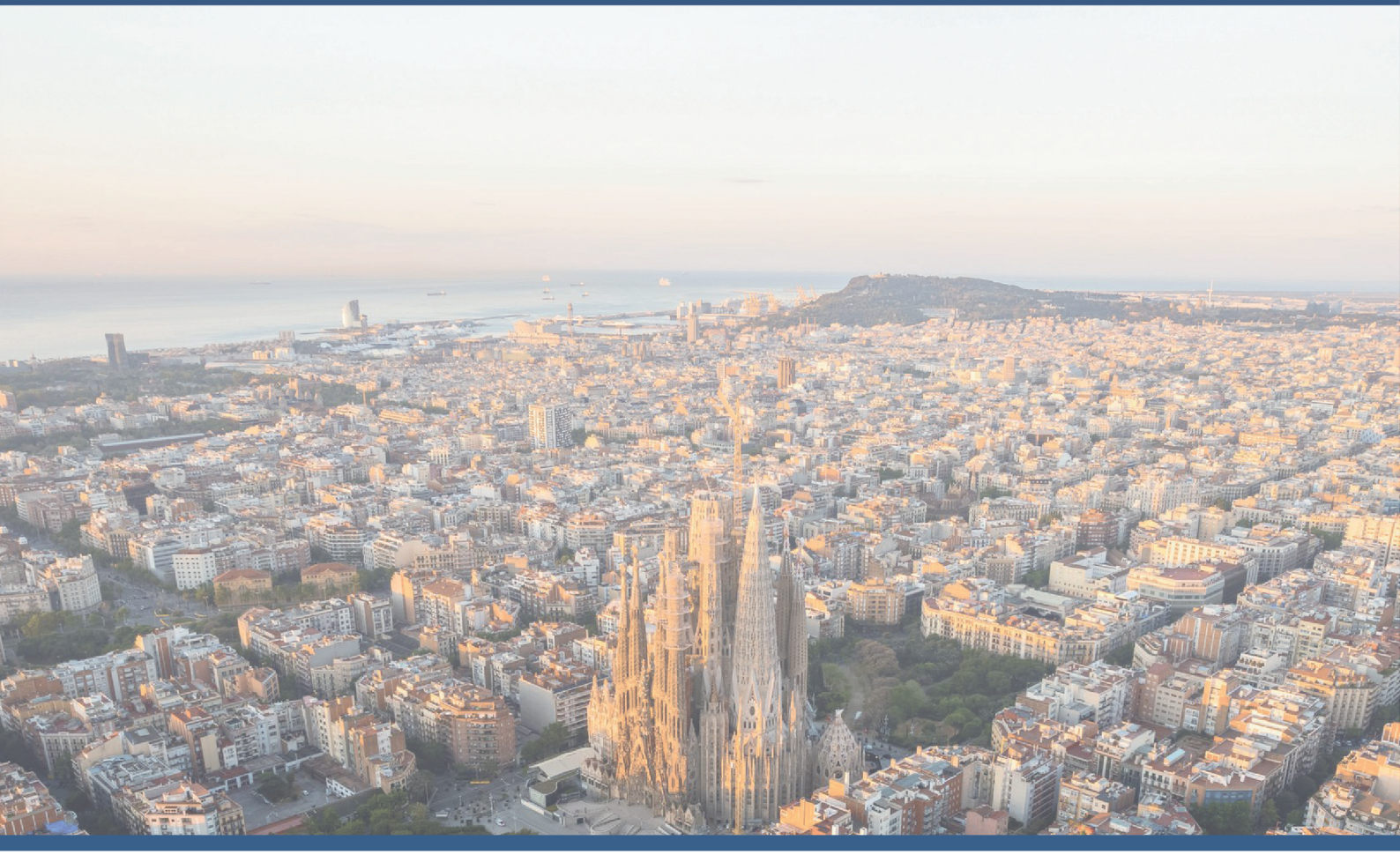
# 28th INTERNATIONAL CONFERENCE ASSOCIATION PEOPLE-ENVIRONMENT STUDIES

Barcelona - 2-5 July 2024



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# Book of Abstracts

# 28th IAPS Conference

## Enacting Transdisciplinar Knowledge: People, Places, Movements and Sustainabilities

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**Angela Castrechini and Enric Pol**

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# 28th IAPS Conference
# Opening Discourses

## Barcelona, Tuesday 4th July 2024
## Paranymph Hall - University of Barcelona

**Welcome Address by the 28th IAPS Conference Chair - Dr. Angela Castrechini**

Dear colleagues, distinguished guests, and dear friends,

It is an honour and a privilege to welcome you to the 28th Conference of the International Association for People-Environment Studies (IAPS) and welcome you to Barcelona. In fact, We gather here today in the beautiful city of Barcelona, united again by a common purpose: to explore, discuss, and advance our understanding of the complex relationship between people and their environment from a transdisciplinary perspective.

I would like to begin by thanking you all for your participation and dedication. Your presence here is a testament to the commitment each of you has with research and practice in the field of environment and behaviour studies. I also extend my gratitude to the members of the Organizing Committee, the Scientific Committee, and the volunteers, whose hard work and dedication are making this event possible.

This Conference brings together scholars, researchers, professionals, and students from various disciplines and from all corners of the world. Our diversity has always been our strength. Over the next few days, we will have the opportunity to share knowledge, experiences, and perspectives that will collectively enrich our field of study and foster new collaborations. Embrace and enjoy this diversity.

This year's theme, "Enacting Transdisciplinary Knowledge: People, Places, Movements and Sustainabilities," reflects the contemporary challenges and opportunities we face at the intersection of the built and natural environment with human behaviour. Through our plenaries, symposiums, thematic sessions, special activities, and poster presentations, we will explore a wide range of topics, from sustainability and urbanism to environmental psychology and community engagement.

I would like to highlight that some of the plenary sessions will be streamed online, allowing for greater accessibility and global participation. These sessions will not only provide a platform for presenting cutting-edge research but also facilitate critical discussions that will drive our understanding and action in the field of environment and behaviour studies.

Let me take this opportunity to remind you of the importance of interdisciplinary collaboration and the exchange of ideas. The challenges we face today, whether it is climate change, uncontrolled urbanization, or social inequity, require integrated and holistic solutions. At this Conference, we have the opportunity to forge new partnerships, learn from each other, and work together to address these challenges.

In addition to the academic sessions, we have organized a series of outdoor activities which consist in visits with experts to explore and understand the topics discussed in the conference in a practical and applied way. These activities will allow participants to connect in a more relaxed and informal setting. These activities offer an excellent context to reinforce our professional and personal networks as well as enjoy the rich culture of Barcelona.

I would also like to extend my thanks to our sponsors and partners, whose support has been crucial for the realization of this event. Your commitment to promoting research and knowledge in the field of environment and behaviour studies is deeply appreciated.
Margaret Mead said "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has." I hope that this small group of almost 600 people finds inspiration in this Conference from each of us with the passion and commitment to continue working towards a more sustainable, equitable, and livable world for all.

Thank you again for being here. I wish you a fruitful and enriching Conference. May our discussions and discoveries in the coming days lead us to new heights and help us create a positive and lasting impact.

Welcome to Barcelona and Welcome to the 28th IAPS Conference!

***Dr. Angela Castrechini***
*Section of Social Psychology, University of Barcelona*
*IAPS 2024 Organizing Committee*

**Opening Remarks by the 7th IAPS Conference Chair - Dr. Enric Pol**

Once upon a time...

Forty-three years ago, we embarked on a journey to organize what would become the first IAPS Conference in Barcelona, even though it was officially the seventh.

We were two newly graduated psychology students, Montserrat Morales and myself, just beginning our academic careers. Montserrat was focused on children's education, while I had just started working as a precarious part-time professor, supported by Dr. Siguan, the then vice-chancellor of the UB and head of the future Faculty of Psychology. Crucially, we had the unwavering support of Josep Muntañola, then the new Director of ETS Architecture at UPC, who had been mentoring us in Architectural Psychology through voluntary seminars at his home.

The IAPS was established in 1981, born from the merger of two conference lines initiated by Professor David Canter in 1969 (precedent of IAPC-Architectural Psychology Conference) and 1972 (Firs ICEP-Conference on Environmental Psychology), with support from Professor Terence Lee. Despite being founded by the same individuals, the 1970s saw emerging conflicts and contradictory interests. The tipping point came in 1979 with back-to-back conferences in Louvain La Neuve and Guilford-Surrey, leading to heated debates. To resolve these issues, a formal association, the IAPS, was created, chaired by Professor Rikard Küller of Lund University, with David Canter as Executive General Secretary.

For more details on these processes, you can refer to my book, Environmental Psychology in Europe, published in 1993 and reprinted by Routledge in November 2024.

Despite our lack of time, money, and resources, we were driven by excitement and determination. Some of our original team members, like Prof. Rikard Küller and Prof. Miquel Siguan, are no longer with us, but others, like Montserrat Morales and Prof. Josep Muntañola, remain active. Prof. Muntañola, now an honorary member of our organizing committee, deserves special recognition for his contributions to Architectural Psychology.

Architectural Psychology, with its social and biological foundations, has evolved since the creation of the IAPS, embracing new perspectives that enhance both well-being and ecologically responsible behaviour.

A key aspect of the IAPS from its inception has been its focus on the object of study rather than the discipline itself. Initially named the International Association for the Study of People and their Physical Surroundings, it was soon simplified to the International Association for People-Environment Studies. This emphasis on interdisciplinary collaboration is crucial for analysing and proposing solutions tailored to the unique characteristics of each ecosystem.

For example, we cannot equate the use of water in the German Black Forest with that in the North African oases. Such simplifications lead to the destruction of natural resources and biodiversity. Instead, we must consider the biological, cultural, technological, socio-economic, and psychological dimensions, all increasingly regulated by laws. Our focus should be on how

communication constructs realities and perceptions, as we react not to objective reality but to our perception of it.

Architecture, engineering, and technology must now develop solutions that consider their environmental impact and how they affect human experiences. This perspective of complexity and collaboration is essential for the debates at this conference. It has guided our decisions in organizing this event.

***Dr. Enric Pol. Conference Chair***
*7th IAPS Conference. Barcelona, 1982*
*28th IAPS Conference. Barcelona, 2024*
*Section of Social Psychology, University of Barcelona*




**IAPS CONFERENCE, July 15, 1982.**



David Canter IAPS General Secretary
Josep Muntañola Dean Archtec. Organiser
Gabriel Ferraté Rector UPC
Rikard Küller IAPS President
Enric Pol Fac Psyc. Organiser.
Montserrat Morales Fac Psyc. Organiser
Miquel Siguan Vice Rector UB

**Opening Discourse Notes – Dr. Adina Dumitru**

Esteemed colleagues in the conference organization team, Enric Pol, Angela Castrechini, Isabel Pellicer, chairs of the Scientific Committee, Sergi Valera and Andres di Masso, Rector Guardia Olmos, Mrs Barnadas, good afternoon and thank you for your warm welcome to the University of Barcelona and to this conference.

Esteemed IAPS members and colleagues, keynote speakers and members of the scientific committee, welcome also on my behalf to the 28th edition of the IAPS conference in Barcelona, with the theme "Enacting Transdisciplinary Knowledge: People, Places, Movements and Sustainabilities". Benvinguts a la 28 conferència de l´IAPS.

I, for one, am delighted that we are here today, kick-starting the first face-to-face conference in 6 years, since Rome 2018, and witnessing the renewed enthusiasm and spirit of more than 600 participants who registered for this event.

Although we shared the scientific excitement and spirit of community that characterizes IAPS during the online conferences in Quebec and Lisbon, I have a sense that we all experience joy in seeing each other in person again, and meeting in this beautiful city.

At our last conference in Lisbon, I mentioned we were organizing it in complex times, following a global pandemic, the start of a war in Europe and against the background of many wicked problems that we as a scientific association are particularly concerned with: climate change, natural resource degradation, biodiversity loss, the global raise in inequality and injustice, the increase in physical and mental health problems etc.

And although maybe the pandemic is slightly more in the past, challenges are no less complex than two years ago, with still growing concern for the climate, biodiversity and humanitarian crises all over the world, new violence and armed conflict, increase in inequality, a rise in extremist and polarized political options and the reign of an era of post-truth that is not even news anymore.

Two years ago, it seemed that at least part of the world was making strides on the environmental and climate change agendas. We were in the midst of the Green Deal implementation in Europe, for example, with the Climate Law, Nature restoration Law, and the Legislative Framework for the Farm to Fork Strategy being put in place, among other interesting initiatives like cleaning soils, targeting pesticide use reductions, the nature-based solutions agenda in cities and countries all over the world, or the just transitions efforts, to name just a few. On a global level, the sustainable development goals and the biodiversity restoration agenda were contributing to global indications of priorities and progress. At this time, we are all aware that some of these advances are being pulled back, nature restoration targets are contested, protests against reduction of plastics and pesticides are rising, and the politics of migration or the divesting of government funding towards military spending are occupying front pages. Addressing the multiplicity of perspectives on sustainability, which are also constantly shifting and moving, can shed a necessary reflexive light on our current and future realities.

IAPS as an organization has an inter and transdisciplinary identity, much in the spirit of the theme of this conference, where we take as a point of departure for our scholarly inquiry the understanding that these interrelated and complex challenges need systemic approaches, as well as transdisciplinary epistemologies and methodologies. Decisions about ways forward and pathways cannot be predefined, but rather need to be the result of serious scientific inquiry, experimentation, social learning and consensus building. The kinds of transformational changes needed to address problems will have to embrace complexity and the understanding that decisions will have to be made under epistemic, social and political uncertainty.

The emphasis of this conference's theme on transdisciplinary approaches that need to consider people and places, but also the fluidity of movement and the plurality of the concept of sustainability itself, could not be more timely. In a time of growing divisions among those who consider that action is needed to avert environmental problems, through democratic social dialogue and creative, socially innovative approaches, and those who position themselves at the denial, growingly belligerent end, we welcome the acknowledgment of plurality of perspectives in the theme of this conference.

The Barcelona team has been spot on in choosing these themes, and in line with what the tradition of IAPS has been. We were an inter- and transdisciplinary organization when these knowledge paradigms were not in vogue. The thematic distribution of sessions at the conference and the diversity of topics and disciplines represented, come to illustrate the spirit and identity of our organization, as well as our ability to respond in relevant ways to current scientific and policy debates. More than 600 scholars will debate, during the following days, concepts, methodologies and solutions to understand, research and experiment with sustainability transformations.

Although we started as an organization of architects and psychologists, we have, over the years come to include urban planners, geographers, economists, biologists, political, environmental and public health scientists, among others. I am delighted that the selection of keynote speakers at this conference, the new formats of proposed special activities, of symposia and paper submissions reflect the beautiful variety of lenses we bring to the study of people-environment relations. Harmut Gunther, Setha Low, Antonio Turiel, Si-min Bian, and Timothy Creswell will for sure challenge us with diverse perspectives, representing different disciplines, topics and geographies, from Brasil to the US, to Spain, China and the UK.

We also have a wonderful participation of the IAPS community here. With more than 600 people registered for the conference, I invite you to take full advantage of this opportunity to listen in and participate in debates, to enjoy the keynote conferences, to dive deep into the themes of your interest and still also navigate those you might not be so familiar with to become inspired by novel perspectives.

Also, I invite you to enjoy the social programme prepared by the Barcelona team. I know our colleagues, and Enric and Angela especially, have gone to great lengths to choose the best locations and activities, mobilizing great collaborations with institutions in the city, to give us

an unforgettable experience. This conference marks a unique milestone and draws a wonderful arc over 42 years from the conference organized by Enric Pol, Montserrat Morales and Josep Muntañola in 1982 to the one we kick-start here today.

Enric, this is testimony to the significance of the work done by your team here, as well as of how vibrant IAPS is as an organization. In 1982, with talks from Josep Muntañola, Enric Pol, Perla Serfaty, David Canter, Claude Levy Leboyer, Rikard Kuller and others, and today with over 600 takes on people-environment relationships. An amazing accomplishment, of historical significance for IAPS.

Let me turn now briefly to a few issues of relevance to IAPS members.
First, for the new members of IAPS, the IAPS Board welcomes you to our Association. We hope you will enjoy it as much as we do, and make it a part of your professional trajectory. Two members will end their term at this conference, Henk Staats from the Netherlands and Adriana Portella from Brasil, and I want to take this opportunity to thank them for their dedication and service to IAPS. The IAPS Bulletin, IAPS history pieces and website and social media communication, among many other aspects, have greatly benefited from their efforts. Two new members will start their term on the Board, Agnes Patuano, from the University of Wageningen, and Jennifer Senick, from Rutgers University. You can get to know them better at the AGM.

Scientific networks are a key part of our association. We would like to mobilize their potential even more, as well as allow for new networks to emerge, as interests and scientific themes evolve. We have updated the status of current networks and we aim for more synergies between them as well as providing support for networks ongoing or new activities, and we will say more about this during our general assembly on Friday, the 5th of July, at 11:30.
As you can see, six networks are active and you have probably attended some of their meetings today, four need new or more conveners to continue and one can also think of new networks that might be necessary, as science, priorities and interests evolve.

I take this opportunity to invite both long-standing and new members of IAPS to take advantage of the wealth of networking opportunities offered by the thematic networks, an important site of connection with colleagues sharing your research focus and interests. And although we find ourselves at the beginning of the conference, I invite you to stick with us until the end, and attend the closing ceremony, where we will also announce where the next conference will take us.

A deep sense of gratitude and a loud thank you goes to the Barcelona team, who have gracefully bared the load of organizing this conference with an enormous amount of submissions from all over the world and doing an incredible job, making it possible for all of us to meet here today. Thank you.

***Dr. Adina Dumitru***
*President of IAPS*
*Department of Psychology, University of A Coruña*

**Speech by the Representative of the Generalitat de Catalunya (Catalan Government)- Anna Barnadas**

Dear Ladies and Gentlemen, dear colleagues from the International Association People Environment Studies, dear Dr Angela Castrechini and Dr Enric Pol,

On behalf of Mr. David Mascort, Regional Minister of Climate Action, Food and Rural Agenda, I would like to welcome you to Barcelona, Catalonia.

It is an honour for me to participate in the opening session of this conference. Biologist by training, I am one of those people who have always understood the environment from a holistic perspective.

I don't think I need to explain it to you: it is clear that we will not be able to address any of the environmental challenges, which are complex in nature and have multiple causes, without an interdisciplinary approach. This, as I said, may sound obvious to many of you, but until a few years ago it was not obvious in the practice of Public Administrations, research institutions, professional teams, nor for a large part of civil society.

As you already know, we are facing a planetary environmental and social poly-crisis. We have transgressed 6 out of 9 planetary boundaries, including those related to climate change, water usage, and pollution from plastics and other human-made particles.

We also know that we have created these problems ourselves, through historic greenhouse gas emissions. Now, we are suffering the consequences. However, the impact is disproportionate, as those who have contributed the least often suffer the most. Moreover, all these issues are interconnected and therefore cannot be tackled individually without understanding the bigger scenario.

Nevertheless, for years we have worked from a silo-based approach. And this sectoral approach, combined with short- term visions and business as usual parameters, have limited the transformative capacity that our actions should have had.
I mentioned before that I am a biologist by training. The knowledge base that my studies gave me has allowed me to understand the complex reality from the perspective of ecological processes.

And yes, I'm biologist by training, but transdisciplinary by doing.

Actually, it was very clear to me from the very beginning, that my vision only made sense if I made it dialogue with other visions and with other professional disciplines. If I shared my knowledge of biology and was able to receive and learn from other disciplines and therefore if I was able to re-understand reality from a much richer and more realistic perspective.

Over the years in which I have had political responsibilities in the field of sustainability, I have been fortunate to be part of teams with the same vision. The Secretariat of Climate Action of the Government of Catalonia is a really good example of this, with teams that work with interdisciplinary visions.

People who understand that health, the fight against inequality and poverty, education, gender equality, intergenerational dialogue and economic progress, among others, are directly linked to environment policies.

With this vision we are trying to manage the complex effects of the severe drought we are currently experiencing in Catalonia, for instance, with so many sectors affected and with the need to preserve nature while keeping social welfare and support the most affected economic sectors. Also based on this approach, we have promoted the co-governance of environmental policies, we are implementing an ambitious climate change adaptation strategy that addresses each and every area of our society and our economy. Or, for instance, we have put the basis for an energy transition process that needs to be fast, just, socially accepted, and respectful with nature and landscape. I have to tell you that it is not always easy.

I am sure that you have experienced it in your professional and academic fields. But experience shows me that we have made progress and I am absolutely convinced that there is no other way than interdisciplinary work to be able to face the great challenges we face and that we will have to face in the coming decades.

That's why we really look forward to your contributions. And that is why the Ministry of Climate Action, Food and Rural Agenda of the Government of Catalonia has supported this conference.

In this sense, allow me to point out that the Government, through the various ministries that have had environmental powers, has collaborated over the years with the Master in Environmental Intervention and Management: Person and Society, promoted by Dr Enric Pol. For those who do not know it, it is an inter-university program active since the 1987-1988 academic year and which has contributed to the training of a large number of professionals.

Receive, Dr Pol, our recognition for your contribution.

Let me conclude by wishing you again a very stimulating and fruitful conference.

***Mrs. Anna Barnadas***
*Climate Action Secretariat.*
*Department of Climate Action, Food and Rural Agenda. Catalan Government*



# 28th IAPS Conference
## Introduction

The 28th IAPS Conference was held from July 2nd to 5th, 2024 in Barcelona. This edition was titled: “Enacting Transdisciplinar Knowledge: People, Places, Movements and Sustainabilities”. People's relationships with the environment are complex and constantly changing, requiring a multi-disciplinary approach. Challenges such as transitioning to more sustainable living spaces, switching to different energy sources, reducing consumption, encouraging circular economies, and addressing climate crisis present new challenges for society, and especially for the scientific community, in terms of both creating new technologies and managing human behavior.
In order to bring about change, it is essential to examine phenomena from various angles, with different disciplinary perspectives, theoretical and methodological approaches, in order to come up with solutions to socially and environmentally important issues and ultimately work towards the well-being of people and society as a whole.
As ecology pointed out in the early 20th century, any action to be sustainable must be "different" and adapted to each ecosystem, that is, to each social or eco-social context.

Therefore, six topics of great relevance were proposed:

**1. Climate Change and sustainability - Changing human behavior**
The latest reports on climate and global environmental issues are becoming increasingly urgent matters that our society must address. The reports indicate a rapid rise in temperature, as well as an increase in pollution and waste accumulation in various natural ecosystems, with a consequent effect on people's health and species. This is the result of human behavior and habits, social dynamics, and industrial, commercial and organizational (public, prived and civil) decisions and actions. It is essential to conduct scientific studies and devise solutions that not only involve technological solutions, but also psychosocial ones, with approaches that focus on people and social influence processes.

**2. Natural and urban environments – The transitions of cities**
The spaces we occupy have been created in the past, are experienced in the present, and are projected into the future. Most of the world's population lives in cities, which are constantly changing to create healthy and, if possible, more natural environments. Recently, the concept of resilient cities has been discussed to emphasize their ability to adjust to difficult situations. Additionally, virtual and hybrid environments have been developed, broadening the human experience of living. Therefore, it is essential to examine urban and rural dynamics, considering the connection between the physical, social, and virtual environments.

**3. Participation, citizenship and environmental justice**

Citizens' involvement is essential for achieving sustainability. Academic research generally agrees that public participation in environmental decisions has many advantages. These can include higher acceptance and support of environmental initiatives from the public, the emergence of new ideas based on local expertise and experience, and social learning. Additionally, it has been determined that effective and meaningful participation is necessary to make sure that policies are created fairly and respect the rights of communities, while also helping them become more resilient. Citizen engagement is a way of empowering them to take part and have a joint stake in their sustainable future.

**4. Place attachment: Space, gender and post-colonialism**

Place attachment and place identity are highly influenced by personal experiences and explain how people emotionally bond with and develop a sense of self in relation to a place. Related concepts such as: social use of space, crowding, privacy, territoriality, personal space, and public space all describe how people interact with and use a particular space.

Additionally, in many environments, there are invisible boundaries and spatial separation based on gender, ethnicity, social class, and other forms of identity that lead to exclusion and social marginalization. Some writers argue that spatial relationships reflect social relationships, and that gender is created through divisions between the public sphere, civil society and private initiatives, ways of perceiving and understanding. Recently, feminist and postcolonial discourse have called for the questioning and re-negotiation of the meaning of spaces.

**5. Mobility, habits and needs**

Cities are increasingly implementing innovative policies and measures to discourage the use of private cars and promote more active and sustainable forms of transportation. Various initiatives are being taken to promote behavioral change in terms of mobility. Direct economic incentives, communication campaigns, and nudging techniques are being used to encourage people to switch to more sustainable forms of transportation. These strategies aim to provide people with accessible and quality alternatives to private cars.

**6. Information, communication management and construction of realities**

In the last two decades, the complexity of environmental crises has grown. We have gone from environmentalists' concern for nature's degradation to looking for citizens' initiative and involvement, and now to urging citizens to follow the instructions of those who know best (scientists, politicians, companies, or interest groups...). Unfortunately, there appears to be a decrease in citizens' willingness to adopt pro-environmental behaviors, while the climate crisis increases eco-anxiety and solastalgia. This trend is likely linked to a growing disenchantment with pro-environmental messages and slogans from administrations and companies. Therefore, the management of communication and its contents is essential for

the construction of new narratives, new cognitive dissonances, and new social representations. The role of ICTs, particularly those of the most popular social networks, must also be considered, as they have taken on a significant role in socialization processes, surpassing those of educational institutions and the mass media.

Considering these challenges, the congress will focus on seeking strategies to promote sustainable environments that favour greater inclusion, social participation, and transdisciplinary in addressing the needs of housing, mobility, and sustainability.
After the need to hold the last two editions of the congress virtually, we are delighted to return to the in-person format with the aim of creating a vibrant space for exchange and analysis, both in formal and informal settings among all participants.

## 28th IAPS Conference

# IAPS 2024 – TOPICS AND SUBTOPICS

**Topic 1: Climate Change and sustainability - Changing human behavior**
- Sustainable lifestyles and green economy
- Resource crises and environmental research
- Risks and hazards: their perception and management

**Topic 2: Natural and urban environments – The transitions of cities**
- Urban design, architecture, landscape design and their effect on people
- Design and habitation of domestic, work and public buildings and spaces
- Evaluation of buildings and natural landscapes
- Stress-related to work and residential settings

**Topic 3: Participation, citizenship and environmental justice**
- Sustainability and social innovation
- Environmental activism and discourses
- Social movement and social media

**Topic 4: Place attachment - Space, gender and post-colonialism**
- Theories of place, place attachment, and place identity
- Social use of space, crowding, privacy, territoriality, personal space
- Stigmatized spaces, prejudices and spatial segregation
- Gentrification and touristification

**Topic 5: Mobility, habits and needs**
- Spatial cognition and wayfinding
- Mobility research
- Leisure and tourism behaviour in physical settings

**Topic 6: Information, communication management and construction of realities**
- Representation and Social Construction of Realities
- Sources of information, credibility and communication management
- Uncertainties of science, ecoanxiety and solastalgia

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# 28th IAPS Conference
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# 28th IAPS Conference
# Organising Universities

The 28th IAPS Conference was hosted by Universitat de Barcelona (UB), in collaboration with Universitat Politécnica de Catalunya (UPC), Universitat Autónoma de Barcelona (UAB), Universitat Oberta de Catalunya (UOC), Universitat Rovira i Virgili-Achitecture School, La Salle – Ramon Llull and Universitat d'Illes Balears (UIB). All of them are a renowned university in the areas of teaching, research, innovation and transfer.

UB, the main venue, is an urban, open and cosmopolitan university like the city of Barcelona itself and one of the oldest institutions in Catalonia (created in 1450): a clear reflection of the political, social and economic events of the country and an important reference of its history.

The universities that suports the Conference, are a socially responsibles institutions that cares for its community. It is committed to pursuing the United Nations Sustainable Development Goals and have integrated them into every area of their activity as it works towards achieving the aims of the 2030 Agenda. The commitment to society is one of the universities core missions and guides its efforts to address many of today's global challenges, including poverty, inequality, climate change, environmental degradation, wealth distribution, peace and justice.

Alongside its close historical ties with the city of Barcelona and with Catalonia as a whole. the universities of Barcelona, are global universities with a presence around the world and contributors to the European universities initiatives.

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# 28th IAPS Conference
## Participation Formats

- **Plenary Sessions:** Main sessions featuring renowned speakers who deliver presentations on key topics or issues relevant to the conference theme.
- **Symposiums:** Focused sessions featuring presentations and discussions on specific themes or topics by experts in the field.
- **Parallel Paper Sessions:** Multiple simultaneous sessions where researchers present their papers on various topics, allowing for diverse discussions and presentations.
- **Poster Sessions:** Researchers present their work using visual displays, typically in the form of posters. During the session, attendees circulate among the posters, engaging in discussions with presenters to learn about their research.
- **Early Carrer Research Workshop:** It offers postgraduate students a chance to present their ongoing research to experts, fostering international connections. Sessions are led by mentors, focusing on similar research areas, with each student given 15 minutes for presentation and discussion.
- **SpecialActivities coming from Special Calls:** Unique events or sessions organized based on specific calls for participation, offering specialized content and formats.

**Special calls:**
Two innovative formats were proposed:

*Special Call-1* – International Transdisciplinary Research
This was a call for special sessions on international and transdisciplinary research that was either in progress or recently completed. These presentations and debates took place in special and specific sessions on projects of this nature. The presentations emphasized the origin, methodology of the project, results, and expected applications by the sponsoring organizations, and were presented as a team.

*Special Call-2* – Applied research and urban projects. Comparing experiences and effects.
A significant effort was made to change citizens' habits and behaviors to improve sustainability through modifications of urban spaces as behavioral settings. To generate debate between specific projects from different cities that had a similar objective, although their methodology and implementation might have differed, we launched this second call. The objective was to foster discussion regarding different urban interventions, considering geographical, cultural, urban, and climatic peculiarities.

· **Outdoors activities:** It refers to leisure pursuits that take place outside, typically in urban / natural or open-air environments. Include the guidance of an expert in the field.

## 28th IAPS Conference

# Keynote Speakers



## Plenary Session 1

*"Tracing the Historical Trajectory of People-Environment Studies from the XIX Century to the Present"* by Hartmut Günther, Psychologist. University of Brasilia, Brazil.

- **Date:** July 2, 2024
- **Time:** 18:00h

Professor Hartmut Günther, Professor Emeritus of Environmental Psychology, University of Brasília, with primary and secondary studies in Germany, undertook most of his university studies in the USA. Completed his studies in social psychology at the University of California at Davis in 1975 and has worked as professor of psychology at three federal universities in distinct regions of Brazil: the South, the North East, and since 1988, in the Central West, at the University of Brasília. The planned city of Brasília sparked his interest in the reciprocal relation between human behavior and planned environments, where he has undertaken studies about housing, leisure and mobility opportunities.

## 28th IAPS Conference
# Keynote Speakers



### Plenary Session 2

*"Why Does Public Space Matter? Exploring a Social Justice Framework for Evaluation and Design"* by Prof. Setha Low, Anthropologist. Public Space Research Group at The Graduate Center, City University of New York (CUNY), USA

- **Date:** July 3, 2024
- **Time:** 12:30h - 13:30h

Professor Setha Low is Distinguished Professor of Environmental Psychology, Geography, Anthropology, and Women's Studies, and Director of the Public Space Research Group at The Graduate Center, City University of New York. She has been awarded a Getty Fellowship, a NEH fellowship, a Fulbright Senior Fellowship, a Future of Places Fellowship and a Guggenheim for her ethnographic research on public space in Latin America and the United States. Her most recent books are "Spatializing Culture: The Ethnography of Space and Place" (2017), "Anthropology and the City" (2019), "Spaces of Security" (with M. Maguire) (2019), and "Why Public Space Matters" (2023). She lectures internationally on public space, social justice and diversity, and partners with the UN Habitat Global Public Space Programme in promoting public space as part of the New Urban Agenda.

## 28th IAPS Conference
# Keynote Speakers



## Plenary Session 3

*"Process, Experience and Flexibility: The Shift in Public Space Construction in Contemporary China"* by Prof. Si-Min Bian, Architect. School of Landscape Architecture, Beijing Forestry University, China

- **Date:** July 4, 2024
- **Time:** 12:30h - 13:30h

Professor Si-Min Bian is an Assistant Professor, Master Tutor and the Director of International Cooperative Education Program at School of Landscape Architecture, Beijing Forestry University, China.
She got her Ph.D. degree from Tsinghua University. Her research interests include practice and theory of Landscape Architecture, public space and strollology, practice and methodology of urban regeneration.
BIAN is also a youth member of Territorial Landscape Committee of the Chinese Society of Landscape Architecture as well as contributing editor of Chinese Landscape Architecture and Landscape Architecture.

## 28th IAPS Conference
# Keynote Speakers



## Plenary Session 4

*"Critical visions for a positive – Actions"*
by Antonio Turiel, Physicist. Institute of Marine Sciences-CSIC, Barcelona, Spain

**- Date:** July 5, 2024
**- Time:** 10:30h - 11:30h

Antonio Turiel is a scientist and is well known for sharing about the sustainability problems in our society. Holding a Degree in Physics and Mathematics and a PhD in Theoretical Physics, he is a researcher at Barcelona's Institute of Marine Sciences (CSIC). His research has focused on turbulence and satellite oceanography, although he is also an expert in the field of natural resources.

His blog, The Oil Crash, is one of the leading sources on issues related to oil and its reserves. He has published "Petrocalipsis". Crisis energética global y cómo (no) la vamos a solucionar [Petrocalypse. Global Energy Crisis and How We Will (Not) Resolve It] (2020) and is co-author, together with Juan Bordera, of the book "El otoño de la civilización" [The Autumn of Civilisation] (2022).

## 28th IAPS Conference
# Keynote Speakers



## Plenary Session 5

*"The Trouble with Placemaking"*
by Tim Cresswell, Geographer. University of Edinburgh, Scotland, UK

- **Date:** July 5, 2024
- **Time:** 12:30h - 13:30h

Professor Tim Cresswell is Ogilvie Professor of Geography at the University of Edinburgh. He is a cultural geographer by training, and the author or editor of a dozen books and over 100 articles on the role of space, place and mobility in social and cultural life. He has PhDs in Geography (Wisconsin) and Creative Writing (Royal Holloway, University of London). Cresswell is also a widely published poet with three collections – most recently "Plastiglomerate" (Penned in the Margins, 2020). His most recent academic books include "Maxwell Street: Writing and Thinking Place" published in 2019 by the University of Chicago Press, "Moving Towards Transition" published by Zed Books (co-authored) in 2021 and "Muybridge and Mobility" published by University of California Press (co-authored) in 2022. His research focuses on place and mobility and their role in the constitution of social and cultural life.



# Symposia

# TOPIC 1:

# CLIMATE CHANGE AND SUSTAINABILITY - CHANGING HUMAN BEHAVIOR

# Understanding everyday circularity: behaviours and contextual change

Craig, Tony (1); Bashir, Altamash (2); Klockner, Christian (2); Hague, Alice (1); Elf, Patrick (3); Colley, Kathryn(1); Poortinga, Wouter (4); Chen, Jianyu (1);

(1) The James Hutton Institute ; (2) NTNU; (3) Middlesex University London; (4) Cardiff University

**Keywords / Relevant Terms**: Circular Economy, Behaviour Change, Circular Behaviours, Sustainable Consumption

## Abstract

In recent years, there has been an increasing volume of discussion about the need for a societal transition towards a circular economy. Such discussions have largely been dominated by material science and wider industrial process issues. There is a growing recognition that understanding behaviours is crucial in anticipating the success (or otherwise) of policy interventions designed to help societies move in this direction. The topic of circular behaviours provides an ideal way to explore dynamic people-environment relationships. This requires us to ask questions like "what is a circular behaviour?", "how do organisations relate to individual decisions about circular economy?", "What role do different psychological constructs play in dynamic transitions towards a circular economy", and so forth. This symposium will discuss the growing evidence base related to circular behaviours, and will provide a useful focus on the need to refine our theoretical ideas associated with this topic. The list of presentations are as follows:

- Altamash Bashir and Christian Klockner: "Consumer behavioral plasticity in the circular economy across diverse geographical regions".
- Alice Hague: "Being circular in a linear economy: perspectives from practitioners"
- Patrick Elf: "Circular consumer and business behaviours: advancing the circular economy by bridging the business-customer divide."
- Kathryn Colley: "Conceptualising everyday circularity and behaviour change for the circular economy"
- Wouter Poortinga : "Circular economy in the community: a qualitative study into sustainable models for repair and reuse hubs in Wales"
- Jianyu Chen: "Social representations of everyday circularity: for a better understanding of circular consumption ideas and practices."
- Tony Craig: "Modelling antecedents to circular behaviours: an empirically grounded approach using psychological values"

# Consumer behavioral plasticity in the circular economy across diverse geographical regions

Bashir, Altamash (1); Klockner, Christian (1);

(1) Department of Psychology, Faculty of Social and Educational Sciences, Norwegian University of Science and Technology

**Keywords / Relevant Terms**: Resource management, Waste reduction, GHG emission, Environmental sustainability, Survey

## Abstract

A circular economy is a strategy that promotes appropriate resource management and reduces waste. This has significant implications for mitigating greenhouse gas emissions and addressing climate change. Consumer behavior significantly contributes to the successful execution of a circular economy as a strategy. In this context, we designed a survey with the objective of gaining comprehensive insights into consumer behavioral plasticity in circular practices.

The survey included questions on two primary circular economy product categories: electronics/electrical and furniture. The survey will be conducted in four countries (Germany, Italy, India, and South Africa) to gauge geographical variations in consumer behavior towards circular economy. The survey is scheduled to be conducted from January to February 2024, with anticipated results expected by spring 2024. The survey encompasses a wide range of questions covering consumers' socio-demographic and financial characteristics. The survey includes questions on consumer knowledge of the circular economy and its role in environmental sustainability. The survey also aims to assess consumer participation within a circular economy and understand the attitudes, perceptions, and motivations associated with circular economy behavior. It also includes questions on the barriers and drivers that influence consumers' willingness to adopt circular economy practices or products. The information gathered from the survey is expected to provide invaluable information for designing strategies that encourage consumers to adopt sustainable consumption behaviors.

# Being circular in a linear economy: perspectives from practitioners

Hague, Alice (1)

(1) James Hutton Institute

**Keywords / Relevant Terms**: Circular Economy, Organisations, Behaviours, Transition, Sustainability

## Abstract

Reducing consumption and transitioning from a linear 'make, take and dispose' economy to a more 'circular' economy is increasingly agreed to be part of the journey to net zero and the development of a green economy. But this transition to a circular economy requires a cultural shift in how people and organisations use resources and materials every day. Much of the focus of circular economy research has been on technical innovation or development of new business models (e.g. Centobelli et al, 2020), while the social and behavioural aspects of the transition to a circular economy are often overlooked.

This paper draws on empirical data gathered through semi-structured interviews with representatives of public (local government), private (SMEs – small-medium enterprises) and third sector (charities/social enterprises) organisations in Scotland during 2023. This research seeks to understand the opportunities and challenges for organisations in the transition to a circular economy, and to consider the motivations and drivers of change within organisations.

This paper will present emerging findings from the study, adding empirical evidence from the perspective of practitioners within organisations to academic debates about the transition to a circular economy. The research raises important questions about the role of small organisations and local government in supporting large-scale transition to a greener, more sustainable economy, and emphasises how people, and their decisions and behaviours, are a fundamental part of a successful transition to a circular economy.

# Circular consumer and business behaviours: advancing the circular economy by bridging the business-customer divide

Elf, Patrick (1); Isham, Amy (2);

(1) Middlesex University; (2) Swansea University

**Keywords / Relevant Terms**: Circular Economy, Organisational Change, Consumer Behaviour

## Abstract

The circular economy holds the potential to significantly reduce resource use. However, besides the circular economy's far-reaching popularity among policymakers, academics and practitioners alike, circular business models and circular (consumer) behaviours have yet to demonstrate their aforementioned potential to operate as a means to a net-zero economy.

The underlying research is grounded in two notions: Firstly, there is no circular economy without a circular society. Secondly, that efficiency gains through resource improvements are insufficient and new organisational behaviours are needed. Consequently, the research sets out to cover the business side and the customer side – two sides of the same coin, which, however, have been tackled in silo so far.

Drawing on qualitative data collected in collaboration with businesses, the empirical paper presents emerging insights into the role of circular offerings and other context-spanning factors. Notably, the research explores the potential of circular behaviours to induce positive spillover effects as well as moral licensing and rebound effects on a consumer and business level.

# Conceptualising everyday circularity and behaviour change for the circular economy

Colley, Kathryn (1)

(1) The James Hutton Institute

**Keywords / Relevant Terms**: Circular Economy; Behaviour Change; Sustainability; Theory; Frameworks

## Abstract

Circular economy (CE) research has tended to focus more on industrial and technical production-side problems, yet everyday consumption and waste-related behaviour will undoubtedly play a pivotal role in the success or failure of CE policy (Georgantzis Garcia et al. 2021). Whilst whilst the importance of behaviour change is often acknowledged, little attention has been paid to the conceptualisation of behaviour and behaviour change in the CE literature (Muranko et al. 2018). In In this presentation, we address this issue, drawing on insights from the CE, consumption, and pro-environmental behaviour literatures.

Specifically, we define 'circular behaviours', seek to develop an integrated framework for classifying these behaviours, and reflect on the use of behavioural theory to underpin existing research on circular behaviour change.

We conclude that no comprehensive frameworks for analysing circular behaviours currently exist. Hierarchical frameworks have the potential to help shift attention from 'easy' yet low-impact behaviours, to more challenging high-impact behaviours, yet are seldom framed specifically in relation to behaviour. At the same time, vertical frameworks emphasising the stages of consumption capture additional behaviourally-relevant dimensions. Furthermore, a reliance on dominant behavioural models such as the Theory of Planned Behaviour inadequately addresses issues of the scale at which outcomes are expressed and the role of intra-household dynamics and social norms in the negotiation of who performs circular behaviours within and on behalf of the household.

This conceptual review of circular behaviours research suggests priorities for a person-centred research agenda on circular behaviours. Central to these is the need for theoretical development and interdisciplinary integration, an argument which could be extended to pro-environmental behaviour research more broadly.

# Circular economy in the community: a qualitative study into sustainable models for repair and reuse hubs in Wales

Poortinga, Wouter (1)

(1) Cardiff University

**Keywords / Relevant Terms**: Circular economy, Material consumption, Repair and reuse; Community, Community hubs

## Abstract

The circular economy is a model of production and consumption that aims to reduce resource usage by diverting waste and re-circulating materials within the economy.

One way of doing this is by promoting the repair and reuse of existing products within communities, which extends product life and reduces resource extraction. This qualitative study aimed explore (a) different types of business models to enable repair and reuse within the community, and (b) the opportunities and challenges of running repair and reuse centres across urban and rural communities in Wales.

This pilot project included eight semi-structured interviews. Two interviews were conducted with policy experts in the Welsh Government and six with practitioners involved in the running of existing repair and reuse centres in a variety of locations The interviews were analysed through a thematic analysis to identify the main topics of the interviews.

The results show that repair and reuse projects can be established successfully at various scales, and have multiple co-benefits, such as job and training opportunities, providing welcoming community spaces, and decreasing financial pressures on consumers.

However, different areas experience different challenges. In urban areas, projects experience heavy workloads due to high demand. In rural areas, accessibility and potential exclusion are more significant challenges. There were also shared challenges across the different projects, including difficulties accessing space, training and skills gaps, built-in obsolescence, and lack of long-term funding.

Overall, repair and reuse services are in high demand, suggesting there is a need for such services within the community, and that they can help make tangible improvements toward a more circular economy. However, government support is needed to enable repair and reuse initiatives to become self-sustaining.

# Social representations of everyday circularity: for a better understanding of circular consumption ideas and practices

Chen, Jianyu (1)

(1) The James Hutton Institute

**Keywords / Relevant Terms**: Social Representations, Circular economy behaviours

## Abstract

The promotion of the circular economy has emerged as a pivotal strategy in addressing the escalating environmental crisis. Extensive research has scrutinised various facets of the circular economy, ranging from production processes to socio-behavioural aspects.

However, a noticeable gap persists in the literature concerning the comprehensive understanding of the how the idea and behaviour of circular economy is appropriated differently among social groups.

This research project, guided by the theoretical framework of the Theory of Social Representations (TSR), intends to undertake an investigation into individuals' cognitive representations of the circular economy. Specifically, our inquiry will centre on the manner in which individuals intellectually and praxiologically engage with the circular economy in their daily lives. This will encompass an exploration of the nuanced meanings, symbolic values and pragmatical inventory of items related to circular consumption behaviours, notably the acquisition of used items. Furthermore, we will endeavour to unveil psychological underpinnings such attitudes, motivations, and social identities, that underlie these social representations.

Our research project aims to address the existing knowledge gap by elucidating the societal-level understanding of the circular economy behaviours. Furthermore, it underscores the necessity of recognising the heterogeneous appropriation of social norms across diverse socio-demographic groups, an imperative for upholding principles of social justice in the transitional phase.

# Modelling antecedents to circular behaviours: an empirically grounded approach using psychological values

Craig, Tony (1)

(1) The James Hutton Institute

**Keywords / Relevant Terms**: Circular Behaviours, Human Values, Circumplex, Models

## Abstract

The relationship between basic human values and support for environmental action has been the subject of a large number of studies, most of which conclude that there is a notable correlation between endorsing self-transcendence values and performing environmental behaviour. The relationship between internal psychological constructs such as values and the likelihood of engaging in environmental behaviours is explored in two studies. The first study involves a secondary data analysis of the European Social Survey data, focussing on the Human Values Scale, and explores the utility of representing human values using an individual circumplex approach (based on Borg et al. 2017). This approach assumes that the circular structure of values is not only an aggregate observation of a correlation structure at the population level, but also something that is psychologically meaningful at the individual level. The relationship between individual level value orientation and population-level observations of value patterns is explored by comparing data across different countries. The second study builds on insights from study one, using data from a questionnaire focussed on circular behaviours. This study analyses the relationships between psychological values and other psychological constructs, including circular behaviours, and offers suggestions about how the conclusions from models are likely to be impacted by representing psychological values in different ways.

References

Borg, I., Bardi, A. and Schwartz, S.H. (2017), Does the Value Circle Exist Within Persons or Only Across Persons? *Journal of Personality*, 85, 151-162

# Contextual drivers for sustainable behaviours: Social- psychological research and interventions to promote sustainability

Bertolotti, Mauro (1);

(1) Catholic University of Milan

**Keywords / Relevant Terms:** sustainability, context, digital communication, technology acceptance, social norms;

## Abstract

Although the discussion on environmental sustainability often focuses on the technological and economic side, it is becoming increasingly clear that people's sustainability beliefs and attitudes, and the intention to act upon them, often depend on the context people find themselves in.

Speakers at this symposium present new research that uses a range of quantitative and qualitative methods to examine how different types of contexts (physical, digital, social, organizational, informational) can subtly but powerfully influence individual attitudes, intentions, and behaviours.

The first paper (by Milani, Dessi, & Bonaiuto) examined the social-psychological drivers of societal acceptance of sustainable energy technologies using a meta-analysis and a survey. The results showed that individual beliefs about these technologies predominate as predictors of attitudes. The second paper (by Bertolotti, Elli, & Catellani) examined the individual social-psychological characteristics associated with pro-environmental behaviours and designed differently framed messages to promote the adoption of such behaviours. The results showed that different frames can be effective in promoting pro-environmental attitudes and intentions in different audiences. The third paper (by Catellani & Carfora) tested a mobile app intervention to promote the consumption of sustainable seafood and found that awareness-based, knowledge-based or combined messages had different effects (both short and long-term) on participants' attitudes and behaviours. The fourth paper (by Bonaiuto, Bonucci Cancellieri, Mura, Milani & Chiozza) examined the effects of organisational communication in two experimental studies, and found that injunctive and descriptive norms can indirectly influence pro-environmental attitudes through collective efficacy. The fifth paper (by de Falco & Sarrica) examined the social representations of agro-photovoltaic technology and revealed a mismatch between the scientific and institutional discourse on this technology and the concerns of the affected communities.

The discussion focuses on the potential applications of these findings in promoting sustainable behaviours in different contexts.

• Alessandro Milani, Federica Dessi and Marino Bonaiuto: “Who accepts and why do people accept (or refuse) sustainable (mitigation and adaptation) energy technologies? Understanding the role of beliefs and attitudes through multiple approaches”
• Mauro Bertolotti, Sara Elli & Patrizia Catellani: “Are individual differences the key to unlock sustainable individual behaviour? The effects of message framing in personalised communication”
• Patrizia Catellani & Valentina Carfora: “Environmental messages to promote sustainable seafood choices: An exploratory mobile app intervention.”
• Flavia Bonaiuto, Uberta Cancellieri, Alessandro Mura, Alessandro Milani & Valeria Chiozza: “The Normative Influence in Corporate Environmental Responsibility: Creating a Sense of Organizational Belonging in Promoting Pro-Environmental Attitudes”
• Mirella de Falco & Mauro Sarrica: “Cultivating shared ownership: Empowering communities for agrivoltaics adoption in Italy”

# Who accepts and why do people accept (or refuse) sustainable (mitigation and adaptation) energy technologies? Understanding the role of beliefs and attitudes through multiple approaches

Milani, Alessandro (1); Dessi, Federica (1); Bonaiuto, Marino (1)

(1) Department of Psychology of Developmental and Socialization Processes, Sapienza University of Rome

**Keywords / Relevant Terms**: Social acceptance, Renewable and sustainable energy technologies, Attitudes and behaviours, Mitigation, Adaptation

## Abstract

New sustainable and renewable energy solutions are essential for mitigating the effects of climate change (e.g., renewable energies such as solar energy) and facilitating adaptation (e.g., geoengineering).

In recent years, the energy sector has seen a surge of studies on the social acceptance of these technologies. It is therefore imperative to integrate the research into a cohesive and all-encompassing viewpoint to take advantage of the cumulative knowledge in the field.

Through two studies, respectively two series of meta-analyses (Study 1) and a survey (Study 2), the current research seeks to explore the main social-psychological, contextual, and technological determinants of the social acceptance of such technologies, providing a thorough understanding of the phenomenon.

Study 1: Two series of meta-analyses analyze how social acceptance of renewable and sustainable energy technologies (of both mitigation and adaptation) is influenced by beliefs about social-psychological, technological, and contextual aspects. The results show that adopters' social-psychological beliefs, in addition to context- and technology-related beliefs, have a greater influence on social acceptance than exclusively individual (e.g., cognitive) or sociodemographic variables.

Study 2: Building on the State of the Art and the results of Study 1, a survey was developed to investigate - through different methodological approaches - the characteristics of people most likely to accept such technologies and the impact of social-psychological, contextual, and technological beliefs on the social acceptance of these technologies. Precisely, the survey investigates the crucial beliefs' impact on attitudes to promote subsequent acceptance behavioral intentions. Finally, the survey highlights similarities and differences in the social acceptance process of mitigation and adaptation technologies.

The results of the research improve the understanding about beliefs' influence on the social acceptance of renewable energy technologies, to strengthen efforts against climate change. This knowledge bears applied implications in terms of possible interventions capable to manage the relevant beliefs.

# Are individual differences the key to unlock sustainable individual behaviour? The effects of message framing in personalised communication

Bertolotti, Mauro (1); Elli, Sara (1); Catellani, Patrizia (1)

(1) Catholic University of Milan

**Keywords / Relevant Terms**: Digital communication, Sustainability, Pro-environmental behaviour, Framing

## Abstract

Communication promoting environmentally sustainable behaviours is often designed to provide universal recommendations aimed at a broad, unspecific audience. There is increasing evidence, however, that a more personalised approach might be more effective, as messages that consider recipients' psychosocial characteristics are more likely to grab their attention and motivate them to actually engage in these behaviours. In a series of studies, we investigated the psychosocial antecedents (personality traits, temporal orientation, regulatory focus, and environmental identity) of sustainable behaviours, and whether message framing (in terms of gain, non-loss, non-gain, or loss) can be used to address individuals with different characteristics, increasing their intention to engage in those behaviours. In a correlational study (N = 250) we first explored the association between individual psychosocial characteristics and behaviours such as reducing energy and water consumption, and sustainable transport options. Then, in an experimental study, participants (N = 450) were engaged in a short mobile app intervention, through which they completed pre- and post-test self-report measures of individual psychosocial characteristics and past pro-environmental attitudes and behaviours, and were exposed to experimentally manipulated messages promoting the same behaviours. Results showed that the effect of message framing on participants' intention to engage in sustainable behaviours was moderated by participants' individual characteristics, such as their temporal orientation and personality traits profile. We discuss the potential application of messaging intervention that dynamically adapt message framing to the individual characteristics of the audience.

# Environmental messages to promote sustainable seafood choices: An exploratory mobile app intervention

Catellani, Patrizia (1); Carfora, Valentina (2)

(1) Catholic University of Milan; (2) International University of Rome - UNINT

**Keywords / Relevant Terms**: Digital Communication, Sustainability, Pro-environmental behaviour, Fish; Nutrition

## Abstract

Using an exploratory mobile app intervention, we investigated the effectiveness of messages focusing on environmental awareness and/or environmental literacy to promote sustainable seafood choices. 348 volunteers (M age=44.30, SD=14.46; females=189; males=154; non-binary=1; nr=4) participated in the study. First, participants completed a questionnaire in which they recorded their previous purchase of sustainable seafood as well as their attitudes and perceived behavioural control in relation to the purchase of sustainable seafood. Then, depending on the experimental condition, over a 36-day period, participants received via the app either: a) environmental awareness messages (i.e., information about the environmental impact of seafood production); b) environmental knowledge messages (i.e., information that focused on how to identify and prepare sustainable seafood); c) combined messages (i.e., information that combined the previous two messages); d) no messages. Finally, we measured participants' attitudes towards purchasing sustainable seafood, their perceived behavioural control over purchasing sustainable seafood, seafood selection using a choice task, and self-reported purchase.

Results showed that participants who received the environmental awareness messages reported more positive attitudes and higher perceived behavioural control after the intervention than participants in the other conditions. These improvements remained stable at follow-up (1 month after the end of the intervention). The environmental literacy messages also led to an increase in positive attitudes, perceived behavioural control and purchasing behaviour, although the purchase of sustainable seafood began to decrease at follow-up. The combined messages improved attitudes and perceived behavioural control.

In addition, participants purchased more sustainable seafood in this condition at follow-up. The discussion will focus on how these results contribute to our understanding of which messages can effectively promote sustainable seafood choices.

# The Normative Influence in Corporate Environmental Responsibility: Creating a Sense of Organizational Belonging in Promoting Pro-Environmental Attitudes

Bonaiuto, Flavia (1); Ganucci Cancellieri, Uberta (2); Mura, Alessandro Lorenzo (3); Milani, Alessandro (3); Chiozza, Valeria (3);

(1) Faculty of Economics, Universitas Mercatorum; (2) Department of Social and Educational Sciences of the Mediterranean Area, University for Foreigners "Dante Alighieri" of Reggio Calabria; (3) Department of Psychology of Developmental and Socialization Processes, Sapienza University of Rome

**Keywords / Relevant Terms**: Corporate Environmental Sustainability, Normative influence, Pro-environmental behaviours, Organizational commitment, Collective efficacy

## Abstract

Organizations play a pivotal role in ecological transition and the promotion of pro-environmental behaviors. Corporate Environmental Responsibility (CER) encompasses voluntary actions undertaken by companies to minimize environmental impact during production and promote these efforts through effective internal and external communication. Grounded in the Focus Theory of Normative Conduct, this research explores how injunctive and descriptive norms related to CER contribute to creating a collective sense of efficacy and commitment to organizational environmental issues, positively influencing attitudes toward both simple (e.g., recycling, sustainable mobility) and collectively challenging behaviors (e.g., acceptance of the company's new energy technologies). Experimental Study 1 involved 439 Italian workers from public and private organizations, utilizing a 2x2 between-subject design to manipulate the intensity of injunctive and descriptive norms. Analyses revealed significant main effects of both norms on collective efficacy and affective commitment but not on pro-environmental attitudes. No interaction effects emerged. To analyze the relationships between the variables, correlational Study 2, with 371 Italian workers, employed a path analysis model. Injunctive and descriptive norms served as independent variables, while collective efficacy and affective commitment acted as sequential mediators. Attitudes toward simple or challenging pro-environmental behaviors were dependent variables. No direct effects of norms, both injunctive and descriptive, on attitudes, were observed, confirming the result from Study 1; instead, the relationship was mediated by collective efficacy and subsequent affective commitment. In both studies, the organization's emphasis on environmental issues did not directly impact workers' favorable attitudes toward pro-environmental matters but indirectly fostered it via a sense of belonging and community within workgroups. This underscores that an organization can establish environmental standards to cultivate a green organizational culture, shaping corresponding attitudes among employees.

# Cultivating shared ownership: Empowering communities for agrivoltaics adoption in Italy

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**Keywords / Relevant Terms**: Energy transition, Social acceptability, Community engagement, Shared representations

## Abstract

Agrivoltaics systems combine solar energy and agronomic production, offering a promising avenue toward sustainable energy production in rural areas. Despite its potential, Italy faces uncertainties regarding the widespread adoption of this technology. State subsidies support advanced systems, yet communication between experts and stakeholders has not yielded anticipated outcomes. Social representations theory can help us understand what hinders the adoption of agrivoltaics. In particular, we aimed to study the social representations constructed by agrivoltaics experts and local communities opposing agrivoltaics diffusion.

A mixed methods approach was adopted. A total of 40 newspaper articles published between 2021 and 2023 were submitted to thematic content analysis. Then, 13 experts in the agronomic and energy fields were interviewed to probe the strengths and threats of agrivoltaics.

Newspaper analysis highlighted diverse concerns, including economic implications, environmental risks, sense of place, and regulatory uncertainties surrounding agrivoltaics. Projects were contested the most in territories that already dealt with different aspects of energy (in)justice, such as a lack of transparent procedures. Interviews echoed these themes, identifying pivotal arguments for or against agrivoltaics. Economic issues were differently perceived depending on stakeholders' entrepreneurial innovativeness/conservatism; the impacts on tourism were discussed in terms of loss/enrichment of cultural heritage; insufficient agronomic experimentation questioned the passage of agricultural machinery; rural areas were deemed sufficient/insufficient for meeting the Italian demand of renewable energy; experts explained threats to landscape as a matter of familiarity/unfamiliarity. Above all, the vagueness of the regulatory framework concealed an issue of defining the sustainability/unsustainability of agrivoltaics systems.

Engaging affected communities is imperative in addressing these interpretative nodes. Shared representations and community ownership of agrivoltaics are then needed to frame this technology as something more than a "technofix" for Italy's energy targets, keeping in mind the complex nature of the social systems combined by agrivoltaics.

# Sustainable future: the role and perspectives of agribusiness supply-chain actors

Catellani, Patrizia (1); Merlino, Valentina Maria (1);

(1) Department of Agricultural, Forest, and Food Sciences, University of Turin, Largo Paolo Braccini 2, 10095, Grugliasco, Turin, Italy

## Abstract

The modern agribusiness production sparks a multifaceted debate encompassing social, economic, and environmental dimensions. Within this context, food systems emerge as pivotal, uniting policies and strategies aimed at ecological and technological transition. Achieving a sustainable future poses a challenge for the agricultural sector, shaped by various sustainable consumption models wherein not just consumers but all actors in the food chain play active roles. This scenario prompts the exploration of different sustainable consumption patterns and the crucial role of stakeholders in devising pragmatic transition strategies, a complex endeavor spanning multiple scientific disciplines. This symposium brings together sociological, econometric, and socio-environmental perspectives, centering on sustainability and innovation in the realms of both consumers and producers. Sciullo and Pettenati delve into the Italian consumer's perception of local production, evaluating how distinct facets of this concept influence individual choices. Mastromonaco et al. offer an analysis of vegetable beverages' supply, employing claims analysis and an innovative methodology to compare with consumer preferences. Sparacino et al. investigate consumer attitudes and preferences toward tropical fruits—banana and avocado—employing two discrete choice methodologies for comparison. On a different note, Costamagna et al. explore the significance of extensive livestock systems in marginal areas on ecosystem services. Their study focuses on hikers' perceptions of the link between animal husbandry and ecosystem services, aiming to enhance environmentally and socioeconomically sustainable production systems. Lastly, Sacchi and Monaco theoretically explore the interplay of circular economy practices within consumers' food coops.

• Alessandro Sciullo & Giacomo Pettenati: "Defining and purchasing Local Products: individual profiles and eating style"
• Giulia Mastromonaco, Antonina Sparacino, Oriana Mosca & Francesco Sottile: "From shelves to consumer: the scenario of plant-based beverage in the Italian market"
• Antonia Sparacino, Nicole Giuggioli, Valentina Merlino, Selene Ollani, Stefano Massaglia, Giulia Mastromonaco & Danielle Borra : "Sustainable choices in a globalized agri-food market: consumer preferences and certification impact on avocado and banana consumption"
• Chiara Costamagna, Valentina Merlino, Paolo Cornale, Danielle Borra & Luca Maria Battaglini: "Mountain animal production: from an ancient breeding practice to sustainable food for new consumption styles. Socio-cultural assessment of hikers' behavior through the study of ecosystem services"
• Giovanna Sacchi & Salvatore Monaco : "Exploring the nexus of circular economy practices in consumers' food coops: a theoretical contribution"

# Defining and purchasing Local Products: individual profiles and eating styles

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(1) University of Turin; (2) University Piemonte Orientale

**Keywords / Relevant Terms**: local production; consumer perception; food chain; clustering; sustainability; eating styles

## Abstract

Downscaling to the local the length of the agri-food chains is widely seen as an opportunity for a more sustainable food production system. The attribute “Local” is then assuming an increasing role in triggering purchasing preferences, due to consumers’ expectations both in terms of product quality and sustainability. In order to grasp the imaginary of local production characterizing the consumers of local food, this research aims to define how this imaginary is influenced by individuals' perception and knowledge about local food production, eating styles and socio-demographic characteristics of the consumers. Based on a survey submitted to a sample of consumers in north-western Italy the contribution firstly provides a semantic map of local production built on keywords adopted by the respondents to describe item, then food consumers are grouped in to clusters on the basis of their eating styles and finally these clusters are characterized according to the preferences and knowledge expressed towards local production. The research produced a possible bottom-up definition of LP, i.e. a definition based on the experience and perceptions of different consumers clusters whose opinions of on the aspects characterizing Local Production refers mainly to the quality of the local product, which is recognized as superior. The results show that the awareness and attitudes of consumers towards the local concept are to a certain degree affected by the joint effect of their socio-demographic profile and their food consumption style, with some unexpected evidences that would deserve to be deepen with further research.

# From shelves to consumer: the scenario of plant-based beverage in the Italian market

Mastromonaco, Giulia (1); Sparacino, Antonina (1); Mosca, Oriana (2); Sottile, Francesco (3)

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(2) Department of Education, Psychology, Philosophy, University of Cagliari;
(3) Department of Architecture, University of Palermo · Centro Interdipartimentale di Ricerca "Riutilizzo Bio-Based Degli Scarti da Matrici Agroalimentari" (RIVIVE), Università degli Sudi di Palermo

**Keywords / Relevant Terms**: plant-based beverages, sustainability, consumer analysis, assortment planning, attitudes

## Abstract

The presence of plant-based beverages (PBBs) in the European market is growing steadily, thanks to significant innovations in both raw material selection and production processes. Consumers have increased PBB consumption driven by sustainable and health-conscious consumption patterns. However, some PBB chains also suffer from various environmental and social issues. In this context, it is critical to discern which attributes of PBBs are deemed most valuable during the purchasing process, including those related to product sustainability. This understanding is of critical importance to manufacturers and retailers, enabling them to align their offerings with dynamic consumer demands and preferences. This topic is particularly important in a market segment where brand assortment and product ranges are continuously expanding. This study analyzes the evolution of consumer preferences for PBBs in Italy, focusing on factors that influence purchase decisions and motivations. First, a survey was conducted with 233 Italian respondents: using a 7-point Likert scale, participants ranked the importance of nutritional characteristics and sustainability aspects in PBB purchases. Consumer data analysis was done through a probabilistic model, the Combination of a discrete Uniform and a shifted Binomial distribution (CUB), involving a combination of two distributions: a discrete uniform distribution and a shifted binomial distribution.

Second, a total of 2,653 PBB references were examined, considering 65 physical retail stores, in order to analyze the information (claims) communicated to consumers through labels.

Using an integrated approach, mixing the probability CUB model and a descriptive analysis of retail offerings, we explore the complex interplay between consumer choices and label claims.

# Sustainable choices in a globalized agri-food market: consumer preferences and certification impact on avocado and banana consumption

Sparacino, Antonina (1); Giuggioli, Nicole (1); Merlino, Valentina (1); Ollani, Selene (1); Massaglia, Stefano (1); Mastromonaco, Giulia (1); Borra, Danielle (1)

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**Keywords / Relevant Terms**: Avocado, consumer preferences, banana fruit, sustainability, consumer choices

## Abstract

The phenomenon of globalization is allowing the agri-food market to become increasingly interconnected, making room for tropical fruits in Western Europe as well. Bananas have become products integrated into daily diets, and avocado consumption has seen significant growth in recent years. However, due to their length and complexity, supply chains for tropical fruits in general, also for avocados and bananas, are characterized by economic, environmental, and social sustainability challenges. The opinions and preferences of Western consumers are a good starting point for improving market and sustainability communication in consumer markets. Two case studies were developed through choice experiments: the first related to avocado consumption and stated preferences using Best-Worst Scaling (BWS) methodology, and the second using Conjoint Analysis to explore individual attitudes toward banana consumption in relation to sustainability attributes. The two methodological approaches, both derived from the discrete choice approach, enabled the assessment of consumers' attitudes toward two tropical fruits by obtaining interesting and comparable results. The results revealed that not all consumers are aware of the sustainability issues of tropical fruits; however, certification has an impact on purchase decision making, particularly Fair-Trade certification for bananas. Several implications for improving sustainability communication and marketing to increase consumer awareness were identified.

# Mountain animal production: from an ancient breeding practice to sustainable food for new consumption styles. Socio-culturalassessment of hikers' behavior through the study of ecosystem services

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## Abstract

The Italian Alpine region has a long-standing connection between the binary system of the tourism industry and silvopastoral sector. Mountain agro-zootechnical activities efficiently utilize natural resources: ruminant livestock converts the resources of marginal pastures into highly valuable and nutritious food sources. In addition, these traditional farming systems show different territory-activity-specific externalities, contributing to creating and maintaining semi-natural habitats. In this context, another benefit it's about the preservation of traditions and cultural heritages. Thus, the sustainability of mountain production, especially dairy production, is linked to the dimensions of economic, ecological and cultural sustainability. The increase in alpine tourism since the COVID-19 pandemic makes it important to know the current preferences and attitudes of hikers (as consumers) toward mountain farming. The case study was developed by analyzing the perception of ecosystem services (ES) provided by animal production among tourists in a specific mountain area (Upper Ellero Valley, northwestern Italy). In addition, the behavior of tourists regarding the enhancement aspects of mountain areas related to mountain agriculture was investigated. Responses on ES perception were analyzed using principal component analysis. The new principal components were used to group the sample according to individuals' perceptions of ecosystem services. Finally, correspondence analysis was adopted to analyze the association between the three groups of hikers and the proposed strategies for enhancing mountain areas.

This research revealed a positive perception of visitors toward the impact of herds on SEs. In addition, different opinions emerged among the clusters regarding the enhancement strategies that can be adopted for the development of mountain areas by exploiting the positive link between herds and the environment. These findings could have concrete implications on shaping social and economic development.

# Exploring the nexus of circular economy practices in consumers' food coops: a theoretical contribution

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**Keywords / Relevant Terms**: Circular Economy, Circular Practices, Consumer Behaviour, Food Coops, Sustainable Consumption

## Abstract

In the face of global challenges such as climate change and resource depletion, the imperative for sustainable practices, aligned with SDGs, has gained paramount importance. This contribution delves into the theoretical framework of integrating circular economy principles within the cooperative model to address not only environmental concerns but also contribute to social justice and equity.

Our hypothesis posits that consumers' food coops, as community-driven entities, hold the potential to act as catalysts for circular economy initiatives, fostering sustainable development. Renowned for their community-oriented approach and commitment to ethical sourcing, these coops provide an ideal context for exploring circular economy integration. Noticeably, within numerous food cooperative initiatives, the emphasis is not only on sustainable farming methods but also on adopting sustainable practices that extend throughout the supply chain, addressing concerns such as recycling and minimizing food waste. This ensures the firm embedding of sustainable principles into the everyday habits of consumption.

In this framework, the overall aim is to investigate how the cooperative elements influence the adoption of circular practices, contributing to food democracy, sustainable consumption, and to the broader discourse of social justice.

This theoretical contribution draws on collective action and co-production theories, analysing their relevance in understanding the role of cooperative structures, governance, and member engagement in promoting circular practices not only at the food choice level but also towards an aware and sustainable lifestyle, among community members, thereby addressing the principles of equity.

Through a review of existing literature, case studies, and theoretical models of collective action and co-production within the food sector, we aim to contribute to ongoing discussions on community-driven circular economy practices.

By comprehending the nexus between consumer behaviour and circular practices, we aspire to provide valuable insights, guiding the development of strategies and policies to promote sustainability within the food cooperative sector and beyond.

# Psychological well-being in the local landscape of changing climate and biodiversity

Johansson, Maria (1); Andersson, Hanna (1); Wullenkold, Marlis (1);

(1) Lund University

**Keywords / Relevant Terms**: climate change; biodiversity decline; coping; psychological well- being; pro-environmental behaviour

## Abstract

The global challenges of climate change and biodiversity decline have complex and multiple connections, and cannot be managed in isolation from one another. The Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) have called for research jointly considering these challenges. This symposium discusses social and psychological interconnections. While climate change and biodiversity decline are both global, they may locally manifest in different ways. Moreover, exposure to the environmental changes may differ from people's individual experiences of the changes. Local initiative for people's engagement to mitigate the changes may be experienced as neglible, but they may matter as the benefits of many local biodiversity measures accumulate at the global level.
This symposium aims to from an environmental psychology perspective analyse and discuss how changing local landscapes I) impact upon people's psychological well-being, II) how people' individually cope with local changes in climate and biodiveristy, and III) to what extent local policies are formulated to collectively motivate and support engagement in local initiatives. The symposium is interactive, four presentations set the foundation:
Two presentations address status quo "The role of greenspace qualities at the nexus of human health and environmental sustainability and resilience to climate change and biodiversity loss" respectively "Barriers and enablers to engaging in urban greening - reviewing climate policies in five cities across Europe". Then two presentations analyse psychological approaches towards change "New Approaches to Addressing Climate Change and Biodiversity Loss: A study on trainable/modifiable determinants of Pro-Environmental Attitudes and Behaviour" and "Talk it out: Coping with climate change and biodiversity loss in private-sphere conversations".
Presentations are followed by a general discussion with the objective to identify social and psychological cross-overs between climate change and biodiversity loss. Symposium participants are invited to share related research and practical experiences.

• Cecilia Stenfors, Johanna Stengård, Yannick Klein, Ida Nilsen: "The role of greenspace qualities at the nexus of human health and environmental sustainability and resilience to climate change and biodiversity loss"
• Hanna Andersson, Hanna Åberg & Maria Johansson: "Barriers and enablers to engaging in urban greening - reviewing climate policies in five cities across Europe"

• Marlis Wullenkord & Maria Johansson: “Talk it out: Coping with climate change and biodiversity loss in private-sphere conversations”
• Walter Osika: “New Approaches to Addressing Climate Change and Biodiversity Loss: A Study on trainable/modifiable determinants of Pro-Environmental Attitudes and Behaviour”

# The role of greenspace qualities at the nexus of human health and environmental sustainability and resilience to climate change and biodiversity loss

Stenfors, Cecilia (1); Stengård, Johanna (1); Klein, Yannick (1); Nilsen, Ida (1)

(1) Department of Psychology, Stockholm University

**Keywords / Relevant Terms**: Green structure, sustainable urban development, human health & behaviour, biodiversity, climate change

## Abstract

Background:
Human health and environmental sustainability constitute major local and global challenges which are also closely interconnected. Mental health and sleeping problems are e.g. public health concerns that are costly for individuals and for society.

Exposure to natural environments such as green (vegetation) and blue (water) space are associated with a range of human health benefits, and are also central in biodiversity conservation and climate change mitigation However, population-based studies investigating high-resolution, individual-level residential greenspace are yet limited, as population-based studies have mainly assessed greenspace at more crude aggregated levels.

Objective & methods:
Thus, in a set of large-scale population-based longitudinal studies, on nationwide cohorts in Sweden (?130 000), objective high-resolution individual-level residential greenspace land cover assessments were made, including availability and access to different greenspace qualities (incl. of high biodiversity). The role of different residential greenspace qualities was investigated longitudinally for: 1) objective prescription medication purchase for common mental health problems, and 2) self-reported symptoms. Furthermore behaviour-related use and exposure to different types of natural environments were assessed in a sub-cohort, and their significance for multiple health indicators.

Results & discussion:
Results across studies show that more residential greenspace especially in the immediate residential surrounding (50m and 100m buffer zones around home) is associated with lower insomnia, antidepressant and anxiolytic prescription medication purchases, and less symptoms. Furthermore, spending time in nature especially in the home environment and forests were important for several aspects of mental health and health behaviours.

Results highlight the role of greenspace in the immediate residential surroundings, as well as access to high quality greenspaces (i.e. larger coherent green areas conferring higher biodiversity) for mental health and health related behaviours.

The multiple pathways through which different greenspace qualities can affect human health, while also contributing to biodiversity conservation and climate change mitigation and resilience are discussed.

# Barriers and enablers to engaging in urban greening - reviewing climate policies in five cities across Europe

Andersson, Hanna (1); Åberg, Hanna (1); Johansson, Maria (1)

(1) Lund University

**Keywords / Relevant Terms**: climate change, policy, motivation

## Abstract

In times of climate change, urban green spaces play an important role in biodiversity conservation, human health, and well-being. Local policy measures may trigger different psychological processes in individuals that lead to engagement or disengagement. Based on Self-Determination Theory, this study analyses to how local climate change mitigation and adaptation policies consider people's engagement in urban greening. A narrative review was conducted to provide a theoretical framework integrating behavioural intervention strategies and distinguishing between different forms of extrinsic and intrinsic motivation. The framework was applied and tested through a collection of relevant climate change policies in five case study areas across Europe. The analysis served to extract and analysed various behaviours associated with urban greening expected to be performed by citizens. Preliminary results indicate that the behavioural intervention strategy proposed by the policy often focuses on education (both formal and informal), environmental planning and management, and training activities to engage individuals. The target group of educational activities is primarily children, while training activities are targeted at NGOs or SMEs. Many strategies serve to inform citizens, and thereby seem to be directed to the stages of precontemplation and preparation, and heavily rely on integrated regulated motivation. Given the predominance of measures that are based on information and education, more efforts may be needed to support a transition towards citizens' intrinsic motivation for active engagement, for example also creating opportunities for autonomy, meaningful relationships, and development of competence. This research contributes to a better understanding of how policy can have an impact on people's engagement. Decision-makers and policy-makers could benefit from taking more explicit account of individual human motivational processes into account when designing and implementing new policies.

# Talk it out: Coping with climate change and biodiversity loss in private-sphere conversations

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(1) Lund University

**Keywords / Relevant Terms**: climate change, biodiversity, eco-emotions, empathy, coping

## Abstract

In times of escalating global environmental crises and subsequent troubling emotional experiences, it is imperative to understand the psychological mechanisms through which people cope. Although it is increasingly recommended to talk about global environmental change and the emotions it evokes as a way of coping with its overwhelming and existential nature, private-sphere conversations about climate change and biodiversity loss have so far received little attention. Based on theories of emotion, coping and empathy, this study explores the character of private-sphere conversations about climate change and biodiversity decline and associations with people's mental health and pro-environmental action. We base our analyses on questionnaire responses of a random sample of adults in the South of Sweden (N=1299), who either answered questions about climate change or about biodiversity loss. Firstly, we focus on the self-reported content of participants' conversations and use thematic analysis to understand: What do people talk about when they talk about global environmental change privately? Do those conversations match their thoughts about global environmental change? Secondly, drawing on the qualitative analysis, we explore relations with respondents' assessments of empathic understanding in those conversations, previous experience of global environmental change, general mental health, and pro-environmental action. Finally, we compare findings for climate change and biodiversity loss. Scientifically, this study defines support factors for having constructive conversations that could aid in coping with global environmental change for the self, others, and the environment. Practically, the study outcomes contribute with knowledge on how social interactions in the private sphere may support well-being and spur action.

# New Approaches to Addressing Climate Change and Biodiversity Loss: A Study on trainable/modifiable determinants of Pro-Environmental Attitudes and Behaviour

Osika, Waltis (1); Stenfors, Cecilia (2); Wamsler, Christine (3); Mundaca, Luis (4)

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**Keywords / Relevant Terms**: "Climate change", "Biodiversity loss", "Mental training", "Pro-Environmental Attitudes", "Pro-Environmental Behavior"

## Abstract

Background & methods: Traditional methods to combat climate change and biodiversity loss have proven insufficient. New approaches are thus needed, e.g., such that bridges personal and organizational realms of transformation. In this study, decision-makers (N=185) in the EU participated in a survey encompassing trainable transformative psychological qualities, mental training (incl. different types of contemplative practices), well-being, stress, and pro-environmental behaviours (incl. both actions and attitudes).

Results & discussion: Findings revealed a discrepancy between psychological qualities/processes associated with pro-environmental behaviour vs. well-being. Specifically, compassion towards others was associated with pro-environmental actions but was not associated with personal well-being. On the other hand, compassion towards oneself ("self-compassion") was associated with wellbeing, but not with pro-environmental actions. Nature connectedness was associated with a range of positive outcomes. Furthermore, results show that mental training, especially with longer duration, are linked to increased pro-environmental behaviours, and to well-being. Importantly, at an organizational level, workplace sustainability efforts, from top management to personal contributions, were interrelated and can guide future interventions.

Interventions and strategies for enhancing pro-environmental behaviours important in the work towards mitigating biodiversity loss and climate change are discussed.

# TOPIC 2:

# NATURAL AND URBAN ENVIRONMENTS – THE TRANSITIONS OF CITIES

# Restorative environments (REN I)

Herchet, Marilisa (1);

(1) TUD Dresden University of Technology

**Keywords / Relevant Terms**: restoration, natural environment, urban environment, built environment

## Abstract

Since 2008, the IAPS Restorative Environments Network connects restoration researchers globally and across disciplines. The first part of our two symposia focuses on restorative environments. Through five presentations, we explore the potential of various natural and built environments, using different research methods. We compare the restorative outcomes of favorite places (1) and forest biodiversity (5) and we share insights on how young people relate to the surrounding natural world (2). We shed light on nature's influence of Body Image Perceptions (3) and we analyze the reward value of viewing more or less beautiful natural environments (4). In summary, this symposium aims to study and ultimately foster the creation of environments that promote human well-being and mutually beneficial people-enviroment relations.

The session chair and discussant is Marilisa Herchet. Presentations include:

1. Dovile Barauskaite*, Aivaras Vijaikis, Florian Lange, Jan Willem Bolderdijk, Yannick Joye: *To Be Good Enough: The Positive Effects of Nature on Body Image Perceptions and (Consumer) Decision Making*

2. Eleanor, Ratcliffe*, Bethany Harries, Kirsi Salonen, Jane-Veera Paakkolanvaara, Yasushi Suko, Katriina Hyvönen, Kalevi Korpela: *Favourite outdoor places in the UK and Finland: relationships between place type, features, and restoration outcomes*

*3. Kevin Rozario; Rachel Rui Ying Oh; Melissa Marselle* et al.: The effect of forest biodiversity on short-term mental health and well-being* = Presenting author. The symposium is co-organized by iapsREN (IAPS Restorative Environments Network), and is part I of our Research from the iapsREN symposia (iapsREN part I and II).*

4. Topaz Shrestha*, Zelda Di Blasi, Sarah Foley, Marica Cassarino: *The Natural World Around Me; A qualitative exploration of young people's environmental perceptions and relationship to nature*

5. Yannick Joye*, Florian Lange Aivaras Vijaikis, Dovil? Barauskait?, Jan Willem Bolderdijk: *A choice experiment into the reward value of viewing natural environments*

# To Be Good Enough: The Positive Effects of Nature on Body Image Perceptions and (Consumer) Decision Making

Barauskaite, Dovile(1); Vijaikis, Aivaras (2); Lange, Florian (3); Bolderdijk, Jan Willem (4); Joye, Yannick (5)

(1) Vilnius University; ISM University of Management and Economics; (2) Vilnius University; MRU University; (3) KU Leuven; (4) University of Amsterdam; (5) Vilnius University

**Keywords / Relevant Terms**: nature, body image, consumer behavior

## Abstract

Background and objectives: Advertising and social/mass media are well-known to confront people with unachievable standards concerning appearance, possessions, experiences, and lifestyles, potentially compromising their psychological wellbeing. In light of this, a growing body of research shows that contact with nature can diminish the importance attached to self-enhancement goals, such as the pursuit of status, wealth, or physical beauty. Building on this literature, in the current research we aim to test whether exposure to nature, particularly awe-evoking nature, can dampen people's aspiration towards an idealized body image.

Process and methods: To achieve our aim, we will discuss the results of an experimental study where we (a) exposed participants to either videos of natural or urban environments, and subsequently (b) assessed how much they aspired to have an ideal body image. After this, participants engaged in a raffle task requiring them to make either egoistic or prosocial choices, which would help us to evaluate their tendency toward compensatory consumption.

Main results: Our main expectation is that nature will dampen people's aspiration to an idealized body type, particularly if that nature has awe-evoking qualities. Furthermore, we anticipate that these effects may extend beyond mere body image considerations and spill over to consumer decision making, resulting in participants becoming less likely to make consumer choices that can compensate for the inability to attain an idealized body image.

Implications for research and practice/policy; Our research may offer insights into enhancing psychological wellbeing, addressing and mitigating societal pressures related to appearance, informing urban planning and public policy decisions related to the inclusion of natural elements in our environments.

Importance and originality of the contribution: Overall, this research contributes to a broader understanding of the beneficial psychological effects of nature exposure.

# Favourite outdoor places in the UK and Finland: relationships between place type, features, and restoration outcomes

Ratcliffe, Eleanor (1); Harries, Bethany (1); Salonen, Kirsi (2); Paakkolanvaara, Jane-Veera (3); Suko, Yasushi (2); Hyvönen, Katriina (3); Korpela, Kalevi (2)

(1) University of Surrey; (2) Tampere University; (3) Jamk University of Applied Sciences

**Keywords / Relevant Terms**: favourite places; nature; restorative environments; restoration; place

## Abstract

Background and objectives: Restorative experiences of nature can be enhanced by person—place bonds, e.g., place attachment and/or consideration of a place as 'favourite'. Urban parks, forests, woodland, and blue space are often identified as favourite types of outdoor places, but there is limited understanding of how this may be represented at a population level, and differences in perceived restoration between these places and between countries.

Process and methods: N=1003 adults resident in the South East of England (UK), and N=667 adults resident in Finland, identified and described a favourite outdoor place; evaluated its key features; and indicated perceived restorative outcomes in that place. In the UK, frequently-identified place types were local parks (29%), beaches/coastlines (17%), forests/woodlands (13%), open countryside (10%), inland freshwater (8%), and private gardens (5%). Restoration outcomes differed significantly between place types: beaches/coastlines and forests/woodlands were rated highest and local parks and private gardens lowest. Considering all place types together, restoration was positively predicted by the presence of natural sounds, beautiful views, greenery, water, and quietness. We are currently analysing data from Finland and will present these, and cross-cultural comparisons, at the conference.

Implications, importance, and originality: This study makes an original contribution to restorative environments research by uniting this work with study of favourite places using large/representative and cross-cultural samples. Findings to date provide insight into UK place preferences that could support salutogenic landscape design and management. For example, local parks were the most frequently chosen favourite place, perhaps due to their accessibility, but restoration scores for this place type were relatively low. Land owners and managers could consider how to enhance the psychological experiences of local parks by emphasising key features that predict restoration such as positive soundscapes and views, vegetation choices, and water.

# The effect of forest biodiversity on short-term mental health and well-being

Marselle, Melissa (1); Rozario, Kevin (2); Oh, Rachel (2); Schröger, Erich (3); Gillerot, Loïc (4); Ponette, Quentin (5); Bonn, Aletta (2)

(1) University of Surrey; (2) Helmholtz Centre for Environmental Research—UFZ; (3) Wilhelm Wundt Institute for Psychology, Leipzig University; (4) Forest & Nature Lab, Department of Environment, Ghent University; (5) Department of Environmental Science, Earth and Life Institute, Université catholique de Louvain

**Keywords / Relevant Terms**: restorative environments, forest diversity, tree species richness, stress reduction, structural equation modelling

## Abstract

Forests can foster mental health and well-being. Yet, the contribution of forest biodiversity remains unclear, and experimental research is needed to unravel pathways of biodiversity-health linkages. Here, we assess the role of tree species richness, both actual and perceived, and how stress reduction and attention restoration can serve as potential mediating pathways to achieve positive mental health and well-being outcomes.

We conducted an experimental field study in three peri-urban forests in Europe. Employing a mixed design, 223 participants were randomly exposed to a forest of either low, medium or high tree species richness or a built control for 20-minutes. Participants' short-term mental health and well-being and saliva cortisol as a biomarker of stress were measured before and after the intervention.

Forest visits for 20 minutes were found to be beneficial for participants' short-term mental health, short-term mental well-being, subjective stress, subjective directed attention as well as perceived restorativeness compared to a built environment. No differences were found for saliva cortisol, which decreased in both the forest and the built environments. Increased perceived biodiversity was significantly associated with well-being outcomes, while no association was found for differences in actual tree species richness. Structural equation modelling indicates that higher levels of perceived biodiversity had an indirect effect on short-term mental health and well-being through enhancing perceived restorativeness.

Understanding the beneficial effects of forest biodiversity on mental health and wellbeing, and how these effects occur, can inform conservation management and help develop effective nature-based interventions for promoting public health through nature visits.

# The Natural World Around Me: A Qualitative exploration of young people's environmental perceptions and relationship to nature. Symposium 'Restorative Environments (REN I)'

Shrestha , Topaz (1)

(1) University College Cork (UCC)

**Keywords / Relevant Terms**: nature connectedness, environmental stewardship, environmental justice, health equity, health promotion

## Abstract

Background/objectives: Human and environmental health are deeply interconnected. Therefore, it is of significant concern that urbanisation and environmental degradation are leading to a reduction in our engagement with the natural world. Many of us seem to be both physically and psychologically disconnected from nature and this has implications, for both human and planetary well-being. Drawing from ecopsychology theory, this project explores how our intrinsic affiliation towards nature can be harnessed to enhance well-being while promoting environmental stewardship.

Process/methods: Thematic analysis was used to qualitatively explore young people's relationship to nature and how it relates to their mental health and sentiment of pro-environmental behaviour.

Main results: While multiple nature-based interventions exist, all proposing engagement with nature as a mechanism of improving mental health, there is a lack of consideration for young people's environmental perceptions when developing these interventions. This can only limit the harnessing of natural environments to promote well-being and environmental stewardship, potentially resulting in ineffective and ill–targeted interventions.

Importance and originality of the contribution: At a foundational level, more research is needed to conceptualize how young people, in varying circumstances, perceive and experience nature. A qualitative approach will help unearth the nuances of young people’s environmental perceptions and provide insight into the individual and contextual factors that govern the human-nature relationship.

Implications for research and practice/policy: Such research will support a more comprehensive and dynamic approach to intervention design and the development of interventions which are sensitive to the individual and ultimately more targeted and effective. We hope that this will lead to the development of nature–based interventions which benefit both the climate and biodiversity, while simultaneously enhancing human well-being.

This study is submitted as part of a symposium title "Restorative Environments (REN I) in collaboration with the IAPSren Restorative Environment Network.

# A choice experiment into the reward value of viewing natural environments

Joye, Yannick (1); Lange, Florian (2); Vijaikis, Aivaras (1); Barauskaite, Dovile (1); Bolderdijk, Jan Willem (3)

(1) Vilnius University; (2) KU Leuven; (3) University of Amsterdam

**Keywords / Relevant Terms**: natural environments, financial incentives, reward value, choice experiment

## Abstract

Background and objectives: Engaging with beautiful natural environments is often considered an aesthetically rewarding experience, with nature's aesthetic reward value playing a key role in restorative nature experiences. Yet, for most people, interacting with nature is just one among the many rewarding activities they pursue, alongside other activities like listening to music, enjoying food, meeting friends, or pursuing financial gains. This raises the question of how the reward value of experiencing nature measures up to the reward value of other rewarding activities or stimuli. The main objective of this research is to address this issue.

Process and methods: In an online study, participants will have to allocate their time to one of two activities: (a) working on a slider task in exchange for money, or (b) engaging in the rewarding experience of watching a 30-second movie clip of beautiful nature. Participants will have to choose to engage in these two activities over 12 rounds. Within each of these 12 rounds, we will manipulate the monetary payoff of the slider task (i.e., €0.01, €0.02 or €0.03) and manipulate the hedonic value of the nature stimuli (i.e., very beautiful vs. moderately beautiful).

Main results: We are currently collecting data, and the results of this exploratory study will be presented at the conference.

Implications for research and practice/policy: Our research aims to shed light on the relative reward value of natural environments compared to alternative sources of gratification. This might help in understanding, guiding and optimizing nature-based interventions aimed at yielding personal and societal benefits.

Importance and originality of the contribution: Our study sheds light on the reward value of natural beauty versus monetary rewards

# Research from the Restorative Environments Network: the role of gender, race and other person-factors (REN II)

Bornioli, Anna (1);

(1) University of Surrey

**Keywords / Relevant Terms:** restorative environments, nature, urban settings, gender, social features

## Abstract

Environmental psychology theories suggest that interacting with certain environments, notably natural, can support health and wellbeing, including restorative benefits. However, to date nature-health theories and evidence tend to lack a focus on gender, social features and other person-factor characteristics. Arguably, nature engagement (including the ways individuals are exposed to, access, and experience nature) and use of and experiences in public spaces can be affected by gender-related socio-cultural norms, attitudes, and behaviours, as well as by income inequalities and social meanings.
This session aims to put together current research ideas on the associations between gender, person-factors, environments and health. This symposium advances the field of people-environment studies by contributing to overcome the WEIRD issue in the study of restorative and welbeing experiences of settings (e.g. the sole focus on Western, Educated, Industrialized, Rich, and Democratic research participants), thus addressing recent calls from scholars. This contributes to more inclusive research and policy.
The session chair is Dr Anna Bornioli. Presentations are by researchers from a mix of career stages, and include:

1. Giulo Faccenda & Simona Sacchi: The consequences of gender-environment fit on well-being, gender role norms, and environmental behaviors in gendered urban spaces

2. Birgitta Gatersleben: Gender, fear and restoration in nature

3. Everly Jazi: Marginalized Community Members' Views of Nature and Mental Health Equity

4. Thomas Morton et al: Social meanings shape the perception of restorative environments

5. Anna Bornioli: The role of gender and other person-factors in restorative environments research: a research agenda (*presentation and symposium commentary*)
The symposium is co-organized by iapsREN (IAPS Restorative Environments Network), and is part II of our Research from iapsREN symposium (iapsREN part I and II).

# The role of gender and other person-factors in restorative environments research: a research agenda

Bornioli, Anna (1);

(1) University of Surrey

**Keywords / Relevant Terms**: restorative environments, nature, urban settings, gender, social features

## Abstract

Background and objectives: Restorative environments theories suggest that exposure to certain environments, notably natural, can support recovery from stress and cognitive fatigue and promote positive affective states. In the past decade, scholars have also highlighted that person-factors such as personal preferences and socio-demographics can affect restorative perceptions and experiences. One of these person-factors is arguably gender, as uses of and experiences in urban and natural spaces can be affected by gender-related socio-cultural norms, attitudes, and behaviours; gender roles and relations (e.g., childcare responsibilities); gender stereotypes (i.e. what is socio-culturally appropriate for women); and sex-related biological attributes (i.e. women's needs to use restroom more often than men). Despite this, and despite 49,7% of the world population being female, the role of gender in restorative environments research has been overlooked so far.

Methods: This paper presents a conceptual framework on restorative experiences, environments, and gender. It is based on a) a scoping review on women's restorative experiences in different settings, and b) a series of expert workshops conducted with academics from the nature, health, and gender fields.

Results: Preliminary results highlight the role of contextual factors (place affordances and infrastructure) and personal factors (life stage/family circumstances; perceived safety and social context; other socio-demographics) in women's restorative and wellbeing experiences of settings.

Implications for research/practice: This research identifies the features which can support women's restorative and wellbeing experiences in urban and natural settings, thus guiding future research and policy.

Importance and originality: This works aims to contribute to healthier and more inclusive cities, guided by the feminist principle that if public spaces are good for women, they will be good enough for everyone. The study also contributes to restorative environments research as it aims to advance theories by integrating a novel gender perspective.

# Gender, fear and restoration in nature

Gatersleben, Birgitta (1);

(1) University of Surrey

**Keywords / Relevant Terms**: gender, danger, restoration, woodland

## Abstract

Exposure to, and engagement with non-threatening natural environments benefits wellbeing, supporting recovery from stress and mental fatigue and promoting positive affect. However, the use of, and experiences in natural environments varies with gender, as do perceptions of what constitutes a non-threatening natural environment. We conducted secondary data analyses on three studies that examine the impact of woodland density and the presence of different danger threats on perceptions of fear and restoration in nature. In Study 1, 269 participants were shown a slide show of woodlands with varying levels of density. Dense woodlands were perceived as less restorative. Women rated likelihood of encountering social dangers (but not physical dangers) higher, especially in dense woodlands. Perceptions of social dangers among women predicted (negatively) perceived restoration. In Study 2, 51 participants were shown videos of similar woodlands under three social danger scenarios: control, a person walking past, feeling followed. Social danger threats affected feelings of safety and perceived restorative quality among women, but not among men. In study 3, 300 participants watched videos of woodlands under five different social and physical danger scenarios. Women expressed more fear, rated restoration lower, and were less likely to want to walk alone, in the presence of an animal or social threat. Reluctance to walk alone was linked to a lack of feeling in control and worries about severity of consequences (but not likelihood of coming to harm). Interestingly, participants, independent of gender, felt a greater sense of control over social threats in dense woodlands rather than open woodlands, but the reverse was true for an animal threat. Individual differences in what can be described as non-threatening, restorative environments must be considered in landscape management and design.

# Marginalized Community Members' Views of Nature and Mental Health Equity

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(1) The University of British Columbia

**Keywords / Relevant Terms**: Nature, Green Space, Health Equity, Mental Health

## Abstract

Metro Vancouverites of marginalized ethnic and cultural ancestry and/or those of low-socioeconomic background (e.g., low-income households, individuals with low educational attainment) face multiple disparities: disparate health outcomes, access to natural space, and outdoor recreation participation (Jackson et al. 2023; Parent et al., 2021). In 2023 (continuing into 2024), I conducted multiple focus group interviews with marginalized community members to hear directly about their conceptualizations of nature, how they use nature, and the impacts to their mental health. Beyond this, I explored the equigenic effect for marginalized groups (Mitchell et al., 2015) to see if the nature and health chain is moderated by these marginalized identities and what factors could explain this. Previous to this study, researchers have posited mechanisms behind the equigenic effect, but seldom to they hear from the population directly. As traditional, cultural, and colloquial knowledge plays a large role in use, conceptualization, and connection with nature, I wanted to see what the marginalized group members thought of these aspects, while informing my further study methods through this type of elicitation informing which variables to include andinquire about in future surveys (Dietsch et al., 2021).

# The consequences of gender-environment fit on well-being, gender role norms, and environmental behaviors in gendered urban spaces

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**Keywords / Relevant Terms**: Space-focused stereotypes, person-environment fit, gender, urban space, environmental behavior

## Abstract

Space-focused stereotyping processes are responsible for the application of stereotypical traits of social categories to physical space. In accordance with this theory, sociological and anthropogeographical research has shown how the urban landscape can be segmented into two separate spheres, the public and the private, which would be associated with the dimensions of masculinity and femininity respectively. In previous studies, we provided empirical evidence for a cognitive association between gender and urban spaces, using both direct and indirect psychometric instruments. We also found that the stereotype of gendered spaces exaggerates the gendered perception of environmental behaviors performed in those places. As a result of a gendered view of spaces, one's gender self- identification may or may not fit with the gender ascribed to urban spaces. We therefore define the construct of gender-environment fit (G-E Fit) as a differential score of gender stereotypical traits (agency for men and communion for women) ascribed either to the self and the urban (vs. natural) spaces. In Study 1 we hypothesized the impact of G-E Fit on hedonic well-being and restorativeness in public urban (vs. natural) spaces, consequently affecting the place approach and avoidance intentions. Moreover, Study 2 investigated how the G-E Fit predicts adherence to gender role norms in public urban (vs. natural) spaces, thereby shaping the willingness to engage in norm-related environmental behaviors. After providing for the first time a quantitative assessment of gender-space cognitive association in social psychology, we delve into its psychosocial consequences in terms of well-being and stereotypical roles of women. The research aims to offer an empirical contribution that can serve as a starting point on how to deconstruct the gender stereotypes and norms that fuel inequalities and influence environmental behaviors, ultimately fostering greater environmental sustainability and social equity in urban environments.

# Social meanings shape the perception of restorative environments

Morton, Thomas (1)

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**Keywords / Relevant Terms**: Restorative Environments, Stereotypes, Race, Ethnicity, Urban Environments

## Abstract

Background and objectives: Research on restorative environments draws attention to the psychological affordances of physical environments. Specifically, natural environments are theorized – and demonstrated – to afford opportunities for restoring cognitive and emotional reserves, whereas urban/ built environments are understood as distracting, depleting, and emotionally draining. Less systematic attention has been given to how the social meanings of environmental categories shape their restorative value. Drawing on assumptions about the racial coding of urban environments, we examine: (1) whether and how racial diversity affects the perceived restorativeness of natural and urban environments; (2) whether effects differ across racial majority and minority group members, and; (3) how ethnic/ racial cues in urban environments alter interpretations of physical environment quality.

Methods: This talk incorporates data from: (1) online experimental studies in which the salience of racial diversity is manipulated before (UK & US) participants ( = 1462) evaluate images of natural and urban scenes, and; (2) a VR experiment in which (Danish) participants ( = 60) explore simulated urban environments that vary in their physical quality and social character.

Results: Online experiments find the impaired restorative value of urban (versus natural) environments is exaggerated among ethnic majorities (versus minorities), especially when racial diversity is salient. Within virtual urban environments, we find that the presence of diversity cues amplifies majority group members responses to environmental degradation.

Implications: The findings demonstrate a significant role for stereotypes and social meanings in guiding the perception of restorative environments and altering interpretations of physical environmental quality.

Significance: The findings point to the need for more systematic research examining how social factors shape psychological responses to physical environments.

# Green infrastructure and urban greening: the intersection of ecological benefits, social impacts, governance, and environmental justice

Pham, Hien (1); Nesbitt, Lorien (2); Lemieux, Charlotte (2); Abou Rjeily, Lisa (3);

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**Keywords / Relevant Terms:** Green infrastructures, green gentrification, governance, citizen participation, behaviors

## Abstract

Green infrastructure (GI) has increasingly featured in urban policies and development projects and benefited from multiple climate funding programs (Nelson et al., 2021) favored by different governmental levels across the globe (Mell & Clement, 2020). GI is often defined as “an interconnected network of green spaces that conserves natural ecosystems values and functions and provides associated benefits to human populations” (Benedict & McMahon, 2002:12). Its definition is intersected with other terms such as nature-based solutions, vegetated infrastructure, and natural infrastructures (Mastler et al., 2021). In this panel, we use a broad definition of GI, embracing all these terms and referring to all green spaces and greening practices in cities. GI owns its popularity to numerous ecological benefits and positive social implications that it is supposed to provide (Matthews et al., 2015). Yet recent studies reveal controversial results regarding social impacts GI, suggesting GI projects may aggravate environmental inequalities (Rigolon & Nemeth, 2018). In this panel, we look for accounts for these suppositions, pertaining on the following questions:

• How do we evaluate the ecological benefits (including biodiversity) of GI? How do the benefits vary depending on the socio-political context; and to the way the infrastructure is designed, managed, and maintained?

• What are the impacts of GI on the local population, as regards to their uses and experiences, considering the diversity of GI projects and the territories where they have been implemented?

• Who is involved in GI projects and why? What are the potential barriers to citizen participation? What are other behaviors related to people’s involvement in GI?

• Is access to the benefits of GI equitable? If not, why? What are determinant factors of an equitable access to GI?

The session chair is Dr Hien Pham. Presentations are by researchers from a mix of career stages, and include:

1. Charlotte Lemieux: Neighbourhood-Level Changes to Active Travel Behaviour Relative to New Green Space, Active Travel Infrastructure, and Gentrification

2. François Bérubé: Reducing our ecological footprints and greening the city: what is the coherence between pro-environmental behaviour and citizen involvement in green infrastructure in Quebec?

3. Lisa Abou Rjeily: Governance, uses and perception of green alleys: A comparative analysis of projects implemented in Montreal, Quebec City and Trois-Rivières, Canada

# Neighbourhood-Level Changes to Active Travel Behaviour Relative to New Green Space, Active Travel Infrastructure, and Gentrification

Lemieux, Charlotte (1); Morton, Thomas (1); Clifton, Kelly (1); Butt, Mélanie (1)

(1) University of British Columbia

**Keywords / Relevant Terms**: Travel behavior change, urban greening, gentrification, neighborhood change, livability

## Abstract

Active travel and urban green infrastructure face a shared challenge. While both types of interventions provide important benefits to city residents, they increasingly pose perceived threats of gentrification, potentially excluding vulnerable residents and sparking debates on the fairness of creating 'livable' cities that might exacerbate social inequities. Within the context of this complicated narrative about active travel, greening, and social inequity, there is an unmet need for a fine-grained and disaggregated analysis that considers the benefits of active travel and greening together relative to gentrification. Examining census tract-level changes in Seattle (Washington) between the 1990s and 2020s, this research evaluates these relationships. Specifically, the study explores how in-movers' travel behaviour differs from existing residents in gentrifying and non-gentrifying neighbourhoods, considering the introduction of active travel and green space amenities.

The findings uncover distinct variations in active travel behaviour between in-movers and existing residents, both preceding and following gentrification processes at the neighbourhood scale from 1990 to 2020. The results further stratify this difference according to types of green space and active travel infrastructure introduced to the neighbourhood. These results allow us to specify the temporal patterns that characterize social and physical changes at the neighbourhood scale and further theorize the sequencing of events that may generate more or less socially just outcomes as measured through the lens of gentrification. Overall, the study sheds light on the intertwined effects of active travel, greening, and gentrification, offering valuable insights to guide more equitable policy approaches in urban development.

# Reducing our ecological footprints and greening the city: what is the coherence between pro-environmental behaviour and citizen involvement in green infrastructure in Quebec?

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(1) Université du Québec à Montréal

**Keywords / Relevant Terms**: Green spaces, environmentalism, urban areas, greening

## Abstract

Faced with global environmental issues, city dwellers are called upon to adopt a lower carbon lifestyle, but also to make their living environment more sustainable. These include the adoption of pro-environmental behaviors like reduction of plastic, car use, or meat consumption, and the involvement of citizens in the greening of their neighbourhood. We are interested in greening through the implementation of green infrastructures, namely developments and spaces that address environmental issues by providing ecosystem services. These include green alleys, communal gardens or bioswales. However, we do not know how citizen involvement in greening and pro-environmental behaviors are associated, to what extent are these forms of behavior consistent (which associations) between them and what factors may influence them. We surveyed citizens of three cities in the province of Quebec (Canada) whose population and type of green infrastructure differ, namely Victoriaville, Gatineau, and the Montreal borough of Mercier–Hochelaga-Maisonneuve. Data collection took place from June to November 2023. Preliminary results show that several categories of pro-environmental behaviour (e.g., eco-citizenship and food consumption) are associated with the phases of citizen involvement in greening (e.g., design and implementation). In addition, community gardens or collective vegetable gardens can provide an environment conducive to the adoption of environmentally beneficial behaviour. We also identify citizen participation in the design of green spaces more often when governance is hybrid, with diverse actors. The results would thus help guide and even question public policies and practices in health, the environment and urban planning. Such a vision could lead to effective measures to promote greener cities, democratic life, and environmental habits, but also to counter the effects of greening such as green gentrification.

# Governance, uses and perception of green alleys: A comparative analysis of projects implemented in Montreal, Quebec City and Trois-Rivières, Canada

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(1) Ecole nationale supérieure de paysage de Versailles, France

## Abstract

Green alleys are urban greening projects based on citizen participation that transform traditional alleyways into green infrastructure and into spaces of interaction, socialization and appropriation. Framed within the discourse of ecological transition of cities, green alley projects offer the advantage of introducing nature into interstitial asphalted spaces, contributing to mitigate heat islands, improve stormwater management and promote biodiversity. Yet, our knowledge of this greening practice is still fragmented, leaving a number of questions unaddressed, for example: What are mechanisms of participation and the hybrid governance underlying this practice? To what extend does this practice contribute to improve people's quality of life? How does the local context influence this practice? To answer these questions, the present research provides a comparative analysis of green alley programs implemented in three cities in Quebec, Canada: Montreal, Quebec City and Trois-Rivières, offering a fine-grained understanding of the changes in built environment, uses and perceptions towards the green alleys, and their governance. We use multiple sources of data collected from field observations, questionnaire surveys and interviews with local stakeholders and citizens (in summer 2023). Our findings show the influence of the local context and governance on the biophysical changes of green alleys and their appropriation by residents. We also underline the role of citizens and NGOs in the implementation of green alleys, and highlight the risks of reinforcing socio-spatial inequalities in cities. Our research can inform city administrations, NGOs and citizen movements in assuring the perennity of this green practice as well as socio-ecological benefits the practice may bring to urban residents.

# Big City Life: a multi-disciplinary lens to investigate people-place relationships in urban contexts

Mosca, Oriana (1); Boffi, Marco (2);

(1) Department of Education, Psychology, Philosophy, University of Cagliari, Cagliari, Italy; (2) Department of Cultural Heritage and Environment, University of Milan;

## Abstract

Interdisciplinary research is strongly valued and encouraged by research funders, institutions, and state, governmental, and non-governmental entities. The recognition of the importance of transcending conventional disciplinary boundaries is growing and this shift is increasingly acknowledged as a crucial prerequisite for achieving social, economic, cultural, and environmental sustainability. Urban systems are complex and to understand and find solutions to complex challenges, boundaries need to be crossed: from research questions' formulation to fostering dialogue in the search for synergy to the elaboration of policies to transcend disciplinary silos. We present some studies investigating people-place relationships in urban contexts to overcome rigid disciplines' boundaries.
Boffi and colleagues introduce a method of analysis incorporated into a mobile application for evaluating the psychologically significant experience tied to a specific location. This method provides cartographic representations of chosen constructs, harmoniously integrated with spatial variables related to participants' positions and exploration behavior. Similarly, Mosca and colleagues present a territorial game facilitated by a web application designed to enhance positive connections between individuals and places. This involves a mixed reality treasure hunt that intricately combines the playful elements of the game with the environmental and historical heritage of the territory. Mula and colleagues analyze the biophilic and general attitudes and beliefs about pink flamingos living in the Molentargius- Saline Regional Park, located within the metropolitan area of Cagliari (Sardinia, Italy). Muroni and colleagues proposed a novel assessment of urban walkability, the Walking Focus Group Approach, tested in an international summer school dedicated to walking in cities and to cities that walk, held at the University of Cagliari. Rainisio and colleagues, starting from an existing gap in the literature, conducted a psychosocial longitudinal analysis on the impact of a street art-based project in a changing neighborhood in Milan, examining changes in place attachment and neighborhood image as perceived by citizens.

Presentations will be made by researchers from a mix of career stages, and include:

1. Marco Boffi: exp-EIA: a mobile app for a participatory approach to urban design
2. Oriana Mosca: Is it better to journey together or alone? Walklet: a territorial game to promote positive people/place relationships in the Is Mirrionis neighborhood (Cagliari, Sardinia)
3. Silvana Mula: Biophilia in the Molentargius-Saline Regional Park: attitudes and social representations of pink flamingos
4. Oriana Mosca: Assessing urban walkability through Walking Focus Group Approach: a Proof of Concept
5. Oriana Mosca: Is street art an effective tool for urban regeneration? A psycho-social longitudinal analysis on a changing neighborhood in Milan (Italy)

# Exp-EIA: a mobile app for a participatory approach to urban design

Boffi, Marco (1); Rainisio, Nicola (1); Stancato, Gabriele (2); Piga, Barbara Ester Adele (2)

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**Keywords / Relevant Terms**: mobile app, evidence-based design, participatory approach, psychological mapping, experience-sampling method

## Abstract

The disciplinary exchanges that occurred between psychology and urban planning and design have defined many variables and analytical methodologies, contributing to a more nuanced understanding of the relationship between communities and places. Despite the rich academic tradition, the implications in the educational, professional, and institutional domains remain limited. However, the lack of codified conventions has paved the way for numerous experiments in the field of ICT, leading to the creation of tools aimed at collecting on-site subjective data through mobile devices.

In this framework, we present the Experiential Environmental Impact Assessment method (exp-EIA©), which combines behavioral and spatial information with psycho-social variables collected at the neighborhood and building scale to provide a representation of subjective experience in places. The method, designed to explore and assess the current condition and/or design proposals (through VR/AR), is integrated into a web and mobile application for participatory processes in urban areas. The method was applied in a series of walks on university campuses in Milan, supporting future transformations. Participants followed several routes with a facilitator and evaluated significant places in the area, allowing for an investigation of emotions, restoration, and environmental preference at the building scale, and place attachment and sense of community at the neighborhood scale. The method also provides real-time cartographic representations of the results, depicting a psychological map of the area that can support professionals and citizens in seeking solutions that promote well-being in the urban context.

This contribution offers a reflection on the integration of this tool into participatory processes, aimed not only at environmental transformation but also at the design of local services through the emergence of community needs. The discussion highlights the possibility of integrating this approach into methods such as photovoice or focus groups, allowing for the design of innovative engagement practices.

# Is it better to journey together or alone? Walklet: a territorial game to promote positive people/place relationships in the Is Mirrionis neighborhood (Cagliari, Sardinia)

Mosca, Oriana (1); Fornara, Ferdinando (1); Salis, Carla (1); Pia, Gabriele Luigi (1); Pinna, Vanessa (1); Manunza, Andrea (1); Blecic, Ivan (2)

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**Keywords / Relevant Terms**: territorial games, walkability, serendipity, groupd dinamics, positive people/place relationships

## Abstract

Territorial games are attracting growing interest from environmental psychologists and urban planners because they promote situated cognition and are promising tools in environmental, cultural heritage, and tourism sciences. We present here a web app, Walklet, a game halfway between a treasure hunt and a point-and-click adventure, built to encourage sustainable mobility in urban spaces through playful walks and interaction with the space. We developed a methodology that can be used by cultural heritage practitioners and digital designers to provide useful information on their digital products and that can highlight which psycho-environmental variables are more effective in promoting a positive relationship with chosen places to investigate. To test the efficacy of our methodology we organized two typologies of urban walks: 1. the first was conducted by two research members with small groups (n=48 in 6 groups); 2. the second was an alone walk (n=51). Participants completed a questionnaire before and after the urban game. The relation with the physical place was investigated by assessing perceived restorativeness, emotionality, and place attachment. The digital experience was analyzed considering participants' engagement and serendipity of digital environments' evaluation and at the same time group processes were taken into account. T-test analyses were conducted to detect differences between pre-and post-experience for both typologies of territorial game. Results showed that both elicited mainly positive changes but on different variables. Lastly, we conducted a MANOVA on all the measured variables comparing the two experimental conditions. Results showed that the group-walk condition was more effective in eliciting higher levels of positive engagement and emotionality, restorativeness, and creativity. Our method can inspire new ways of co-creating walkable, aesthetic, and connected urban adventures, for motivating healthier behavioral changes in urban areas and a rise of awareness and civic participation in the cure of public spaces.

# Biophilia in the Molentargius-Saline Regional Park: attitudes and social representations of pink flamingos

Mula, Silvana (1); Mosca, Oriana (1); Sarrica, Mauro (2); Rizzoli, Valentina (2); Da Silveira, Anderson (3); Manunza, Andrea (1); Ariccio, Silvia (4)

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**Keywords / Relevant Terms**: Biophilia, Biophobia, Attitudes, Social representations, Environmental identity

## Abstract

Molentargius-Saline Regional Park, located within the metropolitan area of Cagliari (Sardinia, Italy), is a wetland known for its biodiversity that is one of the most important European sites for the stopover, wintering, and nesting of several species of aquatic birds. Among them, there are the pink flamingos, the most known symbol of the Park, who chose the Park as their permanent residence. We aimed to study the biophilic and general attitudes and beliefs about pink flamingos living in the mentioned urban park. To this aim, we administered an online survey to a large sample of participants (n = 1381, M age = 31.26, sd = 15.05) with the following measures: biophilic attitudes, attitudes toward popular and unpopular animals, emotionality toward wild animals, and environmental identity. We also investigated the social representation of pink flamingos through a photo-elicitation task asking respondents to report free associations about them. The free associations were submitted to a descending hierarchical classification analysis. Results show four main semantic areas: two clusters are related to situated (e.g. Molentargius) and denotative (e.g. pink) elements; two clusters include connotative (e.g. majestic) and symbolic (e.g. freedom) features associated with flamingos. We adapted and cross-validated (i.e., EFA on the first half of the sample and CFA on the second half) the Biophilia Attitude Inventory which resulted in 4 dimensions, two related to Biophilia (i.e., Curiosity about nature, Moral care) and two related to Biophobia (i.e., Dominionism, Animal obedience). Biophilia was positively associated with related constructs and Biophobia was negatively associated with them. Implications for theory advancements will be highlighted, alongside useful information to conduct projects and outline proposals for policies and environmental planning practice interventions in the protected area.

# Assessing urban walkability through Walking Focus Group Approach: a Proof of Concept

Muroni, Emanuel (1); Mosca, Oriana (2); Sottile, Eleonora (1); Cois, Ester (3); Blecic, Ivan (1)

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(3) Department of Political and Social Sciences, University of Cagliari

## Abstract

The orientation towards the green transition of the strategic initiatives proposed by the European Commission (i.e., the Green Deal) also requires policies for "behavioural transitions", among which mobility. In recent years, there has been a growing interest in experimenting and deploying different tools and techniques for observing, interpreting, and representing urban space and social practices related to walkability and pedestrian accessibility of places. In this context, we propose an operational approach aimed at applying spatial research methods regarding the analysis of walkability, mobility patterns, and social practices in spatial utilisation. Our goal is to explore the intricate relationship between the quality of urban space (continuity, balance, safety, comfort, accessibility, interest, and attractiveness) and inhabitants' and city users' perceptions, attitudes, and relations with that space. As a case study, our approach examined university students' interdisciplinary experience in carrying out the activities of an international summer school dedicated to walking in cities and to cities that walk, held at the University of Cagliari in the summer of 2023. Employing a "multi-angulation method," we extracted insights from fieldwork conducted in a case-study area in Cagliari, Italy. We also used a Walking Focus Group (WFG) as a novel method to integrate the students' findings through quantitative analysis methods, as well as a strategy to achieve the final interpretive synthesis. The main results showed interesting outcomes related to the role of the WFG method in collecting data, which helps formulate design policies, hypotheses, projects, and actions for making urban environments and services more conducive to everyday life based on walking and active mobility. The discussion highlights practical implications on the study area, as well as methodological implications in conducting projects and outlining proposals for policies and spatial interventions.

# Is street art an effective tool for urban regeneration? A psycho-social longitudinal analysis on a changing neighborhood in Milan (Italy)

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(1) Department of Cultural Heritage and Environment, University of Milan

**Keywords / Relevant Terms**: "street art", "urban regeneration", "place attachment", "social psychology", "community"

## Abstract

The recent institutionalization of street art has positioned it as a pivotal tool for urban regeneration in numerous major cities, marking a transformative shift in its perception from a symbol of rebellion to a recognized and integrated art form within urban development policies. Despite this, the impact of street art-based policies has been inadequately explored from both psychosocial and longitudinal perspectives, as clear and conclusive results on their tangible outcomes and impacts are currently lacking. To address this critical gap in research, we conducted a comprehensive analysis of the changes in place attachment and neighborhood image over five years after the initiation of a street-art-based renewal project in the Ortica neighborhood of Milan. Our study also delved into the perceived historical "personality" of the neighborhood by surveying both residents and citizens (n= 296). The survey, designed for comparative analysis between 2017 (the beginning of the project) and 2022, employed content analysis and analysis of variance techniques. The results revealed that street art inspired by local history and culture had a positive effect on residents' place attachment and local image. Significantly, this positive effect was achieved without disrupting existing community traditions. However, notably, non-residents did not experience substantial impacts. These findings underscore the importance of urban renewal policies that prioritize the social and cultural history of a district. By connecting street art with elements inspired by local heritage, local policies can not only safeguard the well-being of citizens but also revitalize the community imagery, fostering a climate conducive to innovation and creativity. The centrality of cultural relevance and community engagement in ensuring the success of urban renewal projects will be further discussed.

# Psychological benefits of positive soundscapes

Payne, Sarah R. (1); Marselle, Melissa (2); Uebel, Konrad (3); Ratcliffe, Eleanor (1);

(1) University of Surrey

**Keywords / Relevant Terms**: soundscapes, psychological restoration, stress recovery, nature

## Abstract

Research on environment-wellbeing relationships, and especially nature and health, has predominantly focused on visual stimuli. There is a smaller, but growing, body of evidence regarding psychological benefits of soundscapes, and especially nature sounds. There is still a significant way to go in developing this understanding and applying this to policy and practice. This symposium brings together researchers at a range of career stages from the UK, USA, and Finland, who consider the topic using different methods (experiments, surveys, public engagement, interviews, and longitudinal studies) and concepts/theories (nature connectedness, stress recovery, attention restoration, pro-environmental behaviour intentions). Together the talks aim to determine the psychological impacts of positive soundscapes and showcase the practical implications and applications of creating positive soundscapes in a range of environments (including natural habitats, national parks, and residential settings).
This advances people-environment studies by examining psychological outcomes arising from soundscape experience, both in the short- and long-term; uniting topics that are not often studied together; and drawing on cross-disciplinary knowledge from ecology, sustainability, and landscape and urban planning.

### Author names and titles

1. Do anthropogenic sounds diminish stress recovery? A laboratory test of U.S. National Park soundscapes
By *J.Benfield, E.Himschoot, J.Smyth, H.Costigan, D.Taff, & P.Newman*
2. Restorative perceptions of natural soundscapes: Relationships with acoustic complexity and anthropogenic noise
By *K.Uebel, M.Marselle, C.Buchanan, S.Butler, N.Hanley, A.Higney, & E.Ratcliffe*
3. A positive feedback loop vs. diminishing returns: Two factors may affect the self-reported restorative effects of repeated listening to natural sounds
By *Y.Suko*
4. Links between soundscapes, psychological restoration, and pro-environmental behaviour intentions
By *G.Murrell*, *E.Ratcliffe*, & *L.O'Brien*
5. Encouraging children's connection to nature via listening to their everyday external soundscapes
By *S.R.Payne*, *J.Bushell*, *A.Keenan*, & *J.Hennessy*
6. Creating positive, nature-induced soundscapes in urban residential neighbourhoods via Sustainable Drainage Systems
By *J.Satyarthi*, *S.Arthur*, *A.van der Jagt, & S.R.Payne*

# Links between soundscapes, psychological restoration, and pro-environmental behaviour intentions

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**Keywords / Relevant Terms**: Soundscapes, pro-environmental behaviour, restoration, traffic noise, birdsong

## Abstract

Better understanding of the drivers of individuals' intentions to engage in pro-environmental behaviour may prove useful in tackling environmental crises. When individuals feel an environment provides them with psychological benefits (such as restoration from cognitive fatigue or stress) they may be more likely to act pro-environmentally to protect it, but connections between these topics are relatively under-studied. Further, most research on restorative environments examines the contributions of visuo-spatial features of such environments, with less focus on multi-sensory experiences, including soundscapes. This research unites study of soundscapes, restoration, and pro-environmental behaviour by exploring how an urban green space with differing soundscapes may be perceived as restorative, and whether this in turn is linked to intentions to act pro-environmentally towards that space. N=137 participants, recruited via social media and a student recruitment system, took part in an online experiment. Ratings of perceived restorative potential and pro-environmental behaviour intentions were measured after watching videos of an urban green space overlayed with natural (birdsong) and/or anthropogenic (traffic noise) sounds. Birdsong significantly increased perceptions of restorative potential, while traffic noise significantly reduced these perceptions. Traffic noise (but not birdsong) also had a direct negative effect on pro-environmental behaviour intentions, as well as an indirect effect whereby perceptions of restorative potential acted as a mediator. Findings highlight the role of differing soundscapes in influencing restorative outcomes, and the importance of mitigating anthropogenic noise to promote pro-environmental behaviours. Such findings may prove useful in the design and management of green spaces to support both wellbeing and environmental outcomes, for example via interventions that abate anthropogenic noise (e.g. via acoustic barriers) and promote natural sounds (e.g. by planting avifauna-friendly vegetation). Findings also demonstrate a rationale to further combine psychological restoration and pro-environmental behaviour research more than is currently being done.

# Do anthropogenic sounds diminish stress recovery? A laboratory test of U.S. National Park soundscapes

Benfield, Jake (1); Himschoot, Elizabeth (1); Smyth, Josh (2); Costigan, Heather (1); Taff, Derrick (1); Newman, Peter (1)

(1) Pennsylvania State University; (2) The Ohio State University

**Keywords / Relevant Terms**: Restoration, soundscape, protected areas, experiment

## Abstract

Expanding on a growing body of literature linking specific soundscapes to restorative and related health-promoting outcomes, the current laboratory-based experimental study tests reported mood, stress, and objectively measured physiological stress response and recovery following a social-evaluative stressor task. Such testing conceptually replicates and extends previous work, primarily by explicitly testing the effects of natural scenes and soundscapes during stress recovery, while also including stress biomarkers (salivary cortisol; cardiac function) as outcomes in addition to self-report. A sample of 120 undergraduate students completed a typical stress recovery procedure in which baseline measures of mood, stress, and salivary cortisol were collected alongside continuously collected heart rate variability data. After baseline measures, participants completed a well-validated acute stressor task: the Trier Social Stress Test (TSST; Kirschbaum et al, 1992; Allen et al., 2017). Participants in the post-stressor phase were again tested on mood, stress, and salivary cortisol levels prior to being randomly assigned to three recovery conditions – a no sound control with descriptive text of a U.S. national park, a natural sound video captured in the national park, and a natural sound plus anthropogenic sound video captured in the same location. Heart rate variability was measured throughout the study (Polar RS800) with other outcomes (salivary cortisol, perceived stress, and reported mood) collected several times during the recovery period to track stress recovery across conditions. In line with prior research, we anticipate that the solely natural sound condition will demonstrate faster stress recovery than the same local soundscape with human-caused noise intrusions or the control condition. We anticipate demonstrating the restorative effects in both directly measured and self-reported outcomes and will situate these findings within the larger context of the other laboratory-based soundscape restoration studies.

# Creating positive, nature-induced soundscapes in urban residential neighbourhoods via Sustainable Drainage Systems

Satyarthi, Jivantika (1); Arthur, Scott (2); van der Jagt, Alexander (1); Payne, Sarah R. (3)

(1) The Urban Institute; School of Energy, Geosciences, Infrastructure and Society, Heriot Watt University; (2) Institute of Infrastructure and Environment; School of Energy, Geosciences, Infrastructure and Society, Heriot Watt University; (3) Environmental Psychology Research Group (EPRG), University of Surrey, Guildford, United Kingdom

**Keywords / Relevant Terms**: Soundscapes, SUDS, nature-based solutions, health and wellbeing, psychological restoration

## Abstract

Urbanization and noise pollution, increasingly pose threats to residents' health and wellbeing. Restorative, nature-induced, soundscapes are being explored by infusing nature sounds in urban spaces to prevent noise impacts. For example, using nature sounds to mask traffic noise, evidentially provides stress relief. Similarly, sounds of flowing or trickling water, leaves rustling, trees and plants swaying, and certain bird sounds can potentially reduce stress and noise impacts, thus enhancing quality of life. Independent studies have explored various anthropogenic sounds, establishing their feasibility of inducing restoration. However, research is limited on the applicability and creation of nature-induced restorative soundscapes through a combination of flora, fauna, and water in residential neighborhoods. Further, SUDS (Sustainable Drainage Systems), a blue-green infrastructure using nature-mimicking methods, are being increasingly promoted to mitigate flood risk. This presents an opportunity to explore if nature-based, restorative, soundscapes can be created as a by-product of SUDS. This research attempts to find how SUDS' water and planting design features can be altered to create restorative soundscapes. A total of 11 interviews were conducted with UK-based practitioners and researchers, to establish the feasibility of integrating the creation of soundscapes with SUDS, the implementation challenges, and seek recommendations on suitable flora and fauna combinations for a restorative soundscape. Qualitatively analyzing the interviews showed that strategic placement of flora species inviting desirable fauna, such as invertebrates and birds, is essential to achieve this result. Additionally, to create pleasing water sound effects, only the water conveyance channels present a seasonal opportunity, unlike still water in SUDS ponds and swales. Therefore, SUDS require context-specific, careful landscape integration into its water and planting features to create a restorative soundscape.
Findings from this study will advance into testing feasible SUDS design alternatives with participants, to assess the most effective ways of creating restorative soundscapes through SUDS in residential areas.

# Restorative perceptions of natural soundscapes: Relationships with acoustic complexity and anthropogenic noise

Uebel, Konrad (1); Marselle, Melissa (1); Buchan, Claire (2); Butler, Simon (2); Hanley, Nicholas (3); Higney, Anthony (3); Ratcliffe, Eleanor (1)

(1) The Urban Institute; School of Energy, Geosciences, Infrastructure and Society, Heriot Watt University; (2) Institute of Infrastructure and Environment; School of Energy, Geosciences, Infrastructure and Society, Heriot Watt University; (3) Environmental Psychology Research Group (EPRG), University of Surrey, Guildford, United Kingdom

## Abstract

Natural soundscapes constitute a key dimension of nature contact experiences and are capable of providing valuable mental health and well-being benefits. However, we have a poor mechanistic understanding of the acoustic properties that promote these benefits, the mediating pathways that underlie this effect, and the moderating impact of anthropogenic noise. Further, there is little understanding around the applicability of acoustic metrics in quantifying and potentially predicting restorative soundscapes. To address these gaps, we report on an online study in which N=1529 UK residents (representatively sampled for age and gender) listened to nine simulated soundscapes of UK natural habitats at low, medium, and high levels of three acoustic metrics: Acoustic Complexity Index (ACI), Bioacoustic Index (BIO) and Entropy (H), with either no, low or high traffic overlays. Participants reported affective and acoustic perceptions, along with self-reported measures of mental well-being such as perceived restorativeness of the soundscape and restoration outcome. Preliminary findings indicate significant differences a) between the three metrics (ACI, BIO, H), with BIO associated with the highest perceived restorativeness and restoration outcome and H the lowest; b) between metric levels, with the highest restorativeness and restoration scores at a medium metric level; and c) between traffic level, with reduced restorativeness and restoration outcomes as traffic level increases. Notably, results indicated greater acoustic complexity, as indicated by the metric level, was associated with higher perceived restorativeness and restorative outcomes, even at low levels of traffic noise. Conversely, high traffic noise appears to negatively impact perceived restorativeness and restoration outcomes in natural soundscapes regardless of increasing acoustic complexity. Overall, results indicate the potential value of acoustic metrics in describing restorative natural soundscapes and the moderating impact of high levels of traffic noise on mental well-being benefits. These results can inform the management of beneficial soundscapes in natural areas.

# Encouraging children's connection to nature via listening to their everyday external soundscape

Payne, Sarah R. (1); Bushell, Jennifer (2); Keenan, Andy (2); Hennessy, Jo (2)

(1) University of Surrey; (2) Wonderseekers

**Keywords / Relevant Terms**: soundscapes, children, nature, public engagement, nature connectedness

## Abstract

Associations exist between people's engagement with nature, nature connectedness and desire to protect and maintain natural environments, while engaging with natural and biodiverse soundscapes has psychologically restorative effects. Furthermore, adults who engage with nature at a young age, are more likely to engage with nature as older adults. Unfortunately, children within deprived communities can have fewer opportunities to engage and connect with nature. A collaborative outreach research project developed between a primary school, charity, and university, therefore aimed to i) establish children's perception and evaluation of soundscapes in their everyday external environments, and ii) explore changes in soundscape evaluations, connectedness to nature, and pro-environmental behaviour after a series of nature engagement and urban-nature design activities.

Thirty UK children, aged 9 and 10 years, completed measures of nature connectedness, pro-environmental behaviours, drew their favourite and disliked outdoor sound, as well as naming a place that made them 'feel good' because of its soundscape. An ongoing nine-month series of activities focussing on appreciating the environmental and human health benefits of natural sounds continues, before repeating the baseline questionnaire. Activities include 'sound bingo', describing everyday outdoor soundscapes, logging weekly rhythms of school ground soundscapes, and designing a positive soundscape in their school grounds. Inferential statistics will be applied to numerical measures, but given the small sample, analysis will be driven by qualitative content, comparing types of sounds identified and affective reactions.

This exploratory project will open further research directions through identifying children's preferences of engaging with, and integrating natural soundscapes into, urban planning and design. This is increasingly important given children are the future environmental stewards, and nations are introducing noise and soundscape policies which planners/developers must adhere. The mixed method approach, focus on a deprived community, and applied practices, provides a unique contribution to the predominant research evaluation of urban park soundscapes.

# A positive feedback loop vs. diminishing returns: Two factors may affect the self-reported restorative effects of repeated listening to natural sounds

Suko, Yasushi (1)

(1) Tampere University

**Keywords / Relevant Terms**: Restorative effects of natural sounds, longitudinal field experiment, self-reported restoration, positive feedback loop, diminishing returns

## Abstract

The restorative effects of listening to (recorded) natural sounds indoors have mostly only been studied in one-off laboratory settings. This study investigated how the effects of such sounds change when listened to repeatedly. We designed an online longitudinal field experiment lasting seven days, in which we assigned 166 university students to one of four intervention groups: (1) listening to natural sounds, (2) sitting in silence (i.e., another means of relaxation), (3) reading news online, or (4) no intervention (i.e., the control). We measured the students' self-reported restoration statuses before and after the daily intervention using the Restoration Outcome Scale (ROS). We used a linear mixed-effects model to analyze the data, which predicted the ROS score based on three fixed effects: the day (1-7), the intervention group (1-4), and the daily measurement time (either before or after the intervention). Then, we conducted linear hypothesis tests to examine whether the ROS scores of the participants in the three intervention groups differed significantly from those in the control group. The results showed that both natural sounds and sitting in silence had significant restorative effects, with the former significantly more restorative than the latter. In addition, we found two mutually opposing trends regarding the longitudinal effects of natural sounds: (i) on days later in the week, the subjects became restored already before the scheduled daily intervention, whereas (ii) the extent to which the daily intervention would restore a participant (i.e., the ROS change score within a single day) decreased over time. We can ascribe the former to a positive feedback loop, and the latter to "diminishing returns." This implication poses a new research question: How many consecutive days does listening to natural sounds remain restorative? This study contributed to ascertaining the longitudinal, everyday restorative effects of listening to natural sounds.

# Indoor and outdoor school environment impact on students' cognition, affect, socialization, and well-being

Bonaiuto, Marino (1);

(1) Sapienza University of Rome

**Keywords / Relevant Terms**: nature, school, outdoor education, cognition, wellbeing

## Abstract

The symposium is dedicated to thoroughly exploring the influence of indoor and outdoor school environments on diverse aspects of students' experiences and outcomes, encompassing cognition, affect, socialization, and overall well-being. Positioned at the crossroads of environmental psychology, education, and public health, the research programme presented in the symposium aims to provide nuanced insights into the dynamic interplay between educational settings and students' holistic development (fund MUR PRIN 2022MBPWH7).
Within the symposium, studies delve into the internal design of educational spaces, examining their impact on students' cognitive performance and other individual consequences. Additionally, investigations explore the correlation between green spaces within school grounds and positive social behaviours, peer relationships, and collaborative learning experiences. This multifaceted exploration highlights the potential of environmental design to shape academic outcomes and social dynamics within educational settings. Another pivotal dimension of the symposium probes the connection between exposure to natural elements in outdoor school environments and students' well-being. By welcoming longitudinal assessments and surveys, researchers seek to unravel the potential positive effects of incorporating nature into the school day, including benefits to emotional health, stress reduction, and life satisfaction. The symposium's discussions extend to integrating environmental education initiatives within school curricula. Presentations delve into the holistic impact of indoor and outdoor learning experiences, emphasizing how environmental education contributes to students' overall development. That includes fostering environmental stewardship, nurturing critical thinking skills, and promoting emotional intelligence among students.
In synthesizing these studies, the symposium offers valuable insights into the intricate relationship between school environments and various dimensions of students' experiences. The implications of this research extend beyond academia, reaching into educational policies, design considerations, and practices aimed at creating optimal learning environments that holistically support students' well-being, fostering a generation of learners equipped for academic and personal success.

Presentations will be made by researchers from a mix of career stages, and include:

1. Ferdinando Fornara: Outdoor green vs. indoor school activities: differences in teachers' psychological response
2. Giulia Vettori: The relation between indoor classroom acoustics, children's well-being and learning. The results of an interdisciplinary research-intervention project

3. Lucia Mason: Green and Gray: Students' Benefits of School Lessons in a Natural Environment
4. Marino Bonaiuto: Impact of outdoor school-based nature education programs on environmental literacy, identity and well-Being: examples from preliminary data on secondary school students

# Outdoor green vs. indoor school activities: differences in teachers' psychological response

Fornara, Ferdinando (1); Mosca, Oriana (1); Meloni, Carla (1); Pedditzi, Luisa (1); Di Napoli, Federica Micaela (1); Isoni, Cristina (2); Livi, Stefano (2); Rubat du Merac, Emiliane (2)

(1) University of Cagliari; (2) Sapienza University of Rome

**Keywords / Relevant Terms**: outdoor green, restorativeness, school environment, school teachers, affective qualities

## Abstract

The aim of this research is to verify the effects of outdoor green (vs. indoor) activities on the well-being of preschool and primary school teachers. Starting from the theoretical assumptions provided by both the Attention Restoration Theory (Kaplan & Kaplan, 1989) and the Nature-Based Learning (Kuo & Jordan, 2019), a comparison between teachers working in schools running frequent green outdoor teaching experiences and those who work almost only indoor was realized. A sample of primary school teachers (n = 209) working in different Italian regions filled in an online questionnaire including the Satisfaction with Life Scale (SWLS), the Interdependence Happiness Scale, the Perceived Restorativeness Scale (PRS-11), the Scale of Affective Qualities of Place, and the Revised School Level Environment Questionnaire (RSLEQ). Results from ANOVAs evidenced that teachers running outdoor green activities show higher levels of perceived affective qualities and restorativeness than teachers running mainly indoor activities. The model tested through SEM analysis showed that positive affective qualities attributed to the school are associated with higher levels of restorativeness and this, in turn, is linked to a more positive teachers' perception of social relationships at school, which increases both interdependent happiness and life satisfaction. Overall, these outcomes are consistent with previous research demonstrating the beneficial psychological effects of nature experiences in the school context, thus supporting school programs characterized by the frequent organization of outdoor activities in green spaces.

# The relation between indoor classroom acoustics, children's well-being and learning. The results of an interdisciplinary research-intervention project

Vettori, Giulia (1); Laura, Di Leonardo (1); Secchi, Simone (1); Bigozzi, Luci (1)

(1) University of Florence

## Abstract

Individual contribution as part of a symposium

The interdisciplinary research group composed of members of the School Psychology Laboratory (Section of Psychology, Department of Education Languages Interculture, Literature and Psychology) and the Interdepartmental Research Unit Florence Accessibility Lab (University of Florence) is carrying out research to investigate the relation between indoor classroom acoustics, well-being, and learning and is designing metacognitive paths for enhancing awareness of the environmental and individual conditions that favour adequate listening conditions at school.

Our first study compared primary school children's working memory performance of children under different acoustic conditions at school. Twenty-five second graders participated in the study by performing a verbal working memory task under two different acoustic conditions, with a time frame of 1 month: Poor acoustic quality (long reverberation time [Long RT] and babble) versus Adequate acoustic quality (short reverberation time [Short RT] and babble). The results suggest that primary school children's verbal working memory is sensitive to variations in indoor classroom acoustic conditions and negatively impacted by poor acoustic quality.

# Green and Gray: Students' Benefits of School Lessons in a Natural Environment

Mason, Lucia (1); Rocchi, Cecilia (1); Moè, Angelica (1); Scrimin, Sara (1);

(1) University of Padua

**Keywords / Relevant Terms**: nature, green environment, classroom, school performance, affect

## Abstract

In educational research the role of the school physical environment has hitherto received very limited attention compared to other areas of research (e.g., Cheryan et al., 2014; Maxwell, 2016). Even more recent is the growing interest in the outdoor environment surrounding schools where breaks, in-school activities, and after-school programs may take place (Amicone et al., 2018; Li et al., 2019). Yet, research has documented the benefits of nature for cognitive functioning and emotional wellbeing (e.g., Norwood, 2021; Vella-Brodrick & Gilowska, 2022). The benefits are even associated with passive, short-term contacts with greenness, when the natural environment is not used or incorporated in school activities and contacts may last only about fifteen minutes (Authors, 2022b). However, there are no studies that investigated whether passive and short exposures to nature during school lessons, not breaks, are less mentally fatiguing and generate more wellbeing than lessons in the classroom (Berman & Kaplan, 2010; Authors, 2022a).

This contribution is grounded on the two theories that explain the benefits of nature: Attention Restoration theory (Kaplan, 1995) and Stress Reduction Theory (Ulrich et al., 1991). The aim is to report the effects of indoor and outdoor school environments on students' performance in learning tasks, their affective state, and perception of the environments in interaction with individual characteristics. We present data from studies in primary and lower secondary school documenting that after a usual lesson in the school garden, students' performed better in typical tasks like math calculation, reading comprehension, and conceptual understanding than after a similar lesson in the classroom. Their emotional state was also more positive after a lesson in nature. Finally, students perceived the natural environment as more restorative than the indoor environment. Our data also show that students with some characteristics (e.g., internalizing or externalizing problems) benefitted more from exposure to greenness.

# Impact of outdoor school-based nature education programs on environmental literacy, identity and well-Being: examples from preliminary data on secondary school students

Bonaiuto, Marino (1); Chiozza, Valeria (1); Fratini, Fabiola (1); Perucchini, Paola (2); Xie, Mei (1)

(1) Sapienza University of Rome; (3) Roma Tre University

**Keywords / Relevant Terms**: nature, school, outdoor education, affect, identity

## Abstract

Environmental Education (EE) is widely acknowledged as a fundamental prerequisite for promoting sustainable development. Prior research demonstrates that these initiatives foster connection to nature, respect and empathy for the environment, and improved mental and physical well-being. EE is often delivered to boost positive transformations in cognitive, affective and participatory attitudes and behaviours. Moreover, outdoor settings may provide an additional advantage.

As a preliminary step, an outdoor EE project was monitored in a secondary school in Rome through a quasi-experimental field design with data collection before/after interventions and conducted in parallel on two groups of participants (i.e., trial and control group). The project's impact on the participants was evaluated concerning four indicators: a) Environmental values, awareness and concern; b) Eco-friendly worldviews and behaviours; c) Knowledge and curiosity; d) Civic engagement and territory. Statistical analyses aimed to compare the scores before/after the proposed interventions to verify the main hypothesis, according to which the score in each impact indicator shows a statistically significant increase after participation in the project activities in the trial group. Results showed a statistically significant increase in the trial group's scores compared to the control group in some of the variables considered, suggesting that pupils involved in the project have increased their sense of connection with nature, becoming more aware of issues related to climate change and the consequences on the quality of the environment and human health, as well as strengthening their motivation for social responsibility and engagement within the community. The contribution constitutes a first step towards advancing research on the benefits of EE programmes. The significant increases observed among the trial group are consistent with previous research and testify to the value of promoting nature-based education projects that complement standard "formal" classroom learning methods with outdoor modules that engage students in direct experience with their surroundings.

# TOPIC 3:

# PARTICIPATION, CITIZENSHIP AND ENVIRONMENTAL JUSTICE

# Fostering socially innovative & empowered energy transitions to sustainability

Dumitru, Adina (1); Klöckner, Christian (2);

(1) University of A Coruña; (2) Norwegian University for Science and Technology

**Keywords / Relevant Terms**: energy transitions, empowerment, energy citizenship, social innovations, cultural sensitivity

## Abstract

Transitions to sustainability imply profound changes in our current systems of production and consumption (Vita et al., 2020). Specifically, the energy transition has occupied the attention of scholars, citizens and policy-makers, leading to a reconceptualization of the role of actors in the energy system, from one that is centralized and characterized by top-down decision- making, to a de-centralized, democratic and horizontal one, where citizens engage actively and assume a variety of roles and responsibilities (Coy et al., 2021).
The symposium will present both qualitative and quantitative research undertaken in several European and North-American projects: SMARTEES, Energy Prospects, EUNETS, ENCHANT National Science Foundation Civic, and New Jersey Board of Public Utilities. It will showcase trans- and interdisciplinary research, through both academic and practitioner presentations, using interdisciplinary approaches rooted in psychology, policy studies, planning, and political science to address the following objectives:

- The role of social innovation in energy transitions
- Psychological factors contributing to the social acceptability of interventions for energy transitions
- Barriers and facilitators of socially innovative projects, by focusing on the city of Barcelona
- Conceptualize energy citizenship and empowerment in different types of energy citizenship cases
- Barriers and potential of large-scale analyses of the building and land-use potential for the implementation of renewable energies.
- The cultural sensitivity of psychological interventions to increase energy efficiency in households

Dumitru, A.: Psychological factors and processes influencing social acceptability of social

Presentations will be made by researchers from a mix of career stages, and include:

1. Jennifer Senick: Data and Simulation Tools for Community Energy Planning Processes: How does a local community chart a path towards building decarbonization if baseline data for existing conditions do not exist?
2. Luisa Losada Puente: Citizen empowerment and community engagement through energy communities

3. Adina Dumitru: Psychological factors and processes influencing social acceptability of social innovations in energy transition
4. Bozana Vrhovac: Participatory Visioning For Energy Transition
5. Christian Klöckner: On the cultural sensitivity of psychological interventions to increase energy efficiency of households

# Data and Simulation Tools for Community Energy Planning Processes: How does a local community chart a path towards building decarbonization if baseline data for existing conditions do not exist?

Sennick, Jennifer (1)

(1) Rutgers, The State University of New Jersey

**Keywords / Relevant Terms**: building decarbonization, community energy plan

## Abstract

This presentation shares methods and findings developed to support the pilot implementation of a community energy plan for 1 of New Jersey's 564 municipalities (Maplewood Township) that will be transferred to the remaining 563 municipalities in the project's next phase. The Community Energy Plan Grant Program, designed and funded by the NJ Board of Public Utilities Office of Clean Energy provides resources to municipalities to develop climate action plans based on their assessment of which clean energy strategies are most applicable to their respective communities. To facilitate the local planning process, we created a residential building inventory and synthetic population, e.g, a statistically accurate estimate, we leveraged the American Community Survey (US Census Bureau) and the Residential Energy Consumption Survey (US Energy Information Administration) microdata and employed statistical matching techniques using key variables such as electricity, natural gas bill and year of housing unit and household population data including household socio-economic status. We then developed an energy simulator tool and dashboard for visualizing aggregated, synthesized household energy use profiles categorized by socio-economic status, thereby facilitating both short-term and long-term strategic decision-making. An additional aspect of this work entailed parcel-level rooftop solar potential estimation by property type, using Microsoft Building Footprint, NJ parcel shapefile data, and NJ MOD-IV (property tax assessment) data combined with the NJ BPU's solar data registry. The results depict existing technology market penetration adoption patterns across neighborhoods for residential and commercial buildings, by socioeconomic characteristics, and attributes of the solar system Collectively, these data and simulation tools assist local decision-makers and community members in informed and equitable climate action planning.

# Citizen empowerment and community engagement through energy communities

Losada Puente, Luisa (1)

(1) University of A Coruña

**Keywords / Relevant Terms**: building decarbonization, community energy plan

## Abstract

This presentation shares methods and findings developed to support the pilot implementation of a community energy plan for 1 of New Jersey's 564 municipalities (Maplewood Township) that will be transferred to the remaining 563 municipalities in the project's next phase. The Community Energy Plan Grant Program, designed and funded by the NJ Board of Public Utilities Office of Clean Energy provides resources to municipalities to develop climate action plans based on their assessment of which clean energy strategies are most applicable to their respective communities. To facilitate the local planning process, we created a residential building inventory and synthetic population, e.g, a statistically accurate estimate, we leveraged the American Community Survey (US Census Bureau) and the Residential Energy Consumption Survey (US Energy Information Administration) microdata and employed statistical matching techniques using key variables such as electricity, natural gas bill and year of housing unit and household population data including household socio-economic status. We then developed an energy simulator tool and dashboard for visualizing aggregated, synthesized household energy use profiles categorized by socio-economic status, thereby facilitating both short-term and long-term strategic decision-making. An additional aspect of this work entailed parcel-level rooftop solar potential estimation by property type, using Microsoft Building Footprint, NJ parcel shapefile data, and NJ MOD-IV (property tax assessment) data combined with the NJ BPU's solar data registry. The results depict existing technology market penetration adoption patterns across neighborhoods for residential and commercial buildings, by socioeconomic characteristics, and attributes of the solar system Collectively, these data and simulation tools assist local decision-makers and community members in informed and equitable climate action planning.

# Psychological factors and processes influencing social acceptability of social innovations in energy transition

Dumitru, Adina (1)

(1) University of A Coruña

**Keywords / Relevant Terms**: social innovations, energy transitions, social acceptability, psychological factors

## Abstract

Transitions to sustainability imply profound changes in our current systems of production and consumption, including food, mobility, energy, and the built environment (Vita et al., 2020). The energy transition in particular has occupied the attention of scholars, citizens and policy-makers at all levels of governance, leading to a reconceptualization of the role of different actors in the energy system, from one that is centralized, dominated by experts and characterized by top-down decision-making, to one that is de-centralized, democratic and horizontal, and in which citizens engage actively and assume a variety of roles and responsibilities (Coy et al., 2021).

The present symposium will address a few different themes that have become central in the debates regarding energy transitions in Europe. In this paper, we will address the role of socially innovative approaches in advancing the different goals of the energy transition, by presenting research on the role of psychological factors in the public acceptability of social innovations and zooming into the specific case of Barcelona and its urban transformation strategy through superblocks, with results from the H2020 SMARTEES project. A representative survey was carried out of two neighbourhoods in Barcelona that have undergone significant transformation but using different urban intervention and community participation strategies in the design and implementation of the superblock strategy. Our results show which psychological factors play a significant role in the social acceptability of superblocks and are discussed in the light of psychological theory.

# Participatory Visioning For Energy Transition

Vrhovac, Bozana (1); Buchecker, Matthias (1)

(1) Swiss Federal Institute for Forest, Snow and Landscape Research

**Keywords / Relevant Terms**: Vision, Strategic planning, Participation, Renewable energies, Future

## Abstract

Recent academic literature emphasizes that public participation in local renewable energy planning in Europe usually takes place at a late stage and only rarely in the strategic needs assessment phase. It is often limited to one-sided information and convincing the public of a project or site rather than opening discussions on project design. The aim of this work is to promote the energy transition through a planning and participatory visioning approach at the regional level catalyzed by social learning. The approach aims to explore how opening the discussion on spatial and energy development towards a more holistic and strategic approach through visioning helps develop a shared understanding of regional energy transition and more acceptable spatial (energy) futures.

To test the participatory visioning approach, a field-experimental intervention research design (A-B-A Design) is applied in two Swiss regions, combining repeated qualitative and quantitative measurements of participants' and regional residents' perspectives and process observation.

The intervention included visioning workshops, in which participants developed visions of regional energy transition using a combination of the methods Geodesign methodology and the Three Horizon Framework. To reach out for the wider public, newspaper articles and digital exhibitions of the visioning workshops were published.

The process of the visioning workshops, their outcomes and first findings of the evaluation will be presented and discussed.

In the long term, the results should help to prevent undesirable future developments in the region and demonstrate early participatory planning through visions as an alternative and supplement to project and site-related participation.

# On the cultural sensitivity of psychological interventions to increase energy efficiency of households

Klöckner, Christian (1)

(1) Norwegian University of Sciene and Technology

**Keywords / Relevant Terms**: Energy efficiency, interventions, cultural differences

## Abstract

Increasing energy efficiency is a main pillar of Europe's strategy to reach a CO2 neutral future, and participation of private households in this endeavour is of vital importance to reach the ambitious targets. In this presentation, I will discuss some of the main findings of a large field experiment conducted in the EU project ENCHANT. We used six well-established psychological intervention techniques (providing hands-on Information, social norm communication, collective framing, commitment, competition, feedback) alone and incombinations and tested them on 2500 households from Norway, Germany, and Romania in a randomized control trial design through a specifically developed online intervention platform. Participants were recruited through engaged user partners like a county administration in Norway and an energy provider in Germany, but also a survey panel in Romania. We measured electricity consumption by asking for entering weekly meter readings on the intervention platform for six weeks. Electricity consumption was normalized for weather effects, number of household members, and situational conditions of the household. We found that providing hands-on electricity saving tips had a positive effect on electricity saving in all countries, whereas the other interventions had marginal effects overall and were only effective in some of the countries and for subgroups of the population. We interpret this as an indication that more complex environmental psychological intervention tools need to be carefully tailored to the cultural context.

# TOPIC 4:

# PLACE ATTACHMENT - SPACE, GENDER AND POST-COLONIALISM

# Place dispossession: micropolitical approaches to spatial injustice in neoliberal times

Di Masso, Andrés (1);

(1) University of Barcelona

**Keywords / Relevant Terms**: Place dispossession, micropolitical, spatial injustice, people- place bonds

## Abstract

*Background and objectives:*
Environmental psychology has seldom addressed how socio-economic dynamics and political regimes shape people's everyday experiences of place. When the politics of people-place bonds has been tackled, several studies have provided valuable insights on how gender inequalities, social exclusion, racist segregation, urban poverty, postcolonial dominance or xenophobic discrimination can be read through the lens of place attachment, sense of place, place identity and related place meaning-making processes. These contributions have shown that subjectively and socially meaningful people-place bonds often articulate complex power relations connecting the spatial underpinnings of everyday experience with structural power relations and socially oppressive dynamics. Building on this research strand, in this symposium we focus on diverse experiences of spatial injustice in Spain and Chile that are articulated by a common process of capitalist place dispossession, which shapes and undermines specific forms of people-place bonds.

*Significance for the advancement of People-Environment relations.*
Overcoming habitual studies on the loss of place, which tend to neglect the political economy that produces loss and its psychological and community-related aftermaths, we argue that many place-related personal or social harms and new senses of place related to urban redevelopments, abandonment and spatial expropriation, cannot be properly understood outside an overall process of capitalist dispossession that binds subjectivity, community and power through a specific politics of place –based on commodification, creative destruction, depredation, displacement, control and repression. The contributions gathered in this symposium encompass housing struggles, rural-urban mobilities, gentrification and urban degradation as iconic examples of capitalist place dispossession and its close relationship with place-alienation, spatial rights and resistance, and ideologically consequential senses of place. The symposium thereby provides new theoretical and empirical insights on the everyday politics of people-place bonds.

Presentations will be made by researchers from a mix of career stages, and include:

1. Cristina Pradillo-Caimari: Opposing residential dispossession: How housing struggles affect people-place bonds?
2. Hector Berroeta: Subjective Dynamics of Place Dispossession Due to Urban Deterioration

3. Laia Aleu Barnadas: "Ultimately, we all want the experience of moving to the city": Navigating the boundaries between choosing to leave and place dispossession
4. Raúl Solano: Collective action frames of the housing movement in Barcelona: politicizing sense of place
5. Valeria Santoro Lamelas: Neoliberal health and its implications in place dispossession dynamics in gentrified spaces

# Opposing residential dispossession: How housing struggles affect people-place bonds?

Pradillo-Caimari, Cristina (1)

(1) Universitat de Barcelona, Universitat Pompeu Fabra

**Keywords / Relevant Terms**: residential dispossession, housing struggles, protest, resistance

## Abstract

Background and objectives: Since the 2008 financial crisis, diverse housing movements have emerged to defend people's right to stay in their homes. Over the past decade, in the Catalan context, a varied range of struggles and protest repertoires have arisen to oppose and resist progressive residential dispossession. Drawing on the idea that social movements and demonstrations change participants' subjective experiences, this presentation focuses on how housing struggles affect psychoambiental attachments. In particular, the spotlight is on conflicts that stem from the organization of tenants' blocks with the same owner. I argue that this contentious strategy enables the emergence of novel understandings and relationships with dwellings.

Process and methods: The data is collected through a combination of participant observation and residential biographies with the tenants of two struggling blocks of el Sindicat de Llogateres in Barcelona. Thematic Discursive Analysis is conducted.

Main results: When the sociopolitical conflict that underlies housing access and maintenance comes to the fore, the commonsense assumption that home is an intimate and private space is challenged. Tenants' dwellings become a struggling space that not only catalyzes novel meaning-making processes but also expands the physical borders of the rented flats by constructing a block community emplaced in its neighborhood.

Importance of the contribution: The analysis of this contentious strategy highlights the diversity of ways through which people (re)construct meanings and relationships with their homes. Furthermore, it deepens our understanding of how opposing residential dispossession transforms people's attachments to their living spaces—their home, their block, and their neighborhood.

Implications for research: Attending to the changes in people-place bonds within housing struggles, this presentation contributes to emphasizing the political dimension of psychoambiental experiences.

# Subjective Dynamics of Place Dispossession Due to Urban Deterioration

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**Keywords / Relevant Terms**: Place dispossession, urban deterioration, capitalism; psychogeographical studies, sense of place

## Abstract

Urban deterioration is the decline of urban areas due to a series of social, economic, and environmental problems that impact the internal structure of cities. This process is accompanied by a place dispossession, which is not exclusively anchored in the accumulation by dispossession, a product of power dynamics imposed by capital, but also by the forms of city appropriation that generate subjective dynamics of symbolic displacement and micro-segregation. We explore the subjective dynamics that articulate place dispossession through a Thematic Analysis, based on spatially referenced interviews and participatory photography with residents of the city of Valparaíso (July/November 2023). Symbolic place dispossession due to urban deterioration manifests as an ambivalent connection with the city, explained by two opposing valuations. On one hand, there is the romanticization of life in Valparaíso, metaphorically represented by the imagery of a "magical and eternal" city, associated with pleasant emotions toward an old Valparaíso experienced with nostalgia, longing, powerlessness, and resignation. On the other hand, there is a negative valuation of living conditions, summarized in the image of "a city not for everyone," referring to its material and social conditions of precariousness, where physical and symbolic losses are highlighted, experienced through place avoidance and trajectory changes.

Studies on urban deterioration often focus on processes of precarization and their negative consequences for the stability and well-being of vulnerable urban populations, such as gentrification, real estate speculation, and deficits in public services. Analyzing symbolic dispossession in this context opens a novel field in psychogeographical studies that highlights the intrinsic connection of the experience of place to social conflicts related to abuse, privilege, inequality, plunder, or disdain.

# "Ultimately, we all want the experience of moving to the city": Navigating the boundaries between choosing to leave and place dispossession

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(1) University of Barcelona

## Abstract

Background and objectives: The Right to stay put is often focused on the relationship with housing. However, home as an affective anchor extends beyond private space. Currently, this is evident in rural areas, where the shift from productive economy to the rural as a recreational experience, coupled with urban centralization, triggers processes of indirect, community and labor resource displacement, which transform home in a broad sense. This research addresses place dispossession in the rural world lead by this transformation process.

Process and methods: Employing a qualitative methodology, we conducted fieldwork comprising 32 in-depth walking interviews and a three-month ethnography in two towns near the Catalan Pyrenees (Llanars and Camprodon, Spain). Data analysis was conducted through Thematic Discursive Analysis.

Main results: The subjective experience of the displacement forms described above is culturally mediated by imperatives for mobility toward cities and narratives that normalize urban dependency. The intersections between structural transformation and cultural narratives create an ambivalent sense of place, characterized by 1) place dependence ties that neutralize criticism of the transformation of the village and 2) the conflict between the desire to leave the village and the need to keep belonging there.

Importance of the contribution: It enriches the understanding of subjective forms of displacement by exploring contradictions and possibilities arising between the material and symbolic realms when leaving a home undergoing transformation, which tensions the boundaries between the perception of choice and place dispossession.

Implications for research: This work contributes to politicizing ties to place, particularly within experiences of displacement in rural gentrification processes.

# Collective action frames of the housing movement in Barcelona: politicizing sense of place

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**Keywords / Relevant Terms**: "Collective action frames" " housing movement" "place dispossession" "home-meanings"

## Abstract

The right to housing and the social movements connected with it are deeply intertwined within specific political contexts. These contexts often maintain historical patterns, like the conflicting restructuration of urban spaces for capital accumulation. Social movements, in response to these challenges, have fostered alternative interpretive frameworks, legitimizing their actions and challenging the prevailing real estate culture. This presentation aims to explore how the collective actions in Barcelona's housing rights movements have evolved across five pivotal sociopolitical junctures.

We explore moments since the 1931 rent strike to squatting in the 1980s, the 2008 crisis, PAH's inception, Sindicat de Llogateres in 2017, and the movement's current state, using primary and secondary sources. A content analysis was conducted, focusing on the dimensions of agency, injustice, and identity proposed by Gamson for the study of collective action frameworks.

The findings highlight consistencies in these frameworks, especially in terms of recognizing the state's inefficiency in safeguarding housing rights, while also revealing notable shifts in perceptions of injustice and identity. Exploring alternative interpretative frameworks sheds light on how collective dissatisfaction tied to housing has been communalized and politicized, forming collective identyities such as the 'working class,' 'mortgage victims,' or 'renters,' contingent upon the expressions of conflict. Within this line, there are reflections on the current moment of place dispossession and the emerging collective subjects of resistance.

While previous studies have contextualized the movement within similar frameworks, this genealogical exploration into the collective action frames of the housing movements, integrating the role of home-meanings in shaping the struggle, has been underdeveloped both in people-environment studies and in social movements research.

This approach underscores the contested, symbolic, and context-dependent nature surrounding the right to housing, highlighting how the defense of this right has historically generated alternative interpretative frameworks, politicizing the place meaning-making processes.

# Neoliberal health and its implications in place dispossession dynamics in gentrified spaces

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**Keywords / Relevant Terms**: Neoliberalism, healthy spaces, place dispossession, gentrification.

## Abstract

Background and objectives: Gentrification is an urban transformation led by the market interest that produces material and symbolic displacement of the local population and the incorporation of social and economic privileged groups. The market's interference in urban space translates into inequities in access to and enjoyment of infrastructure that could promote health; on the ability to afford housing, food, and other expenses, and deteriorates the social cooperation and community mobilization that can act as a protective factor for health.

Process and methods: However, health discourses are often present in gentrification as improvements in green spaces, new infrastructures, and well-being promises make the place more attractive to the New Class Gentrifiers. Precisely, we problematize how discourses of health are deployed in gentrified spaces and what are their effects on the processes of place dispossession. We analyse 35 walking interviews in Barcelona between 2018-2022. We developed a Critical Discourse Analysis.

Main results: Health discourses adhere to the neoliberal subject who seeks self-improvement through the choice of "good" practices and healthy products. These "good" practices and products contribute to the place dispossession. Capitalism, on which this view of health is based, limits other possible ways of rethinking health outside of individualization and consumption.

Originality of the contribution: Numerous studies have studied how gentrification impacts health, but this communication aims to elucidate how certain health discourses contribute to reproduce the logic of capital and place dispossession.

Implications for research: The communication aims to advance the deployment of knowledge about the construction of healthy spaces and place dispossession within the framework of neoliberalism. At the same time, we discuss possible points of resistance from which healthy spaces and practices can be thought.

# Environmental Psychology and Ethical-Political Suffering: Struggles for Territory in Latin America

Ramírez, Catalina (1); Pinto de Carvalho, Laís (2); Diniz, Raquel (3); Von Breymann, Helga (1);

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(3) Federal University of Rio Grande do Norte

**Keywords / Relevant Terms**: Enviromental psychology - ethical- political sufferring- Struggles for territory

## Abstract

According to Mattos et al. (2021), the production of territories and places in which we develop our daily lives is a topic that has been receiving much attention from different researchers in the discipline of psychology. There are alternative and/or contested ways in which certain groups and certain people construct places and the links they develop with them, in the capitalist, neoliberal and patriarchal society in which we currently live. In this symposium, we present four research experiences developed in Latin American contexts that account for the way in which these groups and people are attachment to the places they inhabit. In these presentations we conceive space "as a dynamic and dense dimension of society, where it is not possible to separate matter from the meanings it makes possible and those that are constructed in relation to it" (Rodríguez, 2021, p.21).
We also present the different methodologies from which these processes of knowledge construction were developed; we stress some central concepts of environmental psychology, highlighting the need to generate and conceptualize experiences from our Latin American context, incorporating the feminist perspective and putting in the first place the voice of the people and groups with whom we work and recognizing the processes of ethical-political suffering that they face every day. In this symposium, we reflect on what are some of the conditions of possibility for certain lives to be more livable, and we question ourselves on the ways in which we are producing knowledge about people-places links in some Latin American contexts, which translates into a clear ethical-political positioning on the part of the researchers.
In this symposium will be presenting: Laís Pinto de Carvalho (Universidad Tecnológica Metropolitana); Helga von Breymann (Universidad de Costa Rica) Raquel Diniz (Federal University of Rio Grande do Norte); Catalina Ramírez (Universidad de Costa Rica).

Presentations will be made by researchers from a mix of career stages, and include:

1. Laís Pinto de Carvalho: “Comadreando” in the face of dispossession: Exploring the relations between home, body, and territory of Chaitenian women
2. Catalina Ramírez: Psychosocial implications of homemaking process in public space: the experience of homeless people
3. Helga von Breymann: Discrimination experiences linked to the production of Public Housing in Costa Rica
4. Catalina Ramírez: Territorialities in conflict: ethical-political suffering in struggles for artisanal fishing territory on the Brazilian coast

# “Comadreando” in the face of dispossession: Exploring the relations between home, body, and territory of Chaitenian women

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(1) Universidad Tecnológica Metropolitana

**Keywords / Relevant Terms**: Enviromental psychology - ethical- political sufferring- Struggles for territory

## Abstract

The present work explores the process of home unmaking, considering the contributions built by feminist geography and environmental psychology, problematizing how neoliberalism and colonial-patriarchy structures affect and disposes bodies and territories producing discomfort, privatizing rights and desires in the process. Based on the case of the eruption of the Chaiten volcano, Chile, we explored the diverse life stories of those who were surprised by the expulsion from their homes following the eviction of residents at the hands of a rash housing policy that classified the city as uninhabitable. Using qualitative methodological strategies, we worked with women who lived in Chaitén during the volcanic eruption, who following the aftermath decided not to return and settled in the towns of Puerto Montt, Chiloé, Futaleufú, and Palena. Based on their trajectories, we explored the process of home-unmaking and the place of gender in these processes.

The results reveal that the discomfort experienced by these women points rather not to the volcano itself but to a development model characterized by stripping, dismantling, and restricting and moreover, applying the same logics of property management to the human body and emotions.

The potentialities of home-unmaking as a liberating reconfiguration are discussed, considering the transition between fluidity with the possibility of elaboration and home remaking and the struggles against rigidity, in which various expressions, tensions, and conflicts hinder the possibility for elaboration and disengagement. The experiences of these women allows us to better understand how to approach home-unmaking, which we note involves settling into a dignified space, where it feels welcoming, and where feelings of belonging and homeliness are established. In this case, these reconfigurations are anchored and specially grown from networks and relationships of reciprocity between humans, non-humans, and the nature: they are weavings of care that weave a link between the body, home, and territory.

# Psychosocial implications of homemaking process in public space: the experience of homeless people

Ramirez, Catalina (1)

(1) Universidad de Costa Rica

**Keywords / Relevant Terms**: Home, public space, people experiencing homelessness

## Abstract

We share the results of a research process that shows the psychosocial implications of the homemaking process in the public space by people experiencing homelessness and how these people link and mean the places they pass through on a daily basis in San Jose and Barcelona. The street situation is a social phenomenon that is gaining relevance and is becoming more evident and worrying every day and requires greater attention from the social sciences together with other disciplines. Using an ethnographic approach, we developed participant observation, informal conversations and walking interviews (Evans & Jones, 2011). The results reveal that in the homemaking process in public space, psychosocial processes appear such as: stigmatization, the construction of a network of interpersonal relationships based on recognition, the conditions of possibility between rules and negotiations, the possibility of temporary appropriation of a space, the constant threat of expulsion from public space and the daily activities they carry out to build a "structure" that allows them to delimit a private space in public space. We conclude that people experiencing homelessness construct a home in public space through processes of temporary appropriation of space and in the midst of a permanent threat of expulsion. Likewise, we found that the choice of significant places, including home, depends on the experiences of recognition and emotional closeness on the part of the people who live and/or transit through those places. We are not making an apology for the homemaking process in public space, because no one should live on the street. Understanding the psychosocial implications of this process, the actions and relationships that influence the choice of a place, evidently leads us to rethink both the public policy for working with these people, the forms of care and the design of the devices that exist to house them.

# Discrimination experiences linked to the production of Public Housing in Costa Rica

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**Keywords / Relevant Terms**: Discrimination experiences, Costa Rica, Public Housing

## Abstract

In Costa Rica, decades of neoliberal policies have not only reshaped housing regulations and programs, but also directly exacerbated the daily experiences of discrimination faced by vulnerable populations residing in Public Housing projects. This research investigates how recent public policies have triggered and amplified discrimination against inhabitants of Public Housing developments, focusing specifically on projects built between 2000 and 2018 in the Greater Metropolitan Area. To this end, the study initially carries out a documentary analysis of various projects developed with resources from the National Financial System for Housing. A second analysis is based on data collected through a questionnaire applied to 450 residents of these neighborhoods to understand the experiences of discrimination associated with the place where they live. Our analysis reveals a clear shift in urban development patterns associated with Public Housing construction. These projects have demonstrably segregated residents, pushing them towards peripheral areas with worse living conditions and accessibility. This geographical segregation is further compounded by the everyday discrimination residents face due to their association with these stigmatized neighborhoods. Survey data from residents themselves sheds light on the various forms of discrimination they encounter, highlighting the tangible impact of socio-territorial segregation on their daily lives and psychosocial well-being. The consequences of these discriminatory practices are far-reaching, reinforcing social and economic inequalities and perpetuating cycles of disadvantage. Our research underscores the urgent need for policy interventions and community initiatives that counter these trends and promote inclusive, equitable urban development. By dismantling discriminatory structures and fostering integrated, well-serviced communities, we can create a Costa Rica where everyone has the right to a dignified and discrimination-free living environment.

# Territorialities in conflict: ethical-political suffering in struggles for artisanal fishing territory on the Brazilian coast

Diniz, Raquel (1)

(1) Federal University of Rio Grande do Norte

**Keywords / Relevant Terms**: Enviromental psychology - ethical- political sufferring- Struggles for territory

## Abstract

Based on our theoretical-empirical approaches to artisanal fishing on the Northeast Coast of Brazil, we aim to demonstrate the subjective impacts caused by the advances of large enterprises associated with the so-called “clean energy” on traditionally occupied territories. From a psychoanthropological perspective, we propose that territoriality comprises processes of appropriation of space and place attachment, playing a fundamental role in understanding the world, in the epistemological practices, sociality and housing of traditional communities, which challenge the universality of concepts such as person/environment , nature/culture, rural/urban etc. The territory is, therefore, the historical experience of living in it (and with it) as a basis for processes of socialization, circulation of knowledge, intersubjective and pluriontological constitution. Such experiences have suffered continuous and systematic attacks since colonial expansion, which continue today, under the logic of coloniality (Walter Mignolo, 2005). In recent decades, with the support of sustainability discourses and the necessary energy transition in a devastating scenario of climate change, such attacks gain materiality and legitimacy with the massive implementation of wind farms and solar plants in traditional territories on the coast of Brazil, disregarding the harmful effects to the ways of life of the communities that historically occupy it. It is in this context of conflict between instrumental reason and historical reason (Paul Little, 2018), that we identify processes of ethical-political suffering experienced by leaders and groups who act in defense of their territories. As Bader Sawaia (1999) teaches us, “suffering is pain mediated by social injustices” and is therefore constitutive of the disputes in which such groups find themselves placed on a daily basis. Thus, we see the inseparability between the affective, ethical and political dimensions in disputes over territory in the context of dependent capitalism

# Overcoming physical, social and psychological barriers to enhanced engagement with urban nature: Experiences from the GoGreenRoutes Project

Murphy, Cassandra (1); Potter, Kalyn (2); Barboza, Evelise (3); Fernandez de Osso Fuentes, María (2); Calogiuri, Giovanna (4);

(1) GoGreenRoutes; (2) Maynooth University; (3) ISGlobal Barcelona Institute for Global Health; (4) Universitetet i Sørøst-Norge;

**Keywords / Relevant Terms**: Urban Space, Nature Relationships, Equity, Barriers, Engagement

## Abstract

Globally research on and implementation of nature-based solutions (NBS) has increased in line with national and international climate agendas emphasizing the benefits of NBS for planetary and human health. In addition to exploring the impact of NBS (interconnected green corridors in public spaces) on ecosystem restoration and resilience, and climate change adaptation and mitigation, we investigate the impact of nature-based interventions and solutions on multidimensional health-termed: 360-Health.

The objective of GoGreenRoutes (2020-2024) is to position European cities as world ambassadors of urban sustainability by implementing NBS and advancing our understanding of urban re-naturing on human and environmental health. The project has received funding from the European Union's Horizon 2020 Innovation programme under grant agreement Nº 869764.

This symposium aims to explore diverse dimensions of individual experience in and perception of urban nature, with emphasis on overcoming barriers and enhancing human-nature relationships.

Our research has continued beyond urban nature, natural environments and NBS to investigate the relationship between human health, natural or wild spaces, and to individual's connection to these spaces (Lumber et al., 2017, Pritchard et al., 2020) which is central to the theme of GoGreenRoutes.

We will explore the physical, social and psychological barriers to engaging with urban nature and pathways to support greater connection in the following presentations:

1. The development of a nature relationship scale - Using a Delphi methodology by Cassandra Murphy

2. A Gendered Perspective of Perceptions of Safety in Greenspace: a systematic review by Kalyn Potter

3. Green spaces as urban assets for health promotion and health equity by Evelise Barboza

4. A place branding approach to digital placemaking for nature and wellbeing through a modified Delphi by Maria Fernandez de Osso Fuentes

5. Reconnecting citizens to nature through virtual reality: viability of the GoGreenRoutes' Virtual Reality Experiential Showcase by Giovanna Calogiuri

# The development of a nature relationship scale - Using a Modified-Delphi methodology

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(1) Maynooth University; (2) SPAICE Consulting

**Keywords / Relevant Terms:** Nature Relationship, Connection, Measure,

## Abstract

Background and objectives: The term nature connectedness is used to describe the positive emotional, physical and cognitive connection between humans and their environment (Barrable & Booth, 2022). Through this research, we set out to discover the issues that arise from our current understanding of human-nature interaction and in turn develop the construct and associated measure of the newly defined nature relationship.

Methods: Using a modified Delphi method, a total of 23 interviews were completed with a mixture of experts (academics; n=10) and expanded experts (individuals who work with nature in a hands-on or creative way; n=13). A dual approach to coding was implemented. The codes were then weighted by the participants on their importance to the newly developed concept.

Main Results: Alongside this, a working group consisting of experts in scale development and human-nature interaction worked with the existing codes to develop items for the measure. These items were reviewed by an external panel of experts before validation began. Some elements that were highlighted in the interviews were the reliance on positive experiences in defining our relationship with nature, and the mirroring effect of nature with our social relationships with other human beings. It also highlighted the role preferences and memories play in maintaining your relationship.

Implications for research and practice: The results indicate the complexities of nature relationships and dismiss the belief that to be connected to nature your feelings are primarily positive. This research allows us to better understand human-nature interactions and supports practitioners in increasing service users' connection with the national world.

Importance and originality of the contribution: The research is innovative and original in that it explores a new construct and subsequently develops a new measure. By connecting with expanded experts we are digging deeper into individuals' experiences and looking beyond current literature.

# Green spaces as urban assets for health promotion and health equity

Pereira Barboza, Evelise (1); Cirach, Marta (1); Vidal Yañez, Diana (2); Montana, Federica (1); Mueller, Natalie (1); Iungman, Tamara (1); Khomenko, Sasha (1); Daher, Carolyn (1); Barrera-Gómez, Jose (1); Nieuwenhuijsen, Mark (1)

(1) ISGlobal Barcelona Institute for Global Health; (2) Pompeu Fabra University

## Abstract

Background: The importance of green spaces for population health and well-being in urban areas was highlighted in three recent health impact assessment studies. Firstly, we estimated the potential reduction in natural-cause deaths among adults in around 1,000 European cities if WHO recommendation for universal access to green spaces was achieved. Secondly, we examined the relationship between green space distribution and socioeconomic status in six medium-sized European cities, determining its impact on attributable mortality. Lastly, we focused on Barcelona, Spain, assessing the mental health benefits of implementing the local Green Axes Plan.

Methods: We performed different comparative risk assessments focused on adults ( 20 years), using normalised difference vegetation index (NDVI) and percentage of green area (%GA) as green space proxies. Exposure and preventable health burden were estimated at a fine grid-cell level (250 m × 250 m) for 2015.

Results: The first study findings revealed that meeting the WHO recommendation for green space access could annually prevent a substantial number of deaths in European cities: 42,968 using the NDVI proxy and 17,947 using %GA. For the six cities, green space distribution varied within and among cities, with approximately 60% of the population lacking adequate green spaces. There was also a significant correlation between exposure to green spaces, attributable mortality, and average annual income, delineating two distinct patterns based on the residence of deprived populations. In Barcelona, the implementation of the Green Axes Plan could potentially prevent 14% of self-perceived poor mental health cases, 13% of mental health specialist visits, and reduce antidepressant and tranquilliser/sedative use by 13% and 8%, respectively, leading to substantial annual savings of over 45 million euros.

Importance and originality: These studies contribute to a comprehensive analysis of the relationship between green space, socioeconomic factors, and population health and well-being, providing valuable insights for shaping urban planning policies.

# Reconnecting citizens to nature through virtual reality: viability of the GoGreenRoutes' Virtual Reality Experiential Showcase

Calogiuri, Giovanna (1); Brambilla, Elena (2); Flaten , Ole E. (3); Fröhlich, Fred (3); Litleskare, Sigbjørn (1)

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**Keywords / Relevant Terms:** Immersive virtual environments, Nature-based interventions, Nature relatedness, Technological nature, Urban nature

## Abstract

Background and objectives: Urbanization challenges human-nature interactions. Within the GoGreenRoutes project, we developed a highly immersive Virtual Reality (VR) Showcase, which will be displayed in six European cities (Lahti, Tallinn, Umeaa, Limerick, Versailles, Burgas) to raise awareness about urbanization, convey the benefits of contact with nature, and elicit feelings of nature connectedness and attachment to local green spaces. Ahead of the official tour, through a field quasi-experimental study, we explored the extent to which the VR Showcase could elicit the desired effects.

Process and methods: The VR Showcase was displayed at three university campuses and two middle schools in Norway. Students and employees were invited to engage with it. Quantitative and qualitative data were collected through a brief survey and field observations.

Main results: 138 participants engaged with the VR Showcase (11 – 73 y.o.; 66 females, 70 males, 3 non-binary). The users' engagement was high, despite some concerning levels of cybersickness. There was a statistically significant increase in nature connectedness, especially among those with lower affinity with nature (interaction effect: $F(1,92) = 7.94$, $p = 0.006$). After the VR experience, the participants reported medium-high levels of intent to visit local green spaces and increased awareness of urban nature (for both: Mdn = 6.00; IQR = 5.00-8.00). Qualitative data provided further insights regarding the participants' i) previous feelings about nature, ii) engagement with the features of the virtual world, and iii) perceived impact of the VR experience.

Implications for research and practice: The findings provide evidence regarding the effectiveness of the GoGreenRoutes' VR Showcase, adding important knowledge within the rapidly growing field of technological nature interventions.

Importance and originality: This interdisciplinary study builds upon established knowledge in environmental psychology, computer sciences, and public health, providing a unique insight into practical applications of technological nature interventions.

# A place branding approach to digital placemaking for nature and wellbeing through a modified Delphi

Fernandez de Osso Fuentes, Maria J. (1); Keegan, Brendan J. (1); Jones, Marc V. (2); MacIntyre, Tadhg E (1)

(1) Maynooth University; (2) Manchester Metropolitan University;

**Keywords / Relevant Terms:** digital placemaking, place branding, nature connectedness, wellbeing, communciation

## Abstract

Background and objectives: In the face of economic globalisation, cities confront the challenge of preserving and improving their natural areas, which affects the human-nature disconnection. Riechers et al. (2021) highlight the need to restore the human-nature relationship through creative, technologically-infused solutions (Schmidt & Marratto, 2008). When it comes to interacting with urban natural areas and incorporating nature into one's identity, digital placemaking could play a key role. Digital placemaking uses digital media to promote both individual and communal place attachment (Halegoua & Polson, 2021).

Methods: A modified Delphi study with experts in digital placemaking and expanded specialists in relevant domains was developed to investigate the impact of digital placemaking in place branding for urban natural places supporting wellbeing.

Main results: 26 participants between experts (10) and expanded experts (16) have been part of the study. Initial results present a number of opportunities of the use of digital placemaking for nature and wellbeing, including wayfinding in nature, informational and for place management. Potential barriers and challenges have also been highlighted and should be taken into consideration when applying this concept.

Implications for research and practice/policy: Our study adds to the body of knowledge on the potential of digital placemaking, providing useful perspectives on how it might improve the wellbeing of citizens and advance sustainability objectives. Our research concludes by highlighting the potential and challenges of digital placemaking for both individuals and organisations, as well as the significance of reestablishing a connection with nature in urban settings.

Importance and originality of the contribution: Our interdisciplinary study aims to finally achieve consensus on the concept of digital placemaking and its particular application for nature and wellbeing from an innovative place branding perspective.

**Participants:**

**Juniors:**
Kevin Clementi, Univ.Haute-Alsace, Fr
Ruth Barankevich, Univ. California, Irvine
Elena Slominski, Univ. California, Irvine
Amanda Gabriel, Swedish Univ. & Surrey U
Emma Thornberg, Internat. Univ. Catalonia

**Seniors:**
Hartmut Günther, University of Brasília,
Daniel Stokols, Univ. California, Irvine
Lynne Manzo, University of Washington in Seattle

# History of Environmental Psychology

Pol, Enric (1);

(1)University of Barcelona

**Keywords / Relevant Terms:** Environmental Psychology, Epistemology, Disciplinary Identities, Sustainable, Development, Historical Mapping.

## Abstract

It is common to find mentions to the history of Environmental Psychology starting in relatively recent decades. But as some Germans have taught us (Lenelis Kruse, Gerard Kaminski, Carl Graumann, Hartmut Günther, Gifford and few others) the real origins come from a transdisciplinary look, linked to the cultural contact, the emergence of what we now know as environmental sciences, the improvement of living conditions through architecture and the hygienist movement. The requirements of each historical moment have varied, and this has meant that environmental psychology has changed its emphasis and name over time. And more importantly, the dominant epistemological positions. This makes it possible to understand why it is called Environmental Psychology in its origins, why it goes through an era where the name Architectural Psychology dominates, and why it is now focused above all on climate change. And this trajectory is NOT contradictory, but harmonious. As I have explained in several publications, environmental psychology can be divided into four stages: (1) a First Birth, or remote origins; (2) An American Transition; (3) The era of the Psychology of Architecture; (4) The consolidation of Environmental Psychology for Sustainability and Climate Change.

The symposium has been developed in two sessions, one more focused on history, the other on epistemology. We have wanted to include in both sessions the perspectives and experiences of juniors and seniors. This aims to help to understand both evolution and future trends, based on current challenges.

# Epistemology of Environmental Psychology

Di Masso, Andrés (1)

(1) University of Barcelona

## Abstract

Epistemological debates in people-environment studies have tended to be submerged. Early discussions about philosophical worldviews, place phenomenologies or the interdisciplinary nature of the field, seem to have been left behind in favour of mostly fragmented empirical studies following post-positivistic guidelines. Recently, however, emerging reflections on the politics of place, gender-based approaches, systems-thinking, relational ontologies of place and a growing concern with the global nature of local problems, make epistemological matters seem relevant again. Climate change, digital multilocation, new forms of urban segregation, housing crises, contemporary migratory trends or increasing mobilities are re-shaping our emplaced lives, unveiling the pressing need to renew existing knowledge frameworks to understand emerging re-configurations of people-place relations. This involves both revisiting past epistemological debates in the light of contemporary phenomena, as well as forging new 'epistemic attitudes' capable of accounting for these emerging environmental realities.

This symposium gathers scholars from different geographic regions and academic generations, representing varied knowledge cultures, traditions and projections in environmental psychology. Each scholar was asked to provide a short description of their epistemological stance related to their work and share their reflections around the following two questions:

- Why are epistemological concerns (still) relevant in people-environment research and practice?
- What are the main epistemological challenges nowadays in people-environment studies?

The symposium unfolded as a one-hour collective discussion about past, present and future knowledge-making assumptions, frameworks and practices in people-environment studies.

# My Journey in Search of a Critical Environmental Psychology, Within the Social Sciences

Clementi, Kevin (1)

(1) ATER, Université de Haute-Alsace, laboratoire SAGE (UMR 7363)

Contemporary teaching narratives in environmental psychology often emphasize its links to the natural sciences. However, from a historical perspective, environmental psychology is also deeply rooted in the social sciences. This trend reflects the current prevailing tendency among environmental psychologists to engage in dialogue with the "hard sciences" and adopt their methodologies, often without a critical or epistemological examination of their relevance and applicability to psychological level of analysis.
This oversight is particularly concerning, as the cognitive relationship to urban (or non-urban) spaces cannot be disentangled from an analysis of social relations or spatial production. Through examples of interdisciplinary collaboration between the social sciences and environmental psychology, this presentation argues that psychology can offer a unique and complementary perspective alongside disciplines such as sociology and geography, by addressing the interplay between social, spatial, and cognitive levels (Ramadier, 2017). Specifically, psychology provides valuable insights into how social and spatial structures are “internalized” along social and residential trajectories.
More broadly, maintaining this connection to the social sciences addresses what I consider one of the most significant blind spots of mainstream psychology: its failure to acknowledge the socio-structural inequalities that shape individuals’ relationships with reality. This tendency, as Parker (2007, p. 33) critiques, leaves psychology “trapped within its own horizons” conceptualizing individuals as de-socialized and stripped of class affiliations, life trajectories, or embodied experiences.
During the discussion, we reached a consensus on the importance of critically examining how the history of the discipline is written and taught today. Shedding light on the foundational elements that shaped this field—strongly interdisciplinary from its inception—will help ensure a continued awareness of what defines its scientific strength.

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# The Intersection of Social Ecology and Environmental Psychology: Environment-Behavior Research in an Era of Urgent Global Dilemmas

Barankevich, Ruth (1)

(1) University of California, Irvine

This presentation offers an empirically based discussion of emerging research developments at the interface of environmental psychology and social ecology. We outline the bounds of each research domain by noting the ways in which they are distinct from each other as well as the overlap between them. The convergence and development of these two fields over the last two decades is highlighted, in the context of major global dilemmas posed by the Anthropocene Epoch: especially, global climate change, disease pandemics, sociocultural and geopolitical conflict, and negative impacts along with positive affordances of the cybersphere. We provide a sampling of environment-behavior research in each of these areas, noting the ways in whichit reflects multidimensional and multi-scalar complexities inherent in these accelerating global trends. Lastly, we mention some prospective directions for environment-behavior research that could advance our understanding and management of local and global challenges.

# Conceptual and historical mapping of environmental psychology

Gabriel, Amanda (1)

(1) Swedish University of Agricultural Sciences (SLU) & University of Surrey

Environmental psychology (EP) has traditionally been an interdisciplinary science, addressing the complex relationships between individuals and their social and physical environments, both natural and built. Over the decades, the field has engaged with a diverse range of topics, reflecting its dynamic and multifaceted nature. However, as EP continues to evolve, critical questions about its epistemologies and identities—both singular and plural—have emerged. There is an increasing need to examine the ways in which the field can address pressing environmental challenges while embracing the principles of sustainable development. At the symposium on the epistemologies of environmental psychology, I contributed a presentation that explored these critical themes through the lens of an ongoing research project. This project investigates the historical and conceptual evolution of the field by mapping the topics published in environmental psychology articles over the past twenty years. My presentation specifically highlighted the need to interrogate the disciplinary and geographical differences that have shaped the field and their implications for its future development. I raised questions about how the historical and epistemological trajectories of environmental psychology differ across regions and disciplines and explored the potential for fostering greater collaboration and mutual understanding within the global EP community. In my discussion, I emphasized the value of reflecting on how the conceptualization of "environment" has evolved within EP and how this understanding is influenced by disciplinary perspectives and cultural contexts. For instance, the field's development at the University of Surrey has been shaped by its strong empirical focus, whereas the work at the Swedish University of Agricultural Sciences (SLU) has emphasized a connection with environmental management. These differences underscore the need for dialogue and collaboration to build a more comprehensive understanding of what EP is, both as a research discipline and a professional practice. The ongoing project I presented aims to address these questions by gathering and analyzing recent conceptualizations of EP. This work seeks to identify contemporary trends, highlight underexplored areas, and foster a shared understanding of the field’s identity and purpose in a rapidly changing world. By systematically examining how the field’s priorities and epistemological frameworks have shifted over time, the project contributes to an ongoing effort to position environmental psychology as a discipline capable of addressing the interconnected environmental, social, and psychological challenges of the 21st century. In conclusion, my presentation underscored the importance of critically reflecting on the disciplinary and geographical diversity within EP and identifying opportunities for greater collaboration and interdisciplinary dialogue. This symposium served as an important step toward advancing these discussions, providing a platform to explore how EP can evolve and thrive as both an academic discipline and a professional field dedicated to addressing complex environmental issues.

# Literature review of environmental sustainability

Thornberg, Emma (1)

(1) Doctorate Degree in Economics & Law, International University of Catalonia (UIC)

Emma is currently pursuing her Doctorate Degree in Economics and Law at the International University of Cataluña. She researches Corporate Sustainability and ESG. She has an Erasmus Mundus Master Degree in Work, Organizational and Personnel Psychology from the University of Barcelona and University of Bologna. She also has a Bachelor of Science in Psychology from Virginia Polytechnic Institute and State University.

This literature review explores the multifaceted concept of environmental sustainability, examining key terms integral to understanding and promoting environmental sustainability. The goal is to provide a comprehensive overview of the term's evolution.

# Mapping the Ecology of Environment-Behavior Relationships

Stokols, Daniel (1)

(1) Professor Emeritus at School of Social Ecology University of California, Irvine

From its earliest years to the present, many scholars in environmental psychology have given increasing attention to understanding multi-level, contextual circumstances that strongly influence humans' relationships with their surroundings. The environmental contexts of people's day-to-day activities can be described in terms of their scale or complexity. The scale of environmental units ranges from the specific stimuli and situations that occur within a given setting to more complex life domains, community and societal contexts that are comprised of multiple situations and settings. The history of environmental psychology reflects a steady trend toward the development of research programs reflecting increasingly broad contextual scope—i.e., those that encompass places, processes, and events occurring within a broad rather than narrow region of person's geographic environment, sociocultural surroundings, temporal and virtual experiences. My own career path parallels this trend toward the development of environment-behavior analyses encompassing progressively broader spatial, sociocultural, temporal, and virtual scope. I am an academic grandchild of Kurt Lewin in that my dissertation advisor was John Thibaut, one of Lewin's PhD students at MIT's Group Dynamics Laboratory. My research in the 1970s on people's reactions to laboratory situations of high and low density, as well as noise-impacted and quieter schools, were heavily influenced by Lewin's conception of the psychological life space and the interplay between individuals' dispositions and motivations and their perceived environmental surroundings. At the same time, I was intrigued by Roger Barker's (another of Lewin's PhD students at MIT) research on behavior settings, or what he described as the 'foreign hull" of the life space—i.e., the non-perceived, yet behaviorally-influential ecological environment. These interests in the ecology of environment and behavior were further piqued by a course on human ecology that I took during my graduate studies at the University of North Carolina-Chapel Hill in 1971 with Amos Hawley, a leading Chicago School sociologist and human ecologist trained by Robert Park and Roderick McKenzie. My decision to take split minors in Sociology and City Planning in combination with my PhD studies in social psychology at UNC were an e]ort to integrate multidisciplinary and multiscalar research perspectives (or ontologies) for understanding environment-behavior relationships. Since 1973, I have been a Professor of Social Ecology at the University of California, Irvine. My 2018 book, Social Ecology in the Digital Age, situates environmental psychology within a broad ecological framework, spanning local to global levels of analysis, in which patterns of human behavior and well-being are examined in relation to four distinct yet highly interrelated domains of environmental experience: namely, our natural, built, sociocultural, and virtual surroundings.

# Environmental Psychology: the History of Influential Figures

Uzzell, David (1); Moser, Gabriel † (2);

(1) University of Surrey; (2) University Paris-Descartes

My friend Gabriel Moser and I were having dinner in Gabriel's apartment in Paris in about 2002, talking about influential figures in environmental psychology. It became clear very quickly that we were sitting at a very special and unique moment of time. Not many academics are fortunate to be around at the beginning of a major area of academic research. But we were. Moreover, sadly, it occurred to us that some of these people would not be around for ever - perhaps immortal in env psych but not as humans. We thought we should try and interview as many of the key figures in the first years of environment-behaviour research and environmental psychology and capture their stories had before they moved on to another placeless place.

We decided the most effective way of capturing the information we wanted was to send a questionnaire that that had seven open-ended questions – we wanted colleagues accounts in words not numbers, so that they could express their thoughts and tell us stories in as little or as much detail as they wished. Some wrote one or two sentences; some wrote several paragraphs in response to each question.

We asked the following questions

1. What was the trigger that made you want to do research on people environment relationships and/or environmental psychology? For example, was there a particular theme or problem?
2. Were you influenced in the early stages of your career, for example, by particular problems or subject matter, particular scholars and//or particular texts
3. If there were key individual(s) in what way did they influence your thinking (e.g., theory, methods, application)
4. What do you think has been the major contribution of environment-behaviour research to our understanding of people-environment relationships from a theoretical and methodological point of view?
5. What would be your priorities for future environment-behaviour research?
6. What do you think has been the impact of the early work on environmental and architectural planning and policy?
7. Biographical details: Please provide us with a brief summary of your academic career including dates, academic discipline studied and universities attended; a list of five papers/chapters that you would like to be remembered for (do you think/know they will influence others – in what way?) What will be your legacy?

We drew up a list of as many people that we could think of, and we asked colleagues to suggest names. When we received the responses, we used a snowballing method to obtain more. We did not limit our list to just psychologists as many non-psychologists have been highly influential and added enormously to the richness and insights of this field of work. For Gabriel and me with our long association with IAPS this seemed to be the obvious thing to do, as it reflected in many ways the

philosophy of IAPS. The colleagues we wrote to could be from anywhere in the world – and of course this was made easier precisely because IAPS has such an international membership.

In all we received:

· 89 completed questionnaires which, when printed, amount to 330 pages and just under 150,000 words.

· Researchers from a wide cross-section of disciplines: psychology, architecture, urban design, geography, sociology, social ecology, cultural anthropology, facilities planning, law, media studies, zoology

· Countries across the globe, the majority inevitably being from the Global North: North America 56; Europe 26; Latin & Central America 3; Oceania – 2; Other (Japan; Israel) 2

We started this research in 2005. It took us well over a year to receive the number of responses we eventually achieved. In the early stages Bob Gifford was briefly involved in helping to invite and encourage respondents. In terms of the analysis, unfortunately, we were handicapped in several ways. Because this research was unfunded, we had to find all the resource ourselves. This not only meant our own time, which we freely gave, but it had to compete with all our other responsibilities, including funded research. Then later, Gabriel died, which had a significant impact. It is only now having 'retired' that I have been able to make the time to turn my thoughts once more to this wonderful data set.

It is my intention to analyse and publish the preliminary findings from this study within the coming year. This will involve addressing most of the questions listed above. But the interviews can be subject to all sorts of analysis, and it is my intention to make these available to scholars for further investigation. Hopefully, it might also encourage some researchers to undertake some follow-up research. It would be interesting to see how researchers now see their priorities, what they think the major contribution of environment-behaviour research has been to our understanding of people-environment relationships, and what has been the major impact of environmental psychology on the real world? Has environmental psychology lived up to its promise?

# Some reflections on personal involvement and growth with environmental psychology

Günther, Hartmut (1);

(1) Professor Emeritus of Environmental Psychology, University of Brasília

Summary: I traced my eventual involvement and contributions to environmental psychology to my experience of very frequent changes of residence, Initially from then East Germany to West Germany (age 6); next within West Germany, next to the USA (age 18), and back to several moves within West Germany. Next, several locals within the USA during various phases of my academic career (graduate school, póst docs, sabbatical), as well after moving to Brazil, Southern, North Eastern and Central Brazil. These frequent moves contributed to the development of sensibility and demands place. The contact with Robert Sommer and contributed to systematize my ideas and the confrontation with the planned city of Brasília led me to contribute to Environmental Psychology in Brazil inspired by living in this planned city.

# Expanding epistemologies for people-place relationships: On the continuing need to recognize diverse ways of knowing

Manzo, Lynne (1);

(1) Prof. Department of Landscape Architecture & School of Social Work
University of Washington in Seattle

This presentation argues that many assumptions and implicit biases about what constitutes valid knowledge, who produces it and how it is produced remain well entrenched in the study of people-place relationships. There is a continuing need for critical reflexivity around one's own positionality as a researcher and the recognition that no research is value neutral or apolitical; in fact, neutrality itself is a value and bias. Moreover, understanding the socio-political context of both the research itself and the phenomenon under study is essential for a proper understanding of people-place relationships. Indeed, recognizing the situatedness of knowledge is necessary to study the experience of place effectively. This presentation also cautions researchers to remain vigilant for tendencies toward universal knowledge claims and the creation of false binaries e.g. quantitative-qualitative while noting Denzin's (2017) claim that critical qualitative research is under assault in a context of regulatory practices of neoliberalism. The presentation closes with a call for the equal valuing of multiple onto-epistemological paradigms to not perpetuate dominant forms of knowledge & limit our understanding of the world.



# Special Calls

# SPECIAL ACTIVITY 1:

# STREET PACIFICATION AND TACTICAL URBANISM. PACIFICATION OF STREETS, GREEN AXES, SUPERBLOCKS AND GREEN INSIDE BLOCKS

28th INTERNATIONAL CONFERENCE ASSOCIATION PEOPLE-ENVIRONMENT STUDIES - BARCELONA 2 - 5 JULY 2024

# Pacification of streets, green axes, superblocks and green inside blocks. Barcelona experiences

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(1) Barcelona City Council, Director of Urban Strategy

**Keywords / Relevant Terms**: urban planning; superblocks; public space; green infrastructure; sustainability

## Abstract

Barcelona is a dense and compact city, practically consolidated, with a long tradition in urban planning and design of public space. The actions carried out in the 1980s, starting with the implementation of the democratic City Councill, became a global benchmark in the world of architecture, urban planning and design.
The new climatic conditions and other demographic, social and economic issues make the constant review of public space even more relevant today. It is necessary to redefine urban quality and adapt the city to the new climatic, social and economic challenges, some of which are urgent.
From the analysis of the voids in the urban fabric (without considering Collserola and Zona Franca), it follows that only 25% of the city's surface is occupied by larger ground floor buildings. The 42% of the surface are streets, squares and parks, spaces that have the category of public space. The rest, 33%, is made up of mostly empty spaces (some are not public), uncategorized spaces: block interiors, inter-block spaces, cutouts, we could say - the leftovers. This data gives an idea of the potential that the city has for increasing and improving public space.
The Superblock Program was born in Barcelona as an evolution of the pacification of the city, with the aim of improving the above mentioned 42% of public space that already exists. In the implementation of the program, the functions of the streets were reviewed, they were specialized: some of them reserved for mobility, and others freed up with the aim to gain space for other uses like green areas, space for stay, sitting, socializing, leisure and play. The objectives are always the same: the improvement of environmental quality, the promotion of sustainable mobility and the reinforcement of social cohesion.
Despite the experience in pacifying the areas of the city with very narrow streets (old neighborhoods), the model was under discussion for a long time. It was until 2016, when the program was implemented for the first time in the “Plan Cerdà” urban grid of the Eixample District. The most paradigmatic examples were the Superblock Poblenou, which led to the explosion of the Superblocks in the city, in the media and in the public debate. And, afterwards
the Superblock Sant Antoni, where the work was done more slowly, linked to the refurbishment of the Sant Antoni Market and with wider participation of the residents.
Collecting the learnings from the first implementations, and once Superblocks have been evaluated, it can be said that the model works: the space is gained for people, as well as for green areas and for other activities; environmental quality is improved and the car mobility is reduced in the areas where it has been implemented.

Five years after the first implementation, in 2021, it was decided to take a leap of scale and apply the system extensively in the center of Eixample district. Eixample is the district with the highest level of environmental pollution index and the biggest lack of green spaces. At the same time, it is the area with the highest public transport accessibility rates in the entire metropolitan area, therefore, it is possible to rethink mobility and make it more efficient in terms of the use of public space.

The application of the model in the Eixample district resulted in 21 green axes and 21 new squares, a new green infrastructure, which can contribute to improving the environmental quality. Out of this, 4 axes and 4 squares were implemented in the summer of 2023, transforming 11 hectares into new green and leisure spaces.

This transformation implies a change in the configuration of the Eixample, the central district of the metropolitan area, which, like all major changes, must be evaluated with time and care.

Although it takes time to assess the impact, municipal policy does not stand still. If Superblock focuses on improving the existing public space, the Proximity and Interior Spaces Program works in the rest of the city that is neither public space nor buildings, and that is, we could say, a third part of the city. The intention of this program is to highlight all these spaces, and promote their acquisition as a new public space. The objectives remain the same: redefine urban quality and adapt the city to the new challenges.

In a first edition, spaces will be developed in just one mandate, which all added up, represent an increase of 22.3 Ha of green areas, the equivalent of the existing Glòries park (18.5Ha) or Ciutadella park (16.4 Ha).

Both policies start from the same challenges, they share objectives, and both are applied in a complementary way throughout the territory, each in two realities of the consolidated city.

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# Collectively defending the ‘Superblocks’

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**Keywords / Relevant Terms**: Appropriation, tactical urbanism, participation

## Abstract

The ‘Colectivo Superilla Poblenou’ defines itself as a heterogeneous group of people united with the aim of actively participating in the implementation of the Superblocks project, approaching it from 'their needs and desires as users' and with the common vision of helping to create 'a more social and healthier city, where the public space that the car occupied, is recovered by people'.

The communication details the experience of this association in the process of urban and social transformation that the Superblock project supposed for the Poblenou neighborhood, from its creation in 2006 to the present and in three different fronts: participation in the design of the urban space, political and media defense of the Superblock’s model and the promotion of cultural, recreational, and social initiatives in public space.

Among the milestones achieved by the collective, its members like to highlight 'the creation of a sense of belonging in the territory that did not exist before and the dynamization of the neighborhood.' Recently, however, the association has decided to dissolve. It is observed that as the tactical urbanism has given way to a more structural one and as the intensity of the media battle that the implementation of the superblocks entailed has diminished, so has the motivation and activity of the neighbors of the transformed area.

In the debate that followed, it was possible to contrast the different interpretations of what happened in the process of implementation of the Superblocks, from neighborhood, political and academic perspectives. A vision of it as an open process in constant revision was shared.

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# The impact of proximity to amenities on housing affordability. Insights from Mediterranean 15-minute cities

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(1) Universitat Autònoma de Barcelona

**Keywords / Relevant Terms**: 15-minute city, proximity, housing, rent prices

## Abstract

In recent years, the 15-minute city has become a popular paradigm in urban design. By promoting proximity to everydayamenities, it intendsto induce a modal changeon residents towardsactive modes of transportation, reducingemissions and improvinghealth and socialcohesion.

Even if urban studiesliterature has widelyanalyzed this concept,a notable gap in research remains concerning the impacts of the 15-minute city on access to affordable housing. This research examines the relationship betweenproximity to certainamenities and rentalprices in the Spanish cities of Barcelona, Valencia, Palma and Granada, where the 15-minute city is already a reality. By doing that, it bridges a gap in literature that can help understand how changesin the built environment can induce changesin the housing market.

Tostudy thisrelationship, traveltimes toeveryday amenitiesare calculated,and anofficial index of rental prices is used. We employ bivariate maps to account for the spatial heterogeneity of this relationship, as well as segmented regression models to accountfor non- linearity.

Results show that in the most accessible areas,proximity to amenitiesis associated with higher prices whereas in less accessible areas proximity is linked with lower prices. Furthermore, Valencia, Palma and Granada are depicted as monocentric cities, with a centralarea clustering higher accessibility values and prices; while Barcelona shows a polycentric layout,with multiple clusters of maximum accessibility available at different price ranges.

This researchcontributes to understanding the implications of proximity to amenities on affordable housing opportunities, addressing a relevantgap in literature on the 15-minute city and a pressing issue in contemporary cities. It is particularly relevant for policymakers to understand how the housing market values proximity to amenities in order to foresee how future 15-minute city policies couldimpact access to housing.

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# The Superblock Effect: Urban Design and its Electoral Repercussions in Barcelona

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(1) Universitat Autònoma de Barcelona

**Keywords / Relevant Terms**: Transportation, Superblocks, Electoral Outcomes, Policy Acceptability

## Abstract

Urban and transportation policies are increasingly pivotal in mitigating climate change effects, particularly through strategies like superblocks and 15-minute cities. This paper delves into the political ramifications of such urban interventions, focusing on Barcelona's superblocks and their impact on local electoral outcomes.

Despite the environmental and social benefits of urban mobility transformations, their political acceptability remains contentious. This study investigates the electoral repercussions for politicians endorsing these measures, crucial in a landscape where public resistance topolicies like low traffic neighborhoods is mounting. The paper bridges a gap in current literature which often neglects the political dimensions of urban planning, especially concerning built environment changes.

Employing a novel approach, this research utilizes Geographic Information System (GIS) data and disaggregated electoral data to assess the political consequences of Barcelona'ssuperblocks. The methodology includes a combination of Adjusted Difference-in-Differences (DiD) and Propensity Score Matching (PSM), aiming to understand the electoral response to theseinterventions at a highly localized level.

Findings reveal that areas with superblocks in Barcelona showed a comparatively stronger inclination towards the incumbent party, Barcelona en Comú (BEC), despite an overall decline in their city-wide popularity. This pattern suggests a positive reception of superblocks among local residents. The study, therefore, highlights the significance of superblocks in mitigating the declinein electoral supportfor BEC.

This paper contributes to the discourse on urban planning and policy acceptability. It underscores the importance of considering political dimensions in urban policy implementation and offers insights for policymakers in balancing sustainable initiatives with public and political support. The methodology demonstrated here opens avenues for future research in other urban contexts, assessing the political impacts of various urban interventions.

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# Too many cars versus too many people? Examining residents' views of Barcelona's new pedestrian green axes

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(1) Universitat Autònoma de Barcelona

**Keywords / Relevant Terms**: pedestrianisation, superblocks, survey, liveability, public space

## Abstract

Although Barcelona's superblocks plan has been internationally heralded as an ambitious street transformation strategy, it has attracted widespread local criticism on the grounds of traffic impacts,potential risk of "green gentrification", and contributing to creation of "winner"and "loser" streets. Indeed, policy attempts to pedestrianize city streets typically attract vociferous opposition, but it remains unclear whether such negative views are representative of those of the general population. For this reason, understanding how residents perceive the impacts of such schemes is critical to their evaluation. To this aim, we present the results of arepresentative survey of residents of Barcelona's Eixample district (n = 1.200), focusing on their perceptions and preferences regarding the newly pedestrianized "green axes", whichwere completed in June 2023. Our results show that although residents of pedestrianized streets are more positive about pedestrianization, most respondents (66%) consider that the impacts of pedestrianization have been positive regardless of whether they live on a pedestrianized street or not. Nevertheless, residents of pedestrianized streets consider thatthebenefits of reduced negative traffic externalities may be partially counterbalanced by newproblems caused by an intensive use of public space (e.g. noise from people and cafes, touristification, nightlife). Our results also show that there is a strong relationship between supportfor pedestrianization, age and mobility habits: daily car and motorbike users are much less supportive of pedestrianization than public transport users and cyclists, while support for pedestrianization decreases markedly with advancing age.

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# Paradise in a Parking Lot: unlocking the vibrancy of the suburban public realm through pop-up gathering places

Stewart, Brendan (1); Rotsztain, Daniel (2);

(1) University of Guelph; (2) plazaPOPS;

**Keywords / Relevant Terms:** Tactical urbanism, Privately Owned Public Space (POPS), Social infrastructure, Retrofitting Suburbia, Prototype

## Abstract

This session discusses plazaPOPS (www.plazaPOPS.ca), a collaborative, community-driven tactical urbanism initiative in Toronto, Canada,focused on transforming privately owned strip-mall parking lots into vibrant gathering spaces. Designed for automobiles, strip-malls define Toronto's post-war (1950s - 1970s) main streets, and serve low-income and new-immigrant populations with limited car ownership. Despitefeaturing a diversearray of culturally significant mom-and-pop businesses that function as de-facto hubs of community life, these streetscapes are unfriendly to pedestrians, representing a widespread spatial injustice.

To address this challenge, plazaPOPS partners with commercial landowners, local businesses, and arts, culture, and social service organizations to create, program, and manage pop up gathering places in areas where public realm enhancement is limited due to a lack of land in public ownership. This collaborative, partnership based model createsa pragmatic form of social infrastructure tailoredtothe unique conditions of the post-warmain street.

The initiative, piloted through a seed grant in 2019, gained federal support through Toronto's 'Main Street Recovery and Rebuild Initiative', funded by the Federal Development Agency for Southern Ontario, during the COVID-19 pandemic, for up to 15 new installations from 2022 to 2024. Research for the project, studyingits social and economic impacts,is funded by a parallelgrant from the Social Sciencesand Humanities ResearchCouncil of Canada(SSHRC).

This session presents findings from the 2023 installations, including results from a public life study, intercept surveys with installation users, and an ethnographic study incorporating participant observation and interviews. Lessonslearned encompass design considerations, public perceptions, and an analysis of plazaPOPS as a pragmatic and innovative form of 'social infrastructure.' The success of the pilot and subsequent research highlights the potential for community-based interventions to enhance the suburban public realm and economy, and the complex, cross-sector partnership based model requiredto bring these spaces into being.

# SPECIAL ACTIVITY 2:

# CLIMATIC SHELTERS

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# Barcelona's Climate Shelters network, at 5 minutes walking

Ventayol, Irma (1)

(1) Barcelona City Council. Director of Climate Change Office

**Keywords / Relevant Terms**: Barcelona City Council. Director of Climate Change Office

## Abstract

The city of Barcelona has been working for the climate emergency for more than two decades, with many municipal programs involved since 2002. They converged in some strategic goals that the city wants to achieve before the end of 2030, which in terms of mitigation involve reducing 50% of GHG emissions compared to 1992, and being carbon neutral in 2030, among many other goals. Projections indicate a potential rise in temperatures ranging between 1.7, in committed scenarios, and 3ºC in passive scenarios, by the end of the century, while annual rainfall might decrease between 14% in committed scenarios and 26% in passive scenarios.Many other indicators suggest that temperature rise and extreme climatic events will probably continue to be a major threat in the city, exposing some areas to higher levels of a vulnerability index. Other impacts in the city have been severe droughts, with minimum values of accumulated rainfall over the last few years, which triggered declaring public alerts to citizens (from Pre-Alert phase to Alert, and to Exceptionality later on). The city has a challenge to provide more climate justice, so that we can avoid the current situation in which from all mortality projections associated to heat, 24% of them are related to energy poverty and 70% of those deaths are from women.

Some of the actions the city has implemented already comprise a Climate Shelter Network, training to home care professionals, working with elderly care centers, and promoting Climate Shelters in school playgrounds open to citizens beyond school time periods.

The main goal related to the Climate Shelter Network involves assuring that 100% of the population lives within a 5 minute walking distance from a climate shelter. We started in 2020 with 70 of them, and we started the summer period in 2024 with 354 clime shelters. The distribution across the city has meant that 98% of the population has a climate shelter within a 10 min walking distance, and 68% has one less than 5 minutes away from where they live. Those numbers decrease in August (most municipal facilities and private businesses concentrate summer vacation in Spain at that month), with the minimum coverage on Sundays that month, with only 168 climate shelters, which mean 89% of population covered within a 10 minute walking distance and 45% within 5 minute. On the contrary, we haven't achieved yet that more than a third of the city population knows or has heard of the Climate Shelter Network, and only 7.7% declared that had ever used one of those climatic shelters in the city. A public communication campaign is underway every year to improve such numbers. Other heat adaptation projects involved:

•special trainings to professionals of the Home Care Service or volunteers in the care sector (nearly 500 trained caregivers)
•working with elderly care centers (396 thermally-diagnosed residences, producing a catalog of mainly passive, replicable and low-cost solutions to improve their thermal conditions)
•transforming 43 school playgrounds to adapt them to climate change, thanks to public European funding
•and others such as a shadow plan, Shadow Plan, Draining and reflective floors, Nursery schools for climate, Drinking and ornamental fountains, Refreshment points with water, Reinforcement Points Energy Advice, Heat Emergency Plan, Green covers, Subsidies for energy rehabilitation, among others.

# Green Sustainable Cities: Principles, Practices and Policies

Rae, Ruth (1)

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**Keywords / Relevant Terms**: Biophilic Cities, Green Infrastructure, Nature-Based Solutions, Sustainable Cities, Urban Green Space

## Abstract

Cities that are green with horticultural elements provide benefits for people and the physical environment and include sustainable features that are critical for our future. Biophilic principles recognize the essential need for human contact with nature and the various environmental benefits provided for by natural systems. Biophilic cities emphasis the importance of nature in their design, planning and management, and their practices include the implementation of green infrastructure and nature-based solutions. This research will show how the horticultural greening of cities incorporates various types of designs and techniques, and how these practices provide benefits to urban inhabitants as well as the city itself. It gives an overview ofthedifferent types of green spaces that exist in many urban areas, such as public parks, urban forestry, community gardens and provides examples of the innovative designs that createurban green spaces. Although some of the focus is on New York City's greening practices andpolicies, there is also a discussion of greening techniques, designs, and policies in other citiesinthe United States and around the world. The presentation portrays how public policies canimpact the implementation of greening initiatives, how the natural physical environment affects the quality of life for individuals and communities, and how the successful greening of urban environments can combine efforts by citizens and community groups, businesses, and government policies.

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# Blossoming Resilience – Exploring the perception and function of green spaces during heat waves in Germany

Lehrer, Lena (1); Shamsrizi, Parichehr (1); Betsch, Cornelia (2);

(1) Bernhard Nocht Institute for Tropical Medicine, University of Erfurt;
(2) Institute for Planetary Health Behaviour

**Keywords / Relevant Terms**: green space, well-being, heat waves, planetary health, climate change

## Abstract

Green spaces, renowned for enhancing health and well-being, become crucial during climate change and rising temperatures. This study investigates perceptions of greenery, its utilization, and impact on well-being. Additionally, it links socio-demographic factors to desire for more green spaces.

We conducted three cross-sectional online surveys between May and September 2023 (self- reported temperature M = 28.44 (SD = 5.54), N = 2,988, quota-representative for age by gender, and federal state). Surveys encompassed socio-demographics, health factors, reported temperatures, access to private outdoor spaces, and childhood environment. Green space access, usage, desire for more greenery and well-being were assessed (WHO-5).

Across all time points, 73-76% spent time in nature at least weekly. Regression analyses revealed that higher usage was linked to having children, childhood exposure to green spaces, access to private outdoor spaces, lower population, and caretaking (R2 = .08). Approximately 75% reported (very) green residential areas and good condition of greenery. Perceiving one's environment as greener was associated with being female, older, higher income, private outdoor spaces, smaller municipalities, and childhood green exposure; education, having children, caretaking or chronic conditions showed no effect (R2 = .20). Good access to greenery, frequent utilization, and lower temperatures correlated with higher well-being. Whether access to green spaces predicted well-being was linked to (lower) temperatures, but not to utilization. The desire for more green was greater for younger individuals, lower incomes, and larger municipalities (R2 = .07).

For limitations, it must be noted that only subjective green space and temperature data was used. Further, results might have been more pronounced during extreme heat. After all, green space predicted higher well-being, especially in lower temperatures. While the majority weresatisfied with their environment's green spaces, specific groups wished for more. Addressing these needs, particularly for vulnerable groups (e.g., lower income), is imperative for community planning.

# The Manylabs Climate Collaboration: Testing the efficacy of 11 behavioral interventions to promote climate action in 63 countries

Doell, Kimberly (1); Vlasceanu, Madalina (2); Van Bavel, Jay (2);

(1) University of Vienna; (2) New York University

**Keywords / Relevant Terms:** Behavior Change, Climate Change, Environmental Psychology

## Abstract

What is the best way to promote climate change mitigation? While many interventions have beentested, comparing their efficacy is problematic because they are generally tested on specific populations, in specific contexts, and on specific outcome variables (e.g., behavioural intentions). Here, we conducted an international mega-study across 63 countries (N= 59,440), including over 250 collaborators, that compared 11 different interventions (against a control) on the same four sustainability-related outcome variables (i.e., climate change belief, policy support, willingness to share information on social media, and an effortful tree-planting task). We found that no intervention worked across all outcome variables, and intervention efficacy depended on prior climate change beliefs, suggesting that interventions need to be tailored according to their outcome and individual- level characteristics of the populations being sampled. Further, intervention effectiveness was small and differed across outcomes: Beliefs were strengthened most by decreasing psychological distance (by 2.3%), policysupport by writinga letter to a futuregeneration member (2.6%),information sharing by negative emotion induction (12.1%), and no intervention increased the more effortful behaviour– several interventions even reduced tree planting. Together, these results highlight the necessity of conducting well-powered, highly collaborative research that looks at many facets of climate change mitigation, including real behavior.

# SPECIAL ACTIVITY 3:

# URBAN RENEWAL AND PARTICIPATION

# Experiences of participation in a socially and culturally complex city

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(1) Environmental technician at City Council of Hospitalet de Llobregat

**Keywords / Relevant Terms:** Environmental Education Master Plan; citizen participation; urban transformation; sustainability culture; monitoring indicators

## Abstract

The City Council of Hospitalet de Llobregat decided to draw up a new Environmental Education Master Plan (*) including transversality from the outset, in which citizen participation was prioritized and previous actions were highlighted. In order for it to be successful, it was considered essential to involve people from different sectors since the beginning of the process, who would make the Plan their own and then follow the monitoring and evaluation stages. These phases tend to become blurred as time goes by, interest decreases and other emerging issues take priority.
The municipality has a very high population density and has absorbed successive waves of immigration in recent decades. Relying on the wealth and diversity of backgrounds of citizens was also another challenge to consider. It is essential that everyone relates with the challenge of climate change, in this case in an urban and metropolitan environment.
The framework of the Master Plan sets the way towards a renewed urban environmental education, with key concepts such as the “environmental management of the city” and the “transformation of the city”. The aim is to increase the culture of sustainability in the social and economic agents of the city, as well as throughout the citizenry, in order to contribute to the municipality’s Agenda 2030. The vision of the Plan is to transform l’Hospitalet into an open space for learning and experimentation in sustainability that encourages co-responsibility in the face of collective challenges.
The phases of the preparation of the Plan were: preliminary analysis and context; participatory process and drafting of the Master Plan. Focusing on phase 2, the participatory process, a map of actors or agents that could contribute to the construction of the Plan was drawn up. The data collected from this stage of participation came from:
- 16 interviews with municipal technical staff from different areas
- 224 responses to an electronic form distributed among educational centers, City Hall workers and citizens interested in the topic
- 3 group discussion workshops (73 attendees in total: environmental education group, entities, retail and citizens; and municipal staff)
Of the 6 strategic objectives defined in the plan, 6 axes resulted from which the actions were defined in specific files. These files describe the operational objectives, the budget, the driving agent and the monitoring indicators. The latter will be essential to establish a final assessment.
In the debat following the presentation at the IAPS Conference on 3 July 2024, the variety and number of social profiles participating in the Plan was positively valued. The opportunity of collecting citizens’ views instead of uniquely relying on the local administration’s perspective was also highlighted. We agree that for urban transformation to take place, as intended in this Plan, the effort and willingness of the true final recipients of the actions is required: citizens. If the actions have been devised by everyone, it seems that it will be easier to obtain good results.

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# Communitarian participation in urban renewal. Experiences in Torre Baró

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(1) University of Barcelona

**Keywords / Relevant Terms:** participatory process; urban transformation; community collaboration; conflict management

## Abstract

The neighborhood of Torre Baro was the first to approve an urban transformation with the arrival of democracy to the city of Barcelona, specifically in 1984. Unfortunately, 25 years later, and with many struggles between neighbors and town hall nothing had happened.

This blocking situation was the starting point to start a community and collaborative process between the Barcelona City Council and neighbors and public service professionals working in Torre Baro. The objective of this participatory process was to update the urban plan approved in 1984 and, above all, to make it a reality.

A project of a duration of 6 months was designed that allowed:
• Establish participation spaces to collect the ideas of neighbors and professionals about how the urban transformation process of Torre Baro should be.
• Learn to work together between neighbors, services and public administrations (local and regional).
• Build mutual trust between neighbors and Barcelona City Council.

The main results of this project were:
• List of neighborhood proposals to incorporate into the future urban transformation project of the Torre Baro neighborhood.
• A dynamic of joint work between the area of urban planning of the city of Barcelona and the association of neighbors of Torre Baro, for the elaboration of the Special Plan of Interior Reform of the neighborhood of Torre Baro.
• Settling the foundations to start a comprehensive community project, the community development plan, in the neighborhood of Torre Baro.
• Creation of a joint workspace between the professionals of the different public services of the neighborhood of Torre baró.

During the discussion following the presentation of the experience carried out, two main themes were:
• The very concept of participation. He understood as not only a process of information output, but that is also, of giving opinions. If not as a process of inputting information, that is, being informed about topics that can help build the opinions of the participants. Hence the idea that it is important to be able to think about formative and informative spaces in participatory processes.

• On trust and conflict management. Although the starting point was distrust between neighbors and town hall, distrust dragged for many years, mutual recognition and the will to move forward in the transformation and improvement of the neighborhood allowed to start a collaboration that ended up building trust and complicity. Hence the idea that participatory processes must promote the recognition and complementarity of the different actors involved assuming, at the same time, that along the way conflicts will arise and that overcoming these will be an engine for trust.

# A Scenario study for remodeling an old apartments through DB and GIS analysis (for local government in Korea, Gwangju Metropolitan City)

Shon, Seungkwang (1); Shon, Donghwa (2);

(1) Dongshin University; (2) Chungbuk National University

**Keywords / Relevant Terms:** Deteriorated Apartment Housing, Stock Apartment DB, GIS , Remodeling Scenario, Remodeling Administration

## Abstract

Apartment housing is Korea's representative housing type, and apartment housing has been mass-produced over the past 50 years since 1970, accounting for more than 70% of the country's total housing stock. Inventory homes are allowedto be rebuilt if they are over 20 years old. As new apartment houses with excellent performance are distributed in large quantities, the performance of stock apartments is relatively low and it is becominga social pathology that shortens the lifespan of apartment houses. In order to cure this pathology, public support and management policy mechanisms must be established to continuously improve the architectural performance of existing housesand improve the performance of residential stock apartment houses. For this purpose,the following researchmethod was selected; First, from the public's perspective, the characteristics of the apartment complex under the jurisdiction of the local government are created in a DB: the contents include the year of use since completion, the number of households in the complex, the floor area ratio, the access method of each household, the floor height of the residential building, and the block size. Type, main area, etc. are written in an Excel file. Second, according to the characteristics of inventory apartments writtenin DB, GIS can be used to link and express them on a spatial map. Third, the DB was analyzed by applying a scenario of remodeling a stock apartment house, and a spatial locationmap was createdusing GIS. Fourth,a scenario was created accordingto the purpose of remodeling old apartment houses,and it could be usedas policy data to manageand support.

# Experimentation of a Participatory Methodology for Change Facilitation in Co-producing Public Spaces Among Elected Officials, Technicians, and Citizens of the City of Miramas for Climate Change Resilience

Hernandez, Aura (1); Bigot, Maeva (1);

(1) Nunaat

**Keywords / Relevant Terms:** Resilience, governance, inter-group relatioship, decision making, urban planning, citizen participation

## Abstract

Governance serves as a systemic intervention tool (Meadows, 2008) for transforming lifestyles in regions. It determines the influence mechanisms of participatory processes, public action innovation methods, power dynamics among actors, and how interaction modes support social innovation and resilience in addressing climate change. Our prior research in urban renewal and public innovation (Hernandez, 2023) revealed key barriers to this transformation: 1) Siloed information flow within services, 2) Citizen participation policy treated utilitarianly rather than fostering community relations across services, 3) Lack of a citizen participation reference, 4) A public service focused solely on territorial activities, 5) Depoliticization of public action. In the Miramas public spaces renovation project,we aim to experiment with a innovative cooperation method where municipal technicians are fully integrated into citizen involvement, understanding public space usages, and establishing enduring relationships with citizens, promoting sustainable community well-being (Stockols, 2017).

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# Transforming cities: citizen participation in urban planning

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(1) Universidad de Guadalajara, Mx.

**Keywords / Relevant Terms**: Urban renewal, Community participation, urban planning

## Abstract

The main objective is to Understand how citizen participation occurs in an urban spacethat is going to be transformed, and, in particular, analyze how expectations about the changes influence the activationof collective participation. Understand the relationship that people have with the environment, in what way the changes in it affect them and, as a consequence, affect the way in which they participate in neighborhood decision making.

This investigation was made following the instrumental case study approach (Stake, 1999). Two cases in two differentcities were selected for this investigation: for the firstone I selected the neighborhood of Vallcarca in the city of Barcelona, and for the second case I selectedthe case of theJapan park in Bogota Colombia.

Multiple data collection techniques were applied in all cases, such as participant observation, interviews, social media analysis, etc. The data obtained were analyzedfollowing thethematic analysis technique proposed by Braun and Clarke(2006)

Main resultsshow that when people get affected by renovation in the media that surrounds them, they usually get activated and act most of the times by protesting and blocking the urban renovations. Often people tend to get affected by these changes, above all in areas such as: place identity, place attachment causinganxiety and othersymptoms.

If the city council takes the participation process more seriously and involves citizensin decision making of the process, the negative consequences of urban renovation can be minimal, as citizens gain power throughparticipation. Both citizens and governments must be willing to cooperate and work together, public policies about urban planning must include participation, so it can truly respond to citizens' needs, and enhance quality of life.

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# Urban Walkgraphies in the Confins of South America: creating clues for public policies with traditional communities that inhabit the margins of cities in Brazil and Argentina

Rocha, Eduardo (1); Portella, Adriana (2); Tetamanti, Juan Manuel Diez (3); Cardoso, Silvia Helena Dos Santos (4);

(1) Federal University of Pelotas; (2) Heriot-Watt University; (3) National University of Patagonia San Juan Bosco; (4) Federal University of the South and Southeast of Pará;

**Keywords / Relevant Terms:** urban walkgraphy, urban policy, margins, interior of South America, LiveWalk App.

## Abstract

The development model adopted by medium-sized cities in Latin America has resulted in the occupation of water body banks by traditional societies, including quilombolas, fisherwomen, riverside communities, and indigenous people. These communities perceive water as a source of renewal and a guarantee of survival. Our research aims to formulate public policy guidelines in collaboration with these communities, situated on the outskirts of medium-sized cities in the extremities of South America, where bodies of water simultaneously serve as borders and foundations. Our focus is on the cities of Marabá/BR, Pelotas/BR, and Comodoro Rivadavia/AR. Our methodological approach employs Urban Walkgraphy, which combines exploratory walks and cartography, establishing an organic methodology. Grounded in the pedagogy of reception, recognition, and sensitive analysis, this methodology integrates the knowledge of traditional communities in collaboration with researchers, supported by the development of the CaminhoVivo application. The interaction between researchers and traditional communities is enriched through exchanges of experiences in the field, as well as face-to-face and remote seminars. These interactions will occur in ahybrid environment, incorporating online platforms, applications, and public domain resources. We will present and publish the results in workshops involving civil servants and government representatives, aiming to transfer our findings to public policymakers. Additionally, the results will be disseminated through events and publications in indexed magazines, as well as exhibitions in cultural spaces and local schools. Our international research team comprises experts from various fields and collaborates with esteemed institutions such as UFPel, UNIFESSPA, and UNPSJB, in addition to the municipalities of Pelotas, Marabá, and the Municipality of Comodoro Rivadavia.

# SPECIAL ACTIVITY 4:

# NATURE BASED SOLUTIONS (NBS)

# The COEVOLVERS project approach to Nature-Based Solutions

Fornara, Ferdinando (1); Hiedanpää, Juha (2); Soini, Katriina (2); Ojala, Ann & Mishra, Himansu (2); Gorriz, Elena (3); Pataki, Gyorgy & Bansagi, Eva (4); Kluvankova, Tatiana & Szabo, Tomáš (5); Herrmann-Pillath, Carsten (6); Maran, Timo (7); Townsend, Leanne (8);

(1) University of Cagliari, Italy; (2) Natural Resources Institute Finland (LUKE); (3) Consorci Centre De Ciència i Tecnologia Forestal de Catalunya (CTFC), Spain; (4) ESSRG, Hungary; (5) Slovak Academy of Sciences (Slovakia) and Centre for Transdisciplinary Studies (CETIP), Czeschia; (6) University of Erfurt, Germany; (7) University of Tartu, Estonia; (8) James Hutton Institute, United Kingdom;

**Keywords / Relevant Terms:** nature-based solutions; co-creation; affordance; qualitative and quantitative methods

## Abstract

This special session on international and transdisciplinary research will report some theoretical reflections and first empirical outcomes related to the project "Coevolutionary approach to unlock the transformative potential of nature-based solutions for more inclusive and resilient communities", funded by the EC Horizon Europe Programme. The 4-year project, started in November 2022, aims to explore how Nature-Based Solutions (NBS) can contribute to the societal change needed to address the ongoing biodiversity and climate crisis.

NBS are solutions that benefit both nature and humans, such as green roofs or wetlands. However, until now they are often considered as technical efforts, and not enough attention has been paid to the societal issues, local communities, citizens, or other species in their living environments, the true participants and beneficiaries of these solutions.

Starting from this assumption, the eleven partner organisations of COEVOLVERS, in seven communities (Living Labs) across Europe, co-create nature-based solutions that help local communities, including most vulnerable humans and non-humans, to adapt and contribute to the societies' biodiversity and climate transformation. The ultimate objective of the project is to provide an understanding of the genesis and establishment of fairer NBS, especially from the perspective of the most vulnerable humans and non-humans, through the innovative use of various digital tools and creative methods.

This session aims to present how NBS can contribute to the societal change needed to address the ongoing biodiversity and climate crisis, working on co-designing fair NBS governance techniques, models, and practices. In particular, the presentations of this session will focus on both the theoretical underpinnings that characterize COEVOLVERS approach and the first research outcomes stemming from interviews, surveys, and affordance analysis of Living Labs settings.

# Nature-Based Solutions: Background and overview of the COEVOLVERS project

Fornara, Ferdinando (1)

(1) University of Cagliari, Italy

**Keywords / Relevant Terms:** nature-based solutions; co-creation; affordance; qualitative and quantitative methods

## Abstract:

This is an introductory presentation of the COEVOLVERS project, focusing on its theoretical underpinnings and methodological choices. The main goal of the project is to provide an understanding of the genesis and establishment of fairer Nature-Based Solutions, especially from the perspective of the most vulnerable humans and non-humans. In particular, the focusis on the co- creation process as an interplay not only between the stakeholders, but also between human and non-human actors. To accomplish this, COEVOLVERS explores through seven Living Labs across Europe the situational and place-based conditions around the socio-politics of NBS design and implementation.

# Nature-Based Solutions challenges and implementation in different European countries: the experience of Living Labs

Mishra, Himansu (1)

(1) Natural Resources Institute Finland (Luke), Finland

## Abstract:

The Living Labs (LLs) in COEVOLVERS project explore NBS design and implementation through coevolutionary and multi-actor platforms to create innovative solutions. They strengthen the capabilities of creative democracy and social learning. Using living lab principles, COEVOLVERS examines environmental affordances to reshape motivations and actions. Through transdisciplinary knowledge integration, co-creation cycle, application of innovative digital tools, and art-based methods, problematic situations are identified and analysed, leading to the co-design of fair governance models. This presentation highlights key challenges, current solutions, methods, tools, techniques, and the impacts of implementing NBS in various LLs in COEVOLVERS. It concludes by demonstrating examples of participatory and art- based creative methods to explore LL/NBS sites, together with participants by sharing everyday experiences, feelings, and knowledge, participants contribute to community building around the exploration and co- creation of NBS.

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# Nature-Based Solutions: mapping the affordances in the Living Labs

Ojala, Ann (1)

(1) Natural Resources Institute Finland (Luke), Finland

## Abstract:

In COEVOLVERS project, one of the goals is to identify the role and significance of human and non-human affordances in the design and implementation of Nature-Based Solutions (NBS). The aim is to make these affordances visible, showing how different participants and non-human species perceive environments, challenges, and possibilities of NBS, and understanding their meanings and significance in these environments. To achieve this, we use theory-driven methods that have been further developed and tested in our Living Labs. This presentation provides a brief introduction to the theoretical bases of affordances and umwelt analysis, followed by examples from our Living Labs.

# Assessing the Socio-politics of Nature-Based Solutions: first results from interviews, survey, and Role Board Game

Szabo, Tomáš (1)

(1) Slovak Academy of Sciences, Slovakia & Centre for Transdisciplinary Studies (CETIP), Czech Republic

## Abstract:

This contribution focuses on the results of guided interviews and surveys across different Living Labs as a tool to learn about the actors' relationship with NBS. A Role Board Game called Ecopoly will be provided as an example of basis for co-creation and better management of the territory.

# Actionable knowledge for transformative Nature-Based Solutions

Townsend, Leanne (1)

(1) James Hutton Institute, United Kingdom

## Abstract:

In this presentation we discuss the importance of actionable knowledge in research. We will explore the meaning of actionable knowledge (i.e. that which can be applied in practical and policy-based settings), and how the concept can be applied in an action research setting. Drawing from examples from the COEVOLVERS project on inclusivity in nature-based solutions, we show how research findings can be translated into actionable knowledge and how this can result in the co-development of tools for policy and wider stakeholders that promote research impact at various levels.

# SPECIAL ACTIVITY 5:

# RURAL-URBAN MIGRATIONS. SOCIAL DYNAMICS AND URBAN DEVELOPMENT

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# Migration and Cities: Challenges and Opportunities for an Inclusive and Resilient Future

Celaya, Amaia (1)

(1) UN-IOM International Organization for Migration

## Abstract

This intervention focused on global migration, highlighting its economic, social and urban impact. Here is a summary of the key points:

1.- Migration and Economic Contribution: In 2015, migrants contributed more than US$6.4 trillion to global GDP, representing 9.4%. The number of migrants has increased, although their share has remained around 3% of the world's population over the past 60 years.

2.- Migration Patterns: Displacement trends are increasingly complex, with migration moving towards urban settings due to various causes such as natural crises, civil conflicts and economic needs. Rural-urban migration is changing social dynamics and urban development.

3.- Challenges for Cities: Migrants face challenges accessing housing, health, education and employment. Receiving cities also face issues of infrastructure and inclusive policies while dealing with social integration and cultural diversity.

4.- Positive Impact of Migration: Migrants can increase innovation and productivity, contribute to economic growth, and promote ethnic and cultural diversity. They can also drive more inclusive policies and integrated development.

5.- Sanctuary Cities: These cities protect undocumented immigrants from deportation, promoting inclusive policies. These policies encourage immigrants to report crimes, seek medical care, and enroll in schools without fear of deportation. Barcelona is an example of a "sanctuary city."

# Co-designing public spaces at the Baró de Viver neighbourhood, Barcelona

Vidal, Tomeu (1); Salas, Xavier (1); Remesar, Antonio (1); Esparza, Danae (1); Padilla, Samuel (1)

(1) Polis Research Center, University of Barcelona

## Abstract

manage the relationship between public actors, technical experts, and politicians in participatory urban planning? These are key questions explored in a long-term participatory process aimed at transforming the image of a neighborhood and enhancing its public spaces.

Participatory processes for urban improvement serve as complex social and environmental arenas, where concepts like appropriation of space (Korosec-Serfaty, 1976; Pol, 2002; Vidal & Pol, 2005), place attachment (Altman & Low, 1992; Lewicka, 2011; Manzo & Devine-Wright, 2014), and empowerment (Rappaport, 1987; Rowlands, 1997; Zimmerman, 1995) come into play. Additionally, these processes contribute to strengthening the social fabric (Montero, 2009), fostering collaboration, and enhancing the community.

This participatory project was developed in the Baró de Viver neighborhood (Barcelona, Spain) between 2004 and 2011 (Remesar et al., 2012; Vidal et al., 2012). The project had four primary objectives: 1) exploring the limits and potential of citizen participation, 2) empowering residents to take active roles, 3) developing participatory methodologies and tools for public space and art design, and 4) transforming the urban environment both physically and symbolically, while promoting collaboration among all stakeholders.

The methodology combined small group workshops with larger community forums. Insights and proposals generated in the workshops were shared with the broader community through multiple channels, including digital platforms and public forums, where additional feedback and new ideas were incorporated. The process unfolded in three phases: identifying key issues in public spaces, proposing interventions, and preparing detailed project plans.

Key physical outcomes included the construction of the Wall of Remembrance and the remodeling of the Rambla Ciutat de Asuncion, culminating in the unveiling of the Monument to Cheap Houses in February 2011. Beyond these physical changes, the project achieved significant non-material results, such as fostering dialogue between diverse stakeholders, forming heterogeneous groups, empowering residents, and building trust in the participatory process and in the community's capacity to influence urban planning (Remesar et al., 2012; Vidal et al., 2012).

The success of this project was underpinned by the collaboration between neighbors, the local government, and the research team (CR-Polis, University of Barcelona). Most importantly, it demonstrated that a creative, inclusive participatory process can lead to residents having direct control over decision-making in the design of public spaces in their neighborhood. While the material transformations are visible, the project's greatest achievement lies in empowering the community to make informed decisions about their urban environment, fostering a sense of ownership and long-term engagement in public space design and management.

# Supporting Sustainable Urban Transformation in Cambodia: The Build4People Project

Bloebaum, Anke (1); Matthies, Ellen (1); Waibel, Michael (2); Mund, Jan Peter (3); Messerschmidt, Rolf (4); Sok, Serey (5); Op, Vanna (5);

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**Keywords / Relevant Terms:** Sustainable urban transformation, urban quality of life, citizen science, participatory planning, human-environment relationship, Royal Kingdom of Cambodia

## Abstract

The transdisciplinary Build4People project (https://build4people.org) is funded by the FederalMinistry of Education and Research (BMBF)Germany from 2019 to 2025. The projectaims to improve the urban quality of life through sustainable urban transformation in Phnom Penh, Cambodia. The Build4Pople team consistsof researchers from German and Cambodian universities covering various disciplines such as human geography, energy and building technology, GIS and remote sensing and environmental psychology, as well as two German companies (climate and energy concepts, urban planning and architecture). To promote implementation and science-society transfer, Build4People works with various local implementation and dissemination partners. To tackle typical urban problems of an emerging country in the Global South, such as the massive influx of rural-urban migrants, the parallel developer-driven densification and enormous spatialexpansion of urban development with simultaneous loss of green/water spaces, the congestion of infrastructures and the growing ecological footprint of the rapidly expanding urban upper and middle classes, to name but a few, Build4People applies various interdisciplinary analytical and transformative approaches. Three of these are presentedto illustrate on the overarching goal of the project: (1) the results of a representative, standardized household studyon urban qualityof life (N = 750),reflecting the interplay of subjective factors(sphere of people) and the evaluation of the environment (sphere of the environment); (2) first results from a Citizen Science APP reflecting perceived quality of life and valuation of urban green spaces in Phnom Penh, allowingto link objective and subjective factors;(3) results from an EcocityTransition Lab Series,a methodology that brings togetherdifferent stakeholders and supports participatory planning approaches. To integrate these different transition management tools, Build4People is currently developing a so-called Transformation Toolbox to supportthe actual implementation of more sustainable urban development pathwaysin Phnom Penh.

# The Impact of Environmental Satisfaction and Place Attachment on Migration Intentions: A Case Study of the Polluted Region (Chelyabinsk)

Ivanova, Alexandra (1); Zabelina, Ekaterina (2); Valko, Danila (3); Nikolaeva, Ekaterina (2)

(1) HSE University, Russia; (2) Chelyabinsk State University; (3) The South Ural Universtiy of Technology

## Abstract

There is a growing discourse about the significance of environmental issues being equally important as economic factors in global migration processes. Making migration decisions can be challenging however internal migration within some countries like Russia is relatively easy due to cultural and linguistic similarities across regions. To investigate how environmental and urban satisfaction, as well as place attachment, influence migration intentions we selected the region with the heaviest industrial pollution in the country. Preliminary data were collected from an online survey of 335 respondents from the Chelyabinsk region aged 18 to 64 (M = 29, SD = 11), predominantly women (n = 261, 78%), residents of Chelyabinsk city (n = 265, 79%), with a moderate income level (n = 278, 83%). Hierarchical regression analysis indicated that place attachment was the most significant predictor of the desire to stay in the region, explaining 27% of the empirical data. Dissatisfaction with safety levels and career opportunities were less influential but significant predictors of the inclination to leave the region, whereas dissatisfaction with housing availability reduced migration intentions. Surprisingly, environmental conditions (overall environment, air quality, and water quality) accounted for up to 5% of the variance in migration intentions and were significant only as individual predictors. Interestingly, when asked about regional problems in open-ended questions, participants often cited ecological issues as the primary concern. This prompts further investigation into whether a deteriorating environmental condition might become a widely recognized label in public discourse, that people name but don't consider because gradually acclimate to living with these challenges. Perhaps the explanation of the results lies in the notion that economic issues are more readily observable and foreseeable compared to the health impacts caused by pollution even though people are much less satisfied with the environment than with other urban living conditions.

# SPECIAL ACTIVITY 6:

# STRATEGIES FOR COMMUNITY INVOLVEMENT AND ENVIRONMENTAL VOLUNTIERS

# "Let's Read the River: Where Science and Communities Meet to Improve the Environment"

Bernal Piñera, Sandra (1)

(1) Technical Office for Environmental Education and Promotion. Barcelona Provincial Council. Environmental Education Program

## Abstract

Llegim el Riu is a cross-disciplinary project initiated by the Library Services Management and Environmental Services Management of Diputació de Barcelona. This citizen science initiative focuses on the Llobregat, Ter, and Besòs rivers, aiming to foster public awareness and collaboration in protecting these water bodies. The scientific and educational outcomes of this process lead to the co-creation of public policy recommendations for managing and conserving the river ecosystems, developed in partnership with the local community.

The primary objectives are to create spaces for social innovation within municipal libraries and to offer an original, innovative, and transformative project. Through libraries, the project seeks to enhance knowledge about aquatic ecosystems, generate citizen science data to support river conservation, promote environmental education on rivers through a citizen science tool, and encourage public involvement in environmental decision-making. Once participants understand the dynamics of their local river and identify its environmental impacts, they are empowered to contribute to local environmental management.

Key stakeholders in the project include city councils, municipal libraries, the FEHMlab research group from the University of Barcelona (UB) and its citizen science tool RiuNet, the NGO Associació Hàbitats, and the NGO Fundació Rivus, in addition to Diputació de Barcelona (Diba).

The project unfolds in stages: in spring and autumn, groups of citizens, supported by UB scientists and the RiuNet app, conduct ecological assessments of the rivers. A few days later, these same volunteers, alongside UB scientists and members of Associació Hàbitats, analyze the results and develop proposals for local environmental management. The municipalities then implement some of the citizen-suggested actions, using either their own resources or those provided by Diba. These actions may include waste collection, health and educational activities, communication campaigns, the installation of solid waste retention systems, and more. Additionally, Diba creates and distributes educational materials to support the autonomous environmental education efforts in each municipality.

To date, over 400 participants from 23 municipalities have contributed to the project, with more than 64 actions proposed and 30 already implemented.
We find it very positive to have shared this experience in the discussion group on Strategies for community involvement and environmental volunteers, and we believe that productive and interesting synergies could arise from some of the projects presented.

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# Evolving life experiences and underlying psychological drivers throughout life stages of environmental volunteers

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(1) Universitat Internacional de Catalunya; (2) University of Barcelona

**Keywords / Relevant Terms**: environmental volunteering, significant life experiences, connectedness to nature, environmental education, environmental governance, life stages

## Abstract

Research on environmental volunteering suggests that nature bonding is crucial to promoting citizen engagement. However, predominant research on volunteers' initial motivations overlooks the creation of bonds between people and nature over time. To understand the nature bonding from a temporal perspective, this article examines significant life experiences of volunteers of a self-organised citizen-based river group in Barcelona Metropolitan Region. Through a qualitative study involving 25 interviews with members of this group, different types of significant life experiences (formative and reinforcing) and associated psychological drivers (others-oriented, place-oriented and self-oriented) are identified. Maturation and interaction of experiences and drivers throughout volunteers' life stages determines the evolution of self- nature bonding, that starts unconsciously and becomes conscious and complex, leading to place attachment and moral commitment. The shift from mere identification of volunteers' initial motivations to a holistic understanding of their bonds with nature over time provides insights for promoting the self-organisation of citizen-based groups that can play a significant role in collaborative environmental governance.

# A stepwise methodology to join and support neighborhoods' engagement and interest in climate change related processes

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**Keywords / Relevant Terms:** Action research, disruptive and unconventional environmental Communication, neighbourhood participation, interventions

## Abstract

The main idea of the Clean Culturesproject is to join people in their existing contextand enhance and support their already existing engagement and interests from a climate change perspective. We have chosen neighborhoods as the arena for interaction because people spend a relatively large proportion of their free-time in their residence and neighborhood; and the neighborhood is where you meet and interact with your neighbors on an everydaybasis. As we cannot assumethat every neighborhood has an already existing engagement or interest in climate-related issues,we need to be open for using any kind of engagement or interest as a point of entry. However, using something totally unrelated to climate change as a point of entry is of course considerably more challenging. By studying existingneighborhoods as case studies in four European countries, we have developed a 5-step process of how one may support neighborhoods' in addressing climatechange related challenges. We do not claim this is the only way to support neighborhoods in activities of relevance for climate change, or that these steps are necessary to do so. However, we have testedand developed this stepwise processand shown that it indeed works. Hopefully, our paper can be used as a Proof of Concept(PoC) of a methodology that can be used to support neighborhoods in carrying out climate change related change processes. Also, this process is iterative, which means that it is possible to go back and forth between the steps if necessary. The paper shows examples from the project cases (www.cleancultures.org) and presents case-specific results for each step in our of five- step process. Our aim is to learn from these cases and to contribute to a successful metodology that may be utilised and further developed in future research.

# Group Identity, Group Emotions, and Group Efficacy Beliefs in Collective Environmental Action: A Scoping Review

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**Keywords / Relevant Terms:** scoping review, environmental activism, environmental movement, environmental action

## Abstract

Due to the acute environmental crises of our time, numerous people join activist groups and demonstrate in the streets every week, demanding effective policy measures as well as climate and environmental justice. So far, much research has been done on how group factors, namely group identity, group emotions, and group efficacy beliefs, motivate individuals to get involved in such Environmental Movement Organizations (EMOs). Little research has been done on what group factors hold the movement together, strengthen it, and promote movement effectiveness and cooperation between different EMOs. This systematic scoping review aims to provide an overview of the latest work published about group factors in the environmental movement. Thereby, the different levels of group factors, namely individual, group and movement level, are differentiated. The aim of the review is to clarify what characterizes the current state of research on these group factors in the environmental movement. This includes outlining the terminologies, definitions, and theories used in this literature. Besides, relevant findings, and suggestions for future research from the selected literature are examined. In a first search step, a total of 3226 results were identified from the PsycInfo and Scopus databases, then backward reference selection was performed, and finally 41 studies were included in the analysis. Overall, the reviewed studies use largely similar terminologies, definitions, and theories, which makes the theoretical foundation for this research topic relatively clear and non-controversial. The majority of the analyzed studies address group factors at the individual level. Some similarities as well as some contradictions can be found in the results of the studies. In summary, it can be concluded that all group factors enhance and strengthen environmental collective action at the individual level. However, their expression and effects at the group and movement levels are currently understudied.

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# Youth climate activism in the Portuguese countryside: continuities and discontinuities in claims and performances of the movement

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## Abstract

Studies have often neglected the dynamics between engagement *and* disengagement in climate action, particularly, in rural areas. Thus, greater attention is required for understanding the processes that lead to the continuities and discontinuities of acts of citizenship and solidarity in context of underrepresented geographies. In a rural city historically marked by a conservative political ideology in Portugal, the youth mobilised in unprecedented ways to join the Fridays for Futures (FFF) movement in 2019. Secondary school students and teachers gathered in the main square to demand immediate climate action. Yet, the "collective effervescence" eventually faded away. This presentation explores the traces of such disengagement process by looking at how performative politics, as a strategy to bring new symbolic resources and interpretations to current political struggles, becomes relevant or irrelevant in protest claims and repertoires. We conducted a short-term ethnography from March 2023 until October 2023 with the collective that originally organised FFF in that region. We thematically analysed field notes and the collective's social media, tracing back the peak of involvement in climate action and analysing the influence of normative forces in the current discontinuity of the climate mobilisation. The collective attributed this disengagement to the desertification of the countryside where intergenerational claims may become obsolete in a city progressively devoid of youth. Our analysis also highlighted that the continuity was ensured by both grounding and expanding the claims, i.e., rendering them in locally based and intersectionality-oriented ways. This included advocating for rights related to (rural) women, LGBTIQA+ individuals, and housing conditions by occupying public spaces even in the absence of strong popular mobilisation. We argue that climate activism needs to be analysed in relation to everyday dynamics that reflect the particularities of and in place, shaping political struggles, agencies, and repertoires for action.

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# Because it is ours: The impact of public participation on collective ownership and acceptance of local river restorations

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**Keywords / Relevant Terms:** Collective psychological ownership, river restoration, quasi- experimental longitudinal study, paticipatory intervention

## Abstract

River restorations are an important measure for promoting local biodiversity, providing benefits to both people and nature. While the Swiss public supports river restorations in general, actual projects often meet resistance by the local communities, possibly because people become aware of personal costs the project brings along, such as no longer accessible river areas. Collective psychological ownership of the river (i.e. feeling as one of the owners of the river) could shift the focus from perceived personal costs to perceived benefits for the owned object (i.e. the river) and might thus increase support of the local restoration project. Moreover, research suggests that ownership – and thus support – could be increased by involving people in planning around the river. We tested our assumptions in a quasi-experimental longitudinal study in two regions in Switzerland where river restorations were being implemented. In both regions, people could participate in public workshops in which the planning of the restoration project was reflected. We collected data before and after the workshops. Of the 326 people who participated in both waves, 49 attended a workshop. While neither acceptance nor ownership increased through participation, two of the antecedents of ownership identified in the literature, namely self- investment and control, did increase. Specifically, at wave 2, people in the intervention group (but not those in the control group) felt to have invested more time and effort into the development of the local river and to have more control over decisions around their river than at wave 1. Moreover, increased feelings of self-investment and control were associated with increased feeling of ownership, which, in turn, was associated with increased acceptance of the restoration project. Together, our findings suggest that public participation could be an important measure to increase support of local river restoration projects by increasing collective psychological ownership.

# SPECIAL ACTIVITY 7:

# TRANSDISCIPLINARY ADVANCING CAPACITY FOR CLIMATE AND ENVIRONMENT

# Reflections on (co-)producing, exchanging and using environmental social science knowledges across transdisciplinary contexts: Panel discussion hosted by ACCESS

Golding, Sarah (1); Guilbert, Steven (2); Warren, George (1); Verfuerth, Caroline (3); Twigger-Ross, Clare (4); Whitmarsh, Lorraine (5); Devine-Wright, Patrick (2)

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**Keywords / Relevant Terms:** Knowledge Exchange, Impact, Climate Change, Biodiversity Loss, Societal Change

## Abstract

ACCESS (Advancing Capacity for Climate and Environment Social Science) is an innovative project (https://accessnetwork.uk/) that works to advance the impact of the environmental social sciences across transdisciplinary settings. ACCESS seeks to achieve this through a variety of transdisciplinary knowledge exchange activities that help to build capacity, strengthen community, and support the rapid and agile use of social science in the context of climate change, biodiversity loss, land management, and other environmental challenges. ACCESS is funded for 5 years (January 2022 – January 2027) by the UK Economic and Social Research Council. The project is underpinned by three intertwining Guiding Principles (Environmental Sustainability, Knowledge Co-Production and Equality, Diversity and Inclusion). This transdisciplinary panel session will start with a series of short provocations from ACCESS- affiliated presenters, followed by a panel discussion between presenters and the audience. Provocations will explore issues across three areas: 1) transdisciplinary knowledge (co-)production, e.g., how might we more effectively co-produce research findings across disciplines and sectors, 2) transdisciplinary knowledge exchange, e.g. how might we support more meaningful dialogues about research findings across disciplines and sectors, 3) transdisciplinary knowledge use, e.g. how are social science research findings used and integrated across disciplines and sectors to create socially meaningful impact. Presenters will draw on examples from their varied careers, sharing reflections on the benefits and challenges of transdisciplinary working, including applications of the ACCESS Guiding Principles. ACCESS is a UK-based and primarily UK-centric project, so the session will start from this positionality, but the international audience will be invited to share their comments, critiques, and alternative perspectives on transdisciplinary working. Building capacity amongst environmental social scientists to advocate for the importance of social science knowledges and to successfully navigate transdisciplinary contexts will be vital in helping us tackle urgent environmental challenges and achieve just transitions to low-carbon, sustainable societies.

# SPECIAL ACTIVITY 8:

# VIRTUAL REALITY, AI & ENVIRONMENT

# Situational assessment for virtual reality

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**Keywords / Relevant Terms:** situational perception; diamonds model; social exclusion (ostracism); emotional responses; mental health

## Abstract

Manipulation checks in social psychology are routinely based on arbitrary questionnaires. Here, we present the DIAMONDS model of situational perception, an empirically-derived taxonomy of dimensions akin to the “Big Five” in personality psychology- that can be used to measure how any given situation is perceived, including virtual reality scenarios or standard social psychology experiments. In the present study, we specifically examined how ostracism or social exclusion alters individuals' situational perception and behavior to demonstrate the potential of the DIAMONDS framework.

Participants played Cyberball, a virtual ball-tossing game where experimenters control the frequency with which participants receive the ball -thereby allowing to induce social inclusion and exclusion. We found that ostracism leads to significant changes in how people perceive situations, particularly increasing perceptions of Adversity, Negativity, and Deception while reducing Positivity and Sociality. These findings suggest that ostracism changes not only mood but also the “cognitive lenses” through which situations are interpreted.

We also demonstrated that situational perception explains more variance in participants’ emotional responses to ostracism than personality traits alone. This held true in both between-subject (n=349) and within-subject designs (n=259). Therefore, situational perception constitutes an important yet largely overlooked construct that may help bridge the gap between dispositional and situational factors.

This has broad applications in social and clinical psychology, as understanding how individuals appraise situations could allow for a fairer comparison across studies and eventually aid in treating disorders such as social anxiety. Indeed, at the end of the talk we briefly outlined how we plan to integrate virtual reality, artificial intelligence, and neuroimaging to better situational perception in depression, and to gauge its therapeutic potential. In conclusion, situational perception, especially as shaped by social exclusion, may be a key factor in understanding and addressing individual differences in mental health and behavior.

# Virtual Reality for Enhancing Mental Health in a Changing World

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**Keywords / Relevant Terms:** virtual reality (vr); mental health; artificial intelligence (ai); climate change; self-therapy

## Abstract

The world is changing in many ways. In recent years, we've witnessed technological advancements that once seemed confined to science fiction. Innovations such as artificial intelligence (AI), natural language processing (NLP), and auto-generated graphics and audio-visual processing have significantly accelerated the development of virtual reality (VR) applications.

Alongside technological progress (or perhaps even partly because of it) we are facing alarming global environmental shifts. Climate change is not just about weather, the disrupted ecosystems are having profound social impacts, including climate-driven migration. Those affected may face mental health challenges, particularly stress, anxiety and depression, brought on by unpredictability, insecurity and the grief of losing their homes and livelihoods.

Thankfully, technological advances can serve as valuable tools in addressing some of these challenges, including the mental health impacts of climate change. In our study, we tested a remote-access virtual reality (VR) tool designed to alleviate symptoms of depression and anxiety. This system involved participants engaging in self-dialogue over the course of four sessions, during which they interacted with two avatars: one representing themselves (the patient) and the other embodying Sigmund Freud (the counselor). The results were promising. The VR self-therapy system significantly reduced the emotional distress associated with the issues addressed in each session. Moreover, the therapeutic benefits were sustained over time, with participants reporting reduced symptoms of depression and anxiety fifteen days after the sessions.

Given its remote and controlled nature, this system offers a valuable complement to traditional therapy, enabling mental health professionals to reach more patients at a much accessible cost.

# Reimagining end-of-life care: A co-creation odyssey into authentically personalizing virtual nature experiences for transformative farewells to loved places

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**Keywords / Relevant Terms:** end-of-life, co-creation, virtual nature, personalized nature, virtual reality

## Abstract

The intersection of person-centered design, environmental psychology principles, and end-of-life care holds transformative potential, particularly in end-stage chronic obstructive pulmonary disease (COPD). The study focuses on David, an outdoor enthusiast whose world contracted alongside his wife/caregiver, Anne, from an end-stage COPD diagnosis. COPD significantly impacts over 15 million adults in the U.S., limiting their ability to breathe and engage in activities of daily living and spending time outdoors (author, year). Through extensive meetings and phone calls, we gathered personalized insights into David and Anne's cherished outdoor experiences they no longer could enjoy. David was barred from enjoying the “adrenaline junkie” activities that connected him to his home in Upstate South Carolina (U.S.), like white water kayaking. Anne spent every waking moment as a primary caregiver and could not revisit nature spaces for her own or the couple’s shared restoration. The research team scouted the significant landscapes from David and Anne’s cherished memories of specific nature-based places in Upstate South Carolina and used virtual reality (VR) to reimagine these memory-filled places with continuous feedback from David and Anne. The resulting personalized VR journey allowed the couple to revisit their beloved nature spots, offering comfort and joy during David's final days in hospice care. This study underscores the importance of person- centered design in personalizing patient care technology, especially for individuals who cannot safely access their favorite outdoor spaces due to health constraints. The co-designing of nature-based VR experiences with patients and caregivers transcends the role of technology as a mere tool, transforming it into a meaningful bridge to lost experiences and a source of empowerment. This presentation will focus on authentically co-creating and personalizing a virtual nature experience for end-of-life care, lessons learned from this experience, and future directions for re-gifting cherished nature memories for patients and caregivers.

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# Virtual nature environments in promoting psychological stress recovery: A comparison between three different technologies for delivering virtual nature

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**Keywords / Relevant Terms**: virtual nature, virtual environments, room-scale, stress recovery, restoration

## Abstract

Background and objectives: Visiting nature has been shown to be beneficial for psychological stress recovery. However, for many people, access to nature is limited. Technological development has enabled creating nature environments virtually. There have been some positive findings on the ability of virtual nature environments to have positive effects on psychological stress recovery, however, these have been partly contradicting and overall the research is still quite limited.

Process and methods: This empirical study examined the benefits of a same virtual nature (forest) environment delivered through different technologies on psychological stress recovery measures of restoration, current stress, subjective vitality, and affect. The technologies were: TV, VR-headset, and virtual nature room. We applied a three-condition three-visit repeated measurement structure, where 62 participants visited once in each condition for a 15-minute exposure of virtual nature and responded to psychological measures before and after each condition.

Main results: Overall, participants' restoration increased, while current stress and negative affect decreased during the exposure. In comparison to the control (TV) condition, both the VR-headset and VN-room had a better effect on psychological stress recovery, as restoration and subjective vitality increased more and negative affect decreased more. There were no statistically significant differences between the VR-headset and VN-room conditions in any of the measures.

Implications for research and practice: This study demonstrates that VR-headsets and VN-rooms are both viable options to promote psychological stress recovery when access to actual nature is limited. In practice, virtual nature solutions in workplaces, educational facilities, elderly care, or even homes can be a feasible way to promote stress recovery.

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# Empowering Collective Housing with Artificial Intelligence: The Future of Collective Living

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**Keywords / Relevant Terms**: Collective Housing, Artificial Intelligence, Housing Equity, Technology, Society

## Abstract

Advances in artificial intelligence (AI) are reshaping the housing sector, from design and construction processes to the overall living experience. In collective housing, the integration of artificial intelligence technology is changing architectural spaces and reshaping how residents live together. This study aims to explore the role of AI in collective housing, particularly its impact on space utilization, resident lifestyles, interpersonal relationships, and property management.

Initially, the study evaluates how key technologies influence collective housing development, such as elevators and reinforced concrete. It then examines the interplay between technology and sociocultural factors through urban case studies. Upon understanding technology's role in various sociocultural contexts, the study then examines AI application cases to evaluate their potential opportunities to enhance living conditions in modern collective residences. Subsequently, the study develops methodologies for AI implementation in collective housing and assesses the significant social implications of such technologically advanced living spaces.

The findings indicate that AI positively impacts social relations in collective housing by enhancing neighborhood interactions, reducing conflicts, supporting individual aspirations, and contributing to equitable property management. These contribute to enhancing housing equity, an important aspect of social justice. AI also facilitates more flexible collaborative living in collective housing, bringing about higher efficiency through the flexible use of some units, moving beyond traditional private-public boundaries.

The study suggests practical improvements for property management and occupancy equity in collective housing, aiming to create a more efficient and equitable living environment.

Existing research typically focuses on how to improve residential design methods through AI or develop related algorithms. However, this study shift understands the value of AI in housing from a social perspective. In its conclusion, it reveals AI usage scenarios in collective housing, offering a perspective on understanding AI technology's application in housing from a social justice viewpoint.

# SPECIAL ACTIVITY 9:

# RISK, RISK PERCEPTION, FLOODING AND COASTAL PHENOMENA

# Risk, Risk Perception, Flooding And Coastal Phenomena in the framework of Climate Change in Mediterranean Region

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(1) Department of Applied Physics, University of Barcelona

**Keywords / Relevant Terms**: Climate change, Mediterranean, Sea level, Socioeconomic differences, Marine biodiversity

## Abstract

In 2020, the First Mediterranean Assessment Report (MedECC, 2020) was published. It served as the basis for the transversal chapter on the Mediterranean in the VI AR of IPCC (2022) and constitutes the reference report used by the Union for the Mediterranean and the countries that are part of the Barcelona Convention. The report concluded that the Mediterranean basin was heating up 20% faster than the global average and that in 2040 the temperature in the Mediterranean could rise 2.2 °C above the average pre-industrial temperature. As a consequence, precipitation will decrease by 4% per each degree of temperature increase, and sea level could bid more than 90 cm by 2100. In coastal areas, rising sea levels will likely impact infrastructure as well as cultural heritage and will cause the loss of agricultural land due to salinity and sea floods. Furthermore, the report estimated that more than 180 million people living near the coast will running out of water near 2050. Among the non-climatic change factors the increase in air and water pollution, urbanization and land degradation along with the reduction of concrete land, overfishing and the entry of invasive species that threaten marine biodiversity were also considered. In this sense experts have calculated that by 2050, cereal fields will decrease by 17%, 40% of endemic fish species will become extinct and that 20% of marine species will be lost. The report also highlighted how the North-South and West-East socioeconomic differences would be amplified if the necessary measures are not taken, severely aggravating living conditions in North Africa and promoting migratory movements. The presentation will focus on presenting the coastal risks due to climate and environmental change in this region, with special emphasis on the social impacts that they may have. It concludes with the call to all citizens in the face of a challenge that cannot be silenced.

In this context, the session on Risk, Risk Perception, Flooding and Coastal Phenomena addressed both the challenges and proposals for risk mitigation and adaptation to situations that will become increasingly frequent or intense. Three of the presentations focused on the Mediterranean region, as we can see below. Among the adaptation measures, the city of Barcelona is committed to the Blue Economy, as a coastal backbone of the city's progress with sustainable criteria in alliance with the 2030 Agenda and the Strategic Plan for the Coast. Josep Hurtado highlighted within this planning the creation of the Mediterranean Reference Centre for Maritime Technology.

Alexandra Schleyer has opted for transdisciplinarity, as demonstrated by the PRECOAST (Perception of coastal risks and adaptation by territorial actors in Provence-Alpes-Côte d'Azur) programme, which integrates scientific and practical social knowledge, and the OSIRISC (Integrated Observatory of Coastal Risks of Submersion and Erosion) project, which integrates observation of coastal erosion and flooding with observation of the factors that determine greater or lesser vulnerability. The challenge lies in sharing methods, languages and objectives from all the disciplines necessary to address the risks. Along the same lines, there is the presentation by Elsa Giffard, where within projects such as C3-RiskMed (Compound and connected natural risks in the Spanish Mediterranean coast in the face of climate change) or CoastSpace (Developing adaptation strategies for the Catalan coast to the impacts of climate change) the vulnerability of coastal systems, social perception, the limits for coastal adaptation measures, and possible NBS (Nature Base Solutions) are addressed. Following a quantitative survey with more than 200 respondents, Giffard highlighted the importance that the population attaches to climate change and the environment. However, as discussed in the debate, this importance is not reflected in a notable change in the population's attitudes and habits.

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# Resilience, a comprehensive explanation of Barcelona's blue economy bet

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**Keywords / Relevant Terms:** Blue economy; Coastal areas; Strategic plan; Sustainable development; Economic sustainability

## Abstract

The Strategic Plan for the city's coastal areas is a planning instrument that aims to organize and manage all the urban areas of the city's seafront, and therefore covers the coastal neighborhoods, ports, beaches, facilities and open spaces. Until now, there has never been a joint strategy that encompasses all these areas.

With a 10-year time frame (2018-2028), the plan proposes reclaiming the seafront as a quality public area that is open to and enjoyed by all, considering the urban aspect, the environment and the uses of the territory. With a diagnosis completed, the plan takes the form of a set of projects and strategic actions along the city's coastline.

The blue economy covers the productive activities and services that are more specific to the coastline (they need the sea to be carried out). The diagnosis shows that these are sectors that generate greater multiplier effects than other economic activities established along the Barcelona coastline. Promoting new social and solidarity economy initiatives related to the blue economy would generate more inclusive, quality employment, as well as helping to promote seafaring trades, recover the historical memory of coastal neighborhoods, and disseminate and promote maritime culture.

The diagnosis of the Coastal Plan shows that for every direct job, 1.73 are generated indirectly and inductively (compared to an average of 1.10 for coastal activities) and for every euro generated directly, maritime activities generate 1.17 directly and inductively (compared to an average of 0.98 for coastal activities). Faced with the opportunity to promote the development of maritime activities with a high multiplier effect, Barcelona is prioritizing the development of the potential of the city's blue economy. In particular, carrying out activities whose innovation focus is on sustainability and technology so that they become a vector for job creation and economic and social development in the city and a key element of the city's coastline.

Commitment to the blue economy is an example of one of the paths towards becoming the city of the Barcelona Green Deal, Europe's 2030 Agenda and the UN's Sustainable Development Goals, making a considerable contribution to economic sustainability and the creation of quality jobs, through innovation and technological transference. The development of the blue economy offers greater resilience to the manufacturing and business sectors, contributing to the diversification of the economy and the generation of quality employment, while promoting innovation and modern and sustainable infrastructures.

# Science–Policy interaction for coastal adaptation and management: is it a match?

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**Keywords / Relevant Terms:** adaptation, French coast, territoral inertia, interdisciplinarity

## Abstract

Coastal cities need to adapt to undisputed consequences of climate change such as sea- level rise. But risk perception is also a social construction which must be considered in adaptation policies. Our study is based on a strong interdisciplinary approach elaborated between geography and psychology, starting with the concepts of “territory” and “social representation”. This approach enables to conceive risk perception as integrated in a wider set of issues concerning the territory.

Semi-structured interviews with a stratified sample of municipal level authorities (elected officials and technical agents) were conducted in 29 coastal cities in the south of France.

The interview guide covered four topics: general vision of the territory and its coastal zone, perception of climate change, coastal management and development policy, and future vision of the coastline. The recorded interviews were transcribed and analysed quantitatively as well as qualitatively in a comparative thematic analysis. Results show that social representations are centred around beaches and urban development. The major risk raised is beach erosion. The future management of the coastal area is conceived in a continuity between past and present and creative adaptation proposals are rare. The possibilities of structural adaptation are largely ignored. The discourse reflects a strong territorial inertia, where the territory’s past engagements and identity are projected into the future. A notable development could origin in the younger generation of municipal authorities.

At present French mediterranean coastal municipalities lean more towards resistance than towards adaptation regarding climate change. To accompany a paradigm shift, policy makers need to strengthen efforts to raise awareness of climate change on the coast and value actions which are already taken. Apprehending and considering local urban identity is an important leverage.

The contribution is important in its resolute interdisciplinary, even transdisciplinary approach, opening the possibility of comparisons through a replicable methodology.

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# Barriers and drivers to social acceptance of Nature-based Solutions for coastal risk adaptation in Catalonia

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**Keywords / Relevant Terms**: Adaptive coastal management, Social acceptance, Governance, Nature-based Solutions, Managed retreat

## Abstract

In the context of rising concerns for coastal communities exposed to hazardous risks, worsened by climate change impacts, hard protective infrastructures have shown their limits and related negative impacts over time, while cutting-edge adaptive measures are gaining more attention globally. The Catalan coast, characterized by its over-urbanization, high population density, and intense tourism activity, is also subject to the aforementioned growing risks. In that respect, Nature-based Solutions - such as the use, management, restoration, or creation of coastal buffer ecosystems -, along with managed retreat intervention, appear as a promising intervention for facing future socio-environmental challenges. The present study, as part of the National-funded CoastSpace project, aims to define the barriers and drivers to social acceptance of Nature-based Solutions and Managed Retreat for coastal adaptation in Catalonia. Hence, combining a scientific literature review with various Catalan case studies analysis, technical, institutional, and psychological barriers were identified to outline innovative governance opportunities facilitating the implementation of these measures. Results showed that complex socio-environmental systems need more coordinated efforts, visions, and interests from decision-makers, supported by strong political leadership to foster populations' trust in institutions. Communication, learning, and pedagogy also appeared as key tools to promote these measures and help lift the barriers to their implementation, by allowing a paradigm shift from protective hold-the-line strategies towards adaptive retreating and renaturalizing ones, accepting the inevitable reduction of the shoreline.

# Leveraging Virtual Reality for Storm Surge Risk Education: Findings from Two Studies in the Southeast U.S.

Browning, Matthew (1); Frank, Alex (2); Yuan, Shuai (1); Ahn, Grace (2);

(1) Clemson University; (2) University of Georgia Athens

**Keywords / Relevant Terms:** virtual reality, storm surge, climate change, risk perception

## Abstract

Virtual reality (VR) offers an engaging means to educate coastal residents about the escalating hurricanes, stormsurges, and other risks exacerbated by climate change.We conducted two studies using a novel VR simulation developed by the University of Georgia's Centerfor Advanced Computer- Human Ecosystems in collaboration with Clemson University's Virtual Reality -amp; Nature Lab.

In the first study, the perceptions of 42 community leaders regarding the use of VR in storm surge risk education were collected. Qualitative analysis explored ease of use and usefulness after leaders experienced our storm surge simulation. Factors such as emotional impact, novelty, scalability, and customizability shaped leaders' judgments. Customization was vital for tailoring risk education to specific communities. While leaders acknowledged VR's emotional impact and novelty, they also expressedconcerns about limitedVR adoption among users and accessibility challenges.

In the second study, undergraduate students (N=101) were randomly assigned to two groups: one solely receiving risk communication messaging in VR, and one receiving combined messaging with VR-basedpractice of mitigation tactics. Both groups engaged in risk communication through a virtualcoastal home exploration, an informative video,and a simulated storm surge scenario. VR-based practice was exclusiveto the intervention group, allowing them to prepare for the storm (i.e., securing flood insurance and elevating homes). Pre- and post-questionnaires measured issue involvement, efficacy, hope, and mitigation intentions. Results underscored VR's impact on risk communication.

Participantswere likelyto perceivestorm surgeas avital and relevant issue.Hope emerged as a key driver of issue involvement, and spatial presence heightened intentions to adopt real-world mitigation measures.

These studies support VR as an emerging educational technology for climate change resilience andadaptation. Expanding its application to various markets and natural disasters beyond storm surges may provideinnovative risk communication strategies that elevate awareness, engagement, and real- world mitigation intentions.

# “It’s the environment stupid!”: Protecting the marine environment is now more important to citizens across 14 European countries than promoting economic growth

White, Mathew (1); Arato, Jozsef (1); Davison, Sophie (2); Krainz, Morris (3); Taylor, Timothy (2); Pahl, Sabine (1); Kellert, Paula (4); Fleming, Lora (2);

(1) University of Vienna; (2) University of Exeter; (3) University of Geneva; (4) European Marine Board

**Keywords / Relevant Terms**: Environmental concern; Environmental Change; Sustainable growth; Marine environments; Public surveys

## Abstract

US president Bill Clinton’s campaign team famously used the phrase “it’s the economy stupid” to keep campaigners’ minds focused on what voters really cared about. Thirty years later is this still true, or are other concerns, most notably the environmental crises facing us, rising higher up the public’s agenda? To explore this issue, we focused on the marine environment in particular, using survey data from over 14,000 people across 14 European countries, representative on age, gender and region, collected as part of the EU H2020 funded Seas Oceans and Public Health in Europe (SOPHIE) project. Citizens were asked about both: i) their own preferences for marine-related economic, environmental and human health policy goals; and ii) their ‘second-order’ beliefs about the preferences of policy makers for these same three goals. Results found that the public consistently prioritized environmental protection, and to a lesser extent public health, over economic growth. This was consistent across all 14 countries, among those who lived near the coast and inland, and across all points on the political spectrum (right, centrist or left leaning). The public also consistently believed that policy makers cared significantly more about economic growth and less about environmental and human health protection than they themselves did. At least with respect to the marine environment, the European public believes that policy makers are seriously out-of- touch with growing, widespread environmental concerns. Results suggest that if policy makers really care about public opinion (and possibly getting (re)elected) they need to start considering whether it’s time to shift away from the old mantra of economic growth to using more up-to-date campaigning slogans such as “it’s the environment stupid!”.

# SPECIAL ACTIVITY 10:

# ARCHITECT-CLIENT RELATIONS. TOP DOWN, BOTTOM-UP DESIGN AND EVALUATION STRATEGIES

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# Architect-Client Relations. Top down, bottom-up design and evaluation strategies - Session Sumary

Frediani Sarfati, Arturo (1);

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COAC- The Official Architects' Association of Catalonia

**Keywords / Relevant Terms**: Architect-Client Relations; Top-Down and Bottom-Up Design Collaborative Design Strategies; Inclusivity in Design Process

## Abstract

The debate featured Júlia Bertran Borrás, PhD from UPC and professor of architectural projects at ETSAB (Barcelona); Ricardo Devesa, Editor-in-Chief of ACTAR (Barcelona-New York); and Karmele Herranz, environmental psychologist at Tecnalia-BRTA, the Basque Alliance for Urban Research and Technological Development, based in San Sebastian.

In an engaging private debate, the complexities of architect-client relations were explored through the lenses of top-down and bottom-up design and evaluation strategies. The discussion kicked off with a focus (Frediani) on top-down approaches, where architects wield authority in decision-making, often prioritizing aesthetic and functional aspects while interpreting client needs. Herranz argued that this method can streamline the design process and yield cohesive outcomes, especially in large-scale projects with diverse stakeholders. However, Bertran raised concerns about the potential disconnect between the architect's vision and the client's expectations, emphasizing the risk of alienating clients who feel their voices are overlooked.

Conversely, the bottom-up strategy was championed for its emphasis on collaboration and client involvement from the outset. Everyone agreed on the importance of understanding user experiences and environmental contexts, arguing that this approach fosters deeper satisfaction and usability in the final design. Devesa cited successful projects where iterative feedback loops allowed for adaptive designs that genuinely reflected client aspirations and community needs.

In the end the debate also touched on the role of technology in facilitating these interactions. Digital tools and platforms were praised for enabling real-time collaboration and visualization, bridging gaps between architects and clients. However, it concerns accessibility and the digital divide surfaced, prompting discussions about inclusivity in the design process.

In conclusion, the debate highlighted the necessity for a balanced approach that integrates both top-down and bottom-up strategies. By fostering a collaborative environment while respecting professional expertise, architects can enhance client relations and create more meaningful, user-centered spaces that align with environmental psychology principles. The exchange underscored the evolving nature of architect-client dynamics in a rapidly changing societal landscape.

# Domestic Architectural Design as a Collaborative Practice in the Professional Studio as Well as in the Teaching Scenario

Beltran Borràs, Júlia (1);

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**Keywords / Relevant Terms**: architect-client relations, Barcelona, architectural design, building, dwelling

## Abstract

This contribution aims to explain some innovative proposals in contemporary architecture in Barcelona in the wake of the two most recent crises in Spain: the 2008 global financial crisis and the 2020 pandemic. These crises have precipitated a transformation in the inhabits of population and a change in the professional and teaching scenario.

Two projects designed by the studio Voltes cooperativa d'arquitectura have been chosen to illustrate this new architect-client relationship: the building of Ruderal, a cooperative cohousing project in Barcelona linked to the grassroots movement in the Vallcarca neighbourhood, and the transformation of an isolated farmhouse into a rural cooperative cohousing promoted by a community of female, trans and non-binary persons. These projects can be explained by two key drivers of change: the evidence of the planetary climate crisis, which requires professionals to reuse existing structures and choose more sustainable materials for economic and environmental reasons, and the increasing involvement of users or inhabitants in the design process, even generating a certain degree of co-production. The challenge for domestic architectural design in both cases is to involve local communities, and to incorporate a new culture of sharing (co-living, co-working, crowd-funding) as well as demographic shifts (challenging the traditional nuclear family as the only model for organising society).

The training of architects in universities should be affected by these changes in society and the professional scenario. Architecture is the result of the concordance of three levels in a space-time situation: DESIGN (the mental), BUILDING (the physical) and DWELING (the social). This is the dialogical approach based on the theories of the philosophers Paul Ricoeur and Mikhail Bakhtin. This approach is very useful for understanding an architecture based on reality, which creates places to live with aesthetic intentions. Module I of the MBArch Contemporay Project at the ETSAB/UPC, in the 2023-2024 course, is an example of how to introduce into the teaching scenario a realistic housing model designed for citizens who choose to live and work collectively. The exercise consisted of finding existing spaces in the Les Corts district to work on reprogramming, extension or new construction. The opportunity in this case was getting students to work together, sharing cross-cultural experiences, and developing critical thinking about the city.

This special activity is a challenge to share experiences focused on architectural design in Barcelona and other cities, involving different professionals and users. It is important to discuss design as a collaborative practice, to learn from what has been done well and what can be improved, inviting professionals, researchers and educators from different technical and social science disciplines to the discussion. These spaces of debate make possible to observe the interactions between professional studio experience, involving both public and private institutions, and the critical thinking developed within the teaching scenario.

# Cohousing in Barcelona: Architecture from / for the Community

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**Keywords / Relevant Terms**: Cooperative Housing; Architecture and Urban Planning Community Living; Sustainability in Design

## Abstract

Barcelona offers a prime example of the co-housing model as an asset prized for its use value as opposed to investment. This book is a compilation of cooperative housing projects in Barcelona, both complete and under construction. It explains how the co-housing process is managed in terms of architecture, urban planning, financing, legality, and taxation, and delves into the experience of living in a community fueled by a cooperative spirit.

The content of the book, edited by David Lorente, Tomoko Sakamoto, Ricardo Devesa, and Marta Bugés, presents designs for cooperative housing, accompanied by a critical vision of the model's implications in terms of the transfer of use or co-living. Finished and inhabited projects are compiled along with ongoing projects, to offer a general view of this way of living in Barcelona. The case studies are explained by members of cooperatives, experts and designers who look at aspects of design, sustainability, construction and urban life. This book is a tool for understanding the design and construction of co-housing and the community life that goes on there.

# The transdisciplinary response to the demands of society (administrations, companies and citizens) that affect human and social behaviour. 25 years of plural experience in TECNALIA

Herranz, Karmele (1);

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**Keywords / Relevant Terms**: Transdisciplinary Interventions; Environmental Noise Mitigation; Climate Change Adaptation; Comfortable and Healthy Public Spaces

## Abstract

This session presents some of the most significant interventions in which I have participated in TECNALIA. TECNALIA is a centre for applied research and technological development that forms part of BRTA (Basque Research and Technology Alliance) and is a benchmark in both Spain and Europe. I will focus specifically on interventions that constitute transdisciplinary responses to the demands of society. To do so, I will take a longitudinal view along the main challenges faced by our society. First, I will deal with interventions aimed at mitigating the impact of environmental noise in our urban environments (late 20th century). The second challenge we face in the early years of the 21st century is that of integral sustainability (environmental, social and economic). The third is that of adaptation to climate change, focusing on soft interventions (NbS) and their associated benefits. And the fourth, which also integrates the previous ones, is related to the design and promotion of comfortable and healthy public spaces. All these interventions have been approached from a transdisciplinary perspective where different disciplines (Physics, Chemistry, Architecture, Urban Planning, Geography, Environmental Sciences, Sociology... and Environmental Psychology) have shared points of view and have grown. Most of the environmental and urban problems (and improvements) we have faced implicitly or explicitly involve individual and social human behaviour (noise, pollution, environmental or urban destruction, rising temperatures...). This is why, when tackling these challenges, it is necessary to integrate social disciplines, such as environmental psychology, because it has the tools and the background to grasp and understand part of the phenomenon, such as individual and social behaviour. The joint and integrated analysis of the different disciplines allows us to provide a complete (transdisciplinary) response to the main challenges facing our society.

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# The impact of commercial intervention based on intergenerational differences on sustainable development and residents' satisfaction in China's old communities

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**Keywords / Relevant Terms:** Old neighborhood space renewal; Resident satisfaction; Intergenerational difference; Commercial intervention; Sustainable development;

## Abstract

With the continuous development of the economy and society, the fierce competition in the core business circle and the homogenization of commercial operations promote the rise of community business, and policy orientation has become a powerful driving force for the development of community business. New commercial supply is gradually moving to populated areas, further opening up the community commercial market. Chinese community business models are diverse. However, the development of community commerce also leads to the problem that the community cannot develop sustainably due to the low satisfaction of residents with commercial intervention. This study conducted field investigations on old residential areas in Harbin City, Meihekou City and Fuyun County, China, and combined questionnaire collection with the evaluation of residents' satisfaction with community business and the impact of residential business model and space on residential environment. The study found that the existing old residential space has problems such as single and repeated business model, occupation of residential space by commercial space, poor infrastructure, small activity space, etc., which lead to low satisfaction of residents with the old community, so that the community can not achieve better sustainable development. Through questionnaire analysis, it is concluded that there are significant differences in residents' commercial evaluation of residential areas, differences in community business models and residents' satisfaction evaluation, and residents' evaluation of commercial space is correlated with environmental evaluation of residential areas. Therefore, this study aims to improve the satisfaction and happiness of residents in residential areas by constructing commercial Spaces that meet the needs of residents in different residential areas. Finally, it puts forward the commercial spatial model of residential areas to meet the different needs of generations and the sustainable development strategy of community space under commercial intervention.

# SPECIAL ACTIVITY 11:

# ECOANXIETY, HEALTH EFFECTS OF CONTACT WITH NATURE

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# Health and Nature Program of the Catalan Strategy for Natural Heritage and Biodiversity - “EsNatura”

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**Keywords / Relevant Terms:** climate anxiety, eco-worry, eco-anxiety, nature connectedness, pro-environmental behaviours

## Abstract

There is more and more scientific evidence showing that nature provides us with irreplaceable benefits for health and well-being, in the three dimensions that make up the human being: physical, psychological and spiritual. Direct contact with nature can, among other benefits, improve the general state of health and increase physical vitality, improve psychological balance and well-being, improve social interaction and cohesion, foster the capacity for wonder, the sense of unity and belonging. We need a healthy nature (in a good state of conservation) to be able to have a healthy life and integral human development and therefore our health depends on the health of the Earth's ecosystems, and more particularly, on the health of the ecosystems of the places where we live, from the territories where the air we breathe is purified, those that collect the water we drink, or those where the food that nourishes us grows. Thus, contact with nature has an important preventive function, and can also, in certain cases, have remarkable therapeutic or healing functions.

Given the importance of the health and well-being benefits of contact with nature, from the General Directorate of Environmental Policies and the Natural Environment, a new line of action has been added into the Strategy for the Natural Heritage ans Biodiversity of Catalonia 2030 (EsNatura), in its new Action Plan 2023-26, in order to address this issue in a comprehensive way and to be able to effectively address and propose actions.

In strategic objective 6.1: "Wide people's awareness in relation to natural heritage and biodiversity", two new lines of priority action have been included, both with several new actions to be deployed in the period 2023-2026.

·AL: 63 "Integrate the benefits of nature for people's health and well-being in conservation policies, and in the set of sectoral policies" and a second related to governance

·AL 64 "Design and implement the governance of the Health and Nature program"

The main targets to be achieved are the following:

·Design the Health and Nature Program 2023-2026
·Develop the health and nature conceptual framework
·Design and conduct a seminar on Planetary Health at the Public Administration School of Catalonia
·Organize a course on health and nature for Natural Parcs staff
·Incorporate in the "balance-nature" campaign the importance and interdependence of health and nature
·Develop a web page on health and nature
·Prepare a catalog of health-nature initiatives in natural protected areaas NPA
·Integrate health and nature initiatives into the environmental education and volunteering programs ofNPA
·Deploy actions to promote and spread the interdependence of health and nature
·Establish criteria for the design and implementation of a network of healthy itineraries in the NPA
·Incorporate Health and Nature in the Strategic Plans of the NPA
·Deployed Health and Nature initiatives aimed at specific groups in the network of healthy itineraries (health personnel, elderly people, young people, mental illnesses...)
·Facilitate pilot research projects on health and nature in the NPA
·Incorporate the health and nature axis in the European Chart of sustainable Tourism Action Plans (CETS) or in their renewal
·Have an updated map of health and nature assets
·Carry out actions to promote the prescription of nature and assess the degree of implementation
·Carry out and implement the annual dissemination actions of the Health and Nature Table, hold the annual meetings of the membres and increase its scope with the addition of new members
·Define the common articulation of the health and nature territorial tables
·Establish the Territorial Table Health and Nature in Terres de l'Ebre and facilitate and deploy its roadmap
·Establish the Health and Nature Territorial Board in Girona and facilitate and deploy its roadmap
·Establish the Health and Natura Table for children, teens ans youth
·Involve the Natural Parks and/or Territorial Services in the Territorial Tables and/or thematic working groups

As main results we expect to implement all the objectives of the Action Plan for the period 2023-2026

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# Blue Therapies: Benefits and applications of blue health

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**Keywords / Relevant Terms:** Blue Therapies; Blue Health; Aquatic Environments

## Abstract

Blue therapies represent an innovative approach within the broader field of blue health, exploring how natural aquatic environments can enhance the physical and mental well-being of individuals. This concept of blue health has been developed by scientists and health professionals interested in the positive effects of nature on human health, specifically focusing on aquatic environments. Blue therapies utilize seawater to enhance quality of life and personal well-being. Activities conducted in aquatic environments, such as swimming or sailing, are often performed in groups, which can strengthen social relationships and improve emotional well-being. Seawater, rich in minerals like magnesium, potassium, and sodium, offers recognized health benefits. These therapies include various principles, such as using seawater as a therapeutic element, engaging in physical and recreational activities in marine environments, and the psychological benefits derived from contact with nature. Specific activities within blue therapies range from water sports to water treatments like physiotherapy, hydrotherapy, and thalassotherapy, as well as the use of "blue spaces" for walking, strolling, and observing marine therapy centers. For example, sail training promotes vital life skills such as responsibility, discipline, adaptability, and decision-making under pressure, and encourages collaborative learning and effective communication among team members. The benefits of blue therapies manifest both physically—improving physical condition, reducing muscle and joint pain, aiding post-surgical rehabilitation, and enhancing cardiovascular capacity—and mentally, by reducing stress and improving mood through decreased cortisol levels and increased neurotransmitters such as dopamine and serotonin.

Community applications include inclusive and educational programs that enable people with disabilities to participate in aquatic activities, and promote social cohesion and community belonging through projects that use water as a meeting point. Project Thalassa exemplifies this approach by combining water aerobics and metacognitive training in patients with psychotic disorders, showing significant improvements in symptomatology, physical health, and quality of life. In conclusion, integrating blue therapies into blue health programs is essential for a holistic approach to health and wellness. These practices not only offer significant benefits for physical and mental health but also promote life skills, social inclusion, and environmental awareness. The combination of therapeutic components such as seawater and structured activities enriches the overall quality of life and well-being of individuals. In the subsequent discussion following the presentation, the main ideas that emerged were positively valued. The initiative was recognized as extremely interesting and promising. However, a lack of cross-disciplinary training in this field was highlighted, with a critical observation on the insufficient training offerings in this specialty in Spain and Europe, suggesting a need to more actively expand and promote these therapeutic practices.

# Contributing to mental wellbeing and generation of nature-based sustainable interactions though historical parts in the Pyrennees. The Melhorament at “Cami dels Bons Homes” (The Goodmen Trail)

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A professional project developed for theBerguedà Development Agency (Regional Administration).
FEDER Fund Interregional Program Spain-France-Andorra (POCTEFA 2014-2020)
with Alexandre Miró; Karina Behar; Albert Feliu

**Keywords / Relevant Terms:** Blue Therapies; Blue Health; Aquatic Environments

## Abstract

Catalonia has many interesting options for hiking throughout the country. In addition to enhancing physical activity and connecting with nature these hiking trails offer experiences that can support our well-being in various ways. One such well-established route is the Camí dels Bons Homes (the Route of the Cathars). It is a hiking trail of around 200 km marked as GR-107, which links Montsegur (Ariege –France) and Berga (Berguedà-Catalonia). It can be travelled by foot, by mountain bike and on horseback. In addition to spectacular landscapes and due to its rich history, this route allows one to evoke the medieval world on both sides of the Pyrenees, while also serves as a reminder of values such as peace, respect and justice.

Beyond thebenefits of walking and connectingwith nature, the Camí dels Bons Homes also allows us to enjoy the local gastronomy, culture, history, and literature, as well as offering a sense of adventure. Through the Melhorament project, benefits associated to emotional well-being and mental health have been explored, in relation to the completion of this trail or some stages of the itinerary. The results strongly indicate that walking this route reduces symptoms related to psychological discomfort on one hand, and on the other increases well-being and satisfaction with life, among other aspects of psychological well-being.

To carry out the study, standarized questionnaires specifically validated in the field of psychology were used, which allowed us for example to measure the changes at base level and their endurance in the medium term. For instance, the reduction of symptoms related to psychological discomfort and the improvement of the positive effect.

Apart from exploring the well-being effects associated with walking the Camí dels Bons Homes, the Melhorament project has also had other objectives such as generating new proposals in the field of sustainable tourism and forest therapy. These objectives were met and exceeded the original aim. For example, this study has led to creating a number of new itineraries that utilises the practice of conscious walking. Thus incorporating the identified therapeutic benefits with the rest of the values of the itinerary previously mentioned. As a result we were able to enrich and expand the purpose and the potential audience of this route.

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# Nature Connectedness, Eco-Anxiety and Pro-Environmental Engagement: Unraveling Patterns in the GeneralPopulation and Urban Forest PlantingParticipants

Parmentier, Marie-Laure (1); Weiss, Karine (2); Ponserd, Sergine (3); Andalo, Christophe (3); Navarro, Oscar (2)

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**Keywords / Relevant Terms**: climate anxiety,eco-worry, eco-anxiety, natureconnectedness, pro-environmental behaviours

## Abstract

Eco-anxiety is emerging as a worldwide significant concern within the context of climate change and the ecological crisis. Several studies have indicated a positive correlation between natureconnectedness and eco-worryor climate anxiety.Conversely, interventions centeredaround connecting with nature are frequently suggested as strategies to alleviate eco-anxiety. Our study sought to explore the relationships between nature connectedness (NC) and contact with nature (CN) with eco-worry, climateanxiety-related impairments, and engagement in pro-environmental behaviors (PEB), both in the general population, and in a specificgroup engaged in planting urbanforests. A survey,incorporating measures of nature connectedness, contact with nature, environmental crisis perception, eco-worry, climate anxiety-related impairments, and PEB engagement, was administered to 440 adults, including 48 participants involved in urban forest planting. Path analysis was conducted based onpreviously established associations between environmental crisis perception, eco-worry, climate anxiety,and engagement in PEB. Our analysis revealeda more robust direct positiverelationship between NC and eco-worry in comparison to CN and eco-worry within the general population sample. This trend was also observed in the directrelationships of both NC and CN with PEB engagement. Conversely, the direct association of both NC and CN with climate anxiety-related impairments was found to be non-significant. Individuals engaged in urban forestplanting exhibited significantly higher levels of NC, eco-worry, climate anxiety-related impairment, and PEB engagement. Intriguingly, within this subgroup, the direct relationship between CN and climate anxiety-related impairments was significantly negative. Our findings provide evidence of a positive effect of contact with nature, particularly within a group of individuals characterized by elevated NC and eco-anxiety reactions, already engaged in nature-based actions such as planting urban forests. Collectively, our results align with the notion that nature connectedness, rather than contactwith nature alone,may facilitate PEB engagement, correlating with higher levels of eco-worry.

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# Mapping the transition to climate-smart healthcare: A geospatial analysis of green hospitals

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**Keywords / Relevant Terms**: sustainable healthcare, system transitions, geospatial analysis, climate change, public health

## Abstract

Climate change poses an unparalleled threat to public health by worsening health conditions and inequities on both local and global scales. Concurrently, the increasing frequency and severity of extreme weather events can cause critical disruptions to patient care, further straining health systems. Hence, improving healthcare resilience requires significant climate action. Yet, ironically, the global health sector itself amplifies the climate-health crisis through intensive energy consumption, massive waste generation, rapid resource depletion, and environmental contamination. To protect the wellbeing of current and future generations, it is therefore imperative to transition to climate-smart healthcare systems that can withstand the climate disasters of tomorrow while minimizing their own environmental footprint today. As the most polluting health system in the world, the American healthcare sector in particular must take urgent strides toward sustainability.

While previous research has examined sustainability transitions in other sectors (e.g., transportation, energy), the healthcare sector has received little attention. Moreover, prior work has largely focused on the temporal event-chains within system transitions while neglecting their spatial dynamics. Yet systems do not transition in a uniform, linear fashion but instead comprise context-specific, place-based, emergent processes, leading to spatial variability in the trajectory of transitions. This original research maps out green hospitals across the USA to examine national healthcare transition patterns including sustainability 'hotspots.' Contextual analysis of 'hotspots' then enables further exploration of how localized social, political, and economic factors may influence the diffusion and clustering of climate-smart healthcare practices. As anchor institutions in society, hospitals are uniquely positioned to spearhead cross-sectoral climate action, making the healthcare transition an indispensable cornerstone of the overall shift toward low-carbon societies. Thus, understanding how and where sustainability shifts unfold not only offers novel theoretical insights but also carries practical implications for future policies at the climate-health nexus.

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# Review of Psychological Parameters as Certification Criteria for Health Parks: Preliminary Experimental Study on Selected Indicators

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**Keywords / Relevant Terms**: Nature, Urban parks, Health benefits, Environmental indicators, Certification

## Abstract

Numerous studies emphasize the positive impact of natural environments on physical and psychological health. Recent research highlights urban parks as potential interventions for health issues (Keniger et al., 2013). However, not all natural environments offer equal benefits (Herzog et al., 2003). Variations in landscape types, elements, and spatial characteristics determine effects on aesthetic preference, regenerative perception, and health promotion.

This work focuses on indicators relevant to parks' effects on users' well-being. After an initial literature review, relevant indicators were identified and for each of them, the following parameters were determined: requirement (necessary quality for certification), critical thresholds (minimum acceptable level), objective (quantifiable design characteristics) and/or subjective measurements (user judgments).

Then, an experimental study is conducted on four indicators (blue elements, floral coverage, chromatic biodiversity, faunal biodiversity), using AI-generated images, with the same urban park as baseline, in which each of the targeted indicators was added singly, creating a new image.

Pre-testing in a pilot study confirmed effective perception of images based on the relative presence of each indicator. The exploratory objective is to examine indicators' effects on place attractiveness, willingness to visit, place perception in terms of pleasantness and relaxation, emotional reactions in terms of valence and arousal, perceived restorativeness, and potential selection of the place for emotion regulation.
In synergy with experts from different disciplines, the ultimate goal is to certify parks as “Health Parks”, possessing an adequate level of the identified indicators and thus characterized by high potential for benefits. The associated certification system is promoted by various Italian entities, including Assoverde and Confagricoltura.

# SPECIAL ACTIVITY 12:

# INTRODUCING SUSTAINABILITY TO UNIVERSITY TRAINING AND MANAGEMENT

# Towards a Sustaibable University. University of Barcelona Strategy to Achieving Sustainable Development Goals

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(1) Vice-rector for Sustainability and Climate Action. University of Barcelona

**Keywords / Relevant Terms**: Sustainable Development Goals (SDGs); Climate Emergency; Sustainability in Higher Education; Responsible Consumption and Mobility

## Abstract

The University of Barcelona commitment to the Sustainable Development Goals (SGD) is one of the hallmarks of our identity. Sustainability is a transversal imperative that must inform any public institution's structure, goals, operations and assessment of results. Given that our universities are prime observers of reality and key institutions in its transformation, the climate emergency puts us face to face with one of the most serious challenges ever to be confronted in the centuries-old history of higher learning. Here, we present the main lines of action being pursued by our institution with the aim of casting just such a light on possible and desirable futures. This is because we must all share jointly in our responsibility in at least three key areas: generating knowledge, solving problems and raising awareness. In the first area, universities are institutions which, by virtue of our activity and operations, mobilize resources and people that can contribute to reducing the causes of the climate emergency.

Based on this premise, we have enacted a whole series of measures, such as the roadmap for sustainability and ecological conduct, and the UB's energy savings plan. Together, these efforts seek to lower energy costs, promote responsible mobility, incentivize the workings of the circular economy and increase responsible consumption in every corner of our institution. In the second area, universities are leading figures in two crucial fields of endeavour: teaching, and research and transfer. In the case of teaching, the inclusion of transversal skills and competences in every bachelor's, master's and doctoral degree at the UB is the goal of a project first launched in 2022. The effort, which has a horizon of 2025, will be marked by two key milestones. The first is for the UB to ensure that it has accredited teaching staff capable of delivering the training involved as well as support staff that can effectively undertake the processes in relation to specific transversal courses and the incorporation of the sustainability perspective in all teaching plans. The second is to provide training in the resulting skills and competences, once adapted to the realities of each discipline, to all students and trainee researchers at the University of Barcelona. In the case of research and transfer, excellent research that is both interdisciplinary and international, together with the transfer of research results, must focus our efforts towards finding more and better responses to the challenge before us. In the third area, our public universities have a duty to society.

This is why the UB is rolling out a whole series of actions to raise awareness, drawing on the institution's organs of communication, dissemination and culture to name but a few, in order to sharpen the focus on an accurate description of the different dimensions of the issue, publicize the latest advancements in debates on how we must face it, and contribute to ensuring that our community and the broader public adopt a responsible climate attitude.

The session on Introducing sustainability to university training and management is an opportunity for meeting and debate where universities can share their experiences and forge alliances, which are more necessary than ever if we are to make progress on the road to sustainability.

# “Let’s Reduce the Use of Fossil Fuels!” Carbon Neutrality the Next 2030. UAB Politics and Strategies

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(1) Vice-rector for Campus and Sustainability. UAB - Autonomous University of Barcelona

**Keywords / Relevant Terms**: Climate Neutrality 2030; Carbon Footprint Reduction; Renewable Energy Transition; Sustainability in Higher Education; Ecological Transition

## Abstract

Our University, the Universitat Autònoma de Barcelona (UAB), has a long history of commitment to the sustainability. It was pioneer in creating the Environmental Science degree in Spain and the master's degree in Interdisciplinary Studies in Environmental, Economic and Social Sustainability; it is home to the Institute of Environmental Science and Technology (ICTA-UAB), an interdisciplinary and international research centre which works with several UAB departments and one of the top internationally-renowned research centres; and has carried out different plans to improve the sustainability management of its campus, such as the Sustainability Plan (2013-2017), the Healthy and Sustainable Campus Plan (2018-2022) and the SiS Campus Plan (2023). In fact, the University's 2018-2030 Strategic Plan explicitly states the intention to implement a sustainable university model, placing special emphasis on training, environmental awareness and mobility. We recently approved the University's Climate Policy Programme. This plan aims not only to reduce the consumption of water and energy, but also eliminate the use of fossil fuels and advance in the reduction of indirect emissions caused by University activities to achieve climate neutrality by 2030, with the compromise of also compensating for any greenhouse gas (GHG) emissions that cannot be reduced.

The measures include reducing water and energy consumption, gradually reducing the University's direct GHG emissions to achieve carbon neutrality by 2030, progressively abandoning the use of fossil fuels with their total replacement by renewable energies by 2030, incorporating the calculation of the carbon footprint in new construction, joining internationally recognised sustainability platforms and networks, adding the criterion of low-carbon public procurement in contracting processes, and incorporating content on ecological transition, sustainability and climate change in its training offer, among others.

In 2018, UAB achieved a significant reduction in its carbon footprint, when it began purchasing electricity from renewable sources. While in 2015 total emissions were 40,420 tons of CO2, in 2023 this figure lowered to 24,593 tons. Broadly speaking, according to the provisional 2023 closing data, 79% of GHG emissions at the UAB were generated by mobility to travel to the campus, 12% by gas consumption in buildings, and 4% by business travels.

The next academic year (2024/25) will be dedicated to raising awareness of the need to minimise the use of fossil fuels. Under the slogan “Let's reduce the use of fossil fuels!” several activities have been programmed to raise awareness among society about the need to reduce the consumption of oil, coal and gas, and increase the use of clean and renewable energies. The thematic year will begin with the start of the second edition of the UAB Science Carriage, an initiative organised jointly by the UAB and the Ferrocarrils de la Generalitat de Catalunya (FGC) offering an interactive monothematic exhibition inside one of the trains travelling to and from the UAB during all the year. The activities will continue, among others, with the institutional inauguration of the 24/25 academic year. The inaugural lecture will be given by Dr Kevin Anderson, professor of Energy anc Climate Change at the University of Manchester and former director of the Tyndall Centre for Climate Change Research (UK).

The debate was very successful as we shared how to address the introduction of new transversal contents, such as the ecological transition, in all the degrees, beyond the specific or specialized curricula.

# UPC Politics and strategies for Sustainability. Sustainability Campus Plan

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(1) Team for Sustainability Policy at UPC-Polytechnical University of Catalonia

**Keywords / Relevant Terms**: Sustainable Campus Plan; Climate Action and Energy Transition; Responsible Consumption; Healthy Campus; Sustainable Development Goals (SDGs)

## Abstract

Since the Universitat Politècnica de Catalunya - BarcelonaTech (UPC) adopted its first Environmental Plan in 1996, much has changed in terms of sustainability: regulations, social perceptions, CO2 concentrations and the related climate and biodiversity emergency. Despite these changes, the passion and support of a community that wants to live and work in a healthy environment remains the same. In 2022, around 1000 people contributed to the definition of the UPC 2030 Sustainable Campus Plan. This plan requires the entire community to work together to achieve 20 commitments, grouped into four thematic areas and three cross-cutting areas.

The four thematic areas related to sustainable campus management are: climate action, energy transition, responsible consumption and healthy campuses. Climate action is closely linked to Sustainable Development Goal 13 (SDG13). It deals with reducing and offsetting emissions on campus, as well as calculating risks and adapting to the effects of climate change. The energy transition area is linked to the achievement of SDG7. The focus is on significantly increasing the share of renewable energy and improving energy efficiency. Responsible consumption is linked to the achievement of SDG12. It focuses on promoting the efficient use of resources throughout their lifecycle. The plan sets out challenges such as waste prevention, introducing alternatives to single-use plastics and reducing landfill waste. The healthy campus is an emerging area at the UPC, linked to SDG3, health and well-being, and SDG11, sustainable cities and communities. The aim of the healthy campus is to promote the wellbeing and quality of life of the campus community and contribute to global health challenges.

The cross-cutting areas refer to the fact that it is communities, not objects or technologies, that should be made sustainable. The environmental leadership area will work on actions that have a social impact, in order to influence the achievement of the SDGs. The culture of sustainability area brings together actions focused on changing people's habits on and off campus, through the promotion of good practices, the creation of networks and the adoption of regulations in university processes and governance. Finally, the Campus Lab area aims to transform campuses into living laboratories for applied research on sustainability.

As part of the conference debate, we discussed real cases and underlying dilemmas related to implementing a sustainability plan at a university like UPC. For example, we all agreed that it is not an easy task to meet a carbon budget and deal with the need to buy new ICT equipment to improve cybersecurity, or to tackle the flight emissions of staff assisting at congresses like this one. We also discussed the importance of having resources, a network of motivated people and clear political accountability for commitments.

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# France's policy for the introduction of Sustainability in academic training and university management

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(1) Nîmes of University

**Keywords / Relevant Terms**: Ecological Transition; Green Competence Framework; Climate Change Education; Curriculum Transformation and Teacher Training

## Abstract

This communication is based on the recommendations from the French Ministry of Higher Education, Research and Innovation): In February 2022, the Jouzel & Abbadie report (for the Ministry of Higher Education, Research and Innovation) stated that « 100% of students (2 years degree) must be trained in the challenges of the ecological transition within 5 years ». Following this report, in June 2023, the Ministry gave its guidelines, including details and recommendations for teachers and students.

The training and awareness-raising for 1st cycle students (1st and 2nd years) will be implemented during the 2025/2026 academic year. The common base should include teachers training, the integration of training into disciplines and syllabuses, with a transformation of the curricula, and the specialization with the development of associated « green professions ». The GreenComp reference framework should be favored (European framework of competences in the field of sustainability). Knowledge and skills will concern 4 main topics: Climate change (attenuation & adaptation), Biodiversity and its preservation, Resources and their disponibility (including energy), Fair transition and social equity (sustained attention). A survey has been conducted in Nîmes University with students and teachers in order to catch their feelings and reactions. From the students' point of view, there are two main difficulties: students' interest in these courses and time. From teachers' point of view, there is a shared concern about the resources that will be put in place to support teachers in implementing these new teaching programs.

# The Sustainability Cultural Indicators Program at the University of Michigan: an overview and future directions

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**Keywords / Relevant Terms**: sustainability indicators, culture, universities

## Abstract

Like many universities throughout the world, the University of Michigan (U-M) has been actively engagedin sustainability initiatives designed to reduce it carbonfootprint, eliminate waste,and promote healthy ecosystems and communities. U-M has also made explicit efforts to change the cultureof sustainability withinthe university community. That is, it attempts to raise the level of sustainability awareness, promote pro-environmental behaviors, and encourage engagement among its students,faculty, and staff.Furthermore, U-M has also been innovative in its effortsto measure and monitor changes in the culture of sustainability through its Sustainability Cultural Indicators Program (SCIP). Since 2012, SCIP has conducted six surveys with large samples of its students, faculty, and staff. The surveys have measured the thoughts, experiences, behaviors, and levels of awareness of various aspects of sustainability and climate change. Aspects of sustainability range from travel and waste prevention to energy conservation, and sustainable foods. SCIP is an evaluation tool used to inform U-M officials and others responsible for day-to- day university operations including its educational programs.This presentation gives an overviewof SCIP including its history,and approach. Next, examples of the uses of findingsby operational personnel are summarized. Based on experiences over the past decade, the presentation then reviews the benefits of sustainability surveys such as SCIP. Among the benefits are opportunities for environment-behavior research. Finally, plans for on-going work at U-M and in other settings including otheruniversities in the U. S. and elsewhere are discussed.

# SPECIAL ACTIVITY 13:

# PHYSICAL SPACE OF THE WORKPLACE, HEALTH, AND BURNOUT

# Optimizing the Workplace and Sustainability on Companies. Reconnecting Work with Nature

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**Keywords / Relevant Terms:** Biophilic Design; Workplace Well-being; Employee Productivity; Nature Integration; Health and Performance

**Abstract**

Humans have an innate connection with nature, a result of thousands of years of evolution in natural environments. Numerous studies have scientifically proven that contact with nature offers significant benefits for human physiological systems, cognitive functions, sleep quality, and emotional well-being.

In business, the largest operational cost is often personnel. Investing in health by integrating nature into the work environment can boost productivity and improve profit margins. Biophilic design, widely used in the U.S. and Europe, brings nature into workspaces, enhancing health, well-being, and employee performance.

Companies that incorporate nature into their practices become more humane and efficient. Employees feel a sense of pride and belonging to an organization that cares about people and the environment.

A well-designed workplace balances productivity with the personal and social needs of employees by creating spaces that promote collaboration and well-being. This includes meetings, training, and rest areas that encourage cooperation and co-creation, essential for a healthy and efficient company. Rational design ensures that work processes flow smoothly, minimizing unnecessary effort, while technology is integrated thoughtfully to align with human needs and limitations. Moreover, the balance between form and function is crucial, as the quality of the physical environment—through elements like natural light, color, cleanliness, and order—directly impacts employee attitudes and productivity, enhancing both functionality and aesthetics.

MIESES Global, a non-profit organization, has developed the 4P strategy to help companies assess their culture of excellence in four key areas: People, Harm Prevention, Planet, and Prosperity. Based on this evaluation, an action plan is created to improve the work environment.

# The Impact of Sensory Processing on Office Workers' Well-being, Burnout Symptoms, and Satisfaction in Diverse Office Environments

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**Keywords / Relevant Terms:** Sensory sensitivity, Burnout, Office, Occupational health

**Abstract**

Sensory challenges at work are a growing concern with recent evidence hinting at a connection between sensory sensitivity, occupational stress, and burnout. Yet, while variable sensory sensitivity among the population is recognized, a significant knowledge gap exists regarding its link to office environment attributes and occupational health.

We conducted a cross-sectional survey involving 327 office workersacross various industries in Great Britain. The study cohort, spanning ages 18 to 64 years, consisted of individuals who spent a minimum of three days per week working at their primary office location.

Regression analyses confirm our hypothesis that individuals who are sensory sensitive (with lower neurological thresholds) tend to experience a higher prevalence of burnout symptoms,reduced well- being, and diminished work environment satisfaction. The relationship varies by office type, categorized as sensory-friendly and sensory-unfriendly.

This study provides first empirical indications for the association between sensory sensitivity, office designcharacteristics, and severe occupational health impacts.Further research is needed. In the long term, the development of targeted interventions aimed at mitigating burnout symptoms and promotingenhanced well-being and work environment satisfaction within the diverse landscape of modern officesettings is warranted.

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# Influence of other user's presence in the office lounge with the natural environment

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**Keywords / Relevant Terms:** office, natural environment, stress, restorative effect, presence

## Abstract

In the modern world, one of the major causes of stress is reported at the office. There have been many studies on the green effects in the natural environment that improve the human condition. However, the typical office lounge is used as a communal place in the office, and a few researches have detected a clear influence of other user's presence on the restorative effect.

In this study, the authors conducted the experiment to clarify the restorative effects when the other person is next to the office lounge or not by the heart rate variability and Perceived Restorativeness Scale (PRS) that assesses the restorative values of the environment. In this paper, only the PRS as a preliminary report is discussed.

The experiment consists the four office lounges, Type A is located on the grass and next to the other person, and Type B is also located on the grass but surrounded by a tarp to avoid the other user's presence. Type C is surrounded by plants and next to the other person, type D is surrounded by more plants which interrupt the other user's presence. As a result, when the participants move to Type B, the average PRS score of "being away" is significantly higher than other Types (B vs A and C: $p < 0.01$, B vs D: $p < 0.05$, $n=31$), and the "compatibility" and "preference" is significantly higher than Type C ($p < 0.05$, $n=31$). From the above-mentioned results conclude that other users' presence could influence the restorative effect in the office lounge.

The results suggest it is important to make the individual space in the office lounge. In future studies, we are to investigate the relationship between RPS and heart rate variability to reveal the restorative effect when avoiding other uses in the office lounge.

# Green Walls at Workplaces: Key Considerations for Implementation – A Pilot Study

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(1) Mälardalen University

Keywords / Relevant Terms: workspace, indoor green environment, decision-making, employee well-being.

## Abstract

Background and Objectives: This pilot study investigates the motivations driving companies to invest in indoor air- purifying green walls. The primary aim is to understand the key considerations behind the adoption of these innovative solutions for workspace enhancement and strategies for improving workplace environments.

Process and Methods: The study is based on six in-depth interviews with professionals responsible for workspace management and development in the Nordic countries. It focuses on comprehending factors influencing the adoption of indoor green walls, employing thematic analysis to interpret the data.

Main Results: While exploring the adoption of indoor green walls, the study unveiled a broader corporate interest in elevating overall workplace conditions. Interviewees underscored commitments to sustainability, flexible workspace designs, and fostering a positive employee experience—beyond the perceived benefits of air purification and aesthetic enhancements from green walls. Despite positive reception, challenges emerged during interviews. Decision-makers expressed concerns about the initial economic investment, scepticism regarding tangible benefits, the necessity for continuous maintenance, and worries about space constraints.

Implications for Research and Practice/Policy: Results suggest that companies' motivations for adopting indoor air-purifying green walls extend beyond specific product features. Understanding these motivations can inform future research on workspace innovation and provide practical insights for organizations aiming to create healthier and more sustainable work environments.

Importance and Originality of the Contribution: This pilot study marks the initial exploration into the decision-making processes behind the adoption of indoor air-purifying green walls, offering insights into broader workplace improvement strategies. By addressing challenges and revealing underlying motivations, the study contributes to the ongoing dialogue on sustainable and employee-centred workspace practices.

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# KPI-Driven Design: A Tool for Designers to Improve Key Performance Indicators in Post-Covid Workplace Design

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**Keywords / Relevant Terms**: Key Performance Indicators, KPI, Workplace Design, Post- Pandemic, Interactive Tool

## Abstract

The COVID-19 pandemic has prompted observable shifts in architectural practices and urban planning, with a discernible impact on individuals' lives, well-being, and work dynamics. While the future of work will include variations of being remote as an essential way of doing business, the physical office building will continue to maintain an important role for most industries and cities. As employers are strategically reassessing and testing new workplace paradigms, it is important to understand the evolution of key performance indicators (KPIs) and the impact of building design on these metrics. This research develops a tool for designers based on a systematic literature review of 26 peer-reviewed papers from 154 publications between 2018-2022. The selected papers explore the workplace KPIs in the post-covid era which are related to the employees' performance, and the building design strategies that affect them. This tool aims to assist designers in creating spaces that enhance employees' performance and experience in their workplace.

The KPIs identified in the literature synthesis were categorized into two groups:
(1) subjective KPIs, which show how employees perceive their experience in the workplace and includes self-reported performance and work engagement, and
(2) objective KPIs, which show how employees perform in their workplace through cognitive tests and sensors which includes concentration level, reaction level and accuracy rate. This study also identifies seven groups of design approaches in the literature to improve the KPIs which include acoustic design, lighting design, office layout, office dimension, workstation design, space control, and biophilia design.
The tool has a user-friendly interface, making it easy for designers to access relevant information about the relationship between KPIs and architectural design. This enables design teams to support their ideas and choices with data-driven insights during proposals and client meetings.

# SPECIAL ACTIVITY 14:

# INTERNATIONAL AND GLOBAL RESEARCH FOR SUSTAINABILITY TRANSITIONS: A CROSS-DISCIPLINARY APPROACH

# Activating sustainable lifestyles: a space and time approach: The GLAMURS project

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(1) University of A Coruña

**Keywords / Relevant Terms:** Global Research, sustainability, transitions, cross-disciplinary international

## Abstract

One of the achievements of environmental psychology has been the recognition of its capacity to respond to new social challenges, providing conceptual frameworks to understand key aspects of global problems, and methodologies to explore people-environment interactions. However, to approach these problems, psychology has not done it alone, but with other disciplines, both from the field of social sciences, and more technological fields.

Throughout these last three decades, psychologists and other professionals from other disciplines have completed global research, with an international perspective, addressing thematic priorities established within frameworks defined by multiple actors in the context of the research and innovation framework program of the EU and other institutions.

We present examples of collaborative research on global problems, which have contributed to the development of public participation models for decision-making in sustainability planning. New models for exploring responsible ecological behavior have been proposed from the perspective of analyzing human factors involved in activating changes in lifestyles and transitions towards sustainability. The study of psychological processes involved in spatially and temporally situated human behavior has been an important theme. By analyzing these trends in research, we will try to give a vision of key developments in Europe and beyond that have meant an advance from this cross-disciplinary approach, and highlight some contributions that made to the unwrapping of “wicked problems” characterizing European societies.

The growing necessity of trans-disciplinary collaborations in solving the multi-faceted problems of climate change is analysed, entering into a fresh and stimulating dialogue with other social and hard sciences tackling these issues from different perspectives, on the one hand, and engaging with other relevant social actors in producing relevant, open and democratic solutions to these problems. These inter- and trans-disciplinary dialogues require reflection on issues of power in the co-production of knowledge, and the introduction of changes in governance.

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# Labour's Hidden Soul: Religion at the Intersection of Labour and the Environment

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**Keywords / Relevant Terms:** Environmental Labour Studies

## Abstract

This paper comes out of the same body of work being presented by Nora Räthzel in this symposium, which is based on four international research projects in which we investigated the environmental policies of trade unions. This programme work, undertaken in Sweden, Spain, UK, Brazil, South Africa, and India, has been supported by a variety of national and international funding bodies, and which we have collectively called GLEANS (Global Labour and Environment Across the North-South). In these projects, we have conducted over 150 interviews and life-history interviews with trade unionists and visited production sites in all countries. While Nora's presentation will focus on issues raised by worker- environmentalism across the globe, the focus here drops down to the scale of the individual. This presentation examines the intersection of individual life-histories, organisational histories and societal histories and reveals how religion, in several different expressions, serves to provide a connection between justice for workers and justice for the environment in the work of trade unionists. The trade union movement is generally seen as secular, and thus in our life-history interviews finding religion as a backdrop to labour activists' formation was unexpected. Religion becomes manifest in various ways, partly through experiences in the present or at formative periods in unionists' lives, but also through its cultural embeddedness in language and collective memory. In this way it serves to provide subtle influences on beliefs, concepts of social justice and daily action.

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# Dilemmas and perspectives of trade union environmental policies in the global north and south

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**Keywords / Relevant Terms:** North - South relations of trade unions, Environmental Labour Studies, cross-disciplinary approach, labour-environmentalism

## Abstract

Since the beginnings of the 21st century trade unions have been active developing environmental policies with the aim to protect jobs as well as nature. Those policies have been and are developed under the heading of a 'just transition' to a sustainable economy. It is self-evident that any changes of production processes in one country have repercussions on workplaces in other parts of the world, since every workplace is an element in a global production network. Nevertheless, environmental policies tend to be created nationally, whether developed by governments or trade unions. We aim to understand the impediments for the development of just transition policies that overcome national boundaries.

In 4 international research projects we researched environmental policies of trade unions in Sweden, Spain, UK, Brazil, South Africa, and India. We conducted over 150 interviews informational and life-history interviews with trade unionists and visited production sites in all countries.

We analysed the results using insights of labour studies, environmental studies and environmental psychology investigating the individual life-histories within the historical contexts of their organisations and the cultural and political histories of their countries.

Findings to be presented are: the importance of individuals in shaping the policies of their respective unions, which could lead to a demise of such policies when they left; the influence of the political history of trade unions on their environmental engagement; the effects of the international global power relations between the global north and south on the possibilities of unions to work together across national boundaries.

Our findings suggest that theoretically we need the development of environmental labour studies that include worker-environmentalism across the globe, practically we suggest that it is necessary for unions to internationalize their environmental policies to create globally effective just transition policies.

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# High-performance computing meets the social sciences: simulating everyday lives during district regeneration in Stockholm for the SMARTEES project

Polhill, Gary (1); Klöckner, Christian (2); Pellegrini Masini, Giuseppe (2); Hales, David (3); Scalco, Andrea (4); Jager, Wander (5);

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**Keywords / Relevant Terms:** District Regeneration, Social Innovation, Agent-Based Social Simulation, High-Performance Computing

## Abstract

Computer simulations are increasingly being used to inform decision-making in complex social-environmental systems that are beset with wicked problems. As psychologists we should know already that human cognition is not necessarily suitable, on its own, to make such decisions well, and it is indeed arguably 'hypocognitive' to assert otherwise. Agent- based social simulation is one computer simulation approach that gained particular prominence during the Covid crisis as it was able to mix individual human behaviour with the dynamics of viral transmission through social interaction in spatially-explicit environments, and provide the basis for exploring policy scenarios to manage the contagion. But it has a longer history, and this talk will demonstrate its use in exploring a transformative social innovation to manage district regeneration in an ethnically diverse area of Stockholm. Such simulations, especially when in the empirical domain, make demands for data and computing resource that go beyond what researchers' laptops can provide. While High-Performance Computing has been traditionally aimed at the natural sciences, agent-based social simulation provides an important 'use case' for social sciences to access these facilities. Besides these practical issues, there are theoretical matters too, to do with developing scientifically-justified algorithms for implementing human behaviours in social and physical environments. The collaboration of Psychologists and Computer Scientists in the 1970s and 1980s gave birth to Artificial Intelligence. Continuing collaborations between Environmental and Social Psychologists and Computing Scientists has significant potential in advancing the state-of-the-art in how we decide what to do about the challenges posed by sustainability and climate change in creating fulfilling lives for humans.

# PREFALC - An International Cooperation Experience (France-Brazil-Colombia)

Hiluy, João (1); Bomfim, Zulmira (1); Salas, Andrès (2); Sanchez-Albaracín, Enrique (3)

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**Keywords / Relevant Terms:** Environment, International Cooperation Program, Urbanism, Sustainability

## Abstract

This work consists on an International Cooperation experience; The Program – PREFALC "Programme Régional France – Amérique Latine – Caraïbes". Since 2002, when it was launched, it had already sponsored more than 70 projects, with130 French partners and 2000 Latin Americans from 20 countries. It aims to create a network between France and Latin-American partners. In this case, it deals more specifically with the Intercultural and Interdisciplinary Urban and Environmental Management Master. The project involved three countries, France, Colombia and Brazil, that developed some actions concerning different kinds of interactions in the environment, urban fields and related areas. During two years, a group of multidisciplinary professors and researchers promoted and enhanced relationships in this academic embracing field (INSA, UNAL, UFC). The team was formed mainly by engineers, architects, psychologists and concerned professionals. Some French, Colombian and Brazilian missions were done to participate, for example, at the Summer School at UNAL, by teaching courses to related subjects. Between these experiences, it should be highlighted some relevant topics and positive results; Environmental Psychology (affective maps), Urban Solid Waste Treatment (energy recovery) and Disposal Technologies (landfills) and Collective Recycling Communities Arrangements, as also other well succeeded cases. Meetings, seminars and cultural research supervisions at master and doctoral programs were made too, considering mainly mutual interest subjects. Some participants, extended their stay in the other country after the end of the Project. The courses and activities used both Spanish and French as common language.

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# Place-Making with Older People, Towards Age Friendly Communities: The PLACEAGE Brazil Project

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**Keywords / Relevant Terms:** ageing in place, social inequalities, global south

## Abstract

The PlaceAge Brazil consists of two projects funded first by ESRC (Economic and Social Research Council) in the UK (2016-2019), and later by CNPQ (National Council for Scientific and Technological Development), FAPERGS (Foundation for the Support of Research in the State of Rio Grande do Sul), and Federal University of Pelotas in Brazil (2016-2024). The research aims are: (i) to investigate how sense of place is experienced by older people from different social settings living in diverse neighbourhoods in Brazil; (ii) to translate these experiences into designs for age friendly communities that support sense of place; (iii) to better articulate the role of older adults as active placemakers in the design process by involving the community at all stages of the research. We undertake a national case study approach. A comparative national case study approach is needed to understand the diversity of place-based experiences of older adults, and how this is influenced by neighbourhood, social contexts, welfare regimes and processes of urban governance and planning. We selected three cities as case studies in Brazil (Brasilia, Pelotas and Belo Horizonte). The case study cities have been selected to represent a broad spectrum of urban areas in terms of demography (mixed tenures by age), inequality (high- and low- income groups), topography (different types of urban densities and form) and urban development (varying levels of physical transformation and change). Quantitative and qualitative methods were applied to understand people's behaviour and sense of place: surveys, interviews, walking interviews, photo diaries, participatory mapping, world cafe, and political forums. The final report was presented for the local government of each case study city and ageing in place public policies having been considered to be implemented in 2024. The Covid pandemic impact on data was also investigated and produced recommendations for health public policies.

# Changes, Challenges and Coping Strategies in the thirteen coal- and carbon-intensive regions in different EU Countries

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(1) University of A Coruña

**Keywords / Relevant Terms**: carbon-intensive regions, decarbonisation, challenges, coping strategies, regional perspective, EU.

## Abstract

In the last decade, all EU countries have introduced several decarbonisation policies to tackle climate change. The main objective of these policies is to achieve the decarbonisation of the economy through the transition from fossil fuels to renewable energy sources, which in turn depends on the closure of carbon-intensive activities (coal mining, thermal power plants, and heavy industry) and the installation of green energy projects. Due to the decarbonisation policies, several changes (in socio-economic, demographic, political, cultural, ecological, psychological, and gender dimensions) are taking place in the coal- and carbon-intensive regions (CCIRs), which are posing new challenges to local people and policymakers and motivating them to design and implement coping strategies to mitigate the adverse effects of these policies.

In this paper, with the qualitative analysis of the semi-structured interviews (8–15 interviews in each region) with the key stakeholders in the thirteen European CCIRs (A Coruña, Brindisi, Sulcis, Stavanger, Lusatia, Rhineland, Central Germany, Krakow, Silesia, Upper Nitra, Upper Styria, Jiu Valley, and South Wales), focus groups (1x13), and co-creation meetings with regional stakeholders (1x13), we have identified several changes taking place in the CCIRs and the challenges raised by them. With the help of regional policymakers, we have also explored the coping strategies used by the different CCIRs to mitigate the challenges posed by the decarbonisation process.

In the results, we find out that all the CCIRs are at different stages of decarbonisation and have a different degree of dependence on fossil fuels and resource availability to cope with this transition. They are experiencing a different set of changes and challenges, which requires a unique set of coping strategies for each region. However, the regions that are at the early stages of decarbonisation can learn from the experiences of the regions that are at the advanced stages of decarbonisation.

# SPECIAL ACTIVITY 15:

# SUSTAINABLE LIFESTYLES, BIODIVERSITY AND HEALTH

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# Motivations, formative experiences and health impacts in the adoption of sustainable lifestyles

Dumitru, Adina (1); Peralbo, Manuel (1); Vieiro, Pilar (1); Losada, Luisa (1); Duran, Montserrat (1)

(1) University of A Coruña

**Keywords / Relevant Terms**: sustainable lifestyles, motivations, formative experiences, health

## Abstract

The change towards the adoption of a low-emission lifestyle represents a commitment made by the EU country members that requires substantial transformations in individuals' lifestyles. In this context, environmental psychology plays a key role in researching how and through which psychological resources people can effectively influence their ecological footprint and/or promote social change as consumers, producers, or active citizens and in shaping innovative solutions. One of the H2020 project EU 1.5° lifestyles aims is to understand the psychological dynamics behind changes in lifestyles.

This paper presents the results of 38 in-depth semi-structured interviews carried out with people who have already performed moderate and high-impact lifestyle changes in at least two lifestyle domains (food, mobility, energy, leisure, housing), carried out in five European countries (Germany, Hungary, Latvia, Spain, and Sweden). The interviews were analysed using a grounded theory approach and supported by MAXQDA. The results focus on identifying the motivations to adopt sustainable lifestyles, the childhood and adolescence experiences that contributed to this decision, and the impacts on physical and mental health.

Based on the results, a series of recommendations will be formulated to encourage lifestyle change.

# Zoonosis Emergence across Degraded and Restored Forest Ecosystems - Introducing the EU Horizon Europe Project ZOE

Kabisch, Nadja (1); Drexler, Felix (2)

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(2) Charité Universitätsmedizin Berlin, Institute of Virology

**Keywords / Relevant Terms**: Zoonoses, Landcover and Landuse Change, Biodiversity Loss, Restoration, Forest Ecosystems

## Abstract

**Contribution as part of the Symposium: Sustainable lifestyles, biodiversity and health** (Conveners: Adina Dumitru & Nadja Kabisch)

Ecosystem degradation and biodiversity loss may facilitate the emergence of zoonotic diseases. In this talk, we introduce the highly interdisciplinary 4-year ZOE project (01/2024-12/2027) which aims at examining the connections between land use changes, loss of biodiversity, and the risk of zoonoses in tropical biodiversity hot-spots facing loss of primary forest and biodiversity and in temperate regions that have undergone ecosystem degradation and deforestation over historical timescales and at different levels of ecosystem degradation.

Our biodiversity assessments will be based on remote sensing-based geographical-information system analyses of landscape structures, geobotanic plant mapping, and targeted trapping of rodents, ticks, and mosquitoes, as prototypic reservoirs and vectors of zoonotic diseases (macro-organism scale). Host and soil-associated microbiome and virome high-throughput sequencing will be combined with assessment of human exposure to prototypic zoonotic pathogens, using high-throughput serological analyses (microbiological scale). ZOE will link with local communities and stakeholders to address perceived land use and land cover changes, disease occurrence, coping strategies, and risk behaviour. Results will be synthesized in modelling and risk mapping frameworks linking biodiversity loss and zoonotic disease risks and tested in forecasting scenarios to feed into cost-efficient monitoring schemes and early warning systems. An online knowledge platform will be created to link all relevant stakeholders of the biodiversity-health nexus, including other EU-funded consortia, national and supranational organizations stakeholders, local communities, and the public. Our ZOE project consists of an interdisciplinary consortium with expertise in geography, geobotanics, ecology, virology, immunology, epidemiology, sociology, psychology, anthropology and science dissemination from 7 EU and 4 American countries.

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# Restorative nature experience for sustainable behavioral change: results of two Italian case studies on support for renewable energy and sustainable lifestyles from the EU-funded "ENCHANT" H2020 and JPI-Solstice "CleanCultures" projects

Carrus, Giuseppe (1); Tiberio, Lorenza (1); Caffaro, Federica (1); De Gregorio, Eugenio (2); Chiara, Masullo (1); Mastandrea, Stefano (1); Amodio, Massimo (3); Brighenti, Jessica (3)

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**Keywords / Relevant Terms:** Renewable energy, restorative environments, sustainable lifestyles, nature-based solutions, heritage conservation

## Abstract

We present the results of a case study conducted in Italy, in the context of the EU-funded HORIZON 2020 research project titled "Energy Efficiency through behaviour change transition strategies - ENCHANT". ENCHANT has reviewed and assessed previously available knowledge about behavioural interventions targeting energy consumption, and to designed, conducted and tested intervention strategies via RCT-like field experiments in six European countries (Norway, Austria, Italy, Germany, Romania, and Turkey). We present and discuss here the preliminary results of a field study testing the efficacy of an information-based behavioural intervention in Italy. The intervention was conducted through the active support of an Italian non-profit foundation devoted to the preservation of the natural, cultural and archaeological heritage in central Italy, (the Fondazione Roffredo Caetani). The Fondazione Caetani is the organization responsible for the management and conservation of the Ninfa Gardens, one of the most known natural sites and gardens in the world, which is usually visited by more than 80.000 visitors every year, and which is also designated as a natural monument by the Italian Republic. Results of our case study (N = 1114) showed that an intervention based on the provision of climate-related information, presented during the visit to such an aesthetically pleasant natural and historical setting, increases individual willingness to donate money for renewable energy projects. Also, our results suggested that feelings of connectedness to nature predict beliefs in global warming, through the mediation of discrete emotions such as guilt and happiness. We also present the preliminary results of the Italian case studies conducted under the JPI-Solstice funded project "CleanCultures", aimed at promoting sustainable lifestyle change in real-life contexts such residential neighbourhoods in Central Italy and Sardinia. We discuss the theoretical and practical implications of these findings for promoting sustainable lifestyles and environmental education through nature-based solutions.

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# Adopting 1.5 lifestyles: internal and psychological resources and challenges

Losada-Puente, Luisa (1); Dumitru, Adina (1); Vieiro, Pilar (1); Pedralbo, Manuel (1); Durán, Montserrat (1)

(1) University of A Coruña

**Keywords / Relevant Terms**: sustainable lifestyles, psychological resources, interviews, barriers

## Abstract

Changes in energy-related behaviour are a matter of urgency on the political agenda, as part of a package of measures aimed at mitigating the impact of climate change and keeping warming below 1.5 degree. Nearly all consumer activities have negative environmental impacts. The growing human influence on climate change (IPCC, 2021) is evident, whose consumption practices have a negative impact on the increase in concentrations of greenhouse gases in the atmosphere. The study of consumption patterns is key to identifying unsustainable habits and preventing/influencing those that have an impact - directly or indirectly - on the destruction of the ecosystem (Thøgersen, 2022).

In this conference paper we examine the main internal or psychological mechanisms reported by people committed to lifestyle change. We also explore the barriers they have faced (or still face) in their adoption of a 1.5 lifestyle in one or more of the main areas of consumption (mobility, food, housing and/or leisure). Through a qualitative study, 38 key informants from five European countries were interviewed.

The results allowed us to identify characteristics such as open-mindedness, a desire for simplicity, and internal beliefs linked to sustainability in people who are highly committed to changing their lifestyles. Doing meaningful things, having knowledge, autonomy, and control over their decisions, feeling responsible for the surrounding environment, and having mechanisms for coping with adverse personal and social circumstances are internal resources for dealing with other internal, social and structural barriers. This in-depth analysis brings us closer to a better understanding of the internal dynamics that enable people to adopt sustainable lifestyles, and the challenges they have faced along the way. This information is relevant to the design and formulation of realistic and feasible strategies and measures for change that engage citizens and encourage them to take real individual and societal responsibility for change.

# The effects of allergic pollen in green space on mental health, behaviour and perceptions

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**Keywords / Relevant Terms**: sustainable lifestyles, biodiversity, health;

## Abstract

The current environmental crisis is shi□ing how we interact with and experience urban nature. Urban green spaces have been well document to provide mental health benefits to people visiting and living nearby. Yet, green spaces may also present some risks to health, such as through the spread of allergenic pollen, which may be becoming more severe as a result of current environmental changes. For instance, climate change related temperature increases are associated with greater pollen production and an earlier and longer pollen season, while the prevalence of allergic diseases worldwide is increasing due in part to these alterations to the global pollen cycle. Whether the relationship between urban green space and mental health is altered by the presence of allergenic pollen remains underexamined.

In this talk, we present the results of a systematic review of research exploring how allergenic pollen in green spaces may alter the mental health, behaviour and perceptions of visitors and those living nearby. We identified that the effect of pollen within green space on mental health is not entirely conclusive. Most studies observed that the presence of pollen (real or perceived) within green space was related to worse mental health effects than green spaces with less pollen. However, a minor selection found little evidence of this effect. We found strong evidence for a relationship between the perceived presence of pollen and negative perceptions of the green space. Allergy sufferers, including those taking medication, were also commonly observed to adapt their behaviour in green spaces, while green spaces with higher objective allergenic pollen counts received less visitors. We also discuss prospects for future research and highlight the need to closely monitor and carefully select the tree species that are planted within green spaces.

# SPECIAL ACTIVITY 16:

# COMMUNICATION AND COMMUNICATION MANAGEMENT

# "Shaping Perceptions and Actions: The Influence of Environmental Communication in Times of Climate Crisis"

Castrechini, Angela (1);

(1) Social Psychology-University of Barcelona

**Keywords / Relevant Terms**: Environmental Communication; Public Awareness; Climate Change Disinformation; Media Influence

## Abstract

In this symposium on Environmental Communication, we will explore the intersections of media, societal attitudes, and environmental responsibility through different lenses, from institutional campaigns to the influence of populism and the challenges of climate denial in digital spaces. Environmental communication is central to shaping public understanding of ecological issues and encouraging pro-environmental behavior. Through mass media, social media, and targeted campaigns, it can effectively bridge the knowledge gap between scientific insights and public perception, fostering a deeper environmental awareness.

Environmental communication has evolved in three major stages. Initially, the focus was on raising awareness of the environmental impacts of industrialization, followed by growing public engagement with environmental policies in the 1990s, and most recently, the advent of digital activism in the 2010s. Throughout, diverse discourses have emerged: scientific and political frameworks dominated earlier discussions, while activist-led messages are more direct and urgent, driven by the climate crisis. Today, as various perspectives influence the narrative—often intensified by polarized debates or conflicting interests—environmental communicators must navigate both the message and its reception with care.

In this session, we will first consider the role of governmental and institutional campaigns in raising environmental awareness by Anna Estella from the Generalitat de Catalunya. The second presentation by Raquel Bertoldo addresses carbon capture and storage (CCS) exploring how media representation varies by political ideology, affecting public perception and acceptability. Thirdly, Susana Batel explores how the Portuguese media reports on the green energy transition, particularly in the context of right-wing populism. Lastly, Valentina Rizzoli delves into climate denial on social media, a growing barrier to effective environmental communication. Using a tool called De-CoDe Risk, the study examines the nuanced language of denial, moral disengagement, and psychological distance.

Discussion Questions:

1. How can institutional campaigns engage broader audiences effectively, especially those traditionally indifferent to environmental issues?

2. What strategies could enhance the public's understanding and acceptance of emerging technologies like CCS?

3. How can environmental communicators prevent their messages from unintentionally reinforcing populist rhetoric?

4. In addressing climate denial on social media, how can communicators balance factual accuracy with the need for accessible, persuasive language?

# “The role of institutions and entities in the right to enjoy and protect nature”. Communication and Management of Communication

Estella, Anna (1)

(1) Deputy Director of Information and Promotion of Sustainability
Generalitat de Catalunya (Catalan Government)

**Keywords / Relevant Terms**: Environmental awareness; Communication campaigns; Natural spaces; Public policies

## Abstract

We will summarize some relevant aspects of the promotion campaigns of the General Directorate of Environmental Policies and the Natural Environment, and how they conduct communication and awareness campaigns.

The environmental protection needs to plan a good communications strategy. In this regard, the Department has its own media and channels that facilitate and allow this communication through social networks, the website or specific newsletters.

The Department of Climate Action, from Catalan Government, it has been promoting environmental awareness campaigns for years with the aim of boosting citizen co-responsibility in the preservation and improvement of our environment. Some examples are the campaigns "No Noise Week", "bags need to be paid for", "Packaging, where do you go?", or the “natural balance” awareness. You can see some samples at https://mediambient.gencat.cat/ca/05_ambits_dactuacio/educacio_i_sostenibilitat/campanyes_i_exposicions/campanyes_de_sensibilitzacio_ambiental

After the confinement and the mobility restrictions caused by COVID-19 in 2020, the influx of visitors to the natural spaces of Catalonia skyrocketed. Along with the increase in visits, a notable increase in anti-social behaviour has been detected, showing that many of the visitors have little connection to nature, and, therefore, were quite unaware of both natural values and the rules that need to be followed for minimise the impact of their visit.

This situation made it necessary advertising campaigns to raise public awareness about the value of Catalan natural spaces and to minimise the impact of their visits to these spaces. It was deemed important:

• Make known that these are spaces which are humanised, beautiful, unique, fragile, irreplaceable, indispensable... and they are part of our natural and cultural heritage.

• We have to show the respectful behaviours and manners that are required , therefore we have to Facilitate access to practical information.

For some of the audiovisual pieces on specific problems, we ask for collabotation same well-known local "influencers", like Carlota Bruna or David Solans, and also same people from the territory who are affected by these problems and who can explain the problems with their own voice, raising awareness about how we can solve them following some simple recommendations. This, in addition of advertising spots, radio and Tv ad and other digital pieces and billboard (for dissemination on social networks and written or external press).

To guarantee the coherence and success of the campaign from the beginning, it is a key idea that it should be a shared campaign between all the administrations and other involved agents like local bodies, environmental entities and projects in the territory that can act as sounding boards for the message.

Awareness campaigns employ media and strategies similar to advertising, although they do not pursue commercial aims. But we are aware that not all campaigns work or reach the audience in the way that had initially been planned.

We can measure the impact through the response of social network users or clicks on ads or website visits, but measuring the change in attitudes or habits only can be done in the long term, if we see the problems decrease.

Therefore, in conclusion and within the framework of this round table, I would like to pose some challenges in the form of questions that can make us reflect together:

· Is the campaign focused on inviting citizens to take action?

· Are we aware that changes in habits involve a personal decision, which depends on each of us?

· Are consistent and exemplary public policies being implemented which are related to the campaign?

What type of language are we using? Is it direct, simple, clear, positive, provocative?

# Carbon Capture and Storage as a solution? A discourse analysis of the press in France

Bertoldo, Raquel (1); Bagci, Ataberk (2); Poumadère, Marc (3)

(1) Aix-Marseille Université; (2) Université Lyon; (3) Institut Symlog de France

**Keywords / Relevant Terms**: Carbon Capture and Storage, social representations, press analysis, discourse analysis, ideology

## Abstract

Carbon Capture and Storage (CCS) technologies propose to capture the CO2 emissions from industrial activities. It is mentioned by the IPCC (2022) – along with nuclear and renewable energies – as one of the climate change mitigation technologies that will help to attain the carbon reduction objectives by 2050. Still, CCS is not well known by the public. Studies on public perception of CCS have mainly inquired about the acceptability of this technology, taking less often into account what its use means in terms of societal choices over CO2 emission reduction. As part of the H2020 PilotSTRATEGY project, this study proposes to use a press analysis to better understand the arguments are advanced in France to present this technology. More precisely, this analysis used the social representations theory to better describe how (1) national and regional (2) right and left-wing media outlets have presented CCS technologies in the period of 2007-2021. Results show that right-wing and center journals focus their reporting on technical issues and economic benefits. Left-wing journals often argue that CCS might contribute to the current situation, inevitably slowing down collective efforts for the reduction of CO2 emissions. Centrist journals present balanced articles arguing both that CCS might be a solution and an issue for CO2 curbing, through detailed examples. Little to no difference was found between how regional and national newspapers present CCS. Results are discussed in terms of how CCS technologies hinders or supports our collective projects to tackle climate change.

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# Green and just energy? An analysis of the intersections of right-wing populism and the energy transition in Portuguese media

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(1) ISCTE- University Institute of Lisbon

**Keywords / Relevant Terms**: green energy transition; socio-environmental justice; media communication; Portugal; qualitative research

## Abstract

Local contestation to the deployment of large-scale renewable energy infrastructures has been increasing around the world, mainly due to the socio-environmental injustices that the so called green energy transition is reproducing or creating anew. Right-wing populism has also been on the rise across the world, and often associated with climate change skepticism and discrimination and violence towards minority groups. This article aims to explore the potential relations between these two socio-political issues, by analyzing Portuguese media discourses on the renewable energy transition and if and how those expose associations with right-wing populist rhetoric. 465 articles published by Portuguese newspapers were analyzed through Thematic Analysis, which revealed three main themes: 'Portugal at the forefront of the low- carbon energy transition – or fostering the identity and the pride of the nation?'; 'RET dominated by powerful economic lobbies – or the need to dethrone the corrupt elite?'; and, less pervasively, 'Beyond nationalism and populism - Energy justice is crucial for the green energy transition but not much is done for that' . These themes are discussed separately and not in conjunction, and with it, do not contribute to a multivocal, politicized and informed discussion of the negative and positive dimensions of the green energy transition as it is being materialized in Portugal. As such, we conclude that the findings do suggest that, even if indirectly, elements of newspapers' media discourses in Portugal seem to support some of the Portuguese far-right wing party - Chega - rhetoric, and give it strength, through the combination of both the populist and nationalist uptakes of far right-wing populist parties often used to mobilize voters. In turn, this might find echo in the feelings of marginalization and disenfranchisement of the rural communities affected by the green energy transition and promote their adherence to Chega's rhetoric.

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# De-CoDe Risk: A Novel Tool for Identifying Climate Change Denial Processes on Social Media

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**Keywords / Relevant Terms**: Risk perception, climate change, Artificial Intelligence, Natural Language Processing

## Abstract

Socio-psychological processes, such as denial, moral disengagement, and psychological distance, can impede the adoption of effective coping behaviours in response to risk events, such as climate change. To build effective risk communication, crucial for risk management, it is essential to recognize and address these processes in a timely manner.

In this contribution, we employ the Risk Co-De model (Author, year) to identify psychosocial processes associated with climate change risk denial, as articulated in natural language within social media communication. This system combines various nuances of consciousness, disengagement, distance, and denial into four distinct macro categories and nine micro categories.

We employed Mistral7b, a large language model based on artificial intelligence and instructed using the Risk Co-De model, to categorize 21,042 English tweets related to climate change.

The tweets were collected between February 18 and October 10, 2019, a period during which the discourse on this topic was highly active on the social media platform Twitter (now X), thanks to the Fridays for Future movement.

The classification result underwent manual verification to assess its coherence to the Co-De categories, revealing a satisfying accuracy in the classification task. Additionally, tweets exhibiting forms of denial were scrutinized to delve deeper into how these processes are expressed in natural language in English.

The discussion of the results will center on the contribution that studying psychosocial processes in natural language through social media can provide to the understanding of risk perception.



# Parallel Paper Sessions

# TOPIC 1:

# CLIMATE CHANGE AND SUSTAINABILITY - CHANGING HUMAN BEHAVIOR

# The Role of Immersive Nature Experiences in Adolescents' Coping with Climate Change

Brown, Abigail (1)

(1) Cornell University

**Keywords / Relevant Terms**: Youth, Climate Change, Coping, Environmental Design, Nature

## Abstract

This presentation discusses the relationship between immersive nature experiences and adolescent climate change (CC) coping strategies. It aims to identify natural environment features that can promote more effective CC coping. How youth cope with CC impacts their well-being. Meaning-focused coping, the most constructive strategy, addresses individual and community-level resilience through collective actions while acknowledging the CC's severity. Constructive coping can minimize the harm that awareness of CC does to well-being while promoting climate action. Evidence-based design can inform the creation of resilient places and encourage the development of resilient youth through constructive CC coping. Affordances provided by natural environments are particularly promising for designing environments that support the development of young people's constructive CC coping and climate action.

This mixed methods study examined adolescents' (ages 14-18) CC coping before and after participating in wilderness excursions of nine, fourteen, twenty-five, and forty-five days (n=76). A subset of participants (n=52) completed daily journal entries on their excursion to provide insight into their day-to-day interactions with the environment. Session attendees will come to understand the relationship between immersive nature experiences and adolescents' coping with CC and be able to describe the role that natural environment features play in designing solutions for helping youth cope constructively with CC.

The conversation around youth development and well-being in a changing climate has not yet examined the role of physical environment design and immersive nature experiences in maximizing positive developmental outcomes. Recognizing features of the natural environment that support more constructive CC coping is important because these features have the potential to be applied in the design of other environments, such as schools, to reach a broader population of youth. Given the profound impact of CC on youth well-being, understanding and supporting constructive CC coping is increasingly important.

# The Climate Change Perceptual Awareness Scale (CCPAS): A Self-Reported Measure of Awareness of Everyday Effects of Climate Change

Cipriani, Enrico (1); Gemignani, Angelo (1); Menicucci, Danilo (1)

(1) University of Pisa

**Keywords / Relevant Terms**: Climate change awareness, Climate change perception, Environmental neuroscience, Climate neuroscience, Psychometric scale

## Abstract

Climate change is a complex phenomenon that requires a certain level of abstraction to understand. However, people have different experiences and perceptions of climate change, which can be influenced by their pre-existing beliefs, political ideologies, and spatiotemporal surroundings. These perceptions have significant implications for promoting sustainable behaviors, pro-climate policies, and interventions for climate-related disorders like climate anxiety. As climate neuroscience investigates the determinants of climate change perceptions, new tools are needed. We have developed a psychometric measure of perceptual awareness of climate change and provided evidence of its validity for predicting sustainable behaviors.

# Climate action on the neighbourhood level – how individual and collective intentions to act play out in four European countries

Klöckner, Christian (1)

(1) Norwegian University of Science and Technology

**Keywords / Relevant Terms**: climate action, collective, individual, social capital

## Abstract

This paper takes a multi-perspective approach to understand drivers and barriers of climate action on the neighbourhood level. The starting point for the analysis is the assumption that actions to protect the climate on the level of citizens are most motivating and promising, when conducted jointly with others who are closely related, for example by living in the same neighbourhood, thus building on established social systems. The paper outlines drivers and barriers on the individual, collective, cultural, and structural level.

A survey was implemented in nine European neighbourhoods (3 in Austria, 2 in Norway, 2 in Italy, 2 in Finland). The neighbourhoods were in rural communities (4) and in urban or semi-urban areas (5). In total, 1.084 answers were retained between autumn 2022 and summer 2023 and the impact of factors from the different perspectives on the self-reported number of implemented climate actions were tested in a structured, regression-based approach.

Intentions on the individual and collective level impact the number of climate actions implemented by citizens, but individual intentions are more important. In addition, local cultural aspects have an impact on climate action, but also the higher engagement in rural communities in general. Individual intentions to act are slightly less important in rural, than in semi/urban neighbourhoods. On the structural level, males and households with younger children report fewer climate actions, whereas larger households in general and people with university degree report more. Intentions to act individually are mostly determined by perceived individual efficacy and attitudes, but also selected cultural and structural factors.

Collective intentions to act depend on the social capital in the neighbourhood and social norms, as well as selected structural and cultural factors.

The results show that there is a potential to strengthen local climate action by capitalizing on the social capital existing at the neighbourhood level.

# A review and development of an enhanced carbon footprint calculator to facilitate knowledge of individual carbon emissions and behaviour change

Moore, Chrystal (1); Allasia Grau, Samuel (1); De Santana, Tiago (2); Sauras Yera, Teresa (1); Sabate Jorba, Santiago (1);

(1) University of Barcelona; (2) Life Terra Foundation

**Keywords / Relevant Terms**: Knowledge transfer, carbon footprint, behaviour change, carbon emissions, emissions reduction

## Abstract

Carbon footprint calculators (CFCs) are generally regarded as an effective way to transfer ecological knowledge to society, but there is little uniformity or transparency across the various available tools. To address this, we gathered 'best practice' suggestions from existing literature to create a scientifically robust carbon footprint calculator. We then found and comparatively analysed 108 calculators online and identified the strongest for further testing with a physical audience. Practical testing uncovered that generally people were uninformed about their personal environmental impacts, but that CFCs have great potential for education and behaviour change. However, uniformity and greater transparency among calculators is needed, otherwise the tools risk contributing further to misinformation and misrepresentation of environmental science. After completing the carbon footprint calculators, users were asked to complete a survey to self-assess how much information they gained and how motivated they were to change their behaviours as a result of the activity. An overwhelming majority of respondent's knowledge of greenhouse gases increased (94.4%) and foresaw opportunities to reduce their personal emissions (99.1%).

# Individual- and national-level predictors of climate-relevant outcomes: Evidence from 55 countries

Todorova, Boryana (1); Steryl, David (1); Hornsey, Matthew (2); Pearson, Samuel (2); Brick, Cameron (3); Lange, Florian (3); Vlasceanu, Madalina (4); Van Bavel, Jay (4); Lamm, Claus (1); Doell, Kimberly (1);

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**Keywords / Relevant Terms:** climate change belief, climate policy support, pro- environmental behavior, social media

## Abstract

How do various individual and national-level predictors influence different climate-relevant outcomes? Here, we utilized a machine-learning approach (i.e., gradient-boosted decision trees) on survey data from 55 countries (n = 4635), testing 19 predictors on four climate- relevant outcomes. The outcomes included: 1) climate change belief, 2) policy support, 3) willingness to share climate-relevant information on social media, and 4) engagement in an effortful tree-planting task. Our goal was to investigate which are the strongest predictors and whether they show consistent effects across these different climate-relevant outcomes in a large international sample. We tested 15 individual-level predictors including demographics (e.g., age and education), other commonly studied factors (e.g., environmentalist identity or trust in government), and four nation-level predictors (e.g., the Human Development Index and climate risk). While environmentalist identity and trust in climate science were amongst the best predictors for all four outcomes, we found divergent patterns of results for most other predictors. For example, internationally, liberal political views were positively related to climate change belief and policy support, but negatively to social media sharing. These findings have significant implications for both research and policy development in the context of addressing climate change. Understanding the differential impact of individual and national-level predictors on various climate-relevant outcomes can guide the development of targeted interventions and policies that account for the nuanced factors influencing public perceptions and behaviours.

# Explaining variations in pro-environmental behaviour: a multi-construct approach

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(1) University of Surrey · University of Milano Bicocca; (2) University of Milano Bicocca

**Keywords / Relevant Terms**: pro-environmental behaviour, sustainability, behaviour prediction,

## Abstract

The world's concerns regarding environmental sustainability and the ways in which we must confront pressing concerns can arguably be addressed by changes in human behaviour. The current project aimed to draw on constructs from various approaches ¬– namely pre-volition theories (i.e., Theory of Planned Behaviour and the Extended Model of Goal-Directed Behaviour), perceived barriers, and an examination of doing and not doing goals ¬– to explain variations in pro-environmental behaviours. We considered two types of behaviours, recycling and sustainable consumption, to test the constructs' predictive robustness and highlight the important nuances associated with each behaviour. We measured (N = 153) pre-volition constructs (i.e., attitudes, norms, perceived behaviour control, and behaviour desire, etc.) and perceived barriers (i.e., wealth, busyness), including a distinction between doing and not doing goals at baseline. Then, recycling and sustainable consumption behaviours were measured over a 3-week period using a daily diary method. We tested for the explanatory power of the base pre-volition doing model using a Structural Equation Modelling analysis and subsequently tested for the incremental validity of not doing constructs and the perceived barriers. The pattern of results for recycling behaviour and sustainable consumption behaviours diverged greatly. One main finding was that for recycling behaviour, doing intentions were significantly correlated with behaviour, as expected; however, for sustainable consumption, not doing intentions were significantly correlated with behaviour, suggesting that for sustainable consumption, reasons for not doing the behaviour are heavily weighted. We discuss how the findings suggest that recycling may be conceptualised as an incidental behaviour and sustainable consumption may be conceptualised as a deliberate behaviour. We highlight the importance of considering pro-environmental behaviours as overlapping yet distinct. Findings are further discussed from the perspective of Attitude-Behaviour-Context theory and with a consideration of the potential limits of pre-volition models in explaining actual behaviour.

# Development and Validation of a Metaperception Scale: Beyond Social and Subjective Norms to predict pro- environmental behavior

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**Keywords / Relevant Terms:** Metaperception, Social Norms, Subjective Norm, Pro-environmental Behaviour, Validation

## Abstract

In the urgent call for sustainable practices, individuals' perceptions of others' opinions play a key role in shaping pro-environmental behaviors. Previous studies have approached this question through social and subjective norms. However, these social influence processes often refer to behaviors not necessarily undertaken by the individual. In contrast, metaperception is defined as the individual's perception of how others think about them and their actual behaviors. This study addresses the need to distinguish metaperception as an independent and complementary construct by examining the overlap with the social and subjective norms, and by designing and validating a metaperception scale.

The scale development involved a five-step process. First, we defined the construct under investigation. Next, a pool of Likert items was elaborated. Subsequently, a panel of experts rated these items, evaluating their favorability in measuring the construct and their ability to discriminate from social and subjective norms. The selection of final items was based on this expert evaluation. Finally, the scale underwent a pilot study ($N$ = 231), followed by a main study ($N$ = 384) to test validity and predictive power.

Results indicate that metaperception is a different concept from both the social norm and the subjective norm. The validation was successful, demonstrating high reliability scores for the scale. Moreover, the scale proved to be associated with the intention to engage in pro-environmental behavior, as well as actual behavior.

This study makes a contribution by introducing and validating the concept of metaperception in proenvironmental research, shedding light on its distinctiveness from existing constructs, developing a robust measurement tool. In the era of social media, where people tend to show off their identities, metaperception can help researchers explore deeply how social expectations influence individual perceptions.

# Emotional Dynamics in Environmental Decision-Making: The Dominance of Negative Anticipations in Shaping 'Green' Choices

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**Keywords / Relevant Terms**: pro-environmental behavior, Dark Tetrad, Light Triad, moral emotions

## Abstract

According to the emotions-as-feedback perspective, individuals' anticipation of emotions significantly influences decision-making, often surpassing the impact of the emotions actually experienced. Concurrently, the bad-is-stronger-than-good principle posits that negative experiences wield a greater influence on cognition, emotion, and behavior than positive ones. This study explores whether decisions to engage in environmentally friendly or harmful behavior primarily hinge on the avoidance of negative (relative to positive) emotions and/or if anticipated emotions have a stronger impact in the context of harmful (relative to environmentally friendly) behavior. Participants (N = 687) reported their anticipated positive and negative emotions associated with both environmentally friendly and harmful behavior and they made decisions regarding their intended behavior. Whereas the valence of the emotions (positive or negative) had a negligible influence, anticipated emotions for environmentally harmful actions exerted a more substantial impact on participants' decisions than emotions anticipated for pro-environmental behavior. Furthermore, these anticipated emotions played a mediating role in the relationship between pro-environmental attitudes and environmental decisions, with a stronger mediating influence observed for harmful compared to friendly environmental behavior. Overall, this study emphasizes the powerful influence of anticipated emotions on environmental decision-making, particularly when considering harmful behavior. The findings suggest that interventions and policies promoting environmentally responsible behavior should prioritize addressing the emotional consequences of harmful actions over focusing on positive emotions related to pro-environmental conduct.

# Motivating Environmental Signalling

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**Keywords / Relevant Terms**: environmental signalling, social influence, neighbourhoods, intervention study

## Abstract

Research on relational organizing—the act of people reaching out to those they personally know to advocate for something— reveals a general reluctance to reach out to others about pro-environmental behaviors and beliefs. Hearing about a pro-environmental behavior from those who already adopt it directly may however be the most effective in terms of social influence by creating social pressure, providing a relatable example of change, and increasing trust in the provided information. One's neighbors may be especially effective communicators for pro-environmental behaviors due to their relevance in decision-making for one's home, pressure to conform to local norms, frequent contact, and socio-demographic similarities. In the present project, we investigate whether informing people about social influence—namely that their choice to signal their environmental efforts to neighbors can increase the odds that their neighbors will make an effort as well—will increase their willingness to install a yard sign that communicates their environmental efforts. Generally, providing people with an understanding of how they can positively influence others should provide a rationale to reach out to others. An online survey with 586 participants revealed that a message that reminds people of their social influence increased perceptions of yard signs' effectiveness in encouraging neighbours' pro-environmental behaviour. There was a 5.5% bump from the control to the intervention condition in the number of participants who said they would order a sign. Given the small sample size, it is unclear if this rise is significant. To further investigate, we're currently conducting a larger field study in a U.S. neighborhood, targeting home owners who have carried out one or several home energy upgrades.

# Young people's trust in technological solutions to the climate-change problem: Relationships to climate-change engagement and the mediating role of efficacy beliefs

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**Keywords / Relevant Terms**: pro-environmental behavior, climate change, environmental efficacy, trust

## Abstract

Trust is both an attitude and a social emotion, vital for taking on responsibility to work for the good of the whole society. Trust in climate-change science is one positive predictor of climate- change engagement. However, research is scarcer regarding another form of trust, trust in technological solutions to the climate-change problem (TTS). Theoretically one could form two opposite hypotheses: (1) To harbor a high degree of TTS is a way to avoid taking on responsibility to act climate-friendly, or (2) A high degree of TTS is important for feeling that it is worthwhile that you yourself do something to fight climate change. Because feelings of being able to influence climate change is often low among young people, it is important to find factors that could increase felt efficacy. Two questionnaire studies were conducted with Swedish senior high-school students (n=294; n=613; age-range=16-20 years). The students answered an online questionnaire during school hours. The aim was to investigate how TTS relates to two forms of climate-change engagement, private-sphere behavior (both sub- studies) and future intentions to work with climate change in professional roles (sub-study two). We also investigated if felt climate efficacy plays a mediating role in these relationships. The results show that TTS is significantly positively related to climate-change engagement. In sub-study one climate-efficacy fully mediates this relationship, while in sub-study two it works as a partial mediator regarding both forms of engagement. In a theoretical sense this indicates that having trust in scientific solutions to the climate-problem has a positive relationship to engagement and that this is the case partly because it increases felt efficacy. Future longitudinal studies are, however, needed to corroborate these finding. Results are discussed in relation to how to promote a sense of being able to influence climate-change among young people.

# Basic Human Values as Predictors of Ecological Beliefs and Solastalgia

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**Keywords / Relevant Terms**: Basic Human Values, Ecological Beliefs, Solastalgia

## Abstract

Values serve as guiding principles and are typically viewed as determinants of beliefs and behaviour. In the current study we explored the predictive effect of basic human values on ecological beliefs and solastalgia. In addition, we also investigated gender differences in ecological beliefs and solastalgia. We collected data from 551 participants in Bulgaria who completed questionnaires measuring their values, solastalgia, and different types of ecological beliefs, e.g. general climate change beliefs, denial beliefs of climate change, and perceived environmental efficacy. Our results indicated that self-transcendence values and conservation values were significant predictors of denial beliefs of climate change, solastalgia, and perceived environmental efficacy. We also found that males had significantly higher levels of denial beliefs of climate change, while females had higher levels of solastalgia and perceived environmental efficacy. The study expands the understanding of the psychological prerequisites and motives associated with ecological behaviour. The results are applicable in information campaigns for increasing environmental engagement and could also be used in designing interventions aimed at changing everyday pro-environmental behaviours for tackling climate change.

# Missing evidence of the causal role of environmental identity in pro-environmental behavior: A meta-analysis

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**Keywords / Relevant Terms**: meta-analysis, environmental identity, pro-environmental behavior, environmental attitude, environmental intention

## Abstract

Some studies suggest that environmental identity plays a critical role as a factor of pro-environmental behavior, behavioral change, and environmental spillover effect. However, many empirical studies did not find the experimental effect of environmental identity manipulation on pro-environmental behavior or only found an indirect effect mediated by environmental identity.

The aim of this study is to estimate, through meta-analysis of published and unpublished studies, the effect of experimental manipulation of environmental identity on pro-environmental behavior, intention, and attitude (outcome variables).

Following the PRISMA protocol, we have identified over 500 potentially relevant experimental studies. AI-assisted screening by two independent reviewers led to the selection of 23 relevant studies (93 effect sizes) that were used in the meta-analysis.

We found that 40% of studies used recall of past pro-environmental behavior to manipulate environmental identity and 60% of studies measured self-perceived environmental identity. Meta-analysis revealed a negligible experimental effect of identity manipulation on the

# The General Willingness for Environmental Behavior Scale (GWEBS): a short one-factor measure to connect with the great diversity of pro-environmental behaviors

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**Keywords / Relevant Terms**: Behavioral Intention; Pro-Environmental Behaviors, Climate Change Perceptions, Eco-anxiety

## Abstract

A research problem in the context of the climate crisis is that the pro-environmental behaviors and their corresponding specific behavioral intentions are innumerable, of very different scope, and even of a different nature (Babutsidze & Chai, 2018; Lee et al., 2015; Maartensson & Loi, 2021; Oinonen & Paloniemi, 2023). They can imply doing (recycling, cycling, protesting, composting), and the opposite, not doing (do not bathe; do not consume; do not use plastics; do not use private transportation; do not waste food; do not eat meat), as well as accepting doing and accepting not doing at the request of governments that begin to legislate regarding air short trips, single-use plastics, heating or cooling spaces, etc.. This situation makes it difficult to empirically connect abstract constructs with the great diversity of pro-environmental behaviors. Therefore, we developed the General Willingness for Environmental Behavior Scale (GWEBS), a four-item measure not reducible to any particular behavior but open to all that can be an useful research instrument. Participants were 520 individuals, of whom 25% belonged to pro-environmental groups. Three confirmatory factor analyses showed an excellent fit for a one-factor structure and very good reliability. The construct validity was also adequate. The GWEBS was positively related to climate change perceptions (van Valkengoed et al., 2021), eco-anxiety (Hogg et al., 2021) and trust in science. From an inter-subjects perspective, the GWEBS clearly differentiated between women and men, left- and right-oriented participants and participants who were part of environmental associations and those who were not. Activating people's desire to act in a pro-environmental direction can be considered a step in a chain that ends in a particular configuration of specific behaviors. It may not seem like much, but it is important because being an environmental activist is not a question of all or nothing.

# Personal relevance validity as a moderator of motivation in the TRGP model

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**Keywords / Relevant Terms**: consumer behavior, sustainable behavior, personal relevance, persuasive communication, TRGP

## Abstract

Predicting and changing overconsumption behaviors into healthy and pro environmental has been a relevant topic in interdisciplinary research since the las decades. It has been studied from a norms-values perspective, the spillover effect theories, the human values theory or the Theory of Planned Behavior (TPB) and its recent renewal Theory of Reasoned Goal Pursuit (TRGP).

From a communication persuasion perspective, and regarding these antecedents, this research is focused on testin a new construct: personal relevance, to refine the prediction of behabior and the design of interventions usin the basis of the TRGP and the Elaboration Likelihood Model of Persuasion (ELM). The main hypothesis is that personal relevance is a moderator of the motivation and goals in the TRGP model.

A pilot questionnaire is designed and conducted to test the constructs and its variables over an important behavior that hasn't been studied from this appr?oach: buying fast fashion clothes. Seven-point dichotomy adjective scales and free answer questions were applied. A content analysis was made to elicit variables and items from free answers. Also, a confirmatory factor analysis, discriminant validity and an internal consistency determined the final items and constructs to take into account. The results are that personal relevance is a moderator variable of the motivation construct in the TRGP model. Taking into account the porsonal relevance could provide better behavior predictions and could contribute to designing better policies to change attitudes towards environmental and healthy behaviors.

Furure research is needed with a final questionnaire that shows the correlations between the constructs and this new variable checking other behaviors and countries. This information also can be used in an intervention research to change behavior through personal relevance in a persuasive communication design.

# Farmers' dragons – psychological barriers to pro-environmental behavior in agriculture

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**Keywords / Relevant Terms:** climate change, agriculture, psychological barriers, Dragons of inaction, farmer

## Abstract

Agriculture contributes significantly to the global greenhouse gas (GHG) emissions and binding emission reduction targets have been set to include also agricultural production. Reducing GHG emissions in agriculture is shown to be possible, but still the emission levels have stagnated. To understand the psychological barriers that hinder farmers to engage in pro-environmental behavior, the theory of the "Dragons of inaction" (Gifford, 2011) is used and developed further. Based on a nation-wide farmer survey with 4,401 respondents in 2018 conducted in Finland, a mixed-method analysis on farmers' psychological barriers to pro-environmental behavior was completed. Farmers were asked to respond to an open- ended question on climate change impacts to agriculture and the responses were analyzed qualitatively. The analyzed data was connected to the respondents' background variables and other structured climate change related responses and analyzed statistically. The connections within the psychological barriers and between other variables was also studied. Although farmers in general believe in climate change and describe changes in their surroundings and agricultural practices, psychological barriers were also discussed. Transferring the responsibility of climate action to others based on the claims of equity, denial of the human impact on global warming and reactance to the outside pressures were the most stated barriers. Interestingly, mentioning barriers did not always affect farmers' willingness to act pro-environmentally. Some dragons of inaction reported in other studies seem to be less important in agriculture. Three new dragons were also hatched: fatalism, replacement, and opportunity. Ways to "slay the dragons" or overcome psychological barriers of pro-environmental behavior is thoroughly discussed. The results can help governments to design specific interventions that address psychological barriers in agriculture and help to reach mitigation targets for agriculture.

# Toward a net-zero future: Establishing low-carbon indices for green rural tourism

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**Keywords / Relevant Terms**: Green Rural, Low-carbon Tourism, Indicators, Net Zero-Goals, Multi-criteria Decision Making

## Abstract

Since the COVID-19 pandemic subsided globally, the number of tourists worldwide has rebounded to half of that before the pandemic; thus, tourism-related carbon emissions have become an essential environmental topic. The Glasgow Declaration on Climate Action on Tourism aims to reduce global tourism-related carbon emissions by half before 2030 and achieve net-zero emissions by 2050. Rural tourism has become an integral component in the sustainable development of the tourism industry because it provides tourists with unique sceneries and cultural experiences. Previous relevant studies have rarely established low- carbon indices for tourism activities in rural regions, and the formulation of such indices is imperative. Therefore, in this study, the fuzzy Delphi technique was used to identify such indices. This technique was implemented by conducting a questionnaire survey among a panel of 15 experts, which comprised government employees, tourism operators, carbon managers, and community planners from the fields of transportation, landscape design, leisure and recreation, and urban planning. The analytic hierarchy process was used to explore the weights of relevant evaluation dimensions and indices. On the basis of the results obtained in this process, 32 indices were identified across six dimensions (i.e., local dining, rural accommodation, rural scenery, recreational itinerary, green consumption, and community awareness) to evaluate the implementation of low-carbon tourism in rural regions. Although transportation was identified as a major concern, the experts agreed that community awareness was the key factor affecting the promotion of low-carbon tourism. The results of this study can be used as references by governments to develop evaluation tools for the implementation of low-carbon rural tourism. Relevant authorities should place strong emphasis on community participation to promote the implementation of low-carbon tourism policies and achieve net-zero emission goals.

# Inter-group conflicts in mountain: a mixed-method approach

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**Keywords / Relevant Terms**: "environmental values","social identity","identity motives","intergroup relations","mixed-method approach"

## Abstract

Mont d'Or, a mountainous region facing significant environmental issues, is a focal point for complex conflicts related to its use and management. Various stakeholders driven by economic, recreational, and conservation motives, contribute to the intricate dynamics of the « Mont d'Or » system.

Drawing on the social identity model of pro-environmental action (Frietsche et al., 2018), our study explores how individuals perceive and evaluate threats to this natural area based on their group affiliations. Social groups activate distinct representations, influencing systems of beliefs and values (Abric, 1989). Through a mixed-method approach, we investigate the core values crucial for protection on Mont d'Or, considering individual social identification and intergroup relations (Tajfel et al., 1979).

We conducted 49 semi-structured interviews with hunters, stockbreeders, forest rangers and sports practitioners, which explore their perception of the evolution of various human activities in the area. Based on thematic analyses of these interviews, we stated a set of hypotheses, subsequently tested through a questionnaire that enables to explore the connections between identity motives (Vignoles et al., 2006), value systems (Brown and Reed, 2000), perceptions of Nature (De Groot et al., 2011) and intergroup relations.

In terms of intergroup relations, we anticipate that local stakeholders collectively perceive breeders as mainly contributors to environmental degradation, wielding significant decision-making power. The rise of outdoor sports, within the context of tourism transition, is expected to be viewed as a threat to the area. This growth is seen as the primary cause of the decline in hunting, a vulnerability shared by rangers and breeders, who are intricately linked to this practice.

In summary, our mixed-method approach sheds light on the diverse perspectives and tensions within Mont d'Or, offering valuable insights into the social fabric shaping the region's environmental discourse (Ivankova & Wingo, 2018).

# The Intersection of Social Ecology and Environmental Psychology: Environment-Behavior Research in an Era of Urgent Global Dilemmas

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**Keywords / Relevant Terms**: social ecology, environmental psychology, environment-behavior, global dilemmas

## Abstract

This presentation offers an empirically based discussion of emerging research developments at the interface of environmental psychology and social ecology. We outline the bounds of each research domain by noting the ways in which they are distinct from each other as well as the overlap between them. The convergence and development of these two fields over the last two decades is highlighted, in the context of major global dilemmas posed by the Anthropocene Epoch: especially, global climate change, disease pandemics, sociocultural and geopolitical conflict, and negative impacts along with positive affordances of the cybersphere. We provide a sampling of environment-behavior research in each of these areas, noting the ways in which it reflects multidimensional and multiscalar complexities inherent in these accelerating global trends. Lastly, we mention some prospective directions for environment-behavior research that could advance our understanding and management of local and global challenges.

# Encountering ‘Meat’: Exploring the Social Representation of Alternative Meat in a Visualised Foodscape

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**Keywords / Relevant Terms**: alternative meat, foodscape, sustainability, food consumption, visual methods

## Abstract

The advancement of food biotechnology has brought about the creation of new food products, such as plant-based meat and cell-cultured meat, which may act as the more sustainable alternative to substitute meat consumption. However, such novel food products (termed ‘alternative meat’) remain relatively unfamiliar and absent within the public’s diet. Previous research has focused mainly on how consumers perceive alternative meat (i.e., person-food relationship), but may be lacking in considering the geographical context in which food decisions are made. The geographical concept of ‘foodscape’ may fill the gap here, as it examines how the physical (e.g., food availability) and socio-cultural geographies (e.g., norm and meaning) of food may influence acceptance and consumption of food (i.e., person-food- place relationship). From an interdisciplinary perspective, foodscape provides a unique lens to apply social representation theory to explore how this relatively unfamiliar alternative meat may ‘come into existence’ within our familiar and personal day-to-day food environment. By employing qualitative interviews with visual methods, this study uniquely examines the geographical, sociological, and psychological drivers and barriers which underlie the process of socially representing alternative meat within our foodscape. UK participants ($N$=25) with diverse foodscapes (e.g., high vs. low access to food; meat-heavy vs. no-meat) will be recruited and asked to visually construct their day-to-day food exposure and experience in drawings. Participants will then be asked about how, where, when, and why they envision encountering alternative meat within their everyday lives (and in the future). Thematic analysis will explore discussions of ambivalence and tensions in accepting alternative meat, and highlight the different barriers and opportunities within different foodscapes when considering whether alternative meat could transition to become a staple food source in the near future. Data collection, analysis and results will be completed and ripe for discussions by the time of conference.

# Serving up Sustainability in the Canteen: Psychological Evaluation of a Culinary Living Lab in a University Canteen

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**Keywords / Relevant Terms**: Sustainable Food Consumption; Pro-environmental Behavior; Evaluation; Living Lab; Behavioral Change

## Abstract

Food services such as restaurants or canteens can play an important role in the transition towards more sustainable eating behavior by, for example, optimizing the sustainable impact of the menus served. However, service providers can be hesitant to make such changes due to concerns that customers might be less satisfied and switch to other food services instead. Here, we present the evaluation of customers' perceptions of several interventions, such as sustainability optimized menus, and accompanied communication measures in a Swiss university campus canteen over a period of 4 weeks. In an interdisciplinary living lab, two universities and a caterer collaborated to co-design alternatives to promote sustainable nutrition choices. Overall, 408 participants (students and staff) took part in the pre-post evaluation questionnaires. The weighted analysis showed no difference in self-reported frequency of canteen visits ($t$ = - 0.27, $p$ = .78). However, when controlling for dietary preferences, the results indicate a small reduction in satisfaction, mostly among omnivores ($F$ = 10.80, $p$ = .01). This reduction is probably driven by the increase in vegetarian and vegan menu options in the canteen during the intervention period, which omnivores, in general, find less appealing (both $F$ > 7.27, $p$ < .01). Most participants noticed the changes in the menus, and they perceived them, as well as other measures such as displaying the true costs of the menus, as rather positive and helpful for a sustainable diet. Although we do not observe a change in people's frequency of visits to the canteen, it is important to note the possible reluctance of people with an omnivore diet, which might need more targeted interventions. Overall, the living lab showed that introducing more sustainable menus in a canteen combined with a set of communication strategies can be an effective way to increase sustainable food behavior.

# Does the use of food-sharing apps impact food waste habits? A psycho-social analysis within the framework of Theory of Planned Behavior and Technology of Acceptance Model

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**Keywords / Relevant Terms**: TPB, TAM, Food-sharing apps, Food waste, SEM

## Abstract

Food waste is a pressing global challenge that has being recognized as a key issues by The United Nations (2015). Food sharing platforms have emerged as a powerful tool to reduce Food Waste Behavior (FWB). Unfortunately, little is known about the key determinants fostering its usage. This study aimed to analyze the main psychosocial drivers of consumers' use of Food Sharing Apps (FSAs), and how these turn into FWB, within the theoretical framework of Theory of Planned Behavior (Ajzen, 1991) and of Technology Acceptance Model (Davis, 1989).

A sample of 1252 individuals (Mage = 23.56 SD = 7.645) completed an online survey, measuring: a) Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Perceived Behavioural Control (PBC) of FSAs; b) Attitudes, Subjective Norms, and Behavioural Intentions of FSAs use; c) Food Waste Concerns (FWC) and FWB (of app users only; N= 495;Mage=22.739; SDage=5.811), and d) socio-demographics. Structural Equation Modeling (SEM) was used in the analyses. SEM showed that PEU strongly influenced PBC. PU and FWC positively impacted Attitudes.

Additionally, Attitudes, PBC, and Subjective Norms significantly influenced Behavioral Intentions; Moreover, FSAs use was positively influenced by Behavioral Intention.

Finally, contrary to our hypothesis, FSAs use was positively associated with FWB of food purchased through the app. This study provides novel insights into how individuals' psychological factors and technology acceptance influence FWB, providing a fundation for policymakers for developing strategies for curtailing Food Waste.

# The effect of information-based framing on Germans' attitudes toward and willingness to consume the microbial protein Solein®

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**Keywords / Relevant Terms:** "Novel Food," "sustainable protein source," "sustainable diet," "acceptance,"

## Abstract

Food production (e.g., meat production) contributes significantly to climate change and biodiversity loss. Therefore, sustainable protein sources are needed to ensure global food security. Thus, microbial protein may provide a more sustainable alternative to conventional meat. This study investigated Germans' attitudes (N = 642) toward the microbial protein Solein® as a meat alternative and their willingness to consume it. Furthermore, the study analyzed the effect of framings consisting of information on health or environmental benefits, or technical aspects of Solein® production on Germans' attitudes toward Solein® and their willingness to consume. For this purpose, participants were assigned to one of three framing groups: health, environmental, or technical. X2-tests, or ANOVA with Scheffé- corrected post hoc tests, were calculated to assess the framing effect. In addition, the influence of selected (nutritional-)psychological factors on Germans' willingness to consume Solein® was analyzed using regression analysis. The results showed that Germans' attitudes toward Solein® were neutral, with a positive tendency. Participants perceived Solein® as modern, sustainable, and environmentally friendly on the one hand, but also as artificial, exotic, and rather expensive on the other. Germans' willingness to consume Solein® was neutral. The different information-based framings had no effect on either attitudes or the willingness to consume Solein®. However, the participants of the health and environmental framing group had more positive attitudes toward Solein® than the control group. They were also more willing to consume Solein® than the control group. Regressions revealed that attitudes toward Solein® were the strongest predictor for participants' willingness to consume. This study expands the knowledge about the willingness of the population to integrate more sustainable foods into their dietary habits. Furthermore, marketing and communication strategies that address the health or environmental benefits of microbial protein could increase acceptance among the German population. Further implications for a sustainable lifestyle will be discussed.

# Effects of VAT changes on policy acceptance and food consumption in Germany: Two online experiments

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**Keywords / Relevant Terms**: climate change, value-added tax, planetary health diet, pro- environmental behaviour

## Abstract

Adhering to the Planetary Health Diet can increase public health and curb climate change. Value-added tax (VAT) changes that aim to reduce the consumption of animal-based products and to increase plant-based products have been recently discussed in Germany. To investigate how people behave when confronted with an upstream approach, we conducted two preregistered 2x2 between-participant online experiments with N1 = 993 and N2 = 973 participants (quota-representative for age (18-74) x gender and federal state). The experiments investigate the support for different VAT changes and their potential for promoting the Planetary Health Diet. In the first experiment, individuals were presented with different VAT changes for animal-based foods (VAT increase vs. no change) and plant-based foods (VAT decrease vs. no change). The lowest acceptance was found for a VAT increase (d=-0.81). Despite low acceptance, respondents in the VAT increase condition expected a potential reduction in their meat consumption (d=-0.47). The second experiment focused only on a VAT increase for animal-based products (increase vs. no change) and added an intervention to create a better understanding of food-related CO2 emissions. In the intervention “seeding” (Bröder et al., 2023) participants rated the carbon footprints of 48 food products. After the first round of ratings, the actual carbon footprint was provided for 25% of the items and then the rating was repeated. As the dependent variable, participants chose between two gifts they could win: a plant-based or meat-based food box containing a supply of meals for a whole week. Neither acceptance of a VAT increase nor choosing a plant-based food box increased through the intervention. Despite the intention to reduce their meat consumption in response to a VAT increase, participants did not follow through in their actual behavior, revealing an intention-behavior gap, highlighting the need for further investigation to bridge this gap.

# Using Fear Appeals and Collective Efficacy to Promote Plant-Based Alternatives

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**Keywords / Relevant Terms**: Meat, Plant-based alterantives, Fear appeals, Collective efficacy

## Abstract

Previous studies have shown that eating red meat has a high impact on individual health and the environment. This study investigated how consumption of plant-based alternatives could be promoted by exposing people to videos with fear appeals (H1) and collective preventive action statements (H2).

The study used a 2 (fear appeal) x 2 (collective efficacy) factorial between-subjects design. In the online experiment, participants (N = 268, mean age = 35.17, SD age = 16.17, 32.46% male) were randomly exposed to one of the four versions of the video. Intentions to eat red meat and plant-based alternatives were both measured by three items on a 7-point Likert scale (Menozzi et al., 2017).

A Bayesian two-way ANCOVA showed moderate evidence that the intention to eat plant- based alternatives was not explained by exposure to the fear appeal (BF01 = 6.17 ± 0.08%) or collective efficacy (BF01 = 6.17 ± 0.08%). A second ANCOVA showed moderate evidence that the intention to eat meat was also not predicted by exposure to the fear appeal (BF01 = 5.96 ± 0.08%) or collective efficacy (BF01 = 6.15 ± 0.08%). However, people who were exposed to the fear appeal indicated that the health impact of eating red meat was more severe (BF10 = 12.50 ± 0.002%). Exploratory analyses suggest that as people eat more red meat they also experienced more reactance to these messages (BF10 = 5.85 ± 0.03%).

Taken together, these results implicate that fear appeals and collective efficacy do not seem effective in increasing the consumption of plant based alternatives. Potentially, fear appeals might only make people scared without adherence to health recommendations, and people who could have the biggest impact (those who consume the most meat) seem to show the most reactence to the messages.

# Consumers' Barriers to Sustainable Actions: A Multi-Language Evaluation of the Dragons of Climate Inaction Psychological Barrier Scale

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**Keywords / Relevant Terms:** Sustainable Consumption; Pro-environmental Behavior; Psychological Barriers; DIPB Scale; Dragons of Climate Inaction

## Abstract

Every day's consumer decisions carry considerable environmental implications. Yet, different psychological barriers can hinder us from consuming more sustainably. Thus, fostering sustainable consumption requires understanding which barriers exist in specific consumption domains and how they affect behaviors. In a multi-language study with a representative Swiss sample of 1,136 participants, we assessed psychological barriers of consumers. We used the Dragons of Climate Inaction Psychological Barrier (DIPB) Scale including five barrier types (subscales); Change Unnecessary, Conflicting Goals and Aspirations, Interpersonal Relations, Lacking Knowledge, and Tokenism. In an online questionnaire, participants' psychological barriers (DIPB scale) and self-reported behaviors were assessed in one of three consumption domains: food, clothes, or electronics. A confirmatory factor analysis (CFA) indicates a good model fit (i.e., CFI = 0.96, RMSEA = 0.057, 90% CI [0.053, 0.060]), and a multigroup CFA shows consistency across citizens with German, French, Italian or English as first language. In general, a high DIPB value is a negative predictor of self-reported sustainable consumption behavior, though differences exist between domains. For example, linear model analyses indicate that Change Unnecessary (i.e., people's perception that their actions would not matter) is a significant predictor for self-reported consumption in the food and clothes sector ($t < -3.48$, $p < .001$), but not for electronics ($t = -1.12$, $p = .26$). These findings suggest that the DIPB scale is a reliable tool to assess consumers' barriers across different consumption domains and languages. It may help to design tailored interventions, such as prompts emphasizing the effect of sustainable consumption decisions in the food and clothing sectors, to overcome context specific psychological barriers.

# Be green – Beauty behaviour: sustainable cosmetic use among individual and professionals consumers

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**Keywords / Relevant Terms**: sustainable cosmetic products, sustainable behaviour, market

## Abstract

Ecological transition is demanding changes in behaviour towards sustainability in several and new domains and contexts. The market and use of beauty and cosmetic products is following this transition, with sustainable motivations being increasingly determining the choices of individual consumers, namely in younger generations. Also, professionals and producers are at the same time following these demand side motivations as well are being many times the promoters of this transition towards more ethical, organic, or vegan cosmetic and beauty products. This study, in the scope of an Erasmus project in Malta and Portugal, presents the evaluation of individual consumers and professionals about the use, motivations and barriers of cosmetic and beauty sustainable products. Two online questionnaires are measuring green purchase intention, cosmetic green products use, motivations (e.g. environmental identity, climate change risk perception), barriers (e.g. products risk perception, cost, access, knowledge) among individual consumers of different generations, and professionals such as beauty and hair salons, SPA's, producers, among others. Results intend to analyse beauty and green products consumption profiles, identifying possible generation effects, specific motivations, and barriers, and differentiating individual consumers and professionals. These results will give insights about a specific emerging domain in sustainable consumption. Also, the study conclusions will inform guidelines for the training of professionals and for the communication towards the market. Together, these measures intend to give a contribution to the ecological transition in the market and use of sustainable beauty and cosmetic products.

# Consumer-environmental sustainability: Exploring the multi-level challenges of biopolymer commercialization for a greener future

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**Keywords / Relevant Terms**: Sustainable behavior, environmental concerns, circular economy

## Abstract

Biopolymers present a sustainable alternative to traditional plastics, yet their journey to broad acceptance faces numerous obstacles. Combining the insights of psychology to promote more sustainable behavior, the present study employed a two-fold approach to thoroughly respond to the multifaceted challenges posed by this emerging technology: (1) a systematic literature review focusing on the supply-side barriers, including researchers, policymakers, and industry professionals; (2) and a critical review of literature centered on consumer barriers. On the supply-side, we found that technological and knowledge barriers were the most identified, followed by economic, regulatory, and supply-stability challenges. Regarding the demand-side, we found that limited public awareness, little knowledge, concerns and misconceptions about bioplastics properties, and regulatory aspects were identified as the main barriers to consumer adoption of bioplastics. These findings draft a comprehensive multi-perspective roadmap of the key barriers in the commercialization of new, sustainable technologies, with significant implications for future research, policy making, and industry practices.

# Saving the environment one drop at a time: exploring the determinants of consumer behaviour and intentions towards domestic water saving

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**Keywords / Relevant Terms**: Water saving, Consumer demand, Environmental attitudes, Questionnaire, Water policies

## Abstract

This paper explores determinants of domestic water saving by individual consumers. We combine individual characteristics, environmental attitudes, perception of the seriousness of water-related problems, and beliefs about the effectiveness of saving equipment and water policies.

The paper reports the results of a survey of 400 residents in Portugal in January 2022. To understand who engages in water-saving practices, we consider political stance, gender, financial comfort, risk aversion, and beliefs about water consumption reduction possibilities, alongside environmental attitudes. To capture the latter, we consider Schultz's (2001) three dimensions of environmental concern, i.e. selfish, altruistic, and biospheric concerns.

First, we analyse, through PCA, the data on the possibilities of reducing water consumption in the respondent's house, the existence of water reduction equipment/ practices, and their judgment regarding the efficacy of water reduction policies in Portugal. Results show clear a clustering of behavior and attitudes.

Second, the factors previously identified, together with Schulz's three dimensions and personal characteristics, are included in a Probit regression explaining the likelihood of individual engagement in water saving practices. Results show that environmental attitudes are statistically relevant, but self-motivation and other-regarding preferences are not. Moreover, the type of equipment (which respondents own or intend to buy) is statistically significant, as is the area of potential savings and the beliefs about the efficacy of water reduction policies.

Individual characteristics such as financial comfort, risk aversion, and age are also statistically significant (more risk-averse individuals, higher financial comfort, and older individuals being more likely to engage in water-saving behaviors).

Understanding the determinants underlying specific environmental behaviours can help policymakers design more effective policies concerning water use. Our results can provide clues for policymakers to deepen individuals' commitment to saving behaviors in the domestic water sector.

# Relevant Context Boosts Impact of Social Interaction on Identification with Environmentalists, Collective Action and Sustainable Eating

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**Keywords / Relevant Terms**: social identity, collective action, behavioral change, sustainable eating, intervention

## Abstract

Social interaction has been proposed as crucial for steering societal shifts towards sustainability through the crystallization of social identity. This study utilizes networked immersive virtual reality (VR) to investigate how social interaction fosters pro-environmental social identity and promotes sustainable actions within a controlled VR environment.

In this preregistered lab-in-the-field study, participants (255 tested, 194 analyzed) were randomly assigned to one of three conditions: social interaction in the relevant environment, non-relevant environment, or no-social interaction. All participants engaged in a sustainable cooking task in VR, either alone or in a dyad based on the condition. Results reveal that the social interaction in the relevant environment group reported higher intentions to consume less meat than the non-relevant environment group, Beta = 0.40, 95% CI [0.03, 0.77], p = .038. Furthermore, this group exhibited higher collective action intentions compared to the no-social interaction group, Beta = 0.35, 95% CI [0.69, 0.01], p = .044. Both the social interaction in the relevant environment, Beta = 0.35, 95% CI [0.08, 0.61], p = .011, and non-relevant environment, Beta = 0.25, 95% CI [0.00, 0.50], p = .049, reported higher social identification with environmentalists compared to the no-social interaction group. Exploratory analyses demonstrated social identity as a unique predictor of all outcome measures—food intentions, collective action intentions, and pro-environmental laboratory behavior—when controlled for psychological factors, gender, and age.

The study underscores the influential role of social interaction in fostering social identification and pro-environmental behavior, particularly when enhanced by immersive contexts. These findings hold implications for future environmental communication, emphasizing the importance of relevant context and social elements. The research highlights the pivotal role of social identity in pro-environmental actions, advocating for prioritizing its promotion in climate mitigation initiatives. This study pioneers insights into the role of social interaction in climate action using VR.

# Social representations of bottled and tap water in the French context: An example of themata use

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**Keywords / Relevant Terms**: Social representations, Themata, Tap water, Bottled water, France

## Abstract

Water, essential yet scare, is consumed in France as tap and bottled water. Despite high sanitary quality, bottled water is the preferred, opposing sustainable practices. This study investigates the social representations (Batel et al., 2016) of bottled and tap water in a sample of the French population to understand these consumption practices.

Conducted on a sample from the Lyon area, this study involved eighty-three online survey participants and fifteen participants to focus groups. Methods included an iconographic association task with three different stimulus images, changing one variable, the water source (bottle, tap or unknown source). A blind taste test of bottled and tap water was used as a discussion stimulus in the focus groups. IRAMUTEQ, prototypical and thematic analysis were used for data analysis.

The findings indicated a preference for tap water at home and bottled water outdoors. Both water types are similarly represented yet differ structurally, around the themata of purity/impurity and trust/distrust (Callaghan et al., 2012; Marková, 2015). These themata influence consumption practices in various contexts. In addition, unknown and varied sources of tap water contribute to perceptions of impurity, unlike neutral taste and perceived natural source of bottled water. In sum, taste emerged as a key determinant of perceived purity, leading to more scepticism towards tap water despite its ecological benefits.

These results can guide public actors in crafting effective practices change strategies such as public education on water quality and installing water fountains in urban areas.

The innovative use of blind taste test within the social representations approach provides insights into the underlying logic behind water consumption choices, laying the groundwork for promoting sustainable water consumption practices.

# Clothing Repair Workshops to Motivate Behavior Change: A Longitudinal Field Experiment

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**Keywords / Relevant Terms**: clothing repair, behavior change, field experiment, fast fashion

## Abstract

Fast fashion (inexpensive clothes made to break or go out of style) exploits workers in low- income countries, deepens postcolonial inequalities, and transgresses planetary boundaries. Shifting towards a more just and sustainable clothing economy requires policy and behavior changes to extend clothing life cycles. Here, we tested whether group workshops motivate behavior change among 120 residents of Amsterdam. Our study had a mixed design with two groups (intervention vs. control) and three time points (sign-up vs. post-intervention and four- week follow-up). Intervention participants received a short presentation about the environmental and personal benefits of clothing repair, followed by a 1.5-hour workshop on basic stitches and embroidery techniques. Control participants merely read about the environmental and personal benefits of clothing repair. First, we assessed whether the workshops were more effective than control in boosting psychological factors (social identity, efficacy beliefs, positive emotions, environmental concern, and repair intention). Second, we tested whether the workshops changed behavior by comparing the self-reported frequency of repaired, newly acquired, and disposed clothes over two months. Data collection is complete, and the data are being analyzed.

# What ultimate social motives do frugal consumers signal?

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**Keywords / Relevant Terms**: frugal consumption, ultimate social motives

## Abstract

Consumption behaviors signal certain motivations and identities, and thus can have consequences for social interactions and future behavioral intentions. For example, green consumption signals pro-sociality, trustworthiness, and wealth. Green consumers benefit from attributions of a higher social status as well as positive social interactions, which may encourage green behaviors. However, addressing climate change will require reduced consumption rather than merely shifting to greener products, and little is known about the signalization of frugal consumers (i.e., people who avoid unnecessary purchases and care for current possessions rather than buying new things). The available data indicate that frugal consumers are perceived as lower status, less educated, having worse jobs, and are less preferred as partners in social interactions. This study is the first in a set of experiments aimed at examining what factors may serve as positive signals and confer advantages upon frugal consumers in social interactions and might motivate people to behave more frugally.

In a highly powered online experiment (N = 2800) we manipulated consumption profiles (frugal, pro-environmental and conventional) to evaluate which fundamental social motives (Neel et al., 2016) observers attributed to frugal consumers. The data indicated that frugal consumers were perceived as a distinct category relative to the green and conventional profiles. Frugal consumers were also rated higher in social motives related to independence compared to green and conventional consumers, but lower in motivations for self-protection, disease avoidance, group belonging, avoidance of social exclusion, and social status.

These findings will be used in future research, for example, in studies priming information about environmentalism or threat (e.g., resource shortages) to manipulate the social value of frugality and identify interventions that increase frugal consumption. To our knowledge there is no other study that has focused on the range of fundamental social motives that may be signaled by frugal consumption.

# The Second-hand Marketplace and Consumer Environmentalism: When Brand Messaging Might Go Wrong

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**Keywords / Relevant Terms**: Consumer Behaviors, Second-hand Shopping, Brand, Pro- environmental Identity

## Abstract

Material consumption is one of the most significant factors leading to global environmental harm and is caused in large part by consumers' demand for new goods. A partial solution to this problem is to increase consumers' engagement in the circular economy, by encouraging the purchase of used products. While previous research has begun to address the second- hand market, few studies investigate firm-consumer interactions that influence second-hand consumption. We conduct three online experiments to examine when and why consumers may become (de)motivated to purchase second-hand, refurbished products directly from the manufacturing brand. In Study 1 (N = 314) we found that participants preferred to buy second- hand products directly from the manufacturing brand as compared to other sellers (e.g., consignment stores, and other consumers). Reselling brands were perceived as more authentic, which led to their products being perceived as more appealing, ultimately leading to increased purchase intent from the brand. In Study 2 (N = 336) we found that participants were left unpersuaded when brands communicated that their goal in re-selling refurbished products was either (a) environmental protection or (b) quality assurance. However, for participants with low pro-environmental identity, both appeals reduced purchase intent as compared to when no brand goal was communicated. Finally, in Study 3 (N = 349) we found that when brands communicated an environmental-protection goal in their re-selling efforts, participants perceived the brand to be less affordable, which in turn decreased purchase intent. By approaching the circular economy as an interaction between firms and consumers, and taking a trans-disciplinary perspective crossing psychology and marketing disciplines, this work contributes to our understanding of sustainable lifestyles and green economy models—specifically, the market success of refurbished products. This work also contributes to the literature on brand authenticity, pro-environmental identity, and its behavioral consequences.

# Youth and Environment. A study on the psychosocial factors that influence sustainable consumption patterns of Spanish youngers.

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**Keywords / Relevant Terms**: green lifestyles, youth consumption styles, climate action, environmental identity, social norms, self-efficacy

## Abstract

As the latest reports from the IPCC categorically state, to mitigate the effects of global warming, a significant change is required in citizen´s lifestyles specially in Western countries. The present study aimed to explore youth attitudes towards environmental issues and climate change as well to understand the main factors driving or inhibit climate-relevant behaviours. An online survey was conducted in Spain with a representative sample of youth population between 14-28 years old (n= 2.000). The sample was distributed in terms of age, gender, social class and type of resident population. The results of the study show that, although Spanish youngers are concerned about environmental crisis, they feel low capacity to be part of the solutions and they place their expectations in science and technology to cope climate change issues. Therefore, young people are unwilling to introduce radical changes in their lifestyles to reduce their carbon footprint and environmental impact. Deepen on the factors that influence consumption lifestyles, five domains were explored: food, technology, fashion, waste, and transportation and mobility. The results show a high level of environmental awareness regarding the recycling of paper, glass, batteries, and the separation of organic and inorganic waste at home. These behaviours are more frequent among women, young people from a high social class, and people from the extreme left. Further, the educational level appears as a determining factor of sustainable consumption behaviours. Young people with a higher educational level consume more vegetables and buy more frequently in organic and fair-trade stores and are more willing to adopt vegetarian diets. Three psychological dimensions have a relevant influence in sustainable consumption: social norms, environmental identity and perceived-self efficacy. Thus, people who see themselves as sustainable consumers and experience sense of efficacy most frequently purchase organic food, fair trade products, sustainable fashion, and fair technology.

# Towards Sustainable Building Design: Integrating Embodied Carbon Considerations in BIM-Enabled Projects: A Socio-Technical Analysis

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**Keywords / Relevant Terms**: embodied carbon, BIM, building design process, structuration theory, Power Relations in Building Design

## Abstract

In recent years, global efforts to reduce carbon emissions from buildings have predominantly concentrated on operational carbon, neglecting the significant impact of Embodied Carbon (EC) emissions throughout a building's life. The construction industry faces challenges in addressing EC, and Building Information Modelling (BIM) has been proposed as a solution. However, existing literature primarily focuses on the technical aspects of EC assessment facilitated by BIM, neglecting the social aspects in the building design process.

This research adopts a socio-technical approach to reveal the conditions and mechanisms that affect how EC is integrated into BIM-enabled building design. Empirical data was collected through ethnographic methods that included interviews, meeting observation and document analysis for a BIM-enabled building case study. By integrating two fundamental concepts of Structuration Theory into an analytical framework and employing social network mapping to visualise elements, this research uncovers position-practices and dialectic of control as mechanisms influencing EC considerations in BIM-enabled projects, offering novel insights into power relations between clients and design teams, as well as industry and project-level structures.

Findings underscore the pivotal role of people, with clients acting as either barriers or enablers based on their aspirations, and professional teams emerging as crucial middle agents in tackling EC. Position-practice relations, reflecting the introduction of new expert roles or expanded responsibilities for principal design team members, play a significant role in addressing EC. The dialectic of control mechanism, influenced by industry and project-level conditions, impacts professionals' capabilities in dealing with EC considerations.

The analytical framework developed and its visualisation through social network mapping has implications for research expanding the operationalisation of structuration theory. The study has implications for practice and policy by providing novel insights into the interplay of position-practices, power relations between the client and the design team, and their relation to industry and project-level structures.

# Assessing if and how build environment designers encourage people to engage with pro-environmental behaviours through design interventions

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**Keywords / Relevant Terms**: Pro-environmental Behaviour, Design, Built Environment, Intervention, Professional

## Abstract

Change to the spatial and material composition of urban environments, often in developed countries, involves input from design professionals (architects, landscape architects, urban designers). These experts play a pivotal role in shaping buildings and open spaces, in turn, directly influencing the daily experiences and lifestyles of the people who inhabit them. While the importance of their role is recognised, there is a gap in understanding the extent to which these professionals consider the potential of their designs to promote specific user behaviours. In particular, behaviours that can mitigate people's individual and collective impact upon the environment. This becomes increasingly significant in the context of a growing awareness of the detrimental effects of human behaviours on the planet. As human activities continue to negatively impact every aspect of our environment, it is crucial to assess whether design professionals are actively promoting behaviours that contribute to environmental sustainability.

We surveyed just under 15,000 UK-based architects, landscape architects and urban designers. We asked them about their understanding of 'pro-environmental behaviour' as a principle, and their level of engagement with encouraging the use of sustainable transport, waste recycling, food growing, energy conservation and gardening for biodiversity. We also examined their individual level of climate concern, whether they felt their profession was concerned about climate change, barriers to implementing interventions that encourage pro-environmental behaviours and desire to know more about the topic. Findings from our survey will be presented with key themes discussed. This is done while reflecting on whether there is greater opportunity for designers to implement interventions that actively promote user engagement with pro-environmental behaviours.

# Relationship between Design-Related Elements and Perception of Interiors: The Roles of Natural Stimulation and Visual Connection on Perceived Complexity, Familiarity and Restorativeness of Residential Interiors

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## Abstract

Research on restorative environments indicate that natural settings can be therapeutically effective in reducing stress and encouraging positive experiences; however, the restorative potential of built environments, especially in the residential context, is less examined. In the present study, we aimed to assess the perceived restorativeness of home environments through visual stimuli, also considering the relationship of complexity and familiarity to design- related factors. Seventy-two participants evaluated three sets of four photographic images of residential living rooms. Two of those sets were manipulated to include natural elements and provide extended visual connections, while the third set represented the control condition. Although the results indicated a moderate positive association between perceived restorativeness, complexity, and familiarity, significant differences were observed relative to the control condition: (a) While the spaces providing a visual connection to the nearby environment were perceived as more restorative, those having natural elements were associated with higher complexity; (b) The presence of visual connections and natural elements seemed to be associated with higher familiarity reports with the settings. The implications of the results are discussed to propose an approach to creating restorative experiences within architecture and interior design practices.

# Hostile architecture, Aporophobia and the City of Exclusivity

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**Keywords / Relevant Terms**: Hostile architecture, Aporophobia, Cities of Exclusivity.

## Abstract

Hostile architecture refers to the design or modification of elements in public and semi-private places to discourage or exclude certain behaviours and homeless people permanence. It can create barriers for walkability, promoting cities of exclusivity. It involves the implementation of physical elements that intentionally make a place uncomfortable, inconvenient, or impossible to use for activities e.g., sleeping, sitting, or loitering. Hostile architecture is related to Aporophobia. Aporophobia is the discrimination against the poor. This research aims to identify and classified different levels of hostile architecture in Brazil where 243 thousand people are homeless. The case study is Pelotas city. We applied a walking workshop with a group of 35 people, two disabled people, three representatives of a low-income community movement, and three journalists of a local newspaper. We combined the walking workshop with My Map application to geographically identify hostile physical elements in the city. Photos and videos were taken, and informal conversations were recorded during the walking to capture people's perception about hostile architecture. It happened on 09/03/2023 and took 2 hours and was promoted by I Seminar of Citizenship Rights in Pelotas. The results identified three types of hostile architecture: Type 1 refers to physical elements that can hurt or even cause death, Type 2 is related to everything that can obstruct walkability and accessibility, and avoid long term people's permanence, and Type 3 refers to physical insertions that can difficult people's mobility, accessibility, and permanence but will not prevent these. This classification is unprecedented and can support the development of public policies to promote inclusive cities. As a first step, the Brazilian federal government published on 11/12/2023 a regulation that prohibits hostile architecture in public spaces. We hope to inspire academics, stakeholders, and policymakers in the battle against cities of exclusivity. The city should be for all.

# City and Design: socio-spatial organization of care

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**Keywords / Relevant Terms:** city, women, care, pandemic, inequality

## Abstract

Spaces arise from power relations, power relations establish the norms; and norms define both social and spatial limits that determine who belongs to a place and who is excluded and where a certain experience is located (Mc Dowell, 1999). The exclusion of women from the public sphere is supported by the sexual division of work and spaces and materializes in a configuration focused on male experiences and needs; where care and reproductive work occupy a second place that has historically been assigned to them, who, invisibilized, have contributed to the maintenance of life in a daily and silent way. It is timely to review what the pandemic showed us regarding the socio-spatial organization of care and its consequences on urban life for them, mainly to rethink our forms of organization and urban planning in the face of the challenges of inequality that threatens us during and after the 2020 pandemic.

# “Why don’t we have windows?” Perceived Effects of Graduate Student Housing Design on Mental Well-Being

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**Keywords / Relevant Terms:** Housing, mental well-being, graduate students, windows, content analysis

## Abstract

Understanding effects of housing design on mental health is critical for residents, including for graduate students. The University of Michigan’s (UM) Munger Graduate Residences (“Munger”) provide apartment-style housing for UM graduate students. Built in 2015, this 8- story, 380,000 square foot building can accommodate 631 residents. The centrally-located, relatively affordable on-campus facility offers generous amenities (a gym, rooftop track and patio, convenience market, theater, game room, study and socializing spaces, and event programming). Typical apartments are 6- and 7-bedroom units that contain shared kitchen, dining, and living spaces, as well as individual bedroom-bathroom suites for each resident. Of Munger’s 631 bedrooms, 86.7% (547) do not have windows. The present study explored the experiences of Munger residents by addressing a central research question: How do Munger residents perceive the design of their housing to affect mental well-being?

This qualitative exploratory study investigated the experiences of Munger residents related to high density units and windowless bedrooms. Data were collected via five written open-ended questions addressing housing design and perceived mental well-being (MWB) that were included in a survey distributed to Munger residents as part of a larger study. Open-ended responses (n=116) were first coded to identify satisfying and dissatisfying design elements, and elements perceived to affect MWB. The most common design elements reported to affect MWB - including high density living and windowless bedrooms - were further analyzed using qualitative content analysis to better understand residents’ perceived effects on MWB. Coded responses were reviewed and grouped into summarizing themes, focusing on experiences related to high density living and windowless bedrooms. Participants described adverse effects of high density living and residing in windowless bedrooms on physical and mental health outcomes, sleep-wake cycles, and attention and motivation. Study findings suggest that windows in bedrooms should be a requirement of present and future housing development.

# Nudging for Sustainability: Promoting Energy-Saving Behaviors for a Greener Workforce

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**Keywords / Relevant Terms:** “Nudging”, “Pro-environmental behaviors”, “Green workforce”, “Organizational identity”, “Sustainability practices”

## Abstract

The escalating global impacts of climate change underscore the crucial imperative for adopting more sustainable practices, wherein organizations assume a central role in reducing emissions to achieve decarbonization. The research project "Nudging for Sustainability: Promoting Energy-Saving Behaviors for a Greener Workforce," focuses on the implementation of nudges within organizations to encourage energy-saving behaviors. We administered a questionnaire to a group of workers of a sports association to examine their attitudes and behaviors towards sustainability and facilitate the co-design of nudge strategies through focus group sessions. The developed nudges will be administered to a different group of workers and their effectiveness will be tested, by comparing self-reported pro-environmental behaviors between the experimental group and a control group (not exposed to nudges). The project is currently underway, and 41 workers have been involved, so far. The sample is characterized by a marked female prevalence (70.7%) with a mean age of 39.4 years (SD=11.6). Over half of the participants indicated "sufficient" and "good" knowledge of sustainability topics (48.8% and 29.3%, respectively), and associated the term “sustainability” with concepts such as "environment," "respect," and "well-being”. Levels of organizational identity and workers’ perception of the sports association as environmentally friendly were positively correlated, and organizational identity then showed a positive relationship with five out of twelve tested pro- environmental behaviors, such as participating in pro-environmental initiatives, reducing air conditioning usage and utilizing recycled paper at work, making efforts to raise environmental awareness and encourage colleagues to act sustainably. The alignment of personal and organizational values emerged as a pivotal catalyst for promoting sustainability in our participants. Implementing nudges could be a successful strategy to stimulate and reinforce behaviors that did not report a significant association, guiding organizations towards environmentally conscious practices and optimizing cost-benefit ratios.

# The Impact of Global Climate Change on Typical Residential Energy Consumption in Frigid Cities: A Case Study of Harbin, China

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**Keywords / Relevant Terms:** Climate change, Residential energy consumption, Carbon dioxide emission, Shared Socioeconomic Pathways,

## Abstract

The substantial carbon dioxide emission exacerbates the urban heat island effect, leading to a global temperature rise and severely threatening residents' health. Different carbon emission intervention policies directly influence climate change, and the correlation between climate and urban residential energy consumption is inseparable. In frigid regions, rising temperatures necessitate cooling energy to maintain resident comfort and health, a new demand previously not required. This study takes the example of Harbin, a frigid city in China, to analyze the energy consumption variations in typical urban residential areas under three different carbon emission intervention policies. Primarily, utilizing the climate models from the Coupled Model Intercomparison Project (CMIP6), this study predicts meteorological data for Harbin in 2030 and 2050 under three Shared Socioeconomic Pathways (SSP) interventions (SSP126, SSP245, and SSP585). Subsequently, typical residence in the main urban area of Harbin is simulated using Energyplus to assess changes in energy consumption and indoor thermal discomfort during summer and winter under different carbon emission interventions in the future. The research indicates that Harbin's urban temperature steadily rises without policy interventions, resulting in an annual increase in residents' cooling energy consumption and indoor thermal discomfort during the summer. Although heating energy consumption decreases in winter, the overall energy consumption trends upward. The SSP126 demonstrates the most significant reduction in annual residential energy consumption. Furthermore, implementing shading measures in the summer can decrease indoor cooling energy consumption in Harbin. This research provides practical carbon emission intervention policies for frigid cities, aiming to alleviate the adverse impacts of carbon dioxide emissions on global temperature rise and residents' health.

# Building features facilitating behaviour change – a study of default options

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**Keywords / Relevant Terms:** Behaviour change, Design, Energy saving, Household activities, User experience

## Abstract

Today energy-efficient buildings were perceived as having high quality with regard to the ideal living environments for energy and resource efficiency, and at the same time providing comfort. However, the individuals use their living environments differently even physical characteristics of the environments are the same. This has resulted in large variations in water and electricity use despite the buildings' goals to reduce environmental impacts, but on the other hand has pointed to energy saving potentials by changing behaviours.

The present study aimed to investigate how the design of building features influence behaviour change by exploring (i) users' experience and use of default options, and (ii) determinants of energy behaviours. Regarding this, default options (i.e. standard choices for lighting, indoor temperature, water temperature, water flow and electrical equipment) could be considered as building features with the potential of behaviour change.

A pilot study was conducted with 6 participants in a test 2-rooms apartment where they were asked to perform a set of daily household activities through interacting with the default options.

Three of the participants were asked to perform the activities as they usually do at home whereas another three participants were asked to use energy as little as possible when performing the activities. The data were collected by direct observations and semi-structured interviews.

Preliminary results suggested that motivations played an important role in the interactions between participants and default options despite the instructions given, and that the default options alone could not change energy behaviours when interacting with the participants at the first time. However, easy-to-understand and use features were found to potentially promote acceptance and use of the default options for energy and resource efficiency. By considering behavioural determinants, it would also facilitate design improvements of default options as effective drivers of behaviour change.

# Does the energy crisis triggered household energy-saving measures become habits?

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**Keywords / Relevant Terms:** habit, energy-saving measures, energy crisis, household behavior

## Abstract

Due to the energy crisis, households have been compelled to implement frequent energy- saving measures in response to the increased energy costs. The continuing implementation of crisis-response measures will determine if these measures have long-lasting impacts on energy consumption and translate into sustained efforts. The objective of this study is to investigate which crisis response measures have become ingrained as habits, quantify the proportion of Norwegian households that continue using these habits, and identify the specific feature of these measures that influences Norwegian households to adopt them as regular habits. This study employed household-level data from the "BEHAVIOUR survey" conducted in Norway in 2023. The first poll held in May 2023 included 3,551 participants, followed by a subsequent survey in November that involved two-thirds of the original participants. The anticipated result is that innovative and flexible energy solutions, that seamlessly integrate into or streamline the everyday routines of households, will be more readily adopted and will have a lasting effect on the sustainability of the energy system.

# Perceived risks and benefits to explain the acceptance of two energy projects: uranium mine vs. offshore wind power

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**Keywords / Relevant Terms:** Energy, Uranium mine, Offshore wind power, Risk, Benefits

## Abstract

The current energy crisis leads to the exploration of new energy projects in nature, which are often associated with the rejection of the local populations concerned. This research aims to compare two energy proposals that have not yet been developed but have already generated some social conflict in the affected local communities. On the one hand, we analyse the project for the development and exploitation of a uranium mine in northwest-central Spain, an area bordering Portugal. On the other hand, we analyse the offshore wind energy project in northwest Spain. Our research involved 729 people linked to the affected area who reported on their socio-demographic characteristics and responded to the scales created to meet the objective of the study. Through a mixed qualitative and quantitative design, the perceptions of risks, benefits, the level of knowledge about the project, the emotional balance of the project and finally the level of acceptance were compared. The results show that age, gender and level of education and knowledge directly and indirectly influence the level of acceptance of both energy projects. In addition, the perception of risks and benefits is associated with the emotional balance generated, explaining the final level of acceptance. The energy proposal based on the development of a uranium mine generated more perceived risks and benefits than the wind farm proposal. The level of attachment and identity with the area acts as a moderator of the final acceptance of the offshore wind energy project. The results are discussed in order to identify intervention factors to alleviate social conflicts created by new energy proposals.

# The Impact of Morphological Elements on the Overall Energy Consumption of Residential Clusters: A Case Study in Shanghai

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**Keywords / Relevant Terms:** Energy Consumption, Residential Clusters, Morphological Elements, Shanghai

## Abstract

In the context of energy conservation, planning of building energy consumption has become increasingly significant. Residential energy consumption accounts for over 40% of the total, necessitating strict energy consumption control at the design stage of residential areas. Studies have shown that the morphological elements of residential clusters significantly impact overall energy consumption: different morphological elements can cause significant variations in the interactions between individual buildings (such as shadowing and long-wave radiation), leading to substantial deviations in total energy consumption. Hence, assessing the overall energy consumption of residential clusters is not a linear summation of individual units. UBEM (Urban Building Energy Modeling) provides tools to address these issues. Based on UBEM ,the study uses Shanghai as a case to explore how to incorporate energy consumption into consideration during the formative design stage of the residential cluster.

The author constructs an evaluation index system based on a literature review. Considering the specificity of residential clusters, some indices will be modified and innovated (such as the three-dimensional enclosure degree). Based on the evaluation system, the authors will conduct index measurements and energy consumption simulation on 25 residential clusters, establishing the morphological index database and energy consumption database.

Finally, the authors will explore the correlation between morphological elements and energy consumption, conduct threshold analysis, and propose corresponding energy-saving schemes.

The results demonstrate that the enclosed layout offers superior energy-saving effects while the per-unit area energy consumption in high-rise residential areas significantly decreases compared to low-rise ones. In terms of specific index, increasing the building enclosure degree and improving the form factor are the most potent parameters for energy-saving: a 27.65% increase in the enclosure degree and a 0.05 decrease in the form factor can lead to more than 5% reduction in overall energy consumption levels.

# Facing the global climate change challenges: Adaptation, resilience and coping in relation to climate change

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**Keywords / Relevant Terms:** Climate Change, climate adaptation, positive development, resilience, environmental perception

## Abstract

Climate change is globally recognized among the most crucial (if not the most crucial) emergencies that human societies and the entire planet are facing in current times. Accordingly, notable efforts are being made at the political, scientific, and public opinion levels to counter global environmental change (and in particular to lower the pace of global warming, through a significant reduction of carbon emissions at the global level). In this scenario, psychological science can contribute not only to understanding how human societies can shift from more to less carbon-intensive but also to better understanding how individuals, groups, and communities may adapt to ongoing global environmental change in their daily lives. This presentation is based on the "Climate Change Challenge: Adaptation to climate change" Research Topic collection that was launched at the end of 2022 in the journal Frontiers in Psychology, Environmental Psychology Section, which will be open for submissions until March 20th, 2024. In the presentation we will discuss the current state of the art of climate change adaptation theory and research, using a multidisciplinary approach that covers environmental, social, clinical and developmental psychology, as well as natural and ecological sciences. Furthermore, we will discuss the issues of climate change resilience and climate change mitigation across different cultures and regions of the world, rom the points of view of behavior and natural science. The psychological, educational and design implications will be discussed

# Using the Campbell Paradigm to Understand the Role of Institutional Trust in Environmental Policy Support

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**Keywords / Relevant Terms:** institutional trust, policy support, pro-environmental behavior, the Campbell paradigm, environmental attitude

## Abstract

Previous studies have shown that institutional trust is associated with people's support for some environmental policies (e.g., support for higher taxation), but not for others (e.g., support for subsidies and bans). Such results seem to contradict the notion that institutional trust helps resolve social dilemmas and thus facilitates collective actions on environmental problems. To address this shortcoming, namely to understand the role of institutional trust in individual's decision making, we use the theoretical framework of Campbell's paradigm attitude theory (Kaiser et al., 2010; Kaiser and Wilson, 2019). Using the dataset from the environmental module of the ISSP 2023 survey across 28 countries, we fitted four mixed regression models each with one type of policy support as the dependent variable and attitude and trust scores as independent variables, thus allowing for random intercepts across countries and random effects of attitude and trust across countries. This analysis revealed that environmental attitude had, on average, the expected positive effect on the acceptance of the three pro-environmental measures (prices, taxes and cuts in living standards) and the expected negative effect on the acceptance of anti-environmental measures (opening of nature preserves to economic development) across the countries. We also found that institutional trust had the expected positive effect on all four policy measures. These results corroborated the predictions derived from the Campbell paradigm. Our analysis shows that individual policy measures rely most heavily on the cooperation and "goodwill" of others, and are therefore only feasible if we perceive the behavioral costs to be rather small (i.e., expressing a high level of institutional trust). Given this, the role of trust and people's perceived behavioral costs should be at the forefront of policymakers' attention to gain support for environmental policies.

# The role of personal cost expectations for public policy acceptance in a climate change context

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**Keywords / Relevant Terms**: Policy acceptance, Climate change mitigation, Public policy, Personal cost

## Abstract

Achieving the required reduction in greenhouse gas emissions to mitigate climate change will be unlikely without implementing far-reaching public policies and systemic changes, which need the acceptance by a critical mass of the public to be politically feasible and achievable. One factor affecting policy acceptance is (expected) personal cost caused by policy implementation. Not surprisingly, previous research finds that the lower the personal cost a policy imposes on an individual, the more likely they will accept it. However, while many of the essential behavior changes to significantly reducing greenhouse gas emissions will be costly, the type of cost associated with different behaviors and policies varies. Personal costs can, for instance, occur in the form of money, time, effort, or, more intangibly, as loss of pleasure or comfort. How different types of cost affect policy acceptance has not been studied yet but a better understanding is likely important to design high-impact policies with minimal adverse effects.

In a pre-registered survey study using a German sample, we examine the acceptance of exemplary policies addressing the reduction of meat consumption and car travel. In each domain, we present four policy examples: a nudge, an incentive, a tax, and a law. We seek to understand how the (expected) magnitude and type of cost associated with the policy relate to its acceptance. We find evidence for the importance of personal costs and benefits for policy acceptance, and we demonstrate that personal cost consists of multiple dimensions, most of which significantly impact policy acceptance.

# Urban Morphological Analysis and ESG Integration: A Data-Driven Approach Leveraging Machine Learning and Architectural Design Paradigms in Metropolitan London

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**Keywords / Relevant Terms:** Urban Morphology, ESG Integration, Machine Learning, Sustainable Urban Development

## Abstract

In light of the burgeoning global emphasis on sustainability, the incorporation of ESG (Environmental, Social, and Governance) criteria is becoming increasingly prevalent across various domains, notably within urban planning and architectural design. Urban agglomerations, epitomized by metropolises like London, fundamentally serve as crucibles of human civilization and activity. Consequently, urban design and strategic planning exert a profound influence on sustainability trajectories. In this study, we utilized image segmentation algorithms and advanced machine learning models to extract salient urban spatial elements from street-view imagery, including but not limited to built structures, transportation arteries, and green spaces.

In conjunction with extant datasets pertaining to London's urban morphology and community magnitudes we undertook rigorous data preprocessing. This granular data served as an insightful lens into the intricate nexus between London's infrastructural framework and its functionalities, thus laying a robust groundwork for subsequent ESG scoring methodologies. Recognizing that the tangible urban fabric often mirrors the socio-economic dynamics and governance paradigms, we employed KMeans clustering to discern urban morphology features that predominantly influence the ESG scores. This analytical approach not only elucidated the correlation between the city's physical attributes and sustainability, but also illuminated the latent interdependencies between urban texture and socio-economic vectors.Leveraging this data, we conceptualized a robust ESG scoring paradigm intrinsically aligned with architectural design principles. For instance, under the environmental dimension, metrics such as green space coverage, prevalence of eco-centric buildings, and public transit nodes distribution were paramount. The social dimension encapsulated factors like accessibility to public realms, diversity of community engagement activities, and housing affordability. The governance dimension underscored public participatory indices and transparency in urban planning protocols.

In summation, this symbiosis of contemporary data analytical techniques with conventional urban design tenets offers a pioneering perspective in marrying ESG with urban planning, potentially heralding a paradigm shift in future urbanistic endeavors.

# Pathways to green transition in a diverse London community

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**Keywords / Relevant Terms:** "Green transition","Green economy", "Just transition","Diversity","Local authority","Environmentally sustainable behaviour"

## Abstract

The 'green economy' is a concept open to multiple interpretations, definitions and practices, as well as being closely related to other terms such as 'sustainable development', 'just transition' and the 'circular economy'. In order to investigate this concept and its practical implementation, we present initial findings of an ongoing, mixed-methods research study undertaken in collaboration with a London local authority, exploring their policies to promote a 'green economy'. The locality is characterised by an ethnically and culturally diverse population with significant exposure to social, economic and health challenges. Like many local authorities in the UK, this council declared a climate emergency in 2019 and have since attempted to develop policy to address climate-related impacts. Key research objectives include investigation of non-technical barriers and enablers associated with a 'green transition' and the use of the findings to inform a participatory green economy strategy, whilst the research design includes qualitative interviews and surveys exploring perceptions of local authority officers, local residents and local businesses. Our initial findings, which are discussed in relation to existing theoretical frameworks, suggest that these frameworks are inadequate to explain environmentally sustainable behaviour (ESB) of ethnically and culturally diverse communities facing social, economic and health challenges within UK cities. As such, these findings provide insight into a relatively under-explored topic within existing research literature. A novel conceptual model informed by a cross-disciplinary perspective is then presented along with recommendations for public policy-makers seeking to promote green awareness and behaviour across multiple areas of service delivery. The study will be of relevance to academic researchers and policy makers seeking to understand ESB and promote green transition within localities situated in relatively wealthy nations that experience significant social, economic and health challenges and are home to ethnically and culturally diverse communities.

# Pluralistic ignorance, perceived fairness and effectiveness, and support for Net Zero policies

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**Keywords / Relevant Terms:** climate change, Net Zero, policy support, pluralistic ignorance, perceived fairness, perceived effectiveness

## Abstract

Meeting the UK's net zero targets requires a rapid, society-wide transformation to the way we are currently living. Not only do low-carbon technologies need to be adopted widely; people also have to make significant lifestyle changes to reduce carbon emissions. These changes have to be supported and accelerated by public policy to make sure meaningful steps are taken in time. Recently, there has however been vocal opposition to a number of Net Zero policies, in particular those that are seen as restrictive, such as ultra-low emission zones (ULEZ), a 20mph speed limit in Wales, and a non-existent 'meat tax'. In this study we conducted an online survey (n=2,004) representative of the UK population, with the aim to identify what can explain opposition to different types of Net Zero policies. Participants were randomly shown six out of 12 'push' and 'pull' measures (i.e., taxation, subsidies, restrictions and service provision) in three behavioural domains (i.e., travel and transport, household energy use, and diet). They were then asked questions about the policies' (a) perceived effectiveness and (b) perceived fairness, as well as their secondary beliefs about (c) how widely supported/opposed they think the policies are. The results show that push measures are supported less than pull measures, which can be partly explained by their perceived effectiveness and fairness. Furthermore, participants overestimate opposition to/underestimate support for taxation and restrictive legislation, in particular those who oppose the policies themselves. The implications for Net Zero policies will be discussed in the presentation.

# Assessment of the impacts of the 15-Minute Community Life Circle from a Human-Centric Perspective: A Case Study of Pingliang Road Subdistrict in Shanghai City

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**Keywords / Relevant Terms:** Multi-sourced urban data, Human-oriented, Urban design, Impacts assessment

## Abstract

Community is the primary area of citizen's activities. Traditional community constructions often focus on meeting minimal standard requirements, lacking consideration of citizens' actual needs. Recently, major cities nationwide in China have proposed the construction goal of a "15-minute community life circle" to implement a Human-oriented development concept. Under this goal, how to identify their shortcomings in built communities and make targeted improvements becomes an important research issue.

In recent years, the emergence of urban multi-source data and new technologies has supported solving this problem. Taking the Pingliang Road Subdistrict in Shanghai City as an example, this paper utilizes these new data and technologies to assess the impacts of the 15-minute community life circle in the study area from three dimensions: community population characteristics, community public facilities coverage, and community street spatial quality:

1. Community Population Characteristics: The author, based on LBS data, portrays the age composition and consumption levels of community citizens, and further delineates their class distribution through housing price analysis.

2. Community Public Facilities Coverage: The author, using the UNA tool, identifies blind spots in community public facilities and evaluates the convenience based on buildings as the analysis units.

3. Community Street Space Quality: The author identifies the functional features of community streets based on POI data and assesses the spatial quality of community streets using street view big data.

Based on these findings, the author summarizes the problems in the study area and further proposes targeted strategies and optimization suggestions. This assessment method and process can serve as a reference for evaluating the impacts of the 15-minute life circle construction in other similar communities.

# Beliefs and climate change skepticism in French lay people

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**Keywords / Relevant Terms**: climato-skepticism , Conspiracy theory , Belief in science, Need for uniqueness

## Abstract

Despite accumulating data pointing to climate change and its anthropogenic nature, part of the population remains skeptical. We explored how unwarranted beliefs together with beliefs in science predict climate change skepticism. In parallel, we targeted individuals' need for uniqueness, a lesser-known factor for which recent data suggest an association with endorsement of conspiracy theories.

A total of 477 French participants were recruited via social networks. They were asked to complete 5 sets of online measures:
(1) The Science Belief Scale (Farias et al., 2013)
(2) A French version (Lantian et al.,2016) of the Generic Conspiracist Beliefs scale (Brotherton et al., 2013)
(3) 12 items from the Skepticism toward climate change scale (Whitmarsh, 2011), to capture different questions about climate change, from its anthropogenic change to its existence
(4) The French version (Bouvet et al., 2014) of the revised Paranormal Belief Scale (Tobacyk, 2004)
(5) An adapted version (Lantian et al., 2017) of the self-attributed uniqueness need scale (Lynn & Harris, 1997).

Climate change was significantly positively associated with paranormal (r=0.20) and conspiracy beliefs (r = 0.22), while it was negatively associated with belief in science (r=-0.11). No significant relationship was observed between climate change skepticism and need for uniqueness (r=-.02). We extended our analysis by calculating semi-partial correlations and a multiple linear regression model including climate change skepticism as the criterion.

The analysis showed that paranormal beliefs (ß= .07) and conspiracy beliefs (ß= .11) were both independent predictors of climate change skepticism. In conclusion, it will be important for researchers to better understand people's beliefs and cognitions to better grasp the phenomenon of climate change skepticism, and ultimately design programs aimed to debunk people.

# Research needs among Global South residents during heat waves: Assessing risk-perception, knowledge, health consequences, and economic losses in Bangladesh

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## Abstract

Urban heatwaves are becoming an increasingly serious issue, particularly in South Asian nations struggling with higher urbanization and limited resources. Although earlier research concentrated on the biophysical features of urban heat islands, less is known about the public's awareness of urban heat stress and its negative effects on health and the economy. The lack of purposeful funds for heat stress-related social and behavioral studies and not taking heat stress-related issues seriously might be the reasons for a small amount of research in this region. We conducted a large cross-sectional study regarding heat stress- related awareness, risk, impacts, and adaptive behaviors, further divided into three parts. The first two sub-studies aim to investigate the perceived urban heat risk and associated impacts on health and economic productivity, while the third one explores the mediating impact of several perceptions of heat-related risks on the relationships between temperature exposure and adaptive behaviors. A total of 898 participants from eight major cities in Bangladesh participated in the study. The data was collected between September 10 and October 20, 2022. We find a substantial proportion of individuals regularly experience heat stress but have limited awareness of heatwave reduction measures. Moreover, perceived physiological impacts were more severe than psychological impacts. Urban heat also moderately affects daily activities, particularly transportation and sleep/rest. Findings reveal significant perceived economic loss due to heat stress, averaging $281 per person annually. Reduced productivity in the workplace due to heat-related absenteeism and illnesses were major contributors.

# Heating up at home; public perceptions and experiences of cooling demand in the UK

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**Keywords / Relevant Terms:** Cooling demand, heatwaves, heat risks, behaviour, sustainable cooling technology.

## Abstract

Decarbonisation of the energy sector will play a crucial role in mitigating climate change. Whilst progress has been made to reduce emissions in the electric power sector, this has been limited in the area of heating (including space cooling), which accounts for over a third of UK emissions. Energy use for space cooling is growing faster than any other end use in buildings globally, with an increase in the frequency and intensity of heatwaves. A growth in cooling demand is associated with significant risks, potentially contributing to increased electricity consumption and carbon emissions, increasing reliance on polluting refrigerant gases and impacting human health and productivity. This research presents initial findings of public perceptions and experiences of heatwaves, cooling demand and cooling technologies in UK homes. The study adopts an exploratory qualitative research design using participant-led photography, semi-structured interviews and deliberative workshops. Data collection involved engagement with 70 participants drawn from 5 dwelling types within urban locations in Southern England. Over 170 photographs were provided by participants representing how 'keeping cool at home' was visualised and interpreted during periods of higher temperatures and heatwaves. Semi-structured photo-elicitation interviews were then conducted and analysed thematically. Subsequent deliberative workshops examined perceptions of modelled future temperatures and attitudes and acceptability towards a range of sustainable cooling technologies. This paper sets out research findings which enable a new understanding of current and potential future cooling behaviours and strategies in UK homes. Factors impacting cooling, the evolution of cooling strategies and how future cooling demand and expectations are imagined in a warmer climate, for example with an increase in the frequency of heatwaves, are presented. Implications for policy to manage increased risks of higher temperatures is discussed, including mitigative and adaptive behaviours to address future risks and social acceptability of sustainable cooling strategies and technologies.

# School children's risk perception and preparedeness: exploring wildfire risk in Portugal

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**Keywords / Relevant Terms**: Forest fires; risk perception, education for prevention

## Abstract

Wildfires are of the major risks in Portugal. In 2017 only, 114 people died. Since then, legislation has been put in place to prevent wildfires and increase preparedness of the population. Education is known to be pivotal in risk communication.. In this context, the Fire-B- aware project (Perception of fire risk among primary school students and their families in Portugal) aims to investigate the perception and preparedness (early training) for forest fire risk among schoolchildren and their families in Portugal. The objective of this study is to understand how primary school students living in Portugal perceive the risk of forest fire, how prepared they are to respond to these events and how their attitudes and behaviours shape their preparedness. The questionnaire was administered to students in the 7th year of primary school. The sampling strategy followed the two variables analysed: being resident (or not) in a forest fire risk area and having (or not) previous experience of a rural fire in the last 8 years. These two variables were assessed after cross-referencing various data and resulted in 3 groups of municipalities, from which 20 municipalities were randomly selected in each group. The data collection is carried out in a classroom setting followed by a QUIZ, used as an interactive and attractive tool for contributing to environmental education on the subject of rural fire risk.

The results of the survey give an insight on the knowledge gaps that exist in terms of the causes, impacts and responses to forest fires. They also allow us to understand the impact of socio-demographic and experiential factors on risk perception and mitigation measures.

This research also opens the path for future studies about the re-evaluation of the learning process and its impact on the community.

# The public's perception of and concern about heat waves, air pollution and noise in Barcelona

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(1) CIEMAT; (2) UFRO-Universidad de la Frontera

## Abstract

Environmental stressors pose significant threats to human wellbeing, particularly in urban areas. This study examines public perception of three prevalent environmental risks in Barcelona: heat stress, air pollution, and noise. Drawing from an online survey of Barcelona residents, we investigate the degree of concern regarding these risks and identify patterns among different socio-demographic groups. Our findings reveal distinct levels of concern among the three environmental risks, with heat stress eliciting the highest level of concern. Additionally, we observe variations in concern levels across socio-demographic factors, such as age, gender, and education and other correlates such as place attachment and subjective wellbeing. Examining the profiles of those most concerned, we identify individuals with higher levels of environmental sensitivity. Our analysis provides valuable insights into public perception of environmental stressors in the urban context and highlights the need for tailored interventions to address these concerns effectively.

# Factors of Individual Preparedness for Extreme Weather Events and Natural Hazards: Meta-analyses

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**Keywords / Relevant Terms:** climate change, natural hazard, preparedness, meta-analysis

## Abstract

Extreme weather events have become an inevitable yet perilous part of people's lives worldwide, however, individuals are on average hardly prepared to face them. Therefore, disentangling the phenomenon of individual preparedness and identifying its factors is the key to enhancing and promoting preparedness.

In this preregistered study a series of meta-analyses were conducted to scrutinize socio-psychological factors of individual preparedness. Preparedness was defined as actions in response to a natural hazard or extreme weather event to avoid physical harm caused by it.

In the preliminary stage of this research, eight categories of 22 socio-psychological factors were investigated by synthesizing 60 samples (n = 30,652) across 15 countries.

The results showed that the perceived efficacy of preparedness actions and self-efficacy were the strongest factors of taking actions to prepare for natural hazards (r=.51, 95% CI [.36, .64] and r = .43, 95% CI [.09, .68], respectively). Knowledge about natural hazards and a sense of being in control of one's life yielded small significant effects (r = .22, 95% CI [.12, .31]; r = .18, 95% CI [.06, .30]).

Perceived severity and probability, societal and personal risk perception showed significant positive effects of a small magnitude (r ranging from .13 to .22). Experience with hazards, potential barriers to preparedness, negative affect, and socio-demographic factors were weakly related to preparedness (r ranging from .01 to .10).

The present study contributes to the body of the literature by investigating methodologically rigorous conceptualization of preparedness, examining diverse facets and relationships of the well- and under-studied factors of hazard preparedness. Additionally, the study identifies previously unexplored moderators of the main effects and has several crucial policymaking and risk communication implications.

# Characterizing physical activities patterns in urban open spaces considering heat risks and local climate zones

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**Keywords / Relevant Terms:** Local climate zone, urban open space, outdoor activities, urban cooling, heat risks

## Abstract

Urban green infrastructure in open spaces have become essential to address climate change including mitigating excessive urban heat while providing crucial ecosystem services to citizens. Physical activities are closely linked to the quality of urban open spaces with strong associations to human well-being. This paper aimed to identify the relationship between outdoor jogging activities and spatial distribution of heat risk and provision of public open spaces. Prior studies have shown approaches to investigate the relationship between urban open spaces and characteristics of outdoor physical activities. However, substantial efforts are needed to bridge the gap for discussing outdoor activities patters within urban open spaces considering heat risks in different local climate zones (LCZ). This paper captured 41829 jogging records in Guangzhou to illustrate physical activities patterns in 20 selected hotspots. Integrating multi-dimensional data to categorize records by intensity, diversity, distance, the study analyzed remote sensing data representing the urban heat island intensity and Geographical Information System (GIS) data representing the characters of urban forms. Then, the clustering analysis was used to extract key indicators to compare each urban hotspots. Moreover, the hotspots were categorized into four groups with specific characteristics according to clustering results, and recommendations tailored to each clusters were proposed to improve urban design and planning. Finally, the LCZ and heat risks were assessed to identify the relations between outdoor activities and impacts of climate based on cluster categorization. Hotspots can be summarized mainly as urban parks and forests which provide services for outdoor activities and heat mitigation. Jogging patterns are not sensitive to heat risks with significant citizens exposed to high outdoor heat risks. Urban design and planning for a more people-oriented provision of ecosystem services necessitate the incorporation of climate responsive design considerations to strengthen the use of urban open spaces.

# Nexus of Sense of Place, Risk Perception, and Adaptive Behaviour: An Application of the “Place-Based Risk Appraisal Model”

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**Keywords / Relevant Terms:** sense of place, place attachment, risk perception, adaptive behaviour, flood risk management

## Abstract

In communities that have experienced flooding, the connection between an individual’s sense of place (SoP) and their risk perception is a pivotal factor influencing adaptive behaviours. My study delves into the relationship between people’s SoP, risk perception, and adaptive behaviour in Saxony-Anhalt, Germany, where severe floods with significant loss occurred in 2002 and 2013. Based on the ‘Place-Based Risk Appraisal Model (PRAM)’ (Han et al., 2023), this study employs latent profile analysis to classify individuals based on their attributed place meanings (i.e., ecological, economic, recreational, and personal significance) and place attachment (i.e., nature bonding, group identity). The study examines how these classes correlate with individuals’ perception of flood risks and the adoption of adaptive behaviours. I hypothesise that SoP strongly influences risk perception based on the findings of previous studies (e.g., Ruiz & Hernández, 2014). For example, individuals with a strong emotional and identity-based attachment to a place might be more inclined to engage in adaptive behaviours, acknowledging the threat to their valued place. In contrast, those with utilitarian or recreational associations might not perceive the risk as intense, potentially leading to less adaptive behaviour. The significance of this research lies in its potential to contribute to flood risk management strategies by mapping the different ways in which people value and interact with their environment. By doing so, flood risk management can be tailored to resonate with the different SoPs, promoting a more cohesive response to flood risk.

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# To what extent are flood risks considered when people in areas close to rivers choose their residential location?

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**Keywords / Relevant Terms:** Residential choice, Flood risk, Inundation area, Risk information, Typhoon damage

## Abstract

From the viewpoint of mitigating disaster risks, “where to live” is an important factor. Especially in the case of flood damage, the risk is closely related to the terrain; thus, it varies greatly depending on where a person lives. However, when people choose their residential location, they consider numerous factors other than safety, such as convenience and economy. Thus, their consideration of disaster risks may be postponed. Therefore, the objective of the present study is to clarify the extent to which disaster risks, especially flood risks, are considered when people in areas close to rivers choose their residential location and the extent to which a flood risk or lack of flood risk influences peoples’ residential choice.

A questionnaire survey was conducted in November 2020 in Azumacho and Takasaka, Higashimatsuyama City, Saitama Prefecture. Azumacho is within the inundation area, whereas Takasaka is outside the area. In this study, an analysis was conducted of 394 people who have moved from another place and answered that they chose their place of residence on their own.

In response to being asked about the criteria emphasized when choosing a place of residence, although economy and convenience factors such as "residence size and floor plan," "house price/rent," and "closeness to the nearest station" were emphasized, fewer respondents emphasized disaster safety. In addition, a difference was observed in the degree of emphasis inside and outside the inundation area. By contrast, no significant difference was observed in respondents’ collection of information about disaster risk inside and outside the area. Thus, the result of emphasizing other factors such as the image of the town was reflected in the residents’ choice of their place of residence.

Our results suggest that this problem cannot be resolved unless the factors people value when selecting their place of residence change.

# Studying adaptation to climate change with an interdisciplinary approach. Evidence of territorial inertia on the French Mediterranean coast

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**Keywords / Relevant Terms:** adaptation, French coast, territoral inertia, interdisciplinarity

## Abstract

Coastal cities need to adapt to undisputed consequences of climate change such as sea-level rise. But risk perception is also a social construction which must be considered in adaptation policies. Our study is based on a strong interdisciplinary approach elaborated between geography and psychology, starting with the concepts of “territory” and “social representation”. This approach enables to conceive risk perception as integrated in a wider set of issues concerning the territory.

Semi-structured interviews with a stratified sample of municipal level authorities (elected officials and technical agents) were conducted in 29 coastal cities in the south of France. The interview guide covered four topics: general vision of the territory and its coastal zone, perception of climate change, coastal management and development policy, and future vision of the coastline. The recorded interviews were transcribed and analysed quantitatively as well as qualitatively in a comparative thematic analysis.

Results show that social representations are centred around beaches and urban development. The major risk raised is beach erosion. The future management of the coastal area is conceived in a continuity between past and present and creative adaptation proposals are rare. The possibilities of structural adaptation are largely ignored. The discourse reflects a strong territorial inertia, where the territory’s past engagements and identity are projected into the future. A notable development could origin in the younger generation of municipal authorities.

At present French mediterranean coastal municipalities lean more towards resistance than towards adaptation regarding climate change. To accompany a paradigm shift, policy makers need to strengthen efforts to raise awareness of climate change on the coast and value actions which are already taken. Apprehending and considering local urban identity is an important leverage.

The contribution is important in its resolute interdisciplinary, even transdisciplinary approach, opening the possibility of comparisons through a replicable methodology.

# The Antecedents of Risk Perception of Natural Hazards: A Meta-Analysis

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**Keywords / Relevant Terms:** risk perception; natural hazards; meta-analysis; climate change

## Abstract

To ensure better preparedness and response to natural hazards, involving people is crucial. Among the determinants of individuals' actions to protect themselves, both before and after a natural hazard, is risk perception (van Valkengoed & Steg, 2019). A conspicuous number of studies investigated the antecedents of risk perception; nevertheless, there are no quantitative summaries (i.e., meta-analysis) of the available research. The aim of this contribution is twofold, namely, to estimate effect sizes of different potential antecedents of risk perception and to investigate the effect of possible moderators of such relationships. A query string was used on Scopus, Web of Science, and PsycINFO, and a final number of 121 records (127 studies) was included based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Results of the first aim showed that, among thirty-two predictors identified, nineteen reported significant effect sizes. They can be organized into three clusters (Bonaiuto & Ariccio, 2020): 1) factors related to the relationship individual-risk, 2) factors related to the relationship individual-community, and 3) individual factors (i.e., sociodemographic and dispositional factors). The first cluster showed the highest number of variables with strong effects. Overall, an effect of publication bias and study heterogeneity was observed. Regarding moderators, the type of natural hazard considered and the level of risk area of the sample proved to be relevant in some cases. Existing research is scanty regarding some natural hazards (e.g., landslides, drought); thus, future studies may consider studying risk perception antecedents in relation to these understudied natural hazards. Policymakers should consider the three clusters of antecedents. This represents a novel attempt to quantitatively summarize the available literature on the topic of the determinants of risk perception, considering interdisciplinary studies, including grey literature, and with no limits in terms of publication date.

# Improving the warning response model : how do people react to alerts sent on their smartphones in France?

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**Keywords / Relevant Terms:** Alert, Cell-broadcast, hazard, stress

## Abstract

Since June 2022, French prefectures have been able to alert the population of an approaching danger or threat by sending a message via cellular broadcasting (CB). The message is accompanied by a strident ringtone to attract the attention of receivers. This alert distribution channel complements the traditional sirens, televisions, and radio alerts. It has been integrated into a multi-channel platform called FR-Alert. Composing an intelligible message for the greatest number of individuals was a first challenge, on which we were lucky enough to work alongside the authorities (Douvinet et al., 2023). Completeness, description of the hazard, location and choice of words are scientific issues, but also operational ones.

In essence, an alert message generates feelings with a negative connotation, such as fear, stress, uncertainty, anxiety (Reed et al., 2010; Cvetkovi?a et al., 2019; Cain et al., 2021). We then developed an original protocol to evaluate the feedback and perception of people receiving an alert message on their smartphones. During full-scale exercises, the receipt of an alert message was accompanied by a link to an online questionnaire designed to gather people's reactions to the message. 26,402 questionnaires were collected during 73 exercises organized between June 2022 and December 2023 (cf. https://fr-alert.gouv.fr/).

Results show that the older the subjects, the better their acceptance and understanding of the message, and the lower their stress and anxiety. Furthermore, it was the loudness of the ringtone associated with the CB message, rather than the reading of the message itself, that dominated perceptions and initial feelings. Finally, this study underlines that researchers, by sharing their knowledge with populations and stakeholders, can help develop awareness-raising activities and indicate which strategy can be used to improve the perception and understanding of CB alerts in future real-life alert situations.

# Assessing the Role of Place Identity in Environmental Change: Navigating Adaptation in Flooding Scenarios - A VR-Based Approach

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**Keywords / Relevant Terms**: Place Identity, Virtual Reality, Flooding Scenarios, Adaptation

## Abstract

This study delves into the crucial role of place identity in shaping responses to environmental changes, specifically flooding. It focuses on the interaction between place identification, facilitated through virtual reality (VR), and individual reactions to disruptions in environmental continuity. Utilizing an innovative VR methodology, we explored how a simulated flood experience influences participants' sense of identity and adaptive responses. The sample comprised 127 participants, evenly divided into control and experimental groups, with a balanced representation of Norwegian and non-Norwegian nationals, ensuring diversity in the analysis. Mixed-effects models were employed to examine fixed and random effects, accounting for variation across and between participants, based on repeated measures collected at two time points. Preliminary results suggest that strong identification with the VR environment may intensify the effects of continuity disruptions, leading to increased identity threat and subsequently influencing adaptation strategies. This research aims to offer valuable insights into the potential of VR as a tool for examining place identity dynamics and their implications for environmental adaptation responses

# From microplastics to underwater noise: Risk perception and policy support for different environmental pollutants across five European countries

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**Keywords / Relevant Terms**: environmental pollution, risk perception, policy support

## Abstract

Negative impacts on human health and environment have been identified from various pollutants that are introduced into the environment by business and individuals. For example, PFAS (per- and polyfluoroalkyl substances) or “persistent chemicals” are harmful to human health; microplastics, eutrophication and underwater noise have negative impacts on nature (SOS-ZEROPOL 2.1; WHO). Tackling environmental pollution requires addressing awareness gaps, along with systemic (e.g. environmental policies) and individual behavioral changes. The present study investigates the public's risk perception and policy support related to four environmental pollutants (microplastics, PFAS, eutrophication and underwater noise) as well as public support for environmental policies in five European countries (Belgium, Bulgaria, Greece, Ireland, and the Netherlands). In each of the five countries, the sample consists of approximately 900 individuals, stratified by age, gender and region of residence, resulting in a total sample of 4500 individuals. Data collection has been completed in Belgium, Ireland and the Netherlands and is still running in Bulgaria and Greece (expected completion in January 2024). Questions from validated psychological instruments measure people's awareness, values, beliefs, norms, risk perception, policy support, behavioural intentions, and system perceptions, extending a conceptual model from climate change. Preliminary analyses point to considerable differences between pollutants and between countries, e.g. awareness of PFAS pollution is especially high in Belgium and the Netherlands; awareness of microplastics is generally higher than awareness of other pollutants . The simultaneous investigation of various pollutants enables comparing risk perceptions and their drivers across different pollutants and advancing our theoretical understanding of the underlying processes, shedding light on how socio-psychological factors contribute to risk perception and policy support in a differentiated manner. The expected variability in public awareness and concern for different pollutants can inform broader aspects of understanding and responding to environmental issues and facilitate communication about risks and potential systemic solutions.

# An exploration of waste management behaviour drivers in Indonesia: the role of infrastructure, place attachment, social connections and dimensions of concern about plastic pollution

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**Keywords / Relevant Terms**: plastic pollution, waste management, place attachment

## Abstract

Plastic waste continues to accumulate in the world causing environmental, social, and economic issues. Indonesia has been highlighted as one of the top polluters and is committed to responding swiftly and decisively to the challenge. Yet, despite the Indonesian government's efforts to reduce plastic debris by 70% by 2025, annually 4.9 million tons of plastic waste is unmanaged, 83% of which leaks into the marine environment, signifying a disconnect between the official policy and human experiences. Behavioural perspectives are crucial for understanding how and why plastic waste is disposed of, and identifying solutions to prevent plastics from escaping into the environment.

To examine how and why people manage their waste in more and less sustainable ways, we conducted 14 focus groups and a quantitative survey (N = 506) in rural and peri-urban areas of Indonesia. We explored the understanding of sources, pathways, and impacts of plastic pollution among different community groups, and drivers and barriers of the current waste management practices.

We found that a variety of social and personal factors guided people's behaviours, from the standard of house cleanliness to the concept of human waste items (e.g. diapers) requiring special handling. Community ties played a pivotal role in shaping waste management choices, as well as social and nature-based attachment and environmental concern. At the same time, the big variation in availability and accessibility of waste management services contributed significantly to what was available to local populations.

The results are crucial for policymakers, as they demonstrate the drivers of a variety of waste management behaviours, from burning to using waste collection services. Understanding such drivers is essential for delivering meaningful improvements in waste management in Indonesia.

# Impacts of No Single-use Plastic Bags Interventions on Reducing Marine Plastic Waste: A Comparative Investigation on Island Communities in Central Vietnam

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**Keywords / Relevant Terms**: Marine plastic pollution, single-use plastics, island tourism, behavioral change, pro-environmental behavior

## Abstract

Marine plastic pollution is a growing issue, particularly in areas facing the ocean. Anti-plastic interventions have gained widespread attention for their potential to foster consumer awareness and behavioral changes. Tourism could be a controversial factor in this issue: tourists contribute to the local economy but also increase plastic consumption, while tourism may facilitate pollution mitigation for its reputation. This study aimed to examine the impact of no single-use plastic bag (SUPB) interventions on plastic consumption and plastic waste mitigation behavior in island communities, considering the tourism factor.

Data were collected through face-to-face questionnaire surveys in two adjacent islands in Central Vietnam, which comprised three groups of residents: Group 1 in a tourism island with the interventions since 2009, Group 2a and Group 2b in another island without interventions, representing the tourism and non-tourism areas, respectively (n = 100 each group). Questionnaire items were developed based on the Theory of Planned Behavior, and the data were analyzed using the Kruskal-Wallis test for a 3-group comparison. Results indicate that Group 1 had the lowest plastic consumption (e.g., SUPBs and foam boxes) and the highest in knowledge and mitigation behaviors (e.g., avoiding SUPBs, no littering, separation, clean-ups). Group 2a was the highest in some plastic consumption and the lowest in some mitigation behaviors. Overall, Group 1 was the highest in anti-plastic behaviors, followed by Group 2b and then Group 2a, though with statistical insignificance between Groups 2a and 2b in some items. These results imply that experiences through the interventions contribute to less plastic consumption and mitigation behaviors. Interestingly, tourism might discourage such anti-plastic practices, though the implication is inconclusive and could be explained by other community characteristics.

The present findings suggest that long-term interventions in avoiding SUPs can nurture pro-environmental practices in island communities to mitigate marine plastic pollution.

# Eating and drinking microplastics: Predicting people's risk perception and policy support using a climate change framework

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**Keywords / Relevant Terms**: microplastics, food, beverages, human health, policy support, risk perception, climate change

## Abstract

While microplastics (MPs) have recently been found in human food and beverages, considerable knowledge gaps exist regarding standardised identification, relevant sources and pathways, and toxicity for humans. Public concern, however, is high in general opinion polls. What is lacking is research into the factors underlying concern, especially regarding human health impacts. Gaining deeper, more psychological insights into the public's perspectives is crucial with respect to calls for more consideration of public opinion in policy making. Thus, our goal was to test the influence of several factors in predicting risk perception and policy support in the context of MPs in the human food chain, using a well-established theoretical model from another environment- and human health related topic, namely the "Climate Change Risk Perception Model +" (CCRPM+).

Data was drawn from a representative survey of the Austrian adult population (N=741). The survey was largely inspired by the CCRPM+ and explored cognitive, experiential, socio-cultural and socio-demographic predictors of both risk perception and policy support.

We found (1) relatively high concern about MPs in the human food chain; (2) high support for different plastics-reducing policies, and higher support for pull than push measures; (3) risk perception was predicted most by biospheric values, negative affect, indirect exposure through talking to others, social norms and perceived scientific consensus; (4) the pattern of predictors for policy support differed between push and pull measures (e.g., perceived scientific consensus and trust in science predicted higher support for pull but not push measures).

In sum, the present study's contribution is to unpack the factors underlying public concern for MPs in food and beverages. In order to develop and implement acceptable and effective policy measures, knowledge of factors underlying public risk perception and policy support is key, especially where scientific knowledge is still incomplete.

# What (dis)encourages anti-plastic behaviors? Empirical findings from a Japanese consumer survey

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**Keywords / Relevant Terms:** plastic pollution, single-use plastics, perceived behavioral control, dual process model, pro-environmental behavior

## Abstract

**Background and objectives:**
Japan is the second largest plastic consumer country and faces plastic pollution issues, as does the global society. While legal, technological, and economic factors explain plastic product supplies, psychological factors seem considerable in predicting plastic-related behavioral changes among consumers. Many plastic products surround them, and they may perceive it challenging to avoid them daily. This study aims to identify critical psychological factors in reducing plastic consumption among Japanese consumers, focusing on the difficulty levels of the behaviors. This study employs the dual process model, assuming that difficulty levels critically moderate the process and are salient among passive consumers (i.e., weak awareness and norm) compared with proactive consumers.
**Methods:** Online questionnaire data will be collected from Japanese consumers (N=1000) in January 2024 on the behavioral intentions and frequencies; seriousness, responsibility, and social norms; and the prototype image, difficulties, and acceptance of daily life anti-plastic behaviors such as “refuse plastic cutlery in food delivery” and “choose refillable pens instead of disposable ones” and other sustainable consumer behaviors (e.g., buy small food mileage products). These data will be analyzed in two steps: first, the main categories of anti-plastic behaviors will be extracted by the factor analysis, and second, the psychological process of these behaviors will be examined based on the assumed model using the path analysis method. Sustainable consumer behaviors will also be analyzed to explore fundamental differences with anti-plastic behaviors in behavioral categorization and psychological processes.
**Expected results and implications:** The analysis results will provide insights into how passive and proactive consumers perceive difficulties in reducing their plastic consumption, resulting in different performances in anti-plastic behaviors, and propose critical structural and psychological driving forces to encourage both consumers to become less plastic-dependent.

# Navigating Climate Extremes: Examining human adaptation through nature exposure in high-mountain hypoxic environments

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**Keywords / Relevant Terms**: climate change, nature exposure, hypoxia, adaptation

## Abstract

The escalating urgency of climate change and its impact on global environmental conditions necessitate a comprehensive understanding of human adaptation to extreme environmental conditions and identify potential mitigators to alleviate their exposure. This study delves into the psychological and physiological effects of exposure to nature in the context of a high- mountain environment characterized by hypoxia, a condition known to alter cognitive functions and emotional states (Ruffini & Cera, 2020).Drawing on previous research linking nature exposure to enhanced well-being and stress recovery (Bowler, 2010; Berto, 2014), this contribution investigates the potential of nature images to moderate the negative effects of hypoxia. Employing a randomized within-subjects design, participants are exposed to natural or urban environment images for 10 minutes under normoxia (sea-level air oxygen pressure) or hypoxia (4200 m altitude air oxygen pressure) laboratory conditions. Emotional states were assessed before (T1) and after image exposure (T2), while physiological indices (e.g., heart rate, heart rate variability, blood pressure, and ventilatory response) are continuously monitored. Comprehensive individual difference assessments (e.g., Connectedness to Nature Scale: CNS, Mayer & Frantz, 2004; New Ecological Paradigm scale: NEP, Dunlap et al. 2000; Trait emotional intelligence questionnaire: TEIQue, Petrides, 2009) were conducted to test individual predispositions that might enhance the beneficial effect of natural exposure. Preliminary findings from a partial sample affirm the impact of hypoxia on emotional states, revealing higher levels of negative emotions and lower levels of positive emotions in hypoxic conditions. Notably, exposure to natural images appears to mitigate these effects, resulting in a reduction in negative emotions and an increase in positive emotions in both normoxia and hypoxia conditions. The potential implications of our findings for climate change adaptation strategies and the effect of individual differences will be discussed.

# Connection to the Sea: New Challenges

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**Keywords / Relevant Terms**: marine pro-environmental behaviour, emotions, cognition, islanders

## Abstract

The question of people's relationship with the sea or the ocean is a societal issue, particularly when it comes to adapting to climate change. While there are many tools for measuring the quality of connection to nature (implicitly terrestrial), there are very few for understanding connection to the sea and its link with marine protection behaviour. In accordance with the work of Guignard, et al. (2022), we propose (1) to investigate the adaptation of the Inclusion of Self in Nature scale (Schultz, 2001) to the sea, and (2) to compare two populations with different experiences of the sea. This new tool, Inclusion of Self in Sea (ISS), was administered to a general population of 330 people living close to the sea, including 111 islanders (West French Indies) and 219 mainlanders (France). In addition to the ISS, the online survey assessed attitudes towards the sea, positive and negative emotions associated with the sea (i.e., PANAS), knowledge of the marine environment, and marine pro-environmental behaviour. The data was processed using linear regression to identify the determinants of pro-environmental behaviour. Firstly, age and income do not play a role in predicting behaviour. Secondly, the results show differences between islanders and mainlanders. For islanders, behaviour was predicted by ISS (B=.211) and attitude (B=.35, R2=.30). For mainlanders, behaviour was predicted by attitude (B=.345), negative emotions (B=.182) and knowledge of the sea (B=.137, R2=.23). Complementary analyses aim to study possible moderators between SSI and behaviours, such as social trust and institutional trust (Xing et al., 2022). References Guignard, S., Schleyer-Lindenmann, A., Bertoldo, R., & Robert, S. (2022). Qui n'aime pas la mer ? une proposition d'outils de mesure pour appréhender le rapport à la mer. Journées Scientifiques de l'ARPENV-hal-03930380 Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. Dordrecht, Netherlands: Kluwer Academic Publishers

# On the search of a refined personal value typology for environmental psychology

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**Keywords / Relevant Terms**: personal values, environmental psychology, systematic review, thematic analysis

## Abstract

To effectively address environmental challenges, it is crucial to understand the psychological factors influencing human decisions relevant to these challenges, including sustainable behavior. Within environmental psychology, personal values have been established as key antecedents of people's pro-environmental decisions. However, the widely used value typology in environmental psychology is limited in scope, focusing only on a narrow range of value types. This reduces its applicability for emerging research topics, such as studying the acceptance of novel sustainable technologies or choices to adapt to climate change. Our study aims to address this gap by presenting an overview of personal value types identified in the social science and philosophy literature as antecedents to environmental cognitions, emotions and decisions. We conducted a systematic literature review, examining 773 academic records, and applied qualitative thematic analysis to synthesize the data. During the synthesis, each proposed value was categorized to a semantically fitting value type. This resulted in a list with 47 personal value types, incorporating both established value types, such as power and security, and newly emerging value types such as personal health and eudaimonia. Our work lays the foundation for future empirical research to identify the value types most relevant to environmental decisions. The refined value typology will not only be crucial for advancing academic understanding of how personal values influence environmental decisions but also holds significant potential for informing communication campaigns and behavior change interventions. Tailoring them to individual value priorities, such as through customized messaging, could significantly boost their effectiveness, thereby fostering more environmentally friendly and healthy lifestyles. To conclude, our findings highlight the need for developing a more nuanced value typology to improve our understanding of environmental decisions, which is essential for addressing the pressing environmental challenges of our time.

# Perception of Climate Change in Protected Natural Areas of Garajonay and Sierra Espuña

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**Keywords / Relevant Terms**: Climate change, Perception of climate change, Protected natural areas, Scepticism about climate change, Concern about climate change

## Abstract

Background and objectives: Climate change has been classified as the greatest risk to humanity by the World Economic Forum (2016). The assessment of the magnitude of climate change and the most appropriate strategies to address the situation depend largely on the perception of the problem and the beliefs, attitudes, and emotions related to it. The objective of this study is to understand the social perception (judgments and beliefs) about the causes, risks, and scenarios associated with climate change, as well as the assessment of some necessary measures to implement adaptive strategies in samples from the Sierra Espuña National Park and the Garajonay Regional Park.

Process and methods: The total sample consisted of 334 participants, with an average age of 46.9 years. A questionnaire was designed, including measures of concern and scepticism about climate change, as well as attachment and identity with the place. Additionally, a record was added regarding the estimation of impacts from climate change and personal changes necessary to mitigate it.

Main results: Participants showed high levels of concern about climate change, and attachment with the place, but also a low degree of scepticism about the existence of climate. Participants remark the risk of wildfires and the increase of droughts. Regarding personal changes, they suggest increasing local consumption and reducing water use. In terms of social measures to be adopted, participants mention using more renewable energies and improving the fight against wildfires.

Implications for research and practice // Importance and originality to the contribution: Participants show a high level of concern about climate change and a notable ability to detect relevant threats it poses to the maintenance of the evaluated areas. This study demonstrates the strategic value of protected areas for analysing perceptual patterns associated with climate.

# Health Evaluation Framework and the Relation to Green and Blue Design Intervention

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**Keywords / Relevant Terms**: Green and Blue Space, Health Evaluation Framework, Healthy Urban Environment

## Abstract

The increasing trend of urbanization led to fewer natural surfaces within cities, more air pollution, and the resulting urban heat island (UHI), endangering citizens' health. To address these, green (plants) and blue (water bodies) interventions have been recognized as practical solutions that are able to mitigate urban heat, improve air quality, and provide citizens with more connections to the natural environment. However, incorporating green and blue spaces into urban environments may also pose some disadvantages threatening citizens' health. Allergic pollens, water-borne, and vector-borne diseases in green and blue spaces are mostly overlooked in the current urban landscape design. To thoroughly evaluate the potential impacts of green and blue interventions in urban areas on urban populations' health including these mentioned aspects, there is a pressing need for a comprehensive evaluation framework. This study aims to develop a Health Evaluation Framework (HEF) for practitioners and decision-makers to assist them in the assessment process of urban projects and plans to create healthier urban environments. Through a systematic literature review, we explore the relation of green and blue spaces to health, and their variable assessment methods in order to formulate the HEF. The final HEF consists of three parts, including mitigation, instoration, and restoration. Each of them encompasses variables that can be evaluated by either qualitative or quantitative methods. In conclusion, the final HEF is able to broaden the vision of decision- makers and practitioners and offers valuable insights into the potential impacts of green and blue measures on human health in urban areas.

# TOPIC 2:

# NATURAL AND URBAN ENVIRONMENTS – THE TRANSITIONS OF CITIES

# Assessing psychological engagement with nature: a scoping review of experimental studies

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**Keywords / Relevant Terms**: engagement, wellbeing, nature connection, restoration, scoping review

## Abstract

In response to the concurrent challenges posed by mental health and environmental crises, nature-based interventions have become increasingly important to promote benefits for the health of people and planet. Some nature-based interventions specifically aim to increase psychological engagement with nature, though little is known about how these interventions work to benefit wellbeing outcomes for people. Psychological engagement with nature is active engagement in the nature experience, where intention and awareness are encouraged via sensory, cognitive, affective, or behavioural activities in nature. Nature-based engagement interventions therefore alter how individuals interact with nature based on these different forms of engagement.

In this paper, we conducted a scoping review of nature-based engagement interventions. The paper reviewed the current methods and outcomes of these interventions, with the aim to determine how psychological engagement in nature interventions are being designed and implemented to target wellbeing outcomes for adults. We identified 18 studies that met the inclusion criteria. The review revealed that, while there is growing evidence for the benefit of engagement interventions for wellbeing outcomes including affect, nature connection, and restoration, many studies report null effects. Based on these findings, we make recommendations to advance this area of research: first, intervention designs should be theoretically driven, and clearly communicate the theoretical basis for selecting engagement forms to improve target outcomes. Further, interventions should systematically investigate optimal designs, including duration, setting, guidance, and the form of psychological engagement. Among these recommendations, we provide practical insights for implementing nature-based engagement interventions to improve wellbeing.

# Impact of the Restorative Environment on Dental Anxiety

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**Keywords / Relevant Terms**: restorative environment, restorativeness, dental anxiety, evidence-based design,

## Abstract

Dental anxiety is a negative emotional attitude with important repercussions on patients in dental clinics. It can lead to avoidance behaviours with direct repercussions on people's health. Since the first studies by Ulrich (1984), the importance of green environments in the recovery process of hospitalised patients has been demonstrated, as well as the studies by Kaplan (1995) on the effect of restorative environments on cognitive processes such as attention. In this experimental study, we tested the effect of restorative environments on dental anxiety. A sample of 70 patients from UFPC university dentistry clinic in Gran Canaria who came for dental surgery was used for this purpose. The STAI was used to measure anxiety, state and trait, before the intervention. After the intervention, the state-anxiety measure was repeated. There was a "restorative" intervention box with views to the outside and poster with an restorative picture, selected through a pilot study as meeting the restorative characteristics of fascination, avoidance, extension and compatibility; and a "dark" intervention box for the control group. The Student's t-test was used for inferential analysis. It was found that pre/post dental treatment anxiety in the restorative box decreased on average by 3.77 (±7.18) while in the dark box anxiety increased by 1.40 (±9.83). These differences between boxes were significant (t= 2.5132, p = 0.01457) indicating that in post-intervention anxiety levels were lower in "restorative" intervention box. These data corroborate that, as in other healthcare settings, providing restorative spaces improves the quality of treatment for dental patients. Small modifications to the physical environment, at little cost to the dental clinics, can make important changes for the patient.

# Are simulated restorative environments stress reduction in radiotherapy waiting rooms? The elderly perspective

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**Keywords / Relevant Terms:** restorative environments, nature, simulated environments, cancer, stress

## Abstract

Most hospitals were created based on medical needs and available space; however, as the city has grown, so has demand, and the spaces have had to adapt, giving priority to medical efficiency, which is why they incorporate virtual environments that promote psychological restoration for the consolidation of resilient cities.

In recent years, the focus of psychological research in cancer patients who received radiotherapy (RT) has identified stress and depression as the main factors of psychological distress, so there is a growing search for non-pharmacological and short-term solutions to reduce stress before, during, and after RT.

The goal of this study was to determine the effect of exposure to a simulated restorative environment on psychophysiological stress in patients with cancer in an RT waiting room. An experimental design based on biofeedback was used, with psychometric measurements before and after and recording of physiological signals; in a group of 112 patients, three modalities of environmental simulation (static, dynamic, and virtual reality) were presented.

Pre- and post-biofeedback measurements of perceived psychological restoration data were compared through the T-test for paired samples (p=0.05). The electrodermal activity data were analyzed in time series to identify the physiological effects. They found significant differences between the exposure to the restorative environment and cognitive and emotional stress phases. In the restoration phase, young patients presented lower levels of electrodermal activity. However, the elderly group showed greater activation in this phase.

The results are discussed from a multifactorial understanding that includes the physiological conditions of the patients, determined from the stage of cancer, which, together with the conditions imposed from the lockdown by COVID-19, it is identified that the patients presented under-stimulation, so access to a simulated restorative content was stimulating for this group of patients.

# Comparing psychological and physiological responses to exercise in natural outdoor, urban outdoor and indoor environments

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**Keywords / Relevant Terms**: green exercise, restoration, natural environment, physiology, physical activity

## Abstract

**Introduction.**
Exercising in natural environments (i.e., green exercise) has been suggested to provide greater physiological and psychological health benefits compared to urban or indoor environments (Gladwell et al., 2012). This study evaluated the psychological and physiological restorative effects of a 1-hour light-to-moderate intensity exercise session.

**Methods.**
In a randomized crossover design, 15 healthy male subjects (age: 28±5 years) performed a 1-hour walk at a controlled pace (6 km/h) in three different environments: green natural (forest park, G), built outdoor (urban, U) and built indoor (laboratory, I). Questionnaires for psychological assessment were administered to investigate the feeling of restoration, the emotional states, and the enjoyment of physical activity. Physiological indices, including Heart Rate Variability (HRV), Salivary Cortisol and Blood Pressure (BP), were assessed before and after the intervention.

**Results.**
A series of repeated-measures ANOVA indicated a statistically significant effect of the environment. Participants reported higher levels of relaxation, lower levels of anxiety, increased feelings of restoration, and greater enjoyment following exercise in the G environment compared to other settings. Halfway through the walk, participants reported a significantly lower perceived effort in G compared to I (mean decrease 0.87±0.20). Systolic BP and salivary cortisol were significantly reduced after the exercise interventions. G was significantly associated with a lower salivary cortisol concentration compared to U and I. A significant effect of the environment was found on HRV indices, which were higher in the post-exercise period in G compared to I.

**Conclusions**.
These results indicated that one hour of light-to-moderate intensity exercise conducted in a natural green environment elicited positive physiological and psychological stress-related responses. The study also highlighted the higher restorative power of a green natural environment. Natural environments may promote exercise adherence and increase.

# Nature Exposure's Impact on Mental Health and Pro-Environmental Behavior among the Youth – An Umbrella Literature Review

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**Keywords / Relevant Terms:** nature exposure, mental health, pro-environmental behaviour, youth

## Abstract

Global youth is faced with increasing mental health concerns and the global community as a whole struggles with urgent environmental challenges. Therefore, the intersection between mental health and pro-environmental behavior (PEB) emerges as a relevant study field. This umbrella review synthesizes existing research to answer the overarching question: What are the outcomes of nature exposure on mental health and pro-environmental behavior among the youth? Furthermore, it aims to position the role of nature connectedness as a possible mediating factor between nature exposure, mental health and PEB. Our review offers a comprehensive examination of studies from diverse fields, including psychology, environmental science and public health. By employing an umbrella review methodology following PRISMA guidelines, we summarize existing research syntheses on the outcomes of nature exposure and nature connectedness on mental health and PEB, identifying main trends and gaps. The first focus of our review is the psychological dimensions of nature exposure. We examine the literature to understand the cognitive, emotional, and physiological aspects of nature exposure on mental health outcomes, investigating the potential therapeutic effects of nature in reducing stress, anxiety and depression, and improving overall psychological well-being. The second theme of our inquiry addresses the relationship between nature exposure and PEB. We examine reviews exploring the link between nature contact and the development of PEB, focusing on how nature exposure may contribute to fostering a stronger environmental ethic and encouraging sustainable practices. Our review seeks to unravel the potential pathways between nature exposure, mental health, and PEB with nature connectedness as a potential mediator. The findings shed light on the potential of nature exposure as a multifaceted intervention with implications for both individual well-being and environmental sustainability. We identify valuable insights for policymakers and practitioners who wish to integrate nature-based solutions and interventions into mental health promotion and environmental conservation.

# The design of nearby urban nature as a promoter of psychological well-being and sustainable urban behaviors

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**Keywords / Relevant Terms**: Urban-landscape design, urban nature, public space, environmental restoration, sustainable behaviors

## Abstract

The design of nearby urban nature benefits biopsychosocial development, public health, and urban socio-environmental dynamics, impacting the social plan, perceived quality of life, and the promotion of sustainable behaviors. The main objective was to investigate how the design elements of green public spaces influence environmental restoration and sustainable behaviors, considering the latter as those actions that seek the care of natural and socio- cultural resources to guarantee humanity's present and future well-being. A correlational case study design was used with a single measurement and intentional non-probabilistic sampling, applying in situ a psychometric battery composed of Likert scales of ordinal type and semantic differential type to measure different aspects of the urban design variables. - landscape, environmental restoration, and sustainable behaviors. The reliability indices were psychometrically valid for this research, and the case study was an urban park (CDMX, Mexico) with the design of green areas, social equipment, and urban infrastructure. The results obtained in the analysis of variance show significant differences ($p<0.01$) between the variables with the demographic characteristics (schedule, frequency of visit, gender, and residence). Statistically significant correlations were obtained ($p<0.01$), with an effect size above .50 and a statistical power of 1 in all cases. This indicates that the magnitude of these relationships is important and is not a product of chance. The multiple linear regression showed an EV=40%, with a good fit and high predictability. At the same time, the non-metric multidimensional scaling model presented a non-linear estimate (S-Stress=.001), showing a significant fit of the configuration of the variables. The results support the importance of the urban design of green public spaces for positively impacting perceived urban well-being and responsible socio-environmental behaviors, strengthening the favorable environmental perception of the urban environment, and psychological and spatial sustainability.

# Psychological richness of nature experience

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**Keywords / Relevant Terms**: subjective well-being, restorativeness, biodiversity, greenspace, bluespace

## Abstract

Drawing on positive psychology theory outlining 'psychological richness' as an understudied dimension of subjective well-being (that is, made up of experiences which are complex/interesting, novel, and perspective-changing), I propose psychological richness as a facet of nature experienceswhich overlaps with, but is distinct from, several more commonly studies facets or outcomes of nature experiences such as positive affect, awe, vitality, and (soft) fascination.

Using both real and fictional examples, I demonstrate that a psychologically rich nature experience could be direct or vicarious, occasional or routine (if novel elements exist within that routine experience), not necessarily psychologically restorative, relaxing, or positively valenced, and rely on both characteristics of the person and of the environment. In so doing, such a conceptualisation makes room for the value of 'negative' nature experiences (e.g. those characterised by personal challenge, or by environmental degradation).

Extending this conceptually, I draw on mixed-methods environmental psychology research from the IAPS restorative environments network and related fields to demonstrate that, in piecemeal form, this 'umbrella' psychological construct has long been of interest to, in particular, qualitative research. Using this research, I theorise about the potential antecedents and consequences of psychologically rich nature experiences. Environmental antecedents could include biodiversity, person-centred antecedents could include personality, consequences could include pro-environmentalism and creativity.

Lastly, I present preliminary empirical findings from exploratory text analysis of unsolicited comments on nature stimuli (e.g. YouTube video comments) to demonstrate that descriptions of psychological richness are often used in response to (virtual) nature stimuli and that the frequency of this use is not necessarily correlated with descriptions of other dimensions of subjective well-being, further justifying richness as a distinct facet of nature experiences.

I conclude with a potential (largley quantitative) research agenda into the psychological richness of nature experiences, and its proposed impacts in applied practice.

# The presence of people and over-crowding in urban greenspaces: examining the impacts on social connectedness and restoration

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## Abstract

**Background and objectives:**
Urban greenspaces can provide multiple benefits including stress restoration, facilitating social cohesion, and improving mood. Most research looking at the effects of urban greenspaces often focus on spaces free from people. This is a problem for generalising real world effects as visits to urban greenspaces are rarely in solitude. There is a gap in the field, which this experiment aims to fill, to investigate whether other people in an urban greenspace can impact restoration and feelings of state social connectedness. A secondary aim of this experiment is to test whether age has an impact on these effects.

**Process and methods**
Sixty-two healthy adults, split across two age groups, will be recruited. After first viewing stress-inducing traffic videos, participants will view three virtual reality urban greenspaces which vary in the amount of people present. After viewing each environment, stress, restoration, and state social connectedness will be measured.

**Main results**
This experiment is currently underway and results will be presented at the conference.

**Implications for research and practice/policy**
The results from this study can have implications on crowding and the impact that the number of people in urban greenspaces can have, as well as loneliness and how seeing other people in urban greenspaces may have an influence.

**Importance and originality of the contribution**
Prior to this experiment, social connectedness has not been considered as an outcome in greenspace exposure experiments and the presence of people in these spaces is often overlooked. This experiment aims to provide insight into the importance of considering other people in urban greenspaces and how they may impact the experience and benefits received from the space. This experiment also looks at two different adult age groups which will provide knowledge about whether any effects are impacted by age.

# Enhancing nature connection in restorative and accessible natural environments though app-based instructions – A study protocol (1)

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**Keywords / Relevant Terms**: nature; health, mobility disability, nature connectedness

## Abstract

Visits to nature and experiencing being connected with nature can contribute to strengthening mental health and well-being. For individuals with mobility challenges, there can be barriers associated with visiting nature that may disrupt a positive nature experience and there has been limited research on the potential health benefits for this group.

Investigating the specific environments and activities that contribute to improving the quality of the nature experience for people with mobility disabilities has the potential to enhance equity in nature-based health interventions.

This study is part of the RESONATE project funded by Horizon Europe. The aim is to investigate whether app-based audio stories, focusing on present moment attention and the reciprocal relationship between humans and nature, can support visits to nature and enhance the sense of nature connectedness and mental well-being for individuals with mobility disabilities.

The study applies a randomized controlled design consisting of a 2-arm intervention with an active control group. The intervention consists of two parts:

-Intervention Day 1, where app-based audio narratives aimed at enhancing nature connectedness are tested in a natural environment.

-A 4-week intervention that explores potential changes in nature engagement and experiences by using app-based audio narratives over an extended period in self-selected natural settings.

Both groups begin the trial with a visit to a restorative and accessible natural area in the arboretum in Hørsholm, Denmark. Participants individually explore a nature trail with or without access to the audio narratives. Subsequently, all participants are encouraged to spend at least 120 minutes in nature each week for the following 4 weeks. Data is collected at nine data collection points, involving a combination of questionnaires, semi-structured interviews, and biometric measurements (heart rate variability and eye-tracking) and the results will expand on evidence concerning the relationship between nature, health, and well-being.

# Validation of the “Perceived Restorativeness at University” Scale (Rest@US)

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**Keywords / Relevant Terms**: Restorativeness, Students, University, Validation, Scale

## Abstract

College students may face mental health challenges during their academic pursuits. The physical surroundings play a crucial role in influencing students' overall well-being. Their environment can replenish cognitive, physiological, and emotional resources, leading to improved academic performance, enhanced quality of life, reduced stress and depressive feelings. Restorativeness is the process that an environment can induce to replenish the resources of an individual. According to Kaplan’s Attention Restoration Theory (ART, Kaplan, 1995), the perceived restorativeness of an environment depends by four factors: fascination; being away; extent and scope. The most commonly used tool is the Perceived Restorativeness Scale to assess the level of restorativeness of a particular physical environment (Hartig and colleagues, 1997). However, this scale has a generic approach to all types of buildings; hence, a customized metric might offer a more psychometrically appropriate method for capturing the context-specific attributes of university settings for academic students. We aimed to contribute to this gap by validating an instrument that can accurately evaluate university environments, in order to measure the perceived restorativeness of university students. We collect data from a sample of 685 students coming from two different Italian universities to evaluate the psychometric properties of the Restorativeness at University Scale (Rest@US). The scale consists of 13 items divided into four different dimensions: Fascination, Being Away, Scope and Coherence. The proposed model with these four factors strongly aligns with the data in both the calibration and validation samples. Importantly, it remains consistent across genders. The overall scale proves reliable, and its validity is supported by evidence. In a manner consistent with theory, students' perceptions of the restorative qualities of university physical environments, as well as their individual aspects, are negatively correlated to techno-overload and study-related workload. Additionally, these perceptions are positively associated with perceived performance and psychophysical well- being.

# Restoration skills training compared to mere nature contact: Processes and benefits of nature-integrated mindfulness

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**Keywords / Relevant Terms**: Nature-based therapy, restoration, mindfulness, training, treatment

## Abstract

Restoration skills training (ReST) integrates regular nature contact with mindfulness-based practices in a five-week course. Previous studies comparing ReST to conventional mindfulness training indoors found several advantages and sustained benefits of ReST, particularly for participants with more pronounced attention regulation problems. However, it is unknown how the integrated nature- and mindfulness-based ReST compares to regular nature contact without mindfulness-based instructions. This small randomized trial aimed to generate hypotheses regarding added values as well as obstacles to overcome when mindfulness training is integrated with nature contact, by comparing ReST to a formally matched Nature on prescription program. 32 students with stress or concentration problems participated; kept records of their practice habits and associated experiences; answered evaluations of the intervention; and provided data before, directly after and one month after the intervention on measures targeting a range of relevant outcome domains including aspects of their health, daily functioning, and relationship with nature. This presentation will cover the central learnings from analyses of this dataset as they apply to ReST in particular as well as their possible implications for nature- and mindfulness-based interventions (NMBI) more broadly. The presentation will specifically indicate how the conclusions drawn will direct forthcoming studies on the utility of ReST as a NMBI intended to appeal to and benefit vulnerable population segments at risk for progressing mental health problems and with potential co-benefits for a more sustainable human-nature relationships.

# Environmental support for flourishing in older age: an exploration using a personal projects approach

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**Keywords / Relevant Terms**: ageing, personal projects, environmental supportiveness

## Abstract

Supportive outdoor environments can enable people to remain healthy and active in older age, improving quality of life. Yet older adults continue to face difficulties accessing physical environments. This paper presents findings from a longitudinal study of older people (aged 50+) living in Scotland, UK, 2021-23, and explores how physical environments support people to undertake the 'personal projects' (Little, 1983) that enable them to flourish. Personal projects are self-generated and purpose-oriented activities an individual is doing or planning to do, and range from important everyday routines to ambitious, long-term endeavours. Drawing on data from 36 participants, we describe the types of personal projects participants reported as important and what aspects of the environment were associated with project enjoyment and positive outcome. Projects that involved engagement with people were rated as the most important and enjoyable. Projects that involved engagement with nature were by comparison reported as more difficult, and participants reported feeling less in control and less supported to spend time in nature. Concerns about safety and fears of falling or an accident were a significant deterrent to spending time in natural environments. Overall, the easier the local outdoor environment made it for people to carry out their personal projects, the higher their quality of life; this is particularly important in a post-COVID world. As people age, decreases in physical mobility can make outdoor environments harder to access. Drawing on concepts of environmental supportiveness, we explore why older adults may feel unsafe and less in control when in natural environments. We argue that a person's perceived sense of control can inform their capacity to exert agency and adapt to their environment, and subsequently pursue the personal projects that are important to quality of life.

# Study on Water Stress Tolerance of Shade-tolerant Herbaceous Plants in Taiwan

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**Keywords / Relevant Terms**: drought tolerance, green coverage, chlorophyll fluorescence, visual assessment.

## Abstract

Urban green spaces (UGS) play an important role in cities because of their benefits in maintaining and improving the quality of the urban environment, providing a variety of ecosystem services to people and the environment. Urban greening can improve the microclimate of the environment in a concrete building complex, and more and more landscape designers in Taiwan are adopting native plants for engineering applications and landscaping. However, in urban environments, ‘‘drought’’ is often recognized as a major stressor and cause of mortality for urban landscape plants, and they may continue to face drought adversity in future climate scenarios, so drought tolerance is a basic criterion for the selection of plant species in urban environments. In this study, we selected 15 species of shade-tolerant native Taiwanese herbaceous plants, including 10 perennials and 5 geophytic ferns, for the drought tolerance test under 50% and 70% shading conditions, respectively, and restricted water supply for long-term water stress. The test period was 6 months, divided into experimental group and control group. In the experimental group, the plants were planted for 2 months, experienced water adversity for 2 months, and then resumed water supply for 2 months, while in the control group, the water supply was stabilized after planting. Green coverage and chlorophyll fluorescence were used as indicators of drought tolerance during the trial, and visual assessment was used to check whether the plants were still appreciable under adversity. The purpose of this study is to select landscape plant species that are both shade and drought tolerant, and that can withstand the current urban environment and cope with future climates. This study establishes information on the environmental tolerance of plant species and provides a reference for planting selection in future landscape engineering applications.

# Study on the effect of appropriate mowing period on the growth of perennial herbaceous plants.

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**Keywords / Relevant Terms**: herbaceous plant community, maintenance and management, biodiversity, pruning methods

## Abstract

With the rapid development of urbanization, the demand for ecological benefits provided by green spaces in urban areas has gradually increased. In recent years, people have begun to pursue higher ecological sustainability, influenced by the low-maintenance and high ecological benefits of natural plant communities in Western countries. Naturalistic Planting Design has gradually been applied in public spaces in Taiwan. However, the actual application has not achieved the expected ecological benefits. The main reason is the absence of locally suitable plant community combinations in Taiwan, and there is also a lack of related cost and maintenance management methods.

Therefore, this study aims to address the insufficient information on the application of naturalistic planting in Taiwan through experiments. The experiment will focus on urban environmental conditions, complemented by phenological observations. Initially, 20 perennial herbaceous plants will be selected for both individual and combined plantings. In the initial planting stabilization phase, manual weeding will be the primary method, followed by subsequent maintenance using the commonly employed method in public sectors –trimming with a lawnmower. The study aims to investigate the impact of different species and combinations under various mowing methods on their growth conditions. The results are expected to provide insights for the selection and maintenance of natural community plantings in future public spaces. Preliminary research results indicate a noticeable decrease in weed volume during the initial planting stabilization phase with manual weeding.

# Harmonizing with Nature: Study on Cultural Landscape Characteristic of Mrauk-U Ancient City, Myanmar

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(1) Southeast University

**Keywords / Relevant Terms**: Urban space, Cultural landscape, Natural environment, Urban planning, Ancient city

## Abstract

A harmonious relationship between man-made and nature is of vital importance for sustainable development of cities. Learning from history is usually an effective way to obtain inspiration, so it is meaningful to explore the ancient experience of living in harmony with the natural environment through historical urban space. Mrauk-U is ideal as a case study due to its important historical position and urban space closely combined with natural environment. This ancient city was the capital of the ancient Arakan Kingdom from the 15th to 18th centuries and one of the most important trading and cultural exchanging nodes in Asia. Through long-term interaction with the natural environment, Mrauk-U's historical urban space presented a unique cultural landscape. However, the spatial characteristics and forming logic of its cultural landscape have not yet been fully explained.

This study aims to analyze how the urban construction of the ancient Mrauk-U interacted with the natural environment. Based on the first-hand materials such as DEM data and ortho image, as well as historical maps, records and archaeological documents, the 3D model of ancient Mrauk-U is built by GIS platform. Using the methods of spatial and documentary analysis, the connections between the artificial and the natural are analyzed at the regional and urban levels. Furthermore, the characteristics of ancient Mrauk-U's cultural landscape are summarized and the planning ideas and methods involved are discussed. The study concludes that the ancient Mrauk-U has shown outstanding planning achievements in shaping cultural landscape, and reveals that Mrauk-U was built in a highly integrated way with nature to fulfill or enhance the city's practical or symbolic functions, reflecting the ideas of adapting, coordinating and utilizing the natural environment. This study provides historical wisdom and practical references for today's urban planning and construction.

# Emotional landscapes in Mountain Towns: beyond biophilia

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**Keywords / Relevant Terms**: emotions, mountain landscape, environmental identity, well- being

## Abstract

Background: The relationship between people and the natural environment has a strong emotional component. Based on specific and universal physiological responses, Ekman proposed a reduced set of basic emotions. However, social and anthropological research indicates that the expression and recognition of emotions can vary significantly between cultures. This study seeks to describe the emotional expressions of inhabitants of mountain landscapes with the purpose of analyzing emotional evocation in the face of natural stimuli. Process and methods: The study (funded by Fondecyt 1210680, Chile) has a mixed design, where 21 residents of three Andean localities in Chile participated (M=33.7 years; SD=11.5; 81% women). After an excursion through their local landscape, they completed a questionnaire composed of environmental identity and well-being scales, and open-ended responses about the emotions evoked during the activity. The responses were analyzed with non-parametric statistics (Spearman's Rho, Kruskal-Wallis) with SPSS25, and qualitative analysis using Open Coding. Main results: High levels of inclusion of nature in the self (M=5/6; SD=1.3) and satisfaction with life (M=7.8/10; SD=1.5) are observed, correlate positively and significantly with each other ($r=.472$; $p<.05$), and do not differ between the groups. They gave a total of 85 responses of emotional expressions after the excursion, 80% of which have positive valence. According to content, they can be grouped into 19 categories, with joy (22.4%), relaxation (14.1%) and activation (10.6%) being the most common. Less than half (41%) express themselves literally according to Ekman's classification, and positive emotions are associated with natural elements, while negative emotions are associated with anthropocentric interventions. Implications and Importance: The abundance of evocations of positive emotions is consistent with evidence from restoration theory in environmental psychology. Although people have a basic physiological potential for the expression of communicable and recognizable emotions, sociocultural experience fills them with content and makes them much richer.

# The Amazonian Forest as a Space Promoting Connection with Nature: a Study with Local Adolescents

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**Keywords / Relevant Terms**: nature connection, amazon rainforest, adolescents, environmental behavior

## Abstract

There has been a lot of talk about how important the AmazonIan forest is for the environment. But it also has significant psychological benefits. Studies have shown that spending time in natural environments, especially from a young age, can help form a psychological connection with nature. This connection has many positive effects, including improved physical and mental health, reduced stress, increased resilience, and greater pro-environmental behavior. Unfortunately, people living in urban areas are becoming increasingly disconnected from nature, which is harming both human health and natural habitats. This research wanted to find out whether the Amazonian forest could help stimulate this connection with nature in adolescents. We surveyed 763 students (48% male; 52% aged between 13 and 20) from public schools in Amazonas, Brazil. The survey measured how often the students visited forest areas and how connected they felt to nature. The results showed a clear link between the two, with those who felt more connected to nature and visiting forest areas more often ($x^2$= 92.7; df=18; $p<0.001$). There was no significant difference based on gender or age. This study highlights the need for policies that encourage opportunities for contact with natural environments, particularly forests, to help improve adolescents' connection with nature. This is especially important in the Amazon, where this relationship is under threat, and it could also help protect these areas for future generations.

# Aging in Rural: Indoor leisure activities engagement and older adult health during the COVID-19 pandemic

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**Keywords / Relevant Terms**: horticultural therapy, green healing, successful aging

## Abstract

Aging is regarded as a pressing concern worldwide, particularly in rural communities characterized by a high aging index and an exodus of young individuals. In older adults, physical and mental well-being plays a key role in their overall health. In recent years, COVID- 19 has resulted in limitations in the outdoor activities of older adults, negatively affecting their social interactions and health. Therefore, implementing indoor leisure activities is essential to enhance the physical and mental health of older adults during the pandemic. In this study, we investigated the effects of indoor leisure activities on successful aging. Three rural communities were selected to perform three types of activities, namely horticultural activities, handicraft activities, and baking activities, each lasting 4 weeks. A total of 82 older adults were randomly assigned to perform these three activities and asked to complete questionnaires to self-evaluate their activities of daily living, levels of depression, social health, and mental health. Our results indicated that the horticultural activities reduced the levels of depression and significantly improved the physical, mental, and social health of older adults. Similarly, the handicraft activities significantly improved the physical, mental, and social health of older adults. In conclusion, indoor leisure activities can enhance the physical and mental health of older adults. Green care activities should be developed to ensure successful aging within aging communities.

# Observation and identification of natural elements at school environments in the Amazon context

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**Keywords / Relevant Terms**: school environments, green spaces, spatial representations, Amazon context

## Abstract

The presence of natural elements in schools is essential to create a friendly and conducive environment for the training and well-being of individuals committed to the environment. However, a recent study conducted in the city of Manaus, Amazonas, Brazil, found that few schools in the region have green spaces and natural elements. The study analyzed thirteen schools, including eleven public schools and two private schools, located in different areas of the city. The levels of nature in each school were calculated considering the number of natural elements identified and the number of students circulating daily in the school area. The research also collected qualitative data through interviews with principals, teachers, and students. Combining field observations and spatial representations, the study found that only the two private schools had a high presence of natural elements (above 0.81 nature items per student), while nine of the public schools had a low presence of nature (from 0 to 0.40 nature items per student). This information, combined with the qualitative data collected, allowed for the development of a tool to evaluate school environments and their green spaces. The tool enables dialogue with stakeholders for the construction of proposals aimed at improving these spaces, enhancing the benefits arising from contact with nature, and strengthening connections aimed at appropriating and caring for school environments. In conclusion, it is imperative to increase the presence of natural elements in schools to promote socio- environmental experiences and foster a sense of environmental responsibility in individuals.

# The Study on Children's Play Behaviors in Natural Playground in Taiwan

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**Keywords / Relevant Terms**: playground, natural playground, children's play behavior

## Abstract

In recent years, urban development has led to an increasing alienation between children and natural spaces. Numerous studies have confirmed that a lack of interaction with nature in childhood may result in sensory dullness, lack of concentration, susceptibility to physiological and psychological disorders, and more. Taiwan is gradually entering an era of highly developed cities, where playgrounds have become the primary recreational choices for modern urban children. However, most playgrounds in Taiwan lack natural elements. Currently, the development of playgrounds in Taiwan focuses mainly on distinctive or inclusive features, highlighting the importance of natural playgrounds as a worthy topic of discussion.

Therefore, the purpose of this study is to understand children's play behavior in natural-style playgrounds and explore the impact of environmental elements on children's play behavior.

The research takes place in natural-style playgrounds, employing structured observation and time-sampling methods. Observations and related usage are documented on an observation sheet, with video recording as a supplementary record. The subsequent analysis examines the relationship between game elements and children's play behavior through statistical results from the observation sheet and photographic records.

The survey results indicate that natural elements in the gaming environment lead to more diverse play behaviors in children. Loose materials increase constructive play, and children collaborate to build forms. Changes in elevation in terrain provide children with a more varied spatial experience during play, leading to more non-normative play behaviors at higher points.

These findings suggest that natural elements in playgrounds contribute to children's better adaptive development.

The results of this study can serve as a reference for designers and practitioners involved in the development of children's playgrounds, facilitating the move toward naturalization in Taiwanese playgrounds in the future.

# The implications of a snowy landscape for children´s health promoting play in preschool

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**Keywords / Relevant Terms**: Physical activity, Health promotion, Outdoor environments, Children, Nature encounters

## Abstract

It is well documented how children´s access to large and varied preschool outdoor environments have positive effects on their play, health and development. The implications of seasonal variation and winters adding snow to children´s outdoors settings are less studied. The aim with this interdisciplinary study was to investigate the potential and actualized affordances of preschool outdoor environments when turned into snowy landscapes. The study included 21 preschool facilities situated in one of the larger municipalities in northern Sweden with units for children 1-5 years old. During March 2023 was collected, data on children´s play and activity outdoors during one day and accelerometer data on their physical activity outdoors during one week. The results show how winter conditions with snow transforms the preschool outdoor environment, creating barriers for children´s access and overall mobility, but also contributing with affordances for play and activity involving new types of encounters with nature and peers. Discussed are the implications of snow for health promoting outdoor stay and play in preschools and the role of management and educational practice to realize the potentials of a snowy landscape for children.

# Children as sustainability citizens: perceptions of (dis)comfort and actions to promote healthy and comfortable schools

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**Keywords / Relevant Terms**: School buildings, indoor environment, children participation, sustainability, agency

## Abstract

Climate change requires sustainable solutions to promote healthy and comfortable buildings that are energy efficient. Sustainability initiatives recognise the importance of engaging building inhabitants to promote energy savings while preserving good indoor environmental quality. Sustainability initiatives also call for the inclusion of children as key citizens who can act to address climate change challenges resulting from building operation. In this context, school buildings are ideal sites where sustainability citizenship can be learned, lived and practiced from a young age. However, technical solutions to improve building performance rarely consider the perceptions and understanding of young children in relation to their own experiences of (dis)comfort and the connections between what we do in buildings and the resulting building performance.

This paper discusses young children's conceptualisation of their thermal (dis)comfort, indoor environmental quality and energy use in their classrooms; part of a wider project aiming at promoting thermally comfortable and well ventilated classrooms in energy efficient ways.

Children aged 6 to 11 years old from two primary schools located in Wales, UK, participated in workshops to discuss concepts related to their thermal experience, the indoor environment of their classrooms and what they can do to improve indoor quality in energy efficient ways. The workshops deployed creative methods (drawings, videos and experimentation) and were supported by long-term monitoring data from the classrooms (temperature, humidity, carbon dioxide) to facilitate the children's discussions. This paper reports on how the children from different age groups articulate their perceptions of (dis)comfort, their perceived agency to modify their sense of comfort, and how they can promote energy efficient actions for healthy comfortable classrooms. This work brings attention to the potential of children to become active participants in the operation of sustainable buildings.

# Research on Accessibility and Social Equity of Elderly Care Facilities: A Case Study of Harbin

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**Keywords / Relevant Terms**: elderly care facilities, accessibility, ArcGIS, 2SFCA, fairness distribution

## Abstract

With the increasing aging population, elderly care facilities have become a crucial component in meeting community needs, promoting social equity, and ensuring the wellbeing of the elderly. This study employs open-source data and Geographic Information System (GIS) techniques, incorporating a two-step floating catchment area method (2SFCA), to measure and investigate the accessibility of 5044 residential communities and 197 eldercare facilities in the urban districts of Harbin. In terms of social equity, the research explores the spatial scale and distribution characteristics of elderly care facilities based on regional economic development levels, community housing prices and other related data.

The findings indicate that: (1) The spatial distribution of eldercare facilities in the main urban area of Harbin is highly uneven, primarily concentrated in Nangang, Xiangfang and Daoli districts, with bed capacity mainly concentrated in Nangang, Xiangfang and Songbei districts. (2) The accessibility of elderly care facilities in the city center is relatively high, with optimal accessibility observed at the intersection of Daoli, Nangang, and Xiangfang District, while the peripheral areas of the urban zone exhibit lower accessibility. (3) There exists a positive correlation between the spatial distribution of elderly care facilities and regional economic development level, community housing prices and distribution density, elderly population density, and road network density. (4) The distribution of bed capacity demonstrates a significant positive association with regional per capita GDP, however, bed capacity does not exhibit such pronounced relationship with regional elderly population size, population density and their proportions, indicating that economic development significantly influences the distribution and scale of elderly care facilities. Based on these research results, this paper proposes strategies for optimizing the configuration of elderly care facilities to enhance old people's quality of life and promote social equity and justice.

# People's conceptual environmental appraisals and urban space use in daylight and electric light

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**Keywords / Relevant Terms**: Environmental appraisal; Urban space; Structured walks; Mobility; Light

## Abstract

Urban planning and design should provide public spaces that support human needs of physical active travel, play and social interaction, and psychological restoration across seasonal and diurnal variation in daylight and electric light. How people experience or appraise an environment is a critical component in the understanding of the relationship between urban design and human behaviour. In a certain setting, people respond to specific components of the environment, perceived environmental qualities, which make up the overall impression of the setting, and shape human-environment transactions fundamental to human well-being. Importantly, perceived stimuli are considered to act together as collative properties, which form the perceptual basis for higher order, conceptual environmental appraisals in which perceptions of specific stimuli are integrated. This research aims to identify associations between people's conceptual environmental appraisals and urban space use. The research draws on a set of empirical studies among children and/or adults in seven Swedish cities. In all studies data was collected by structured walks located to the participants' neighbourhoods and combined with self-reported and/or observed space use. Qualitative and quantitative analyses were conducted to identify associations between appraisals and space use in daylight and electric light. Results suggest that behavioural intentions in the local environment with regard to walking and cycling as well as observed space use for play and social interaction are sensitive to conceptual environmental appraisals such as perceived a) prospect and refuge, i.e. features associated with the perceived safety of the place, b) lighting qualities, i.e. features associated with the atmosphere and preference of the place, and c) restorative potential of the setting. The outcomes stresses the importance of considering people's overarching experiences of their local environment in both daylight and electric light conditions in urban design that support active mobility, social interaction and restorative experiences across seasonal variations in daylight hours.

# Understanding indoor scene experiences – Which visual features predict core affect and approach-avoidance responses?

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**Keywords / Relevant Terms**: affective responses, approach-avoidance responses, indoor environments, visual features

## Abstract

For an environmental psychologist, it is quite confronting to realize how little we know of indoor scene experience and which visual features are central in shaping our initial responses. To shed more light on this, we conducted two studies. In the first exploratory online study (Study 1), 55 participants viewed 220 images of living, office, and hospital rooms and rated their valence, arousal, and approach-avoidance responses. Studies in scene perception literature show that indoor environments are a combination of low- (color, edge, spatial frequency), mid- (objects, contours, spatial layout), and high- (functions, type of environment) level visual features. We thus quantified a large number of low-, mid-, and high-level visual features in our images and conducted bootstrapped stepwise regression to identify features with the most predictive power. Per outcome variable, we created a model for each feature level separately and one model with features from all levels. Findings suggest that visual features of indoor environments are good predictors of affective and approach-avoidance responses: our final models explained 64%, 50%, and 63% of the variance in valence, arousal, and approach- avoidance responses, respectively. Mid- (e.g., enclosure level, presence of bed or desk) and high-level (e.g., functions: working, medical activity) visual features explained most of the response variance, but low-level features (e.g., saturation, brightness, edge density) still had substantial explanatory power. Additionally, mid- and high-level visual features demonstrated a large overlap in explained variance. These findings motivated an ongoing thorough investigation (Study 2) with a larger and wider image set (n=480, including office, living room, restaurant, and store scenes) and additional physiological (skin conductance) and objective approach-avoidance (posture) responses. The outcomes of these two studies will be used to relate image-based insights to relevant environmental psychology theories and further our understanding of the factors that drive our responses to indoor environments.

# The Significance of Controlling Spatial Volume in the Performance Design of Indoor Arena

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**Keywords / Relevant Terms**: indoor arena, spatial volume, cooling and heating energy, acoustic reverberation,

## Abstract

In the context of global initiatives promoting environmental sustainability and low-carbon practices, there is a pressing challenge to reduce the energy consumption of the indoor arena. In particular, the spatial volume of indoor arenas is a prevalent factor influencing both building energy conservation and acoustic reverberation while relatively few architects pay attention to it when designing the indoor arena.

In our paper, a series of standard arena models were developed based on analyses of 30 indoor arenas. These models explore the correlation between spatial volume and seating capacity, focusing on medium to large-sized sports arenas ( ranging from 3000 to 10000 seats). Utilizing tools such as Ladybug-Honeybee and Pachyderm, the study examines the relationship between spatial volume and various performance metrics of indoor arenas, including cooling and heating energy, as well as acoustic reverberation time.

Findings reveal a linear relationship between spatial volume and seating capacity, approximated as V = 15.3x-10995 ( x: the capacity in seats, V: volume in $m^3$), and provide a series of standard arenas that help architects quickly layout seats. Simulations across various-sized arenas in Beijing, Wuhan, and Guangzhou demonstrate a direct correlation between volume and heating and cooling energy. Significantly, as the spatial volume increases, so does the energy consumption, linearly. The study also highlights the temperature stratification phenomenon in large spaces, leading to the development of a stratified block model for simulations. This model underscores the need for enhanced volume control in regions experiencing severe cold. In the field of acoustic reverberation, simulations conducted on arenas indicate that a reduction in spatial volume, coupled with the use of sound-absorbing materials, can effectively lower the reverberation times.

Consequently, during the early design process, architects have the opportunity to rapidly and intuitively control the performance of the indoor arena through the manipulation of spatial volume.

# Effects of Multi-Sensory Experience of Nature on Affect

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**Keywords / Relevant Terms**: affect, biodiversity, multi-sensory perception, mental health, nature

## Abstract

This study addresses the evolving dynamics of multi-sensory nature experiences in diverse environments and their influence on affective states. As natural and urban settings become increasingly intertwined, this research explores the underexamined territory of mixed environments and their impact on human wellbeing. A sample of 294 university students participated in the study, and completed measures of psychological anxiety and connection to nature. Subsequently, participants were exposed to 15 audiovisual recordings depicting varying proportions of natural and urban scenes and soundscapes from sites around their university campus. During a 60-second viewing period for each clip, participants indicated their positive and negative affect. Results revealed a significant interaction between visual and auditory modalities, predicting both positive and negative affect. Environments with high visual nature and low anthropogenic noise correlated with elevated positive affect and reduced negative affect. Conversely, areas featuring high visual nature alongside high anthropogenic noise were associated with heightened negative affect. Furthermore, individual participant differences emerged, emphasizing that a stronger connection to nature magnifies the impact of both visual nature and anthropogenic noise on affect. Notably, individuals with higher state anxiety exhibited the most pronounced increase in negative affect as visual nature decreased. Synthesizing our findings, we emphasize the detrimental impact of anthropogenic noise on the restorative effects of visual nature exposure, even in environments abundant with natural visuals. Emotional responses to nature exposure were heightened for individuals with a high biophilic identity and, to some extent, those experiencing elevated anxiety. These insights underscore the significance of considering multi-sensory nature experiences in the design of ‘wellbeing-in-nature’ interventions, especially for groups with heightened sensitivities, optimizing the therapeutic potential of diverse environmental settings.

# Lighting plans of refuges for wide-area disasters in Japan - How to plan for the operation of refuges?

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**Keywords / Relevant Terms**: "Natural Disaster", "Refuge", "Resilient Lighting", "Safety and Security", "Spatial Brightness"

## Abstract

Japan is a country that frequently experiences natural disasters. In a large-scale disaster, victims of all ages and genders are forced to live in the same space in designated refuges for extended periods. However, the refuges, often located in gymnasiums or classrooms, are not designed to be living spaces during disasters. This has led to a need to improve the overall environment of refuges, including the lighting conditions. The lighting design of refuges should respond to disasters based on three stages: 1) emergency measures for existing facilities, 2) minor renovations to enable disaster response, and 3) large-scale renovations including new construction.

We investigated the use of refuges, related studies and the standards associated with them. Based on a case study on the use of a gymnasium as a refuge during a widespread disaster (typhoon), we examined the relationship between various lighting conditions, including the current lighting environment, and psychological evaluation (visibility, spatial brightness, etc.) in three different activities (chatting or eating, going to the restroom at night and falling asleep) in a model experiment. It was found that the evaluation of spatial brightness was highly correlated with other psychological evaluations in each activity and was an effective indicator for judging the appropriateness of lighting conditions. The presence or absence of other people around the space where the evacuees are located is likely to have an impact on their sense of security. Lighting conditions where there are large differences between light and dark areas may affect not only the direction of gaze, as observed in the model, but also information from the entire space; therefore, verification in full-scale experiments is necessary.

# Psychological Responses to Reflection of Street Lighting on Water Surfaces in Nighttime Waterfront Landscapes

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**Keywords / Relevant Terms**: Nighttime landscape, Waterfront space, Water surface reflection, Street lighting, Impression

## Abstract

Nighttime waterfront landscape consists of illuminated structures and reflective water surfaces. However, quantitative research examining the psychological responses evoked by the reflection of street lighting on water bodies is lacking. In this study, first, human evaluation items and specific factors were extracted using the evaluation grid method. Next, an indoor experiment was conducted to examine the psychological responses produced by changes in water surface reflections.

Based on the survey, the following evaluation indicators were extracted to describe participant's psychological perception of the water surface: glare, calmness, brightness, vividness, glittering, and beauty. Furthermore, three physical attributes were defined to describe the water surface: light color, water surface luminance, and waveform. In the indoor experiment, a simulation device (3.5m deep, 2m wide, 2.5m height) was built to control the three physical attributes. The light color levels consisted of daylight (6500 K) and bulb color (3000 K); the water surface luminance levels consisted of 5000, 8000, 12500, and 20,000 cd/m2; and waveform consisted of none, small, and medium wave. Thus, a total of 24 patterns were prepared. The psychological impression items consisted of six adjective pairs. This experiment was conducted with 30 participants in November, 2022.

A three-way analysis of variance with the factors showed significant differences in the results. The bulb color was perceived as more soothing, glittering, and beautiful than the daylight color with regard to light color. Calmness increased when the luminance value was lower than about 8000 cd/m2. The higher the luminance value, the higher the evaluation of sharpness and glitter. When the water surface had small and medium waves, the evaluation value of calmness, glittering, and beauty was higher than when there was no wave. Calmness and beauty were rated higher for small waves than for medium waves. The findings can develop pleasing lighting schemes in waterfront landscapes.

# Does road lighting counter the increased risk of crime after dark?

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**Keywords / Relevant Terms**: Road lighting, crime, darkness, daylight

## Abstract

There is good evidence about the association between light level and the fear of crime (perceived safety) reported by pedestrians. While perceived safety is reduced after dark, the provision of road lighting offers some mitigation, with higher illuminances tending to offer greater mitigation.

Evidence for a link between road lighting and actual crime is more mixed. The Farrington and Welsh review concluded that improved lighting was associated with a reduction in crime, although this was only a small and inconsistent effect. Furthermore, reductions tended to happen in daylight as well as after dark, suggesting the reduction was related to community pride rather than to changes in visibility brought about the lighting improvements. Studies comparing crimes in daylight and darkness, for the same time of day, suggest an effect of light on only limited types of crime, such as robbery.

One limitation of crime analyses is that the police do not report crime data with sufficient detail. We have overcome this through collaboration with a UK police authority where they apply our analysis code to their data. In the first stage of work we compared counts of crimes at the same times of day but under conditions of daylight or darkness, producing an odds ratio as a measure of the risk of crime occurring after dark, relative to daylight.

Our results suggested bicycle theft, burglary, criminal damage, robbery (personal), and vehicle offences were the crime categories more likely to occur after dark than during daylight. We also found that the overall risk of crime occurring after dark varies spatially, with some areas being significantly more at risk of after-dark crime than others. In ongoing work we are investigating whether the presence of lighting, and the type of lighting provided, can offset the increased risk of crime after dark.

# Pedestrian Reassurance after Dark: a Comparison of Revealed and Stated Preferences in Male and Female Pedestrians

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**Keywords / Relevant Terms**: Road lighting, pedestrians, reassurance, perception of safety

## Abstract

Walking is a form of active travel with physical and psychological health benefits to the pedestrian and environmental and economic advantages to the wider population. One factor influencing the decision to walk after dark is pedestrian reassurance - the confidence gained from road lighting to walk along a footpath or road, especially when walking alone. Enhanced reassurance is associated with more walking and thus using road lighting to improve reassurance would be expected to result in more walking after dark. For example, in response to assaults on female pedestrians, the UK government response was to allocate additional funding to improve road lighting. Whether improved lighting does support female pedestrians depends however on how it is measured.

Research using stated preference methods such as category rating scales tends to conclude that females express a lower degree of reassurance than do males in both daylight and darkness, with this difference becoming greater after dark. A limitation of such studies is that the time of day respondents gave their evaluations is not known: it is possible that responding in daytime about fear of walking in the dark (a perceived perception) may exaggerate the degree of fear compared with an evaluation made after dark (the direct perception).

An example of revealed preference is to observe the number of people walking in daylight and darkness whilst accounting for other confounds. We have investigated pedestrian reassurance using both methods. With the stated-preference experiments females reported significantly lower levels of reassurance than did males in both daylight and after dark, with darkness having a greater negative impact on females. The male-female difference was reduced with higher light levels. However, the revealed preference experiment did not suggest significant difference between male and female pedestrians.

# Attention and Safety in urban nightscapes: Pedestrian experience of walking in outdoor environments under uniform and non-uniform lighting

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## Abstract

Urban lighting is vital for pedestrians' experience of walking after dark. One rarely studied light characteristic is its uniformity, despite literature reporting contrasting results. More uniform lighting is preferred and rated higher on perceived safety (Bullough et al., 2020; Fotios et al., 2019; Narendran et al., 2016; Nasar & Bokharaei, 2017; Kimura et al., 2014; Portnov et al., 2020) whereas less uniform lighting seems to be beneficial for alertness and attention (Burtt, 1916; Jedon et al., 2022a). To increase our understanding of these possible dual effects of uniformity, we conducted a quasi-experimental field study, manipulating uniformity of street lighting. The experimental design was based on a theoretical framework positioning alertness, arousal, and anxiety as mediators of the relationship between light and pedestrians' attention and safety (Jedon et al., 2022b). Participants were exposed (within-subjects) to three different, yet equally bright lighting settings: one more uniform (U = 0.43), and two less uniform (U = 0.31 / 0.32) differing in visual appearance. We tested how these settings affected alertness, arousal, anxiety and perceived safety of the environment. Alertness was measured through the indicators of response speed and accuracy on an auditory GoNoGo task. Perceived environmental safety was measured through self-reports. Arousal was measured through Thayer's (1986) AD-ACL and Electrodermal Activity. Anxiety was measured through the commission errors in the GoNoGo task and heart rate indices. We also explored how the manipulations affected aesthetic judgement and perceived outdoor lighting quality. Due to the weather constraints, the data collection is still ongoing. To the best of our knowledge, this is a first study that systematically tests the different potential effects of uniformity comprehensively and explores their joint impact on pedestrian safety. Findings could help us understand why some environments are experienced differently even though they fit the same lighting standards.

# Perception of safety as a feature of the city: A case study in Nyíregyháza, Hungary (1)

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**Keywords / Relevant Terms**: safety, perception of urban safety, the city's attractive features

## Abstract

This research aims to explore the socio-physical context of the perception of urban safety. Perceived safety is highlighted as an important measurable characteristic for urban well-being, urban prosperity, and thus as a significant indicator for resilient cities. A questionnaire was used on a representative sample of 500 people (age: M = 50,23, SD = 17,11; 52,8 % women) living in Nyíregyháza, the capital of Szabolcs-Szatmár-Bereg county, Hungary. Generally, in the questionnaire we aimed to understand the attitudes of inhabitants towards their urban environment and the attractive features of the city. In terms of safety, respondents were asked to rate the general safety of the city and the importance of safety within the city. For analysis, the area of Nyíregyháza was divided into 10 districts, based on the settlement's latest development plan. In these areas, age- and gender-specific population data are available at the level of districts. Our results show that there are significant differences between the feelings of residents of different districts in terms of both general safety ($F(9, 264.232) = 31.813$, $p < 0.001$, ?2 = 0,370) and safety as a factor of importance ($F(9, 72.085) = 25.851$, $p< 0.001$, ?2p= 0,350). District 2 (Örökösföld) and 8 (K?lapos, Oros, Nagyszállás) have significantly lower values than the other districts, suggesting that these two neighbourhoods have the highest perception of risk. In the presentation, the socio-physical background of these differences will be analyzed. Our research has much to offer to urban development practitioners, policymakers, or those who are working to improve local society. Furthermore, studies on resilient cities, and place attachment can be complemented by the methodology presented in this research. Since using complex, transdisciplinary methods analyzing the settlement's structure, provides information about the built environment and the social urban connections as well.

# Unpacking Urban Insecurity: Exploring the Nexus of Crime, Walkability, and Urban design in Brasília and Florianopolis

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**Keywords / Relevant Terms:** fear of crime, walkability, urban design, public spaces, criminality

## Abstract

A growing concern about crime in large cities significantly impacts residents' quality of life and influences their choices regarding mobility and leisure activities. This research investigates the relationship between perceptions of walkability, fear of crime, and environmental perceptions of Crime Prevention through Environmental Design (CPTED) in Brasília and Florianópolis. Surveys were distributed in six distinct study areas in each city, including Superquadras 409 and 410 in Asa Sul, Vila Planalto, and Vila Varjão in Brasília, as well as Costeira do Pirajubaé, Saco Grande, and Jardim Atlântico in Florianópolis. The study utilized the Neighborhood Environmental Walkability Scale (NEWS), a validated tool in the Brazilian context. Surveys were administered door-to-door in each of the selected areas. The sample (N=2114) is predominantly composed of women (66.9%). Results indicate that respondents in Brasília perceive their environment as more walkable compared to Florianópolis. Residents of Florianópolis express greater fear of crime than those in Brasília. Overall, women feel more insecure than men; however, in Florianópolis, there was no significant difference in fear of crime between genders. Correlating fear of crime and perceptions of walkability, a negative correlation was observed (rho=-0.47, sig=0). Regarding social contact in the neighborhood, a positive correlation was noted (rho=0.345, sig=0), indicating that higher social contact among residents corresponds to greater perceived security. Concerning CPTED, the study opted to utilize Maintenance and Image variables (rho=0.406, sig=0), Natural Surveillance (rho=0.328, sig=0), and Geographic Juxtaposition (rho=0.482, sig=0). Spearman correlations were positive for other variables when analyzed alongside perceptions of walkability, suggesting that greater maintenance, natural surveillance, and geographic juxtaposition in the neighborhood correspond to higher perceived walkability. The conclusions of this study have significant implications for urban crime prevention and alleviating fear of crime.

# Urban Spaces and Female Perceptions: Exploring Gendered Spatial Justice and Safety in London

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**Keywords / Relevant Terms**: Gendered Spatial Justice, Women's Safety, Spatial Analysis, Feminism, Gender Relations

## Abstract

The study investigates the consequences of female fear as a result of unequal status and its role in perpetuating gender disparities, as well as how safety perception is influenced by the interplay of the physical environment, individuals, space, and location. Utilizing London as a case study, it employs both quantitative and qualitative methods to reveal how negative emotions in women contribute to social spatial exclusion, and delves into the intricate relationship between gender spatial justice and women's sense of safety in urban environments. The study also focuses on the less explored area of the interaction between women's safety concerns, experiences of victimization, and their patterns of movement in urban spaces. It underscores that women's subjective emotions are pivotal in shaping the power dynamics within urban spaces, thereby identifying urban design as a crucial tool for fostering inclusiveness.

To thoroughly understand these issues, the study applies KMeans analysis to geographical spatial data from London, considering aspects like site enclosure, road accessibility, architectural visual prominence, and green space ratio to identify urban spatial characteristics that are either beneficial or detrimental to women. Through the analysis of social media evaluations of different urban public spaces and the application of machine learning tools for emotional semantic analysis, the research explores the issue of spatial justice from a gender perspective.

In summary, the study comprehensively examines the interaction between gender spatial justice and women's sense of safety in London's urban spaces, highlighting the necessity of an integrated approach in urban design to promote inclusivity and address the spatial impacts of gender power dynamics.

# Issues Related to Evacuation Exit Door's Specifications in Japan

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**Keywords / Relevant Terms**: Evacuation, Exit Door, Japanese Building Standards Law, Emergency Lighting, Smoke Density

## Abstract

In Japan, the Building Standards Law requires that exits designated for evacuation can be unlocked from inside the building without the use of a key. The door unlocking method should be clearly indicated in an easily visible place near the exit. Following this, many local governments fire prevention ordinances and regulations also stipulate that doors can be unlocked and opened with an opening motion, or easily unlocked with a single motion from inside the building without the use of a key, etc., along with the requirements for exits to be used for evacuation. However, some of these specifications do not end with "a single movement," which may hinder evacuation. In case of a fire, the power outage and smoke generated can make it difficult to find evacuation routes due to poor visibility. If the evacuation exit door, which is the last resort, cannot be easily unlocked, it can become impossible to evacuate, and there have been cases where fatalities have occurred as a result.

This study evaluated two types of unlocking devices commonly used as evacuation exit doors in Japan, and one panic response device that is standard in Europe and the US. The devices were tested on subjects under varying visual environmental conditions, such as different levels of vertical illumination and smoke density, in the evacuation route. As a result, many subjects could not operate the emergency lock with acrylic cover, which is commonly installed in Japan, even in brightly lit environments, and the average unlocking time was 21.49 seconds, about four times longer than that of the panic response device. In addition, the higher the smoke density under emergency lighting conditions (1 lx on the floor), the longer the unlocking time became, clearly indicating that a change in Japanese evacuation exit door regulations is essential.

# Practitioners' perceptions of challenges to mainstreaming sustainable drainage systems (SuDS)

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**Keywords / Relevant Terms**: Sustainable drainage systems (SuDS), Climate adaptation, Blue green infrastructure, Nature-based solutions, Barriers to delivery

## Abstract

Environmental challenges, such as climate change, brings increased risks of flooding, and with that comes an increased need for climate adaptation to such risks. Nature-based solutions approaches, such as sustainable drainage systems (SuDS), offer effective alternative water management to traditional grey infrastructure approaches. They also provide multiple co- benefits including improving water quality, restoring nature, and providing better spaces for people. Despite the benefits, the implementation of SuDS is still limited. We present the findings of a mixed-methods study among practitioners working within UK organisations relevant to SuDS (such as national environmental agencies, local authorities, water companies). The findings from the survey (n = 48) provided us with an overview of organisational roles and perceptions of SuDS (including perceptions of benefits, barriers, and information-gaps). The main perceived benefits of SuDS identified by survey respondents include drainage, flood risk reduction, climate change adaptation, water quality, and biodiversity & ecology. The main barriers identified were access to funds, difficulty retrofitting, cost to maintain, ownership of SuDS, and lack of collaboration between various stakeholders. Issues around availability of information to support SuDS scaling were also highlighted; the main information-gaps include conflicts with corporate identity, cost to maintain, lack of collaboration between various stakeholders, public acceptability of SuDS, and health and safety issues. The survey research was then followed up with in-depth interviews with a subset of six survey respondents. This allowed us to further explore and get more detail around the barriers perceived by participants. Three broad themes were prominent: i) People-related elements associated with SuDS; ii) Limiting practicalities associated with SuDS and iii) Informational factors. The findings of this research provide further insights around complexity and obstacles to the mainstreaming of SuDS. We conclude the research by making sector- wide recommendations to further facilitate the growth of the delivery of SuDS.

# Urban Nature: On Definitions and Alternative Futures

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**Keywords / Relevant Terms**: evolution, green infrastructure, nature experience, urban greening

## Abstract

In pursuing a better future, laypersons and professionals rely on language to describe and explain the past, the present, the problems, and paths forward. When the available language does not suffice, they modify it to better articulate why and how change should take place. These linguistic developments constitute movement toward alternative, more desirable futures. We consider the term “urban nature” in this light. Elaboration of its multiple meanings will aid efforts to contend with problems stemming from human population growth and its concentration in urban areas. Some of these problems have global scope. Climate change, for example, works across all borders. Other problems, such as urban heat islands, are not global, but they recur in localities around the globe and may feed into global problems. Recognizing that local solutions may also have broader relevance, many laypersons and professionals use English terms and their counterparts in other widely used languages to coordinate activities across linguistic boundaries between societies. Terms like “urban nature” and its counterparts in other languages now support wide-ranging discussion of how improved integration of natural settings, features and processes in urban areas can yield benefits to people, other species, and the ecological systems on which they depend, thus contributing to more sustainable human-nature relations, locally and globally. But what do people mean with “urban nature” and what additional meanings might they yet attach?

Starting from these questions, in this presentation we first consider meanings historically assigned to “urban” and “nature,” touching on matters of both substance and process. We then examine current usage of “urban nature” and its various biophysical manifestations. Recalling the historical meanings of “urban” and “nature,” we consider additional implications and emerging manifestations of their combination, with a view to alternative futures. We close with some critical considerations.

# Localizing Renewables - Designing Sustainable Energy Landscapes

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**Keywords / Relevant Terms**: renewable energy landscape, urban design, local acceptance, place attachment

## Abstract

The global shift toward renewable energy is crucial for a sustainable future, prompting a transition from centralized to decentralized energy generation. This leads to an increased prevalence of visible energy structures like wind turbines in local landscapes, which, in some cases, has led to resistance by local residents. One influencing factor among many on local attitudes toward renewable energy infrastructure is its impact on landscape. When energy infrastructure is perceived as landscape disruption, this can negatively affect peoples' identification with their local landscape, resulting in unfavorable attitudes towards these new, "intrusive" constructions.

Addressing this, our research focuses on design options of physical components of renewable energy infrastructure to enhance their integration into urban and rural landscapes aesthetics. Our contribution presents innovative design approaches tailored to specific local German contexts, emphasizing the incorporation of local characteristics into the design of renewable power plants. To achieve this, we identified and analyzed numerous German study areas, developing designs that consider both the technical potential and unique identities of each location. These designs range from imperceptible integration to consciously visible structures, with a goal of aligning with local features. We argue that such locally adapted designs have the potential to positively impact both, local and general acceptance of renewable energy plants. By discussing these approaches, we advocate for viewing the material effects of the energy transition as opportunities for urban and landscape design, emphasizing the importance of balancing renewable energy goals with local requirements and visual harmony.

# Nature play observations and environmental features that support Bio Play

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**Keywords / Relevant Terms**: Bio play, nature play, children, outdoors, playgrounds

## Abstract

Outdoor play in nature is important for the wellbeing of children as it supports healthy physical, social, emotional, and cognitive development and can inspire children to create a life-long affinity for nature. A well-designed outdoor play space can provide children with a wide variety of play affordances, including opportunities for physical, exploratory, imaginative, bio, expressive, and restorative play. Play spaces are often designed with low maintenance in mind, but that may result in decreased play value. Behavior mapping was conducted in an outdoor play environment in Santa Barbara, California, before and after renovations that were designed to increase physical accessibility at the site, following protocols of compliance with the American Disabilities Act. Play types were observed and recorded using the Tool for Observing Play Outdoors (TOPO). Two areas were significantly altered during the renovations; a mulch pile originally created to host bugs was removed, a build area was enhanced and moved to a more prominent location, and a creek with a recirculating waterway was changed by removing the natural bottom of soil and gravel to a concrete bed. It was presumed that the new creek bed would require less maintenance as the new bottom would decrease the amount of particles entering the waterway. As children were no longer able to manipulate the creek bed, Exploratory play gave way for an increase in boat racing, identified as Games-with-Rules play. We discuss the repercussions of this change in terms of child development. We evaluate the opportunities for adjusting the play categories as a way to interpret this finding. The removal of the mulch bed decreased wildlife engagement (Bio play) as children were no longer encouraged to hunt for bugs and larvae. This presentation will discuss the intended and unintended ways in which play affordances changed due to these renovations.

# Anxiety meets nature: The role of nature on the relationship between socioeconomic status, anxiety, and well-being

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**Keywords / Relevant Terms**: green spaces, blue spaces, subjective socioeconomic status, subjective well-being, anxiety

## Abstract

People with lower subjective socioeconomic status are more prone to experience anxiety and poorer subjective well-being. Nature's restorative ability can play an important role among this group given that spending time outdoors is often associated with better overall mental health and well-being. In this study, we aim to explore the moderating effect of recent visits to green and blue natural spaces on the mediated relationship between subjective socioeconomic status, anxiety, and subjective well-being. A nationally representative sample of 946 Portuguese respondents was recruited. Results showed that anxiety mediated the relationship between subjective socioeconomic status and subjective well-being. In addition, the mediation effect was weaker for those who visited natural spaces more frequently, suggesting that spending time in nature buffers against the anxiety associated with lower subjective socioeconomic status from translating into poorer subjective well-being. These findings highlight the importance of using nature as a cost-effective strategy to assist in mitigating the negative effects of low subjective socioeconomic status.

# Greening schoolyards: a key strategy for urban sustainability transition

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**Keywords / Relevant Terms**: green schoolyards, sustainabitiy transition

## Abstract

Schoolyards in the North have conventionally been large barren asphalted areas, used mostly for physical education and recess, frequently dominated by ball-based games and competitive conducts. The steady advancement of biodiversity loss, climate change, and associated heat waves or floods, along with the reduced opportunities for nature contact and outdoor/diversified play in urbanized areas, have brought about a systemic shift in thinking about schoolgrounds and their role in education, child development and urban sustainability altogether. Green schoolyards are becoming increasingly popular among policy-makers and educational organizations. Ideally, these possess minimal non-permeable surfaces and feature native vegetation (trees, shrubs, flowers, vegetable garden), brown elements (like sand, tunnels, logs), along with diverse structures for play and sit-together. In light of the social, psychological, environmental, and pedagogical benefits of nature-rich, diverse and climate-adaptive schoolyards, this paper aims to explore the governance configurations that enable, produce, and sustain these spaces. We scrutinize existing peer- reviewed literature analysing the norms, actors, and processes through which green school playgrounds are conceptualized, designed, implemented, sustained and used. We find that the availability and reliability of public funding is one of the baseline conditions for the steadfast naturalization of schoolgrounds. Effective schoolyard governance furthermore rests on the approaches that underpin the design of the nature-based intervention. A key aspect here is the extent to which 'nature messiness' and loose elements are welcomed and actively sought. The responsive and just governance of green schoolyards further rests upon the way these are being integrated into schools' pedagogical visions and praxis. Finally, greening schoolyards requires participation processes that are accessible and inclusive for adults and children from a variety of socio-cultural, ethnic and economic contexts. Naturalizing schoolyards, however, goes beyond the search for narrow technical solutions for climate adaptation or pedagogical innovation, being a process of school (re)making and societal transformation.

# Diversity in nature contact in the UK – An intersectional analysis of the MENE survey

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**Keywords / Relevant Terms**: diversity, nature contact, intersectionality, health and well-being

## Abstract

Contact to nature has been linked to multiple benefits for individual's physical health and mental well-being (Hartig et al., 2014). Natural elements can also help people develop biopsychosocial resilience to stressors and support coping practices (White et al., 2023). However, previous studies have shown inequalities in access to, and use of, nature across population subgroups as a function of age, gender, social economic status, and ethnicity (Garrett et al., 2023; Colley et al., 2022; Powers et al. 2022). Thus, in addition to investigating the benefits of nature contact, we need to know more on why or why not individuals access natural environments and how this differs for groups facing multiple inequalities. Using data from over 480,000 participants in the UK's Monitor of Engagement with the Natural Environment (MENE) survey, this talk will present data on the intersectional disparities in outdoor nature use and outline the motivations behind those who do and do not make recreational visits to nature. Due the scale of the dataset we are, for the first time, able to meaningfully explore nature use in a truly intersectional way by looking at the intersections across gender, 3 age-groups, 10 ethnic groups, and four levels of socio-economic status. The talk will provide population representative insights into issues of diversity surrounding nature access in the UK and aims to inform public policies aiming to reduce existing health inequalities through greater, and more inclusive, nature contact in the future.

# Focus group studies on indoor nature integration: elements, expected benefits and determinants of implementation

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**Keywords / Relevant Terms**: indoor nature integration, biophilic design, qualitative research, barriers, attitude

## Abstract

Introduction: Nature has a positive impact on human well-being. Even a biophilic design, an interior adapted to include or refer to natural elements, has been linked to better well-being. To optimize future interventions, this study examines the general public's opinion on nature integration: nature elements, expected benefits and determinants leading to implementation. Method: In seven focus groups with 41 participants (63% women, 23-72 years), we examined how people define nature integration and which effects they expect. Six other focus groups with 25 participants (68% women, 19-69 years) examined the determinants of nature integration practice, based on the ASE-model (Attitude, Social influence, Self-efficacy). Results: Green plants, natural light, fresh air, and colours appeared as universal elements of nature integration, while nature views, water, fire, animals, smells and sounds were rather building specific. Also the expected benefits were building specific, with mainly mental and cognitive expected benefits. The three ASE core aspects attitude, social influence and self- efficacy were identified as determinants of nature integration intention. Herein, social influence was less relevant, the attitude was already positive for most participants and knowledge of expected benefits was an important driver. Participating in this study was experienced as an intervention as they had never thought about it before and would consider it now. To put intentions into practice, barriers include budget, effort, lack of space and too artificial/exaggerated, while creative skills and knowledge of possibilities could motivate nature integration.

Conclusion: Raising awareness about the possibility and usefulness of indoor nature integration seems to be a first important step for interventions. Easy, natural, budget-friendly, tranquillity-radiating interventions should be prioritized. Standardized interventions could be difficult since it should match people's personal preferences. We will now start focus group studies with restaurant owners and visitors to detect nature integration determinants within that specific setting.

# Examining the Links: Frequency of Nature Experiences, Nature Connectedness, and Perspectives on Nature

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**Keywords / Relevant Terms**: perspective on nature, nature connectedness, nature experiences, feeling of awe, adjective check list

## Abstract

The term "nature" encompasses a wide array of meanings, and the environment one envisions when hearing the term can vary significantly from person to person. This study investigated whether there is a correlation between the environment one imagines upon hearing the term "nature," their frequency of nature experiences, and their connection with nature. We utilized an adjective checklist to measure images of nature and analyzed how these images differ based on the frequency of nature experiences and the degree of nature connectedness. We collected responses from 2,100 individuals aged between 20s and 60s from a web survey company's monitor pool. When asked, "What do you think of when you hear the word 'nature'?", the most common response was "a place with lush greenery" (44.8%), followed by "a place where human intervention is minimal" (24.9%), and "a place with biodiversity" (15.8%). The analysis revealed no correlation between the frequency of nature experiences and the image evoked by the term "nature." Similarly, no correlation was found between the strength of nature connectedness and the image evoked by the term "nature." However, those who valued nature more highly tended to choose an environment with biodiversity and minimal human intervention, while those who chose a well-manicured nature valued it less. It is worth noting that the more frequent the nature experiences, the stronger the connectedness, and the higher the value placed on nature. Regarding the adjective checklist evaluation, those with a moderate or higher frequency of nature experiences scored higher on "Awe" towards nature than those with fewer experiences.

# Relational perspectives on human-nature relationships and the role of nature connections in well-being

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**Keywords / Relevant Terms**: nature connection; mindfulness; relationality; wellbeing

## Abstract

There is increasing evidence that connections with nature play a vital role in the relationship between nature and wellbeing, with multiple studies observing nature connection as an individual characteristic that moderates or mediates wellbeing benefits of nature exposure. While this avenue of inquiry is promising, it problematically relies on unidimensional indicators of connection that overlook well documented social and cultural diversity in human-nature relationships.

In this presentation we draw attention to 'relational' worldviews and consider how they shape our understanding of the role of nature connections in well-being. Relational paradigms are characterised by holistic ontologies, situated and embodied ways of knowing, and ethics of care. 'Relational thinking' is invigorating diverse academic fields, but its implications for nature-
wellbeing research are underexplored.

We first assess how relationality is and is not evident in nature-wellbeing research. We note that in recent decades, the field has been dominated by mechanistic worldviews that treat nature and humans as separate entities. This has reinforced a focus on sharp distinctions between nature and urban environments, a focus on individual well-being, and linear models of change in wellbeing. More relational perspectives are also evident, for example in studies of First Nation well-being.

We illustrate relational worldviews in the context of nature and wellbeing through research conducted with people from Buddhist, First Nation, and ecofeminist traditions. Participants described a large sense of nature, incorporating the cells in our bodies to the cosmos, wild places and plastic bags and concrete. They emphasised collective wellbeing alongside individual wellbeing, and described how nature-wellbeing relationships are enhanced through integrated cyclical dynamics of flourishing, resisting more linear or discrete mechanisms found in much nature-wellbeing theory.

We close with a reflection on ways relational worldviews challenge theoretical and methodological approaches to 'nature connections' studies of nature and wellbeing.

# Exploring the impact of rewilding urban gardens on human mental health and well-being

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**Keywords / Relevant Terms**: mental health, biodiversity, intervention, urban green

## Abstract

Living in cities has reduced possibilities to be in contact with the biodiverse natural environments. As biodiversity supports ecosystems and human well-being, there is a huge need to rewild urban ecosystems. Several studies have demonstrated that various forms of contact with nature, including exposure to nature views, visits to natural settings, and engagement in leisure activities in nature, have strong positive effects on human mental health. Participants report improved mood and relaxation, and some studies even suggest a reduction in the use psychotropic medication. However, there are only few studies about the relations between biodiverse environments and mental health. In our interdisciplinary 5-year study in Finland, we are implementing biodiversity interventions to rewild urban gardens and yards and aim to enhance the health and well-being of urban inhabitants in various ways. This presentation focuses only on a specific segment of our comprehensive project, targeting on the rewilding effects on mental health during the first year of the study among private garden owners in four different cities and inhabitants of a housing unit for elderly. The gardens and a yard were transformed using different green elements as well as organic materials such as decayed wood. All study participants competed questionnaires about their living environment, nature visits, and responded to several questions regarding their mental health and well-being. In addition, participants answered questions about their garden/yard activities, and emotions related to their garden visits. Human hair samples were used to measure cortisol concentration. We expect that the interventions improve participants mental health, and in the long run raise their connection with nature and behaviours related to their own gardens. This is the first study where the biological, medical, and social markers are studied comprehensively in the intervention study. The project can have large impact on city planning and rewilding urban environments.

# Competition increases Stereotypical Image of Wolves: Spanish Livestock Farmers' Perception of Wolves

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**Keywords / Relevant Terms**: social stereotypes; wolf; livestock farmers; conservation psychology; human-wolf conflict

## Abstract

Research on the social perception of animals is essential to understand human-animal relations. Regarding conflicts between humans and wild animals, competition for resources can lead to a negative perception of animals that hinders their conservation. This work analyzed the social stereotype of wolves held by Spanish livestock farmers, a social group immersed in a competitive situation with this animal. Using a questionnaire, administered mainly in their workplace, extensive livestock farmers (N = 84) selected through snowball sampling listed the characteristics associated with wolves, their valence, and the consensus among Spanish farmers. Main results showed that wolf's stereotype content –socially shared attributes about wolves is almost identical to lay population's, although more negatively evaluated, particularly for right-wing farmers. Importantly, farmers perceived wolves specially as lacking warmth (e.g., harming) more than highly competence animals (e.g., cunning). This finding is consistent with the theoretical competition-warmth link found in the stereotype field. The identified wolf stereotype can be used to reduce public opposition to wolf conservation management, especially for ranchers, one of the key stakeholders in the human-wolf conflict.

# Mapping the Social Benefits of Woodland Creation and Expansion Longitudinally

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**Keywords / Relevant Terms**: Woodland creation, longitudinal, social benefits, tree-planting, post-industrial

## Abstract

The importance of providing urban populations with equal access to green and blue spaces is widely acknowledged. It is reflected in the UK Government's recently announced Environmental Improvement Plan, which aims for every person in England to live within a 15- minute walk of green/blue space, inclusive of woodlands, wetlands, parks, and rivers. To deliver such targets, urban and peri-urban areas in England are set to witness significant environmental change. Much of this will be delivered through extensive woodland creation and expansion, with targets to treble tree planting to 30,000ha a year by 2025. While the environmental and economic impacts of such land-use change are relatively well understood, the social impacts are far less clear. This research addresses this gap by exploring the hyper- local experiences of community members at two post-industrial case study sites in England, where woodland creation is already underway. These sites are particularly fruitful for exploring transitions given their spatial and temporal context as areas which sit just outside large population centres, encapsulate traces of both urban and rural, and have seen, and continue to see, rapid change in terms of post-industrialism, nature-restoration, and population change and growth. Telephone surveys, online semi-structured interviews, and walking interviews with a diverse sample of local community members are being conducted at three time-points between Autumn 2023 and Summer 2024. This longitudinal mixed-methods approach provides an in-depth source of evidence, helping to understand how woodland creation affects local communities, including the multiple scales (from individual to community-level) and temporalities involved. We present findings from year 1 of the project, reflecting on the feasibility and value of longitudinal research for attending to, and understanding post-industrial landscapes and the communities experiencing woodland creation there. Findings will also help inform the design of future tree-planting schemes to best benefit local communities.

# Nature exposure reduces self-reported acute pain: A systematic review and meta-analysis

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**Keywords / Relevant Terms**: pain, nature exposure, nature benefits, distraction, meta-analysis

## Abstract

A substantial body of research shows that interacting with nature contributes positively to physical and mental health. Evidence suggests that nature exposure is even associated with reduced levels of self-reported pain. However, the magnitude and robustness of this effect remain unclear. We conducted a systematic review and meta-analysis to quantitatively investigate the impact of different forms of nature exposure on self-reported acute pain (including rating scales and pain threshold). The meta-analysis so far includes 37 studies from 18 countries, covering 51 individual effects and a total sample size of 2648 participants. While updated results will be presented at the conference, the analyses revealed a significant standardized mean difference in acute pain between nature and comparison conditions (SMD = -0.53). This effect was not moderated by publication year, context (clinical vs. laboratory), or design (within- vs. between-designs). However, we found the type of control used to act as a moderator: studies comparing nature exposure to other forms of distraction showed a smaller effect (SMD = -0.27) than studies that used no other forms of distraction (SMD = -0.59). The analyses also showed a high level of between-study heterogeneity, potentially attributable to variations in the types of acute pain and nature exposure used. Our results suggest that nature exposure has a consistent but small to medium effect on self-reported pain (corresponding to a reduction of one point on a scale ranging from zero to ten). We will discuss practical implications and how methodological variations among studies influence the outcome.

# Neighborhood greenspace exposure is associated with improved sleep outcomes over time among a representative national sample of American children

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**Keywords / Relevant Terms**: Greenspace, Parks, Neighborhoods, Children, Sleep,

## Abstract

**Background/Objectives:** Children's sleep is critical to healthy development, yet over a third of children in the United States experience insufficient sleep. Greenspace exposure likely promotes better sleep. Moreover, children at risk for sleep deficits may especially benefit from greenspace exposure. Herein we pursue two primary research questions. **RQ1:** Does neighborhood greenspace demonstrate a positive relation (main effect) with children's sleep? **RQ2:** Does greenspace buffer or dampen (moderate) the negative impacts of multiple SES risk factors on sleep outcomes?

**Methods:** We examined sleep among a nationally representative, four-year longitudinal sample of 8,789 U.S. children ages 9 and 10 years at baseline. Neighborhood greenspace measures included baseline home census tract calculations of percent open park space and total greenness (NDVI). Multi-level models incorporated extensive individual and neighborhood-level covariates (including test year, age, race/ethnicity, address tenure, income, parent education, neighborhood disadvantage, urbanicity) to test greenspace main effects and interactions. Sleep was measured by parental ratings of children's sleep duration and difficulties sleeping. Interaction variables were household income and parental ratings of child stress.

**Results:** Neighborhood open park space and total greenness measures were related to more sleep and fewer sleep difficulties, after controlling for covariates. Additionally, park space, family income, and stress demonstrated a three-way interaction showing parks to attenuate risk and improve sleep outcomes for children from relative poorest backgrounds and highest stress levels. No interaction effects were uncovered for NDVI.

**Policy/Practice:** This research demonstrates the importance of park space in children's home settings on sleep outcomes over time. It also shows potential enhanced benefits for high sleep deficit risk groups.

**Originality:** This study is the first to examine the interaction between greenspace and different social risks on children's sleep outcomes, and one of the few to test main effects of greenspace on sleep using a longitudinal, individual-level design.

# Effects of the proximity and availability of urban blue and green spaces on social capital

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**Keywords / Relevant Terms**: Urban blue and green space, spatial proximity, wellbeing, social capital

## Abstract

Blue-green infrastructure (BGI) comprises major public venues for urban residents to engage in leisure activities or attend gatherings. Previous studies that have confirmed the positive associations between urban greening and residents' infrastructure satisfaction, social satisfaction, and social capital. Moreover, the utilization of public facilities by residents is strongly affected by the proximity and diversity of these facilities. However, relevant previous studies have mostly focused on green spaces while overlooking blue spaces. Therefore, the objectives of this study were to improve the benefits brought about by blue spaces and to explore how the proximity and availability of blue and green spaces affect the social capital of local residents. The research area consisted of 50 sites in Taichung City, Taiwan. A space syntax analysis was performed to determine the spatial arrangement and proximity of local blue and green spaces. The normalized difference vegetation index, normalized difference water index, and Shannon diversity index were calculated to determine the area of local blue spaces, the area of local green spaces, and the diversity of local public facilities, respectively. A total of 1000 valid responses were collected from respondents in the research area regarding their frequency, duration, and purposes of using local blue and green spaces; perceived quality of blue and green spaces; and social capital. The results revealed that highly diverse local facilities and large areas of green and blue spaces increased the duration of residents using such spaces and positively affected their social capital. The findings of this study highlight the importance of equal blue and green space distributions for improving the social capital of urban residents and can act as useful references in the development of future urban planning strategies.

# Proximity's Influence on Physical and Mental Health in Barcelona

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## Abstract

The concept of the 15-minute city has gained prominence as a transformative urban planning strategy, aiming to create more livable and sustainable urban environments. This paper delves into the intricate relationship between the 15-minute city model and the physical and mental health of its inhabitants. By advocating for proximity and accessibility, the 15-minute city promotes the idea that essential services should be within a 15-minute walk or bike ride. This study is focused on the municipality of Barcelona, already considered a proximity city. Utilizing health data from the 2021 Health Survey in Barcelona (involving 3,556 adults), we assess the relationship between the 15-minute city model and physical and mental health variables. The 15-minute city concept is translated into a detailed map based on walk or bike times to essential services, like shopping, workplaces, and recreational spaces using available built environment data. We examine the positive correlation between proximity and key health variables, including Body Mass Index (BMI), health status, weekly fitness levels, life satisfaction, and depression levels. This research aims to contribute to the understanding of the intricate interplay between urban design, physical activity, and mental health. By providing insights into how proximity impacts health outcomes, this study serves as a valuable resource for policymakers, urban planners, and public health advocates working collaboratively to prioritize the well-being of city residents. The anticipated findings hold implications for creating healthier and more sustainable urban environments globally.

# Indoor air matters: improving home air quality in West London through community engagement

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**Keywords / Relevant Terms**: indoor air quality, home, behavioural change, health

## Abstract

Indoor and outdoor airborne pollutants are both increasingly acknowledged as a substantial health risk. Studies on indoor air pollution have, however, not received the same level of attention as outdoor air pollution, despite clear evidence of its harmful effects, especially when adults and children spend much of their time at home. Furthermore, there is a lack of research aimed at understanding how to effectively motivate individuals to take action to improve home air quality.

The present study aims to address this gap by investigating how community engagement impacts psychological predictors of indoor air quality-related health behaviours. This study is part of the WellHome project (n=100), which sets out to engage households in a diverse and deprived part of West London on the topic of indoor air pollution. Community engagement is hypothesised to lead to proactive behaviours across various activity categories such as cooking, heating, cleaning, personal care, smoking, fragrance use, window opening, and the use of air purifiers.

Through a mixed-effects modelling approach, we analyse the pre- and post-intervention changes in the Health Belief Model (HBM) constructs and their relationship with behavioural changes across the different activity domains. This approach allows for an in-depth exploration of (i) whether the intervention alters HBM predictors, as well as (ii) if these changes consistently translate into behaviour modification across and within different activity categories and individuals.

The outcomes of this analysis contribute to a more detailed understanding of how engaging households can improve home air quality. These findings are anticipated to optimise the effectiveness of future interventions in fostering change in behaviour related to indoor air quality across diverse categories of activities.

# Study on young people's social evaluation and prospects for housing acquisition -Comparative analysis between Japan and Norway-

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**Keywords / Relevant Terms**: Housing affordability, Social evaluation, Happiness, Housing acquisition, Young people

## Abstract

Currently housing affordability in large cities in developed cities are becoming more serious not only for the elderly, disabled but also for young people. The difficulty young people have in acquiring housing in an issue related to social sustainability related to marriage and birth rates. This study aims to clarify how young people evaluate their own society and what intentions of housing they have regarding their future.
As a first step, we conducted a survey among university students in Japan and Norway. What both countries have in common is a strong preference for home ownership and high rate of single-family home owner ship. On the other hand, the two countries show different trends in international rankings regarding people's happiness and international competitiveness.

According to the 2023 World Happiness Report (SDSN) and World Competitiveness Year Book (IMD), Japan ranks 47th and 35th, and Norway ranks 7th and 14th. Compare to Japan society, where the population is declining and aging rapidly, Norwegian society is positioned as a happy and competitive society.

The questionnaire was created using Google Forms and students were asked to respond in class. The questionnaire consists of basic attributes, current happiness level, social evaluation and future housing intentions. The survey was conducted in Japan in July 2023 and in Norway in September 2023, and the number of valid responses was 134 in Japan and 111 in Norway.

The survey results revealed different trend in happiness, social evaluation, and housing intentions in each country. In this study, I would like to discuss how young people view the home that people should feel most attached to, taking into account their respective social situations.

# How Do Choices Impact Employee Stress Levels in ABWs? A Qualitative Study on How Individual Choices Impact Stress in Activity-Based Workplaces

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**Keywords / Relevant Terms**: Activity-based workplace, Well-being, Workplace stress, Workplace design, Choices

## Abstract

Activity-based workplace (ABW) is an emergent way of working where employees select workspaces based on tasks, often without an assigned workspace. Its rising popularity in both research and practical settings is attributed to cost savings and increased employee flexibility. However, despite ABW's growth and the extensive time spent in such environments, there's a lack of consensus in existing literature regarding its impact on employee stress and well-being. This inconsistency stems from diverse ABW implementation strategies and the misalignment of constructs in prior studies. Drawing on Ulrich's supportive design (1991) and the Job Demands-Requirements (2006) models, this study addresses these gaps, aiming to understand how ABW's physical characteristics influence employee stress, thereby offering insights to enhance workplace well-being.

This research involved semi-structured interviews with 15 individuals, focusing on their experiences with ABW's physical aspects and their effect on stress levels. Analyzing these interviews via thematic analysis revealed four main themes that influence stress in ABW settings: choices, programmatic requirements, social dynamics, and distractions. This presentation focuses on the "choices" theme, which encompasses factors like personal preferences, interpersonal differences, and the degree of control employees have over their work environment, all of which are mentioned to play a significant role in reducing stress for employees in the ABW context. "Choices" help gain an understanding of how individual ergonomic considerations as well as the autonomy of controlling their immediate environment, contribute to a more personalized and comfortable workspace.

The study's findings provide valuable insights into how physical work environments can support or impede employee well-being. These insights are instrumental for designers and management in optimizing workspaces to minimize work-related stress. Furthermore, the study lays a foundation for future empirical research to explore the impact of physical workplace features on employee stress in-depth.

# Impact of Home and School on Stress Experience and Executive Functioning in Scholars

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**Keywords / Relevant Terms**: Childhood development, Neurocognitive deficits, Environmental quality, Stress, Primary environments,

## Abstract

The societal challenge of income disparities and their impact on human development requires multifaceted solutions. This requires interventions in the socioeconomic system and an understanding of neurocognitive and psychological mechanisms linking deficits in children's primary environments (such as housing and school) to their executive functioning and stress experiences. Unfortunately, research on this interplay in the Latin American context is limited.

A quasi-experimental design involving pre-established groups stratified by low-income level was employed to investigate this complex phenomenon. The study included 337 students from five elementary schools in Mexico City's Metropolitan Area, with evaluation conducted through psychometric battery using paper and digital instruments. The assessment covered environmental quality, perceived stress, coping styles, and executive functioning (neurocognitive deficits); sensors were used to measure classroom volume, noise, and indoor temperature.

The research findings reveal a parsimonious model (RMSEA=0.030,CFI=0.983,X2 =123.833 p=0.024), establishing the direct effects of home and school environments' quality on executive functioning. Notably, stress was identified as a mediating factor between primary environments and deficits in executive functioning, particularly in attention and decision-making. This suggests that heightened stress due to suboptimal environmental conditions significantly contributes to crucial aspects of executive functioning.
Remarkably, educators and caregivers can use these findings to implement strategies that mitigate stressors and relieve neurocognitive deficits from poor environments. Introducing enhanced coping mechanisms and enrichment spaces can alleviate the impact of poor environmental quality, fostering an environment conducive to optimal executive functioning in children. Addressing these issues comprehensively can advance both individual well-being and societal development in the Latin American context.

# Between nature, pavement, and student's wellbeing. A comparative case study of high school grounds spatial organization and landcover

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**Keywords / Relevant Terms**: green schoolyards, nature-based learning, active lifestyle, wellbeing, restorative environments

## Abstract

Background: Mental fatigue, stress, and obesity are prevalent issues among high school students, impacting health, wellbeing, and academic performance. Studies highlight the positive effects of nature in schoolyards on learning, active lifestyles, and attention recovery. However, limited knowledge exists on how schoolyard landcover and spatial organization affect high school students' access to nature. Objective: This research conducts a comparative case study evaluation of two high schoolyards in rural Quebec, Canada, classified as "polyvalent schools" constructed between 1967 and 1983. The primary objective is to identify, through site assessment, the strengths, and constraints that can promote students' learning, health, and wellbeing. Method: A comparative empirical study is employed, utilizing satellite images tracking the evolution of each schoolyard. Field observations follow, assessing its current spatial composition and utilization. Subsequently, artificial intelligence (AI) generates a preliminary list of design guidelines for high school ground renovation. These ChatGPT-generated recommendations are then scrutinized and curated by the researcher, selecting those aligning with specific physical and social contexts. Findings: Regarding spatial organization, in both schools, natural areas were segregated from the building by internal vehicular roads, limiting nature accessibility and creating visual and physical barriers to students. Preliminary data indicates low tree cover percentage, high percentage of pavement for vehicular circulation vs low percentage for pedestrian circulation, and deficiencies in outdoor furniture. Positive observations include incorporating ramps and shared facilities with the community. Implications: The anticipated impact involves providing the Ministry of Education with design guidelines that can be applied in future renovations of Quebec's high school grounds. Originality: A distinctive methodology is employed, integrating artificial intelligence (AI) to generate design guidelines, subsequently refined by human research. This innovative approach showcases the fusion of advanced natural language processing for insights and interpretation of complex datasets.

# Sense of place narratives of residents in neighbourhoods under touristic pressure: Making, entering, and enjoying local socio-cultural worlds

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**Keywords / Relevant Terms**: senses of place, narrative, right-claim

## Abstract

Massive tourism is a powerful force at the scale of inner-city neighbourhoods, radically altering their socio-cultural worlds with the modification of places and relational dynamics, the displacement of long-time residents, and the arrival of new ones. As urban tourism grows, more research is necessary for understanding the psycho-socio-political dimensions of its impacts - in particular, more needs to be known about how residents in touristified areas make sense of place and community as these change under new uses, dwellers and policies. For this goal, in this presentation we focus on narratives of residents collected through interviews (n=30) in two Lisbon neighbourhoods affected by tourism. We explore the different ways in which long-time and new residents construct (plural) senses of place, identifying place-relevant “heroes” and “villains” and temporalities, and constitute themselves as political actors by claiming (diverging) place-relevant rights and relations to others, some more, some less aligned with the values of current urban policies. Findings reveal three narratives, each constructing a different sense of place – rooted, elective, cosmopolitan – linked with different temporalities and place-roles, and privileging different place-rights, some more individual, some more collective/relational. The study extends the comprehension and theorisation of people-place relations and rights-claiming of residents in touristified urban contexts.

# The relation of sufficiency-oriented lifestyles and the socio-political acceptance of urban land-use changes

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**Keywords / Relevant Terms**: sufficiency, lifestyles, socio-political acceptance, land-use, urban

## Abstract

High consumption of natural resources in urban and regional areas is a direct driver of the interlinked biodiversity and climate crises (IPBES, 2022; IPCC 2022). Lifestyle changes in unsustainable consumption and mobility patterns are urgently needed to meet climate change mitigation and biodiversity goals. Here, we explore the sufficiency-oriented lifestyles as willingness to give up carbon-intensive ways to use urban space. To date, theorisation on sufficiency has been divorced from the literature on socio-political acceptance of land-use change by local residents, which has mainly been researched focusing on renewable energy, especially wind power, and aspects of land-use changes (Wolsink, 2019; Busse & Siebert, 2018). To contribute to covering this gap, we explored relationships between socio-political acceptance of land-use change and sufficiency-oriented lifestyles across cities and neighborhoods in Finland. For this study, we collected total of 896 survey responses. We conducted a cluster analysis to distinguish a set of urban lifestyles based on how residents use the urban space and their orientation to sufficiency. We explored socio-political acceptance of land-use changes considering both increase and decrease in different types of urban land-use. We conducted a regression analysis to distinguish patterns of socio-political acceptance of land-use changes across sufficiency-oriented lifestyles as well as sociodemographic factors. The preliminary results of this study show that the variation in socio-political acceptance of land-use changes correlates with the variation in residents' lifestyles and orientation to sufficiency. This study suggests that the influence of the different lifestyles on the acceptance of urban land-use changes is an important phenomenon to consider in urban planning. Acknowledging the links between sufficiency orientation in lifestyles and the land-use change acceptance may have implications for the probability of urban planning influence on lifestyle changes and on how to address the pressing environmental challenges in cities in a more targeted way.

# Residents' relations to local outdoor environments with infill development – the densification of a welfare landscape

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**Keywords / Relevant Terms**: compact cities, green spaces, infill development, modernist planning, neighborhood satisfaction

## Abstract

The asset from modernist planning can be considered a heritage with specific welfare values. This welfare landscape is being much affected by densification, as infill development is a common planning strategy today. The knowledge on how such developments affect residents and their relations to local outdoor environments is still very limited, including for groups such as children and the elderly. We studied the case of a city district with much multi-family housing in Uppsala, Sweden. The district was originally planned in the 1960s as part of the Swedish modernist welfare era. It has been affected by densification through infill development during later years, to various degree in different sub-areas. A mixed-methods approach included document analysis and observations followed by an online survey on use, perceived qualities and satisfaction with outdoor environments among local residents. The results revealed the heritage of careful planning during the 1960s with high green space availability and limited car traffic. Respondents living in non-densified sub-areas reported higher levels of satisfaction, more qualities and a more varied use of the outdoor environment compared to those in densified sub-areas. However, also the level of management of outdoor environments was important, considered too low in mainly one of the non-densified sub-areas. Many respondents described a loss of qualities in their local outdoor environment through the infill development, during the construction and in its results, with less green spaces and increased car traffic, affecting children and the elderly much. The study thus revealed large negative effects for residents of the densification. The study provides an example of development mainly focused on density per se, without securing sufficient qualities in the outdoor environment. If densification is to support children, the elderly and other groups, it needs to better include qualities such as sufficient green spaces and limited car traffic.

# Positive associations of significant local environmental changes perceived by residents and their pro- environmental behaviors in communities and households

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**Keywords / Relevant Terms**: Pro-environmental behavior, significant life experience, urban development, neighborhood, community attachment

## Abstract

Significant life experience related to the environment is known to lead to a later pro-environmental attitude. This may apply to community environmental changes but has been little studied. The present study aimed to examine the potential influence of significant environmental changes as perceived by residents on their community and household pro- environmental behaviors (PEBs). Questionnaire data were collected from residents of Tsukuba City, Japan, in November 2023 (n = 730). The questionnaire asked about years of living, place attachment, significant local environmental changes, PEB intention and practice at the community (e.g., environmental conservation activities and neighborhood cleanups), and household (e.g., energy and water conservation, waste reduction and separation) levels. Correlation analysis, unpaired t-test, and structural equation modeling analysis were conducted to examine the positive associations of significant environmental changes with PEBs and differences in PEBs by perceived existence and diversity (i.e., various types mentioned) of the significant environmental changes. The most impressive environmental change perceived by the respondents was predominantly a drastic increase in housing (42.80%), followed by a decline in transport convenience (10.58%) and a decrease in the natural environment (9.59%), among others. Unpaired t-tests revealed that respondents retaining impressive environmental changes showed stronger PEB intention and practice than those without such perception. SEM analysis indicates that years of living are positively associated with place attachment and diverse perceptions of significant environmental changes, resulting in enhanced PEBs. Interestingly, community PEB intention was positively related to household PEB but not vice versa. Also, the strength of impression was explained by the diverse perception of local environmental changes but did not contribute to PEB intention and practice. These results imply that being mindful of local environmental changes as significant experiences would enhance PEB intention and practices, and enhancing community PEB may spill over to PEB in a broader context.

# Resilient Cities – Resilient Neighbourhoods: Socio-Ecological Challenges at Different Urban Scales

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**Keywords / Relevant Terms**: resilient cities, neighbourhood scale, socio-ecological dilemma, real-world examples, conflicts between stakeholders

## Abstract

Background: The call for more urban resilience is a response to the mid-term review of the achievement of the SDGs, which shows an insufficient result. In particular, SDG 11 “Make cities and human settlements inclusive, safe, resilient and sustainable” requires more political will, resources, and public commitment to strengthen the urban transition towards resilience. SDG 11 plays a crucial role as it links several SDGs within the urban sector. Its focus on urban livelihood and survival calls for resilience towards destructive events and crises that include natural disasters, social and economic crises. This general objective requires locally specific mechanisms, governance structures and tools to adapt, cope with and recover. Successful resilience strategies include learning for better adaptation and not just bounce back to the pre-event state. Process: The contribution focuses on the identification of different resilience dimensions in the city and their interrelationship. Based on social-science analysis of real-world examples, trade-offs, conflicts and paradoxical relationships between urban stakeholders on change and persistence are shown. It also draws attention to different urban scales within a city and the importance of urban districts and neighbourhoods. Here, citizens experience the most important elements of daily life. Results: The example of climate change-related refurbishment of rental buildings and the case of a dramatic population ageing reveals socio-ecological dilemmas. On the one hand, a high degree of refurbishment is indispensable as an important adaptation to climate change in terms of resilience. On the other hand, this leads to rising rents and restrict affordable housing, especially for the aging population. Those who cannot pay will have to move and lose their familiar surroundings, leading to a loss of social resilience. Implications: Resilience strategies as part of urban transitions require a balanced approach that considers both technical and social measures and their respective consequences.

# Scenarios of future (Proximity, Business as usual, Low Carbon, Smart Territory and Resilience, Environmental and Social Crisis): What Our Lives and Societies could Look like in 2050

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**Keywords / Relevant Terms:** Collective futures, prospective, society

## Abstract

Context and objectives. This action-research was supported by a local authority (South of France) as part of a prospective approach to the year 2050. Specifically, based on Bain's et al. (2013) work, the aim was to explore five scenarios of possible futures incorporating climate change and its consequences (Proximity, Business as usual, Low carbon, Smart territory and Resilience, Environmental and social crisis) in terms of perceptions, representations and acceptability of each scenario. We focused on rural and peri-urban populations, who are often ignored by public policies. Method. The action-research was carried out in two stages: (1) a survey (331 complete responses) in which one of the five scenarios was implemented, making it possible to take stock of a number of aspects of everyday life in 2020 (mobility, place attachment, connection to nature, ...) and in 2050 and (2) a series of focus groups (with rural citizens) using the persona method. Results. Survey : The Low Carbon and the Proximity scenarios generate the most expectations in terms of social justice, stimulation, tradition and preservation of the environment. Conversely, the Business and Smart Territory scenarios promote a mirrored vision of society's values: social justice is a less important value, and so are environmental issues. It should be noted that the importance attached to the values of power and resources does not seem to vary according to the scenario. Overall, the Resilience scenario seems to generate projections of a future in between. Focus groups: As the results of the survey suggested, the Smart Territory scenario shows the influence of digital technology and the retreat of individual freedoms, the Proximity scenario illustrates a future that could be described as empowerment. In contrast, the Resilience scenario generates reactions of apathy and piecemeal adaptation rather than a proactive dynamic.

# The Atlas Project: GIS as a Tool to Enhance Landscape Architecture Students' Understanding of Landscape Analysis and Sustainable Design

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**Keywords / Relevant Terms**: GIS, Ecological Design, Geographical Analysis

## Abstract

This research examines students' perceived effectiveness of learning GIS as a software tool in conjunction with landscape analysis. Students studying in the discipline of Landscape Architecture are challenged to learn an ever-increasing number of software programs, in addition to landscape analysis and design synthesis. Since 2021, undergraduate landscape architecture students in Iowa State's LA 302 Ecological Design studio course have created an atlas of one of the rivers flowing through or past the state of Iowa. The Atlas Project draws inspiration from the Missouri River Commission's 1890s mapping of the Missouri River when 83 individual map plates documented the existing conditions of the river channel. Working as a team, students inventory historic and contemporary characteristics of their assigned river segment, illustrating their findings in a series of map plates. Students use ArcGIS Pro to further analyze their mapped area to identify communities at risk of flooding, alternatives for conventional row crop agriculture, and opportunities for new parkland and wildlife management areas. Students build on their analysis findings to identify areas of interest within their map plate and develop a conceptual master plan diagram that addresses either the aforementioned concerns, development in ecologically unsuitable areas, or other conflicting land uses. In this way, their inventory and analysis build the case for change along the river corridor. A survey tool was created by the course instructors to understand how this project is perceived and to adjust teaching methods moving forward. Students were surveyed to understand their confidence in using ArcGIS Pro as a technical tool, and how this project contributed to their understanding of landscape analysis and sustainable design. Preliminary findings suggest students appreciated the real-life exploration of Iowa's rivers and the project enhanced their understanding of GIS. Some initial challenges were cited including working with the software on personal computers.

# The Effect of Augmented Reality on the Environmental Interpretation: Learning Outcome, Personal Involvement, and Place Attachment

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**Keywords / Relevant Terms**: Augmented reality (AR), environmental education, environmental interpretation, learning effectiveness, place attachment

## Abstract

Numerous studies have shown that environmental education can enhance people's sense of responsibility and ethics toward the environment. In recent years, contemporary technologies have been evolving. Planners and designers have strived to integrate augmented reality (AR) technologies to innovate interpretation. However, compared to other professional areas, the application of AR for interpretation in the settings of natural-based recreation is still in its early stages. We have yet to learn about fundamental questions such as 'Is it worth installing AR into the outdoor interpretation? What are the extra benefits we can receive from AR? Therefore, this study explores the effects of AR on interpretation in outdoor recreation settings by comparing three forms of interpretation: (1) Traditional interpretation board with photos and texts. (2) AR-applied interpretation overlaying virtual objects with the natural environment on-site. (3) AR-applied interpretation overlaying virtual objects with the natural environment and dubbing. A self-administered questionnaire was conducted for data collection. We used the Generic Learning Outcomes model to evaluate the effectiveness of learning, the Personal Involvement scale to measure personal involvement, and the Place Attachment scale to measure the change in the relationship between visitors and the outdoor setting. Finally, we ask questions about the content in interpretation to understand the participants' actual absorption. In analysis, the statistical technique ANOVA is used to evaluate the effects of the three forms of interpretation. The results of this study may assist the understanding of the pros and cons of different forms of interpretation in outdoor settings. In addition, the result can provide references for planners and designers to evaluate whether and how they want to apply AR technology and consider how to maximize the benefits of environmental interpretation for achieving the long-term goal of environmental sustainability.

# Children's perspectives on outdoor lighting in their neighbourhoods after dark

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## Abstract

Children's independent mobility (CIM) during daylight conditions has received considerable attention in research, showing that CIM is declining, with significant implications for children's health, well-being and development. Less focus has been placed on CIM during dark hours and the role of outdoor lighting in children's neighbourhoods. Findings from a recent scoping review show that darkness constitutes a major obstacle for CIM, and that fear of darkness is common among children. The presence, extent and quality of outdoor lighting seem to matter for CIM. Aiming at further understanding of associations between CIM, darkness and presence and perceived quality of outdoor lighting, a questionnaire study was conducted with children aged 10-13 (N=123) in three mid-sized cities at different latitudes in Sweden. The results show that 45% of the children never or rarely went outside without adult supervision in their neighbourhood after dark. Most (54%) children reported that they did not have a place outside that they liked to be at during dark hours and asked for changes to the outdoor lighting in their neighbourhood, wishing for more, stronger, brighter, cosier or more colourful lights, fixing of broken lamps, and for the lighting to be switched on earlier. These findings highlight the need for further research on children's perceptions and perspectives on outdoor lighting in relation to CIM, to develop the current recommendations for outdoor lighting and thereby making cities more accessible for children throughout the day and seasons.

# Influence of Column Layout in a Museum on the Segmentation of Spatial Cognition

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**Keywords / Relevant Terms**: spatial cognition, segmentation, column layout, virtual reality

## Abstract

In this study, we presented a virtual space in which columns with different arrangements and number of columns stand in the space, and recorded the segmentation of spatial cognition perceived by the subjects. The main purpose of columns in a large space is to serve as a structural framework to support a building, but they may also have a symbolic or design role, so it is necessary to consider the impact of columns on their surroundings. In particular, considering the fact that a continuous arrangement of columns can make the building feel like a wall or create a space around the columns, it is thought that the arrangement of columns can restrict human behavior to some extent, even in a single room. Since it is difficult to change the arrangement of pillars in a real space, we provided a virtual space using a head-mounted display and asked subjects to experience various rooms with different room sizes and pillar arrangements, and to describe how they felt the space was divided. Based on these results, in order to clarify the division of space in a continuous space, we created a virtual museum and investigated what paths subjects would choose when viewing all paintings, and described the relationship between pillar arrangement and spatial perception. We believe that this research will deepen the relationship between visibility and action constraints and develop methods for spatial segmentation, such as "I can see the front but not go there because there are only pillars and no walls.

# Design principles in visual communication supporting community engagement for sustainability in Virtual Reality Spaces

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**Keywords / Relevant Terms**: social innovation, visual communication, co-design, virtual reality, design principles

## Abstract

**Background:** sustainable renovation of homes is a necessary step to meet the EU goals of energy efficiency. In social housing, sustainable renovation requires the consent of tenants. As part of the larger uVITAL project on social housing upgrading, we aimed to enhance resident participation to innovate the renovation practice. To this end, we used Virtual Reality (VR) as visualizing information could act as boundary objects to tenants and involved professionals from the housing association. Here we focus on how to design the user interactions in redesigning the communal garden facilitating community engagement.

**Aim:** this study aims to describe the design principles in developing a VR model facilitating user interactions for community engagement in a social housing upgrading project.

**Method:** a research-through-design process was used to design a multiplayer virtual reality model facilitating user interactions. Tenants engaged in 2 previous single-player VR workshops before engaging in the workshop to co-design the communal garden. All models were first verified with the housing association and the second was also verified with the contractor.

**Findings:** we identified 4 major design principles. First, a high degree of realistic modelling was important. For practitioners this was important not to raise expectations amongst tenants. Tenants sought reassurance during the workshops that it really was realistic. Second, tenants appeared to be a highly vulnerable group with low (digital) literacy, and therefore a technical and a narrative guide were introduced so that tenants could discuss their wishes. Real time rendering was a 3rd important design principle so that tenants could see the impact of the changes they proposed underscoring the importance of VR providing boundary objects. Finally, the use of avatars was protecting people's privacy, and combined with an accurate representation in space helped to immerse and actively engage with neighbors and guides.

# Who, Where, and Why Do People Stay Outdoor in Housing Blocks? The Human Behaviour in Open Spaces of Housing Areas in Tokyo

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**Keywords / Relevant Terms**: Japanese public housing blocks, open spaces, recreational activities, walkable environment, architectural planning

## Abstract

Open spaces of housing blocks serve not only for daylight, privacy, etc. (Ministry of Land, Infrastructure, Transport and Tourism, 2006), but also for recreation and relaxation, determining the quality of residential environment and the formation of community (Takeda, 2008). Uncovering the relationship between activities and open spaces is beneficial for creating comfortable and usable spaces (UR, 2021). Studies have explored difference in activities depending on the types of open spaces in inner city redevelopment blocks (Hanazato et al., 2011), and on their sizes and shapes in Chinese housing blocks (Yin et al., 2016). However, they only dealt with comparatively narrow areas. In this study, larger housing blocks with more open spaces with larger and/or smaller scales were examined from the viewpoint of walkable environment and the aim is to clarify the group that is more likely to do activities in open spaces, and the types of open spaces and facilities that can increase activities. 5 typical public housing blocks in Tokyo Capital Area with more than 1,000 households are selected as considerable targets. These blocks include open spaces of different types, different sizes, and facilities. Then, about 8,300 people in total are mapped on site with their attributes and behaviours on weekdays and holidays. As the results, following are found: 1. Children are more likely to stay in open spaces than other generations. 2. There are almost no activities on streets ($p$<.001), highest rate of activities in parks ($p$<.001), while plazas and walkways are in between. 3. Number of facilities contributes less to activities than type of each open space they occurred. 4. The analysis of density of activities showed different results.

# No Bridge is in Vain: An Analysis of the Use and Activities of Urban Bridges and Surroundings

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**Keywords / Relevant Terms**: urban environment, waterfront, bridge, behavior, activities

## Abstract

Many cities are born and developed from waters; bridges across it not only serve for the transportation, but also the areas where they intersect and integrate with the city are also important places for urban residents to carry out various activities. Haihe River is the mother river of Tianjin, China. The space around bridges across the river witnesses a variety of the daily life and civic activities, which has distinctive characteristics. In this study, three bridges: Shizilin Bridge, Jinbu Bridge, and Jiefang Bridge and their surrounding areas were selected. Through observation and interviews, preliminary investigations of behavior-space in these areas were conducted, including the groups of people, time periods, locations and activity types. The typical activities at Shizilin Bridge and surrounding area included fishing, diving, walking, sightseeing and so on while more evening activities such as square dancing and night bicycle riding were observed at Jinbu Bridge and its surroudings. Jiefang Bridge and its surroundings where been named Jinwan Square were more inclined to commodity sales, consumption and tourism. Then, followed by the analysis of behavioral requirements and deficiencies of the corresponding three bridges and their surroundings, according to at the bridge, under the bridge, and the adjacent area. Finally, three kinds of waterfront spaces were summarized, and the optimization strategies were proposed for the existing problems, including the functional optimization to promote the diversified use of space, developing the slow traffic system and improve traffic capacity; encouraging spontaneous activities with public participation. The results and strategies from this study could be applied to the design and planning of other urban waterfront space.

# Investigation on the Relationship between Urban Streetscape Comprehensive Assessment Model and Urban Mental Health Model - A Case of New York City

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**Keywords / Relevant Terms**: global urban transformation, environmental perception, deep learning, perception indicators, urban planning decisions

## Abstract

With the rapid transformation of cities globally, the need to understand and predict human perception of the environment has been a focus of society. Some studies have started to explore various aspects of human perception and corresponding emotions in different urban areas. However, past research relied on low-volume surveys and limited data sources, making it difficult to measure human perception of large-scale urban areas with flexible spatial resolution. Therefore, in response to this limitation, this research is pioneering a deep-learning based method that models and predicts human perception of a place's physical environment. This method is applied to the evolving environment of New York City, with the goal of in-depth research into the inherent heterogeneity patterns in the city that could potentially impact its functional effects.

The methodology of the study involved collecting a plethora of datasets from Twitter and Google Street View, evaluating six major human perception indicators (safety, liveliness, boredom, wealth, depression, and beauty), and applying comprehensive urban streetscape assessment and urban mental health models. This model is used to analyze the internal relationship between Twitter semantic data and Google Street View image data. It interprets people's perceptions and emotions towards places and their objective connections.

The research findings indicate that people’s perceptions of urban areas involve multidimensional emotions. These perceptions and their emotional strengths impact the way they experience their environment. In addition, there is a link between people's general emotional state and their subject-objective perception. It has been found that people's preferences for standard scenes are relatively unstable. This perception suggests that the emotional sentiments towards urban spaces are influenced by the volatile nature of the urban canvas. Understanding these variables will help enrich the understanding of place semantics, providing valuable insights for future urban planning and decision-making processes.

# A Study on the Behaviors of the Asuka Outdoor Bench in Asuka Village, Japan

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**Keywords / Relevant Terms**: Sitting Behavior, Outdoor Bench, Free-use Notebook, Bus Stop

## Abstract

Since March 2022, an outdoor bench with a shelf (the Asuka outdoor bench) has been built by Kio University students and placed near a bus stop in Asuka Village, Nara prefecture, Japan. Students made some goods, including stamps, puzzles, and blocks, and placed them on the shelf of the Asuka outdoor bench. To study the relationship between the Asuka outdoor bench and behavior, we have placed a free-use notebook on the shelf since March 2023. The subjects chosen were residents and tourists who sat on the outdoor bench and used the goods. The main objective of this study was to determine how people use the Asuka outdoor bench and goods. The methods used included questionnaires and analyses of notes written in a free-use notebook. The three findings below are worth mentioning. (1) As a resting place, people sat on the Asuka outdoor bench to rest or wait for a bus. The free-use notebook was written about the users' impressions of Asuka Village. Some people drew a quick sketch or used the stamps to decorate the notes written on the free-use notebook. (2) As an exchange place, some people wrote messages about their tour or introduced some spots to others. Some people drew sketches or composed poems. Some people wrote messages to express their gratitude to the landowner or Kio University students for creating this place. (3) As a play place, some people played with puzzles or stamps when they sat on the Asuka outdoor bench. Some children wrote messages or sketched with their parents. Two neighborhood children made an appointment to meet friends on the Asuka outdoor bench. To conclude, the Asuka outdoor bench was used as not only a resting place but also as an exchange place between people with the free-use notebook.

# Research on the Configuration of Community Public Service Facilities under the Residential Tourism Effect—A Case Study of Sanya City in Hainan

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## Abstract

"Residential Tourism," blending travel and living, is gaining popularity. There is a noticeable difference in the demand for community public facilities between those living temporarily and permanent residents. Addressing the varying needs of these diverse groups for public facility allocation is crucial. However, current research on the needs of different community groups and a comprehensive evaluation of the effectiveness of public service facilities is relatively scarce and lacks a complete analytical framework. This study addresses these issues by integrating a diverse range of urban data sources and social media data to establishing a data-driven, systematic analytical framework aimed at assessing and optimizing the functionality of community public facilities under the influence of residential tourism. Evaluated the public service facility functions for the elderly and younger populations across five dimensions: public satisfaction, demographic composition, convenience of life, blind spots in public service facilities, and potential for layout optimization. Initially, we conduct public sentiment and analysis on social media review data using a language model and large-scale data models to assess satisfaction levels and identify facility types with higher attention. By utilizing Location-Based Services data, we understand demographic compositions. Furthermore, we analyze the convenience of life at the building level using Points of Interest data, building data and road network data. Finally, we study blind spots and potential areas for layout optimization in community public service facilities using POIs data. Through these methods, we have developed a quantified scoring evaluation system and proposed targeted design strategies based on the scores. We selected Sanya, a distinctive tourist city in Hainan, China, as a case study to showcase the method's effectiveness. Applying this method refines public service facility configurations in communities affected by residential tourism, improving their quality, reveals the new potential of fine-tuned urban management utilizing multi-source urban data and social media data.

# Evaluation on the Publicness of the Waterfront Public Space in Shanghai —Take Xuhui Riverside, Southern Section of Yangpu Riverside, and Jingan Section of Suzhou Riverside as examples

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**Keywords / Relevant Terms**: waterfront space, publicness, evaluating model, public space, data analysis

## Abstract

Water is a public good that belongs to all citizens which should be enjoyed equally by all citizens without hindrance. However, during urban construction, developers often compete for the development rights of waterfront space, causing it to gradually lose its publicness and become a place of gentrification. However, it is impossible to talk about publicness without supervision and effective use. Therefore, this paper focuses on the publicness and future construction direction of typical waterfront public spaces in Shanghai.

After comparing the advantages and shortage of each evaluation model, the star model was used as the basis for evaluation, and five dimensions were established: ownership, control, physical configuration, civility, and vitality. After analysis and screening, the evaluation indicators of each dimension were improved. On-site questionnaire survey, PSPL survey method and big data analysis are used for evaluation, the scores of the above evaluation indicators are calculated, and the scores of the five dimensions and the total publicity score are calculated. The results show that the Jingan section of Suzhou Riverside has the best publicness, followed by Xuhui Riverside, and the southern section of Yangpu Riverside is the worst. Finally, suggestions for space optimization design are proposed for each evaluation dimension, providing a method reference for public evaluation and optimization design reference for waterfront space.

The public evaluation in this article is not only an evaluation of material space, but also a discussion of fairness and justice with sociological value, which is of great significance to the sustainable development of the city, and also relatively lacking in the current research on the quality of urban waterfront space in China. In addition to traditional questionnaire surveys and observations, this paper also uses big data analysis methods to make the public evaluation results more scientific.

# Post-Occupancy Evaluation: A Firmwide Mixed-Methods Exploratory Research

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**Keywords / Relevant Terms:** Post Occupancy Evaluation, POE, Exploratory, Mixed Methods Research, Transdisciplinary

## Abstract

Despite the benefits of learning from the past, architects rarely get back to their buildings and explore how the actual occupant experiences compared to their predicted outcomes they were intended when designing the project. The value of post-occupancy evaluation (POE) in the design process has been discussed in previous studies, however, few of them focused on cross-market and cross-region POE benefits, obstacles, and strategies to overcome the obstacles. This paper presents the findings of a transdisciplinary research initiative conducted in a global firm (with 800+ employees) that aimed to understand the benefits, obstacles, and recommendations for implementing POE across different practice areas and regions. This study is a mixed-methods exploratory research, and the methods includes (1) a firmwide survey with 160+ responses – to identify firmwide knowledge about POE and interested employees to attend focus groups – (2) eight focus groups with 36 employees, and (3) 2 interviews to understand different practice areas and regions perspectives about POE process. The results revealed that conducting POE benefits client relationships, advances marketing, and enhances design quality. This study also shows that developing POE benchmark/database, identifying the “right” clients and projects, and educating design teams about POE process and values are among the recommendations to overcome identified obstacles. Furthermore, healthcare, workplace, and education projects are identified as the easiest practice areas to conduct POE due to the client’s knowledge about POE and long-term view on the projects, and access to the regular users of the spaces. This study was conducted by a group of Research Fellows across different practice areas and regions, and the results contribute to the knowledge about the POE process in architecture industry by providing insights from a global transdisciplinary research initiative.

# Perceived Environmental Quality Indicators in a Prison Context

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**Keywords / Relevant Terms**: prisons, inmates, health-enabling features, perceived environmental quality

## Abstract

Current guidance from the World Health Organization (WHO) states that a health-promoting prison should be safe, secure, reforming, and grounded in the concept of decency and respect for human rights. However, most rehabilitative programmes do not take into account how prisons are perceived by inmates and what environmental features make a difference to their quality of life (QoL), health, and well-being. This study evaluates the transition from an older to a new prison facility in Italy to test if there is a difference in pre- and post- conditions, by comparing inmates' ratings in terms of place evaluation, stress, satisfaction, and quality of life. A total of 216 inmates completed a questionnaire that measured the prison's environmental quality and QoL-related variables. The results show that as inmates' environmental perceptions improve, so does their place evaluation. When the older and newer prisons were compared, the results revealed that the "newer prison" setting was better evaluated in relation to six interrelated dimensions: comfort issues (care and cleaning of common areas); sensorial aspects (presence of light); satisfaction with prison and rooms; aesthetics (beauty and care); interpersonal relations; and individually-related coping strategies (focusing on work). We conclude by stressing the need for a person-environment model (i.e., P-E model) for the promotion of health (i.e., adjustment and rehabilitation) in prisons. Main contributions of this study are a P-E model and original comparative findings stressing the interaction of physical, social, emotional, and organizational conditions as perceived by incarcerates and their potential to "rehabilitate", restore, and support QoL in prisons. The findings provide useful information for prison managers to use the prison architecture as a tool for improving well- being and mitigating the harmful effects of incarceration.

# Can we avoid quiet quitting with nature? - the role of perceived accessibility and actual visits on quiet quitting and burnout

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**Keywords / Relevant Terms**: quiet quitting, burnout, office use, natural environment, green office

## Abstract

The phenomenon of quiet quitting is not new, but its prevalence has increased tremendously in the post-pandemic labor market. Quiet quitting is where an employee doesn't quit his job but reduces his work to the bare minimum, which in the long term can lead to a decreased performance and even to burnout. Many empirical studies are being conducted due to the psychological understanding of quiet quitting, but its relationship with space use is not yet explored. In the presented research, we undertook the first steps towards this by exploring the effect of natural environment in office situations. In our online questionnaire survey with a sample of 815 people, we investigated the effect of the perceived accessibility of nature and nature use in office. Despite our expectations, we did not manage to prove any effect of perceived accessibility of nature on quiet quitting or burnout. Regarding the actual nature use, we got results that were contrary to our expectations. In case of frequent nature visits during office hours, we also experienced high level of quiet quitting. Based on the path analysis we found that quiet quitting has a positive effect on burnout and 1.3% of the total effect is mediated by the level of nature use ($p = 0.018$). We can therefore conclude that frequent nature visit during office hours is rather a symptom of quite quitting than a protective factor, but it also can be considered as a protective factor for avoiding burnout while being already in the state of quiet quitting. It would be interesting to investigate further wether is there an effect of national or organisational culture regarding nature use while working, or to find out how these first results can be built into HR and office design practise.

# MODEL OF PSYCHOLOGICAL EFFECTS IN STUDENTS GENERATED BY NOISE IN CLASSROOMS

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**Keywords / Relevant Terms**: classroom acoustics, SEM, environmental noise, educational environment

## Abstract

Over 50 years the negative impact of environmental noise in academic assessment has been an object of study in the educational context. These studies implemented different conceptual and methodological perspectives and have founded that noise has a harmful effect over the cognitive development of students (Shield & Dockrell, 2008; van Kempen, 2018; WHO, 2016). Evans (2006) confirms that children exposed to noise present significant deficits in reading, long-term memory, attention and speech perception. The objective of the study is to probe a model of the psychological effects in students generated by noise in classrooms, to explain the simultaneous relationships of noise on the psychological attributes of school children.
Method. The design of the study tested the independent variable of noise, integrating the relationships with the seven (dependent) psychological variables that were evaluated: emotional effect as a latent variable (annoyance and two for interruption of communication with the teacher and with classmates); cognitive effect as a latent variable (attention and memory); intelligibility of speech; and reading comprehension.
Results. 240 students participated; there were 134(55.8%) female and 106(44.2%) male. The average age was 10 years. To empirically prove the model, we used the methods of structural equation modeling. The estimating provided indices of goodness of fit: ?2=23.71, p=0.36 and RMSEA=0.01 (90%CI=0.00-0.05), SRMR=0.03 and CFI=0.99, TLI=0.99. Therefore, the model was correct. Research implication. For the model of measurement confirms the factorial structure of two latent variables: emotional effect with ?'=(.83,.87,.92) and cognitive effect with ?'=(.46,.55). For the structural model, we prove the effects of noise on psychological variables: noise has a positive influence (.13) on emotional effect, noise has a negative influence (-.23) on cognitive effect. Among others effects were a negative relationship (-.42) between emotional and cognitive impacts, and the strong positive influence of cognitive impact on reading comprehension (.83).

# Research on Accessibility and Social Equity of Elderly Care Facilities: A Case Study of Harbin

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**Keywords / Relevant Terms**: elderly care facilities, accessibility, ArcGIS, 2SFCA, fairness distribution

## Abstract

With the increasing aging population, elderly care facilities have become a crucial component in meeting community needs, promoting social equity, and ensuring the well-being of the elderly. This study employs open-source data and Geographic Information System (GIS) techniques, incorporating a two-step floating catchment area method (2SFCA), to measure and investigate the accessibility of 5044 residential communities and 197 eldercare facilities in the urban districts of Harbin. In terms of social equity, the research explores the spatial scale and distribution characteristics of elderly care facilities based on regional economic development levels, community housing prices and other related data. The findings indicate that: (1) The spatial distribution of eldercare facilities in the main urban area of Harbin is highly uneven, primarily concentrated in Nangang, Xiangfang and Daoli districts, with bed capacity mainly concentrated in Nangang, Xiangfang and Songbei districts. (2) The accessibility of elderly care facilities in the city center is relatively high, with optimal accessibility observed at the intersection of Daoli, Nangang, and Xiangfang District, while the peripheral areas of the urban zone exhibit lower accessibility. (3) There exists a positive correlation between the spatial distribution of elderly care facilities and regional economic development level, community housing prices and distribution density, elderly population density, and road network density. (4) The distribution of bed capacity demonstrates a significant positive association with regional per capita GDP, however, bed capacity does not exhibit such pronounced relationship with regional elderly population size, population density and their proportions, indicating that economic development significantly influences the distribution and scale of elderly care facilities. Based on these research results, this paper proposes strategies for optimizing the configuration of elderly care facilities to enhance old people's quality of life and promote social equity and justice.

# The effects of thermal comfort on mental states in green space: a geographically-explicit ecological momentary assessment

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**Keywords / Relevant Terms**: thermal comfort, microclimate, anxiety, rumination, green space

## Abstract

Research has shown that parks and green spaces can enhance mood and lessen stress. Beyond these direct psychological impacts, factors like heat stress and physiological strain can adversely affect people's mental states. However, our current knowledge about how microclimate comfort influences mental health, after controlling for the level of visual greenness, is limited. As such, this study aims to investigate the impacts of microclimate conditions and thermal comfort on mental states. This study was conducted in Houston Arboretum using a geographically-explicit ecological momentary assessment (AEMA) approach. As participants visited the arboretum, they were provided an Android phone with an app to detect their geolocations and send survey prompts based on geofences. Main survey measures included the perceived biodiversity, self-reported anxiety and rumination, and thermal sensation of the specific areas within the arboretum. Microclimate conditions were measured objectively using Kestrel 5400 Heat Tracker in different locations of the arboretum for continuous measurements. Eye-level green index was evaluated using Light Detection and Ranging (LIDAR) data. Multi-level models were used to estimate the relationships between ambient conditions, anxiety, and rumination. A total of 164 individuals participated in this study, and 462 surveys were completed, averaging to 2.8 GEMA surveys per participant. The green index around the participant's momentary locations was notably linked to psychological states of the participant. Additionally, the micro-scale thermal comfort index, derived from micrometeorological data, particularly in conditions of high or extreme heat, correlated with increased anxiety and rumination. Participants' reported thermal sensations were also predictors of momentary anxiety levels. This research extends beyond the mental health benefits of green spaces, revealing that microclimate and thermal comfort conditions could impact psychological states after controlling for visual greenness. The results of this study can guide the optimal design of green spaces that maximize their mental well-being benefits.

# Public concern about health and safety due to the physical living environment

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**Keywords / Relevant Terms**: Risk perception concerns national survey

## Abstract

Since 2016, the RIVM, in collaboration with the Netherlands Bureau of Statistics (CBS), has been conducting the Survey on Perceptions of the Home Environment (OBW). From 2019, this is done every year. The questionnaire survey examines how residents experience their physical living environment. It examines annoyance caused by environmental aspects such as noise, odours and vibrations, satisfaction with the residents' living situation and concerns about health effects and the impact of dangerous conditions on the living environment (perception). Since 2019, more than 8,500 Dutch residents aged 16 and over, from a random sample of more than 25,000 residents (response rate: 35%), have completed an online questionnaire. They expressed their concerns about 13 different topics (e.g. busy roads, overhead power lines, airports, contaminated soil, etc.). About one in eight (12%) residents are seriously concerned (score of 8 or higher on an 11- point scale from 0-10) about their own safety by living near industrial activity, followed by 11% who are (seriously) concerned about living on or near contaminated soil. Concern about living near an agricultural area is lowest (2%). Since 1998, there has been a clear downward trend in all the risk factors asked about. The downward trend is in line with the general perception of safety in the period 2005-2017 as measured by the Dutch Safety Monitor, another national survey. Concern about health effects was examined in relation to air (indoor, outdoor), soil, (drinking) water quality and noise in the home. Air quality leads to the highest proportion of concerned residents: about one in eight (13%) are (seriously) concerned about their own health because of the quality of the outdoor air. Concern about the quality of the soil around the house is lowest, but still around one in 13 residents (7%) are (seriously) concerned.

# Beyond cultural ecosystem services: assessing users' relational values towards street gardens in Montreal

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**Keywords / Relevant Terms**: Cultural ecosystem services, relational values, street verge garden, small-scaled urban green infrastructure, users

## Abstract

Urban green infrastructure (UGI) provides numerous benefits to citizens. Valuation of Ecosystem Services (ES) is a way of accounting for their value. The conceptual framework of ES values nature instrumentally or intrinsically, which is unsuitable for valuing all cultural ES (CES). The notion of relational value can fill the gaps in this dichotomous vision. Difficulties remain in operationalizing the concept, particularly in distinguishing it from other environmental values, due to the paucity of empirical studies on the subject. In fact, there is no study on users' relational values towards small-scaled UGI. Drawing on a theoretical framework for the co-construction of CES, embodiment theories, and then on the construction of relational values, this study qualitatively explored users' relational values towards street gardens in Montreal. Since this is a public UGI located on street verge and shared between neighbours, users' relationship to space is interesting to study. Four street gardens with similar profiles were selected for this purpose. Analysis of the semi-structured interviews conducted with users demonstrated their relational values towards street gardens. These gardens nourish users' identity, provide them with valued experiences, increase their skills and knowledge, heighten their sense of responsibility towards nature and others, and fuel their well-being. Their social role is significant. This research has strong implications for decision-makers and practitioners. The direct link between relational values and different aspects of well-being could provide inspiration for those seeking to promote the individual and social well-being of urban populations through street-level greening initiatives. The study also offers perspectives for operationalizing the concept of relational value by identifying many discursive indicators that could be used in surveys or questionnaires to determine user's relational values towards different types of UGI, key information for UGI's management.

# Mechanisms Underlying the Associations between Different Types of Nature Exposure and Sleep Duration: An 18-Country Analysis

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**Keywords / Relevant Terms**: nature; green space; blue space; sleep; wellbeing

## Abstract

Whilst green space has been linked to healthier sleep outcomes, the roles of specific types of nature exposure, potential underlying mechanisms, and between-country variations in nature- sleep associations have received little attention. Drawing on cross-sectional survey data from an 18-country sample of adults (N = 16,077) the current study examined: 1) the relative associations between six different types of nature exposure (streetscape greenery, blue view from home, green space within 1km, coast within 1km, green space visits, blue space visits) and insufficient sleep (< 6 hrs vs. 7-10 hrs per day); 2) whether these relationships were mediated by better mental wellbeing and/or physical activity; and 3) the consistency of these pathways among the different countries. After controlling for covariates, neighbourhood nature measures (green space, coast within 1km) were not significantly associated with insufficient sleep; but nature visible from home (streetscape greenery, blue views and recreational visits to green and blue spaces were each associated with less insufficient sleep. Significant nature- sleep associations were mediated, to varying degrees, by better mental wellbeing, but not self- reported physical activity. Country-level heterogeneity in the strength of nature-sleep associations was observed. Increasing nature visible from the home may represent a promising strategy for promoting healthier sleep duration at the population level, whilst nature- based interventions encouraging individuals to spend time in local green/blue spaces may be an appropriate target to assist individuals affected by insufficient sleep

# Building the future of innovation: Centering student creativity on university campuses

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**Keywords / Relevant Terms**: Innovation; Creativity; University Campus Buildings; Creative Spaces; Collaboration

## Abstract

As universities aim to foster the next generation of innovative thinkers, the design and function of their campus buildings should support student well-being and creativity. The design of campus buildings shapes student experiences, responding to changing expectations of students and the educational landscape over time. Moreover, studies reported the importance of social and community spaces for creative performance. Well-designed public spaces on campus could also support knowledge-sharing and innovative collaborations. Campus buildings need a creative atmosphere as having a common understanding of collaboration and innovation without a social barrier, and that knowledge generation and transmission flow. Based on the 15 physical attributes and seven spatial types that stimulate creativity from the scoping review of literature, the current study explored undergraduate student (N=85) perceptions of highly creative spaces in one large public university in the United States. Among each of their top three creative spaces on campus, social spaces (32.2%), open spaces (23.9%), and exploration zones (23.5%) were most frequently considered to spark students' incubation phase of the creative processes. Particularly, students reported various in-between spaces on campus that support interactive and collaborative activities, such as seating areas in atriums or open forum spaces. Common characteristics of these spaces included a good amount of natural light, inspirational features, groups of tables and chairs, and a large volume. Most importantly, balanced support for exploration and communication at both individual and group levels was suggested as highly creative spaces for college students. Environments that pause for reflection also appeared to impact students' creative potential. The findings call for further studies on developing creative environments as catalysts for innovation and collaboration of students on campus. The current presentation will share physical attributes in detail for creative space planning with research evidence and visual examples at the conference.

# Distribution Characteristics and Influencing Factors of Invisible Consumption Space: A Case Study of Nanjing Old City

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**Keywords / Relevant Terms**: invisible consumption space, mobile Internet, distribution characteristics, urban regeneration, platform economy

## Abstract

With the development of the 5G mobile communication technology and mobile Internet industries in China, urban space and people behavior presented a trend of OMO (online- merge-offline), which has facilitated the creation of new consumption spaces, including invisible spaces that mainly located inside high-rise buildings and rely on online platforms to operate. The production of invisible consumption space originates from the everyday life and consumption practice of grassroots people, which engenders the autonomous spatial adjustment and functional reorganization of existing space and therefore, serves as a catalyst for urban regeneration. This kind of micro and gradual regeneration avoids demolition and construction of buildings, which is more sustainable. Taking the Nanjing old city as a case study, by processing consumption space POI data, this paper recognizes invisible consumption spaces that are not located in the streets or shopping malls, but connect with online platforms. Through GIS analysis, the distribution of invisible consumption spaces presents characteristics of central agglomeration and multi-polar clustering at the scale of the old city. Based on decision tree model, selecting typical area to analyze the locational factors of invisible consumption space, it proposes that the explicit and implicit spatial relationship, space cost, and building management are the main factors influencing space distribution, while commercial and residential buildings are important carriers of spatial clustering. This paper argues that the emergence and development of invisible consumption space is a manifestation of the diversification of old city consumption spaces and an important bottom-up regeneration approach in the mobile Internet era. However, it also poses new challenges to urban planning and governance.

# Inclusive Design Strategy Research of Museum Space Based on Environment-Behavior Studies

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**Keywords / Relevant Terms**: inclusive design, environment-behavior, equal access, diversity, museum

## Abstract

As the growth of the spiritual and cultural demand of Chinese people, under the support of policies, the development of museum in China has shown a rapid booming trend since the 21st century. The inclusive design of the museum, however, has been long neglected. According to the National Museum of China Data Report 2022, the percentage of visitors over 60 is only 5.86%. Similar results also occur in the juvenile group, and the disabled even worse. And the existing surveys showed that the inclusive design should take both uniqueness and commonality of people with diverse experience into consideration. Therefore, a series of investigations were implemented in 4 museums in Chengdu, China. Over 200 specimens of the visitor routes were tracked, and over 100 questionnaires were distributed. By analyzing the interaction between visitors' behaviors (streamlines, visiting time, space satisfactory, preferences, etc.) and the environmental factors (social identity, cultural backgrounds, physical space characteristics, etc.) based on the environment-behavior studies, an empirical method is built to evaluate the quality of inclusive designs. Furthermore, five strategies from different aspects are proposed as follows: adjust scale and arrangement of the space; improve the streamline integration of different groups; improve legibility; increase the interior space quality; increase openness and accessibility. These proposals are expected to arouse attentions to the unsatisfactory inclusive design of the museum in China.

# A Hands-on Participatory Living Lab Experience on a Possible Sustainable Conservation Scenario of a Natural Heritage Site in Göreme, Türkiye

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**Keywords / Relevant Terms**: participatory planning, stakeholder participation, living lab, natural heritage site, sustainable conservation and development

## Abstract

Participatory planning, as an alternative to conventional urban planning and design, contributes to the democratization of scientific research and decision-making, decentralization of the planning process, and inclusion of different stakeholders and community groups in the planning process, leading to a product and service, or environment to satisfy the needs and aspirations of end-users. It is also vital for achieving sustainable development of urban and rural environments, sustainable cultural and natural heritage conservation, and creating sustainable communities. This paper describes a hands-on, bottom-up endeavor of an EU project titled Underground4Value. It explains the Living Lab experience of Göreme (Cappadocia in Türkiye), which was carried out between 2019 and 2023. The Living Lab gathered a group of international and national researchers/academics and local stakeholders, including head officers of the central government's provincial agencies and regional development agency, hotel owners, local travel agencies, tour operators, museum directors, and an architecture and conservation consultancy firm. It aimed to promote a co-learning and co-creation process to evaluate the underground built heritage (UBH) as the catalyst for community valorization and the primary driver of sustainable cultural and natural heritage conservation, urban and rural regeneration, and sustainable development of Göreme and Cappadocia. The organizers of the living lab, who followed the participatory and inclusive process, cooperated with the local stakeholders to define the multiple values, weaknesses, threats, and problems of UBH heritage, to collectively select one critical UBH problem site, and to find solutions. In the Action's Training Program, senior international experts, local officers, and young academics discussed possible solutions suggested by local stakeholders. They proposed a sustainable conservation scenario on the selected natural heritage site. This paper aims to tell the story of this hands-on experience, explain the process and outcomes, and discuss this participatory and inclusive planning approach's potential, limitations, and challenges.

# Beyond Nature: Investigating the Restorative Properties of Environments Through the Comparison of Historical and Natural Image Exposures

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**Keywords / Relevant Terms**: Restorativeness, Emotions, Historical environments, Natural environments

## Abstract

Contact with nature has been widely recognized to promote restoration in people. Restorative properties can characterize not only natural environments but also built environments, however, there is limited understanding of the positive effects of historical and artistic environments on emotions, cognitive functioning, and psychophysiological indexes. The present ongoing research is part of the iNEST (Interconnected Nord-Est Innovation Ecosystem – Spoke 4) project, with the aim of investigating the restorative potential of historical/artistic environments. Participants answered questionnaires on their connection to nature and preference for urban or natural environments. Then, they assessed their emotions and arousal before and after viewing AI-generated images showing natural environments, historical, historical with nature (mixed). Affective qualities and perceived restorativeness were measured after 4,30 minutes of image exposure in a Cave Automatic Virtual Environment. During the session, we measured psychophysiological indexes using Empatica E4 bracelet. Preliminary results of 64 participants (40 women; age = 20.98, SD=2.04) showed a main effect of type of environment for the restoration factor “being-away” (F = 6.10, p = .004, ? 2 p = .17),with natural and mixed environments having higher scores than historical ones and no differences emerged concerning other restoration factors. A main effect of the type of environment on relaxation and distress emerged (F = 22.33, p < .001, ?2 = .41; F = 7.04, p = p. 00, ?2p = .18). Post hoc analysis showed that mixed environments have restorative potential comparable to natural ones and are less distressing and more relaxing than environments solely with historical features (Historical environment). This study provides a better understanding of restorative processes underlying the interaction between individuals and their environments highlighting the psychological and psychophysiological processes that can promote restoration comparing different types of environments.

# The role of museums that are converted from industrial heritage areas in strengthening residents' relationship with the city: The case of Müze Gazhane in Istanbul

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**Keywords / Relevant Terms**: Identity, Meaning-making, Visitors' satisfaction, Museum, Industrial Heritage Areas

## Abstract

The restoration of cultural heritage areas within Istanbul's city center garnered heightened significance and popularity recently. While some regions remain under protection, certain structures and buildings in these areas undergo repurposing. Notably, the historical peninsula has witnessed restoration initiatives, manifesting as open-air and regular museums converted from heritage areas and buildings. Extending this approach to other parts of the city, particularly for residents, is deemed imperative. Museums, along with visitor interactions, play a pivotal role in fortifying the relationship between residents and the city. Our research inquired about the roles that a museum converted from industrial heritage areas may play in strengthening residents' relationships with the city. The study specifically focuses on the assessment of identity, meaning-making, and visitors' satisfaction within the context of repurposed museums from industrial heritage buildings. Müze Gazhane, initially a gasworks producing electricity for city illumination, transformed into a cultural complex and museum, presently enriching the community through art and cultural events. The restoration of the facility was initiated as a volunteer effort with active community participation from Hasanpa?a Neighborhood. Employing a two-tiered approach involving quantitative and qualitative data collection, we surveyed 65 visitors and conducted semi-structured interviews with 12 participants. The study results suggest that visitors' characteristics, motivations, and familiarity influence their meaning-making and satisfaction levels. Visitors coming with a particular identity-related motivations seemed to exhibit higher satisfaction and meaning-making levels. Volunteers for public events at the museum reported an enhanced sense of place and neighborhood belonging. Müze Gazhane's renovation seems to positively impact visitors' daily lives and overall quality of life. In conclusion, we found that Müze Gazhane assumes a significant part of its visitors with diverse motivations, contributing to their sense of belonging. The findings underscore the importance of repurposing heritage areas into museums to strengthen citizens' relationships with their neighborhoods and society.

# Experiencing built heritage sites: differences in connotative meaning with variations in type and expertise

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**Keywords / Relevant Terms:** semantic differential scale, historic environment, affective meaning, evaluation of heritage

## Abstract

Background and objectives: Environmental psychology literature reveals that people have a general preference towards historic built environments, yet there is little evidence as to the meanings and affects associated with heritage sites and how these can be measured. Our research sheds light on the connotative meaning of various types of historic places and how their evaluation differs between laypeople and heritage protection experts. Process and methods: A semantic differential scale was developed for measuring the connotative meaning of built heritage and was used for five different types of historic sites: urban, symbolic, vernacular, ruin, and industrial among both heritage experts (N = 78, 52.5% women, age: M = 51.15, SD = 13.273) and laypeople (N = 213, 66.2% women, age: M = 51.99, SD = 13.992). The underlying factor structure was explored, identifying four meaning dimensions in the case of laypeople and six in the case of experts. One-way ANOVAs were executed to reveal significant differences in the values on each meaning dimension among the five heritage sites. Main results: The laypeople and expert samples show very similar patterns in their valuations in the four common meaning dimensions (evaluation, complexity, intimacy, condition). In both groups, the industrial type received the lowest values in the intimacy, complexity and evaluation dimensions, while the symbolic type got the highest values in the evaluation and complexity dimensions. In the intimacy dimension, laypeople valued highest the vernacular, while experts the urban heritage type. Originality/Implications for practice/policy; The research sheds light on a less studied area of environmental psychology, the connotative meaning of the historic built environment, whose conservation and reuse is becoming a recognized component of circular economy. Understanding people's emotions and individual differences in attitudes towards heritage sites gives insight into how conservation policies may be tailored to better safeguard and sustain the environment.

# Heritage Unesco Dynamization: The tourist guide as a cultural mediator in the person-city relationship

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**Keywords / Relevant Terms**: cultural mediation, tourist guide, culture of peace

## Abstract

Cultural mediation has been defined as an educational practice that serves as a "tool for social transformation and democratization of culture in the face of society and the cultural institution itself" (Lopez-Aparicio and Cajudo, 2020). It allows access to the knowledge of culture and the reunion between two separate worlds, generating its own idiosyncrasy, professional, and theoretical definition. Also, it is a magnificent opportunity to leverage this interrelation with the environment to generate a culture of peace, understanding, and harmony among visitors in a cultural space. Considering that the tourist guide is a reference in communication and the transmission of the heritage values of an environment, we have asked ourselves: Is cultural mediation a mechanism of interconnection between the person (tourist) and the historical sociocultural environment of a city like Barcelona through the narration of Gaudí's world? The objectives of the work were 1) to analyze the key elements in the construction of the narrative used by the "tourist guide" in their role as a cultural mediator in the city of Barcelona, and 2) to propose an integration of cultural mediation in the social interaction between the tourist guide and the visitor in a city. Therefore, the development of this work represents the presentation of a transformative and innovative experience in the educational and communicative functions of the tourist guide in their socializing role and facilitator of processes of action-reflection, criticism, and awareness of the passage of time and its local reality. In addition, it provides a main channel for tourists to interact with destination places, with the tourist guide as a mediator with the environment and sustainability.

# TOPIC 3:

# PARTICIPATION, CITIZENSHIP AND ENVIRONMENTAL JUSTICE

# Imagining alternative climate futures: narratives of young activists

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**Keywords / Relevant Terms**: narrative analysis, future visions, climate activism, social psychology, environmental citizenship

## Abstract

Psychological studies of climate change (CC) are mostly centred on people as consumers, and less on their role as citizens. Yet the realm of citizenship, mediating informal and institutional politics, is a locus of meaning-making over what should be the accepted forms of societal change, including those associated with CC. With today's growth of youth-led civic action for CC, it is important to understand the different youth-climate views entering the public debate - the different futures they imagine and the different roles they give citizenship in these. We explore this with a narrative analysis of interviews with young people (n= 28), engaged in dutiful (e.g., being a party member), prefigurative (e.g., creating an alternative cooperative), and disruptive (e.g., direct action) forms of climate activism. Three narratives are identified: (1) a reformist narrative, with a stable temporality depicting a future climate-resilient society reachable through today's incremental change through institutional guidance; (2) a confrontational narrative, with a regressive-progressive temporality, constructing youth activists as heroes that, against the vested interests of corporations and governments, fight for systemic change to prevent climate chaos; (3) an experimental narrative imagining change through experimentation with alternative solutions, whose heroes are anonymous citizens gathered in small-scale institutions or communities. With different levels of reflexivity, the clear roles of the confrontational narrative translate into proposals for urgent action, while the experimental and reformist narratives think o reconciling different Others' positions. However, interviewees share a cross-cutting difficulty in imagining a truly concrete future beyond criticising prevailing climate narratives.

# Making the City of the Future: University Students' Narratives about Public Participation

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**Keywords / Relevant Terms**: Students' public participation, People-place bonds, Place-narratives

## Abstract

Background and objectives. University cities are undergoing significant transformations that need to be better understood. Particularly, it is important to better understand the crucial and varied place-making roles that students play in these transformations. Despite their role in studentification and gentrification processes, little is known about how they make sense of their in-place public participation practices and of their place-making implications for the future of the city. This presentation aims at exploring students' narratives about their in-place public and political participation and their senses of place from a temporal perspective, in relation to the future of the city. Process and methods. Our narrative approach seeks to comprehend sense of place in a temporal perspective, as different narratives interpret and re-signify the past, the present and the future in different ways, thus legitimizing certain possible urban futures, and de-legitimizing other. The empirical study includes twenty-seven walking interviews with students, conducted in Bologna (n=15) and in Lisbon (n=12). A Narrative Analysis is conducted to understand how participants make sense of participation and mobility by placing them within (different) temporal perspectives about self, places, and cities, by identifying place-relevant actors and roles, by developing (different) rights-claims and types of sense of place, and by using collective or individual voices. Main results. Results suggest that a first narrative is based on a confrontational dynamic between students and institutions, while a second one is focused on social relationships with other social groups. Implications for research and practice policies. This study aims at promoting policies related to the management of the students-residents relationship in urban environments. Importance and originality of the contribution. The research delves into the role of students in shaping the city of the future, by comprehending the relations between mobility, sense of place, and participation practices.

# Environmental Activism among young adults: a scale validation

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**Keywords / Relevant Terms**: "environmental activism" "scale validation" "young adults"

## Abstract

As a response to the ongoing environmental crisis (Hopkins, 2020), young adults have emerged as a prominent force in advocating for environmental causes (Arya & Henn, 2021), displaying a wide range of actions, from moderate (e.g., sit-ins, marches) to extreme forms (e.g., blocking traffic, symbolic artifact destruction). To channel this passion, it is essential to understand the level of environmental activism in young adults. While progress has been made in developing tools to assess environmental activism (see Environmental Action Scale, Alisat & Reimer, 2015), it is worth noting that many of these instruments have primarily focused on general populations, without emphasis on young adults as a distinct demographic. Considering the unique challenges that young adults face concerning environmental issues, there's an urgent need to create and validate measurement scales explicitly tailored to their context. This research aims to fill this gap by developing and validating the Young Adults Environmental Activism Scale (YA-EAS), a comprehensive scale designed to measure environmental activism among young adults (age 18-26) and to differentiate between extreme and non-extreme behaviors. In Study 1, an exploratory factor analysis was conducted (N=300), revealing a reliable scale with two factors: "extreme activism" (representing a cluster of behaviors characterized by engagement in radical actions) and "non-extreme activism" (that is, a set of behaviors associated with moderate or conventional involvement in environmental causes). Moreover, to assess the structural validity of the scale, each participant was asked to evaluate the items of the YA-EAS concerning their relevance to environmental activism and the extremism of the indicated behaviors. In Study 2, employing a new sample of young adults (N=300), a confirmatory factor analysis confirmed the two factors identified in Study 1. Additionally, correlations between the two YA- EAS subscales and variables of interest were employed to assess the convergent and discriminant validity of the scale.

# Explaining Environmental Activism: A Systematic Literature Review on Psychological Dynamics in Collective Action

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**Keywords / Relevant Terms**: Collective action, environmental activism, psychological processes, psychological factors, literature review

## Abstract

Planetary boundaries and climate tipping points are increasingly being transgressed. Worldwide, individuals are mobilising to address environmental and climate challenges, by participating in activism, advocacy, and educational initiatives. Collective action can change public opinion and behaviour, pressure governments to act, and create resistance to environmental destruction. Yet, activists experience challenges such as negative emotions, polarization in public attitudes, and increasing criminalisation of activism. That makes it more difficult for an already relatively small number of individuals engaged in collective action. Knowing what makes people participate can inform mobilisation efforts aiming to sustain and expand the collective action needed for social change. A variety of psychological processes, such as social norms, efficacy beliefs, and emotional engagement, have been found to underpin collective action. By systematically reviewing the research literature, we aim to synthesize and critically evaluate the available empirical evidence, thereby contributing to identifying gaps and biases. Previous narrative reviews of environmental and social psychological literature have indicated that research dominated by WEIRD samples and authors has typically neglected marginalised communities who are disproportionately affected by environmental destruction and social inequalities. Cross-sectional quantitative designs prevail, while causal and qualitative methods are rare. Following PRISMA reporting guidelines, our systematic literature review synthesises the psychological dynamics of collective environmental action. The review examines which constructs, methods, samples, socio- cultural contexts, and phases of activism have been studied and what relationships have been found. We are assessing which psychological factors emerge as correlates and triggers of collective action. Further, we explore how socio-demographic factors and personality traits influence these dynamics. We plan to present the review process and preliminary findings. Our review aims to deepen the understanding of collective environmental action, by synthesising evidence and pointing researchers and activists to psychological dynamics that need to be better understood and managed for enduring collective action.

# Associations between government response and public support for radical climate movements

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**Keywords / Relevant Terms**: climate movement, radical protest, government response, repression, public support

## Abstract

Background and objectives: In many countries, social movements aim to fight climate change by demanding more restrictive policies. In some cases, these movements employ radical tactics, such as road blockades, to pressure the government. While radical tactics have been shown to decrease public support for climate movements, research from other domains suggests that repressive government responses could increase mobilization. To investigate this phenomenon, a preregistered survey experiment was conducted. Process and methods: The sample (N = 1,132) was quota-representative for age x gender and federal state with regard to the German adult population. After assessing participants' view on current climate policies, they read about strict or lenient government responses to the Last Generation, a well-known radical climate movement. Then, perceptions of the response and support for the movement were assessed by donations in an incentivized dictator game. Main results: Contrary to our expectations, emphasizing a strict government response did not increase support for the movement among participants who considered current climate policies not going far enough. The result may be explained by widespread resentment against the Last Generation as further analyses showed that donations were indeed high when participants perceived the government response as strict and inappropriate, but that this perception was rare. Implications: While the results refer to a specific movement in the German context, they suggest that radical protest is less suitable to drive policy change when public support for the movement is low as it may trigger harsh government responses that damage the movement while not contributing to its mobilization. Adapting protest tactics or improving communication about the movement's goals and actions may increase its success.

# On the difficulty of civic engagement in the mobility transition - An interdisciplinary approach to mobility activism

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**Keywords / Relevant Terms**: mobility transition, activism, interdisciplinary, car-dependency, citizen engagement

## Abstract

In complex transition processes, like the mobility transition, it can be difficult to identify how individuals can stir change to a more sustainable future. Whereas the influence of individuals as consumers, e.g. in changing their mobility behaviour, is limited given the current mobility infrastructure, they can demand widespread changes to the mobility system as a whole in their role as active citizens. Citizens can engage in citizen initiatives and protests to back up niche innovations and destabilize established regime structures. However, citizen engagement for a sustainable mobility transition faces several structural barriers and often seems to be of interest only to a few, especially outside urban centers. In this conceptual paper, we analyze the difficulties citizen initiatives face in mobilizing for change against the backdrop of socio-psychological theories of collective action. Using the Social Identity Model of Collective Action (van Zomeren et al., 2008), we highlight how motivating factors like a common social identity, collective efficacy beliefs and group-based emotions are particularly difficult to address in the realm of mobility and transport due to the vast variety of regime actors involved and the path dependencies within the mobility regime. Based on examples from the German context, we analyze how the car-dependent mobility system as well as the different spatial scales of the problem make finding leverage points for change particularly challenging for citizen initiatives. Drawing on literature of transition studies and sociological work on car-dependency, we outline an integrated, interdisciplinary research agenda to further analyze interdependencies of (psychological) within-actor factors and systemic characteristics of the automobility regime to improve our understanding of mobility activism.

# Fostering biospheric values within families: the role of bidirectional intergenerational transmission among young adults

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**Keywords / Relevant Terms**: biospheric values, intergenerational transmission, pro-environmental behaviors

## Abstract

In recent decades, increasing research has emphasised the role of biospheric values in fostering pro-environmental behaviours, but only a few studies have focused on how they are transmitted. Evidence suggests that family context during childhood plays a significant role in transmitting those values through direct and indirect socialisation processes. However, this intergenerational transmission evolves as interactive and reciprocal as the children age and gain information from outsider contexts. Despite this evidence, the bidirectional nature of parent-child influences in transmitting biospheric values remains understudied. Thus, the current project aims to corroborate two-way intergenerational transmission of biospheric values between mothers, fathers and offspring by estimating two different models (i.e., model A for transmission from parents to offspring; model B from offspring to parents). Data are collected based on offspring perceptions on a sample of young adults who were asked to report perceptions of their own and parents' biospheric values as well as the perceived transmission process within the family. Results from model A reported significant associations between the mothers' and fathers' biospheric values and the perception of the transmission process to children. Model B showed associations between offspring biospheric values, perceptions of the transmission process between offspring and parents and parental biospheric values, indicating an existing directionality of the process. Future studies could benefit from implementing the proposed survey with longitudinal designs and multi-informant methodologies. Investigating the mechanisms through which individuals convey a deep-rooted commitment to ecological well-being is essential for promoting sustainable practices and protective actions, as well as for responding to some of the UN Sustainable Development Goals, such as Goal #11, Sustainable Cities and Communities, and Goal #13 Climate Action, which call for interventions aimed at enhancing behavioural change by promoting awareness and engagement.

# Transformative Pathways in Changing Environmental Values and Attitudes: Exploring the Impact of Participatory Teaching Methods in Biodiversity Education

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**Keywords / Relevant Terms**: biodiversity education, transformative change, experiential learning, environmental attitudes, relational values

## Abstract

Children are particularly vulnerable to the negative effects of the current environmental, economic and health crises. Experiential learning is needed to cultivate both a heightened affinity between children and nature and to nurture their overall well-being. However, the current body of knowledge is insufficient to gauge the extent to which various participatory teaching methods may influence children's environmental attitudes and relational values. As part of the EU-funded PLANET4B project, the transformative potential of Hungarian biodiversity education is being assessed through a critical systemic analysis, key informant interviews, and various participatory methods applied in school gardens, and in a participatory theatre piece.
So far, 16 interviews have been conducted, encompassing perspectives from environmental education experts spanning the realms of academia, the public sector, civil society, and the arts. The preliminary analysis pointed out the paradox of Hungarian environmental education, with the curriculum placing increasing emphasis on ecological issues, whilst the education system is constantly restricting flexibility and freedom of choice. Consequently, our fieldwork is exploring experiential learning methods designed not only to enhance cognitive skills, but also to positively influence students' attitudes, well-being and relational values towards their peers, teachers, and the natural environment. These methods are envisioned as means to ease the challenges posed by the educational system. However, it is crucial to acknowledge that while these tools may have transformative effects primarily at the individual level of children and to some extent within the institutional purview of schools, they tend to be embedded in the existing system rather than provoking a substantial change in it.
This study aims to assess the impact of these intervention methods on children's environmental attitudes and relational values. In the spring term, we will extend the research to a broader array of schools, and the findings will be presented at the IAPS conference.

# Effects and mechanisms of the Public Climate School - a school-based program on climate education for students: A pre-post design study

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**Keywords / Relevant Terms**: education for sustainable development, climate change, civic engagement for climate protection, ecological handprint

## Abstract

Background and objectives: Climate change will increasingly affect the lives of young people. In the spirit of education for sustainable development, it is important to educate students about climate change and provide opportunities for action, such as civic engagement for climate protection to increase people's 'ecological handprint'. This study examines pre-post effects and potential mechanisms of the Public Climate School, an online and on-site school-based project week on climate change topics. Process and methods: We enrolled 360 students from 23 classes and 7 schools in Germany (grades 7 to 11), who responded to online questionnaires before and after the Public Climate School, which took place between 20 – 24 November 2023. We repeatedly assessed theory- based behavioural and psychological variables, including civic engagement for climate protection as the pre-registered primary outcome of the study (e.g., signing a petition for climate protection). Main results: Preliminary pre-post analyses showed increases of students' civic engagement for climate protection, reflected by a small effect size. Regression analyses predicting pre-post changes in civic engagement for climate protection yielded two significant predictors: students' intention strength as well as their perceived identification with the climate movement. Implications for research and practice: This study showed that a school-based project week can foster students' civic engagement for climate protection and identified potential mechanisms. Future research could use experimental designs examining causal relationships in order to provide stronger evidence how climate education programs work for various outcomes and underlying mechanisms. Importance and originality of the contribution: The Public Climate School is an innovative and scalable school program. School actors from different levels (e.g., teachers, head of the school, employees in the ministry) could consider implementing a long-term adaptation of such a program in order to strengthen education for sustainable development.

# Engaging Youth with Climate Crisis through Literature

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**Keywords / Relevant Terms**: Climate Crisis, Climate literature, young people, environmental education

## Abstract

This paper delves into the task of engaging young individuals with the complexities of the climate crisis with specific focus on affect and emotion. Acknowledging the emotional spectrum evoked by climate crisis, from anxiety to disengagement, presents a challenge in fostering meaningful involvement. This study introduces an innovative approach—an exploration of climate literature through structured book club sessions—to address this challenge. Over a three-month period, a cohort of young participants actively engaged in a climate- focused book club. Following their engagement with the book club, semi-structured narrative focus groups were conducted that centred on young people's perspectives and experiences concerning climate change within this context. An interdisciplinary research team conducted thematic analysis of the data, uncovering multifaceted themes. The analysis yielded significant insights encompassing personal benefits, knowledge acquisition, skill development, behavioural changes, connections forged, and shared reading experiences. Most notably, the study identified emotional depth as a crucial element, providing a pathway towards deeper engagement. The presentation not only showcases the findings but also underscores the pivotal role and potential of climate literature as a mechanism for meaningful engagement. By empirically testing this innovative approach, the study offers tangible insights into leveraging climate literature to catalyse engagement, foster informed perspectives, and potentially drive action among young individuals regarding the climate crisis. We will also discuss future directions for this research and its potential relevance and importance for educators, researchers, and policymakers seeking effective strategies to engage youth in addressing the climate crisis—a critical step towards effecting the necessary changes for a sustainable future.

# Community-based river management: Challenging the way we produce, exchange and apply knowledge for improving river health

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**Keywords / Relevant Terms**: socio-ecological resilience, collaborative river management, grassroots mobilization, community empowerment, environmental volunteering

## Abstract

Background: Rivers have become collaborative management labs that illustrate the achievements and limitations of riparian communities' engagement in diagnosis, decision- making, and implementation and monitoring stages. Although in recent decades a wealth of experiences undertaken worldwide have explored pathways such as community science and environmental volunteering to improve river health by empowering riparian communities, there is still an intention-implementation gap hindering genuine collaboration, associated with power asymmetry and mistrust between traditional decision-makers and local communities. Objectives: The aim of this contribution is to provide a critical review of community-based river management, with particular attention on pathways to initiate and sustain community engagement and trust building among actors. Methods: We performed a systematic review of worldwide empirical evidence on community engagement in river management published from January 2000 to May 2021. By means of iterative categorization, we described three variables across all case studies: governance context, values of mobilization and pathways to engagement. A conceptual framework of community-based river management was drawn up and evidence of each pathway synthetized. Results: Community-based river management is shaped by the governance context, mobilization values and engagement pathways. The governance context determines riparian communities' role in river management depending on the local participatory culture. The communities' mobilization is mostly driven by the simultaneous defence of environmental, economic and social values. The community engagement pathways involve the collection, transmission and application of local knowledge in river management. Community-based river management is an ongoing process oriented to build trust between riparian communities and main actors. Relevance and implications for practice: Against the current lack of an organized store of learnings to improve river health through collaboration, this study provides policy-makers and

# Evaluating the social impact of a collective heating initiative: A field study in student dormitories in Poland

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## Abstract

Participation in pro-environmental actions is expected to result in more favorable environmental attitudes through reduction of cognitive dissonance and changed self-perception (Nilsson et al., 2017). When participating not only in individual, but collective pro- environmental actions, this can lead to a change in social identity and thereby to stronger intentions to further behave pro-environmentally (Fritsche et al., 2018; Truelove et al., 2014). A collective setting can further help to overcome barriers for behaviors which are harder to change: research suggests that heating behavior, as one crucial domain for behavior change in residential settings, is more malleable when understood collectively rather than individually (Adams et al., 2021). However, experimental research on the social impact of collective initiatives is scarce (Bielig et al., 2022). We conduct a field study in student dormitories of a Polish university, and investigate how participation in a heat reduction intervention affects attitudes towards pro-environmental interventions in the heating sector. We also measure support for other green policies and effects on social identity processes, including political polarization. Our intervention consists of temperature manipulations via energy management system, which we frame as a collective action for CO2 reduction. Our study employs a within-and-between subject design with pre- and post-surveys in intervention (2) and control (1) dormitories. We investigate the extent to which (1) attitudes towards heating interventions change through participation, and (2) whether social identity processes (social identification, collective efficacy and social norms) mediate the effects of participation in the intervention. Behaviorally, we evaluate energy behavior change on an aggregated dormitory level and examine whether there are behavioral spillovers to other energy domains, e.g. electricity. Data collection is taking place from December 2023 until March 2023.

# Action Research using Affective Maps: psychosocial and environmental interventions in fishing communities affected by wind farms on the Ceará coast

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**Keywords / Relevant Terms**: Traditional Communities, Wind Farms, Esteem for the Place, Affective Maps, Environmental Vulnerability.

## Abstract

The aim of this work was to promote research and interventions with the traditional community of artisanal fishermen called Curral Velho, located on the west coast of Ceará, Brazil, in the municipality of Acaraú. The community is environmentally vulnerable due to the development of wind farms in the region. The work began in 2023 with the participation of the Federal University of Ceará, the Terramar Non-Governmental Organization and the Community Association of Residents of Curral Velho. With a convenience sample of 49 people, the aim was to get to know the community's human-environmental relationships. The research was carried out using the Affective Maps methodology with the application of the Affective Maps Generator Questionnaire – made up of elements such as drawing, survey and Likert scales. The preliminary results show that a significant part of the local population reported that there would be nothing good about the implementation of the wind farms, while at the same time they were divided on the benefits and harms caused by the initiative. Although the data is still under analysis, the reports indicate that the participants in the survey have an affective image of destruction and insecurity in relation to the implementation of the wind farms, especially with regard to the possible reduction in artisanal fishing caused by the environmental impacts. Even so, the Esteem for the Place Index of the sample is positive (?=14.7), with a particular emphasis on commitment to the place (?=4.6, max.=5). The data corroborates the demands of fishermen and shellfish gatherers, who are calling for the suspension of licenses already granted to wind energy companies on the Ceará coast, including offshore companies. Finally, the study is relevant for strengthening links to environmental preservation and can serve as a basis for public policies to promote environmental justice.

# Centering community perspectives to advance recognitional justice in urban environments: Lessons from urban forest practice

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**Keywords / Relevant Terms**: environmental justice, urban forest, community-led stewardship, recognitional justice, gentrification

## Abstract

Cities worldwide are grappling with complex urban environmental injustices. While environmental justice as a concept has gained prominence in both academia and policy, operationalizing and implementing environmental justice principles and norms remain underexplored. Notably, less attention has been given to centering the perspectives and experiences of community-based actors operating at the grassroots level, who can inform and strengthen urban environmental justice practice and outcomes. Through ethnographic, participant-as-observer methods and interviews, this study explores the perspectives, experiences, knowledge, and practices of community-based actors in Philadelphia, Pennsylvania who are invested in addressing environmental injustices through urban tree- planting, stewardship, and activism. Urban forest stewards were asked how they were addressing issues of distribution, procedure, and recognition in urban forest planning and practice, as well as the socio-political and institutional factors that have influenced their perspectives and practices. Particular attention is given to how these stewards implement recognitional justice principles. To visualize patterns of distributional environmental injustices, we investigated the historical racist practice of redlining alongside current tree canopy cover, and the spatial distribution of persons of color and persons living in poverty. Findings from this study exposed several complex socio-political challenges affecting steward engagement in community-led tree initiatives, and the broader pursuit of environmental justice. Stewards identify past discriminatory urban planning practices, gentrification concerns, underrepresentation of Black and Latinx voices in decision-making, the volunteer-based tree- planting model, and tree lifecycle costs as barriers to advancing environmental justice. Nevertheless, urban forest stewards remain dedicated to collective community-building to address environmental injustices. Stewards stress the importance of recognizing, listening to, dialoguing with, and validating the perspectives and experiences of their neighbors as essential to their process.

# Retributive Justice, Egocentric Bias, and Zero-sum Beliefs in International Climate Agreements

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**Keywords / Relevant Terms:** International Environmental agreement, Retributive Justice, Zero-sum thinking, Egocentric Bias, Cognition

## Abstract

Background and Objectives: In climate change agreements, some groups defend strict environmental regulations to detain non-sustainable actions through retributive mechanisms, thus focusing on minimizing outcomes to zero-sum. However, this might not necessarily lead to reduced zero-sum beliefs. This study examined whether retributive justice (i.e., punishment for perceived wrongdoing) and egocentric bias (i.e., favoring one over others) are factors in zero-sum thinking and the perception of fairness in these scenarios. Process and Method: This scenario-based study was composed of 201 participants who read a scenario based on a climate change agreement between their own country and another one. Thus, with a 2x3 experimental design, we manipulated retributive justice (i.e., no retributive mechanisms, retributive mechanism, and control) and egocentric bias (i.e., participant`s country gaining at other`s expense, another country gaining at the participant`s country). Participants were then asked to what extent they agreed with statements, on a 7-point agree-disagree scale to measure zero-sum thinking, perceived fairness, retributive intentions, prior zero-sum judgments, and political views. Main Results: Retributive justice had a significant effect on perceived fairness. Furthermore, participants perceived the outcomes as zero-sum depending on egocentric bias, but not on retributive justice. Then, results show that zero-sum thinking is influenced by prior zero-sum judgments and political views. These factors may reflect the existing beliefs of participants toward intergroup conflict. Finally, retributive intentions were influenced by both egocentric bias and retributive justice. Implications for Research and Practice/Policy: This research shows that legally binding agreements might be better constructed on consensus principles and trust rather than retribution. Importance and originality of the contribution: This is the first study to experimentally test the determinants of zero-sum thinking and perceived fairness in international climate change negotiations, with the aim to identify the role of justice mechanisms.

# Fostering Environmental Justice Through Transdisciplinary Learning: A Case Study of an International Summer School

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**Keywords / Relevant Terms**: Mutual learning environments, Transdisciplinary learning, Robust societal knowledge

## Abstract

Background and objectives: Public participation has been shown to be essential for achieving sustainability. Academic research supports the idea that public participation in environmental decision-making has significant benefits, from increased support for environmental initiatives to the emergence of new ideas based on local experience. Importance and originality of the contribution: This summary presents a concrete experience: an international summer school dedicated to transdisciplinarity and its application to land use conflict resolution and sustainable solutions. Main results/arguments: The International Summer School - Transdisciplinarity methods and tools for dealing with sustainability and land use conflicts was held for the first time in 2022 in Catalonia, Spain, and for the second time in 2023 in Nord-Brandenburg, Germany. The overall objective is to fill the educational gap on transdisciplinarity. Through reflective exercises, role-plays and dialogues with local actors, we aim to broaden participants' perspectives beyond their fields of research, thus fostering a deeper understanding of socio-environmental challenges. Implications for research and practice/policy: While we do not intend to create transformative change in one week, we are convinced that the didactic structure and innovative methods used were key. We will focus our presentation on the format of the Summer School, its didactic structure and the methods used to strengthen inter- and transdisciplinary reflection. Feedback from participants supports our contention that training in integrative and reflexive methods is crucial for research that contributes to social transformation. At this conference we want to share and discuss our experiences, highlight lessons learned and explore possibilities for future similar initiatives.

# From the Macro and Micro Aspect to Exploring the Relationship Between Urban Green Spaces and Housing Prices

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**Keywords / Relevant Terms**: environmental justice, urban green spaces, green space quality, sustainable developmenT, green gentrification, Community Park Audit Tool

## Abstract

As urban populations rise, Urban Green Spaces (UGS) become crucial public facilities, providing environmental, economic, and social benefits. High-quality UGS enhances area appeal, affecting local property prices. Yet, discussions focusing solely on distribution, accessibility, and size are insufficient. Many urban green space plans lack alignment with inclusivity and resilience goals, leading to increased property prices without fulfilling essential needs and causing environmental inequality. This study, adopting an environmental justice perspective, observes UGS-property price relationships. Macro-level attributes offer insights into green space ratios, while the study assesses service quality differences and develops a sustainability index for UGS evaluation. Focusing on 31 parks in Hsinchu City, Taiwan, using GIS and Space Syntax, the study examines the impact of UGS on property prices. Findings show macro-level attributes positively influence property prices, but the impact of green space ratios may vary due to other variables and regional disparities. Micro-level attributes confirm activity areas within UGS significantly impact positive outcomes, providing quality spaces enhancing residents' living conditions and physical activity. The study emphasizes holistic UGS planning, meeting urban residents' needs while advancing environmental justice, community cohesion, and sustainable development.

# Mandated on-site wastewater treatment and reuse in San Francisco: The role of distributive fairness perceptions for policy acceptance

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**Keywords / Relevant Terms**: policy acceptance, distributive fairness, wastewater reuse, decentralised wastewater treatment, San Francisco

## Abstract

In San Francisco, as in many urban settings globally, water scarcity poses a critical challenge and raises the need for reducing potable water consumption. One solution are on-site systems that treat a building's wastewater on-site for non-potable reuse. To increase the use of on-site systems, San Francisco, along with other cities worldwide, issued a policy mandating their adoption for part of the population. The rest of the population continues using the centralised treatment system without reuse. This disparity might impair the distributive fairness of the policy and of water services, which might reduce public acceptance of the policy and consequently the chances of a successful implementation. Yet, research indicates that not all groups of society are equally taken into account in peoples' assessments of fairness and acceptance, but it has not yet been investigated which groups are considered for policies on wastewater reuse. To examine this question, we conducted an online survey with residents of San Francisco who are covered by the policy and residents not covered (N=504). We assessed perceived fairness of the policy for six different groups of society as well as policy acceptance. Regression analyses showed that for all residents, higher fairness for both future generations and the population as a whole explained acceptance. Residents covered by the policy additionally considered fairness for the environment, while residents not covered considered fairness for owners of buildings mandated to install on-site systems. The fairness for people with a low income and for residents of buildings with on-site systems did not explain acceptance. We further investigated which specific implications of the policy explained its perceived (un)fairness for each group. The findings implicate that to increase acceptance of future policies mandating on-site systems, policy makers should consider the policy's outcome for different groups of society, while particularly focussing on collective outcomes.

# Towards The Spatial Justice Impact Assessment Of Urban Regeneration: For A Methodological And Operational Approach Aimed At Planning And Implementing Interventions

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**Keywords / Relevant Terms**: Spatial Justice, Social Impact Assessment, urban regeneration, inclusion, participatory urban planning

## Abstract

Spatial Justice involves organizing and managing space and distributing resources. Adopting a spatial justice approach canmitigate discrimination in urban areas, despite a lack of consolidated operational tools for planning and evaluating urban policies. Despite this, Social Impact Assessment (SIA, the process of analyzing, monitoring, and managing social changes resulting from planned interventions) is currently being developed as a tool for measuring the impact of public policies. This contribution proposes an approach to prevent exclusion and gentrification in urban regeneration projects, ensuring the creation of a Just City. The focal point is understanding if SIA can become a tool to guarantee more just projects and processes and if it can transcend its role as an evaluation tool and become a proactive planning instrument. Milan is a valuable context for such an investigation, since it has experienced notable growth and dynamism hosting major events (e.g., Expo 2015, 2026 Winter Olympics). Lately, the Town Administration, real estate and private sector are promoting a wide program of urban regeneration that involves the whole city. Also due to the nature of these projects, Milan is facing a significant crisis that is impacting the life of its inhabitants. The primary case study of the ongoing research is the New Campus in the Città Studi neighborhood, where the University of Milan is leading a regeneration initiative. The research follows a three-phase approach: 1)mapping stakeholders and communities to be involved; 2)employing psycho-social tools (e.g., exp-EIA method) for exploring the area and assessing people's reaction to the environment in its existing condition; 3)identifying outcomes and indicators suitable for evaluating the urban regeneration project with a spatial perspective through dedicated public workshops. The overarching goal is to develop social impact indicators collaboratively, ensuring a fair and participatory assessment of the transformations brought about by the project.

# Recognition, decolonial justice and community benefits: Local implications of the procurement and deployment of large-scale renewable energy facilities in rural Indonesia

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**Keywords / Relevant Terms**: energy transition, justice, Indonesia, local impacts, place

## Abstract

The transition to renewable energy in light of global climate change has strong implications for social and environmental equity, justice and fairness across scales and geographies. Research on social acceptance and energy justice has been prolific in exploring various social responses to the expansion of renewables. However, decolonial critiques of energy justice reprehend an increased detachment of westernised conceptions of justice from what is happening on the ground in the Global South (e.g. Dunlap & Tornel, 2023). Likewise, critical approaches to social acceptance argue for a greater consideration of contestations over renewable energy developments as embedded in broader socio-economic and political contexts, instead of reducing acceptance to individualised responses (Batel & Rudolph, 2021). In doing so, the paper explores socio-economic implications and community benefits of the deployment of the first utility-scale onshore wind farm and floating solar PV projects in rural Indonesia. The research draws on three periods of multi-sited fieldwork conducted in Indonesia in 2023, including interviews with developers, citizens, regional and local authorities, and focus group discussions with representatives from local communities. By investigating territorial manifestations of procedural and distributional justice evoked by global procurement and deployment practices for the two large-scale energy projects, the paper sheds critical light on the perpetuation of historical imbalances, enclosure and the significance of recognition-based justice as central elements of the struggle for a just energy transition in the Global South. While the operational wind farm is locally anchored by means of various corporate social responsibility activities provided by the developer, desired benefits concerning the floating solar PV project are linked to place-related changes, the displacement of fishing activities and the unfulfilled hope for long-term employment. Finally, the paper contemplates how local stakeholders frame community benefits and justice in relation to novel infrastructure
projects.

# Sense of place: Experiences of environmental (in)justice among residents in a “vulnerable area”

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**Keywords / Relevant Terms**: sense of place, densification, Environmental justice

## Abstract

Rapid urbanisation is one of the complex and dynamic processes, transforming and shaping urban spaces in recent decades. These changes have direct impact on our understanding of place, the meanings, values, and symbols. Sense of residential environments as part of our everyday landscape can sometimes be changed massively, due to the ongoing urban densification. This article aims to better understand the conceptualisation of ‘Sense of Place’ in a disadvantaged neighbourhood in Malmö, Sweden, and to critically investigate urban transformation projects from the perspective of the changing sense of place related to neighbourhood changes. The concept of sense of place is used in order to capture neighbourhood qualities, with a theoretical frame from literature on ‘Environmental Justice’. The empirical data generated from photo-elicitation interviews with the residents. The participants were instructed to photograph the most attaching things/places from their neighbourhoods and try to capture local elements of their daily lives that provided the most meanings. We used thematic analysis method to analyse the data. The overall result shows that the participants appreciate the outdoor environment in Bellevuegården neighbourhood, both the aesthetic and the social experiences, despite of social problems and criminal activities such as shooting or selling drugs in the neighbourhood. At the time when the interviews were conducted, the COVID 19 had created a special and unique situation that affected how people use and move themselves in public places. Furthermore, experiencing a densification project constructed another special situation that provoked the residents’ emotional feelings towards their everyday landscape. The residents’ sense of place have been actively and constantly constructed and reconstructed within their minds, shared culture and social practices.

# Explaining Environmental Justice through International Justice in the Context of Green Space

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**Keywords / Relevant Terms**: environmental justice, interactional justice, green spaces, underserved communities

## Abstract

Environmental justice has become a critical discourse by environmental justice specialists in recent years due to the new injustices revealed by the strategies implemented in green spaces. These resulting inequities generally lead to distributional injustice by physically displacing socioeconomically vulnerable individuals and causing them to relocate to less healthy areas. However, focusing only on distributive justice means overlooking the processes that reproduce these injustices. At this point, this study asks the following question: How is the sustainability of environmental justice possible? Therefore, this research aims to explain the causal dimensions of environmental injustice in cities beyond distributional injustice and to point out interactional justice. To achieve this, the concept of Environmental Justice in the context of Green Spaces through the lens of interactional justice is discussed. In this way, a comprehensive literature review is conducted from secondary sources. Qualitative data obtained from academic literature and policy literature are used for this study.The main results of this research demonstrate how inter-community power relations play a crucial role in producing environmental injustices. Additionally, green space planning should be inclusive procedural justice can be achieved and this might result in recognitional justice. Moreover, procedural injustices are a result of interactional injustice, particularly of immigrants and other minority residents. Otherwise, interactional justice can prevent people living in a particular area from being excluded because of their negative experiences in green spaces. This research can be considered as a guide to policy makers for just and sustainable city planning, emphasizing the need to shift power to communities.The research is significant in terms of strengthening underserved communities in cities by explaining the causal dimension of environmental injustices by combining environmental and economic data. It differs from previous studies in that it explains this with interactional justice, one of the environmental justice discourses.

# Design principles in visual communication supporting community engagement for sustainability in Virtual Reality Spaces

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**Keywords / Relevant Terms**: social innovation, visual communication, co-design, virtual reality, design principles

## Abstract

Background: sustainable renovation of homes is a necessary step to meet the EU goals of energy efficiency. In social housing, sustainable renovation requires the consent of tenants. As part of the larger uVITAL project on social housing upgrading, we aimed to enhance resident participation to innovate the renovation practice. To this end, we used Virtual Reality (VR) as visualizing information could act as boundary objects to tenants and involved professionals from the housing association. Here we focus on how to design the user interactions in redesigning the communal garden facilitating community engagement. Aim: this study aims to describe the design principles in developing a VR model facilitating user interactions for community engagement in a social housing upgrading project. Method: a research-through-design process was used to design a multiplayer virtual reality model facilitating user interactions. Tenants engaged in 2 previous single-player VR workshops before engaging in the workshop to co-design the communal garden. All models were first verified with the housing association and the second was also verified with the contractor. Findings: we identified 4 major design principles. First, a high degree of realistic modelling was important. For practitioners this was important not to raise expectations amongst tenants. Tenants sought reassurance during the workshops that it really was realistic. Second, tenants appeared to be a highly vulnerable group with low (digital) literacy, and therefore a technical and a narrative guide were introduced so that tenants could discuss their wishes. Real time rendering was a 3rd important design principle so that tenants could see the impact of the changes they proposed underscoring the importance of VR providing boundary objects. Finally, the use of avatars was protecting people's privacy, and combined with an accurate representation in space helped to immerse and actively engage with neighbors and guides.

# The Amazon Rainforest is not the "Lung of the Earth": An Educational Intervention Demystifies Misconceptions among Amazonian Students

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**Keywords / Relevant Terms**: Amazon rainforest, Carbon cycling, Knowledge, Environmental education, Researchers

## Abstract

The ecosystem services provided by the Amazon Forest are essential to human beings and all life forms. These services play an important role in the carbon cycle, local and global climate regulation, being shelter of a rich biodiversity and many other benefits. For a long time, the forest was erroneously seen as the Earth's lungs. This misconception has also permeated the school level, as evidenced by a survey conducted with 666 9th-grade students from public schools in eight municipalities in Amazonas, Brazil. Our first objective was to access students' knowledge of the forest's carbon cycling before and after the researcher's intervention. Then we focused on understanding the variations in knowledge between municipalities and identifying which strategies better help students in assimilating the information. Data were collected in two stages: the application of Survey 1 (S1), consisting of conceptual questions before teaching about the topic, using seven teaching approaches and approximately 15 days later, Survey 2 (S2) was reapplied to the same students. Results showed that it is virtually certain the difference between S1 and S2 ($p < 0.0001$), with S2 presenting an increase of 286,5% in correct answers. Additionally, students from Parintins ($p = 0.0225$) and Presidente Figueiredo ($p = 0.0437$) achieved the highest percentage of correct answers in S2, indicating that the intervention in these schools was more efficient. Strategies two, three and five ($p < 0.001$), involving videos presentations of on-site research; classes with technical materials and instruments, as well as the presence of the researchers, respectively, were effective in improving students' knowledge. The results suggest a need for changes in the way of teaching, improving professors' qualifications and didactic resources with conceptual clarity. These changes are crucial to enhance significant learning for the students.

# Co-Designing Children's Playspaces: Evaluating Program Impact on Design Priorities and Participant Outcomes

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**Keywords / Relevant Terms**: children, participatory design, co-design, program evaluation, outdoor play

## Abstract

There has been growing interest among design practitioners and researchers in participatory methods as a means of embedding user expertise in decision-making (Robertson & Simonsen, 2012; Sanders, 2002). Co- design with children may be a valuable pathway for capturing the voices of this underrepresented user group. However, despite an increase in the application of participatory methods, we still know little of the impact of specific co-design activities and program types on both design outcomes and child participant outcomes (Bossen et al., 2016).This study contributes to a deeper understanding of how co-design activities and program length affect the development of design priorities. This exploration is grounded in a case study approach involving both a 10- week and 3-week co-design program with two 5th grade classes in Ithaca, NY centered on the redesign of their school's outdoor playspace. A waitlist control design with pre/post measures was also integrated to evaluate the psychological and learning-based outcomes for child participants. We hypothesized that children would benefit from being engaged in the design of their physical space through attainment of new skills and increased sense of self-efficacy, agency and belongingness. This presentation will illustrate how specific activities, such as photovoice and drawing, contributed toward the expression of students' playspace priorities, and the difference in the type and diversity of playspace priorities that emerged from the 10-week versus 3-week programs. Our approach leveraged qualitative and quantitative methods to track priorities as they emerged, group priorities within larger themes, and measure individual preferences. The result was a systematic understanding of how priorities emerged over the course of the co-design process, and a set of playspace priorities that was incorporated into the final design brief. Psychological and skill development outcomes were also evaluated for child participants.

# Play your cards right – Visual method enhancing dialogue between pupils, teachers and architects about school building experience

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**Keywords / Relevant Terms**: schools, participatory photography, architect and non-architect evaluation, visual method, built environment education,

## Abstract

‘Play your cards right’ is a visual method that was developed as part of a qualitative research conducted in secondary schools in Budapest with the aim of understanding pupils’ perception and experiences of their schools. It was also used as a creative tool during participatory design processes. Perception, preference and attitude of the built environment differ in age groups, depends on gender, cultural, social backgrounds and personal experiences. Architects form a special group in this regard, they differ from non-architects’ in a significant way (Groat, 1994; 1990, Gifford et al, 2000). Among public buildings the role of school is outstanding: it effects people during a most sensitive period of their lives, it is part of the hidden curriculum (Dudek, 2005, Dúll & Lippai, 2015). School is a central theme of built environment education, too, and as this study suggest, it can become a medium to learn about spatial behavior, identity, culture, education and architecture in general. ‘Play your card right’ method starts with a participatory photography phase (Wang & Burris 1997): it gathers students’ photos of the school. All images are printed on cards and are offered to small groups for evaluation through a designed series of preference making activities and discussions.
Pupils' (age 13-15-17), teachers' and architects' groups were all highly active during the process of preference making. The discussion naturally expanded from the physical to the complex socio-physical environment and towards the urban context. The method opened up channels of communication and contradicting literature my study found basic similarities among the 3 groups. The method effectively helped the participatory redesign of the school corridors. The discussions about the school building by pupils enhanced their quality of observation, spatial self-awareness, it helped abstract thinking and category forming about the qualities of the socio-physical environment.

# Exploring the Transformative Effects of Generative Artificial Intelligence on Interdisciplinary Interactive Model in Architecture and Nursing

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**Keywords / Relevant Terms**: Generative Artificial Intelligence, Interdisciplinary Interactive Model, Healing Spaces, Architectural Design, Nursing

## Abstract

This study aims to explore the impact of the introduction of generative artificial intelligence (AI) on the design of collaborative healing spaces in interdisciplinary workshops with architectural and nursing professionals. As researchers in the Department of Architecture, have observed through past collaborations with the Department of Nursing that the healing space needs vary among different departments. Leveraging generative AI, this study explores interactive relationships among the environment, nursing, and people, considering it as a tool for future hospital space design. The research objectives are as follows:

1.Investigate generative AI's role in interdisciplinary interactions, focusing on meeting user needs.

2.Develop an innovative model facilitating efficient expression of requirements by nurses and architects for practical design prototypes.

**Process and methods**: The research method including mixed-methods and participatory observation. Participants included 10 architects and 20 nurses, grouped in 5 departments of the hospital. The research process is as follows:
1.Establish foundational knowledge in architecture and nursing and understand generative AI.
2.Incrementally comprehend visions, needs, and spatial scales for healing spaces.
3.Conduct on-site environmental behavioral studies.
4.Present design outcomes and administer questionnaires.
5.The researcher conducts research analysis.

**Main results:**
1.Diverse knowledge affects designers' understanding, influencing healing space designs for different disciplines.
2.Integrating generative AI and digital tools reduces time and cost for architectural design while improving communication.

**Implications for research and practice:**
1.Nursing professionals' field explanations enhance focus on user needs during discussions.
2.Proficient participants swiftly construct spatial volumes and transform them with generative AI, fostering diverse architectural creations.

# Immersive virtual reality models of a retrofitting process to inform social tenants

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**Keywords / Relevant Terms**: social housing, visual communication, immersive virtual reality models, eye-tracking, attention

## Abstract

Background: retrofit programs for social housing are a key part of the efforts to reduce Dutch carbon emissions by 2050. In the projects we are involved in, retrofitting of tenants' homes is mainly done in occupied state, requiring housing associations to obtain consent of at least 70% of the involved households. Clearly, communication is key during the whole process. Traditional communication methods include brochures, presentations, and face-to-face explanation during short home visits. To improve communication, we use immersion to innovate the communication process between the professionals and social tenants. Another innovation to the traditional communication process is that the contractors were our lead partners. As a recent development, except for early written communication, housing associations outsource all further communication with tenants to contractors. For a contractor it might be easier to relate to tenants, because the contractor brings important improvements to their homes. The immersive narrative was developed together with the contractor involved. Eye-tracking was used to evaluate where and how tenants directed their attention. Aim: this explorative study investigates how to develop the immersive narrative and direct the tenant's attention while explaining the consecutive steps during the retrofitting process. Method: using a practice-based and research-through-design approach, we developed an immersive model with real-time rendering explaining the complete renovation process in 6 consecutive stages. Eye-tracking was used to trace attention and was recorded through the HTC-Vive-Pro headset. Afterwards, tenants were interviewed by telephone to evaluate the use of Virtual Reality as a means to inform them on the renovation of their home. Results: 39 tenants, mostly over 70 years of age, were fitted with eye-tracking. Tenants' evaluations of the used communication method were highly positive. The results of the eye- tracking of the 6 consecutive stages will be presented and discussed.

# Developing Climate Resilient Age-Friendly Cities and Communities: A Place-based Approach

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## Abstract

Background: The climate emergency, including the increased frequency of extreme weather events (e.g., flooding, heatwaves and storms), pose new challenges for the health and wellbeing of older people, compromising their ability to age in place. In response, there is a critical need to explore how we build climate resilience into the design and planning of cities and communities. Importance and Originality: The WHO age-friendly cities and communities (AFCCs) movement has focused on developing environments that encourage active ageing by optimising opportunities for health, participation, and security to enhance quality of life in old age. However, there has been little articulation of what healthy ageing means in the context of extreme weather events or what specific place-based interventions are needed at a city and community level to mitigate the impacts of extreme weather on older people. Objective: We will present findings from a UKRI funded project entitled Healthy Ageing in Place: Co-Designing Inclusive Climate Resilient Age-friendly Cities and Communities, which explored the barriers and opportunities to delivering inclusive climate resilient AFCCs. Methods: The research captured experiences of older people, policymakers and practitioners via a range of qualitative research methods including policy mapping events, knowledge café and codesign workshops. Main results: We draw upon specific themes emerging from the research including: housing and home, health and social care, civic participation and volunteering, social infrastructure, mobility and outdoor spaces, information and communication, and intergenerational communities. Implications for research and practice/policy: The paper will highlight recommendations for the future direction of the AFCC agenda including specific policy and practice interventions aimed at building climate resilient communities and cities to support healthy ageing-in-place.

# Shape and use of the classroom in secondary schools: architectural object to be requalified To support educational success in Quebec

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**Keywords / Relevant Terms:** Classroom use, classroom, high school, students, space-time, occupation, socialization, engagement

## Abstract

Faced with the aging infrastructure of Quebec's public schools, the necessity for renovation is evident, particularly in classroom settings. This study employs a mixed methodology, combining non-participant observation in 12 classrooms across 4 high schools and an interactive digital game with 90 teenagers in 3 classrooms. Additionally, a survey by the Schola research consortium in June 2023, involving 75 secondary school teachers, enriches the data. The findings underscore the importance of factors like lighting, acoustics, air quality, room configuration, size, occupancy density, furniture, and layout in adolescent educational success. This research offers a detailed view of current learning environments and highlights key elements for classroom renovation, focusing on principles that motivate adolescents for educational achievement. The paper also delves into the usage of classrooms in Quebec high schools, examining the interaction between the physical classroom environment and its users. Through the observation of 17 classrooms in six schools and feedback from 235 teachers via the spring 2023 Renseignez-nous survey, it evaluates the influence of pedagogical methods and varying needs on space utilization. The findings reveal a preference for lectures, moderate group work, and significant digital technology integration. However, it notes the inflexibility in room layouts and restricted cellphone usage by students, indicating areas for pedagogical enhancement. The conclusion emphasizes the need for adaptable and responsive learning environments to accommodate evolving student requirements and diverse educational goals.

# Playing in the streets: a comparative study of three participatory ephemeral interventions in Barcelona's public space

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**Keywords / Relevant Terms**: studies of urban space; participation; self-construction workshop; urban furniture

## Abstract

**Background and objectives:** The analysis focuses on the potential value of educational projects of ephemeral intervention in public space to stimulate new uses. To this end, three workshops on the design and construction of urban furniture by the social and educational community developed between 2021 and 2022 and located in different districts of Barcelona have been selected. The training actions have been designed by architects, with the participation of educators, city councils and neighbourhood organisations.

**Process and methods:** The workshops were methodologically organised into three distinct phases: socio-physical analysis and design, construction of the urban furniture and use of the objects in a public space. The results of each phase were evaluated in a comparative way.

**Main results:** The initiatives are projects conceived and designed for a local context and its respective call for proposals, but with the capacity for long-term replicability and community sustainability. This critical analysis will be a tool to improve the methodology for future transformations of the environment from the social and educational community.

**Implications for research and practice/policy:** The role of the architect as a mediator in the analysis and design phases of the objects, transforming collective ideas into forms with his or her tools, is included in the discussion of the study cases. By going beyond the notion of body-space relations based on proportions, measurements and geometry, these workshops open up to new forms of action, interaction and reflection.

**Importance and originality of the contribution:** The analysis of each constructed structure (new urban furniture, participatory murals, mobile trolleys, coloured stools to play on, etc.) reveals the convergence of three phases of thought and action: the participatory design, the collective configuration of the objects and the poetic act of using them in public space.

# Evaluation of discourse quality in a citizen participation workshop: A case study of decontaminated soil generated in Fukushima, Japan

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**Keywords / Relevant Terms**: citizen participation workshop, discourse quality, science and risk communication, decontaminated soil generated in Fukushima

## Abstract

Evaluating the discourse in a participatory workshop is essential to ascertain the effectiveness of the program. Particularly, assessing the deepening of the thoughts through the dialogue, rather than attitude change, is important. For this reason, measuring the discourse quality is crucial. Therefore, this study aimed to evaluate the discourse quality of a citizen participation workshop by analyzing utterances. We organized a workshop calling for citizens living in Tokyo and Osaka. The topic was the final disposal and recycling of the decontaminated soil in Fukushima caused by the nuclear powerplant accident. Reducing the soil is vital for reconstruction and a sustainable future for Fukushima. Although recyclable soil is firmly secured the safety scientifically, some people fear using it. The well-trained facilitators managed the workshop. The experts of different professions, from pros and cons, gave information and communicated with participants in an ordinary science communication manner. Following that, participants discussed in small groups. We recorded the utterances of the participants and converted them to text. The discourse was analyzed mainly by two criteria: a) respect and consideration for relevant stakeholders, and b) common goods (i.e., social desirability) regarding utilitarianism, fair distribution of burden, and maximin principle. Finally, we asked the participants to answer the post questionnaire. The result of text analysis indicated that participants stated positively about the treatment of the soil, while they were not confident about the risks and safety. The discourse analysis revealed that consideration for Fukushima residents decreased after the discussion. Regarding common goods, participants mentioned more about utilitarianism but less about fair distribution and maximin principle. The questionnaire results revealed support for the policy of recycling the soil. Overall, although the participants did not change their attitudes very much, they recognized that the issue is a matter of not only Fukushima but all of Japan.

# Examination of attitude change among participants in citizen participation workshop on final disposal of removed soil

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**Keywords / Relevant Terms**: citizen participation workshop, public acceptance, risk perception, Fukushima, removed soil

## Abstract

The final disposal and reuse of removed soil generated by the Fukushima Daiichi Nuclear Power Plant accident are issues, in which all Japanese residents should be involved. The law stipulates final disposal outside Fukushima, and reusing the soil throughout Japan is required to reduce the final disposal amount. However, only a few people outside Fukushima are interested in and know these issues, hence a national discussion is needed. A citizen participation workshop inviting urban residents was conducted to deliberate on the removed soil. The purpose of this study was to explore how participant's opinions would develop over the discourse through the workshop. The workshop was conducted in Tokyo and Osaka in September 2023. A total of 48 citizens participated in it. At first, participants received expositions regarding the removed soil from experts, followed by a question-and-answer session as interactive communication. Then, participants discussed the issue both within and outside the group. Participants were asked to complete questionnaires before and after the workshop to measure opinions. The questionnaire consisted of the risk perceptions, interest in the problem, sense of the involved party, trust, procedural fairness, and acceptance of the policy and executing the treatment in their residential areas. The results showed that the participant's interest, sense of the involved party, and knowledge of the issue significantly increased after the workshop. Risk perception of reusing removed soil significantly decreased, but that of final disposal did not. In addition, we found no significant differences in trust in the government and experts, and procedural justice. While their acceptance of reusing in their area significantly increased, acceptance of final disposal did not. These results suggested that the participants came to view the issue more as their own through the workshop. The reasons for changes in the opinions of the participants are discussed.

# Effect of Discussion Frame on the Reflection of Minorities' Opinions and the Evaluation of the Group Decision: A Group Discussion Experiment on the Disposal of Decontaminated Soil in Japan

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**Keywords / Relevant Terms**: public discourse, discussion frame, reflection of minorities' opinions, group discussion experiment, final disposal of decontaminated soil outside Fukushima

## Abstract

In public discourse, reflecting minorities' opinions is important but not always taken into account. Therefore, this study aimed to investigate under what conditions minorities' opinions are reflected, focusing on the discussion frames in a group decision. In the competitive frame, where participants insist on their opinions and refute opponents, it is presumed that minorities' opinions will be less likely to be reflected in group decisions because the majority's opinions have more influence than minorities'. Conversely, in the inclusive frame, where participants deliberate both good and bad points, minorities' opinions will be reflected in group decisions because they consider diverse aspects including minorities' opinions. Thus, we hypothesized that the evaluation of group decisions would be more positive in the inclusive frame than in the competitive one. The discussion theme was the final disposal of the decontaminated soil outside Fukushima prefecture, Japan. The soil was generated due to the Fukushima Daiichi Nuclear Power Plant accident. The location of the disposal has not been decided. Hence, conducting public discourse on the issue to build a consensus is necessary. We conducted a group discussion experiment manipulating the discussion frame. In the competitive frame condition, participants were requested to insist on their opinions and refute the opponents. In the inclusive frame condition, participants were requested to consider both the pros and cons of the disposal outside Fukushima. We asked the participants to decide as a group whether the disposal should be implemented outside Fukushima or not.

# Consensus process for final disposal of removed soil outside Fukushima Prefecture: Development of the “Removed soil game” incorporating the stepwise public- stakeholders engagement process

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**Keywords / Relevant Terms:** final disposal of decontaminated soil, consensus building, public-stakeholders engagement, gaming, perspective taking

## Abstract

The removed soil from the decontamination work of the Fukushima Daiichi nuclear power plant accident is managed in the interim storage facility in Okuma and Futaba town, Fukushima prefecture. Japanese law stipulates that the soil will be finally disposed of outside Fukushima Prefecture by 2045. Reducing the amount of soil by recycling the low- radioactive level soil secured the safety is essential to complete the final disposal. Therefore, consensus building for the final disposal and recycling of the soil is critical. Stepwise public-stakeholders engagement is useful for building a consensus of the allocation of risks and negative resources. This study aimed to demonstrate a stepwise consensus process through public- stakeholders engagement. Particularly, this study examined the differences between the cases that successfully made acceptable proposals and those that failed, focusing on the public viewpoint and perspective-taking of the involved parties. Notably, people sometimes lack perspective-taking due to a low sense of involvement, even though they can consider a public viewpoint. We developed a “removed soil game” consisting of three phases to observe the consensus process by stepwise public-stakeholders engagement. Phases 1 and 2 are discussions by stakeholders setting a conflict situation and afterward. Phase 3 is a discussion by the public setting a situation with no conflict. We conducted the game twelve times. The results demonstrated that the games, failing consensus regarding policy goals in phases 1 and 2, tended to make acceptable proposals successfully in phase 3. Moreover, the results indicated that players in successful games were likely to strongly commit to the stakeholders’ role in the early phases, and they could take a perspective on stakeholders' positions, interests, values, and emotions in the latter phase. We discussed the implication of implementing the stepwise consensus-building process through public-stakeholders engagement, focusing on specific policy issues of Fukushima in Japan.

# Developing a framework for understanding and assessing the role of citizens in the governance of flood risk

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**Keywords / Relevant Terms**: citizen involvement, participation, flood risk management, governance

## Abstract

There is a growing consensus that collaborative approaches to risk management are central to developing adaptive resilience to the increased risk of flooding from climate change. This paper presents a framework for understanding and assessing the role of citizens and communities within initiatives for the collaborative governance of flood risk in Europe. The framework focusses on objectives, processes and structures. The paper provides a short summary of current discussions of flood governance and resilience. The discourse of flood risk management (FRM) now includes a strong call to diversify strategies to bring in measures focusing on adaptation and transformation alongside prevention and protection measures( Fournier et al., 2016; Mees et al., 2016; Twigger-Ross et al., 2020). Local, flexible, adaptive approaches invariably draw in a wide range of actors, with citizens and communities being part of this widening governance. This paper analyses the roles of citizens and communities in flood risk management decision making and delivery, focusing on three interrelated aspects of citizen involvement: objectives, processes and structures. These three aspects impact on the nature of involvement and the paper suggests that certain types of objectives, processes, and structures need to be in place for involvement to be meaningful. Factors linked to approaches that are effective in delivering resilient and legitimate flood risk management are discussed, using examples from across Europe which show the importance of attending to these aspects. The paper closes with a critical reflection on the research processes taken to gather the evidence and point the way to future research needs.

# Negotiating Sustainable Futures: Participatory Visioning of Integrated Regional Energy Transition

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**Keywords / Relevant Terms**: geodesign, renewable energy, participation, visioning, spatial negotiation

## Abstract

Many European countries are striving to increase the use of renewable energy sources (RES) to meet climate goals. Public support for energy production from renewable sources is generally high, but there are obstacles in achieving the set goals. The most highlighted obstacle is opposition to RES projects, usually described as the "NIMBY" effect ("not in my backyard"), often accompanied by a lack of institutional collaboration, both horizontally (across sectors) and vertically (between the state and municipalities). However, research suggests that NIMBY is a too shallow explanation and proposes to frame public opposition as “place- protective” action. Thus, to effectively implement national policies, a change in the planning process is needed, where the use of RES is addressed more comprehensively as part of broader landscape development. This contribution presents an innovative research approach of co-creating a regional spatial vision, where professional stakeholder’s development ideas are merged into a common vision through a guided spatial-negotiation process, allowing identification of place-values and possible conflicts with RES projects. Before the vision co- creation workshop, interviews with key regional stakeholders were conducted to identify main views on RES planning and the region's development priorities. A public opinion survey on these topics was conducted with a wider audience. During the workshop, stakeholders use a geoinformation-supported process ("geodesign") to develop and negotiate possible development scenarios. The purpose of the workshop is to create a more consensual vision for the region, strategically determining development and conservation priorities. The workshop is evaluated through an analysis of the developed vision and post-workshop surveys. The contribution presents two pilot implementations of such workshops in Slovenia and examines the usefulness of innovative collaborative approaches involving professional stakeholders that enable early detection and resolution of conflicts using digital tools in regional planning, with a focus on renewable energy.

# TOPIC 4:

# PLACE ATTACHMENT - SPACE, GENDER AND POST-COLONIALISM

# Fit or unwelcomed Neighbors: The Role of Place Identity and Place Attachment on Attitudes Toward Migrants

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**Keywords / Relevant Terms**: "Place attachment", "Place identity", "Intergroup relations", "identity motives"

## Abstract

In the current European political and social context, emigration has placed several challenges to the management of the place identity and intergroup relations. If on one side, migrants have to adapt and rebuild a new identity with a new place, long-term residents have to re-adjust their identity with that place. While much research exists on the impact of spatial change on place identity, few have looked at the impact of place bonds on intergroup relationships with migrants. This research bases on the three-type of place bonds model developed by Lewicka(2011) (traditional, active attachment or relativity towards a specific place). The first aim is to comprehend how these types of attachments influence the attitudes people have towards other cultural groups. In addition, based on the identity motives developed by Easterbrook and Vignoles (2012), we aim to understand how the different place identity mediate the effect between the type of place attachment and these intergroup attitudes. The study was conducted in a deeply traditional municipality in the south of Portugal, with 311 residents that answered a questionnaire with the following scales: Place Attachment Type (Lewicka,2011), Identity motives (Smeekes&Verkuyte,2013);and Place identity. We also measure intergroup attitudes in relation to 8 migrant groups: French, Romanian, Bangladeshi, Ukrainian, and from Portuguese speaking countries. Variables like such as sex, age, length of residence, nationality, economic level and political orientation are controlled. The results emphasize the importance of exploring different types of place attachment in understanding intergroup attitudes, depending on the prestige of the groups involved. The results on identity motives allow us a deeper understanding of the relationship between types of attachment and inter-group attitudes of the different groups. These results have political and social implications. They allow to better understanding territorial conflicts and planning social interventions that account these identity issues over a place.

# Placemaking promoting place attachment in the School of Communication and Arts (UFSC) in Brazil.

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**Keywords / Relevant Terms**: placemaking, place attachment, grafitti

## Abstract

Participatory design is very well known in the field of architecture and urban planning. However, determined interventions in urban and architectural space with participatory approach have been recently known as placemaking, defined as an approach to the design of places which focuses on the people who use the environment, whose process of intervention involves collaboration between different actors in the community. Through this participatory process, the needs of the community can be considered, and the space can easily meet their needs. On the other hand, place attachment is an emotional association between people and the environment; environment which can influence and be influenced by individuals and their personal experiences. Also, a significant amount of research has been dedicated to define what makes a place significant for place attachment; which include the participatory process in building the space. So, the aim of this study is to present and discuss the initiative of place attachment promoted by the School of Communication and Arts (Centro de Comunicação e Expressão), of the Federal University of Santa Catarina (Universidade Federal de Santa Catarina), Brazil, through the installation of mural paintings (graffitis) built collectively, with the participation of the university community, in order to face vandalism in the walls of the Campus. The study with qualitative approach was based in non-systematic observations (before and after the initiative) and in deep interviews with actors involved in the process. Results shown that the initiative of place attachment conducted in the University reduced vandalism in the walls of the School, a problem that lasted for years.

# Place Identity: The connection between the contents of place and identity motives among migrants.

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**Keywords / Relevant Terms**: Place Identity, Migrants, Contents of Identity, Identity Motives

## Abstract

People build their identity based on specific features of a place through their experience and the value they attribute to it. The experience of a new place brings challenges for the migrant as they have to re-adjust their identity to their new place (Tr?bca, 2019). Thus, the current study focuses on how migrants build their place identity with the current residency place and how they connect to the specific elements in the landscape. In the scope of this study, the Identity Process Theory (SPT) (Breakwell, 1986) is used to understand the motives that drive place identity building. The current study is the first study to focus on the motivations of place identity building among migrants through features of a place. Focus groups were organized with only international migrants and only natives in Lisbon and Brussels to comprehend what made their place unique and the connection and subjective meaning attributed to the different features of the place. The results showed that both migrants and natives are motivated for distinctiveness, continuity, self-esteem, self-efficacy, and belonging with their place, supporting the SPT. However, migrants are more motivated to pursue a continuity with their type of place and groups, and to value aspects related with control over their environment, while natives value contents of the place that are continuous and stable through time. This reveals that migrants and natives show a different salience or type of the different motives of place identity, suggesting that, although place identity is formed under the same motives, they are linked with different features of place and for different goals. In sum, understanding the central processes of identity among migrants and natives with a place can provide knowledge to enhance a cohesive identity of a place by preserving and creating elements that fulfill both groups place identity needs.

# Attachment to Places for Resting Outside? Needs for the mobility of visually impaired people in urban environment.

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**Keywords / Relevant Terms**: visually impaired people, place attachment, resting place, mobility

## Abstract

It is known that mobility limitations in older adults can lead to social isolation and poor health (Rosso et al., 2011). Mobility limitations also occur frequently among visually impaired people, and affect their activities that require outing (Lamoureux et al., 2004). One important factor that supports the outings of visually impaired people is a resting place (Cho et al., 2011). Therefore, this study aims to identify the characteristics and degree of attachment of resting places frequently used by visually impaired people. In this study, both visually impaired people (n=201) and sighted people (n=300) answered the web-based questionnaires with the same content in Japan. The results showed that visually impaired people are more likely to choose "stand-alone stores" ($p < .01$) and less likely to choose "commercial complexes" ($p < .01$) as their most frequently used resting places when outing, compared to sighted people. As for the reasons for choosing these places, a higher percentage of visually impaired people checked: "the place and the route to it are safe ($p < .01$)," "easily accessible ($p < .01$)," and "I can always find suitable seats vacant ($p < .05$)" compared to sighted people. In addition, visually impaired people have more difficulty in finding a resting place than sighted people ($p < .01$). Regarding the attachment to a resting place, visually impaired people selected "I think it is an important place" and "I would be sad if the place were lost" at higher percentages ($p < .01$) than sighted people. These results suggest that visually impaired people have more limited options for resting places when outing than sighted people, and because of that, they have deeper attachment to these places.

# Being urban Komi: navigating identities and connections to places, environments, and people

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**Keywords / Relevant Terms**: human-environment relationship, urban Indigeneity, urban-rural dichotomy, Komi

## Abstract

Urban spaces have consistently been focal points of contention in research concerning Indigenous communities. Due to their connections with colonial histories, cities, and consequently the Indigenous populations residing in urban areas, have frequently been regarded as less legitimate. In my research, I contend that it is unpractical to juxtapose cities against the Indigenous realm. Labeling urban areas as lacking authenticity and casting doubt on the authenticity of urban Indigenous individuals are notably problematic perspectives, especially as Indigenous populations continue to experience a growing urbanization trend. In my doctoral research, I explore the construction and evolution of Indigeneity within an urban setting in the Komi Republic, situated in the northern region of Russia. My study focuses on the Komi people, a Finno-Ugric ethnic group. Traditionally perceived as a predominantly rural population with a distinct rural identity, they are currently undergoing rapid urbanization, with less than half of the Komi population now residing in cities. I investigate how the Komi people not only sustain and develop their identities in urban settings but also transform urban areas and assert ownership of them. In this contribution, I specifically focus on the role of their relationship with the environment and nature in these interconnected processes. Among other things, I argue that despite the common perception of rural and urban identities as distinct, the example of the Komi people highlights the artificial nature of this dichotomy. In reality, the boundaries between rurality and urbanity are highly porous. Discovering rural and natural elements within the urban environment, coupled with the opportunity to speak their own language and connect with other Komi, is instrumental for Komi in maintaining well-being and a connection to their roots.

# Exploring ambivalent place attachment of rural youth living in forest landscape and socioecological sustainability

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**Keywords / Relevant Terms**: ambivalente place attachment, socioecological sustainability, environmental psychology, rural youth, urbanormativity

## Abstract

This study aims to explore ambivalent place attachment of young people living in forest landscapes who, after having lived and been higher educated in urban environments, move to a rural community. Rural milieus face complex problems of depopulation and demographic imbalances that threaten their socio-environmental sustainability, with an increase in forest fires, the loss of social and economic dynamism and the loss of valuable cultural landscapes. Bonds developed between young people and rural places influence social and ecological sustainability. As part of the European Project Interreg – COMFOR-SUDOE (SOE4/P1/E1012) we carried out a research about sustainability and forest meanings in two case studies in Spain – “Palencia Model Forest Initiative” in the center?north of the Palencia province (Castille and Leon) and in “La Vera” in Tietar Valley (Extremadura). Usually, place attachment is studied using quantitative methods. Here, we would like to explore nuances in male and female young people’s narratives about their personal experiencies living in rural spaces. Therefore, a qualitative multiple case study was conducted with 16 semi-structured in?depth interviews (nine female and seven male) in the mountains of Palencia and “La Vera”. Data analysis revealed significant ambivalences in place attachment and mixed feelings towards rural territories. On one hand, young people living in rural forest landscapes strongly value to be close to friends and family and to live in nature and forest spaces. On the other hand, they have to deal with lack of socioeconomic dynamism of rural communities and dismissive representations of rurality in the urbanormative paradigm, which increase ambivalences in attachment to rural place. Sustainability of rural communities and forest governance depends on how young people solve the personal and social equation between lights and shadows, weaknesses and strengths, love and hate for the place where, for the moment, they are living.

# At Risk of Being Weaponized : Toward a Political Lens on Place Attachment

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**Keywords / Relevant Terms**: place attachment; socio-spatial precarity; marginalized communities; landscape of power; social justice

## Abstract

While some recent scholarship has recognized the conceptual complexity of place attachments, there is still a tendency to privilege rootedness and positive affect in a way that (1) limits consideration of the dynamism and adaptive capacities of attachment and (2) suggests attachments are antithetical to place change. In this presentation, the authors argue that, in a context of increased socio-spatial precarity and change, place attachment is at risk of being misunderstood and misused. In more extreme cases, it may be weaponized against vulnerable people (e.g., NIMBYism, nationalism, displacement). To address these concerns, the speakers will present case studies of place attachments and disruption among marginalized communities in the US and Chile.

In these cases, transformations in the place have brought to light political intersections in assumptions and public discourses about place attachment. The use of the place attachment concept is observed to justify logics and practices that neglect autonomy and care, particularly applied to those more oppressed groups.

From these cases, the aim is to emphasize the need to understand place attachment through a political lens, and to acknowledge differential socio-spatial precarities in an uneven landscape of power. This presentation emphasizes the fundamental importance of including a participatory discussion of place attachment in intervention and planning processes. It also problematizes the application of place attachment, advocating for a situated and ethical-political understanding of place attachment that supports social justice.

# Understanding short and long mobilities together: Place attachment and community dynamics in a multicultural, historic and touristified Lisbon neighbourhood

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**Keywords / Relevant Terms**: migration, place attachment, touristification, walking interviews

## Abstract

In our globalized societies, mobilities are shaping everyday life. From long-term mobilities to search for better living conditions to short-term mobilities such as tourism, communities are facing change processes, and cities are being transformed. In the last years, in Southern Europe some cities have been confronted with touristification, resulting lack of housing and broken community ties, to name but some impacts for residents. Through an Environmental and Community Social Psychology perspective, this study analysed how short and long-term mobilities intertwine in the same place and how people who live there – both "traditional" and migrant residents – adjust to these complex processes of urban change. We explored place attachments to a Lisbon historical neighbourhood, Mouraria, that has been facing a touristification process. Moreover, we analysed how the consequences of touristification shaped intergroup relations in this neighbourhood, which is simultaneously considered historical, traditional, and multicultural. Through walking narrative interviews with Mouraria residents (N = 20), both "traditional" and migrants, we concluded that touristification's negative consequences were associated with a sense of common fate based on structural social injustices that, in some cases, fostered an effacing of intergroup differentiation, and in others contributed to discrimination towards migrants. Additionally, we found an essentialization of Mouraria's social life as "bairrismo" mainly made by "traditional" residents and related to a conditional acceptance of new residents in the neighbourhood. Finally, most of the interviewed migrants presented a traditional-active place attachment, both connected with Mouraria's proximity to their culture of origin and practices that envision the wellbeing of all neighbourhood community. Our findings contribute to the current debate on migrant's citizenships and the role of public policies and urban planning in fighting against touristification and with it reducing intergroup conflict and the loss of community ties and dynamics.

# Contested future of urban centers: Local strategies against touristification

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**Keywords / Relevant Terms :** Touristification, social movements, housing, gentrification, urban neighborhoods

## Abstract

There is an ongoing housing crisis in major European urban centers. The inquiry of my PhD research focuses on the resistance among activists and locals against platform-based touristic housing with an urban anthropological approach. The phenomenon of mass tourism accompanies the development of modern society. Platform-based home sharing applications opened a new front line in the field of housing since their appearance in the 2010's. In the first instance, related to urban mass tourism the distance between tourists – who used to stay in hotels and other types of official accommodations – and local residents of the city radically reduced. The apartments that were previously available on the long-term rental market for the urban population in many cases have been transferred to the short-term touristic housing market. These changes on the cultural and social fabric of certain neighborhoods caused the rise of the social movements in the field of housing. The paper summarizes the latest results of my ongoing research, which has been in progress since 2019. I analyze this social struggle thinking together with those who are involved and affected by the phenomena. In the multi-sited ethnographic case study, I would like to point out some similarities and differences between the housing movements of Barcelona and Budapest. While it is a global phenomenon the local cultural practices and peculiarities of the social context differ across cites and societies. In the analysis I compare the results of my fieldwork in two anti-eviction housing movements one operating in Barcelona and the other in Budapest. What are the characteristics of effective resistance in this specific field? How did the COVID19 pandemic affected this social drama and the members of the housing movement? The question arises along David Harvey: who has the right to the city?

# Measuring the Green Gentrification Potential of Nation's Gardens

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**Keywords / Relevant Terms**: Gentrification, greening, policies, case study

## Abstract

Today, cities have become more crowded, congested, and closed with the increasing population. The need for open green spaces in metropolitan areas is rising as a result of this circumstance. Governments have begun to create urban greening programs in response to this demand. It was announced that Nation's Garden projects will be implemented in Turkey in 2018 to eliminate the lack of green areas in cities. On the other hand, especially in the international literature, greening practices carried out in the city center and its peripheries do not raise the issue of green/ecological/environmental gentrification discussions. The outputs of these projects have started to be analyzed concerning geographical data in recent years. This study examines 12 Nation's Garden projects currently implemented, 6 in the implementation phase, and 28 in the projecting phase in Istanbul, Turkey's most populous and most invested city. Among the 12 projects implemented in the city, the gentrification potential of 4 projects that dealt with uses whose previous usage function was outside the green area (empty land, military use, mining area) was examined. The analysis examines the variations in pre-project and current rental values, housing prices, rental prices per square meter, and prices for property sales per square meter. These values, meanwhile, are insufficient to capture the dynamics of a bustling metropolis like Istanbul. For this reason, socio-economic parameters were discussed. At this point, correlation and regression analyses were conducted based on socio-economic parameters. Two out of the four Nation's Gardens showed signs of gentrification potential, according to the study's preliminary findings. Although this study is one of the leading academic studies in the field of green gentrification in Turkey, it also forms a basis for measuring the greening policy implemented in the country.

# Identifying the impact factors of internet celebrity green spaces and their relationship with climate gentrification in central Shanghai

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**Keywords / Relevant Terms**: Internet celebrity Green Space, Climate Gentrification, Social Media, Spatial Econometric Model, Hedonic Pricing Model

## Abstract

"Internet Celebrity Green Spaces" refers to city parks popular on social media. Some parks may draw attention and visitors online due to exceptional environments, generating a socio- cultural clustering effect leading to property value rise and original resident displacement, known as climate gentrification. Few existing studies have quantified the correlation between social media activity on green spaces and climate gentrification. This study uses Sina Weibo check-in data to measure the green space popularity in Central Shanghai and explores the relationship between this popularity and the level of housing prices, which is closely related to gentrification. Methodically, the study adopts a variety of spatial econometric model to comparatively analyze the correlation between the internet celebrity of green spaces and various influencing factors. It also use the hedonic pricing model to examines the relationship between housing prices and factors including the level of green space popularity. The findings indicate a positive correlation between the quantity of Weibo check-ins at a green space and factors such as the park's area, the number of nearby parking lots, and the average local housing price. This suggests that larger, convenient, and higher-priced areas are more popular. Furthermore, the hedonic pricing model shows a positive correlation within 0-200 m from the property between housing prices, and the form of the green space, and the proportion of water bodies. Larger green spaces with higher Weibo activity might relate to higher property prices, but a higher proportion of water bodies might not corresponds to price rise. In conclusion, the popularity of green spaces relates to the levels of climate gentrification shown in housing prices. By analyzing the relationship of them, we can track gentrification levels, assess the associated risks, uncover current urbanization issues in Shanghai, and scientifically aid in government policy formulation and urban renewal planning.

# Nested realities - a Finnish suburb on a discussion forum (2000–2018)

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**Keywords / Relevant Terms**: suburban housing estate, neighbourhood reputation, stigma, identity, social media

## Abstract

In the western societies, suburban housing estates often bear questionable neighbourhood reputations, causing concern for residents, politicians, and urban planners. Once a hopeful answer to a severe housing shortage in post-war Europe and a prominent attempt to improve the living conditions of the masses, these estates have, over time, faced criticism for being architecturally and functionally monotonous and concentrations of social problems. Recently, many suburban housing estates in Finland have undergone extensive rehabilitation measures aiming to refresh the built environment and ameliorate the socio-economic structure. However, the implementation of these facelifts risks altering their authentic identity, which may not align with the reputation. A neighbourhood reputation evolves in a complex public discourse rooted in socio-economical, material, and historical context of the area. The position in the urban hierarchy, the building period, quality, and access to amenities, among others, have influence on it. Additionally, individual events and rumours can have a lasting impact on the reputation. Consequently, a neighbourhood reputation often reflects commonly held beliefs more than objective reality and can vary significantly from the residents' actual experiences. Research indicates that the negative reputations of suburban housing estates in Finland are predominantly propagated by print media, with academic research playing a notable role, while residents' voices have been pushed to secondary platforms. This proposal focuses on Kontula, a notorious neighbourhood in eastern part of Helsinki. Utilising an extensive data set derived from an online discussion platform Suomi24, the image transmitted on the platform is analysed and compared with Kontula's renowned reputation. The qualitative study is complemented by a literature review. The novelty of this study is that it brings secondary platforms, like social media, into focus. Unlike studies on public discussion about suburban housing estates, social media's role in shaping their reputations has not yet been the subject of considerable research.

# Gender in a space economy: Assessing fear as a navigation lens for adolescent girls in dispossessed communities

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**Keywords / Relevant Terms**: children-environment, neoliberalism, dispossession, public space, gender

## Abstract

Spatial dispossession that drives income segregation, especially in the highly speculative environments of competitive global cities such as Hyderabad, India and Manila, Philippines, is an increasingly common phenomenon referred to as “neoliberal dispossession.” Some scholars promote neoliberal dispossession by emphasizing the possibility of trickle-down economics while others call for transdisciplinary research to understand the emotional, experiential, and cognitive effects—especially for under-recognized groups of people (Cline 2005, Salemink and Rasmussen 2016). The perspective of teenage girls is central to questioning and re-negotiating the spatialities of dispossessed communities because their transition from the freedoms of childhood to the gendered social expectations of adulthood starkly reveal otherwise invisible boundaries that shape, define, and exclude. This presentation connects girls’ description of “fear” as the primary navigation tool regulating their spatial mobility with contemporary feminist theory to evaluate the role of fear in girls’ emotional experiences of their communities. This work extends previous findings on children’s experiences by shifting the framework toward gender in a space economy (Bishop 2022, Loebach 2019, Kreutz 2016). Drawing from an empirical, five-year, transnational (India and Philippines) study with teenage girls (n=25) living in dispossessed communities, this presentation proposes engaging scholars on a theoretical reflection of the data, connecting key findings about fear and gender to the larger ecological issues of social sustainability. The original mixed-method study used photo-voice, participant-directed mapping, interviews, and spatial analysis. Rigorous coding of data resulted in 16 distinct and transferrable fears that shape girls’ perceptions of and mobility through the built environment. For example, girls’ fear of unregulated “nature” meant that communities dispossessed into undeveloped areas, such as low-cost agricultural fields, were perceived as if the community was surrounded by a “wall” restricting movement but further, they described the emotional weight of the surroundings as a persistent discomfort of scary imagined possibilities.

# Identifying and Defining Spiritual Meanings and Qualities of Today's Third Places

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**Keywords / Relevant Terms**: Third Place, Spiritual Qualities, Instrumental Features, Coffee Shop

## Abstract

The evolving human-environment relationship within private, semi-public, and public spaces have changed over the decades, linked to a variety of reasons, such as space affordances, daily needs of users, and most recently, the growth of digital technology use and the Covid-19 pandemic. The impacts of these two phenomena were especially evident within Third Places, which have been previously used primarily for leisure and recreation. We build upon existing theoretical delineations between instrumental and spiritual space features and uses. The spiritual view of environments extends beyond religious or sacred meanings and encompasses other intangible dimensions, such as maximizing positive affective, aesthetic, and cultural meanings. Spiritual and instrumental meanings are placed on a spectrum in order to address the complex nature of human-human and human-environment. We ground the theoretical discussion of varying space needs in the results of a qualitative study, extending the limited body of literature and proposing spiritual qualities of environments that may have gained prominence with the increased use of personal digital devices. Open and thematic coding of interviews with coffee shop patrons (n=20) revealed that individuals sought out semi-public and public spaces for instrumental purposes (e.g., ordering a drink), and also for their spiritual qualities (e.g., sociability and pleasant ambiance), even in instances when they were not using the space as a Third Place, such as pursuing solitary work tasks. Spiritual meanings within coffee shops are linked to customers' past, present, and desired future identities, as well as a variety of spiritual qualities that users attribute to public social spaces. These identified features and qualities are connected to needs and values that users may be explicitly and implicitly seeking, such as increasing one's sense of belonging. Finally, we discuss what these instrumental and spiritual aspects of space may mean for our developing understanding of modern Third Places.

# What lessons can psychology draw from sociology ? Proposal to adopt a socio-structural perspective on the relationship between individuals and geographical space

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**Keywords / Relevant Terms**: Psychology, Sociology, Spatial theory, Epistemology.

## Abstract

Social and environmental psychology currently lacks a scientific model that centers on geographical space and its structure as the focal point of study. This deficiency becomes evident when examining the dominant models used to comprehend the relationship between individuals and geographic space in the discipline. Psychology often treats space merely as an object to which individuals are exposed, neglecting its examination as a social product shaped by intergroup dynamics. In this sense, the discipline lacks a comprehensive spatial theory. Consequently, psychology tends to overlook the social dimension of the link between the individual and space, often approaching this relationship in dualistic terms—distinguishing between an external (environment/milieu/space) and an internal (individual) perspective.Our proposal suggests integrating several theoretical contributions from the social sciences, particularly sociology, into the field of psychology. All these contributions emphasize the social construction and organization of space. Given these perspectives, our proposal is to modify the traditional hermeneutic-phenomenological approach in psychology, with a specific focus on contextualizing this relationship within the structural and material dimensions of space production.Firstly, we will take into account the morphological approach. Maurice Halbwachs (1950) explores the link between material space and social structures, highlighting space as a structuring "framework" for societies shaped by varying social memories and representations among different groups. Secondly, in a post-Marxist approach, Henri Lefebvre (1974) regards space as a social product, scrutinizing its mechanisms of production and appropriation. It emphasizes that space is neither "natural" nor "neutral," as its form reflects the social hierarchies and hegemony of dominant classes influencing its conception. Thirdly, structural-constructivism (Bourdieu, 1993; Löw, 2015), and urban sociology, in a broader sense, demonstrate that space is not only socially constructed but also animated by the conflicting actions of individual and groups.

# Meaning Of Aging In Place To Older Korean Immigrants

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**Keywords / Relevant Terms**: Aging in Place, Older adults, Place Attachment

## Abstract

Globally, aging in place — the concept of growing old in a familiar environment independently and safely — is preferred by most people. Research indicates that aging in place yields better physical, psychological, and cognitive outcomes for the elderly. However, this trend contrasts with the experiences of older immigrants, particularly in the United States. The older immigrant population, notably from Korea, is rapidly increasing in the U.S., with older Korean immigrants forming a significant but underserved group. This qualitative research aims to understand the unique challenges faced by older Korean immigrants in aging in place. The study involved 15 older Korean immigrants living in the U.S. Through phone interviews lasting 30-40 minutes, participants provided demographic information and discussed their experiences and perceptions of aging in place, including their strategies for doing so. The research revealed that these individuals face numerous challenges, such as financial strain, language barriers, discrimination, cultural differences, and social isolation. These issues often limit their access to essential resources, making them heavily reliant on informal care and support from family. Many participants expressed growing fears and uncertainty about their future, with some showing a reduced desire to age in place due to the difficulties in adapting to an unfamiliar environment and forming a deep connection with their new community. This study highlights the need for better understanding and support for the unique experiences of elderly immigrants, especially in promoting successful aging in place. The findings emphasize the importance of considering cultural diversity when devising strategies for aging in place, and contribute significantly to social justice in aging by focusing on underserved immigrant groups with limited resources.

# Meanings of Aging in the Right Place for Housing Insecure Older Adults in Temporary Housing

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**Keywords / Relevant Terms**: Aging in the Right Place, older adults with experience of homelessness, housing precarity, temporary housing, transitional housing

## Abstract

The concept of aging in place (AIP) is widely acknowledged as the preference of older adults. However, AIP without consideration of the intersections of diversity in later life is critiqued as lacking an equity lens. To address this gap, we examined the meaning of AIRP to older adults (aged 55+ years) who have experienced homelessness, building on existing research. We conducted photovoice interviews with 11 residents of a temporary housing program in Metro Vancouver (Canada). Using thematic analysis, we investigated the meanings of AIRP based on 1) How one feels, 2) What one does, and 3) Where one lives. The theoretical framework of AIRP underpinning our analysis considers place attachment, the stability and affordability of place, the built environment, support services, social integration, and broader political and economic contexts. Our study expands the discourse on place attachment by contextualizing the significance of AIRP within the complex intersections of space, identity, and equity. Findings demonstrate that meanings of AIRP follow a similar pattern as Maslow's Hierarchy of Needs. That is, when basic needs of shelter are met, participants' considerations of the 'right' place to live extends beyond affordable housing to include having access to meaningful activities – both in vibrant urban districts and nature-scapes – enabled by affordable transportation. This consideration includes higher-order factors such as opportunities for meaningful engagement and looking forward to a stable life, being at peace, feeling safe and comfortable in one's home and neighborhood. Our examination of what AIRP means to this group of older adults broadens current conceptualizations. Given the increase of older adults who are homeless in North America, it is imperative that policymakers and practitioners be cognizant of meanings of AIRP to enable diverse groups of older adults to thrive in housing that is more than a shelter.

# Place Attachment of Visually Impaired People Compared with That of Sighted People: Where how and why it differs?

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**Keywords / Relevant Terms**: place attachment, visually impaired people, public facilities, architectural planning

## Abstract

Place attachment is accepted as one of the important concepts for community design (ex. Hester, 2014). Today, in order to apply a concept to design, the concept needs to be inclusive. And differences in people's perception and/or experience in environments may affect people's place attachment. In Japan, there live 310,000 people with visual impairments, and the number increased in these 50 years (Ministry of Health Labour and Welfare, 2016). The trend of increase is similar in the world (Bourne et al. 2017). On the other hand, there has scarcely been research of place attachment to public environments in community focusing on people with visual impairments. In this study, we excluded the residential places and conducted a questionnaire survey in which 104 people with visual impairments and 65 sighted people are asked where each of them thinks is the place he/she recalls as most attached. The results show that, while schools and natural environments, like parks and river shores, are commonly recalled as most attached places by both groups, shops and restaurants are recalled significantly more by visually impaired people ($p<.05$), and cultural facilities like libraries and museums are recalled significantly less ($p<.05$). The degree of favor to the most attached place tends to be higher in visually impaired group ($p<.1$), but the difference between the two groups is not shown with other indices of the place attachment except for the importance of the time spent there doing what they like doing there ($p<.01$). In this study, we discuss that lack of vision does not necessarily mean lack of place attachment, but probably cause different experiences of public facilities and attachment to different public places in a community.

# Unveiling the Social Meanings of a Place from a Postcolonial Perspective: The Case of Latin American Students in Europe

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**Keywords / Relevant Terms:** Attachment to Place, Postcolonialism, Life Stories,Education, Europe

## Abstract

The concept of place attachment has been extensively theorized, diversifying and expanding this research field in recent years. However, there has been a lack of articulation of the phenomenon with postcolonial, decolonial, or counter-colonial perspectives. According to this, incorporating place attachment from these critical approaches would contribute to the political problematization of places. This study aimed to unveil the discursive practices that motivate transnational mobility to Europe. In other words, we focused on place attachment as a discursive practice and its connection to the perpetuation of certain dominant models. The methodology of this research consisted of four meetings between the authors (as participating subjects), during which interviews were conducted to create life stories for each one. Qualitative data were collected about the participants, highlighting that both come from Latin American countries and moved to Europe for their studies. On the one hand, the results demonstrate how the "Dream of Studying in Europe" has been configured as a discursive practice constructed in subalternized places. On the other hand, the researchers were able to problematize this discursive practice by contrasting it with the in situ experience. Additionally, we highlight how Academia continues to be a colonial space where power and domination practices materialize around knowledge production. This research confirmed colonial elements that have permeated the idealization of studying in Europe, which is relevant to discuss due to its impact on individuals' educational and life trajectories. Finally, this proposal invites us to make other possible horizons and discourses about university studies visible to revalue other spaces and forms of knowledge generation.

# Compliance with stay at home coping instructions during COVID-19: The role of home place attachment and psychological need satisfaction

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**Keywords / Relevant Terms**: place attachment, self-determination theory, covid-19, environmental risk, psychological needs

## Abstract

Numerous studies investigated the compliance with COVID-19 related coping behaviors. However, the majority of approaches considered individual variables, while neglecting the importance of person-place relationships. To fill this gap, two studies have been conducted to understand the role and antecedents of stay at home behavior during COVID-19 lockdowns. A first study (N=794), conducted in 2020 in Italy, combines variables from the Theory of Planned Behavior (TPB) and risk perception with Home place attachment and Past stay at home experience to explain people's decisions to stay at home during the COVID-19 lockdown. A structural equation model found that the predicted model has a good fit and all variables are found to significantly predict stay at home behavior, except for descriptive norms and risk perception. Place attachment and Past stay at home experience are found to positively predict stay at home behavior. A second study conducted in 2021 replicated the same results while highlighting the role of basic psychological need satisfaction as antecedents of home place attachment. Results are discussed for their theoretical and applied implications, i.e., focusing on the role of basic psychological needs for the development of place attachment and focusing on how to foster behavioral coping during future pandemics as well as in the face of other environmental risks, but also for the daily life implications.

# Shaping Experiences in Care Homes in Wales: An Interior Design Perspective on Social Areas

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## Abstract

This ongoing research delves into the transformative potential of interior design within care homes in Wales, with a particular focus on its impact on residents' social experiences. Presented through the unique lens of an interior designer, the study closely examines the diverse care home sector in Wales to understand residents' varied needs in social areas. Moreover, the presentation will be highlighting a carefully chosen episode, complemented by architectural drawings and photograph analyses of care home environments. This visual component aims to offer a comprehensive illustration of identified design elements and their influence on residents' social experiences, enhancing the depth of the scoping analysis. The investigation underscores the intricate relationship between interior design and the well- being of older individuals, emphasizing meaningful engagement in social activities as a crucial deterrent against loneliness. In care homes, where residents often contend with conditions like dementia, communication challenges heighten the risk of overlooking their health and social care rights. Furthermore, the study addresses a notable gap in existing literature by emphasizing the need for a nuanced understanding of the social activity patterns of the aging population within care home environments. By analyzing the material environment of care homes in Wales, the research seeks to unravel the complex relationship between design elements and social activity patterns. Its ultimate goal is to inform interior designers about the diverse requirements of care home residents, contributing to the creation of spaces that prioritize physical, mental, and social well-being. Through this holistic lens, the research aspires to enrich the lives of older individuals in this critical sector, advocating for a more comprehensive approach to their care and living experiences.

# The Overlap Between Home and Office: The Antecedents of Workplace Attachment in Remote Working

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**Keywords / Relevant Terms**: remote working; place attachment; basic needs; workplace

## Abstract

The Covid-19 pandemic has transformed remote work into a fundamental aspect of the employment landscape, prompting numerous companies to adopt this work format or a hybrid model. As of 2022, approximately 3.6 million individuals in Italy engage in remote work, with over half associated with large companies. The advent of remote working has blurred the boundaries between home and work environments, often requiring individuals to adapt personal spaces into functional remote offices. This research explores how the environmental comfort of the home, repurposed as a workplace, contributes to fostering a sense of place attachment by addressing autonomy, competence, and relatedness needs, as outlined by the Self-Determination Theory (SDT). Correlational Study 1 involved 307 Italian remote workers, testing a mediation model with Perceived Remote Workplace Environment Quality Indicators (PRWEQIs) as the independent variable, place-related needs as mediators, and remote workplace attachment as the dependent variable. Results confirmed that environmental comfort, through fulfilling these needs, facilitates the development of attachment to the remote workplace. To validate these findings, Study 2 utilized a single-factor between-subject experimental design. Manipulating environmental comfort levels (high vs. low) through two scenarios, the study measured place-related needs and remote workplace attachment. The ANOVA and mediation model, tested on 311 participants, substantiated the results of Study 1. Amid the evolving work landscape, the research underscores the importance of Indoor Environmental Quality (IEQ) and a dedicated home physical-spatial environment for remote work. An appropriate remote work setting empowers individuals to feel autonomous and competent, fostering a sense of connection with others despite physical isolation. Through the satisfaction of needs, an emotional attachment to the workspace is cultivated.

# Cross-sector Collaboration to Reduce Spatial Segregation: Organizational Practices in a Swedish Urban Development Project

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**Keywords / Relevant Terms**: Spatial segregation, Urban planning, Collaboration, Organizational inertia

## Abstract

In times of numerous complex societal challenges, urban planning professionals face mounting pressure to collaborate and integrate knowledge across diverse fields and sectors. In Sweden, the municipality is the local authority responsible for urban planning and one of the major challenges that the urban planning practice is expected to approach is the increasing spatial segregation. Research suggests that decreasing spatial segregation necessitates cross- sector collaboration. This study examines an urban development project in a mid-sized Swedish municipality explicitly aiming to reduce segregation. The policy decision for the project emphasises sustainable development and underscores the importance of establishing a cross-sectoral organization to achieve this. Through a three-year interactive case study within the urban planning department overseeing the development project, I explore how organizational dilemmas associated with cross-sectoral work intersect with conceptual dilemmas linked to spatial segregation. Empirical data includes field notes, semi-structured interviews, and qualitative document studies. The analysis of the attempt to create a horizontal project organization as a strategy to address cross-sectoral challenges within the bureaucratic hierarchy reveals practical implications. I argue that organizational inertia may contribute to the reproduction of spatial segregation, and also to the discontinuation of the urban development project in this specific case.

# Effects of the renovation and reuse of old houses on the value of the surrounding landscape

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**Keywords / Relevant Terms**: Old houses, Adaptive reuse, Landscape value, Urban landscape

## Abstract

Old house renovation has received considerable attention as an urban renewal strategy for contemporary urban development schemes. However, the effect of this strategy on the value of the landscape surrounding renovated old houses requires further exploration. Therefore, this study adopted a two-stage research design to explore how the renovation of old houses in Chiayi City, Taiwan, affected the value of their surrounding landscape. In the first stage, a literature review and qualitative interviews were performed to identify relevant influential dimensions. Specifically, we conducted in-depth interviews with 18 owners of old houses, examined their views on old house preservation, and investigated the effect of these houses on people's connection to the local culture. The interview data were analyzed using ATLAS.ti to identify several dimensions, namely historical and cultural value, urban aesthetic value, social value, and sustainable value. In the second stage, the results obtained and dimensions identified in the first stage were used to create a questionnaire, copies of which were distributed to 300 tourists and 300 local residents. The results of the questionnaire survey revealed that the local residents had a dilemmatic view regarding how shops in renovated old houses affected the surrounding environment. Specifically, they recognized the positive effect of these shops but were concerned about the negative impact of the commercialization (i.e., gentrification) of local streets on their quality of life. By contrast, the tourists only noted the positive effect of the aforementioned shops on the surrounding environment. They asserted that the historical, cultural, and aesthetic value of these shops diversify the cultural experiences of the urban environment and create economic benefits for the local community. Overall, these findings highlight the importance of old house renovation to the historical and cultural value of urban areas and provide crucial references for the implementation of relevant projects and policy decisions.

# Empowering Old Towns: Quantitative Strategies for the Renewal of Gezhouba District in Yichang City

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**Keywords / Relevant Terms:** Urban Renewal, Multi-Source Data Analysis, Redevelopment Potential Assessment, Urban Transformation, Urban Economic Value

## Abstract

The evolution of urban space increasingly emphasizes the need for intensive efficiency and quality pursuit. Enhancing urban economic value is a key factor for transformational development. Therefore, land suitability evaluation plays a key role in land resource utilization and renewal project planning. How to accurately investigate the existing problems and propose targeted strategies is the key work in the preliminary stage of urban renewal, which is also the research topic of this paper. This study focuses on the practical challenges facing the Gezhouba district in Yichang City, including aging environments, homogenized industrial structures, and population loss. In response, this study proposes a targeted strategy for the revitalization of the Gezhouba district: Initially, this study utilizes multi-source data (e.g., LBS and POI) along with spatial analysis tools (e.g., sDNA) to comprehensively assess the vitality, industrial functions, and spatial characteristics of Gezhouba district, which seeks to accurately identify the core problems, especially in understanding the urban spatial characteristics of the riverside mountainous area. Second, a value assessment system is constructed by analyzing real estate and tourism data and combining them with urban multidimensional analysis, aiming to identify key areas in the old urban area with potential for renovation and regeneration; lastly, by quantitatively analyzing the basic spatial dimensions of globally renowned waterfront old towns, the study synthesizes common features of urban form and support services, developing a specific strategy for empowering waterfront and mountainous urban areas. To summarize, this study is based on the preliminary stage of urban renewal and transformation, quantitative analysis tools to identify urban problems, explore values, and formulate empowerment strategies, which provides a new perspective for activating the Gezhouba old town area, thereby constructing a new framework for urban spatial renewal. It also helps to provide certain valuable insights for the transformation of old districts in similar contexts.

# Power Asymmetries and Alluvial Risk in Informal Settlements of the Atacama Desert, Chile

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**Keywords / Relevant Terms**: Place Attachment; Gender; Migration; Informal Settlements; Alluvial Risk

## Abstract

Informal settlements in Chile have increased, locating themselves in hazardous and contaminated territories, complicating their precariousness. To build prospective paths that allow reducing the risk of disaster, an understanding conditioned by factors influencing how the community experiences the territory and risk, and how the State proposes alternative habitation options, is necessary. Recent mudslides in the Atacama Region have confirmed their danger, contributing to the construction of the disaster risk in a context of high exposure, vulnerability, and climatic emergency. The main informal settlements located in the high parts of the city of Copiapó are studied, evaluating risk, listening to the community, and proposing alternatives that allow inhabiting dignified and secure territories. Alluvial risk scenarios are modeled. Attachment to the place and the perception of risk are evaluated through surveys, interviews, and group strategies. Based on the above, in an integrated process, mitigation measures are proposed, evaluating them through modeling and community participation. The modeled hazard scenarios reveal medium danger. Levels of vulnerability and exposure are high. The perception of risk is significant, especially in the migrant population. The gender and ethnic-racial dimension of attachment to the place are problematized, identifying power asymmetries that characterize their inhabiting. The community's request that structural measures be multipurpose, adapting their characteristics to the uses and needs of social spaces is emphasized. It is concluded that informal settlements located in areas of alluvial danger are a growing challenge that strains inhabiting secure territories. From the community perspective, the understanding of risk is tense due to precariousness, the non-occurrence of recent major events, and the lack of guarantees from the State that would allow them to believe in fair relocations. The responsibility and challenges of the State in responding promptly to ensure the right to dignified housing for populations inhabiting precarious settlements under risk are highlighted.

# In and out-of-place: Diverse experiences of perceived exclusion in UK greenspace settings

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**Keywords / Relevant Terms**: inclusivity, discrimination, greenspace, prejudice, nature, health and wellbeing

## Abstract

Drawing on Bourdieusian theories of practice, this study illuminates how social and cultural capital, habitus, and symbolic violence shape exclusionary practices and discriminatory processes, contributing to feelings of otherness and discomfort among UK ethnic minority group members in green spaces. Despite the gravity of the issue, research on perceived exclusion and the experiences of ethnic minority groups remains limited. This study aims to address this through an in-depth qualitative study exploring how 53 individuals from UK ethnic minority backgrounds residing in Bristol perceive and experience exclusion in UK greenspaces. Going beyond narratives that pathologize the exclusion of ethnic minority from green spaces, this research reveals a spectrum of experiences related to perceived exclusion, including both positive and negative, and challenges and expressions of empowerment and agency. By emphasizing the diverse nature of these processes and their variations across social and geographic contexts, this study offers insights for future research and policy formulation. It advocates for recognising this diversity and underscores the importance of integrating theories of practice into initiatives promoting nature engagement, inclusivity and addressing perceived exclusion.

# Collective (in)action in social disadvantaged neighborhoods: Identification with the neighborhood, collective efficacy and the influence of perceived risk of crime

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**Keywords / Relevant Terms**: low socioeconomic status, neighborhood identification, perceived risk of crime, collective efficacy, collective action

## Abstract

Citizen engagement is vital to build and sustain secure, positive living environments, especially in socioeconomically disadvantaged neighborhoods where residents' mental health and well- being is at risk (van Ham et al., 2013). However, lower socioeconomic groups are often perceived as less active in addressing social disadvantages (Becker et al., 2017; Sampson & Wikstrom, 2008). According to socio-psychological models, collective action hinges on social identification, perceived injustice, and group efficacy beliefs (Van Zomeren et al., 2008). Importantly, research in other domains suggests that fear hinders collective action (Miller et al, 2009). This study aims to further understand the reasons why low socioeconomic status (SES) individuals refrain from involving themselves in actions to improve their neighborhood. Specifically, it investigates whether social identification has an indirect effect on collective action through perceived injustice and collective efficacy, and whether perceived risk of crime moderates the relationship between perceived injustice, collective efficacy and collective action. Using a paradigm in which participants were prompted to envision themselves living in a hypothetical society (Jetten et al., 2015), sixty-five individuals (40% male, M(age) = 24.32, SD(age) = 7.44) were experimentally primed as low SES individuals living in disadvantaged neigborhoods. Subsequently, participants were randomly assigned to two conditions to manipulate perceptions of risk of crime: exposure to either neutral images or violent images (Lang et al., 2008). A moderated mediation model was developed (Model 14, Process Macro). Results showed a positive relationship between neighborhood social identification and collective action through collective efficacy, but only at low levels of perceived risk of crime. Higher perceived risk showed to diminish the positive impact of collective efficacy beliefs on collective action. Findings highlight the importance of prioritizing interventions to enhance the perceived safety of neighborhoods and directly addressing safety concerns. Such initiatives are critical for  Department of Landscape Architecture, National Chiayi University.

# Attachment to Place and Governmentality: A Critical Approach

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**Keywords / Relevant Terms:** Governmentality, Subjectivation, Place Attachment, Discursive practices, Foucault

## Abstract

Place attachment was first defined in the 1970s, which opened a wide and diverse branch of research, currently even articulated with Deleuze and Guattari's rhizomatic proposal. However, despite this diversification, there is little research on the phenomenon from a critical approach. Consequently, through this novel proposal, I intend to articulate place attachment with the Foucauldian perspective for the first time. To justify and support this initiative, I will illustrate how, through governmentality and its discursive practices, the population of the city of Arica was subjectivized in order to consolidate this territory for the country of Chile. This research originates from my doctoral research plan. I began by investigating the genealogy of the city of Arica, specifically from the time it began to be governed by Chile after the War of the Pacific. This allowed me to gather a broad historical bibliography on the various strategies developed to manage the population. Subsequently, I problematized, as central elements, the discursive practices used during that period to subjectivize the population in this northernmost region. Indeed, I turned to Foucauldian archaeology to question the dominant discourses. Through this developed Foucauldian analysis, I unveiled how the State and the Chilean oligarchy managed various media to promote place attachment in northern Chile. This encouraged identity polarization: “Modernity Chilean" - "Other," impacting subjectivation and discursive practices up to the present. This study articulates place attachment as a discursive practice and the Foucauldian perspective, allowing the opening of new research lines from different critical frameworks. This, in turn, grounds the construction of future works that promote social transformation by questioning the dominant power systems in various localities and contexts.

# A Study of the Current Application of Ethnobotany in Northern Paiwan

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**Keywords / Relevant Terms**: Ethnobotany, Aboriginal, Paiwan, North Paiwan

## Abstract

Ethnobotany has always been highly valued internationally, representing the unique plant culture formed through the long-term coexistence of indigenous peoples with their natural environment and embodying the wisdom of various ethnic groups. However, social changes have led to the gradual forgetting of indigenous cultural wisdom, intensified by frequent interactions. Factors such as the outflow of tribal youth or natural disasters forcing community relocation, disrupting their traditional way of life, contribute to the forgetting or replacement of plant applications, resulting in the gradual loss of indigenous culture and the depletion of traditional knowledge. This research aims to systematically compile the plant utilization methods of the North Paiwan tribe through the collection of existing literature and data. Plants are categorized into eight major groups, including edible, tools, hunting, construction materials, medicinal, ceremonial, toys, and firewood. Through qualitative interviews, the study plans to gain in-depth insights from tribal elders regarding the usage methods of important plants associated with tribal culture, systematically documented through text and images. Due to external factors such as foreign religions, the usage of ceremonial plants is severely impacted, highlighting the urgent need for preservation. As a result, the research aims to establish the North Paiwan Ethnic Plant Database, providing robust support for future education and cultural preservation in ethnobotany. Simultaneously, through detailed records of ceremonial plant usage, the study addresses gaps in traditional knowledge, safeguarding substantive contributions to the cultural heritage of indigenous plant use. This research not only contributes to a deeper understanding of ethnobotany in academic circles but also offers practical solutions for safeguarding and passing down these valuable cultural assets.

# Creating and validating a place attachment scale integrating cognitive, affective, and behavioral processes

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**Keywords / Relevant Terms**: Place attachment scale

## Abstract

Background. Several scales to measure place attachment (PA) have been proposed, but a lack of consensus about the theoretical nature of PA creates ambiguity about how best to measure it. In response to this critique, we propose a measure of PA based on the conceptual model proposed by Scannell and Gifford, specifically focusing on the cognitive, affective, and behavioral processes involved in PA. Method. Aiming for a scale of 15 items (in French) distributed across three psychological dimensions, we follow the methodological framework of Boateng et al. for the development and validation of a measurement scale. Previous work resulted in the development of thirty items that were improved through a process of cognitive interviewing. These items will be administered online to 300 participants (between January 24 and April 24) and analyzed using factor analysis. Exploratory factor analysis provides information about the scale's internal structure and allow for the selection of items for the final version of the scale. Results. The results of exploratory factor analyses will be presented. Regardless of the outcome of the exploratory analyses, it will be a good opportunity to discuss the theoretical components of PA and how to measure it. Discussion. This work contributes to the literature on PA by providing a measure based on a solid theoretical foundation, filling a significant gap in this research domain. To our knowledge, it is also the first attempt to integrate a behavioral dimension to the measurement of PA. The study also contributes to the literature in environmental psychology by illustrating the application of a rigorous methodological framework for scale development.

# Exploring Photography's Shaping of Urban Emotions and Contemporary Changes: The Case of Commemorative Events in Tainan 100 Years Apart

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**Keywords / Relevant Terms**: Place Attachment, Place Identity, Image Media, Urban Photography, Tainan

## Abstract

This study explores how place attachment to urban spaces is influenced by imagery and how it has evolved with advancements in imaging technologies. It underscores how photography separates emotions and memories from real spaces, shaping a collective urban imagination through photographers' preferences and viewers' interpretations. The study notes the increased prevalence of image media in everyday life and its impact on contemporary place attachment, which differ significantly from those in the past. It focuses on Tainan City, which has a rich history and culture in Taiwan. During the period from 1895 to 1945, Taiwan was under Japanese rule. The methodology involves literature comparison and image analysis. The steps include collecting early images from the 1930 Japanese colonial government's Tainan 300-year commemoration, compiling promotional images from the 2024 Tainan 400-year event on social media, and analyzing differences in place attachment between these periods through data and image comparisons. This study found that with the widespread use of photography, place attachment constructed through images becomes more diverse and fragmented. Additionally, in interpreting urban spaces, early colonizers used photography to assert authority, while contemporary governments adopt a more approachable image. These differing image presentations contribute to a transformation in the nature of place identity. It also notes a significant increase in contemporary place identity construction through image media, alongside real-space interactions. The study points out that the control over urban sentiments through images is no longer limited to governments, as personal media now plays a more influential role. In the past, limited technology meant photography was controlled by a minority in society, conveying specific information about urban areas. Now, advances in media technology enable the public to express local consciousness through images. However, the study recognizes that diverse personal media may result in the loss of regional characteristics and weaker emotional attachments.

# Cultural Influences on Lighting Preferences in Hotel Guestrooms: A VR-Based Empirical Study

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**Keywords / Relevant Terms**: Lighting Preference, Hotel Guestrooms, VR, Cultural preference, Design Globalization

## Abstract

This study investigates the influence of cultural background on lighting preferences in hotel guestrooms, using Virtual Reality (VR) technology. It aims to understand how different cultural backgrounds affect consumers' preferences for hotel room lighting. The research employed a quasi-experimental design using VR simulations to create a virtual hotel guestroom environment. The VR simulations provided four different lighting designs according to color temperature (Warm/Cool) and intensity (Bright/Dim). Participants from three different cultural backgrounds were exposed to various lighting scenarios with different intensities and color temperatures. The sample consisted of 126 participants, with 45 (35.7%) from South Korea, 44 (34.9%) from the United States, and 37 (29.4%) from Iran. Their preferences, emotional responses (pleasure and arousal), and reasons for preference were analyzed. A majority of participants preferred the warm and dim lighting condition of the hotel guestroom. Participants from Iran generally reported higher levels of positive emotions associated with pleasure and arousal in their preferred lighting conditions compared to those from the U.S. and South Korea. Notably, the cool and bright lighting was the least preferred across all groups. Gender-based differences were also observed; however, the warm and dim lighting remained the most preferred condition across genders. The emotional responses to lighting conditions were significantly different in the preferred and least preferred VR settings, indicating a strong correlation between lighting preferences and emotional states. These results have significant implications for hotel design and management, highlighting the need for culturally sensitive lighting design. The research contributes to understanding the psychological impact of lighting on hotel guests and provides data-driven insights for enhancing guest experiences through tailored environmental design. This study's originality lies in its use of VR technology to assess lighting preferences in a controlled, immersive environment, providing novel insights into the cultural nuances of design preferences.

# Personal territory recognition of older adults and its relationship with spatial visibility characteristics based on big data extracted from video in nursing homes

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**Keywords / Relevant Terms**: personal territory, surveillance video, Isovist, nursing home, logistic regression

## Abstract

With the global aging population on the rise, the demand for eldercare facilities has increased significantly. Establishing a conducive personal space for the elderly within nursing homes is considered paramount for improving their overall quality of life. Although some studies have explored the personal spaces and territories of institutionalized elderly individuals, many rely on conventional research methods such as snapshots for extensive data collection, often with limited exploration in terms of spatial configuration. Therefore, this study addresses this gap by employing deep learning techniques to recognize personal territories of older adults through the analysis of surveillance videos within a public space of nursing home in Beijing, China, which intends to investigate the relationship between personal territories and spatial visibility characteristics using Isovist analysis. The methodology involves extracting spatiotemporal behavioral data from surveillance videos, evaluating visual accessibility through Isovist analysis methods, and utilizing logistic regression to quantify the impact of various spatial visibility characteristics on the formation of personal territories. Predictive models are generated based on regression results, evaluating optimization strategies for the case building public space from a visual domain perspective. The research findings indicate that spatial visibility characteristics influencing personal territories in public space of nursing homes encompass three aspects: compactness, occlusivity and dispersion, which impact the formation of personal territories varies in strength, ranging from strong to weak. This suggests that personal territories tend to manifest in areas characterized by relatively open and complete visibility, coupled with increased spatial privacy. This study represents the inaugural effort to use video data to understand the individual behavioral patterns of older adults in connection with the spatial configuration of nursing homes in China by using quantitative analysis methods, offering valuable insights for the design optimization of eldercare facilities.

# Between Crowding and Social Life: Bridging Perspectives on the Impacts of Presence of Others in Public and Leisure Spaces

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**Keywords / Relevant Terms**: Presence of people, crowding, social impact, restorative environment, privacy

## Abstract

The presence of people in urban and natural settings has complex, context-dependent impacts on human functioning, well-being, and sense of place. However, disciplines like urban design, outdoor recreation, and tourism management often narrowly focus on either the benefits or drawbacks of others' presence, such as crowding and social life. While these narratives may hold the most salient effects in a given context, the lack of crosstalk can constrain assimilating conflicting concepts needed, particularly social psychology theories, to explain the complexity. This critical review bridges perspectives across disciplines to provide an integrated view for determining when and how the presence of others improves or impedes positive person-environment transactions. The presentation will focus on several key theoretical takeaways: 1) Social learning, cognitive mechanisms of shared experience, and symbolic interactionism are often missing perspectives that fundamentally explain social impacts; 2) For crowding, conflicts in behavioral and social values (meanings) need to be distinguished; additionally, spatial, service, and social interaction resources consumed or provided by others require distinction; 3) For restorativeness and self-regulation, compatibility is the key moderator and compatibleconcepts like Bandura's modeling, Cottrell's evaluation apprehension and Kaplan's soft fascination are needed; 4) For privacy and safety, place meanings/norms, others' characteristics, and anonymity in high-density settings can explain conflicting effects. In addition, an integrated framework will be briefly presented to categorize impacts on behaviors, cognitive/emotional processes, and symbolic meaning (re)creation. This framework holds theoretical significance for researchers in crowding, place attachment, restorative environments, and visitor experiences by capturing overlooked aspects. Finally, a practical checklist will be provided to help planners, architects, and managers assess the multifaceted issues related to visitor impacts. This inspires creative, tailored design and management approaches for settings where typical assumptions about visitor impacts may not apply.

# Measuring sense of place as an unmeasurable urban environment: using street view images and CNN to detect building façade materials

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**Keywords / Relevant Terms**: urban environment, building facade materials, sense of place, street-view images, machine learning

## Abstract

Sense of place, an intangible perception, is widely acknowledged as an immeasurable aspect of urban environments. Therefore, understanding urban environments would greatly benefit from the ability to measure sense of place. The measurement of sense of place has long been hindered by its ambiguity and complex connotations. Measuring the associated environmental elements can serve as an entry point to address this challenge. Building façade materials are an ideal representation of sense of place due to their physical and social attributes. However, there is currently a lack of widely applicable and high-resolution methods for identifying façade materials on a large scale. To address this, our study proposes a novel approach that utilizes Street View Images (SVIs) and a set of deep Convolutional Neural Networks (CNN) to accurately identify building façade materials. We have constructed a large dataset to ensure the generalizability of our method. By dividing buildings within SVIs into high-resolution rectangular images and applying a well-trained ResNet-based model for classification, we are able to depict the sense of place and its spatial patterns by measuring the diversity and continuity of façade materials. The effectiveness of our method is demonstrated through examples in Barcelona and Shanghai. By gaining intuitive insights into sense of place, our approach can support urban identity improvement through urban planning and design. This study represents a new advancement in urban science, empowered by intelligent algorithms. Moreover, it introduces a fresh perspective on exploring unmeasurable qualities based on the objective physical environment.

# TOPIC 5:

# MOBILITY, HABITS AND NEEDS

# Incorporating Cognitive Maps for Intelligent Spatial Agents in Urban Agent-Based Models

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**Keywords / Relevant Terms**: cognitive map, spatial learning, agent-based simulations, mobility

## Abstract

Agent-Based Models (ABMs) of urban phenomena have been developed to capture the complexity of processes occurring in cities. However, when it comes to portraying the interaction between people and the urban environment, the behavioural complexity of agents representing human actors remains underdeveloped. This work aims to enhance the cognitive and behavioural complexity of urban agents by incorporating cognitive and environmental psychology theories into agent-based modelling. It focuses on the design of cognitively grounded urban agents who are a) equipped with representational capabilities of the environment – cognitive maps -, b) able to interact with it, and who c) learn from their experiences. A computational approach to cognitive maps is adopted to accommodate urban mental imagery in the agent architecture. Firstly, this framework explicitly models the interaction between the structure of the urban environment, the emergence of cognitive maps, and, the resulting behaviour of the agents; secondly, it formalises spatial learning processes, thus enabling agents to adaptively modify their knowledge and behaviour in response to repeated spatial experiences and social interactions. The inclusion of cognitive agency is evaluated for an ABM that simulates pedestrian movement in cities. Different behavioural trajectories of simple and complex agents are compared concerning their variation through space and time. Our approach to cognitive mapping can be easily incorporated into other ABMs of urban phenomena where agents mimic human actions, e.g. residential mobility and consumer behaviour. This integration facilitates a deeper theoretical understanding of (spatial) behaviour and the human-environment relationship in cities. Furthermore, whilst simple ABMs are already considered powerful tools for urban planning and policy making, “cognitive ABMs” may provide more valuable insights as concerns the role of different factors, for instance the street network configuration, distribution of services, divisions between social communities, in shaping a wide range of processes that involve human behaviour.

# Inclusive Wayfinding: co-designing architectural recommendations for people with learning disability

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**Keywords / Relevant Terms**: inclusive design, learning disability, co-design, wayfinding

## Abstract

Successfully orienting through the built environment requires the ability to comprehend and utilize wayfinding information, a cognitive process that poses challenges for people with learning disability. (Castell, 2012) Learning disability, characterized by cognitive impairments, may hinder one's capacity to process information effectively. (Mencap, 2022) Consequently, people with learning disability encounter difficulties in acquiring and processing essential wayfinding information, leading to frustration and disappointment when faced with the prospect of abandoning the process due to challenges in maintaining focus, impatience with prolonged navigation times and/or illegible, protracted routes (Salmi, 2007). This paper is derived from a doctoral study dedicated to unravelling the spatial barriers encountered by people with learning disability during their navigation of buildings specifically shopping centres. The study was conducted in three stages: Stage one comprised interviews aimed at understanding the usage patterns within the learning disability community. Within stage two, walking interviews were conducted within a selected case study building, followed by stage three, a co-design workshops involving people with learning disability. These workshops delved deeper into the spatial barriers faced, ultimately culminating in the development of wayfinding solutions and aids tailored to support their navigation processes. The research identified key challenges, including unclear layouts, ambiguous signage, absence of wayfinding aids, and a lack of support staff as significant barriers faced by people with learning disability when orienting buildings. This paper concludes with a set of co-produced recommendations advocating for the design of clear signage and innovative wayfinding aids, offering a pathway towards a more accessible built environment for people with learning disability. This collaborative approach, bridged the gap between architecture research with the lived experiences and insights of people with learning disabilities, paving the way for a more inclusive and accommodating future in spatial design and navigation.

# Rethinking Wayfinding Strategies for Older Vision-Impaired People to Enhance Accessible Outdoor Public Realms

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**Keywords / Relevant Terms:** Vision impairment, wayfinding, age factor, public realm

## Abstract

Enhancing accessible public spaces is a significant topic for vision-impaired people in supporting equal participation of these individuals in society for today and the future, which needs to be evaluated with the increasing prevalence of visual disability as well as age related factors. Currently, vision impairment affects about 2.2 billion people worldwide, and this number is expected to increase rapidly in the next 50 years due to extended life expectancy and related diseases (WHO 2019). In addition, older persons constitute the majority of vision-impaired people due to age-related diseases causing vision loss. Thus, this information highlights the prevalence of this condition and the need for solutions that support the equal participation of these individuals in society. On the other hand, older vision-impaired people face challenges in accessing and finding their way to the outdoor public realms, whose wayfinding information is mainly designed to be perceived through visual means. However, it is highlighted for older people with vision impairment that the importance of going out and fulfilling their needs is essential to maintain their mental well-being, sense of independence, and social involvement. However, little research has focused on wayfinding strategies for older persons in public realms who may experience visual and cognitive decline. From this perspective, this study, with a multidisciplinary literature review and state-of-the-art method, primarily in architecture, urban design and neuroscience, aims to investigate wayfinding strategies to ensure that older vision-impaired people navigate independently in the public realm. These include analysing the spatial cognition of older vision impairment and wayfinding factors, including vision impairment and age-related spatial requirements. With the multidisciplinary synthesis, it is presented the wayfinding parameters, including the similarities for vision-impaired people of all ages, such as multi-sensorial cues, as well as mainly potential important facilitators for age-related memory and cognitive decline (e.g. legibility layout and consistent signage).

# Emergency Evacuation of Elderly People in Senior Care Home Based on Mobility and Physical Characteristics

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**Keywords / Relevant Terms**: evacuation simulation, senior care home, emotional characteristics

## Abstract

The physical functions of the elderly gradually deteriorate, resulting in slow movement and other phenomena. This leads to a long emergency evacuation time for the elderly, especially in senior care homes where the elderly are concentrated. This paper utilises experimental and simulation to analyse building evacuation of the senior care home for the elderly with autonomous behavioural abilities. This study investigates the physical and behavioural characteristics and emotional changes of elderly people during emergency evacuations, through behavioural observations and questionnaires completed by a sample of 10 elderly participants. An evacuation simulation of an indoor activity space of a senior care home in Wuxi City, China, was conducted by Pathfinder software? and the results of the observation and questionnaires were used to analyse the evacuation of elderly people in different types of building spaces. The results show that an increase in evacuation distance increases anxiety in elderly adults while making their reaction time longer. The number of turns in the evacuation path increases anxiety in elderly people while increasing reaction time. The width of evacuation doorway exits reduces the queuing time of the elderly and relieves anxiety. This study provides a database for building evacuation safety design and related specifications for the elderly in senior care homes. Emotional characteristics and reaction time of elderly people in evacuation were added to the study.

# Exploring the Impact of Social Factors on Wayfinding and Visual Attention in a Virtual Airport Environment

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**Keywords / Relevant Terms**: social wayfinding, navigation, virtual reality, airport, eye tracking

## Abstract

Recent research has focused on the effects of non-social elements in the environment on wayfinding. Although social elements constitute a significant part of the environment, they have not been investigated thoroughly in the literature. This pilot study investigated the influence of social elements on visual attention and wayfinding behavior in a multi-level virtual airport. The study examined the effects of human presence, type of human activity, and directional movement of other people on participants' attentional behavior and wayfinding performance. International arrival and transfer floors of Istanbul Airport were modeled in the Unity game engine for the experiment. The experiment design was a 2x2 setup with two environments and two scenarios. The two environments were: (1) a control environment with no social parameters in effect, and (2) the same environment with social parameters in effect animated according to real-life data. Ten volunteers participated in both scenarios, each with different routes where they were placed at a starting point and asked to complete a wayfinding task including five stops and a final destination. HTC Vive Pro Eye was used as a head- mounted virtual reality (VR) device with a built-in eye tracking system. Quantitative data including fixation times and saccades were used to measure attentional behavior. Task duration, error count, and distance traveled were recorded to measure wayfinding performance. The results indicate that social elements may affect both wayfinding performance and attentional behavior. Physical elements and signage gained less attention when there were social elements present in the environment. While non-moving humans and crowds did not show any effect on wayfinding performance, human crowds with directional movement had a positive effect on wayfinding performance scores. The results suggest that social elements may have influence on multi-level indoor wayfinding and they need to be considered as part of the physical environment.

# The DIGNITY Toolkit - Promoting inclusiveness in the relentless digitalisation process of the mobility sector

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## Abstract

Current digital mobility services – such as map applications, route planners, vehicle sharing systems, ticketing and payment facilities etc. – have great potential to improve passengers' transportation options and experiences, offering a wide range of mobility innovations to meet more sustainable lifestyles. In fact, they provide better access to mobility information, helping passengers to combine different types of transport modes together for a single journey. Nonetheless, these services will only be useful for people who can access and use them effectively. In this sense, different vulnerable-to-exclusion societal groups including elderly, migrants, low income and low educated persons etc., may not fully benefit from these services. Moreover, there is a danger that, rather than helping, digital mobility services may exacerbate the existing disadvantages for such groups. Consequently, special care needs to be taken in order to ensure inclusiveness in the design of digital mobility services. The H2020 European initiative DIGNITY 'Digital Transport in and for Society' (https://www.dignity-project.eu/) has implemented – as one of the main project's output – a Toolkit (https://dignity-toolkit.eu/) specifically designed to help governmental institutions at different levels and mobility providers to bridge the digital gap and to help create more inclusive policies, products and services. The Toolkit implementation process includes the application of user-centred design, integrating a set of complementary tools aimed at tackling the digital divide in the mobility sector. This contribution describes and discusses the Toolkit and its approach, which promotes co-creation, collaboration, and participation as key elements to enhance inclusion and accessibility in mobility ecosystems. Furthermore, it reflects on its potential to promote transdisciplinary processes, involving academics, public entities, mobility providers and groups at risk of exclusion.

# From Stroads to Complete Streets: Catalyzing Walkable, Sustainable, and Equitable Development through Innovative Transportation Strategies

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**Keywords / Relevant Terms**: Walkable, Sustainable and Equitable Development; Placemaking and Complete Streets; Innovative Transportation Strategies

## Abstract

Across America, communities want to catalyze walkable mixed-use development along wide, auto-oriented, suburban commercial highways. These highways are referred to as “Stroads”– a street/road hybrid that have neither the charm of great streets, nor the speed of great roads. A “street” is where residents live and interact with businesses. A “road” is for moving quickly from A to B at speeds of 40 mph or higher. Stroads are a big part of why congestion is extreme, and why walking, biking, and transit infrastructure are so underwhelming in suburbia. Segregated uses in low-density suburbs and auto-oriented infrastructure contributes to poor health, traffic fatalities, poor air quality, public debt for excessive infrastructure, and inequity in housing and transportation affordability. In recent years, research on transportation and mobility has demonstrated how Complete Streets can support livability and accessibility in support of multi-modal and active transportation. However, there is lack of understanding about how certain placemaking strategies can be used to convert Stroads into “Complete Streets”. These efforts are mostly stalled due to conflicting perceptions of design factors by various stakeholders. Sustainable mixed-use real estate in suburbia and multi-modal transportation opportunities must become part of the mainstream interdisciplinary research informing policy and practice conversation due to the influence that roadways have on community health and healthy behaviors. Thus, focus groups and structured interviews, involving multi-sector stakeholders, were conducted to assess perceptions on innovative intersection design strategies, as well as to determine obstacles faced by communities to achieve sustainable, walkable, and equitable urban design development. The findings revealed worries of stakeholders, including the barriers to providing support to communities for sustainable development. Understanding varying stakeholder perceptions and how to overcome their worries can guide us to create and implement effective transportation design strategies that can catalyze the development of walkable and equitable communities.

# Diurnal variations in urban environmental features that support walking and cycling

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**Keywords / Relevant Terms**: Walkability, Bikeability, Urban Design, Lighting

## Abstract

To reduce the emission of greenhouse gases generated by urban transport, cities need to be designed to support sustainable modes of transportation, such as walking and cycling. When designing such environments, it is essential to take a 24-hour perspective and account for how environments change when it gets dark. Especially in parts of the world where seasonal variations in daylight hours make pedestrians and cyclists travel after dark during long periods of the year. To better understand how changes in lighting conditions affect environmental features, daytime and dark conditions should be studied in parallel. This study utilized a between-subjects design, comparing a pedestrian/bicycle path located in a mid-sized Swedish city, both during daytime and dark conditions, with two types of lighting applications. Pedestrians (n = 92) and cyclists (n = 84) responded to a questionnaire before and after walking/cycling, assessing a number of environmental features hypothesized to be of importance for walking and cycling. While on the path, the participants were filmed by a drone and their trajectories (speed and placement on the path) were determined. Statistical analyses (Mann-Whitney U test) indicate significant differences (p = 0.05) in perceived restoration, traffic environment, path surface quality, complexity, and visual accessibility between daytime and dark conditions. Also, there were significant differences (p =.05) in perceived lighting quality and perceived safety between the two lighting applications after dark. Results indicate that environmental features are experienced differently during daytime than during dark conditions. Differences between the lighting applications imply that lighting characteristics, such as colour temperature, illuminance, and uniformity, impact the experience and how well the lighting applications cater to the needs of pedestrians and cyclists. In further analyses, data from the drone videos will be connected to the self-reported data to explore how environmental experience may relate to micro-level behaviours.

# Safety concerns continue to hinder physical activity in English cities: A case study of cycling in Lancaster

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**Keywords / Relevant Terms**: cycling, safety, Lancaster, England

## Abstract

Cities worldwide are striving to promote physical activity in line with net-zero targets to create healthier societies and urban environments. Cycling stands out as a key activity in this endeavour. While countries such as the Netherlands and Denmark have made significant strides in promoting cycling, others, including England, face challenges in increasing participation rates. This study looks specifically at the English context and seeks to understand the barriers to cycling and develop possible solutions. Using the city of Lancaster in the UK as an example, the prevailing cycling culture and associated barriers are examined. Insights into the barriers faced by cyclists are gained through a survey (n=65) in which cyclists were asked about their socio-demographics, cycling behaviour (e.g. frequency of cycling), their thoughts on the built environment and cycling policies. In addition, interviews were conducted with local council staff (n=3) to understand their views and the cycle paths were analysed using Google Street Map images. The findings of this study highlight a variety of barriers that continue to hinder cycling. These include issues such as drivers' attitudes, infrastructure limitations, and policy constraints. Above all, safety concerns are the biggest obstacle. Solving these problems requires a comprehensive approach that includes not only infrastructure improvements, but also policy adjustments and educational initiatives.

# Willingness to walk in a tropical climate

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**Keywords / Relevant Terms**: pedestrians, climate, walk distance, cognition

## Abstract

This study examines willingness to walk (WTW) in a tropical context, using Singapore as the setting. It is widely assumed that tropical environments reduce WTW, which obeys a distance- decay law. Singaporean participants (n=101) were recruited to walk a predesigned itinerary, with evaluations of the local environment and their WTW for further segments of the itinerary. The hypothesis that WTW would decline according to distance-decay functions is based on the idea that the ambient environment dominates consideration by pedestrians. The alternative thesis is that the local environment–sights, sounds, goods, people, activities, architecture–play a part in WTW. The survey was conducted in sunny weather with average air temperature of 31.8°C (SD=1.7) and relative humidity at 59% (SD=10.4). Of the 101 participants, 38 express a restoration in the willingness to walk over the course of the itinerary. There are 40 who do not express an increase in the willingness to walk somewhere over the course of the itinerary. The remainder maintain the same rating for willingness to walk. Those expressing restoration and those who do not travel about the same number of segments and also do have significantly different WTW scores on average. Overall, there is a slight decline in the willingness to walk over the whole itinerary. There is broad agreement among participants with restoration concerning the segments with higher rates. The logical conclusion is that there is something about those segments or their experience of them that is prompting the restoration of the willingness to walk in that group of individuals.

# Proximity through the Interplay of Walking and Transit Accessibility

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**Keywords / Relevant Terms:** 15 minute city, railways, proximity, accessibility

## Abstract

This study examines the relationship between accessibility and equity in urban areas, with a specific focus on the ease of access to various social functions such as care services, education, provisions, entertainment, and public and non-motorized transportation. Using georeferenced data of 27 urban functions and services, we can determine which parts of a city meet the requirements of the 15-minute city postulates, which emphasizes the importance of having essential services within a short walking distance. However, it is important to question whether this approach is adequate to understand the degree of equity in the spatial distribution of essential urban services. It acknowledges the significance of public and non-motorized transportation in providing access to urban functions beyond those within walking distance. This allows for a better understanding of the possibility for citizens to access nearby services and more distant ones located in other parts of the city. Additionally, the study considers the potential for each cell in the city to receive users and citizens from other parts of the city. As a result, it highlights the presence of hyper-proximity spaces and hyper-isolated areas, which in the case of Barcelona represent more than 20% of the urban space each. Overall, this study provides a comprehensive analysis of accessibility and equity in urban areas, and its findings can contribute to the development of policies and strategies that aim to improve the spatial distribution of essential urban services and promote equity in urban areas.

# Spatial Multi-Scale Evaluation of Walkability in a 15-Minute Neighborhood Living Circle

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**Keywords / Relevant Terms**: 15-minute neighborhoods, street view imagery, deep learning, walkability, evaluation system

## Abstract

This study aligns perfectly with the conference theme, “Enacting Transdisciplinary Knowledge: People, Places, Movements, and Sustainabilities.” It examines walkability in Shenyang's 15-minute neighborhood living circles through a transdisciplinary lens, integrating urban planning, technology, and ecology. Utilizing AI, big data, and spatial analysis, it evaluates urban neighborhoods across safety, comfort, activity, and fluidity dimensions. The results offer insights into sustainable urban living, highlighting the importance of interdisciplinary approaches in addressing complex environmental and societal challenges. This research contributes to understanding and improving the symbiotic relationship between people and their urban environments, fostering sustainable community development. Specifically, this study investigates walkability within the 15-minute neighborhood living circles (15-NLC) in Shenyang, China, focusing on seven core urban neighborhoods. A multi- dimensional walking space index system for 15-NLC is established. Utilizing web-based big data from Baidu Street View, street view images are acquired through web crawling, then processed with image recognition and semantic segmentation using artificial intelligence deep learning techniques. Walkability is evaluated considering area definition, specific study population, and Points of Interest (POI). Publicly available Baidu Street View data is accessed using a Python crawler script. The PSPnet model algorithm and Cityscapes Dataset enable the identification of roads, pedestrians, vehicles, plants, walls, and other elements in panoramic street views. The percentage of required elements is calculated and analyzed through ArcGIS. Data is processed and integrated into the evaluation system, which comprises four primary dimensions: safety, comfort, activity, and fluidity. Each primary dimension contains two or three secondary dimensions, creating a comprehensive evaluation system. Visualization results are presented accordingly. The study thoroughly examines the seven neighborhoods in relation to the four primary dimensions, analyzing the current community environment's characteristics, strengths, and weaknesses. Based on research findings and discussions, detailed rationalization suggestions are provided, along with recommendations for future neighborhood environment development focus.

# The influence of darkness on cycling rates for utilitarian and recreational journeys

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**Keywords / Relevant Terms**: cycling rates, ambient light, journey type, utilitarian cycling, recreational cycling

## Abstract

Cycling is essential for health, the environment, and the economy. Despite efforts to promote cycling in recent decades, cycling rates remain low in many countries. One reason behind this can be the extended period of daily darkness in the winter. Previous studies have shown that, even when other factors are accounted for, darkness has a significant impact on cycling rates, but this impact is not consistent and varies from one city to another as well as one counter location to another. We investigated the impact of ambient light conditions (daylight vs. darkness) on cyclists numbers using an Odds Ratio (OR) determined across the multiple combinations of case hour and control hour. The data used were hourly counts of cyclists, captured by automated counters, as obtained from publicly available data sets for Seattle (US), Auckland (NZ) and Leeds (UK). Specifically, we investigated the deterrence of darkness on utilitarian and recreational cycling journeys, using data for weekdays and weekends as a proxy for journey type. The results show that darkness significantly reduces the number of cyclists, with weighted mean ORs of 1.97 for Seattle, 1.50 for Auckland, and 1.21 for Leeds. The ORs were greater at weekends (2.77, 2.65, and 1.37) than at weekdays (1.87, 1.36 and 1.22) for Seattle, Auckland and Leeds respectively, suggesting that darkness is a greater deterrent for recreational journeys than for utilitarian journeys. These findings can inform future lighting strategies for cycleways and cycle routes, as the optimal lighting conditions may vary depending on whether a route is primarily for utilitarian or recreational purposes.

# Is it possible to educate for sustainable mobility?

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**Keywords / Relevant Terms**: Education, transportation, sustainability, prevention, accident

## Abstract

The rate of deaths by traffic in Brazil is high, especially among young people. Work with education on traffic safety is mandatory in all levels of education. But, the law is not obeyed. On the one hand there are not structured projects to help teachers. On the other hand teachers are not trained to work with this theme. This work is about the teachers' perception about their possibilities to work on traffic safety. The participants were 184 teachers of fundamental and high school level, invited to answer a questionnaire with questions about traffic safety education. Besides to believe that their students do not have sufficient knowledge about traffic to ensure their safety in this context (95.8%) and they see their students behaving inappropriately in the traffic environment around the school (94.6%), just 40.5% agree that they play an important role in traffic education. It could be because just 15.5% of them say that they have enough knowledge about traffic safety to work on this topic in the classroom. Thus, only 39.9% feel able to act in traffic education within the school context. Other explanation could be related to the fact that besides 97,6% totally agree that it is important to work with traffic education from basic education, just 47% believe that is possible to fit traffic classes within their disciplines, and 32.7% totally agree that strategies applied in basic education have real effectiveness when it comes to traffic safety. About traffic safety behaviors to walking around the school the teachers recognized the importance of them. In the next step the participants will take a course about citizen science with a possibility to opt to learn and apply a citizen science protocol about traffic safety with their students.

# Polluting as a privilege: An Intersectional Approach to Environmental Justice and Transportation Emissions

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**Keywords / Relevant Terms**: mobility, emissions, intersectionality, environmental justice

## Abstract

Pressing concerns over air pollution and its impact on community health demands a comprehensive understanding of the political nature of the atmosphere and transport-related emissions. This study delves into how social and historical structures of power influence travel behavior and subsequent emissions. To achieve this, transport emissions were calculated from a travel survey that gathers a representative sample of Barcelona residents. We use the novel quantitative method MAIHDA, which is rooted in intersectionality principles, to examine the intersection of gender, age, and migration background with emission releases from mobility. Our findings reveal that those identities tied to privileged positions promote the greatest contribution to air pollution. Specifically, middle-aged European-born men exhibit the most NOx-intensive mobility practices. In contrast, communities embodying intersectional axes of oppression such as misogyny, racism, or ageism, demonstrate lower emission levels. This highlights the unique mobility experiences of migrated women, often overlooked in previous research. These results advocate for acknowledging the unequal distribution of responsibilities and reevaluating burden-sharing schemes in air pollution policies in order to advance environmental justice and community health.

# The Influence of Built Environment Transformation Policies on Local Elections

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**Keywords / Relevant Terms**: Policy acceptability; Built environment transformations; Electoral results; Barcelona

## Abstract

The city of Barcelona has been a pioneer in implementing policies aimed at transforming its built environment. These policies are designed to make the city more pedestrian-friendly, reclaiming space once dominated by cars. Key initiatives include the establishment of superblocks, the reduction of public parking spaces, and the pacification of streets near schools. However, the success of these policies largely depends on public support, which can be hindered by organized opposition. Thus, public acceptance of strategies promoting a safer healthier and overall more sustainable built environment is crucial to their success. This study seeks to examine the connection between the implementation of built environment transformation policies in Barcelona and the electoral outcomes of the recent municipal elections in May 2023, specifically for the party that championed these changes, Barcelona en Comú (BEC). Our research involves mapping the city's built environment transformations dating from 2015 to the present. By assessing the extent of urban transformation at the level of census tracks, we correlate alterations in the built environment with electoral results. To achieve this, we employ a multiple linear regression model that accounts for the hierarchical structure of the data, while also controlling for sociodemographic and built environment factors. Results show a strong relation between superblocks and the vote to BEC; however, the relationship is unclear for those school environments that have been pacified, and nonsignificant for the reduction of parking spaces. These findings provide us with the opportunity to investigate, for the first time, whether sustainable transformations in the built environment hold significance in influencing local electoral outcomes. It is essential to estimate the political cost associated with urban transformations and their impact on local election outcomes to spare politicians the trial and error process which could cost them the elections.

# What Explains the Current and Future Choice of Modes of Transport by First-year Undergraduate Students in Brazil?

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**Keywords / Relevant Terms**: modal choice, sustainability, young people

## Abstract

Mobility choices can contribute to environmental degradation and affect human health. This study aims to understand how first-year undergraduate students choose their means of transport for traveling to university in Brazil and to analyze their intended choice for the future. A printed questionnaire based on the Protection Motivation Theory was administered to 255 students during their classes. They were on average 19.34 years old (SD = 1.64). Financial cost was the main reason for choosing modes. Bus was the most used means of transport in the present (67%), but most students did not intend to continue using it in 10 years' time for traveling to work, as 94.1% of them intended to use the car. Self-efficacy impacted the choice of car and bus. Although they understood that motorized traffic impacts the environment, ecological behavior wasn't linked to the choice of more sustainable modes. The results are discussed in terms of the need for 1) universities to address transport and the environment; 2) government action to improve the quality of public transport.

# Transport Infrastructure Disruptions as 'Moments of Change' for Sustainable Travel Behaviour

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**Keywords / Relevant Terms**: Habits, Moments of Change, Behaviour Change, Policymaking, Interventions

## Abstract

The UK has set a target to achieve a 78% reduction in carbon emissions by 2035. Despite overall progress, transport emissions have remained stubbornly high, and policymakers are increasingly considering how to promote radical behavioural changes. Although habits often serve as a barrier to behaviour change, 'moments of change' – whereby contextual disruptions trigger the destabilisation of habits associated with certain behaviours – present potential opportunities for policymakers. While existing research on moments of change predominantly focuses on life transitions, few studies have extended the concept to external events. This research addresses this gap by investigating the effects of moments of infrastructural change (e.g., road closures) on reducing car use, and whether such windows of opportunity are currently acknowledged in UK transport policy and practice. Semi-structured interviews were conducted with 24 transport practitioners from 11 UK transport organisations, and transcripts were compared against key strategic documents from each organisation to identify gaps in the implementation of behaviour change strategies. Interviews revealed that stakeholders are aware of the need for behaviour change and showed openness to incorporating behavioural interventions into their work, and this was supported by some strategy documents which discussed this need. However, it was evident in both the interviews and document analysis that supported methods for achieving transport behaviour change rarely aim to target influential unconscious psychological factors, such as habits, and that there is limited understanding and application of the concept of 'moments of change'. Findings emphasise the need to address gaps in knowledge regarding the opportunities offered by infrastructural moments of change and how interventions can leverage them. Through employing diverse methods, the present research contributes novel information about the interplay between the built environment and habits, and in particular, advances the conceptual understanding of the notion of 'moments of change'.

# Research on Spatial Measures to Encourage Low-Carbon Transportation in High-density Urban Railway Station Areas in China——A Comparative Study of Three Cases

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**Keywords / Relevant Terms**: Spatial Measures; Low-Carbon Transportation; High-density Urban Railway Station Areas; Passengers and Citizens; Accessibility

## Abstract

Due to strong transportation function, railway station areas in high-density cities are places with dense population. In China, there is a strong reliance on cars for people to leave or reach this area, which consumes lots of energy and causes congestion in the surrounding area. Previous studies have shown the great potential of spatial measures to encourage low carbon transportation. Therefore, how to encourage people to use public transportation or walk which is more low-carbon through spatial measures in high-density urban railway station areas has become an important research problem.
The authors conducted field research in Guangzhou East Railway Station Area, Shenzhen North Railway Station Area, and Shapingba Railway Station Area. The authors survey 281 passengers and citizens to understand how they reach the station area by questionnaire, and record the leaving transportation way of over 300 passengers by tracking. On this basis, the authors calculate the share of different transportation, and further analyzed the correlation between the accessibility of each transportation facility and the corresponding transportation sharing rate. The main findings are: 1. Citizens prefer to reach the station area by metro, while passengers have a more diversified transportation choose. 2. Passengers are the main users of cars in the railway station area, which is the key objects for low-carbon transportation encouragement. 3. The accessibility from the railway station exit to other transportation facilities significantly affects the leaving transportation way of passengers. Improving the accessibility priority of the metro can significantly reduce car use by passengers. 4. A pedestrian network closely linked to surrounding areas can increase the percentage of passengers leaving on foot. Based on the findings, the authors propose three spatial measures to promote public transportation or walk. These measures will reduce the use of cars, and greatly improve the sustainability of railway station area.

# Research on the vitality of railway station areas in the context of high-density cities in China - taking Chongqing Shapingba Railway Station and Guangzhou East Railway Station as examples

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**Keywords / Relevant Terms:** railway station, Dense cities,vitality

## Abstract

With the rapid development of high-density cities, buildings and surrounding urban functions have gradually formed complex three-dimensional spatial layouts and organizational streamlines. A railway station is a comprehensive building that integrates multiple transportation functions. Its functions are complex and diverse, so it is easy to cause the railway passenger station to be separated from the city, traffic chaos and congestion within the railway passenger station area, complex and inefficient passenger transfer streamlines, and poor building functions. Problems such as singleness and low vitality of the station area. In high-density cities, the problems in railway station areas are more prominent, and the integration of railway stations and urban functions also needs to be dealt with. This study analyzes the vitality of railway station areas in high-density cities in China. It selects two typical domestic railway stations - Chongqing Shapingba Railway Station and Guangzhou East Railway Station as examples. It uses multi-source big data analysis methods to analyze the station area accessibility and walking distance. The vitality of the railway passenger station area is evaluated in terms of accessibility, regional pedestrian density, POI density and diversity, land use mix, block density, residential and commercial density, etc., so as to provide guidance for the future development of railway station areas in high-density cities.

# Residential mobility as an adaptation strategy in times of pandemic: towards an ecological transition in Quebec (Canada)?

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**Keywords / Relevant Terms**: Residential choices, residential mobility, COVID-19, lockdown, ecological transition

## Abstract

The COVID-19 pandemic, spanning from 2020 to 2022, prompted widespread public health measures that transformed individuals' relationships with space and time, redefining their experience of housing and neighborhoods. Some responded to the crisis by moving to larger dwellings or less densely populated areas, seeking proximity to nature. As the climate crisis worsens and urban sprawl grows, this research aims to understand how residential choices were made during the pandemic, to provide insights on their territorial impacts and assess their potential contribution to an ecological transition. Focusing on Quebec (Canada), the research uses longitudinal data from the MAVIPAN web survey, exploring the impacts of the pandemic on lifestyles since Spring 2020 (Living with the pandemic in Quebec, Leblanc et al, 2020). A sample of 283 participants who potentially changed their place of residence was selected through specific criteria. Subsequently, an online follow-up survey available from October 2nd, 2023, to November 16th, 2023, gathered detailed insights into participants' moves and housing choices. Using mixed methods, this additional data allowed to identify trends by characterizing chosen environments and habitats using GIS, producing a set of descriptive statistics on socio-economic characteristics of movers, and qualitatively analyzing their motives for moving. Of the 283 sample, a total of 107 participants answered to the follow- up survey. It is expected that rather than increasing the number of relocations, the pandemic will have shifted households' criteria when it comes to choosing a new home, altering their order of priorities, and creating new possibilities. Overall, this research project provides a better understanding of underexplored issues and some thoughts on how architecture and planning need to adapt to other ongoing crises. Ultimately, the research aims to identify potential actions to strengthen the resilience of households and formulate recommendations for decision-makers on housing and urban policies.

# Towards Sustainable Urban Mobility: Translating Research into Urban Design Guidelines to Promote Public Transport

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**Keywords / Relevant Terms**: Urban design, mobility, public space, public transport

## Abstract

National and international climate change targets have created an urgent need for action in urban and transportation planning. As urban planning in recent decades has been based on a car-centric approach with all its negative externalities, there is a need to reorient urban planning towards active mobility and public transport. Public transport should play a key role in the necessary transformation of urban transport systems due to its low demand for public space and its resource efficiency. The proposed contribution examines how urban planning can contribute to the promotion of public transport. Design principles that promote public transport are key elements in ensuring sustainable mobility in the coming decades. Due to the long renewal cycles of the built environment, new urban design strategies need to be implemented now. Against this background, the proposed contribution explains how the built environment influences mobility behavior and what design principles can be derived from the available evidence. Existing studies (qualitative and quantitative) have been analyzed, summarized and translated into design guidelines. In addition to density and settlement structure, the guidelines also address route length and the design of public spaces. As every public transport trip begins with the journey to the station, the latter aspects play a central role in the design. It became clear that many of the basic ideas are already firmly anchored in current urban planning concepts such as the 15-minute city, Transit Oriented Development or the Leipzig Charter - but a comparison with realized projects often reveals significant differences in urban design. The derived requirements cover different scales of urban planning and are intended to support local authorities in their design processes, to serve as a guide and at the same time to highlight existing research gaps.

# What is the potential of a digitalised and connected escape from a car-centric world? Evidence from a field trial in Switzerland

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**Keywords / Relevant Terms**: mobility-as-a-service, travel behaviour, behaviour change, field trial

## Abstract

To achieve the net zero emission goal and contribute to more liveable cities, car dependency remains a serious challenge. In that regard professionals and researchers increasingly acknowledge Mobility-as-a-Service (MaaS) as a potential game-changer [1]. However, field trials evaluating the effect of MaaS on travel behaviour and its determinants are still rare [2]. Against this background, we explore three research questions based on a field trial in Switzerland: (1) Is using MaaS associated with the change in reported travel behaviour? (2) Is using MaaS associated with a shift in the stage of travel behaviour change? (3) Is using MaaS associated with a change in attitudes and intentions towards the use of sustainable alternatives to private car use and an increased information about them? The study is part of a project financed by the Swiss Federal Office of Energy (SFOE), within which a MaaS app called MixMyRide has been developed and launched. The app incorporates, in addition to traditional means of transport like the private car, public transport, bike and foot, also shared micro-mobility solutions such as bike- and e-scooter-sharing and the possibility to offer and book carpooling rides. We investigate the three research questions stated above within a field trial running from March 2023 to April 2024 in three Swiss agglomerations (Winterthur-Zurich, Lugano and Geneva) within a survey-based pretest-posttest design. References [1] T. Storme, J. De Vos, L. De Paepe, und F. Witlox, „Limitations to the car-substitution effect of MaaS. Findings from a Belgian pilot study“, Transportation Research Part A: Policy and Practice, Sep. 2019, doi: 10.1016/j.tra.2019.09.032.
[2] C. Q. Ho, „Can MaaS change users' travel behaviour to deliver commercial and societal outcomes?“, Transportation Research Part A: Policy and Practice, Bd. 165, S. 76–97, Nov. 2022, doi: 10.1016/j.tra.2022.09.004.

# Comparing three interventions for encouraging the uptake of active travel

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**Keywords / Relevant Terms**: Active travel, mode shift, local authority, intervention, carbon emission reduction

## Abstract

Municipal authorities increasingly recognise the role of behaviour change in reaching net zero targets. However, engaging the public as active agents of change remains a challenge, particularly for travel behaviours where agency is contingent on provision of local infrastructure and services. This paper presents empirical findings from two longitudinal studies undertaken in collaboration with Cornwall Council, a regional authority in the UK, in 2023 (n = 164) and 2024 (n = 400). Three interventions were trialled which explored different approaches for encouraging active travel: 1) a behaviour change visioning tool to consider ways of reducing car use and highlight the co-benefits; 2) social prescribing of active travel, combined with targeted support from health improvement practitioners; and 3) provision of free credits to use e-bike shared mobility. Changes in participants' travel behaviours and attitudes were measured pre- and post-intervention using surveys and travel diaries. Over half of the participants (53%) considered the visioning tool to be 'somewhat relevant' to their travel needs and behaviours, whereas participants in the social prescribing study reported increased confidence to try active modes. Uptake of e-bike shared mobility was notably higher for recipients of free credits (37%), relative to the control group (21%). In terms of mode shift, 28% of e-bike users avoided using their car and 15% substituted for public transport. The main barriers to active travel were cost, lack of cycling competence, and road safety concerns. Collectively, these findings provide a useful evidence base for local authorities to design active travel policies targeted at specific social groups, with a particular emphasis on behaviour change, which can complement their existing roles of regulation and infrastructure provision. The evidence of mode shift also has important implications for reducing carbon emissions.

# TOPIC 6:

# INFORMATION, COMMUNICATION MANAGEMENT AND CONSTRUCTION OF REALITIES

# “Danger warning!” or “Danger watchfulness”. An intercultural approach to risk

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**Keywords / Relevant Terms**: social representations, risk, place identity, intercultural approach

## Abstract

This paper is based on an international and interdisciplinary research project. Its aim is to understand the way in which individuals living in a coastal area construct a representation of the risks associated with their territory, and position themselves in relation to the issues facing this territory. To do so, we studied various forms of social knowledge and practices related to this maritime and coastal space, through place appropriation and various forms of identity construction (e.g.: involvement in territories, meanings of places, forms of attachment and belonging to the place). The research uses a comparative approach involving populations who live in different geographical, social and cultural contexts, but share a strong attachment to the sea: the regions of the Pays du Haut-Léon (France) and the West Fjords (Iceland). To understand the links between territories, identities and risks, qualitative surveys (semi-structured interviews, mental maps, and analysis of media content) and quantitative surveys (questionnaires) were carried out among the inhabitants of these territories. On the whole, 48 interviews were conducted within the French and Icelandic populations; various communications media were analysed (municipal newsletters, regional/local press, touristic guides) and 222 questionnaires were collected. The results of the part of the questionnaire dealing with local issues reveal a totally different conception of risk between French and Icelandic respondents. The former consider a majority of the issues as constituting a risk for them and/or their territory, whereas the latter, for the same issues, consider that there is hardly any risk. These results interrogate the concept of risk, specifically in terms of the representations of danger or hazard, and of their probabilities. Beyond this, they interrogate the human-nature relationships. These observations will be highlighted by content from the qualitative analyses.

# Caution hot!? Findings from environmental psychology and disaster risk research on risk communicating and warnings of natural hazards

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**Keywords / Relevant Terms**: Disaster Risk Research, flooding, Warnings, Crisis Communication, Heat stress

## Abstract

Natural hazards pose a threat to human health and life. To prevent negative healt impacts and deaths, as well as structural and monetary damage a functioning risk management is needed and citizens need to be aware and ready to adapt, as well. Risk and crisis communication is implemented to foster people's risk perception and motivate individual adaptation. This presentation aims at giving a short overview on theoretical and methodological approaches from environmental psychology and disaster risk research that are used to explore peoples risk perception concerning natural hazards, evaluating communication measures, and understanding individual adaptive behaviour. Results from recent quantitative surveys on heat risk and flooding from Germany are presented. A focus is set on warnings: In an experimental setting different versions of heat warnings were compared showing additive value of action recommendations. In a retrospective online survey after the 2021 flood in Germany reception of and reaction to actual warnings was explored. The presented research highlights the importance of interdisciplinary research on natural hazards. The results can help to understand individual adaptation, as well as possible impacts of risk and crisis communication on risk perception and adaptation. Findinds on warning perception and understanding can be used to improve current warning practice.

# Developing and evaluating a behaviour change intervention to improve the disposal of compostable packaging at UK workplaces

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**Keywords / Relevant Terms**: Compostable packaging, behaviour change intervention, waste behaviours, sustainability, COM-B model.

## Abstract

Compostable packaging provides a potentially more sustainable alternative to conventional packaging. However, people often inappropriately dispose of compostable packaging which limits its potential environmental benefits. This study applied the Behaviour Change Wheel and the Capability, Opportunity, Motivation-Behaviour model to develop and evaluate the effect of a behaviour change intervention on the disposal of compostable packaging at workplaces in the UK. The intervention addressed barriers to the appropriate disposal of compostable packaging as identified in focus groups with workplace employees (n = 29), workplace observations and previous literature, and consisted of clear and distinctive labels on packaging, matching bin signage, a motivational video, and an onboarding presentation for workplaces. Using a pre-post design, the intervention was implemented at three workplaces and the effects of the intervention on the amount of compostable packaging collected was assessed 1-month (post-intervention) and 2-months (follow-up) later. The intervention led to sustained increases in the amount of compostable packaging collected (post-intervention: increased by 5%, 20% and 63%; follow-up: increased by 39%, 47% and 50% across the three workplaces) and reduced contamination in compostable bins. A post- intervention survey and follow-up stakeholder engagement event suggested that the intervention was acceptable to workplace leads and employees. However, there was no evidence that the intervention changed employees' perceived capability, opportunity and/or motivation to appropriately dispose of compostable packaging. The main recommendations for packaging producers and workplaces include using consistent distinctive bin signage that corresponds with standardized labels on packaging.

# Citizens' perception of waste and recycled materials in construction: keys for communication

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**Keywords / Relevant Terms**: Construction waste, Recycled materials in construction, Citizen perception, Information, Communication

## Abstract

Human actions contributing to climate change are diverse, with waste generation being anotable factor. Although construction waste accounts for over a third of the waste produced in Europe, it has not received sufficient attention to date, along with people's perceptions of its more eco-friendly alternative: the use of recycled materials in construction. Therefore, in this study (N = 605), an approach to this issue is attempted by exploring perceptions and beliefs about this practice, considering the differentiation between eco-responsible individuals versus those not-responsible. These two groups were quite different regarding their pro-environmental behaviors, with the eco-responsible majority engaging more in environmentally friendly practices and the non-responsible people claiming not to be concerned about the environment. However, when it comes to behaviors or perceptions related to the use of recycled materials in construction, the differences between these groups diminish. Both groups showed a high level of agreement in accepting the use of such products but also adknowledged lack of information and awareness regarding recycled materials in the construction industry. Nevertheless, some differences were found in psychological barriers for adopting behaviours related to this domain, as well as in the potential facilitators of such practices. Patterns of trust in information sources also showed the need of carefully choose channels and communication strategies when providing the needed information. Therefore, the present work highlights the need to understand the citizens' perceptions related to less widespread pro-environmental actions in the population, as well as the need to be aware of the profiles present in the population when designing information campaigns or programmes for promoting such sustainable actions or behaviours. Future avenues of research and intervention related to promoting awareness and use of recycled materials in construction will be discussed.

# Investigating the Relationship Between Pro-Environmental Attitudes, Dietary Choices, and Packaging Preferences in a Simulated VR Restaurant Environment Study

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**Keywords / Relevant Terms**: pro-environmental attitudes; dietary choices; packaging preferences; Virtual Reality (VR) simulation; food service industry

## Abstract

This study explores the intricate relationship between pro-environmental attitudes, dietary choices, and packaging options in a Virtual Reality (VR) restaurant setting. The primary goal is to address key environmental issues, particularly plastic waste and greenhouse gas emissions, within the food service industry. The research aims to dissect the factors that influence environmental attitudes and behaviors, focusing specifically on dietary preferences and packaging selections in a VR restaurant context. It examines the associations between gender, education, intervention strategies, and pro-environmental attitudes, as well as the link between vegetarian diets and sustainable practices. The findings indicate a significant correlation between gender and pro-environmental attitudes, and a potential relationship between adopting vegetarian diets and pro-environmental attitudes. The study highlights the complex nature of these relationships and emphasizes the critical role of interdisciplinary research and strategic interventions in promoting sustainable behaviors and reducing environmental impact. The use of VR as a tool offers a novel approach to understanding individual choices in controlled environments, providing insights into the complex dynamics of pro-environmental decision-making. This paper contributes to the ongoing dialogue on sustainable behavior, presenting insights into the interplay between personal preferences, environmental awareness, and choices that carry significant environmental implications.

# Understanding residents' mental models of biodiversity along rivers

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**Keywords / Relevant Terms:** Mental model elicitation, ecosystem services, riverrestoration, lay people

## Abstract

River restoration is an important measure for promoting biodiversity. According to recent research, the Swiss population is largely in favor of such measures. Nonetheless, the implementation of river restoration projects often meet with local resistance. Evidence suggests that lay people's limited understanding of the importance of natural watercourses for enhancing local biodiversity might be a main cause of resistance. There is, however, only little scientific knowledge about lay people's understanding of biodiversity conservation. With our project, we aimed to systematically reveal lay people's understanding of biodiversity along rivers using a mental model approach. We conducted the study in two Swiss river catchments where river restoration projects were planned and thus of social relevance, the Magdener river in the Swiss plateau and the Beverin river in the Eastern Swiss Alps. First we conducted qualitative interview with experts in river biodiversity and elaborated an expert model of biodiversity processes in river areas. On this basis, we conducted semi-structured interviews with a diverse sample of residents living in the study areas to reveal lay people's mental models. In a next step we conducted a standardized online survey involving random samples of 3000 residents in both study areas. In a last step, we analyzed residents' quantified mental models of river biodiversity comparing groups with different levels of self-reported knowledge about biodiversity. The findings revealed aspects of river biodiversity residents appeared to have a poor understanding, such as the role of natural dynamics for biodiversity or the critical role of intensive agriculture for biodiversity. Interestingly, residents with different levels of self- reported knowledge of biodiversity showed similar mental model pattern, but with different levels of conviction of the specific beliefs. Conclusions on the implications for residents' involvement in river projects will be drawn.

# Green and just energy? An analysis of the intersections of right-wing populism and the energy transition in Portuguese media

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**Keywords / Relevant Terms:** green energy transition; socio-environmental justice; media communication; Portugal; qualitative research

## Abstract

Local contestation to the deployment of large-scale renewable energy infrastructures has been increasing around the world, mainly due to the socio-environmental injustices that the so called green energy transition is reproducing or creating anew. Right-wing populism has also been on the rise across the world, and often associated with climate change skepticism and discrimination and violence towards minority groups. This article aims to explore the potential relations between these two socio-political issues, by analyzing Portuguese media discourses on the renewable energy transition and if and how those expose associations with right-wing populist rhetoric. 465 articles published by Portuguese newspapers were analyzed through Thematic Analysis, which revealed three main themes: 'Portugal at the forefront of the low-carbon energy transition – or fostering the identity and the pride of the nation?'; 'RET dominated by powerful economic lobbies – or the need to dethrone the corrupt elite?'; and, less pervasively, 'Beyond nationalism and populism - Energy justice is crucial for the green energy transition but not much is done for that'. These themes are discussed separately and not in conjunction, and with it, do not contribute to a multivocal, politicized and informed discussion of the negative and positive dimensions of the green energy transition as it is being materialized in Portugal. As such, we conclude that the findings do suggest that, even if indirectly, elements of newspapers' media discourses in Portugal seem to support some of the Portuguese far-right wing party - Chega - rhetoric, and give it strength, through the combination of both the populist and nationalist uptakes of far right-wing populist parties often used to mobilize voters. In turn, this might find echo in the feelings of marginalization and disenfranchisement of the rural communities affected by the green energy transition and promote their adherence to Chega's rhetoric.

# Understanding climate change in Portuguese community: the role of politics, culture, and social identities

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**Keywords / Relevant Terms:** social representations, climate change, place identities, political-ideological orientations, culture

## Abstract

Negative impacts of climate change have become increasingly visible worldwide, including in Portugal with heatwaves, droughts, and sea-level rise. However, most research in social, environmental, and political psychology approaches to climate change covers individual-level environmental attitudes and behaviors leaving the political and cultural dimensions of those understudied. Therefore, it is important to understand the role of people's daily practices, political-ideological orientations as well as the cultural values and related social and place identities in climate change representations to tackle this problem at multiple levels as more than an environmental problem. The current study aims to explore how people from different socio-demographic backgrounds and life-place trajectories negotiate understandings of climate change and related actions and how these reflect political-ideological orientations, cultural values, and social and place identities and attachments. Focus group discussions and individual interviews were conducted and analyzed based on thematic analysis. We conclude by discussing climate change as a multidimensional problem that is co-constructed by different actors at different levels and pointing out the necessity of tackling climate change as more than just an environmental problem but a political and cultural one.

# Bridging Psychology and Climate Change: A Digital Educational Toolkit

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**Keywords / Relevant Terms**: Climate Change Psychology, Digital Educational Toolkit, Behavioral Change, Applied Training, Collaboration with NGOs

## Abstract

Climate change poses a profound threat to humanity, demanding a collective and transformative response. This abstract outline a project aimed at creating a digital educational toolkit to establish climate change psychology as a vital domain for psychology graduates. Despite the urgency, climate change psychology remains a niche within the broader field of psychology. This project recognizes the significant impact psychologists can have in fostering behavioural change towards a more climate-neutral lifestyle. The toolkit will encompass four intellectual outputs, addressing climate change psychology from environmental, social, work, and organizational psychology perspectives. Leveraging digital educational possibilities, including e-learning, flipped classroom, and blended-learning approaches, this project bridge the gap between psychology students and the critical field of climate change psychology. Through a comprehensive analysis of challenges faced by climate activism groups, NGOs, and research, the toolkit aims to convince psychology educators and researchers of the imperative need for a focused approach to this emerging field. Acknowledging the diverse areas within psychology that can contribute to the climate change debate, the project incorporates social psychology insights into group processes of climate activists. It also explores industrial and organizational psychology to analyse human behaviour in NGOs and grassroots movements, offering recommendations for making volunteer work more attractive and better supported. Furthermore, the project integrates applied training to empower psychology students not only with theoretical knowledge but also with practical skills to address pressing climate change issues. This includes collaborative efforts with NGOs and grassroots movements to allow students to apply their knowledge in real-world settings. In summary, this project seeks to break down barriers and engage a broader audience in climate change psychology through a novel digital educational toolkit, empowering psychology graduates to contribute significantly to the pressing challenges of climate change.

# Perceptions and Actions in Climate Change Education: Insights from Catalonia's Green Schools Network Students

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**Keywords / Relevant Terms**: Climate Change Education (CCE), Student Perceptions, Eco- Social Contexts, Catalonian Green Schools Network, Sustainability Practices

## Abstract

The planet is undergoing rapid transformations that impact the atmosphere, oceans, and lands, leading to an unprecedented climate and ecosocial crisis. Education on climate change (ECC) has been established as a vital tool, globally recognized, to address these challenges and raise public awareness. The education of young people is essential because, without neglecting the responsibility of adult generations, the resilience and empowerment of youth are key to facing future challenges. For this, ECC should provide them with knowledge, strategies, and actions to mitigate and adapt to the climate crisis from a complex perspective. Therefore, we ask ourselves: How do secondary education students understand and perceive CC? What actions are they aware of to mitigate CC? Do they relate CC to nearby ecosocial problems? The research includes a sample of 650 students from the Green Schools Network program in Catalonia who were given a questionnaire with open and closed responses. The data, analysed quantitatively and qualitatively, show that: 1) students do not make a clear distinction between individual and collective actions, 2) recycling is the most recurrent action, 3) they identify contexts with CC but some closely related to CC are not associated by them. These findings suggest that, while knowledge about CC is improvable but adequate, ECC has gaps in the effective integration of CC in all its complexity. ECC should place more importance on an in-depth and adapted analysis of contexts and mitigation and adaptation actions. It is crucial to propose an ECC that goes beyond the classroom, combining theoretical learning with practical actions, and that transforms values and attitudes, fostering collective responsibility and meaningful actions at both individual and community levels.

# Information exchanges for the diffusion of energy technologies: the role of trust, frequency of interaction and proximity

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**Keywords / Relevant Terms**: energy transition, information exchanges, trust, proximity, diffusion of energy technologies

## Abstract

The diffusion of renewable energy technologies in society is relevant in advancing the energy transition. Information exchange among the members of a social system is key to influencing the adoption-decision of innovations. Although multiple studies have identified proximity effects– the influence of close people on an individual's behaviour – as relevant for the diffusion of energy technologies, few have focused on understanding the characteristics of the information exchange situations that affect adoption. In this study, we surveyed 3,000 adopters of photovoltaic panels (PV), electric vehicles (EV) and energy management systems (EMS) in Switzerland, and we focused on their exchanges with professionals and personal contacts that influenced their adoption decision. We inquired about the exchange location, frequency of interaction, contact person, and the level of trust in the contact person. Our results show that (i) when exchanging among personal contacts, adopters exchange mostly with family or friends instead of neighbours, (ii) most exchanges occur at home or within the area where they conduct their weekly activities, (iii) the level of trust they have in that person relates to the number of interactions. Thus, we can identify an accelerating triad – trust, frequency of interaction and proximity – and their compounded effects seem to be key to increasing the role of social influence in technology adoption. We can observe these patterns both in the exchange with professionals and personal contacts. However, distinctions emerge between EV and the other two technologies. These findings suggest that to improve the effectiveness of information campaigns, these should be planned with repetition and with the objective of building trust, as well as leveraging existing trustful relationships in the local social network. Understanding information exchanges in detail is key to guiding precise communication strategies to support the energy transition.

# Towards a new understanding of communication practices amongst mega projects practitioners in Saudi Arabia

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**Keywords / Relevant Terms:** Communication, Information flow, Mega-project, Knowledge-share

## Abstract

Saudi Arabia has transferred its economy to a new era where knowledge-based practices and sustainability are priorities. The construction industry remains conventional practices. However, human factors such as knowledge-sharing and communication practices are less investigated. This study explores the communication practices within mega construction projects in Saudi Arabia, exposing their opportunities and challenges. A conceptual framework was developed, including. a) Transformational aspects move from explicit into implicit knowledge, whereas b) includes three levels of communication practices, namely individual, teamwork, and leadership interventions. Individuals' intent, therefore, is to communicate by identifying both seeking understanding and matching the needs. Combining them may assist in promoting knowledge share, which in turn promotes communication practices. Teamwork is more likely to communicate and share knowledge only when there is task coordination is highly considered through an agreed-developed level of trustworthiness and transparency. Construction leaders and managers are more likely to communicate through data evaluation and shared decision-making framework. The identified three levels of individuals, teamwork and leadership should predict knowledge- share as the main construct associated with communication practices in construction mega projects. Data was collected through a self-administered questionnaire, including eight main constructs. The number of 202 practitioners completed the questionnaire. Data was analyzed using a) descriptive data analysis to present demographic data using IBM-SPSS, whereas b) association between constructs was analyzed by conducting Structured Equation Modeling (SEM) using Smart PLS software. Findings show a significant association in terms of individual communication practices. The construct of matching the needs is a mediator variable that facilitates the association between seeking understanding and knowledge sharing. Knowledge sharing is, on the other hand, significantly associated with establishing effective communication. Teamwork and leadership practices were not associated with effective communication practices.

# Positive management of communication for a sustainable housing

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**Keywords / Relevant Terms**: ADR, Communication, Sustainable housing, conflicts

## Abstract

As part of their efforts to combat climate change, promote ecological transition, and fight energy poverty, the European Union (EU) has proposed, among several actions, housing renovation with NextGenerationEU funds. Buildings account for roughly 40% of the EU's total energy consumption, and 36% of greenhouse gas emissions come from energy use. When this renovation affects private buildings, it requires the agreement of homeowners which can make the process more complex. This paper will present dispute resolution systems to manage conflicts in a positive way among homeowners and in neighborhood. Negotiation is one of the first dispute resolution mechanisms that may help in talking about concerns of homeowners involved in a neighborhood and in a multi-unit building. Mediation is a versatile, confidential, and communicative process that can effectively manage situations involving vulnerable people or consumers, as well as conflicts arising from misunderstandings and poor relationships among owners in multi-unit buildings, or between owners and tenants, which can impede renovation efforts. The expert mediator employs negotiation techniques and tools to emphasize two common goals: combating climate change on a global level and reducing energy costs on a personal level. This approach encourages parties to consider their personal interests and needs, leading them to reach a mutually acceptable agreement on their own. In addition to facilitative mediation, there is also evaluative mediation, which involves a conflict mediator who not only conducts the process but also provides an opinion or proposal that the conflicting parties may consider, if they choose to do so. This mediator is typically an expert in the field of conflict resolution.

# The Prevalence of Eco-Emotions Among Adults in Lithuania

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**Keywords / Relevant Terms**: Eco-emotions, Lithuania, adults, environmental crisis.

## Abstract

People around the world are struggling with challenging emotions related to the environmental crisis (UNDP, 2021). However, representative data illustrating the widespread nature of these emotions within specific populations and countries are lacking. Various factors, such as the severity of the environmental crisis in a given context, media engagement with environmental topics, and levels of environmental education, could affect how individuals perceive the environmental crisis. Therefore, it is crucial to first identify the epidemiology and valence of eco-emotions in specific contexts and populations to better inform local policies. To address this gap, we propose a representative study of Lithuanian households scheduled for January to February 2024, involving participants aged 18 to 75 (N = 2000). Our study aims to explore the extent to which various emotions related to the environmental crisis, assessed through the Climate Change Anxiety Scale by Clayton & Karazsia (2020) and the Climate Emotions Instrument by Pihkala (2022), are prevalent across the adult population in Lithuania. Additionally, we will examine which emotions are dominant or not, and how they are distributed across different age and gender groups. The discussion will include practical implications and outline the next steps.

# Eco-anxiety and trust in science: two paths to connect climate change perceptions and the general willingness for environmental behavior

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**Keywords / Relevant Terms**: Eco-anxiety, Trust in Science, Climate Change Perception, Environmental Behavior

## Abstract

The global environmental crisis is eliciting complex human reactions that can be studied across emotional, cognitive, and behavioral fields. While perceptions of climate change drive actions, there remains a necessity to investigate the precise mechanisms linking these perceptions to the willingness for environmental behavior. We analyzed an increasingly frequent emotional reaction of eco-anxiety and the metacognition of trust in science as two key factors that mediate the relationship between climate change perceptions and the previously developed General Willingness for Environmental Behavior Scale (GWEBS). Participants were recruited from multiple sources, aiming for diversity in gender, political views, and environmental engagement. Using a non-probabilistic convenience sampling method, we employed the snowball technique, explicitly seeking diverse perspectives on the climate situation, ranging from highly supportive to opposing views. Our study revealed a parallel mediation model showing that the unpleasant but non-pathological emotion of eco-anxiety and trust in science, understood as metacognition, that provides cognitive confidence and security in one's perceptions about climate change play a central role connecting climate change perceptions and willingness to behave accordingly even when gender, political orientation, and environmental activism were controlled.

# Adults' and adolescents' climate change anxiety and its correlates in Spain

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**Keywords / Relevant Terms**: Climate change, anxiety, adolescence, adults, connection to nature, coping

## Abstract

**Background and objectives:** Climate change anxiety (CCA) reflects the distress caused by climate change. The climate change anxiety scale (CAS) was developed in 2020 to be used in the USA. Since then, it has been used to measure CCA in adults from different countries. This study aims to examine Spanish CCA, expanding the age range to adolescents, exploring differences according to age, and examining the correlates of CCA.
**Process and methods:** Participants: 1252 adolescents (50.3% females) and 528 adults (64.4% females). Data from adolescents were collected in their classrooms through a pen and pencil questionnaire, and those from adults were collected online.
**Main results:** The CAS is a useful instrument to measure Spanish adolescents' and adults' CCA (?=.82). Adolescents reported low levels of CCA (M=1.41; SD=.43) which were significantly lower than adults' (M=1.83; SD=.64). Adolescents' males (M=1.46; SD=.44) showed slightly higher CCA than females (M=1.35; SD=.38), but adults did not reflect gender differences. Adults who collaborated with an environmental association reported significantly higher CCA (M=2.19; SD=.67) than those who did not collaborate (M=1.69; SD=.57). Participants who feel more connected to nature tend to report higher levels of CCA (r=.33) and behave in a more pro-environmental way (r=.48). Regarding coping strategies: those who used a problem-focused strategy or a meaning-focused strategy reported significantly higher levels of CCA (r=.11 and r=.53, respectively).
**Implications for research and practice/policy//Importance and originality to the contribution:** CAS is a useful tool to register CCA in Spanish adolescents and adults. Both adults and adolescents suffer emotionally due to climate change and its consequences. Connection to nature appears to be a risk factor for suffering CCA, while CCA seems to encourage pro-environmental behavior. Knowledge about CCA's risk factors and consequences is necessary to prevent and treat CCA, as well as to encourage pro-environmental action.

# Coping with Eco-Emotions

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**Keywords / Relevant Terms**: Coping, Emotions, Climate change,

## Abstract

How do people cope with climate emotions? Coping with the feeling of climate sorrow, anger, guilt, or powerlessness consists of efforts to manage specific external or internal demands that are appraised as exceeding the resources of a person (Lazarus, 1991). Some of the coping strategies, such as the connection to nature or the pro-environmental behavior, can be considered functional. However, others such as avoidance or resignation, may be dysfunctional. This study reports on the development and validation of a set of scales that measure coping with climate emotions. Lazarus' coping approach formed the theoretical basis for the development of the scales. Following the answers given to an open-ended question, we proceeded to categorize each of the coping strategies that the participants used to alleviate the feeling of negative climate emotions. Altogether, three scales were developed: problem- focused functional coping, emotional-focused functional coping, and dysfunctional coping. In two studies (N = 320; 1700) the scales and the scale structure were replicated (Cronbach´s ?: .76 to .94). Furthermore, correlations were made with climate change perception (van Valkengoed et al., 2021), eco-anxiety (Hogg et al., 2021), the inventory of climate emotions (Marczak et al., 2023) and willingness to environmental behavior. Hypothesized group differences (gender, age, political orientation and level of environmental commitment) in coping found empirical support. Thus, the scale can be used for research projects as well as for the preparation and evaluation of interventions to alleviate environmental stress from climate emotions and to foster pro-environmental behavior.

# We didn't start the fire! Decolonising narratives surrounding the climate and ecological crises and mental health and wellbeing to facilitate climate justice and equity

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**Keywords / Relevant Terms**: Climate justice, Global South, Nepal, India, eco-emotions

## Abstract

This PhD study is exploring eco-emotions and coping strategies adopted by young adults in Nepal and India associated with the ecological and climate crises. Currently, the literature skews overwhelmingly towards populations from the Global North; emphasising the need to conduct research in the Global South to understand their vulnerability to climate and ecological crises. Addressing these inequalities is important, because populations from the Global South that have been historically exploited lack resources to cope with a changing climate and are in danger of suffering the worst of the effects; drawing attention to these voices is essential in bridging the gap between the Global North and South to deliver climate justice and equity. The burden of responsibility lies with the Global North, who have historically contributed to a majority of issues that have led to global anthropogenic environmental degradation, resulting in low and middle income countries bearing a disproportionate brunt of the effects of the ecological crisis. A constructivist grounded theory design was adopted to understand the views and experiences of participants in Delhi NCR in India and Kathmandu in Nepal to construct theory that is based within the temporal and sociocultural context that the participants inhabit. Twelve participants each (six females and six males) aged 18-29 were recruited for semi- structured interviews. Participants were further divided based on socioeconomic class to explore differences and similarities in experiences. Eco-emotions and coping strategies of participants were observed to be similar to experiences of individuals in the Global North; eco-emotions and coping strategies that may be deemed unique to the South Asian context were reported as well. This study is part of a self-funded PhD project that aims to develop an in- depth understanding of eco-emotions experienced by young adults in Nepal and India, and its impact on their mental health and wellbeing.

# Psychological factors affecting the perception of biodiversity loss: A comparative study in three European countries

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**Keywords / Relevant Terms**: "biospheric values," "anxiety," "biodiversity loss perception," "pro-nature conservation behavior," "structural equation modeling"

## Abstract

The rapid global loss of biodiversity represents one of the most urgent crises threatening people and the environment. Considering the biodiversity crisis, it is crucial to understand how people perceive the risk of biodiversity decline. The study aimed to investigate relationships between value-based (biospheric values), cognitive (emotion and perception), and social factors (cross-country) to understand the public's biodiversity loss perception and pro-nature conservation behavior. Therefore, the present study was the first that examined how psychological factors of biospheric values, biodiversity loss anxiety, biodiversity loss perception, and pro-nature conservation behavior were related, looking at three European countries (Germany, the United Kingdom, and Spain). The data collection was performed in December 2022 using an online questionnaire. Our sample consisted of 437 participants from Germany, 453 from the United Kingdom, and 444 from Spain. Structural equation modeling (SEM) for each country was used to analyze data and identify causal relationships among variables. Furthermore, ANOVA with post-hoc tests was conducted to compare psychological factors between the different countries. Results demonstrated that the SEMs showed a good fit to the data. Path coefficients revealed significant correlations between biospheric values or biodiversity loss anxiety and pro-nature conservation behavior. The perception of biodiversity loss had a rare but rather moderating function between biospheric values and pro-nature conservation behavior. Cross-country comparisons demonstrated significant differences with small effects on biodiversity loss perception between the countries and their pro-nature conservation behavior, with Spain perceiving biodiversity loss strongest as real, caused by humans and close by. Our study findings suggest that to promote biodiversity conservation behavior it could be important to pay close attention to both the emotional and value-based aspects in educational campaigns or policies. Consequently, effective risk management of biodiversity crises is crucial for promoting pro-nature conservation behavior. Further implications and the study's limitations will be discussed.

# Exploring the Impact of Generative Artificial Intelligence and Real Environmental Experience on Architectural Design—A Case Study of Senior-level Learners in the Department of Architecture

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**Keywords / Relevant Terms**: Generative Artificial Intelligence, Real Environmental Experience, Architectural Design, Senior-level Learners

## Abstract

This study aims to propose a systematic guidance for senior-level architecture learners in utilizing generative AI. Generative artificial intelligence(AI) has advanced not only in text generation but has also made remarkable strides in image generation. Balancing the acquisition of the application methods of generative AI in architectural design, while maintaining the architect's sensitivity to real-world observations, and being able to filter reasonable and credible information for sustainable presentation in physical environments, is a crucial challenge for contemporary architects.Research objectives are as follows:1.To clarify the relationship between generated environmental images and physical spaces in architectural design. 2.To examine the differences in the creative patterns and learning outcomes of these learners before and after the introduction of generative AI. Process and methods: This study utilizes mixed-methods, field research, and participatory research. Eight fifth-year architecture students form four groups for an 18-week design program using generative AI on a real university campus site. Research process: 1.Establish knowledge and usage methods of generative AI in architectural design. 2.Conduct environmental behavioral research in the real field. 3.Systematically develop simulated spatial and environmental models. 4.Present architectural space design outcomes and administer questionnaires. 5.Researchers conduct research analysis. Main results: 1.Real field insight shapes learners' generative AI terminology, evident in architectural design outcomes. 2.Generative AI shifts learners' habits in site research, altering architectural design focus and details. Implications for research and practice 1.Learners' past learning experiences influence their assessment of the outcomes of generative AI in architectural design. 2.Digital natives need guidance from experienced educators to perceive ambiguity between generative AI images and real-life scenarios. Importance and originality of the contribution The introduction of generative AI in architectural design applications still presents certain challenges but is indeed feasible. This technology tests individuals' ability to filter spatial rationality and their level of awareness of the real environment.

# The Reconstruction of Urban Consumption Space by Digital Platforms: A Case Study of Nanjing, China

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**Keywords / Relevant Terms**: Digital Platforms, Urban Consumption Spaces, Platform Capitalism, Social construction, urban regeneration

## Abstract

With the advancement of Information and Communication Technologies, the digital platforms' role in restructuring urban spaces has become increasingly apparent. This study focuses on the inner city of Nanjing, China, and analyzes historical POI data, along with text and image data from platforms like Dianping and Xiaohongshu, to dissect how platform-driven socio- economic and cultural dynamics reshape urban consumption spaces. Our findings indicate that platform capitalism significantly contributes to the expansion of urban consumption spaces. This growth is accompanied by a weakening in the traditional role of location due to platforms' technical features (search, navigation), leading to community-focused, less visible, and vertically structured consumption spaces. From a social standpoint, the identity of platform users and the process of place-making are being digitized and visualized. Dominated by operators and internet celebrities, the public uses physical spaces as a backdrop for self-promotion. Through texts and images on platforms, they depict and perform in these spaces, influencing the reshaping of consumption spaces based on their aesthetic preferences, leading to intensified gentrification and stylization. Furthermore, platform communication accelerates the transformation of local cultural resources into cultural capital, as well as the recombination of foreign and local cultures. This can energize the internal dynamics in consumption spaces, while also making the cultural symbols within these spaces diverse, complex, and homogenized.
In summary, platforms generate new capital, including economic, technological, social, and cultural capital, which is dualistic to urban spaces. Authorities need proactive strategies to mitigate potential negative impacts and prevent physical spaces from being subordinated to virtual extensions. Considering digital platforms have become an integral part of urban consumption experiences, their combined study offers valuable insights into contemporary spatial regeneration.

# Participatory mapping for exploring cultural ecosystem services and pro-environmental attitudes

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**Keywords / Relevant Terms**: Participatory Mapping, Cultural Ecosystem Services, Pro-environmental attitudes

## Abstract

Within the wider conceptual framework of ecosystem services (ES), defined as the benefits people draw from nature, the category of cultural ecosystem services (CES) explores more specifically the nonmaterial benefits that people obtain from nature, such as recreation, identity, heritage, environmental education and others. CES are formed at the interface between people's values and cultural practices and environmental spaces (i.e. ecosystems), and they only exist when there is demand - through recognition, assignment of meaning, direct or indirect use. So far research aiming at understanding on how the formation of CES is shaped and can be explained is still pauper. The intangible character the CES forces the use of multidisciplinary methodologies for capturing them. Participatory geographical information systems (PPGIS), or participatory mapping tools, are frequently used for identifying people's preferences over the environment. In this context, this communication aims at presenting to what extend the application a participatory mapping tool, serves for identifying how Cultural Ecosystem Services (CES) are informed by the pro-environmental attitudes. The mapping process was carried out through the application of a questionnaire using the digital tool of Maptionnaire (https://www.maptionnaire.com/) in order to localize the CES and applying the NEP scale. The questionnaire applied to 240 individuals from September to November of 2023 provided results for the statistical and geographical analysis of the type of attitudes related with the location where people benefit from nature recreative, educative, religious, social and cultural activities outdoors. Results show that information technologies as Maptionnaire have the capacity to link environmental attitudes with placed-based preferences. This opens the path for future studies that explore about how promote attitudes that trigger transformative actions for strengthening ecosystem values from the citizens.

# Emphasizing closeness to observable climate changes or virtually depicting future devastating ones? Both could enhance climate action, but not in the same way!

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**Keywords / Relevant Terms**: "psychological distance", "virtual reality", "spatial presence", "support for climate change mitigation", "mitigation intentions"

## Abstract

Addressing climate change poses a major challenge to the human mind: people must anticipate potentially devastating events for future generations despite only directly experiencing the “here and now” (Liberman & Trope, 2008). To overcome this psychological distance and, consequently, to reduce climate inaction, two directions can be taken: emphasizing people’s closeness to the currently observable impacts of climate change with visual cues (e.g., maps or timelines), or helping them to foresee its most serious future consequences, using, for example, virtual reality. Our research aims to assess the effectiveness of both methods in reducing the psychological distance to climate change increasing climate action. In a first study (N = 146), participants had to situate some climate events occurring close to home, in the near future (vs. far from home, in the distant future) in relation to their place of residence and the present time. Results indicate that emphasizing people’s closeness to climate change significantly reduced the perceived psychological distance, thereby indirectly increasing risk perception, emotion reactivity, and engagement in mitigation. In a second study (N = 186), participants watched a 360°-video depicting the significant rise in sea levels at the end of the century near their homes, presented on a virtual reality headset (vs. on a screen or with pictures from the video). Surprisingly, results show that virtually experiencing rising sea levels did not affect the perceived distance to climate change in comparison to other media. However, virtual reality significantly increased the feeling of presence in this distant context, and therefore, indirectly enhanced support and intention for mitigation. In light of these two studies, we will discuss the different processes underlying these strategies (reducing psychological distance or increasing spatial presence) and the recommendations for effectively communicating about both the current visible and far-reaching consequences of climate change, and promoting climate action.

# The contribution of Goal Framing Theory to flood risk prevention: acceptability of a digital prevention tool

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**Keywords / Relevant Terms**: Flood, digital acceptability, goal framing theory, risk prevention

## Abstract

A team of researchers has designed a mobile application to encourage people to adopt preventive behaviour face to flooding risk. To accompany this initiative, our aim is to assess the application's social acceptability beforehand, in order to understand how to facilitate its use. Here, the study of the tool's acceptability is coupled with motivations for using it. In this context, we applied the Goal Framing Theory, developed by Lindenberg and Steg (2013). This approach is typically used in the framework of environmental behaviors. We also question the role of risk perception, which can affect the acceptability of the proposed tool. We created and pre-tested (N = 216) four scenarios incorporating hedonic, gain, and normative motivations, as well as a combination of gain and normative ones. In addition, we included a control scenario without motivations. After reading one of the scenarios, an online questionnaire enabled participants (N = 1688) to evaluate: (1) The Technological Acceptance Model, (2) individuals using the application (cf. Lefeuvre et al., 2008), and (3) the percentage of neighbors interested in the tool. Additionally, participants completed a risk perception scale (Lemée et al., 2018) and socio-demographic items. Our main findings suggest that maximizing the tool's acceptability is linked to normative and gain motivations rather than hedonic ones. Furthermore, we identified that individuals with a strong perception of risk are more inclined to accept the tool compared to those with a weaker understanding of flood risk. We also observed an interaction between risk perception and acceptability motivations, more specifically hedonic motivation. These outcomes will provide useful insights for application designers, allowing them to highlight the essential components when communicating: in line with our results, it is indeed recommended to focus on normative aspects.



# Early Carreer Research Workshop

# ECRW 1

# Polluting as a privilege: An Intersectional Approach to Environmental Justice and Transportation Emissions

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**Keywords / Relevant Terms**: mobility, emissions, intersectionality, environmental justice

## Abstract

Pressing concerns over air pollution and its impact on community health demands a comprehensive understanding of the political nature of the atmosphere and transport-related emissions. This study delves into how social and historical structures of power influence travel behavior and subsequent emissions. To achieve this, transport emissions were calculated from a travel survey that gathers a representative sample of Barcelona residents. We use the novel quantitative method MAIHDA, which is rooted in intersectionality principles, to examine the intersection of gender, age, and migration background with emission releases from mobility. Our findings reveal that those identities tied to privileged positions promote the greatest contribution to air pollution. Specifically, middle-aged European-born men exhibit the most NOx-intensive mobility practices. In contrast, communities embodying intersectional axes of oppression such as misogyny, racism, or ageism, demonstrate lower emission levels. This highlights the unique mobility experiences of migrated women, often overlooked in previous research. These results advocate for acknowledging the unequal distribution of responsibilities and reevaluating burden-sharing schemes in air pollution policies in order to advance environmental justice and community health.

# Young people's role in transforming the urban landscape: action research between planning processes and everyday lives

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**Keywords / Relevant Terms**: participation, young people, action research, social sustainability

## Abstract

This is an empirical study which examines analytical and methodological approaches to young people's participation in sustainable urban landscape planning. We investigate forms of participation that establish meaningful relationships between young people's everyday lives and formalized processes of sustainable urban landscape planning, while reflecting on complexities and limitations to enhancing also more vulnerable groups' participation. Through a systematic literature review of young people's participation in urban landscape planning, as well as an action research process, we describe current and investigate new potentials for dynamically linking the uses, values, and needs of urban youth, to formalized planning processes, as well as to broader societal issues such as climate change and well- being. The main approach is based on a critical-epistemological framework for working with citizen-driven action projects and understanding local and societal issues through social learning. Here it consists of an ongoing series of Future Creation workshops carried out with a group of young people in two vulnerable neighbourhoods in Malmö (Southern Sweden). In addition, we facilitate research workshops between the young people involved, other researchers, and invited practitioners. The workshops are inspired by the literature findings, and offer both the young people's own analysis of the diverse roles the urban landscape plays in their lives, of the potentials insustainable transformations, and their concrete action projects. In addition, we facilitate research workshops between the young people involved, other researchers, and invited practitioners; experimentally bringing the young people's analyses and visions into dialogue with more instrumental planning approaches for a sustainable future, such as ecosystem services, green infrastructure, nature-based solutions and climate adaptation. The research contributes to landscape planning discourses and participatory methodologies by anchoring the question of landscape functionality, values, and transformation in young citizens' everyday life and their social learning processes in and around the urban landscape.

# The restorative potential of urban forests during daylight and nighttime conditions

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**Keywords / Relevant Terms**: psychological restoration, urban forest, outdoor lighting, daylight, structured walks

## Abstract

Urban forests are a type of green space located in the vicinity of an urban area, and may promote human health and well-being through psychological restoration. In order to explore how the pedestrian experience of urban forests differs between daylight and nighttime concerning perceived restorative potential, this study employed the method of structured walks. The study was conducted in Ålesund, Norway, with 52 participants, participating either in daylight or after dark (between-subject design; 16 women and 10 men in both conditions). The location was a path adjacent to an urban forest and the participants answered a questionnaire (individual characteristics, perception of the path and affective experience) in designated places (start, midpoint and end of the route). In the nighttime condition, a headlamp was used for lighting the path, since in Ålesund it is a common method for providing lighting when taking walks during dark hours. After each structured walk, a short group discussion was conducted. The results from this study will shed light on how the pedestrian experience of urban forests is impacted by light conditions (analyzed with ANCOVA). The present field work is the pre-intervention stage and will be followed by an intervention stage where electric lighting will be installed along the path. Further analyses will compare how daylight, headlamp and electric lighting condition impact the restorative potential.The relevance of the study on contemporary issues relies on the concept that outdoor lighting may contribute to safe and inclusive urban environments also during the winter season in Nordic countries, where seasonal variations in daylight hours make much of the travelling occur in dark conditions with reduced visual accessibility. The study will provide the municipality of Ålesund with relevant information on how to design lighting solutions for urban forests, which are important settings for psychological restoration.

# Exploring the impact of individual differences on the mental well-being benefits gained from exposure to urban greenspaces

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## Abstract

**Background and objective**
Extensive research has shown the benefits that exposure to urban greenspaces can have on mental well-being. However, there is a gap in understanding around how individual characteristics, such as age, can impact the well-being benefits gained from urban greenspaces. Additionally, experimental methods focused on exposure to urban greenspaces need further development in two aspects, which this research aims to address; (1) more focus is needed on the multi-sensory aspects of urban greenspaces, and (2) whether immersive technologies such as virtual reality are a feasible exposure method.
**Process and methods**
Quantitative and qualitative methods are employed to address the research aims. Firstly, 20 semi-structured interviews were conducted with participants aged 12-80 yrs. A further two pilot experimental studies were conducted with university students (N = 60). A final experiment (N = 62) using virtual reality is currently underway. Both subjective and objective measures are used.
**Main results**
Results so far show that there are many similarities between age groups regarding important properties for well-being in urban greenspaces. Pilot studies showed the importance of historical elements in urban spaces for stress and hedonic tone. Similarly, virtual reality exposure to green, blue, and historic environments was associated with reduced anxiety and improved mood.
**Implications for research and practice/policy**
This research could influence how urban greenspaces are redesigned in a community-led way, as well as how urban greenspaces impact people differently depending on individual differences such as age. There are also implications for green social prescribing and who might best benefit from the service.
**Importance and originality of the contribution**
This research highlights the importance of urban greenspaces for several age groups and the impact on subjective and objective well-being. It has been shown that virtual reality is a feasible tool for environment exposure in experimental research.

# ECRW 2

# Exposure to nature scenes mitigates the adverse effects of adolescents' social ostracism

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**Keywords / Relevant Terms**: Restoration, Ostracism, Adolescents, Nature, Urban

## Abstract

**Background and objectives**
Restoration effect refers to the recovery of adaptive resources (e.g., attention, positive emotions) that are depleted during daily life. One way in which these resources can be diminished is through social exclusion, often experienced during the teenage years. The objective of this study is to examine the possible restorative effects that visual exposure to nature may have on adolescents who suffer from ostracism.
**Process and methods**
The sample was formed by 304 participants (M age =14.66; SD = 1.39). We conducted a 2 (Ostracism condition: social inclusion/exclusion) x 2 (Stimuli: natural; non-natural) x 3 (Time: baseline; manipulation; intervention) experiment. A questionnaire was designed to assess positive affect, social competence, and attention at three different times. Baseline levels were measured at T0. At T1, ostracism was induced, and, at T2, participants were exposed to either natural or non-natural stimuli.
**Main results**
From T0 to T1, participants' positive affect (p-value < .00; ? = .12) and social competence (p-value<.00;?=.04) was depleted in the social exclusion condition, but attention remained virtually the same (p-value = .78). From T1 to T2, positive affect (p-value < .00; ? = .03) and social competence (p-value < .00; ? = .02) increased for those exposed to nature, reflecting a positive effect of nature exposure in comparison with exposure to non- natural stimuli. Attention improved independently of the kind of stimuli participants were exposed to, probably due to a learning effect.
**Implications for research and practice/policy // Importance and originality to the contribution**
Nature exposure was beneficial for ostracized adolescents. These findings highlight the potential of nature-based interventions as a cost-effective and accessible strategy to help adolescents cope with the negative consequences of social exclusion.

# Exploring the potential of Sustainable Drainage System (SUDS) designs to create restorative environments in residential urban spaces

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**Keywords / Relevant Terms**: SUDS, Soundscapes, sustainable urban neighbourhood, health and wellbeing, restoration

## Abstract

The recent SUDS (Sustainable Drainage Systems) adaptation, as a blue-green infrastructure in cities, provides multiple benefits of flood mitigation and prevention, biodiversity enhancement, and climate resilience. Blue-green urban areas can also provide restorative benefits to urban residents. Furthermore, there is increasing evidence of the positive benefit of blue-green infrastructure soundscapes, in particular natural sounds. For example, the sound of birds, moving water, and rustling of leaves may provide restoration from stress or a blue-green space may offer respite from a noisy neighbouring area, thus reducing noise annoyance. Despite growing research, however, the creation of positive soundscapes as a resultant multiple-benefit of SUDS has not yet been explored. Urban neighbourhoods can be the test- beds to explore this research gap owing to resident's proximity and access to SUDS induced soundscapes. This PhD research thus aims to explore whether or not SUDS can be designed in a way to create restorative soundscapes. In study 1, experts from domains of SUDS design and management, ecology, landscape design, and architecture, were interviewed to find the most appropriate categories of SUDS for residential areas, and water & planting design recommendations for SUDS, to achieve restorative soundscapes and biodiversity enhancement. These findings enable study II, where modeled virtual case scenarios of SUDS, will be tested with participants to determine human preferences and restoration from SUDS- produced nature sounds (water, flora, fauna). This research shall contribute to creating healthier sponge cities, through improvised SUDS, simultaneously providing biodiversity net gain benefits. The policy of creating "nature-positive places" of the Scottish National Planning Framework 4, is also embedded in the aim of this research. This interdisciplinary research shall further align with upcoming noise and soundscape policies in the UK and Europe, eventually propagating well-being with an enhanced quality of life within urban habitats with biodiversity inclusion.

# Exploring the relationship between students' experience in greenspace, nature connectedness and pro- environmental orientation

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**Keywords / Relevant Terms:** Greenspace, students, biodiversity, university campus

## Abstract

Spending time in greenspace is positively associated with nature connectedness and pro- environmental behaviours. This is particularly important, with the ongoing climate crisis and biodiversity loss. A sense of connection to the natural world is influenced by childhood experiences of nature. University is a transitional stage from childhood to adulthood, hence crucial to developing environmental responsibility. Considering the importance of greenspaces for sustainability, universities can therefore have an important role to play. Students represent the future generation of decision-makers and are at a crucial stage in their lives where their behaviours are shaped.This study, therefore, aims to explore the relationship between use and experience in greenspace, nature connectedness and pro-environmental orientation in university students. To achieve this, qualitative data is collected about two British universities (the University of the West of England and the University of Bristol) students' use and experience of greenspaces, design of greenspaces, students' sense of nature connectedness and its effect on their pro-environmental orientation. Research methods include observation, photo-elicitation, and walking interviews. Literature suggests that greenspaces are under-used among students. Hence, for greenspaces to contribute to sustainable behaviours, we need to better understand how the student population experiences them, and what encourages their use and experience of nature within these greenspaces.Research findings can assist universities and municipal authorities, both hosts to students, in tying education practice and policies to the landscape planning and design of greenspaces that will better attract students to use them, potentially enhancing their nature connectedness and encouraging pro-environmental orientation.



# Poster Presentations

# Gamifying Safety Training for Sustainable Work in Waste Management Plants: The SOHS Project.

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**Keywords / Relevant Terms**: Digital Innovation, Gamified Training, Sustainable Worklife, Waste Management

## Abstract

Efficient waste management is integral to realizing the Sustainable Development Goals outlined in the 2030 Agenda and promoting the development of a green economy. Nevertheless, the sustainability perspective has often focused more on the environmental and economic positive sides of the so-called “Green jobs”, leaving key social and workplace aspects, such as occupational safety and health (OSH), underemphasized. The complexity of integrated municipal solid waste (MSW) management systems poses new challenges for the OSH of people employed in waste management plants, due to diverse risk factors and unpredictable waste materials. Safety training is vital for business competitiveness and preventing injuries, and the evolution of training approaches through the integration of digital technologies becomes essential for enhanced accessibility -in terms of both time and costs- and effectiveness. The SOHS (Sustainable Occupational Health and Safety) project addresses these challenges through a human-centered ergonomic approach. Four Italian academic partners collaborate to achieve a threefold goal: 1) conducting a multidimensional occupational risks assessment in three waste management plants used as case studies, 2) creating a digital twin of the risk scenarios detected in the investigated plants, and 3) crafting a prototype for a gamified training solution and testing its usability. The prototyped training tool aims to replace on-field training and hands-on demonstrations for plant workers, providing a highly engaging and effective solution for OSH risks identification and avoidance behaviors. The risk assessment phase, based on documentary data and on-plant measurements (both Technical and Observer-Based Environmental Assessment, TEA and OBEA) is ongoing. Outcomes will include a multidisciplinary OSH risk mapping method, and a database on waste management plant injuries and diseases, besides the development of a prototype for an innovative training tool with potential industry-wide adoption in the waste management sector.

# Understanding gender differences in renewable energy participation: A DCE with Elektrizitätswerke Hindelang (EWH) Customers and Panel Participants

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**Keywords / Relevant Terms**: Renewable energy community, Gender, Discrete choice experiment, Pro-environmental behavior, Renewable energy

## Abstract

Previous research has indicated a heightened environmental concern among women, alongside a propensity to adopt pro-environmental behavior (Zelezny et al., 2000). Yet, the underrepresentation of women in energy communities is at odds with these findings (Hanke and Lowitzsch, 2021). Our study aims to provide empirical insights into the specific attributes of renewable energy projects that influence engagement decisions, examining the conditions that sway investment and participation across genders. We aim to highlight the gender disparity particularly in decision-making authority (Kuschan, 2020) and investment levels (Fraune, 2015), as well as gendered in-group preferences (Rudman & Goodwin, 2004). We employ a discrete choice experiment (Holmes et al., 2017) as part of an online survey to elucidate the preferences of two distinct samples: customers of a Bavarian energy community (N = 132) and German citizens recruited from a panel (N = 773). We included attributes such as energy source, right to vote, minimum investment threshold, annual benefit, capital commitment period, likelihood of capital loss, and opportunities for involvement. Overall, we find that return on investment ($b = 0.18$, $p < 0.001$) has the biggest effect with capital commitment period ($b = -0.07$, $p < 0.001$) and higher minimum investment negatively effecting choice ($b = -0.10$, $p < 0.001$). For our gender focused research question, we find that women are less likely to choose male-dominated energy community investments ($b = -0.08$, $p < 0.001$). Additionally, return on investment appears to be less important for woman when choosing ($b = -0.05$, $p = 0.011$).

# Subscription to renewable energy tariffs – a systematic literature review

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**Keywords / Relevant Terms**: Renewable energy, subscription, consumer, literature review

## Abstract

According to the IPCC's 3rd report, using more renewable energy instead of fossil fuels is one of the best ways to mitigate climate change (IPCC, 2022). In 2020, only 25,3 % of the total electricity production came from renewable sources (RTE, 2020). While this number has increased since, nuclear energy still prevails in France to produce electricity. To increase the production of renewable gas and electricity, consumers can sign up for green energy tariffs and thus support the implementation of renewable energy plants without having to invest in personal installations. Thus, identifying the factors determining the general public's subscription to these green energy contracts seems relevant to reach the goals set by the Paris Agreement on climate change. This literature review was conducted following the PRISMA guidelines (Page et al., 2021). The query ALL = ("renewable energy" OR "renewable electricity" OR "renewable gas" OR "green energy" OR "green electricity" OR "green gas") AND (household OR public OR consumer OR citizen) AND (subscri* OR adopt* OR willing*) AND (barrier OR determin* OR facilit*)) was used on the databases Web of Science and Google Scholar. Out of the initial 19340 results, 33 publications were included in this review. The theory of planned behavior (TPB, Ajzen, 1991) and the unified theory of acceptance and use of technology (UTAUT, Vankatech et al., 2003) are mostly used to describe which factors determine intention to sign up for a green tariff, which is mostly measured through the willingness to pay. Moreover, results show that socio-economic factors such as mean salary positively influence one's willingness to pay more for domestic energy from renewable sources. The prevalence of economic factors in this subject lead us to question the difference between this behavior and other pro-environmental or sustainable behaviors such as recycling or saving water and energy.

# Assessing consumer perceptions and acceptance of innovative sustainable agricultural technologies: a nationwide survey in Italy

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## Abstract

While consumers are increasingly aware of environmental challenges and concerned about the impact of the production chain, in practice, they are still far from changing their consumption habits to make them more sustainable. The psychosocial barriers hindering the acceptance of technological innovation in the agri-food supply chain are manifold, ranging from cultural and value factors to the presence of false beliefs fueled by fake news about agri-food production, emotional dynamics (e.g., food "neophobia" for technologies) and imitation processes. Technological innovations or innovative approaches integrated into production practices, from primary production to the agrifood industry, aimed at recovering waste, increasing resource efficiency, and making agriculture more sustainable are becoming gradually more popular. But how aware are consumers of these technologies? The study of consumer awareness and opinion is the basis for defining their acceptability. In this regard, a nationwide survey of Italian consumers was conducted to define their level of awareness and acceptability of 12 innovative technologies or approaches geared toward increasing the sustainability of the agricultural sector. The choice experiments were structured implementing the Best-Worst scaling experimental design. The results showed a low level of consumer awareness toward increasingly popular technologies. However, the use of by-products and up- cycling in a circular economy perspective seems to be the most convincing alternative for Italian consumers.

# Improving Dialogs in Multi-stakeholder Settings: an Experiment

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**Keywords / Relevant Terms**: energy transition, multi-stakeholder dialogs, moral foundations

## Abstract

Environmental challenges, such as shifts to renewable energy, represent some of the most complex of problems given their societal implications and uncertain outcomes. Such challenges frequently become politicized with people adhering to views aligned with their political affiliation. To make progress stakeholders across the political spectrum need a common understanding of the scope of the problem and other stakeholder's positions related to it. This requires that stakeholders be receptive to information that may not align with their pre-existing positions. We experimentally tested a strategy to foster such receptivity by evaluating the effect of a behavioral intervention on perspective taking and empathy. After screening participants for opposition to a shift to renewable energy, each was randomly assigned to write a short, moral-based essay either for (intervention) or against (control) this shift. We received 223 completed responses which we electronically coded using the Extended Moral Foundations Dictionary. We expected that writing a morally-based essay in favor of one's opposing stance would increase perspective taking, empathy and support of the energy transition. We found a main effect on support and empathy but not perspective taking. We also hypothesized that empathy would mediate the relationship between essay writing and support. We tested a serial mediation model where writing a counter attitudinal essay would result in increased empathy and support, which then results in an intention to act. While we found a significant indirect effect of essay writing on behavioral intention that was mediated by support, there was no evidence that empathy helped to explain this relationship. Given the relatively simple intervention and its ease for incorporation in group settings, we suggest that its use may help lay the foundation for a more productive discussion. Future research can help understand the mechanism by which this occurs and its impact on the likelihood of reaching agreements.

# Are bioplastics truly biodegradable?

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**Keywords / Relevant Terms**: Anaerobic digestion, polylactic acid, biodegradable polymers, bioplastics, pre-treatments

## Abstract

Bioplastics are gaining popularity due to the environmental impacts caused by petroleum- based plastics. Bioplastics offer various options for end-of-life disposal, including composting and anaerobic digestion (AD). However, there is a widespread misconception from the users that bioplastics decompose naturally in the environment, leading to the assumption that they do not harm ecosystems or wildlife. This misconception can affect environmental awareness, as the prefix "bio-" refers to either biological origin or potential biodegradation at the end of the product's life cycle. The bioplastic's biodegradability imply that this polymer can be broken down by microorganisms, however, not all bioplastics biodegrade under all conditions. The aim of this study is to evaluate the anaerobic biodegradability of polylactic acid (PLA), the most widely used bioplastic. The effect of temperature (mesophilic 35 ºC and thermophilic 55 ºC) and particle size (four values ranging from 125 to 4000 ?m) was analysed using virgin PLA pellets. Changes in the structure and thermal properties of the bioplastics during AD were monitored. Experimental results show that PLA degrades faster at smaller particle sizes and under thermophilic conditions. After 450 days, complete PLA degradation occurred under 55 °C for all the samples tested, although shorter times were needed for smaller particles (125-750 ?m). However, under 35 °C, the maximum methane production was not reached within 450 days for any of the particle sizes tested. Colour changes were observed under both conditions, although the samples were more fragmented under 55 °C, which could have promoted its biodegradation. Overall, this study demonstrates that a nearly complete PLA anaerobic degradation for methane production is feasible under thermophilic conditions and its conversion rate depends on the particle size. Therefore, within the circular economy principles, thermophilic AD of PLA could represent a feasible alternative for a sustainable end-of-life treatment of this widely used bioplastic.

# Assessment of the current status of special needs evacuation space allocations in schools of New Taipei city, Taiwan

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**Keywords / Relevant Terms**: School, Evacuation Shelters, Special Needs Evacuation Spaces, Assessment

## Abstract

Researcher inventoried the special needs evacuation spaces and facilities allocated in 17 schools in New Taipei City, Taiwan and examined four major dimensions to assess the current state of special needs evacuation spaces allocated in schools: the ability of the evacuation space to maintain the readiness of its basic functions and facilities during a disaster; the accessibility of functional zones in the evacuation space; the accessibility of the connections between functional zones in the evacuation space; and the functions, capacity, and reliability of the main evacuation area as a temporary caregiving unit. The results revealed that the majority of the main evacuation areas were not designed with special-needs evacuees. In addition, in nearly half (8/17) of the schools, there was no accessible route from the parking lot to the main evacuation area. The main evacuation areas were not directly connected to a treatment unit or washroom, and the accessible facilities were only accessible via elevators. Some schools lacked elevators that connect the floors of different buildings. In the event of a disaster, inoperable elevators immediately impede the connectivity between evacuation spaces. Only six schools had an electrical room or emergency generator installed in elevator-equipped buildings and nearly half (8/17) of the schools had installed a combination of metal water tanks and quakeproof water storage tanks. The majority of schools designated the main evacuation area as a large capacity area that is separated from the main teaching area, and, as a result, neglected the overall utilization of applicable campus spaces. Schools should also consolidate the usability of evacuation spaces based on the allocation and quantity of various types of spaces, parking and accessibility routes, and essential facilities and make preparations based on the current condition of the facilities, thereby achieving the effective use of evacuation spaces during an emergency.

# Public opinion analysis method after disaster with social media data--a case study of the flood disaster in Beijing-Tianjin-Hebei Region

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**Keywords / Relevant Terms:** social media data; disaster perception; machine learning-based approach

## Abstract

Due to climate change, extreme weather events are on the rise, leading to more frequent occurrences of climate-related disasters. Analyzing people's perceptions and attitudes towards disasters after they occur can help determine the spatial pattern of the disaster intensity and the post-disaster needs of different populations. The implication is to provide references for disaster assessment and post-disaster relief needs analysis. Starting from July 29, 2023, due to the influence of Typhoon Dusrayi and Typhoon Canu, the Beijing-Tianjin-Hebei region in China suffered from catastrophic rainfall, resulting in severe flooding in multiple areas. This study utilized web crawlers to collect relevant Weibo data during the disaster, applied machine learning models to conduct public opinion analysis on the flooding disaster, developed the evolutionary patterns of public opinions on the disaster, and obtained heat maps and sentiment indicators for different cities. The results will contribute to the rapid assessment of post-disaster losses and guide the resource allocation in the initial emergency rescue process after the disaster.

# Is it possible to promote a more sustainable lifestyle through the implementation of telemedicine services in rural areas? A qualitative study

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**Keywords / Relevant Terms**: "Telemedicine", "Rural areas", "Healthcare", "Sustainable lifestyle","Acceptance"

## Abstract

The recent technological progresses in medical fields have brought to the development of telemedicine services that are now becoming the norm all around the world. The collaboration between environmental psychologists and healthcare professionals, who practice in rural areas, can bring to more efficient and comprehensive strategies to promote sustainable lifestyles and address health needs in changing climate. The aim of this paper is to investigate the role of rural areas providers on the adoption of telemedicine services inside their communities, understanding the relationship between practitioners, patients, and mountainous environment. To evaluate the role of healthcare professionals in rural areas qualitative structured interviews are being conducted among the 10 local health providers of two municipalities in the mountainous area of the Italian Dolomites. The structured interviews investigate: the current knowledge and use of telemedicine services, willingness to improve the service, expected acceptance and abilities of patients, technological knowledge, environmental benefits and constraints on the development and usage of the service. From preliminary data analysis, it emerges that providers who have more knowledge and experience in the use of telemedicine are keener to propose the service and expect their patients to use it. From further analysis, we expect to see the moderator role of technological knowledge and practical experience on the abilities of practitioners to detect environmental limits that might affect the practical application of the service and the type of patients expected abilities on the use of telemedicine. In conclusion, with this paper we aim to expand the present knowledge on the attitudes towards telemedicine of different rural areas health professionals and propose practical improvements of the service while keeping in mind the environmental characteristics of rural locations.

# Corporate Responsible Communication and Sustainability: an investigation into the practices of an Italian textile company in promoting the reduction of environmental impact and social well-being through digital channels

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**Keywords / Relevant Terms**: Social corporate responsibility; Sustainability communication; sustainable fashion; Sustainable customer engagement behavior

## Abstract

Corporate responsibility efforts continue to grow as stakeholders demand more. Corporations can benefit not only from corporate responsibility initiatives, but also from advertising them widely. This research was conducted in collaboration with GAIA SEGATTINI KNOTWEAR (GSK), a company that manufactures sustainable and ethical sweaters entirely in Italy from regenerated yarns. The research focused on consumer engagement and promotion of conscious consumption in the fashion sector through digital communication of sustainability initiatives. To better tailor products to meet community needs, GSK conducted a survey in November 2022. Data collected through an online questionnaire was analyzed quantitatively and qualitatively by researchers of ROMA TRE and LINK Campus University of Rome. An analysis of 1309 responses revealed a profound emotional attachment among customers to GSK clothing, as demonstrated, for example, by their reluctance to lend garments. With 46.9% of participants having followed the company for more than five years, there is evidence that brand loyalty exists. Most respondents owned more than three items, and those who had been familiar with the brand for a longer period tended to own a larger collection, likely due to a stronger emotional connection. The significant participation in the survey indicates an emotional bond that could highlight strategies to further sensitize individuals and encourage more sustainable purchasing choices. As a result of this involvement, the company can communicate directly with its customer base. This communication is in line with the company's commitment to environmental and social responsibility. Through this initial collaborative effort, we paved the way for a new survey conducted in November 2023 to deepen how corporate social and environmental responsibility affects pro-environmental attitudes and behaviors within the GSK community. Data analysis for this second survey is currently underway and the results of this second survey will also be integrated in this presentation.

# Navigating New Waters, Between the Flood and the Draught: Climate Displacement, Acculturative Stress, and Strategies for Adapting in the Workplace

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**Keywords:** Climate Displacement, Climatic Refugees, Environmental Migratory Grief, Acculturation, Workplace Acculturation (AWEO), Acculturative Stress, Well-being, Mental Health, Job Satisfaction

## Abstract

This project investigates the multifaceted experience of climatic refugees, focusing on the interplay between environmental migratory grief, acculturation in work environments, and their combined impact on well-being and adaptation. Climate change is displacing millions worldwide, forcing individuals to abandon their homes and communities. This project delves into the psychological dimension of this displacement, specifically environmental migratory grief – a profound sense of loss associated with the separation from one's environment and traditional way of life. The project examines how climatic refugees navigate acculturation in new work environments. Acculturation, the process of adapting to a different cultural context, can be a source of stress and challenge a sense of belonging. We explore how these challenges intersect with environmental migratory grief and their combined effect on mental health, job satisfaction, and overall well-being.The research employs a mixed-methods approach, utilizing qualitative interviews to capture the lived experiences of climatic refugees and quantitative surveys to assess levels of grief, acculturative stress, and well-being indicators. By analyzing this data, the project aims to:

1. Understand the specific challenges faced by climatic refugees in workplace acculturation.
2. Identify the core components of environmental migratory grief and its impact on mental health.
3. Explore the interplay between grief, acculturation, and well-being in the context of climate migration.

This is a two-part research project waiting for funding and better resources. The first part consists of exploring the mechanisms and particularities refugees face during the acculturation in work environments and organizations (AWEO), research currently running under a PhD program. The second part involving environmental grief combined with acculturation outcomes founded will wait for resources to reach the relevant refugee population affected by climate change outside Europe.

# THERMAL COMFORT ZONE IN OPEN SPACE IN BIOCLIMATIC ZONE 2 IN RS/BRAZIL

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**Keywords / Relevant Terms**: Thermal comfort; open space, bioclimatic zone 2

## Abstract

The global average temperature in July 2023, according to Copernicus Climate Change Service, was the highest average since 1991-2020. Thermal comfort standards evaluate variations in closed environments, however, the lack of guidelines for indicators in open spaces makes further research opportune. The objective of the study is to determine the thermal comfort zone in the city of Santiago/RS/Brazil, in bioclimatic zone 2, humid subtropical climate. The thermal perception of residents was analyzed using a thermal sensitivity questionnaire, at 3 collection points: P1 (tree shade), P2 (partially artificial shade, awnings) and P3 (exposed to the sun, open). Of the residents, 161 responded during the fall season and 385 in the winter. The Physiological Equivalent Temperature index was used to determine the thermal perception at each point and the range of thermal sensation in open spaces. The climate variables included were: global temperature monitoring; dry bulb and wet bulb temperature; Wet Bulb Index; heating index; air flow and speed compared to residents' perception of thermal perception ranges. Printed on the TGD-400 device and analyzed in the Calculating PET program in RayMan software, placed in an Excel spreadsheet. The result was that the partial upper temperature limit was 23.1ºC, thermal neutrality was 19.6ºC and the partial lower limit was 18.3ºC. There was a greater difference in thermal perception among residents during autumn compared to winter. In P3, data analysis shows a trend closer to discomfort than in the other 2 previous locations. We can conclude that spaces with greater tree density in this study presented a lower rate of thermal difference and thermal perception among residents. An annual analysis can improve the data collected and carry out other studies to validate the protocol for thermal comfort standards in open environments.

# Designing Regenerative Cities: a Literature Review of The Basic Structural Attributes of an Environment that Make It Restorative

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**Keywords / Relevant Terms**: restorative environments; visual attention; automatic attention; low level visual features

## Abstract

This contribution is a literature review to elucidate the role of Low Level Visual Features (LLVFs; basic structural attributes of a physical environment) in eliciting Perceived Restorativeness (PR; the sensation of recovery of human psychophysical energies that an environment can generate). Environmental Psychology has shown that environments with high PR are predominantly natural but, given increasing urbanization, is investigating what structural attributes make built environments restorative. Attention Restoration Theory (ART; Kaplan, 1995), drawing on James's (1892) traditional distinction between voluntary and involuntary attention, states that an environment generates PR when it elicits soft fascination, that is when it captures visual attention in an involuntary but not compelling manner. Based on ART, several authors (Ibarra et al.,2017; Celikors and Wells, 2009) argue that LLVFs, by attracting visual attention in a bottom-up manner, allow for a rapid scene "assembling" (i.e., division into sections and in meaningful objects) facilitating the understanding of the surrounding environment and, by this way, PR is promoted. Despite this evidence, to date, there is no categorization of LLVFs associated with PR, and the attentional mechanisms related to the phenomenon are also unclear. To clarify these issues, 53 peer-reviewed studies concerning psychophysical experiments that investigated the relationship between LLVF and bottom-up attention were revised. Two experimental lines have emerged, the first based on the Gestalt "rules of vision", the second focusing on visual search processes (Wolfe, 1994; 2021), from which both single LLVFs (i.e., contrast in color and luminance, orientation in the space, closure, line intersections and sharpness of visual stimuli) and basic relationships between LLVFs (i.e., similarity, proximity, collinearity, and symmetry) attracting involuntary attention have been derived. The identification of these LLVFs can be a first step in creating a list of PR- associated LLVFs that can be useful in guiding the design of restorative urban environments.

# How healthy and sustainable are the ten largest cities in Spain? Insight from urban design and accessibility indicators based on open-source software and data

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**Keywords / Relevant Terms**: Urban design, public health, physical activity, built environment, OpenStreetMap.

## Abstract

Urban policies promoting population accessibility and mobility are increasing worldwide, considering their environmental, social, and individual health benefits. In this scenario, it is necessary for such policies to have quality information on which to base the design of interventions in cities. For this purpose, the calculation of spatial indicators and their cartographic representation can be highly useful for local and regional planners to understand not only the spatial distribution of infrastructure and services that promote health within cities but also to identify possible inequalities. In this project we aim to assess to what extent the ten largest cities in Spain, with a combined population of 14 million inhabitants, have sustainable and healthy urban designs and mobility systems. To do so, we employ methods for calculation of high-resolution spatial indicators based on open-source software and open data, developed through our involvement in an international collaboration (https://healthysustainablecities.org). We focus on access to daily services and amenities, natural open spaces within and around cities, public transport provision, and walkability levels. Preliminary results show how, on average, 64% of residents in large urban areas in Spain have walking access to fresh food markets, 55% to convenience stores, and 84% live near to a public open space. In terms of transit provision, 76% of the analyzed population has walking access to some form of public transportation, while 53% live close to high frequency transit systems. Lastly, our results suggest that, on average, 69% of residents in large cities in Spain reside in highly walkable neighborhoods. However, a more detailed analysis at the city and neighborhood levels shows significant spatial disparities that can inform local, metropolitan, and even state-level strategies aimed at addressing contemporary urban challenges in Spain, while providing transferable and comparable data among cities with different geographical and socioeconomic contexts.

# Spatial Function and Design of 50 Plus Center to Support Post-retirement Reemployment

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**Keywords / Relevant Terms**: Fifty Plus Center, Complex Facilities, the New Middle Ages, Characteristics of Space Design

## Abstract

In Korea, where the average life expectancy is steadily increasing, re-employment, which provides the economic basis for the elderly after retirement, is an issue that requires a lot of social attention and support. The purpose of this study is to find out the spatial planning directions for the expanding 50+ Centers that supports the re-employment and community formation of the new middle-aged generation who are about to retire. To achieve this, a framework for analyzing spatial design characteristics was derived by reviewing literature and related previous studies, and based on this, the functions and design characteristics of the spaces of six 50+ centers located in Seoul were analyzed. The results are as follows: first, spaces facilitating various programs necessitate ample area and diverse types of autonomous furniture to accommodate diverse activities. Second, community spaces for interaction among the middle-aged require emphasis on convenience and pleasantness in planning. Third, applying the concept of universal design considering diverse users and space functionalities is essential, which could enhance accessibility and safety within 50+ Centers.

# Diagnosis and consideration of spaces vulnerable to infection during the COVID-19 epidemic in South Korea

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**Keywords / Relevant Terms:** COVID-19. architecture. urban. quarantine policy. behavior

## Abstract

In December 2019, COVID-19 emerged in South Korea, significantly impacting daily life for two years. Despite the Korean government's preemptive and flexible quarantine policy, outbreaks still occurred. This study aims to determine the relationship between the spread of COVID-19 infections, architectural urban spaces, quarantine policies, and social and cultural activities. Using data on daily COVID-19 cases in Seoul for 22 months from April 2020, this study analyzed the number of confirmed cases by type of facility, social and cultural factors, and specific spatial characteristics. Over a 22-month period, we analyzed the spatial characteristics of facility types where many coronavirus infections occurred, and analyzed the background of confirmed cases through behavioral analysis and social awareness of facility users. The analysis revealed that the physical characteristics of spaces vulnerable to COVID-19 were closely related to high density due to various programs and activities within the facility and the overall socio-cultural context. This study presents insights for designing flexible responses in architectural urban spaces, particularly regarding space utilization and socio-cultural considerations, in case of future outbreaks of similar respiratory diseases.

# Meta-analysis study of elderly generation vs. baby boomer generation in Korea using text mining methodology

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**Keywords / Relevant Terms**: Baby boomer, Meta-analysis, Meta-analysis, Text mining

## Abstract

The baby boomer generation in Korea refers to the age group born between 1955 and 1963 (Ministry of Health and Welfare, 2011). They enjoyed economic prosperity and experienced a national economic crisis. They show a desire for consumption and are active in sports, and cultural life (Woo Mi-kyung, Park Tae-won, 2014). There is a need to explore the direction of follow-up research for the baby boomers as a coming elderly generation. This study aims to find the characteristics of existing elderly and the baby boomers, targeting research conducted over the past 20 years. We used the paper search service of 'KCI-Korean Journal Citation Index' and analyzed using Excel and Python programs using keyword network analysis and topic modeling among text mining techniques. As results, first, keywords related to residential environment, mental health, and welfare were commonly derived to both groups. Second, Word2Vec was used to derive words related to 'residential', a common keyword in both. In the elderly, 'silver town', 'apartment', and 'single' were mainly derived, and 'moving in', 'rental', and 'renovation' were derived. In the baby boomers 'future environment after retirement', such as 'job', 'retirement', and 'labor', as well as 'apartment' and 'real estate' were derived. Third, using Word2Vec individually, 'later year' was selected for the baby boomers, and 'nursing' was selected for the elderly. The top three keywords from Word2Vec, for the baby boomers were 'family', 'retirement', and 'income', while for the elderly, 'resident', 'guardian', and 'nursing home' were derived. It was confirmed that the tendencies of the baby boomers were clearly different from the previous elderly generation. In future research, we aim to identify specific research topic through topic modeling of this research data and conduct research trends of the elderly spaces to identify research directions suited to the characteristics of future elderly people in spaces.

# Evaluation of the view quality of a window with a roll screen using an edge detection algorithm considering texture perception

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**Keywords / Relevant Terms**: view evaluation, roll screen, visual processing, texture perception

## Abstract

In recent years, much attention has been focused on the psychological and visual effects of windows. This study aimed to devise a new method for quantitatively evaluating the view, and to enable evaluation during the design phase using simulation. Previously, we found that view clarity, as determined by the degree of visibility of the external landscape, is the factor that has the strongest influence on view. The view clarity of the external landscape can be manipulated by window equipment; therefore, in this study, we will examine windows with roll screens. We constructed an algorithm that considers the mechanism of bipolar cells in the secondary visual cortex that influences texture perception. In addition, the algorithm incorporates a feedback mechanism in visual processing, where information processed in the upper layers of the cerebral cortex is sent to the lower layers for complementation and correction to clarify the visibility. We validated the constructed algorithm in real space. Twenty students in their 20s were asked to evaluate the visibility of competing building outlines through a roll screen on a 6- point scale. Three types of roll screens with different opening rates (1%, 5%, 10%) were prepared. The lighting in the room was set to two levels, on and off, and when on, the illumination was adjusted to 500 lx on the desk surface luminance with the roll screen with an opening rate of 1% installed. The results show that the explanatory power of the algorithm can be greater than 0.8, indicating that it can correctly estimate the view clarity through a roll screen. In future, we will consider applying the algorithm to simulate and enable evaluation during the design phase.

# Development of Handwriting Products for Persons with Autism Spectrum Disabilities to Promote Human Rights Movement for Disabilities

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**Keywords / Relevant Terms**: autism;Human Rights for Persons with Disabilities;a promotional product;Improve awareness

## Abstract

This study focuses on improving human rights awareness of patients with autism spectrum disorder (ASD) in Korea through products using Hangul handwriting of autism spectrum disorder. Although social discussions about the rights of persons with disabilities emerged in the 1990s, continuous discrimination and infringement of rights continue. This study demonstrates the human rights issues prevalent within this demographic through in-depth interviews with the experiences of autistic patients. This study aims to deepen the social understanding of autistic patients by creating customized Hangul products using the handwriting of Korean writers with ASD. The products are designed to raise awareness of autism spectrum disorder. By distributing these products, this study aims to improve visibility and awareness of the disabled and to inform the public. Expected outcomes include strengthening human rights awareness of disabilities and the formation of a positive social image through continuous exposure. The use of specialized products not only serves as a means of communication but also as a catalyst for social change that promotes inclusiveness and understanding of people with autism spectrum disorder in Korean society.

# A Study on the Evaluation of Emotional Vocabulary for the older adults on the Design Characteristics of Pergola in Neighborhood Park, in Busan

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**Keywords / Relevant Terms**: Older Adults, Neighborhood Park, Pergola, Emotional Vocabulary Evaluation, Environmental Design

## Abstract

In Korea, outdoor activities among the older adults predominantly occur in parks, with a high prevalence of spending time within pergola. The purpose of this study is to investigate the design characteristics of pergola in neighborhood parks and to evaluate the emotional vocabulary of the older adults for understanding their design preference. For this purpose, a field survey of pergola design located in the 6 neighborhood parks within 3 administrative districts, which are Yeongdo-gu, Dong-gu, and Jung-gu with the highest proportion of aging population in Busan City, and categorizing them into six design types in terms of the shape, color, and material, were conducted. And then, an additional survey was conducted on 200 older adults to find out their emotional vocabulary evaluation and preference about them. The results of this study are as follows: First, it turns out that older adults prefer a general shape of pergola. Second, it was found that the older adults had a high evaluation of color emotional vocabulary for 'warm'. Third, it was found that the older adults had a high evaluation of material emotional vocabulary for 'natural', and comprehensively, it can be seen that the design of pergola, a rest facility, prefers to harmonize naturally with the surrounding environment.

# University campus planning and urban regeneration through conversion of industrial buildings -Methods and spatial characteristics of conversion from industrial buildings to university campuses-

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**Keywords / Relevant Terms:** University campus, Industrial buildings, Conversion, SpacialCharacteristics

## Abstract

The design of university campuses shifts from separation from the city in the 20th century to integration with the city in the 21st century (Hebbert 2018). In particular, the recent trend of converting disused factories and warehouses into university campuses is an interesting example of urban space redevelopment design that aims to shift from deindustrialization to the knowledge industry. This research aims to clarify the conversion methods and spatial characteristics of university campuses converted from industrial buildings, and to acquire basic knowledge on the planning of university campuses that integrate with the city and the regeneration of urban space by universities. The authors use the architectural drawings and photographs available from Internet articles, previous studies, books as the object of analysis, based on the university campuses converted from industrial buildings around the world that have been extracted through previous research by the authors. First, the information before conversion, such as former use, year of construction, and cultural heritage level, and the information after conversion, such as year of conversion, faculty of the campuses, and spatial organization of campuses, are organized. Second, the spatial characteristics of the converted campuses and their innovations and issues in conversion are analyzed from the contents of the research materials. The results of this research can be summarized thus: the methods of conversion are mainly classified into two types: those that utilize existing buildings with minimal changes, and those that use existing buildings and additions to them. In addition to the characteristics of using large spaces of the industrial buildings as studios and galleries for architecture and art faculties, the university is creative in renovating to make them viable as university spaces by dividing the spaces and increasing their openness while inheriting the history of factory spaces that once supported urban activities.

# Designs for Workplace Seamlessly Connecting Daily Life and Disasters

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**Keywords / Relevant Terms**: “Workplace” “Public Health Center” “Seamless” “Daily Life” “Disasters”

## Abstract

Health management in disaster areas is important. In Japan's disaster medical care system, human support system has been improved, but the workplace for supporters have not progress. This study examines the design for workplace where modes change between daily and disaster situations, assuming that it is necessary to take a seamless perspective, rather than considering daily life and disaster situations in isolation. The research target was workplace of public health centers in Japan, the research method was to interview survey regarding daily works and disaster activities and observational surveys on behavior setting, and propose design ideas to solve these problems. As a conclusion, the problem of the following three dimensions was indicated. 1. Person (e.g. hard work, lack of communication, long distance commuting). 2. Place (e.g. small work space, rarely used rooms, no place for rest). 3. System (e.g. change of role, integration of building, digital transformation). In addition, design idea of the following four categories was proposed. 1. Furniture (e.g. storage shelf system for daily life and disasters, item with multiple roles). 2. Part of Building (e.g. large opening for connecting inside and outside, rest area connected to toilet and kitchenette). 3. Region (e.g. involvement of local community, collaboration with surrounding facilities). 4. Others (e.g. color scheme linked daily life and disasters).

# Keys to understanding people's conceptions of climate change: The role of causes, consequences, and behaviours.

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**Keywords / Relevant Terms**: Climate Change Risk Perception, Causes, Consequences, Adaptative and Mitigation Behaviours

## Abstract

People's objective knowledge about Climate Change (CC) relates to the perception of the risk of this event. Nevertheless, the Climate Change Risk Perception Model (CCRPM+) does not consider the importance of specific knowledge and false beliefs associated with CC, but an "objective" value of CC. In this research we study to what extent the Climate Change Risk Perception (CCRP) links to the different beliefs - true or false - about CC. A total of 150 Spanish participants from the general population, with a mean age of 43.9 (SD = 13.1) and 50% women, took part in the study. All of them answered an online questionnaire writing down causes, consequences, and behaviours related to CC. In addition, they completed a scale on CCRP, and an item on the degree of information they believed they had about CC. Results of the simple correspondence analyses allowed us to determine the relationship between different levels of knowledge and CCRP or the level of information. In relation to the causes of CC, participants point out objective, anthropogenic and false beliefs causes, with differences being observed according to CCRP and level of information. Additionally, people with lower CCRP pointed out those consequences and behaviours related to CC that are most regularly accepted (e.g. climate change and recycling); while alternative consequences and behaviours (e.g. damage to humans and reduction of energy consumption) were more repeatedly pointed out by those with a higher level of CCRP. Taking the results into consideration, we conclude the need to generate more specific knowledge measures to evaluate CCPR according to the CCRPM+ model and guide social discourse to accurately understand the CC event and promote more effective behaviours to mitigate its effects.

# Underlying dimensions of Climate Change perception.

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**Keywords / Relevant Terms**: Climate Change perception, causes, consequences, spatial distance, temporal distance

## Abstract

This research studies the cognitive space where Climate Change is perceived since each individual or group's configuration of this phenomenon can help to propose better strategies that help to implement mitigation or adaptation behaviors to alleviate the advance of this phenomenon and its damage to the life of the planet. The specific objective of this pilot study is to verify whether the dimensions proposed by van Valkengoed et al. (2021) - reality, causes, consequences, spatial and temporal distance - have a place in other social contexts and to study to what extent these dimensions could form a single scale of perception of Climate Change. This study included 126 participants from the general Spanish population, with a mean age of 37.9 years (SD = 15.4), of whom 58.7% were female. All of them filled in an online questionnaire which included, besides the variables that measure the dimensions of Climate Change, three scales of Climate Change Risk Perception (CCRP) - personal and social -, New Ecological Paradigm (NEP), Dominant Social Paradigm (DSP), and gender and political ideology as discriminating variables. Results show that NEP, DSP, and CCRP showed satisfactory Pearson correlations with the five dimensions. Likewise, Student's t-tests with gender and ANOVA with political ideology - left, center, and right - allow us to support the discriminant validity of the measures of the proposed dimensions. Regarding the scale development with the five dimensions, the results confirm a general factor with a McDonald's omega of 0.97. The results of this study suggest that the dimensions are functional in Spanish, meaning it will be necessary to carry out studies with larger samples to confirm this measure as a reference in the study of the perception of Climate Change.

# Sustainability of Long-term Care Facilities in Declining Population Areas: Decentralized Placement of Small and Multifunctional Service Centers

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**Keywords / Relevant Terms**: Declining Population Areas, Super Aging Society, Maintaining Public Facilities, Long-term Care Facilities, Familiar Communities

## Abstract

Demographic changes in a declining population and a super aging society pose challenges in maintaining urban functions. Among urban functions, the need for long-term care facilities is growing along with an increase in the elderly population. Compared with other public facilities, long-term care facilities are more difficult to maintain because they require not only building maintenance but also securing human resources. One method to maintain urban functions is “the compact city,” but relocation in old age poses a major challenge of relocation shock/anxieties for older ones. The elderly desire to continue living in their “familiar communities.” Perspectives on People-Environment Studies: Effective facility placement is undesirable. Consequently, this paper proposes an alternative system that aims to sustain residence in familiar communities through the decentralized placement of small-scale, multifunctional service centers. Though still in the planning stage, this system is deemed more effective, as discussed at IAPS.

**Target Area:** The study focuses on Yamato Village, Kagoshima Prefecture, southern Japan, with a population of 1,400 and an aging rate of 42.9%. The existing long-term care facility is completely outdated and deteriorating and has become obsolete, requiring reconstruction. The local government held several workshops with residents and planned to build service centers in strategic places in the communities.

**Characteristics:** This project aims to use a “small-scale functional in-home care” system unique to Japan, featuring three highly flexible services (Day Care Service, Short-term Stays, and Home Help Service). The buildings are small, with low social costs, supporting users at home with a similar level of physical function as in a nursing home. The service centers also have the function of training residents as caregivers.

**Authors’ positions:** The authors are engaged in this case study as advisors and designers of the service centers.

# Living Conditions of Temporary Housings and Problems Faced by the Elderly Residents at the Late Stage of Disaster Reconstruction in Mabi-cho, Japan

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**Keywords / Relevant Terms**: Temporary Housing, Living Conditions, the Elderly, Late Stage of Reconstruction, Mabi-cho in Kurashiki City

## Abstract

Most studies on temporary housing have focused on the peak period with the largest number of residents in temporary housing and active support for them. However, the isolation of the residents, especially the elderly, and the weakening of communities are most noticeable in the later stages of disaster reconstruction with less residents and less support activities in temporary housings. This paper clarifies living conditions of temporary housings and problems faced by the elderly residents at the late stage of reconstruction in Mabi-cho, Japan, one of the stricken areas of the 2018 Japan flood, and explores prospects of the support for the residents in temporary housing at the late stage of reconstruction. According to the results of the questionnaire survey conducted in 2020 with 49 residents at seven temporary housings in Mabi-cho, the elderly accounted for more than 70% of the total population, and most households lived alone or were married couples only. More than half of the residents have moved out of the temporary housings and the average vacancy rate of the temporary housings stood at 61.9%. In temporary housings with a high vacancy rate, community events were rarely held, and use of the meeting hall tended to remain sluggish. Then, according to the result of in-depth interviews with 25 elderly residents of the temporary housings, despite the impending deadline (the end of 2020) for moving out of temporary housing, more than 20% of the interviewees remained unable to find a place to relocate from the temporary housing and they greatly worried about their residence after the temporary housings. As a result, it is necessary to provide the residents of temporary housing with mental and social support to relieve their anxiety about their residence as well as governmental housing assistance programs that are more accessible to them.

# Urban smart farm: design and evaluation of module-based rooftop greenhouse

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(1) Chungbuk National University

**Keywords / Relevant Terms**: Urban farm, Design plan, Green house, Rooftop, Building

## Abstract

This study aims to develop design plan of rooftop greenhouses as a first step to supply urban smart farms. First, we review cases and literature of smart farms installed in existing cities. Next, calculate the module specifications of the rooftop greenhouse and determine the shape. A module is the basis of building design and are a basic design concept for rational use of space. Unit modules are designed considering the function and purpose of the greenhouse, operation program, cultivation facilities, physical conditions, and appropriate space. The unit modules as design proposals are presented in 2D and 3D. Lastly, we propose evaluation directions and methodology for the applicability of the proposed unit module of rooftop greenhouse through expert advice meeting. This paper was conducted as a partial outcome of R&D project related to the development and demonstration of a design model for a rooftop greenhouse, and is a follow-up study of a plan type study that can utilize part of a city building as a greenhouse. Considering the feasibility of building integrated agriculture, the results of this study will be used as data for future related facility supply plans and will also contribute to the revitalization of urban agriculture.

# DEPAVING Aix-Marseille: An interdisciplinary hub for the analysis of urban NBS

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**Keywords / Relevant Terms**: nature based solutions, well being, confort

## Abstract

In the context of adapting to the effects of climate change, French cities tend to promote the de-paving of surfaces and the greening of urban spaces to allow for rainwater infiltration, combatting heat islands, biodiversity loss, and anticipating the consequences of major weather events that current infrastructures might not withstand (such as floods, pollution, etc.). Nature- Based Solutions (NBS) can address both environmental challenges related to climate risks and improve living spaces by advocating for nature in urban areas. In Marseille, a pilot project for NBS in the city was launched under the European project CARDIMED. This project began in September 2023 and will run for a duration of 5 years, initially encompassing the university campuses of Saint-Charles (urban site), Saint-Jérôme (peri-urban site), and the Schuman site (Aix-en-Provence, medium-sized city). With the goal of producing evidence regarding the impact of these significant developments on users' experiences and their quality of life within the campuses and more broadly across the Aix-Marseille metropolitan area, the project will act as an interdisciplinary hub for research, teaching, and urban adaptation policies. Within environmental psychology the project proposes to (1) identify key indicators that describe the user experience and well-being in open spaces within these campuses; and (2) to measure these indicators before and after the de-paving work takes place. This work will be carried out through the development of a questionnaire targeting a representative sample, which will be administered to different users of the campuses affected by the works. This work will be complemented by physical analysis (humidity, temperature), health analysis of local animal populations, biological analysis of the soil, economical analysis (impact within and outside the campus). Overall the CARDIMED project will provide observations from a variety of disciplines to promote NBS in the Aix- Marseille metropole.

# Of buildings and barriers: The association between attitudes and the perception of barriers among German architects conducting energy retrofits

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**Keywords / Relevant Terms**: energy retrofits, sustainability, architecture, environmental concern, environmental psychology

## Abstract

This study investigates retrofits, a key aspect of sustainable building, and the barriers faced by the architects conducting them. Embodied energy and CO2 emissions during construction, often overlooked, significantly contribute to environmental impact of the building sector. Retrofitting existing buildings is increasingly viewed as the most sustainable approach, despite challenges. However, the annual rate of energy renovations in Germany (as well as many European countries) falls short of targets, hindered by financial, regulatory, social, educational, and technical barriers. While previous literature has focused on policymakers and homeowners, architects, a pivotal group, remain understudied. Therefore, in this study, we investigate the perceived barriers of architects as well as the possible solutions towards overcoming them. We recognize that these perceived barriers influence architects within a complex system. The ABC-model developed by Guagnano et al. (1995) proposes that energy behaviors (B) are the outcome of sociopsychological variables (A) and contextual variables (C). This model informs how we investigate the interaction of architect's opinions of retrofits, their perception of barriers facing retrofits and their reported behavior. We ran an online survey over the course of three months in 2023 and gathered data from 199 German architects (42,7% female, age-span 21-85 years (mean: 48 years)). First results show that most of the highly rated barriers are within the fields of bureaucracy and regulations, while the most of the highly rated incentives are within the fields of education. Moreover, the extent to which barriers are perceived as hindering and incentives as motivating is significantly linked to the respondents' attitudes. The more positively they view retrofits, the higher their sustainability motivations, and the larger their environmental concern, the less hindering they perceive the barriers and the more motivating they perceive the incentives. These results shed light on the important role attitudes play in sustainable behaviors.

# Evaluation and Retrofit of the Thermal Environment in Historical Buildings: A Systematic Review

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**Keywords / Relevant Terms**: thermal evaluation, thermal retrofit, historic buildings, sustainability

## Abstract

Interest in subjects related to energy efficiency and thermal comfort concerning historic buildings has grown these days. The designers, engineer, and scholars acknowledge the importance of retrofitting the structures to satisfy the modern energy efficiency and thermal comfort standards for enhancing sustainability and energy performance as well as preserving the historical significance of these buildings. This study provides a comprehensive review of the existing literature on this topic, focusing on various digital methods and techniques employed worldwide for achieving performance restorations. The articles examined in this paper are categorized according to the types of buildings employed as case studies, encompassing residential, religious, and academic spaces, palaces, museums, libraries, theaters, urban areas, and other structures. The findings indicate that case studies mainly include residential, religious, and museum buildings, particularly the structures from the past two centuries. Moreover, Europe, Italy as a notable factor, is a principal contributor to research efforts in this field. The key objective of this study is to present the feasibility of preserving the architectural heritage of historic buildings. Simultaneously, it intends to advance significant enhancements in its energy efficiency and thermal comfort through digital means.

# Satisfaction analysis of indoor intelligent lighting in virtual space

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**Keywords / Relevant Terms**: "Intelligent lighting","Satisfaction","Interior lighting","3D virtual space"

## Abstract

Throughout history, lighting has been an indispensable factor in design. With the advancement of science and technology, the demand for enhanced lighting has increased, leading to a continuous influx of innovative products. However, beyond the functionality of these products, user needs remain the primary focus. Users evaluate products based on their functionality and practicality, often unconcerned with the internal components and architecture. Therefore, the usability of a product is ultimately determined by consumers. The satisfaction of users after using a product, the potential for intelligent lighting, and the future direction of lighting according to user preferences are challenges yet to be addressed. This research aims to explore user perspectives on intelligent lighting from the users' standpoint and understand the impact it may have on their daily lives. For instance, intelligent lighting systems can optimize household electricity usage. Additionally, the study aims to identify practical solutions provided by intelligent lighting for specific user groups facing challenges, such as the elderly with limited mobility or individuals with visual impairments. The research employs a comparative experimental approach, involving 10 volunteers who will watch virtual videos depicting traditional lighting spaces and intelligent lighting environments. The videos, approximately 15 minutes in duration, are created using 3D technology. Subsequently, one-on-one in-depth interviews lasting 5-10 minutes will be conducted with the participants. Satisfaction reported by the participants will be analyzed through seven-Likert scales and compiled through recorded in- depth interviews. At the same time, intelligent lighting is an interdisciplinary field, and intelligent lighting will benefit from the improvement and spread of sensor technology, communication and information technology.

# A Study on Residence Continuance Intention in Old Age with a Declining Population and Super Aging Society

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**Keywords / Relevant Terms**: Declining Population, Super Aging Society, Maintain Urban Functions, Centralized Model, Decentralized Model

## Abstract

**Background:** In Japan, the challenge of a declining population and super aging society has increased, making it difficult to maintain urban functions, especially public facilities, in rural areas. Long-term care facilities face the challenge of a shortage of human resources. Reorganizing these facilities involves two models. First, the centralized model, which can be operated efficiently but may cause relocation shock to residents. Second, the decentralized model, which allows residents to continue living in their communities but makes care staffing inefficient and requires that care services be supported in the community or families. As there are advantages and disadvantages to both models, residents should decide which direction to take.
**Objective:** Exploring the intention of older people to continue living in their homes and communities in two Japanese regional cities with an aging population exceeding 40%. Methods: The survey was conducted in Yamato Village, located in southern Japan with a population of 1,417 and an aging rate of 42.9%, and in Nishinoshima Town, located in northwestern Japan with a population of 2,546 and an aging rate of 48.7%. Despite the development of public facilities in both areas, such as medical and nursing care facilities, they are deteriorating and need rebuilding. The survey, employing an all-inclusive questionnaire for residents aged 40 years and above, distributed approximately 1,000 (Yamato Village) and 1,800 (Nishinoshima Town) questionnaires, expecting a 70% collection rate. The survey is projected to last from December 2023 to January 2024 and covers caregiving needs, housing choices in old age, and community strength in their homes and regions. Expected results: This survey will compare the two areas to determine the relationship between residential continuity of care and local care as well as community capacity.

# Safe and Supportive Home Design for People Displaying Challenging Behaviours

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**Keywords / Relevant Terms**: group home for people with disabilities, challenging behaviours, Sweden, Japan, international comparison

## Abstract

**Background:** Challenging behaviour, including actions such as self-injury, harm towards others, and disruptions, tends to manifest in individuals with severe intellectual disabilities and autism. Given the potential for serious accidents affecting individuals and those around them, there is a substantial need for specialised home designs to reduce or prevent such behaviours and ensure safety. This issue has gained importance in the context of group homes for people with disabilities (GHs) in Sweden and Japan, which are developing new GHs and guidelines to provide better care to individuals with challenging behaviours. Therefore, knowledge and design exchanges between them would help further enhance design strategies to address this issue.
**Objectives:** The research aims to clarify critical home design aspects that support individuals displaying challenging behaviours by comparing design examples between Sweden and Japan. It focuses on differences and similarities in challenges, design elements, and care methods, discussing the reasons behind them.
**Methods:** The study consists of three approaches: (1) Literature review for GHs in Sweden and Japan, (2) Study visits to GHs in Sweden and Japan, including interviews and observations, and (3) Floor plan analysis of the visited GHs.
**Results:** Overall, the essentials to support residents with challenging behaviours and staff are indicated as follows: eliminating environmental stressors that could trigger challenging behaviours, preventing residents and staff from getting harmed after the behaviours occur, and customising the details as home-like as possible according to individual characteristics. The research findings suggested that Swedish GHs have a spatial configuration that makes it easy to separate the flow of residents to mitigate stimuli caused by seeing others. In contrast, Japanese GHs have challenges separating that flow, yet the residents' rooms can control stimuli more effectively than Swedish GHs because of their simple form.

# Required Level of Spaciousness in Rooms without Windows

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**Keywords / Relevant Terms**: Spaciousness, Spatial Brightness, Head Mounted Display, Virtual Reality

## Abstract

Spaciousness affects comfort, intellectual productivity, and health of the building users, and, therefore, needs to be emphasised when people spend considerable time in the same space. Previous studies have revealed that the quantitative evaluation of spaciousness is determined primarily by the physical volume and spatial brightness. This study aims to examine the required level of spaciousness for different rooms according to their purposes, so that spaciousness is a more practical indicator for architectural design. A subjective experiment was conducted using a head-mounted display, based on the validation of its use for evaluating spaciousness in previous studies.

Three types of rooms, a dining room, a meeting room, and an office space were prepared; three levels of the occupant number were set for each room; and five different volume levels were set for each, resulting in a total of 45 spaces. For each space, the participants were asked to evaluate the appropriateness of spaciousness on a 7-point scale: extremely insufficient, insufficient, slightly insufficient, appropriate, slightly excessive, excessive, and extremely excessive.

The results revealed that appropriate spaciousness differed according to the purpose of the room, despite the number of people in the room remaining constant. The appropriate spaciousness required was the least for dining rooms, followed by conference rooms, and then office spaces that required the most spaciousness. In future, we wish to clarify that despite the volume being slightly insufficient, spaciousness can be adjusted to the appropriate level by altering the spatial brightness in the room.

# The Development Research of Horse Racing Sport Space in Inner Mongolia from the Perspective of Human- Land Relations

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**Keywords / Relevant Terms**: Horse racing sport space, human-land relationship, grounded theory, development strategy

## Abstract

This research focuses on the role of human-land relationships in Inner Mongolia, with an emphasis on exploring how to optimize the planning and design ofspaces for horse racing to adapt to and improve these relationships. It proposes targeted development strategies to promote the sustainable development of such spaces, providing scientific guidance and practical references for the planning and design of horse racing spaces in the region. The research first defines the concept of horse racing sport spaces, then combines Grounded Theory with field investigations, following the sampling principles of qualitative research, selects 20 interviewees, and employs the general process of Grounded Theory with semi- structured in-depth interviews to collect data. Using analytical software like Nvivo, the interview data underwent tri-level coding, dissecting the key influence factors of such spatial development from the perspectives of the cultural-human, the geographical- environmental, and the spatial itself. This led to the creation of a comprehensive framework of developmental factors for Inner Mongolia's horse racing sport spaces, encompassing three pivotal domains: geographical environment, human-cultural environment, and spatial environment. Secondly, structural equation modeling is used to further clarify the correlations among the core categories and factors. Lastly, the research recognizes that the current for horse racing in Inner Mongolia are still in the early stages of development, with issues such as low efficiency in space utilization, poor economic and social benefits, and a lack of deep integration with local culture and societal values. To address these issues, three development strategies are proposed: 1) Macro coordination of the geographical environment, 2) Demand balance of multiple entities, and 3) Benefit enhancement through industry linkage.

# Investigating the Effect of the Outdoor Environment for Vulnerable Youth

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**Keywords / Relevant Terms**: Nature-based, youth shelter, well-being, intervention

## Abstract

Existing evidence demonstrates that for vulnerable youth, interaction with nature has positive psychosocial and behavioral outcomes, with enduring post-treatment effects (Overbey et al., 2021). Yet, vulnerable youth in residential treatment facilities often live in sparse and sterile environments. Thus, this study aims to systemically investigate the effect of outdoor environment on psychological and behavioral well-being of youth in residential facilities, as time spent in nature buffers stress and assists with resilience capacities (Berto, et al., 2015). Our community partner, a crisis stabilization and addiction treatment shelter in the Midwest region of the U.S., is moving from an urban setting to a new nature-based campus, intentionally designed with a trauma-informed lens. During the first round of multi-method data collection at the current residential facility, 25 youth (M age = 16,50% boys) completed surveys, supplemented by 72 interaction-with-nature cards featuring emojis - an effective research method for youth at shelters (Tyler & Olson, 2018). Subsequent data collection at the new campus will replicate this approach to examine the intervention effect of a nature-based campus. Correlation analyses using survey data and SPSS revealed youth reported less psychological distress ($r=-.41$, $p<05$) and a higher level of resilience ($r=.42$, $p<05$) when they were more interested in using an outdoor space to decompress. In terms of their emotion regulation, youth were less likely to suppress their emotion ($r=-.44$, $p<05$) when they were satisfied with the amount of green space at the facility. Emoji card data, although indicating only 9.6% of counseling sessions occurred outdoors, showed that looking at nature and being outdoors during sessions significantly correlated with more happiness, confidence, calmness, and hope post-session (all significant at $p<.05$), despite limited direct engagement with nature (4.1%). Our preliminary findings suggest the significant intervention effect of the outdoor environment, informing future residential institution designs for youth well-being.

# How could expected energy-efficiency of buildings be achieved? An assessment of the interaction with building end-users

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**Keywords / Relevant Terms:** energy use, motivation, behavioural change, energy-efficientbehaviour, acceptance

## Abstract

Despite many advances in energy-efficient technologies, energy use in buildings is increasing rapidly (IEA, 2021). However, energy-efficient designs and technologies do not reduce energy use as much as predicted due to the complexity of end-users' behaviours resulting in large variations of energy use (e.g. Gram-Hanssen et al., 2012; Halvorsen et al., 2016). It is important to understand the psychological determinants of energy-efficient behaviour to implement better strategies for behavioural change. It is also important that energy-efficient technologies function to support users to adopt energy-efficient behaviours. Our research aims to broaden the perspective on how people interact with energy-efficient designs and technologies with a focus on investigating the role of psychological and physical factors in promoting energy-efficient behaviours. The research includes i) a systematic literature review of 61 studies on users' interaction with energy-efficient technologies, ii) a field study on users' motivation to carry out energy saving behaviour conducted with residents living in energy-efficient buildings (N = 235), and iii) a laboratory study on users' perception and acceptance of energy-efficient lighting (N = 60). The findings suggest that users' psychological factors play an important role in influencing energy efficiency in buildings through the interaction with energy-efficient design and technologies. Specifically, autonomous motivation plays a significant role in turning lights off when not in use. Furthermore, characteristics of energy-efficient technologies (i.e. lighting) could promote hedonic experiences and adoptions of such technologies. The findings affirm the importance of understanding individuals' psychological factors to promote energy-efficient behaviours when implementing energy-efficient designs and technologies. This can also be useful to facilitate the design of effective interventions to motivate behavioural change toward a higher level of energy efficiency and improvements in energy-efficient design and technologies.

# Effects of exterior lighting equipment with fluctuations: Verification based on impression evaluation structure

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**Keywords / Relevant Terms**: fluctuation,exterior lighting equipment,structural equation modeling

## Abstract

Fluctuating lighting, which refers to dynamically changing the output of lighting, is expected to create a positive impression of the nighttime outdoor environment and attract people. Therefore, this study aimed to quantitatively understand the effect of fluctuations in lighting on the desirability of a space by clarifying the evaluation structure of outdoor spaces with fluctuating lighting. The subjective experiment was conducted on the outdoor terrace attached to a common room. Lighting equipment was installed on the lawn in front of the terrace and they were turned on under five lighting conditions: lights off; constant light at 42% output when the maximum output of the lighting equipment (420 lm) was 100% (time-averaged output value for one cycle of fluctuation conditions); steady light at 100% output; and two types of fluctuations with different temporal frequencies (here, fluctuations resembled flames and matched breathing rhythm). The participants, 18 people in their 20s, were asked to evaluate their impressions of the entire lawn area and the lighting equipment while walking by and sitting on the terrace. We investigated the evaluation structure of spatial desirability using structural equation modeling. Using the factors obtained through factor analysis as latent variables, we created an evaluation structure model in which the evaluation of lighting equipment was linked to the evaluation of the space, which in turn was linked to the desirability of the space. The goodness-of-fit index (GFI) of the model was 0.877 and root mean square error of approximation (RMSEA) was 0.081. The above evaluation structure clarified that the fluctuation of lighting increases the attractiveness of the space and indirectly increases the evaluation of the desirability of the space, regardless of whether people are passing by or sitting.

# The everyday recreational walk assessed with a wearable sensor ring

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**Keywords / Relevant Terms**: restorative environments, skin conductance, real life settings

## Abstract

Outdoor recreation, and particularly nature experience, has been shown to have positive effects on human health and well-being. With the emergence of small wearable sensors we now have an opportunity of getting more insight into how this relationship works in an everyday context. The objective of this study was to explore the usefulness and consistency of a consumer product sensor ring measuring skin conductance (arousal/stress). The approach was a single case study where the same recreational walk was done repeated times by the same participant, in order to identify to what extent responses show stable patterns connected to the surrounding environment or if responses differ a lot between walks due to internal personal factors and specific events occurring. The participant used the ring and a GPS logger, while doing a habitual normal recreational walk in the neighborhood, comprising segments with varying outdoor characteristics, including residential streets, larger roads, a church with surrounding cemetery, a small river, a forest and more open natural areas. The walks also included encounters with animals and other people as they naturally occurred along the route. The data was collected from late June to late Sept and comprised 25 walks in similar conditions with sunny to overcast weather. The route of the walks was identical and took approximately 40 min to complete. The presentation will discuss the performance of the sensor as well as the skin conductance results in relationship to the environmental characteristics of the different route segments. If data from easy to wear consumer products are consistent enough and give reliable and useful data, studies with larger samples and longer timeframes could be conducted in real life settings, which could give valuable new insights about the impact of everyday recreation on health and wellbeing.

# Exploring the Emotion Impact of Nature, Architecture, and Space in Urban Environments: A Cross-Cultural Virtual Reality Study

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**Keywords / Relevant Terms**: Virtual reality, Urban Environment, Emotional Arousal, Cross- cultural, Wellbeing

## Abstract

With increasing urbanization worldwide, understanding how urban environments impact well- being is critical. Urban characteristics like nature, spatial layout, and aesthetic qualities can significantly influence emotions and further contribute to well-being. However, cross-cultural comparisons elucidating this relationship are limited. Additionally, there is a lack of standardized, scalable research protocol for robust reproduction and comparisons. These gaps are critical and urgent to address in today's globalized, post-modernized, and post- colonial era of searching for an optimal dwelling for diverse cultures and populations. This ongoing mixed methods research utilizes state-of-the-art virtual reality (VR) systems - the self-developed synchronized experimental platform EchoSphere, and Modular Urban Street Environment for precise environment simulation - to examine how varying greenery, architecture, and spatial scale elicit emotional arousal across cultures. The current research focuses on differences between the U.S. and China. In the qualitative phase, semi-structured interviews based on VR simulations explore nuanced emotional responses among participants across research sites in the two countries. The thematic analysis identifies patterns informing quantitative tools to measure arousal. In the quantitative phase, these tools are tested on a large sample experiencing controlled environments. Statistical analysis examines differences in self-reported emotional arousal. Integrating cultural insights from interviews with empirical relationships revealed via simulations elucidates how targeted urban characteristic changes can enrich well-being. Expected outcomes include differences in arousal based on greenery, architecture, and spatial scale, with discovering culture-specific reactions. Together, the insights demonstrate how modifying key visual elements creates uplifting urban settings, enriching well-being for diverse cultural needs and populations. Another highlight includes the synchronous, portable, cost- effective VR system EchoSphere, which enables unified experimental protocols and collaboration for future cross-cultural research guiding urban design worldwide. Through innovative VR methods and cross-cultural perspectives, this ongoing research hopes to illuminate the emotional impact of the built environment and pioneer future cities that inspire humanity.

# Favourite places for outdoor recreation: Weak correlations between perceived qualities and structural landscape characteristics in Swedish PPGIS study

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**Keywords / Relevant Terms**: Nature-based restoration, Perceived Sensory Dimensions, Recreational needs, Landscape aesthetics, Planning

## Abstract

Connections between outdoor recreation and health and wellbeing benefits are well established. However, questions remain regarding which landscape characteristics that best predict places in the landscape corresponding to people's main needs and preferences. The perceived sensory dimensions (PSD) model proposes eight basic perceived qualities that people commonly seek in outdoor environments to support complementary needs: a Natural, a Cultural, a Cohesive, a Diverse, a Sheltered, an Open, a Serene, and a Social quality respectively. These PSDs have increasingly been suggested as a tool for green space assessment and planning. However, it is not clear how strongly these qualities can be linked to specific structural features in the environment. We surveyed recreationists in Sweden, tasking them with noting their favourite places on a map (n=275), and to report the degree to which the PSDs were present. The qualities typically reported as most prominent at these places were Open, Serene, and Sheltered, while the least prominent were Social and Cultural. A cluster analysis further revealed that favourite places could be classified into two main groups regarding perceived qualities. One associated with presumably more restorative qualities, emphasising Natural and Serene settings, the other instead suggesting a more outward-directed experience, strong in the perceived Social and Cultural dimensions. Machine learning models however revealed weak links between objective landscape characteristics and perceived qualities, with stronger correlations found with attributes connected to personal characteristics, such as the degrees to which a person identifies as nature or urban oriented. Our results thus suggest that objective landscape measures and individual user characteristics need to be considered together when planning landscapes for perceived qualities in support of common recreational needs, indicating a need for dialogue and engagement with local users as a complement to structural analyses.

# Effects of individual differences and affective state on nature connectedness in children

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## Abstract

Fostering nature connection may promote psychological well-being and enhance proenvironmental attitudes. However, there is limited understanding of what individual factors influence a person's nature connectedness, especially in children. 150 children at age 6.5 years attended the present study. Nature connectedness and affective state was self-reported by the children. Parent reported the child´s gender, temperament, current affective state, and prosocial behavior as well as parents' own nature connectedness and family SES. Higher prosocial behavior and more positive affective state were connected to higher nature connectedness. Thus, individual differences and affective states should be emphasized when examining the development of nature connectedness and its effects on behaviour.

# Reproduction of Spatial Brightness on a High-Luminance Large LED Display -Verification in Various Office Spaces-

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**Keywords / Relevant Terms**: spatial brightness, high-luminance large LED display, tone mapping, luminance distribution

## Abstract

Background and Objectives - Spatial brightness is one of the fundamental factors determining the quality of indoor lighting environments. Therefore, if the spatial brightness of the simulated spaces can be determined using displays during the design process, it would be beneficial for architectural and lighting design. This study aims to verify whether a high- luminance display can reproduce the spatial brightness in various real office spaces, including meeting spaces and an entrance hall, through subjective experiments. Methods and Process - Initially, subjective experiments were conducted in real office spaces with 18 participants in their 20s. The participants evaluated the spatial brightness by adjusting the luminance in a white hemisphere dome. Additionally, the appropriateness of the spatial brightness for the office spaces (subsequently referred to as brightness requirements) was also evaluated using a 7-point Likert scale. Next, we conducted experiments using a high- luminance large LED display that could reproduce less than 1,200 cd/m² of the luminance. Linear-scaled images were created based on the measured luminance and chromaticity data of the real spaces. The objects and the spaces on the display had the same view angles as those in the real spaces. The participants evaluated the spatial brightness on the display following the same process used for the real space. Results - In the preliminary experiment conducted in a simple office room, the spatial brightness on the display closely matched that in the real space; however, under electric lighting conditions, it tended to be perceived as somewhat darker. In the final analysis, it is predicted that the spatial brightness on the display is almost equal to the spatial brightness in the real space. In future studies, we will also examine the reproducibility of the brightness requirements on the display.

# Verifying the Validity of View Quality Assessments in Commercial Buildings Using Head-Mounted Displays

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**Keywords / Relevant Terms:** view, VR, head-mounted display, office

## Abstract

In offices, daylighting and views through windows impact the mental well-being and efficiency of employees. To establish the metrics for view quality, subjective experiments using a head-mounted display are useful because they can readily set various conditions regarding window sizes, positions, and outdoor scenery. However, current head-mounted displays have several limitations, such as low maximum luminance. In this study, we aimed to verify the validity of view quality assessments conducted in commercial buildings using Meta Quest Pro and Meta Quest 3. Two separate experiments were conducted in this research. The first experiment was conducted in three actual office spaces. Participants evaluated the view while seated in a room. In the second experiment, we reproduced the same spaces and views in virtual reality, using a head-mounted display, and asked the participants to evaluate the view. We followed the same experimental protocol in both cases. A significance test was conducted between the assessment scores from the real space and the VR space, revealing a similarity regarding the assessment of spaciousness in the interior space. However, under some conditions, a discrepancy was observed in the assessment of views. This discrepancy might have occurred due to the low fidelity of the model used in the VR experiment. Consequently, we will need to modify the model and revalidate it in the future. If we are able to assess views in the VR space, it will help create the metric for views.

# Identifiying pattens of use in urban places with naturalized ponds

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**Keywords / Relevant Terms**: Naturalized ponds, urban places, patterns of use, observational methodology

## Abstract

As a part of a multidisciplinary research on public spaces with naturalized ponds and their impact on urban environments, our research focus on the analysis of eight public places of the city of Barcelona, for of them with naturalized ponds and the others without. The goal is to characterize patterns of use and occupation among the users of these places. We hypothetize that thre are differences in the patterns detected, both interms of uses of the space and the retention capacity of the ponds in front of those without these elements. Observational methodology was adopted by the use of the EXOdES tool (an app designed by us besed on classical observational categories and field formats). Data obteined were analized considering public places dynamics as a complex system. Consequently we applied network analysis software (Pajek and VosViewer). Results show the different patterns of use depending on the presence of ponds or not. Implications for urban designers and city managers were also highlighted.

# Implicit evaluation of natural, built and artistic environments

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**Keywords / Relevant Terms**: Natural environment, built and artistic environment, implicit evaluation, preference

## Abstract

Implicit affective evaluation refers to the capacity to automatically distinguish external stimuli into two broad dichotomous categories (e.g. pleasant or unpleasant). It is considered important because it can reveal information people may not want to express deliberately. Three studies aim to explore implicit preferences toward natural vs. built environments using the Implicit Association Test (IAT). In addition to the established evidence of natural environments preference over built ones (Hartig, 2004; Kaplan, 1987), these studies incorporate aesthetic quality of built images, a feature not previously explored. Aesthetic quality may invert or at least attenuate the preference for natural vs. built environments. The first IAT study used a set of 10 pictures (5 natural and 5 built) and 10 words (5 positive and 5 negative). As expected, the results show a stronger association between nature/positive words and built/negative words. The second IAT study used the same natural environmental stimuli, but ordinary built environment pictures were substitute by Italian Renaissance and Baroque. Results show that the strength of association between natural/positive words and built/negative words is still present. For the third IAT study, same pictures of study 2 are used, but the categorization label was changed from “built” to “artistic”, hypothesizing that it would evoke a positive affect, thus reducing association latency time. Findings show that natural environmental images were still associated with positive words faster, but this time the label "artistic" attenuated participants’ latency times for built artistic pictures. In conclusion, it is possible to affirm that natural environments, compared to built ones, have a higher restorative potential, promoting a general condition of well-being. The three studies consistently show faster reaction times when compared to built environment pictures. However, it’s worth noting that when built environments present artistic features and are labelled as artistic, the preference is attenuated.

# Enhancing Physiotherapy Adherence: The Cross-Modal Impact of Color and Odor on Emotional Well-being

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(1) Iowa State University

**Keywords / Relevant Terms**: Healthcare, Sensory, Emotions, Well-being, Physiotherapy

## Abstract

Recovering from injury or surgery through physiotherapy is not just physical - it's also an emotional journey to rebuild confidence and inner strength. This study delves into the sensory environmental effects on human emotions and behavior through an intensive literature review. Particularly, the ambient elements of color and smell are scrutinized for their roles in modulating physiological responses that, in turn, affect mood, stress levels, and working capacity. The primary focus of this study is to understand whether the cross-modal association between color and odor can harnessed to create an environment conducive to addressing the emotional struggles patients face post-injury or surgery during physiotherapy. The methodology involves a detailed review of 11 articles to ascertain the influence of different colors and odors on human emotional stress. The study includes insights into applying these sensory stimuli within urban design, Virtual Reality (VR), and Augmented Reality (AR) frameworks, suggesting potential implications for future therapeutic settings. Based on the athletic trainers' rehabilitation programs, three distinct physiologic phases are conceptualized, and emotional and cross-modal sensory (color-odor) suggestions are developed according to the goals of each phase. For example, blue with Sandalwood or lavender can improve a calming mood during the acute phase. Peppermint can have stimulating powers, likely with vivid colors, to encourage patients during the repair phase. When preparing for the remodeling phase, patients can benefit from more sophisticated colors and rosemary, jasmine, or vanilla scents that help gain optimism, pride, achievement, and confidence. The full visual framework will be presented in the poster. This study provides insights into the perceived colors and odors visually or emotionally. While there is no direct relation between sensory experiences and the progress of physiotherapy or injury recovery, these studies show promise in raising empathy and sensory considerations for improving the therapy process and virtual/physical healthcare environments.

# Residential Satisfaction, Sense of Community and Well- being in Northeast Italy: The Role of Restorativeness and Environment Quality Indicators

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K**eywords / Relevant Terms:** Residential satisfaction, Sense of Community, Well-being, Restorativeness, Environment quality indicators

## Abstract

Residential satisfaction consists of pleasure derived from living in a place according to one's needs, expectations and outcomes and can have an impact on overall quality of life. The present ongoing research is part of iNEST (Interconnected Nord-Est Innovation Ecosystem – Spoke 4) project, aimed at examining the role of socio-demographic variables, residential environment quality indicators, and restorativeness in predicting i) mental well- being, ii) residential satisfaction, and iii) sense of communities in territories of northeast Italy with a particular focus on Piazzola sul Brenta, Padua (Italy). To date 101 inhabitants of northeast Italy (48 women - mean age = 31.00, SD=9.62) and 100 inhabitants of Piazzola sul Brenta (77 women - mean age = 40.23, SD=14.16) took part in the study. Participants answered demographic questions and questionnaires assessing restorativeness, residential environment quality indicators, residential satisfaction, mental well-being, and sense of community. After accounting for individual characteristics (age, gender and income), preliminary results suggest that perceived restorativeness contributes to mental well-being (B= .33, CI [.08,.58], p = .01), residential satisfaction (B = .27, CI [.11, .43], p < .001) and sense of community (B=.24, CI [ .06, .43], p = .01). Furthermore, place attachment emerges to play a positive role for residential satisfaction (B =.59, CI [.43, .76], p < .001) and sense of community (B= .45, CI [.27, .64], p <.001). Regarding environmental quality indicators, functional aspects (e.g. commercial services) contribute to sense of community (B = .27, CI [.10, .44], p = .001) while contextual aspects (e.g. maintenance and care) contribute to mental well-being (B = .28, CI [.07, .49], p = .01). The study newly found a link between restorativeness, residential satisfaction and well- being giving some insight to professionals and policy to improve well-being in urban settings.

# Perception of Environmental Policies in Paris: Which Social Justice Elements Contribute to Their Acceptability?

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**Keywords / Relevant Terms**: Environment, public policies, acceptability, social justice

## Abstract

To be accepted, environmental public policies (EPPs) must be perceived as just by the population (Clayton, 2018). This perception is determined by perceived distributive justice and procedural justice (Gross, 2007; Montada & Kals, 2000), perceived consequences for individual freedoms (Jager et al., 2018), or perceived effectiveness of the measure (Dreyer & Walker, 2013). We posit that it may also depend on the perception of threat vs. opportunity for the socio-economic system (SES; Feygina, 2013). Furthermore, the relative weight of these factors is likely to differ depending on the nature of the EPPs. To our knowledge, no systematic model has been proposed to test 1) the specific role of the perception of threat vs. opportunity for the SES and 2) the respective roles of these factors in the context of concrete EPPs. The objective of this research in social psychology is therefore to propose a model that integrates the various determinants of perceived justice and focuses on four local Parisian EPPs: subsidies for bicycle purchase, the restriction of polluting vehicles, the development of cycling lanes, and the introduction of two vegetarian menus per week in collective catering. We surveyed a representative sample of 800 Parisians using an online questionnaire. Participants read a concise text presenting each EPP and then responded to scales assessing their perceptions. The results show a strong link between perceived justice and acceptability. Across the EPPs, perceived opportunity for change in the SES, procedural justice, and distributive justice are the most important elements for determining perceived justice and acceptability. For the three mobility policies, procedural justice is more important than distributive justice, whereas the opposite is true for the food policy. These results have implications for the development of environmental public policies in order to determine the aspects to prioritize when developing faire and acceptable policies.

# The relationship between emotional well-being and exposure to nature in adults: A systematic review from neurobiological and psychological perspectives.

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**Keywords***:* exposure to green space, nature exposure, psychological changes, emotional well-being, functional neuroimaging.

## Abstract

Research or practical problem and objectives: The effects of nature on mental health are an emerging area of study with social and political relevance. The present systematic review aims to synthesize the evidence about the effects of nature exposure on adults' emotional well-being and underlying functional neuroimage changes. Methods: Following the PRISMA and PECOS guidelines, a search was conducted in PsychInfo, CINAHL, Web of Science, Scopus, Medline, Embase, Google Scholar, and citation search for peer-reviewed literature published from 2014 to 2024. 18 of 8,293 studies were included. Their quality was assessed using the GRADE approach. Main results preview and importance: Findings support the association between nature exposure and positive changes in emotional well-being, specifically improved mood, reduced fatigue, and both physiological and psychological relaxation, generally linked to reduced total hemoglobin (Hb) and oxyhemoglobin concentrations (Oxy-Hb) and reduced oxy-Hb concentrations in either the left-, right-, and bilateral- prefrontal cortex. Results in stress and anxiety varied across types of nature exposure and were linked to the activation of the ventral posterior cingulate cortex. Reduced stress was also linked to a negative correlation of the supplementary motor area cluster activation, a decrease in stress-related neural activity, a higher mean prefrontal Oxy-Hb, and a higher emotion-based regulation of stress. However, results cannot be generalized given the heterogeneity in types and duration of nature exposures, and methodological limitations such as small samples and cross-sectional designs. Future research should include follow-up measurements for a more detailed understanding of the effects across type, frequency, and duration of nature exposure, and population subgroups.

# Women's perception of (in)safety and vulnerability to sexual aggression in public spaces: an analysis from a gender perspective in Mollet del Vallès

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**Keywords / Relevant Terms:** sexual aggressions; right to the city; Mollet del Vallès; perception of insecurity; sexual violence

## Abstract:

This research addresses, from a criminological, gender and sociological perspective, the analysis of the perception of insecurity and vulnerability of women to the possibility of suffering a sexual assault in the public space of the city of Mollet del Vallès. To conduct this social research, a mixed methodology has been used in an exploratory sequential design. On the one hand, an exhaustive bibliographic analysis of the specialized literature on sexual violence, specifically sexual aggression, the right to the city and the perception of (in)security has been carried out. Thereafter, five participatory walking interviews were designed and carried out with women between 18 and 30 years of age who reside or have resided for five years or more in the municipality. On the other hand, a quantitative instrument called Reliefs Maps has been developed from an intersectional perspective, which has been answered by a total of twenty participants. This instrument collects and analyzes the data on the experiences of oppression of public spaces perceived as most unsafe for sexual assault from the five in-depth interviews through the level of “fear-safety” for each of the following five categories: gender; age; social class; ethnicity; sexual orientation; and aesthetic canons/physical appearance. With a polyhedral vision in the treatment of the phenomenon, it has been possible to answer the research question: What are the factors that contribute to the perception of insecurity and vulnerability to sexual aggressions in the public space of Mollet from a gender perspective? As well as the general and specific objectives have been achieved, with their respective conclusions.
It is important to note that, during the development of the project, certain limitations and discussions have been encountered, which have been addressed in detail in the final body of this work.

# The Impact of Virtual Nature on Stress Buffering and Recovery

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**Keywords / Relevant Terms**: Virtual Nature, stress beffering. stress recovery, VR

## Abstract

**Introduction:**
Substantial evidence indicates that engaging with nature holds significant potential for facilitating individual stress recovery and enhancing public health. Despite this, there is limited understanding of how exposure to virtual natural environments contributes to buffering stress responses and fostering stress recovery in individuals. To address this question, we use a novel stress induction procedure to explore how virtual natural (versus urban) environments facilitate stress buffering and stress recovery across physiological, subjective, and cognitive levels.
**Method:**
Participants begin with a 12-minute immersive 360-degree video either presenting a natural or an urban environment, through a head-mounted display. Subsequently, they undergo a newly developed Stroop-like stress task spanning four blocks and lasting approximately 40 minutes. This task has induced stress by combining time pressure, negative feedback, and social evaluative threat. Following this, participants again are presented with a virtual urban or natural environment for an additional 12 minutes. We continuously monitor participants' physiological activity by measuring ICG, ECG, blood pressure, facial electromyography, and cortisol levels. Additionally, we track mood states and subjective appraisals. Error rates and reaction times during the stress task are also logged to analyze alterations in cognitive control.
**Results:**
We are currently collecting data and preliminary results will be presented during the conference. We expect that compared with virtual urban environments, engaging with virtual natural environments would not only promote faster recovery but also reduce stress reactivity during the stress task.

# Reducing stress in university students using meaningful place-based guided imagery

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**Keywords / Relevant Terms**: guided imagery, stress, place-based guided imagery, nature/urban orientation, meaningful place

## Abstract

**Research or practical problem and objectives**
Guided imagery is an accessible tool that can be used to improve many aspects of well-being.Guided imagery that describes natural places, like forests, has displayed increased effects in reducing anxiety over non-place-based imagery (Nguyen & Bremner, 2018). Expanding on these studies to include place attachment may help maximise potential benefits. The study aims to (i) examine whether meaningful place-based guided imagery is more effective than non-meaningful place-based imagery and (ii) examine whether participants' urban and nature preferences affect the stress reduction achieved by participating in meaningful urban or nature place-based guided imagery.
**Process and methods (for empirical research)**
Participants will be university students (N=107) recruited on Prolific. Participants will listen to one of three place-based guided imagery recordings: (i) meaningful to them and nature-based, (ii) meaningful to them and urban-based, or (iii) non-meaningful (control). Their stress levels will be recorded before and after the guided imagery task. They will complete questionnaires measuring their preferences for natural and urban spaces. Finally, participants will respond to an open-ended question on the features of the imagined environment.
**Main results preview and importance (or main arguments in the case of critical reviews).** It is anticipated that guided imagery of meaningful places will lead to greater stress reduction than guided imagery of non-meaningful places. Furthermore, we expect that those exposed to guided imagery of meaningful nature-based environments will experience greater stress reduction than those exposed to guided imagery of meaningful urban-based environments. Results will offer insight into whether meaningfulness increases the benefits of place-based guided imagery. Comparing how nature and urban preferences influence the effects of guided imagery will help to tailor potential interventions. Findings from this study will help us understand the potential of incorporating place-based guided imagery into meditation and mindfulness routines.

# Mapping the WEAP (Water, Earth, Air, People): An Archival mapping-based Methodology for understanding Human Impacts on Places over Time

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**Keywords / Relevant Terms**: Mapping/ Water/ Earth/ Air/ People

## Abstract

As architects and urbanists of now, confronted with the existential threat of the climate emergency, we must look more deeply at how humankind's urban narratives, constructs and material layers have impacted on environmental phenomena over time. Using a comprehensive and carefully researched archive and mapping exercise, we call the WEAP (water, earth, air and people) we can deepen our understanding of the environmental effect our places for people have had across different time periods on the water, earth and air that underpin our human constructs and built environment.
Students at the Edinburgh School of Architecture & Landscape Architecture, working in the two-year Masters programme were invited as part of their research-led studio brief to draw the different layers of the WEAP at two different scales; (regional and city) across three different time periods, namely
• Agrarian (10,000-600 years ago)
• Industrial (500 – 50 years ago)
• Digital (50 years ago - present)
Mappings were drawn using CAD with each layer drawn as a DWG file and X-referenced into a standard template.The ideological premise of the studio is to research & investigate 'edge effects' (changes in species, population or community structures that occur at the boundary of two or more habitats) and the 'in-between' they generate, referred to in ecology as the 'eco-tone'. These existing edge effects have been found to operate within physical, socio-political, and environmental realms. The WEAP research data set dives into eep time and the evolution of place, uncovering the geomorphology, ecology, hydrology, climate and forms of human settlement over time. Our city of investigation is commonly known as both Derry and Londonderry, the second largest city in Northern Ireland. The intention is that the WEAP methodology could be applied to any place of investigation as a pre-cursor to the generation of urban design narratives.

# A Design Study for Proposing Environmental Mileage Mobile App - Focusing on the management of abandoned fishing gears

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**Keywords / Relevant Terms**: "Fishing gear", "Ghost Fishing", "Environmental Management", "Application Proposing", "Ocean"

## Abstract

Literature Review & Background As the destruction of the ocean continues, this study arose from the need for more effective oversight of the so-called “ghost gear” produced by fishermen and fishing suppliers at the individual level. The National Oceanic and Atmospheric Administration (2023) defines “ghost gear” as “Any discarded, lost, or abandoned, fishing gear [that] continues to fish and trap animals.” According to Oh Won-jeong (2022), the amount of ghost gear in the ocean amounts to 38,000 tons, approximately 75% of the total discarded waste in the marine environment. This vast amount of waste is produced in large part by fishermen and fishing gear retailers. To remedy this, the government has implemented policies including a “real-name fishing gear system” and a “prepaid security deposit system” for fishing gear use. However, the benefits to fishing sites remain negligible. Therefore, I propose an environmental mileage application for commercial fishermen to independently manage the disposal of their waste. Discussion & Conclusion The research methods were to identify the environmental risks posed by ghost gear waste and the current status of waste treatment through a review of the literature, including interview research. Case studies of fishing gear waste being managed with UI applications were also investigated and analyzed. When questioned about the process of ghost gear disposal, fishing gear retailers, ghost net collectors, government officials, and fishermen perceived the subject and process slightly differently, while nearly all recognized the need for more systematic management. Ghost gear applications in Canada, Norway, the UK, and the United States were analyzed with reference to the evaluation criteria of Jacob Nielsen's 10 Usability of Use Interface Design. The design of the application was proposed based on Information Architecture, User Journey Map, and Persona.

# Lighting plans of refuges for wide-area disasters in Japan -Subjective experiments taking into consideration the actual use of refuges-

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**Keywords / Relevant Terms:** "Resilient Lighting", "Refuge", "Disaster Management", "Safety and Security", "Spatial Brightness"

## Abstract

School facilities such as classrooms and gymnasiums are often used as refuges when large-scale disasters occur in Japan. However, the arrangements may not be suitable for activities such as meals, work, and sleep when staying there for a longer duration. Therefore, this study examines lighting methods suitable for various activities in classrooms also used as refuges in Japan. This study conducted a subjective evaluation involving 28 students in their 20s in a classroom replicating refuges in Japan with cardboard beds and partitions. The students responded to various lighting patterns with respect to their sense of security and satisfaction with the spatial brightness for activities expected in refuges. Multiple lighting patterns were prepared by dimming the pre-existing or partially illuminated lights, and additional patterns such as emergency exit lights and indirect lights were incorporated. Additionally, participants responded in suitable postures for each activity expected in refuges. The results of the experiment revealed that during the onset of sleep, with respect to spatial brightness, satisfaction was higher with dim lighting patterns in the space. However, evaluations of the sense of security during the onset of sleep revealed that majority of the participants experienced anxiety in response to the no lighting pattern. Moreover , the patterns with an emergency exit light or indirect lights appeared to improve the sense of security. Therefore, a certain level of darkness appears preferable for falling asleep. However, faint lights may be required to reduce anxiety, particularly in refuges. As there are individual differences in the responses, further discussions on the lighting environment for refuges will consider the attributes of the subjects. We will also conduct a luminance analysis of each lighting pattern.

# EVALUATION PRO-ENVIRONMENTAL COLLECTIVE ACTION FROM THE SHADOW OF BLIND AND CONSTRUCTIVE PATRIOTISM

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**Keywords / Relevant Terms**: pro-environmental collective action, blind patriotism, constructive patriotism, emotions

## Abstract

In this study, we examined the role of blind and constructive patriotism in understanding pro- environmental collective action. Blind patriotism is defined as seeing an individual's country as superior to other countries and harboring hostility towards other countries. Constructive patriotism, on the other hand, is defined as an individual's identification with the country and taking into account universal values as well as the welfare of the country in the decision- making process. Research shows that constructive patriotism is more effective than blind patriotism for pro-environmental behavior (and collective action). Emotions play a critical role in pro-environmental collective action like patriotism. Therefore, the second aim of the current study was to examine the mediating role of positive and negative emotions in the relationship between patriotism and pro-environmental collective action. The study was conducted online with 460 participants. The mean age of the participants was 35.38 (SS= 13.29). For the evaluation of pro-environmental collective action, participants were presented with five newspaper headlines related to the climate change crisis. Following these headlines, participants were asked how willing they were to volunteer, donate, attend training, and sign petitions to prevent/stop the climate crisis. According to the results, constructive patriotism was positively associated with climate change beliefs and negative emotions. In contrast, blind patriotism was negatively associated with climate change beliefs and positively associated with positive emotions. As expected, collective action intention was positively predicted by climate change beliefs, positive emotions, and negative emotions. However, collective action intention was positively predicted by constructive patriotism. There was the indirect effect of constructive patriotism, but not blind patriotism, on collective action intentions through negative emotions. These findings suggested that blind and constructive patriotism are differentially related to pro-environmental collective action with the mediating role of positive and negative emotions.

# Place Attachment in a Tower Block Neighborhood: Does “Tawaman” dissolve the diversity of the community and place identity?

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**Keywords / Relevant Terms**: place attachment, high rise apartment, neighborhood regeneration, gentrification, Japan

## Abstract

Musashi-Kosugi used to be a factory town built around 1940 with multiple factories and small taverns for factory workers. During a long-term recession, factories relocated away and in the past 15 years, a highly priced Tawaman (high rise apartments) and commercial buildings targeting dual-career couples and the new wealthy class have been built on the former factory sites. There are 15 Tawaman at present and with its prominence has become the landmark of Musashi-Kosugi. Also, Tawaman have attracted residents of social classes different from that of the original in the neighborhood. A qualitative study by Lomas et al. (2021) conducted during an urban regeneration project demonstrated that changes to the physical landscapes and population demographics negatively influenced residents’ place attachment. This study was conducted with residents who relocated to Musashi-Kosugi after the regeneration (i.e., the constructions of Tawaman). Semi-structured in-depth interviews were conducted with five Tawaman residents and four non-Tawaman newcomer residents. We asked about their everyday life, where they went, where they felt Musashi-Kosugi-ness, and where they were attached to. We also presented some pictures of Musashi-Kosugi and asked them to identify the place, and if they can, to give episodes of that place. The results suggest that both residents of Tawaman and non-Tawaman were attached to Musashi-Kosugi as a neighborhood. However, compared to non-Tawaman residents, the residents of Tawaman tended to prefer the recently developed orderly townscapes and the homogeneity of the residents. Although both Tawaman and non-Tawaman residents favorably evaluated historical buildings from the 1800s and wanted to preserve them, Tawaman residents who were raising children, evaluated small taverns and residences built in the 1900s as negative and/or uninteresting. Non-Tawaman residents preferred the diversity of the residents and evaluated both Tawaman and small taverns favorably as symbols of diversity of the neighborhood.

# Practical Study about Placemaking toward Community Revitalization by Utilizing Closed Elementary Schools

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**Keywords / Relevant Terms**: "placemaking" "community revitalization" "utilizing closed elementary school" "Social use of space" "place attachment"

## Abstract

The objective of this study was to investigate all closed elementary schools in Nara-Prefecture, Japan, and to create a taxonomy and proposal for Placemaking toward community revitalization purposes by utilizing closed schoolhouses. The number of closed elementary schools in Nara-Prefecture have reached to 176 in 2022, due to falling birth rate, decreasing population and school consolidation. In this study, 29 municipalities among all municipalities in Nara-Prefecture (39) were investigated and it was found that 70 schoolhouses were already demolished, 63 schoolhouses were utilized, 14 schoolhouses were neglected, and 8 schoolhouses were under consideration for utilization. A taxonomical analysis was conducted, and 92 wooden closed schoolhouses with traditional design patterns were identified, 29 schoolhouses among them were utilized. On the other hand, 60 ferroconcrete closed schoolhouses with structurally easy to convert to other purposes were identified, and 32 schoolhouses among them were utilized. Furthermore, establishment year of closed schoolhouses were classified into 3 types as First Term (established in 1872-1880), Second Term (established in 1941-1950) and Third Term (established after 2000). It was revealed that closed schoolhouses classified as Third Term aren't relatively decrepit, and easy to convert to other purposes. In 2023, Interview for 4 municipalities which established facility management section of closed schoolhouses was conducted, created 4 proposals based on each community needs for placemaking by utilizing closed schoolhouses. As a conclusion, the issue and direction of Placemaking by utilization of closed schoolhouses were found; 1) the local and socio-cultural importance of closed schoolhouses should be revealed; 2) the local consumption of locally produced, nutrition education, lifelong education, after-school childcare, support for young parents and intergenerational exchange should be reflected in Placemaking; and 3) the inclusive collaboration about closed schoolhouses management should be promoted, together with municipality, resident' association, town planning conference and local company toward community revitalization.

# The valorization of Italian public territorial assets in a state of abandonment: an investigation into the perceived value and emotional connection of Venetian citizens on the island of Poveglia.

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**Keywords / Relevant Terms**: place attachment, restorativeness, state of abandonment, place identity, connection to nature

## Abstract

The United nations 2030 Agenda has three of the goals that deal with the intervention strategies necessary for the valorization of territories aiming at: (9) developing qualitative and inclusive infrastructures and a sustainable urbanization, (11) protecting public cultural and natural heritage, and (15) reducing the degradation of natural environments (United Nations, 2015). In Italy the redevelopment of public spaces from a historical, cultural and environmental point of view often translates into complex and unsatisfactory paths. The research reported here centers on a case study on the Poveglia island in the Venetian lagoon. The study investigates citizens' perception on the valorization of this asset managed by the State Property Agency (Italian authority responsible for real estate assets). The data collected will be fundamental to understand the current perception of the island, necessary for a subsequent redevelopment intervention. Thanks to the overview that will emerge from the data, we will use a participatory process involving citizens to redevelop the green section of the island. We will have a multidisciplinary pool of experts from the fields of environmental psychology, psychometrics, agro-forestry sciences and arts administration, education and policy. Now we are defining the investigation methodology, after which a consultative process will involve stakeholders in the process. We have already identified four measures to study: perceived restorativeness, place attachment, connection with nature, and perception of the state of abandonment of public goods. The final goal fits the needs of the European framework on reduction of degraded contexts and on sustainable development of territories. Specifically, it will, for the recognition of valuable spaces in a state of abandonment, highlight objective data on the perceived value and emotional connection of local citizenship to their territory, promoting the definition and use of innovative, inclusive and sustainable strategies, from a social, cultural, economic and environmental point of view.

# Spatial Justice: A Systematic Review of Public Open Space Research in China From a Perspective of the Vulnerable

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**Keywords / Relevant Terms**: Spatial Justice, the Vulnerable, Public Open Space, bibliometrix, Systematic Review

## Abstract

Public open space (POS) provides people with the opportunity to engage in "conservation, recreation, and contact with nature" in an urban context, and is widely considered to be an important contributor to promote people's physical, social and psychological health and social interaction. The attention paid by a large number of scholars to the equity of POS further demonstrates its importance and necessity. However, existing reviews mostly analyzed from the perspectives of spatial distribution and supply-demand, commenting on the current situation of POS inequality and methods for measuring spatial equity, with little summary and review from the perspective of vulnerable groups. This study is based on the reality of China, following the PRISMA review principle, and conducting literature searches on multiple databases using keywords such as spatial justice, vulnerable groups, and public open spaces, obtaining 47 relevant empirical research samples. Then, using the R bibliometrix tool for research topic analysis, we found that the research topic is highly related to issues such as urban parks, accessibility, accessibility, and health. Furthermore, the coding study for samples was completed, analyzing the aspects of cities, spatial types, vulnerable group types, and methods for measuring spatial inequity. It was found that most of the research focused on horizontal comparison from the perspective of population classification rather than personalized research targeting vulnerable groups. Research on the current situation of spatial inequality remained at a descriptive summary rather than attribution and resolution strategies. Finally, this study attempts to improve and supplement the analysis of POS from the perspective of vulnerable groups, and proposes a equity assessment framework for the use of vulnerable groups, providing effective reference suggestions for future POS design and optimization.

# Affective Maps and Esteem For the Place: Resources for territorialization and territory management in the Brazilian National Social Assistance Policy

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**Keywords / Relevant Terms**: Esteem for the Place, Affective Maps, Territory, Public Policy, Social Welfare.

## Abstract

The Brazilian National Social Assistance Policy, a public policy focused on promoting social welfare in Brazil, aims to guarantee access to social rights and act in the prevention of risks and vulnerabilities, promoting acquisitions and potentialities through services and benefits and has territoriality as one of its principles, and its actions must occur in line with the local specificities. The production of data about the territories then becomes very important. Despite this, the social/territorial diagnoses that were already made do not account for psychosocial aspects, which promotes an obstacle in coping with risks and vulnerabilities. In order to solve this problem, this research aims to analyze the experiential-affective dimension of the relationship between residents of a territory referenced by a Reference Center for Social Assistance in Maracanaú, a municipality in the state of Ceará, Brazil, and their place of residence based on the construction of Affective Maps and of the assessment of the Esteem for the Place. For this purpose, the references of Socio-Historical Social Psychology, Environmental Psychology with a transactional approach and the perspective of Decolonial Studies were used. Anchored in a qualitative perspective, the Affective Maps Generator Questionnaire was used as methods of gathering data from 24 users of the mentioned social welfare public equipment. As a result, there was a prevalence of a depotentiating Esteem for the Place among the sample, with emphasis on the affective images of Insecurity and Depotentiating Contrast. The average of the Estem for the Place Index of the sample scores - 35.6, corroborating with the affective images listed. Finally, the research raises reflections on the construction and evaluation of practices of territorialization and management of the territory that take into account the territorial complexity, contemplating the experiential and affective factors in the reading of psychosocial vulnerabilities and potentials.

# Differences in Cognitive Maps and Wayfinding Strategies between Using Conventional Maps and GPS Navigation : A Field Experiment Using the Think-aloud Method and Sketch Maps

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**Keywords / Relevant Terms**: "Wayfinding,Cognitive Map,GPS,Paper Map,Survey/Route Map"

## Abstract

Although the sense of direction and the ability to navigate varies greatly between individuals, wayfinding has become easier for us in today's society due to the widespread use of GPS and its inclusion in smartphones. Accordingly, advances in technology and use of different media is likely to have affected spatial cognition and behavior. In this study, we assumed that the use of GPS has caused changes in how we locate ourselves and search routes. and conducted an experiment to understand differences in wayfinding and spatial cognition depending on the tool/media used for navigating. In the experiment, 27 participants (18 male and 9 female university students) performed a wayfinding task in a congested neighborhood in Tokyo with a complex street structure. The participants were randomly assigned to use either a conventional "paper map", "GPS with current location display only" and "GPS with route guidance" to compare tools/media. The participants' behavior was recorded by observation using the "think-aloud method." Participants were interviewed and asked draw a sketch map to analyze the development of cognitive maps after finishing the task. The results showed that paper map users checked the map and scenery more frequently than GPS users during navigation. Sketch maps were analyzed by comparing the number of closed figures enclosed by streets, considering it as indicators of development of a survey-map-like cognitive map. Paper map users drew more closed figures than GPS users. There was a correlation between the frequency of referring to the map and number of closed figures in the sketch map. The results indicate that GPS users acquired route map knowledge, even when its use was limited to the map and locating functions, while paper map users acquired survey map knowledge. This suggests that there are differences in how people understand space depending on the tool/media they use.

# Gender and commercial landscape in gentrified neighbourhoods: case of Gràcia & Poblenou

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**Keywords / Relevant Terms:** Gentrification, Gender; Gender construction, Discursive-semiotic analyse

## Abstract

In the last decades, many cities and metropolises have suffered a population increase. Due to the inability for the physical growth of some cities and the interest of capitalizing the need, phenomena like gentrification have drastically augmented. We'll define gentrification as the process from which working-class neighbourhoods are ''rehabilitated'' to be occupied by the new middle-classes. Even though many studies discuss the role of gender in this process, there's no antecedent in how is gender defined in these spaces. We tried to fill this gap by asking how does gender express on urban gentrified neighbourhoods. To deepen in spatial gender construction, we analysed two different neighbourhoods in different gentrification stages in Barcelona (Gràcia and Poblenou). We used mixed methods: discursive-semiotic analysis of the commercial façade and descriptive statistic of the gentrification and gender categories. Contradicting the literature, booth neighbourhoods show hegemonic gender conceptions, concluding the fact that gentrification perpetuate gender dichotomy even when adopting new forms.

# A Heuristic Approach to Wayfinding in Interior Environments of a Mixed-Use Academic Building

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**Keywords / Relevant Terms**: Wayfinding, Navigation, Interior Environments, Academic Building, Heuristics

## Abstract

Navigation heuristics, as mental shortcuts, are influenced by the available information in the environment. Amongst various approaches to wayfinding studies, a helpful framework to understand interior spatial cues still needs more attention. This study explored wayfinding systems within interior design, focusing on how people use cognitive heuristics when traveling from one location to another within a mixed-use academic building. The research particularly integrated interior spatial elements into the decision-making processes of wayfinding and observed how people use their environmental information. This unique qualitative approach to uncovering interior wayfinding behaviors contributed to understanding occupants' intentions and developing interior wayfinding principles. One mixed-use academic building at a large public university in the Midwest of the United States was selected for the study. The researchers developed six routes as wayfinding tasks within this new construction, the five-floor building. Ten student participants voluntarily participated in the wayfinding tasks and individually completed self-checklists and interviews after completing the wayfinding tasks. While wayfinding tasks, behavior tracking was used to identify environmental cues (e.g., lighting, furniture, signage, etc.) and the participants' behaviors, such as walking, stopping, looking, or wandering on the routes. Preliminary findings suggested prioritized information that significantly impacts the wayfinding in interior environments, adapting the cognitive considerations for goal- and experience-oriented navigations. The goal-oriented users tend to inspect environmental cues consciously for effective route planning, while experience-oriented individuals use their knowledge of the environment to recognize interesting spatial experiences with memorable landmarks and objects during the identified navigation heuristics. The current research also proposed four impactful visual cues (i.e., pathfinding, design anchor, spatial objects, and here) and adjusted interior spatial elements that support better interior navigation planning with design implications. These visual considerations can be integrated into the environmental design process from the early stage to support building occupants' positive emotions, safety, and well-being.

# Evolution of Route Finding Strategies: Transformations of sketch maps of the Yamanote Line, Tokyo

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**Keywords / Relevant Terms**: wayfinding, Sketch map, Information environment, mobile device, cognitive map

## Abstract

Recent advancements in ICT and mobile devices seems to have brought a shift in how people navigate and explore routes. Acquisition of a well-structured cognitive map has been associated with development of spatial knowledge and smooth route exploration. However, we can now navigate relying solely on point-to-point computer generated guidance without a holistic understanding of space. This may have changed the dynamics of route exploration, particularly in the so-called "digital native" generation, and call for reconsidering the existing view of cognitive maps and wayfinding.
Spatial knowledge of digital native university students was studied using the Yamanote Line, a ring line which is a major element in the image of Tokyo, as a reference. 300 participants were asked to draw a sketch map of the Yamanote Line as an initial survey. While maps generally depicted a circular shape seen in conventional metropolitan route maps, a large number depicted the circular line in several topologically distorted ways or drew only fragments of it.
These maps showed similarities with graphic representations of routes shown on travel apps and LCD screens in trains rather than static maps. This implies that representations in electronic/interactive media and the media's tendency to focus on elements only relevant to the individual's trip is connected to a fragmented understanding of space. Further in-depth interviews were conducted on selected participants. Interviewees drew another sketch map of the route to the interview locale in the campus. Sketch maps' accuracy was related to whether the interviewee's travel habit was passive or active. Passive refers to travelling guided by a navigation system while active refers to planning one's own route to the destination, with the latter drawing a more accurate map. The results suggest that digital tools not only has changed route finding strategies but also affected the mental model of space.

# Effects of route information delivery strategies on human interaction with automated vehicles

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**Keywords / Relevant Terms**: Mobility; Spatial Representation Preferences; Automated Driving System

## Abstract

Automated driving systems (ADS) could revolutionize mobility, increasing safety and sustainability. However, there are challenges to making ADS accepted by the public. Trust and motion sickness are crucial aspects of ADS adoption, and while previous research has identified different elements that can affect trust and motion sickness (e.g., situation management) none investigated the effect of spatial representation preferences when receiving information from the ADS user interface (UI). Data on 21 participants' level of spatial representation preferences, general trust in ADS, and motion sickness history were collected through validated questionnaires. A within-subjects study using a virtual reality (VR) driving simulator was carried out to test the effect of three UIs on self-reported trust in the ADS, motion sickness experienced, and sense of presence after the VR simulation. Sense of presence in the VR simulator was also measured to test its effects on motion sickness and self-reported trust in the ADS. One UI delivered route information by using an egocentric point of view (i.e., route representation), another by using an allocentric perspective independent from self-positioning (i.e., survey representation), and a final one had no route information. Participants experienced all three UI conditions within the VR simulator in a randomized order. A generalized linear mixed models analysis showed no effects of the individual's spatial representation preferences. As expected, an effect of prior level of trust in ADS and motion sickness history on self-reported trust and motion sickness after the VR simulation was found. The results also showed that the higher the survey representation preference the lower the physical presence experienced in VR probably reflecting the use of an allocentric perspective. Larger studies could clarify the impact of these and other individual preferences (e.g., UI modality of information delivery) on ADS user experience and aid companies in optimizing ADS UI for increased adoption.

# The influence of design and socio-psychological features on bicycle use in the city of Cagliari (Sardinia, Italy)

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**Keywords / Relevant Terms**: Sustainable Transportation, Urban Bike Use, Environmental Design, Socio-psychological Influences, Mobility Behavior

## Abstract

This study aims to identify those environmental features that could influence the perception of safety and comfort, and subsequently the behavioral intention, from the perspective of a bike user. Participants, whose recruitment starts in January 2024, will be residents of Cagliari. Referring to the evidence on the effects of green spaces, affordances, social norms, and pro- environmental values, an online questionnaire was set up, including a set of pictures that depict a real road in the city of Cagliari (Sardinia, Italy). Each picture presents a combination of levels of different attributes, i.e. presence/absence of trees or public transportation infrastructure, density of cars or bicycles (high vs. low). For each picture, respondents are asked to indicate their comfort, safety, and pleasantness in experiencing the road by bike. Then, there are items on social norms and intention to use the bicycle on the most and least preferred picture. At the end of the survey, biospheric values and bicycle use behavior are detected. Research outcomes should provide useful information for the urban planners, in relation to which design and socio-psychological elements could increase the proportion of citizens who use the bicycle (instead of their own car) for different mobility goals, understanding which attitudes and perceptions related to urban environments, with the goal of contributing to urban design and development practices oriented toward the bio-psycho-social well-being of individuals and sustainability.

# Recreationists´ mental models of human-wildlife interaction with semi-domesticated grazers in Dutch natural areas

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**Keywords / Relevant Terms**: Mental models, perception of human-wildlife interaction, semi- wild grazers, wildlife conservation, outdoor recreation,

## Abstract

Species protection and conservation efforts have led to a major comeback in wildlife in recent decades, including the active reintroduction of large semi-wild grazers such as horses and cattle into Dutch natural areas. This development of increasing return and recolonization of wildlife poses new challenges for society and especially for nature conservation. The Netherlands is currently experiencing an increase in human-wildlife interactions due to its anthropogenic landscape. This study explores recreationists' perceptions of human-wildlife interactions in two Dutch nature areas using a mental model approach. Mental models are individuals' internal representations that reflect their causal beliefs about the world around them. Specifically, the study examines what the mental models of four different recreation groups look like, to what extent the mental models of these groups diverge, and whether there are differences between mental models from rural areas compared to urban areas. Utilizing a standardized mental model tool, a sample of recreationist visiting national park Zuid- Kennemerland and border park Kempen~Broek (N = 151) created a visual representation of their mental models on human-wildlife interaction and reported on their view on wildlife in the natural areas in a short survey. Participants created rich mental models of various factors that can influence human-wildlife interaction with similarities in content to behavioural guidelines of natural areas. The findings of the mental models and the survey indicate that the interactions with wildlife are predominantly perceived with positive emotions and a positive attitude towards wildlife. Differences between the mental models of the four recreation groups were observed, although these were found to be less pronounced than expected. The comparison between mental models from urban and rural areas was inconclusive. The insights gained from these studies provide valuable information for conservation management, which can be used to adapt communication efforts and promote coexistence between recreationists and wild grazers.

# Deep Sea : Improving societal bonds by highlighting a fundamental invisibility. What do people think of the deep sea?

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## Abstract

Beneath its surface, our blue planet harbors an immense dark territory of depths - unlighted even in our minds. Yet, the deep sea is the world's largest ecosystem, accounting for over 90% of the planet's living volume and it helps regulate atmospheric temperature, stores carbon, and contains riches necessary for the survival of our species. But we, as humans, have evolved to be physically and emotionally disconnected from the deep ocean. The aim of this research is to describe what people think of this environment by exploring the existing beliefs, the related emotions and imaginary universes, and the scientific knowledge that people use to perceive and comprehend the deep sea. Moreover, there is an obvious need to identify the socio-cultural and socio-environmental concerns linked to human activities in the deep sea (ex: deep-sea mining), in order to assess the extent of their impact. In addition to the description work, this research aims to improve the circulation of scientific knowledge within society, and to help the implementation of any policy of ecological prevention and preservation. The methodology consists of a descriptive approach to study social representations, based on individual semi-directive interviews prior to collective interviews. The results of these interviews will serve as the basis for a questionnaire survey. In France, there is no study of social psychology applied to the environment that takes into account vernacular knowledge of the deep ocean. And since the start of this thesis, we are noticing the rich complexity of perceptions that define the deep sea, as well as the difference in perception between “the ocean” and “the deep sea”.

# Exploring Public Discourse Surrounding Low Traffic Neighbourhoods: The Role of Moral Rhetoric and Political Signalling in Social Media

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**Keywords / Relevant Terms**: Natural Language Processing, Low Traffic Neighbourhoods, Political Signalling, Moral Foundations Theory, Twitter Discourse

## Abstract

**Objectives:** Policymakers hope Low traffic neighbourhoods (LTNs) can tackle increasing air pollution and carbon emissions, yet they face significant opposition, including protests and far- right conspiracy theories. Signaling theory suggests the expression of signals may be used by individuals to infer group membership. Political signalling is the signalling of political orientation, thought to be inferred by the expression of distinct distributions of moral values surrounding key topics. This project explores whether opposition to LTNs may be a right-wing signal, thus informing policymakers' responses. Method: 2,252 tweets were collected programmatically from Twitter's API. Support for LTNs was classified using VADER sentiment analysis. Political signalling was inferred through presence of moral language, identified using the MoralStrength lexicon. Moral rhetoric was explored using Latent Dirichlet Allocation topic modelling seeded with the Moral Foundations Dictionary 2.0. Results: A multiple linear regression indicated references to individualising morals, typically associated with liberals, was associated with negative sentiment. However, manual coding found sentiment was not an accurate proxy for opposition which has significant implications for future studies. Results of seeded topic modelling may still suggest in/out-group signalling. The loyalty theme referenced social groups like ‘children’, ‘residents’ and ‘advocates’ and highly emotive language like ‘love’, ‘killing’ and ‘war’. The residual theme also captured references to Rishi Sunak’s recent order to review LTN schemes. Results demonstrate the benefit of mixing top-down theoretical and bottom-up data driven approaches through seeded topic modelling. Conclusions: Whilst sentiment was polarised, it was not a reliable proxy for LTN opposition. Results appear to suggest some group signalling, but should be interpreted with caution due to limited sample size. Further study using stance detection methods and a larger sample size is required. Future studies should consider stance analysis and avoid dictionary-based methods in most cases.

# The Amazon Forest in the Understanding of Finalist Basic Education Studends in Amazonas

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**Keywords / Relevant Terms**: "Amazon Forest", " Free Association", "Biological Structures", "Protection"

## Abstract

The Amazon has a prominent position in the world atlas due to its countless riches, including the largest continuous forest reserve in the world. In particular, the Amazon Forest provides important ecosystem services, one of which is carbon cycling, vital for local and global climate balance. Despite this, the forest has been destroyed at an unprecedented rate. Fires, deforestation, and misuse of natural resources in recent decades have aroused great national and international concern. This concern, however, seems far from achieving effective changes in this scenario. Therefore, it is considered that the Amazon Forest needs to be seen as a natural capital to be preserved and protected due to its socio-environmental complexity, mainly by Amazonians, starting from basic education. But what does the Amazon Forest represent for this audience? This study presents an excerpt from a survey carried out with 792 students (48% boys and 52% girls, between 13 and 20 years old), finishing elementary school in public schools in Amazonas, Brazil. The objective was to verify students' understanding of the Amazon Forest. The free association technique was used with the elicitor term "Amazon Forest" (AF). A corpus of 1575 words were produced, and after semantic grouping and categorical content analysis, 6 thematic categories were constructed. For these participants, FA refers to the understanding of a space that involves a) biotic elements (55%), b) abiotic elements (12%), c) positive qualities (12%), d) society-forest relations (10 %), e) natural ecosystem (5%), e, and f) others (6%). The results show that the majority of students still have an understanding based on the biological structures of this territory (animals and plants), thus reducing a more interrelational understanding of its effective protection and care. This study reveals that Brazilian basic education must consider changes in learning about what the Amazon Forest represents.

# Testing an Educational Intervention to Foster Early Climate Change Engagement

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**Keywords / Relevant Terms**: Climate Change Education, Motivated Reasoning, Climate Change Communication, Climate Change Engagement

## Abstract

Effective climate change education can be inhibited by motivated reasoning, which occurs when a person's pre-existing values, beliefs, or worldviews influence how they process and evaluate new information. Prior research has shown that motivated reasoning can occur in students as young as adolescents, perhaps acting as a barrier to effective learning and engagement with this issue at an early age. In this study, we experimentally tested an educational intervention tailored to students according to best practices for climate change communication. We hypothesized that the tailored intervention would mitigate the influence of motivated reasoning on young learners' responses to a lesson about climate change. A total of 226 middle school and high school students from across the United States were randomly assigned to complete one of two ~20-minute online lessons about the causes, impacts, and potential solutions to climate change. In one module (control condition), the content of the lesson was general and identical for all students while in the other (tailored condition) the content was tailored to the individual student in a way that made the information personally relevant in terms of each student's 1) geographical location, 2) personal preferences and 3) expressed values. We found that, overall, both climate change modules were effective in increasing climate change knowledge among students, regardless of age. However, contrary to our expectations, we found no evidence that the tailored module mitigated motivated reasoning. Rather, we found mixed evidence pointing to a backfire effect of the tailored module among high school (but not middle school) students. Future research is needed to disentangle these findings with a larger and more representative sample of students.

# We Need Nature to Exist – A Qualitative Exploration of the Awareness of Dependence on Nature

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**Keywords / Relevant Terms**: awareness, dependence on nature, human-nature-relationship, qualitative research

## Abstract

Human existence on earth depends on clean air, fresh water and nurturing food. Nature provides all three of them. However, human behavior continues to fuel climate change and biodiversity loss which results in a decreased quality and/or quantity of air, fresh water and food that is available to humans. We assume that this contradiction is based on a lack of humans' awareness of their existential dependence on nature. We think that humans generally know the previously mentioned facts but that humans are not aware of these facts in their everyday lives. To date, there is hardly any published literature on this phenomenon. Hence, in semi-structured qualitative interviews we want to explore, 1) how aware people are of their existential dependence on nature in their everyday lives and 2) the situations in which they report to be aware of it. Adhering to the theoretical sampling strategy, we will interview $N = 4$ people, varying in age and gender. We will conduct a qualitative content analysis to examine people's reported awareness of their existential dependence on nature. This study aims to contribute to a better understanding of how aware people are of their existential dependence on nature in their everyday lives and in which situations this awareness arises. The awareness of the existential dependence on nature might be a valuable entry for future interventions to support pro-environmental behavior.

# Influencing personal norms and behavioral intention to sort food waste by increasing awareness of consequences

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**Keywords / Relevant Terms**: food waste sorting, personal norms, experimentation, behavior change, communication

## Abstract

The two present studies aimed to design the most effective public policy communication to promote food waste separation among individuals who do not do so. According to the norm activation model (Schwartz, 1977), sorting behaviors are strongly influenced by personal norms. Several antecedents can activate personal norms to sort, including awareness of consequences of sorting on the waste problem. In a 1st study (N = 850) we tested the effect of information about consequences of sorting or not, vs. no information, on personal norms and intention. Results showed an effect of the message on personal norms and intention, mediated by awareness of consequences, and this effect, though small, was stronger among people who do not already sort. We then conducted a second study on a more diverse sample that was no longer over-represented by pro-environment individuals. Further, in order to convince individuals who are less concerned by environmental issues, a pilot study (N = 250) showed we should use arguments about environmental and economic consequences of sorting expressed in terms of gain. In study 2 (N = 1500), we compared the effect of information about consequences of sorting, vs. no information, on personal norms and intention. The information reinforced awareness of the consequences and the intention to sort. On the other hand, explaining why to sort increased personal norms only among participants who reported low sorting behaviors. In line with our expectations, the level of pro-environmental identity did not moderate the effect of a message on the environment and on the co-benefits of sorting.

# Climate change anxiety and media consumption

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**Keywords / Relevant Terms**: climate change anxiety, climate news, media consumption, survey

## Abstract

Background According to the American Psychological Association (APA, 2010), nearly half of young adults ages 18 to 34 stated that they felt stress over climate change in their daily lives. Moreover, the Yale Program on Climate Change and Communication (2022) revealed that 9% of Americans feel depressed or hopeless for at least several days out of the last two weeks because of global warming.

We are interested on the impact of news consumption on the rise of climate change anxiety (CCA) among emerging adults. Maran and Begotti (2021) found a positive correlation between the frequency of media exposure on CCA and self-efficacy beliefs. While CCA can increase perceived self-efficacy, Innocenti et al. (2023), revealed that CCA was related to pro-environmental behaviors (PEBs) and eco-paralysis at the same time with self-efficacy as a mediator.

Based on prior research, we hypothesize that students who pay more attention to climate change topics in the news media will show higher levels of CCA and higher levels of perceived self-efficacy. We also predict that students from majors related to environmental studies will show higher levels of CCA than students from other majors.

Methods: This self-report study will be conducted as an electronic survey in Qualtrics which will be distributed through the Oregon State University SONA system and in school newsletters. Items from the Climate Change Anxiety Scale (Clayton & Karazsia, 2020), the General Perceived Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) along with media exposure will be presented, Hypothesis testing will be performed in SPSS using a mediation model (ANCOVA) to explore the mediating effect of perceived self-efficacy on CCA and media exposure.

The current study is expected to contribute to a better understanding of CCA, the relationship to media exposure, and the mediating effect of perceived self-efficacy to inform clinical practitioners and communication professionals.

# The changes of the introduction of smartphones on the QOL of residents living in elderly housing -Focus on activity restrictions and the spread of activities in virtual environments-

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**Keywords / Relevant Terms**: Smartphone,virtual environments, satisfaction score, QOL, elderly housing

## Abstract

**Introduction:** This research aims to introduce activities in a virtual environment via smartphone utilization as a new way to enhance the Quality of Life(QOL) for the elderly, considering the COVID-19 restrictions on face-to-face activities.

**Methods:** The research participants comprise 5 males and 15 females (age avg :79) living in elderly housing ,healthy and not habit for using smartphones. The Research team lent smartphone to the participants for 18months and provided a usage class every two weeks. After obtaining consent, we recorded their tapping speed on the smartphones and conducted a semi-structured interview to evaluate satisfaction factors in 9 activities, based on 4 happiness indicators.

**Results:** The research revealed that after the class, the participants' tapping speed on the smartphone improved by an average of 11.3%. Regarding satisfaction with 9 activities, all showed an increase due to various factors, which could be categorized into three patterns. 1) Increased quantity :useful functions, health management. 2) Increased quality: communication, hobby-play. 3) Expansion of choices and possibilities :going out, taking pictures and videos, gathering information, learning, shopping. The characteristics of 3) :They had other information devices such as PCs and rarely went out, and had fewer online communication partners.

**Conclusion & Discussion:** It is clear that QOL can be improved by activation of the virtual environment, even under the limitation of face-to-face activities in COVID-19. The fact that the presentation of options and possibilities can increase satisfaction with activities, especially for those with physical limitations such as the elderly and disabled, even if they are unable to carry out the activities, indicates the need to rethink daily life, including the expansion of activities in the virtual environment.

# Terra de Mai: a case for deviant ecology and epistemic tools for queering the Environment

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**Keywords / Relevant Terms**: Lesbian, Rural, Queer, Epistemic, Environmental

## Abstract

This essay explores the intersection of lesbian imaginaries, rural life, and ecological crisis. Through a critical examination of sapphic rural idylls, the piece navigates the romanticised notions of cottagecore and challenges their potential reinforcement of dominant bourgeois values. Drawing inspiration from the Catalan poet Maria Mercè Marçal's collection, Terra de Mai, it delves into the implications of lesbian back-to-the-land utopias as epistemic tools for queering the environment. The focus then moves to the emergence of epistemic tools from lesbian 'back-to-the-land' utopias, including the redefinition of kinship, deconstructing heteronormative spaces, and embracing insubordination for creative ecological design. The discussion concludes by emphasising the importance of these tools in addressing the epistemic, social and environmental crisis left by global warming, advocating for a shift towards multi-purpose ecological technology and a queer-centred approach to ecological paradigms.

# Exploring Sustainability through Spirituality: A Journey through Asia

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**Keywords / Relevant Terms**: Sustainability, environmental psychology, spirituality, societal transformation, pro-environmental behavior, Auroville, consciousness, ecopsychology, mindfulness, climate policy

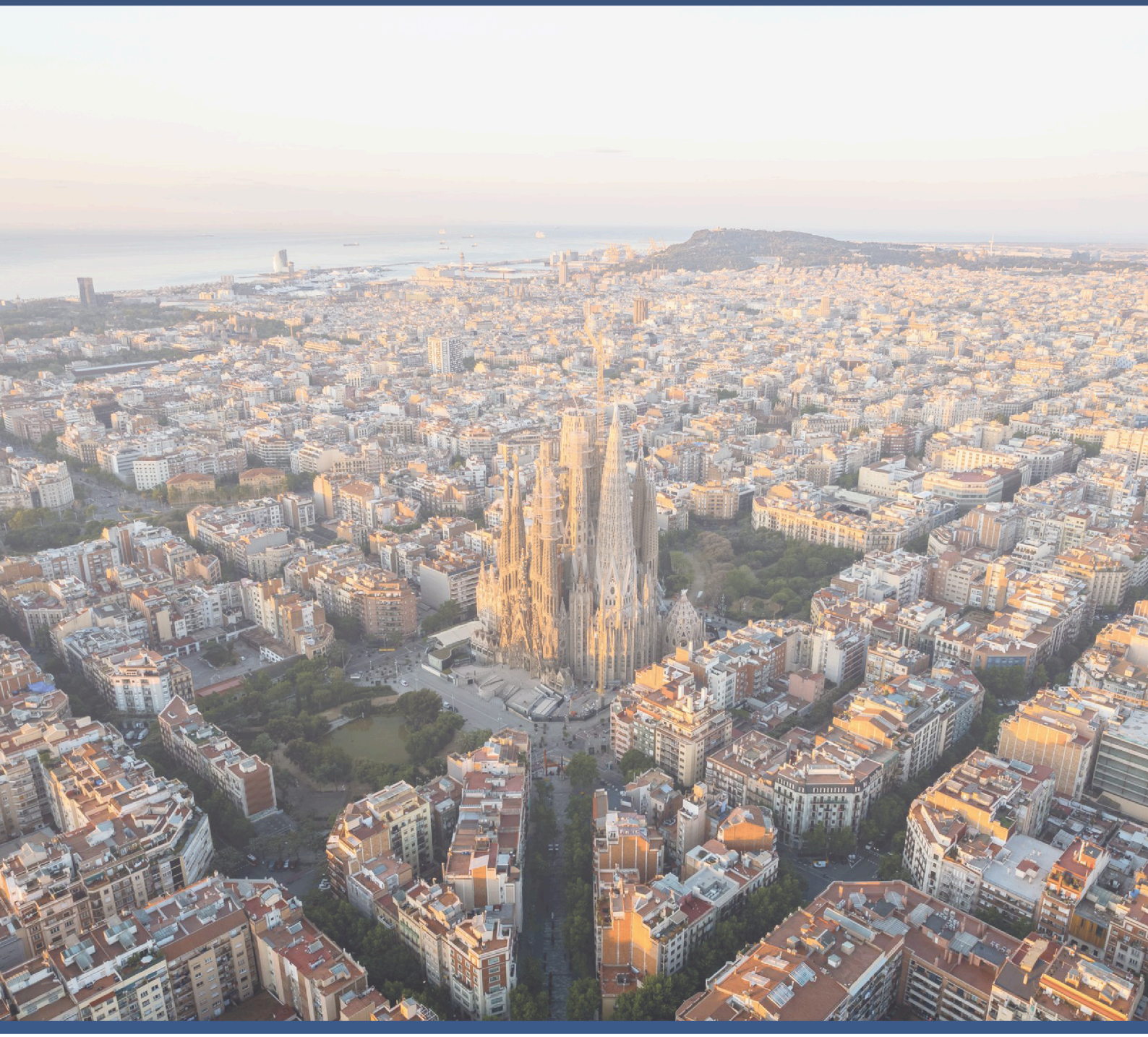
## Abstract

Sustainability and environmental policy are often addressed through economic and technological solutions, yet their effectiveness may be limited without a profound societal transformation. This study explores the role of spirituality in fostering sustainable behaviors by examining Auroville, India, as a case study. Founded in 1968, Auroville was envisioned as a universal township promoting human unity and sustainable living, integrating ecological, social, and spiritual dimensions. The research investigates how the enhancement of consciousness—allowing individuals to connect with themselves, their communities, and the planet—can drive societal change and influence environmental psychology.

Drawing from ecopsychology, mindfulness, and self-compassion theories, this study examines the potential of linking pro-environmental approaches with personal and community acceptance. The findings suggest that cultivating a deeper sense of social belonging and environmental responsibility can encourage behavioral shifts toward sustainability. Moreover, integrating spiritual awareness into environmental policies could enhance their effectiveness by fostering collective consciousness and meaningful engagement with climate initiatives.

By analyzing sustainability efforts across ten countries, the research compares Eastern and Western perspectives on environmental consciousness. It highlights the importance of addressing the root causes of environmental challenges rather than applying temporary solutions. The study also explores whether European Union sustainability initiatives can truly achieve climate neutrality without a fundamental societal transformation.

The case of Auroville serves as a model for a holistic approach to sustainability, demonstrating that aligning environmental policies with deep-seated values and ethical considerations may be essential for long-term ecological resilience. This work calls for a redefinition of sustainability that integrates not only policy measures but also human consciousness and collective well-being



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