Circular economy

European plan to a circular economy future in sports industry

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ABSTRACT.

The development of the world economy was based on its linear organization. Businesses derive the resources they need from the environment, turn them into goods and after the use by the consumers, the goods are disposed into the environment, creating wastes and pollution. That way of organizing the economy is not sustainable for businesses, consumers and the environment. An alternative way of organizing is the circular economy. Which means the creation of a closed system, based on the cycles of nature, with limited use of natural resources. In essence, the whole system works by recycling resources within the economic system, by fueling energy needs from renewable energy sources and by technological development so that the product are design to last longer and are easier to reuse or repair. In the last decade, from 2010-2020, the circular economy has developed quite a bit mainly in Europe, as the European Union promotes the circular economy through directives to the state members in order to achieve its environmental goals by 2030. Similarly, private initiatives and investments in all priority sectors of the circular economy have increased. More and more states, individuals, businesses and organizations are realizing the need for a transition to a circular economy so that the future is sustainable on a planet that can feed an ever-growing population.

This paper first analyzes the concept of the circular economy, the positive effects it will have on the environment, the state, businesses and consumers, the pillars on which it must be developed, but also the problems that must be overcome in order to be making circular business and economics easier to achieve. After that, the programs announced by the European Union in recent years with the areas in which it focuses, as well as the fairly recent Greek national action plan, are being inspected. The second chapter examines the areas of action that both the European Union and Greece have set as target areas for the immediate implementation of measures for the transition to a circular economy. As well as some business cases of the circular economy in the olympic games. Alongside various successful and innovative business ideas are presented that have managed to benefit from the circular economy, both abroad and in Greece. Finally, the sources of funding in Greece and the European Union for entrepreneurs looking for a way to cover high initial investments are presented.

Keywords: Circular Economy, Green Entrepreneurship, Green Growth

RESUMEN.

El desarrollo de la economía mundial se basó en su organización lineal. Las empresas obtienen los recursos que necesitan del medio ambiente, los convierten en bienes y, después de que los consumidores los utilizan, los bienes se eliminan en el medio ambiente, creando desechos y contaminación. Esa forma de organizar la economía no es sostenible para las empresas, los consumidores y el medio ambiente. Una forma alternativa de organización es la economía circular. Lo que significa la creación de un sistema cerrado, basado en los ciclos de la naturaleza, con un uso limitado de los recursos naturales. En esencia, todo el sistema funciona mediante el reciclaje de recursos dentro del sistema económico, alimentando las necesidades energéticas de fuentes de energía renovables y mediante el desarrollo tecnológico para que los productos estén diseñados para durar más y sean más fáciles de reutilizar o reparar. En la última década, de 2010 a 2020, la economía circular se ha desarrollado bastante principalmente en Europa, ya que la Unión Europea promueve la economía circular a través de directivas a los estados miembros para lograr sus objetivos ambientales para 2030. Asimismo, se han incrementado las iniciativas e inversiones privadas en todos los sectores prioritarios de la economía circular. Cada vez más estados, individuos, empresas y organizaciones se dan cuenta de la necesidad de una transición a una economía circular para que el futuro sea sostenible en un planeta que pueda alimentar a una población en constante crecimiento.

Este artículo analiza en primer lugar el concepto de economía circular, los efectos positivos que tendrá sobre el medio ambiente, el estado, las empresas y los consumidores, los pilares sobre los que debe desarrollarse, pero también los problemas que debe superar para estar haciendo negocio circular y economía más fácil de lograr. Posteriormente, se inspeccionan los programas anunciados por la Unión Europea en los últimos años con las áreas en las que se enfoca, así como el relativamente reciente plan de acción nacional griego. El segundo capítulo examina las áreas de actuación que tanto la Unión Europea como Grecia se han marcado como áreas objetivo para la implementación inmediata de medidas para la transición a una economía circular. Así como algunos casos de negocio de la economía circular en los juegos olímpicos. Además, se presentan varias ideas de negocios exitosas e innovadoras que han logrado beneficiarse de la economía circular, tanto en el extranjero como en Grecia. Finalmente, se presentan las fuentes de financiación en

Grecia y la Unión Europea para emprendedores que buscan una forma de cubrir inversiones iniciales elevadas.

To my mom and those who were by my side in this endeavor

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CATALOG OF IMAGES

INTRODUCTION.

One of the biggest problems for economists is the rational and fair distribution of goods among all people, whether it is done directly through goods that are raw materials, such as fruit, or through processed products, products that are produced after processing raw materials in industries or crafts. However, most goods generate various wastes both during their production and after their consumption or utilization. The linear economy creates goods that are useless after their use. Thus, for each new product we need new raw materials, something that becomes more difficult day by day, as people's consumption needs increase, the number of people increases and the area of useful land decreases due to climate change.

According to the European Union, every year every citizen uses more than 15 tons of materials and produces about 4.5 tons[1] of waste. In fact, a study by the Ellen MacArthur Foundation, an institution that deals with the transition to the circular economy, states that 80% of the products that a person consumes each year, including about 20 kg of clothes and 120 kg of packaging of various kinds, end up in rubbish and are usually destroyed. [2]These data ,highlight the key problem of many countries around the world in the management of this waste. Among these countries is Greece, which even today faces several problems related to landfills, while recycling, although it has entered the daily life of Greek people with the blue bins, is not implemented properly, since it is not done proper separation of recyclable materials. Novoville has carried out a survey in 2019, 62% of the participants stated that they recycle, while 40% do not know the recycling actions carried out by the municipality in which they live.[3] Of course the concept of composting remains unknown for a large portion of the Greek population, as only 4% of waste in Greece ends up in composting[4].

Recycling is only a small part of the circular economy, but it is the part that most people are aware of and it shows the positive impact it can have on the whole society. The circular economy, as we will see below in more detailed way does not only solve the problem of economists, but effectively leads to the improvement of the living conditions of the whole

[1] European Commission (2014). "The circular economy. Connecting, creating and maintaining value. ", 19/06/2014, doi:10.2779/79393.

[2] Ellen MacArthur Foundation, S.U.N. & McKinsey Center for Business and Environment (2015) "Growth Within: A Circular Economy Vision for a Competitive Europe", 20/06/2015.

[3] Novoville (2019). "Recycling Research",11/09/2019.

[4] Proceedings of the 2018 circular economy conference of the Unified Waste Management Association of Crete. 23/09/2018.

population, helps to protect the environment, creates thousands of jobs around the world and reduces the cost of producing basic consumer goods. Beyond that, the circular economy seems to have infinite ways of application and serves as a challenge for all scientists, while it is also a big question mark for the industries in which it can be applied.

The European Union and the largest economies in the world have developed programs for the development of the circular economy. In many cases, in fact, these programs are the main pillar of organization of their economic activity. The EU program which also affects the economic development of Greece, was first presented in 2014 and a year later, on December 2, 2015, adopted the first measures to shift the economy from linear to circular[5]. For this transition, the EU allocated more than € 6 billion from various resources, such as the European Structural and Investment Funds (EDF) and the 'Horizon' 2022 program. This program is valid until 2022 and its results are not obvious yet . However, the EU has already submitted a proposal[6] for further strengthening of the circular economy, along with the support of the environmental programs, combining these two in the Environment and Climate Action Program (LIFE) 2021-2027 and a budget of around € 5.5 billion from the Community funds, investment. On 11 March 2020 this proposal became the new action plan[7] of the European Union, which has as a result the effort of leading the world economy to a sustainable plan with a horizon the year of 2030.

The key pillars of this program will be discussed in a more detailed way below. . Briefly, the EU set four pillars for the transition from the linear to the circular economy:

1. The *production*: both in terms of product design, to make them more durable and easily recyclable, as well as in terms of production methods of goods with the aim of less waste generation and less environmental footprint.
2. The *consumption*: Enabling consumers to be better informed, the best selection of products that help the development of the circular economy will be achieved.
3. *Waste management*: with an integrated plan initially to avoid large volumes of waste, preparing for reuse, recycling and finally the disposal, , in the most efficient and environmentally friendly way.

[5] European Commission (2015). "Closing the cycle - An EU action plan on the Circular Economy ", COM (2015) 614, Brussels, 02/12/15.
[6] European Commission (2019). "Establishing a Programme for the Environment and the Climate Action (LIFE) and repealing Regulation (EU) No 1293/2013", COM(2018) 385, Brussels, 01/06/2019
[7] European Commission (2020). "A new action plan for the circular economy. For a cleaner and more competitive Europe ", COM (2020) 98, Brussels, 11/03/2020.

4. *Transformation of waste into resources- Strengthening the market for secondary raw materials:* The aim is not only to create a market for secondary raw materials in sectors that are not currently active, but also the introduction of rules and standards to enhance the quality of recycled raw materials, in order to make them competitive with regular raw materials.

   The EU in the declaration on the circular economy had highlighted five sectors in which it gave priority to the period 2016-2020. These sectors were: plastics, food waste, critical raw materials, such as minerals and electronics, construction and demolition, and finally biomass and products of organic origin.

In the Greek reality, the effort to transition from the linear to the circular economy is not a priority on the agendas of the political parties, as the protracted financial debt crisis leaves no resources available to the government for investments but neither to private entrepreneurs or investors. Of course there are many exceptions that have turned in this direction during the crisis years taking the big risk or even before the crisis proving the insight they possess. In recent years, European subsidies, mainly the NSRF programs are the ones that helped the Greek entrepreneurs to turn to the circular economy, local communities, municipalities and regional units to overcome waste management problems and increase their utilization but also the state to turn to renewable energy sources.

All of these will be analyzed in detail below. Initially, the concepts around the circular economy and the ways in which it is supported and operated effectively in the European Union and in Greece will be developed, but also the remarkable efforts being made in the rest of the world. Next, we will take a look at the areas that can be directly favored or that are an immediate priority for the good of humanity. Finally, the thoughts and conclusions about the circular economy will be presented and its potential in the Greek economy but also in the global economic environment.

1. CIRCULAR ECONOMY

1.1 **Circular economy**

The circular economy is a relatively new term for the public, but it is not new to economists. The first complete reference to the circular economy appears in the book by David Pearce and. Kerry Turner "Economics of Natural Resources and the Environment[8]" in 1989, in which they developed a development model that considers the recycling of waste from individuals, businesses and government, to facilitate the whole economy. Some years earlier, in 1966, Kenneth Boulding stated in an article that *"closed economy of the future might similarly be called the "spaceman" economy, in which the earth has become a single spaceship, without unlimited reservoirs of anything, either for extraction or for pollution, and in which, therefore, man must find his place in a cyclical ecological system which is capable of continuous reproduction of material form even though it cannot escape having inputs of energy[9]".* This is the first reference to the circular economy, although it does not mention the way in which someone will be able to reach it. These ideas developed along with the development of ecological economics and they have been enriched over the past decades, , without many comprehensive efforts to define the circular economy. Sometimes the definition of a circular economy can be a bit complicated, but everyone agrees that the circular economy has the meaning of the circular system of closed loops, with the central goal of decoupling natural resources from economic growth.

The circular economy began to occupy the entire planet significantly in the beginning of the past decade. A key factor in this move was the forecast for the depletion of various natural resources which are now used by the whole society in order to function. Such resources are oil and its derivatives, coal, and gas in the energy sector, but also the metals used in industrial production, such as lead and gold. According to a research, the discovered oil and gas reserves are enough to supply us for the next 50-60 years, if the rate of consumption remains relatively stable, while for coal the adequacy reaches 115 years[10]. The known reserves of gold and lead today, are enough for the next 20-30 years. A very important natural resource that is being

[8] Pearce, D.W., Turner, R.K., (1989) "Economics of Natural Resources and the Environment" Johns Hopkins University Press, *04/06/1990,* ISBN 0745002250.

[9] Boulding E. Kenneth, (1966) "The Economics of the Coming Spaceship Earth", στο: "Environmental Quality in a Growing Economy. Resources for the Future" Johns Hopkins University Press: Baltimore, p.p. 3-14.

[10] Ritchie Hannah (2017) "How long before we run out of fossil fuel?", 08/08/2017, Ourworldindata.org.

depleted today is the earth, whereas its continued use in the food production process makes it less and less efficient, this has as a consequence the use of fertilizers necessary. At the same time, a large part of the land is wasted every day due to the contamination of both the soil and the aquifer.

Another factor that has influenced the leaders of the major economies is the catastrophe that is taking place on the planet from the reckless use of materials and the increasing volume of waste from people and businesses, since the planet's environmental footprint has been increased more than 190% in the last fifty years, according to the Global Footprint Network[11]. More than 2.7 billion tonnes of waste are generated in the European Union each year, of which 100 million are hazardous materials. Also, every European citizen produces more than 170 kilos of food waste in a year. Of all this waste, only 40% is recycled or reused, while the rest is destroyed through landfilling or incineration, polluting thousands of acreages and releasing more than 200 million tonnes of greenhouse gases into the atmosphere each year[12].

At the same time, the increase of the world population pushes the production process to its limits, both in terms of production volume and the possibility of exploiting natural resources. The growing population does not only need products for consumption but also a decent job that will allow him to live and develop. Thus, in recent years there has been an increase in demand for labour, while supply is growing at a slower rate and companies are trying to change the rate of production, to be able to cope with the ever-increasing demand for products. They focus mainly on technological innovation, but if they do not operate in a circular economy, soon the necessary resources will not be available or they will be too expensive to be able to produce efficiently, leading working conditions to devaluation.

Finally, the circular economy can bring a lot of profits to entrepreneurs who dare to pioneer and invest in such sectors. The European Union has estimated that if 10-20% of businesses invest in improving the efficiency of the resources they use, their annual financial interest can be from 400-900 billion euros, i.e., up to 4% of GDP. of the EU[13]. The Greek Minister of Energy and Environment, Mr. Kostis Hatzidakis, pledged that about 4 billion euros will be invested for the shift of Greece towards renewable energy sources, and more than 5,000 jobs will be created in the upcoming five years 2020-2025, while recycling programs will be promoted, so that more than 50% of the garbage ends up in recycling. The Netherlands, one of

[11] https://www.footprintnetwork.org/
[12] European Environment Agency (EEA) (2013) "EEA Signals 2013: Every breath we take. Improving air quality in Europe", 15/04/2019, doi:10.2800/82831
[13] Amec, Bio Intelligence Service, European Commission (2013): "The opportunities to business of improving resource efficiency", Βρυξέλλες, 08/02/2013.

the first countries to aim to be a circular economy by 2050, each year due to the circular economy earns about 7 billion euros and more than 50,000 jobs

All these factors have turned the global community towards a circular economy, as it seems to be the only way, to be able to deal with all these problems simultaneously with a great economic prosperity and with social prosperity. It is clear that the only way is to turn, in total or at least a large percentage of economic activity, from the linear to the circular economy, otherwise the future of man on the planet will be unsustainable.

Fundamentally, the circular economy is an economic system of resource recovery, inspired by the circles of nature. Nothing is lost in nature. Even the leaves that fall from the trees then feed the remaining trees, after they have released their nutrients into the soil first. Thus , in the circular economy the goal is not to waste any resources after one use, while one's waste will always be another's raw material.

1.2 From linear to circular economy

The production process that has been chosen is linear, mainly because this was the logic of the people who were accustomed to the abundance of natural resources and in local production and consumption. Although the agricultural economy tended to recycle materials within the agricultural unit, such as animal manure or feeding the animals with the excess crop, in industrial production the recycling of materials was non-existent until a few years ago. Until the late 20th century, linear economy was a very profitable method for industries, however, along with economic growth, economic inequality due to geographical constraints also emerged since the existence or discovery of scarce natural resources could make a country extremely rich in a short period of time. For example, Saudi Arabia is a country in which 60% of GDP. derived from oil extraction processes, even though 40% of the country is an endless desert, while there was also a cause (overt or covert) for the great wars of the last century.

The linear production process is reflected in the expression "Take-Make-Dispose", Get the resources you need, make the goods for sale, and make a profit and throw away what you do not need, including the good that reaches the end of its life after use-consumption[14]. In this way the products were as simple as necessary, in order to the companies to have low production

[14] ariatli F. (2017). " Linear Economy Versus Circular Economy: A Comparative and Analyzer Study for Optimization of Economy for Sustainability" Visegrad Journal on Bioeconomy and Sustainable Development, Vol.6 2017, p.p. 31-34, DOI: 10.1515/vjbsd-2017-0005

costs and therefore high profits. Also, all research on innovation have been focused on the production process and in the cost reduction in general. However, the prices of raw materials have begun to rise due to the lack that exists or will come. Thus, it was necessary for industries and businesses to look for different raw materials, in order to keep their production costs low, for this reason they turned to the circular economy recognizing the positive impact that this will have on the sustainability of the natural environment and the quality of life of people in general. It is certain that the circular economy will become necessary at some point, whether governments support it or not. But if it is not supported now, it will be imposed in the future by the needs of the market through a great economic and social crisis.

The transition from the linear to the circular economy has been dealt with by several economists. However, the Ellen McArthur Foundation, which aims to fully implement the circular economy, has done a lot of research since its founding in 2010, in order to create proposals for the transition to the circular economy. In 2017 the foundation published a study in which they analyzed the 6 steps for the circular economy, which were based on the following 3 basic principles of the circular economy[15]:

1. Preservation of physical capital with parallel control of inventories and its gradual replacement with renewable energy sources.
2. Maximizing the efficiency of all resources through the re-circulation of products and materials, giving great importance to the design of the goods, so that they can be easily reused and replaced.
3. Reduce negative externalities by redesigning the entire system so that it will be more efficient.

Figure 1 clearly shows how the Ellen McArthur Foundation dreams of the future by presenting all circles of the economy. Waste and negative externalities will be less, while the life of the goods will be extended through recycling, reconstruction, reuse, redistribution, and common use. For the energy that is required for the production of all these goods, the initial goal is to replace the most scarce and polluting energy sources with new cheap renewable energy sources, but also the effort to reuse energy in industrial production, as this energy it is not lost, but converted into another form of energy.

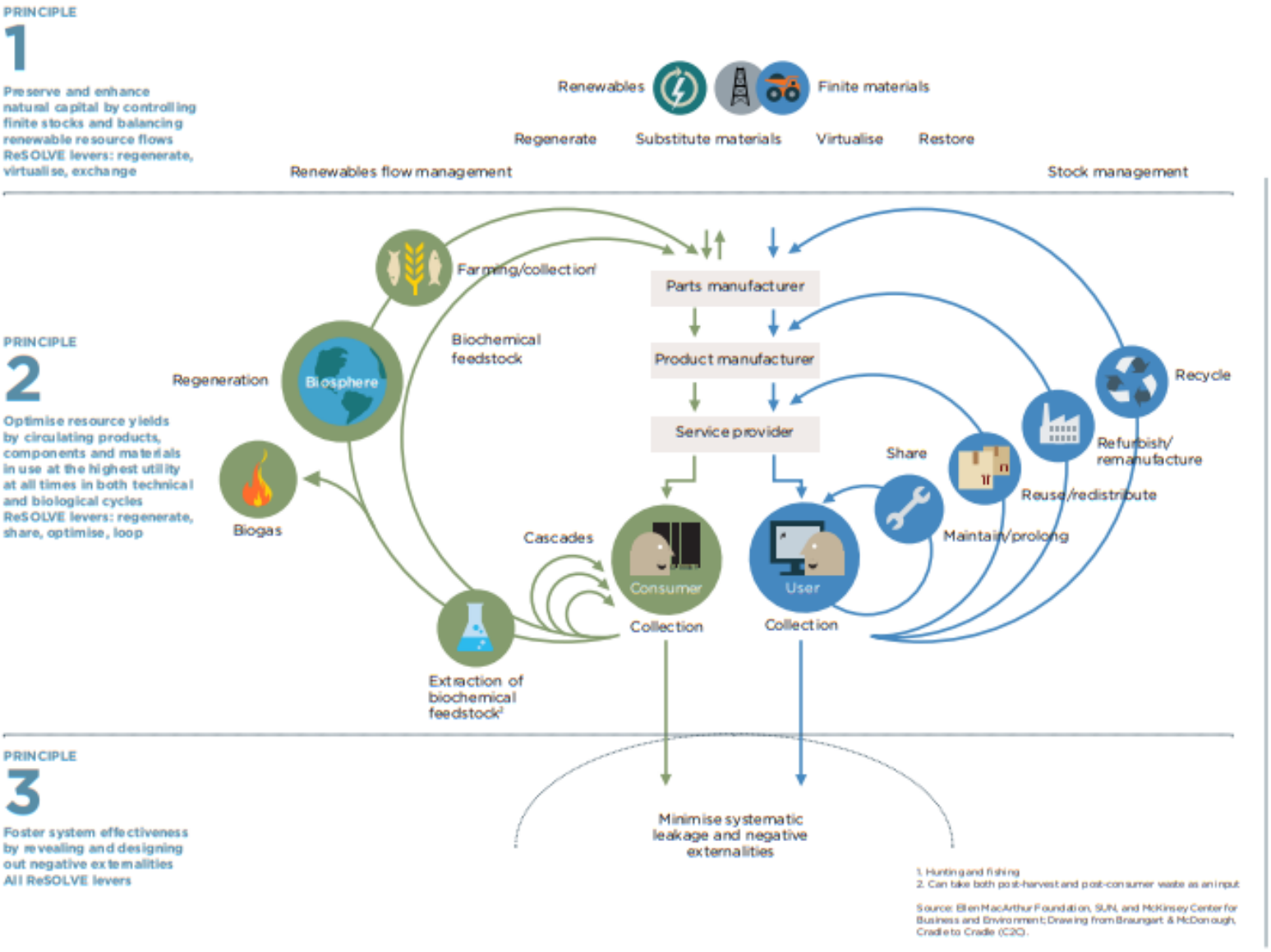
[15] Ellen MacArthur Foundation, S.U.N. & McKinsey Center for Business and Environment (2017) "Growth Within: A Circular Economy Vision for a Competitive Europe", 20/06/2017

The 6 steps required for the transition to the circular economy, according to the same survey, are shown in Figure 2. The name of the design is ReSOLVE, and it comes from the initials of the 6 actions that they are required.

- ***Regenerate:*** The first step is called *Renaissance* and refers to the effort to switch to renewable energy, something that is currently being implemented to a large extent in Greece with announcements for investments of 11 billion in the next three years[16], announcements made during the Covid-19 pandemic. It also aims to restore, maintain, and restore a healthy ecosystem, and the return of more biological materials to the biosphere, for example through composting.
- ***Share:*** Next is Sharing, the process by which different resources are used by different users without necessarily owning them. The most well-known example is Airbnb, when various individuals rent a property for a short period of time (even for a day) or a room of their house to other people, usually tourists. The share system has evolved a lot nowadays, as it offers cheap services of all kinds. There are platforms that allow you to rent even a sofa to sleep at night, you can share the cost of a trip with a stranger with whom you intend to go to the same place, you can wash your clothes in a washing machine that does not belong to you, while you can rent a bike or an electric skate that you find in the middle of the road in most cities of the world. Another part of this step is to reuse goods or resell them after using them. Such solutions are practical in goods such as books, movies, clothes, etc. that may lose their value after use or may no longer be practical for someone. Finally, the aim is to increase the life of a good both during its production but with regular maintenance and during its use.

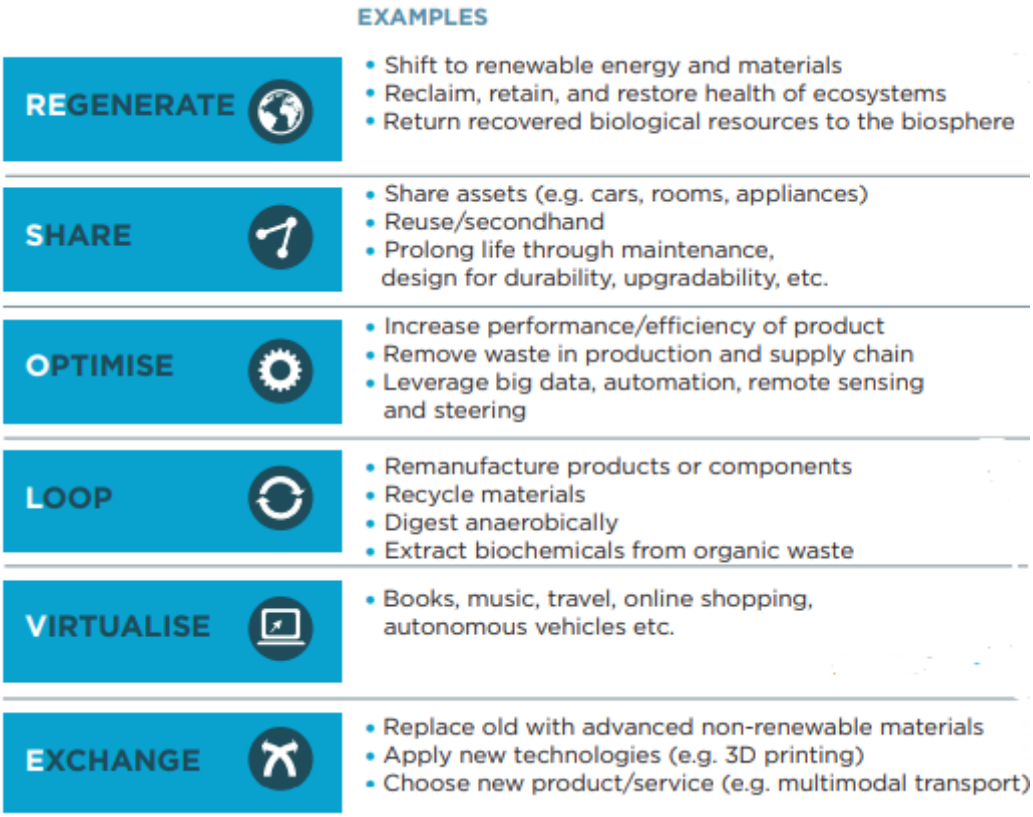
[16] Nikos Rousanoglou "Investments of 11 billion are being activated. in RES projects the next three years "Kathimerini. 01/05/2020, https://www.kathimerini.gr/1076106/article/oikonomia/epixeirhseis/energopoioyntai-ependyseis-11-dis-se-erga-ape-thn-epomenh-trietia

Figure 1: The organization of the Circular Economy.



Source: Ellen McArthur Foundation (2015): “Growth Within: A Circular Economy Vision for a Competitive Europe

Figure 2: The Steps to the Circular Economy



Source: Ellen McArthur Foundation (2015): "Growth Within: A Circular Economy Vision for a Competitive Europe"

- ***Optimise:*** Optimization refers to the ways in which a good can increase its efficiency but also to the ways in which waste is avoided during the production and distribution of the product .Technology and innovation should contribute significantly to this step. However, a change in the mode of production or technology used may not be necessary or sufficient if the philosophy about how a good is produced does not change. For example, Toyota managed in 2020 to reduce by 45% the production and use of plastic without changing its production processes[17].
- ***Loop:*** It is essentially the core of the circular economy, the Closed Circle, and focuses on recycling and reusing all waste, even those produced during the manufacturing

[17] Toyota aims to eliminate plastic usage in manufacturing process", The Economic Time, 02/10/2020 https://economictimes.indiatimes.com/industry/auto/auto-news/toyota-aims-to-eliminate-plastic-usage-in-manufacturing-process/articleshow/71410088.cms

process of other products. A key part in this case is the original design of the product, so that it is easy for the product to be recycled in a large percentage.

- ***Virtualise:*** The times that we live in are characterized by the huge degree of *Digitization*. In a circular economy, it is important for digitization to have a great role in the production process. Thus, if a sports magazine is published digitally, it reduces both its production costs and the waste that would be generated by the mass production of magazines or the leaflets that are distributed at the games. The development of e-services, such as e-shops, also helps to reduce waste, and save resources in general.
- ***Exchange:*** The most important part in the transition from a linear to a circular economy is *change.* A change that must be made at all levels. Energy sources must change from conventional to renewable, technology in all production processes must change and of course the mentality of the citizens of this world must change, so that everyone can contribute as much as possible to this change

In the same research it is stated that *"This vision comes at a time when our global economy is poised for change. A surge in new products and sharing platforms shows that circular models of value creation do exist in pockets of economy. The challenge now is to scale this activity to create system-level change."* This means, that, now that our economy needs a change, the circular economy is here to offer this change, and this is evidenced by the increase in new products and from the sharing platforms that lead to increased benefits for the whole economy. The goal now is not just to make small moves, but these small moves to be turned into changes for the whole system. For this reason, four "structural elements" are presented, and they will help the circular economy to become more attractive to the public, for example to its next users, in order to achieve this change.

- ***Circular design and production of goods***: A key part of the circular economy is product design so that they are now "circular" products. That is, to be easy to recycle, reuse and generally adapt the product to the raw materials market after its use. This requires industries to use innovations in the way they produce as well as in the way they design their product. The choice of appropriate materials will directly affect the way of production but, of course, the overall participation of a company in the circular economy, as it is essential that the raw materials are derived from recyclable materials

as much as possible. It is also important to have feedback mechanisms within an industry, so that design processes can be properly coordinated. Such procedures are the design for easy separation, sorting or reuse of the product, designing for potentially useful ways of using goods by industries or even consumers and designing for more durable products, this means, with a longer service life.

- ***New business models***: The new business models should aim not only at the production of products, so that consumers-users can buy them, but they should also aim for easier access to them. For example, shops that offer washing machines to people who cannot afford to buy a new washing machine give access to the product, without changing its property status. An important role in this new era will certainly have the large companies that will be able to bring to the center of society the new techniques and the new possibilities of the circular economy. But it is certain that small entrepreneurs will bring the biggest changes with innovations in almost all areas of our daily lives. Small business plan innovations are usually easy to copy, and the small business geographical constraint allows them to be relocated to other cities or countries by different entrepreneurs, as a result creating different players in new markets and more profit margins with less competition and with respect for consumers.
- ***Inverse circles:*** One part of the cycle is the proper design of the good and of course the correct disposal, so that it can be returned to the production process or at least not be a threat to the environment. The second part of the cycle is the return of waste to the secondary raw material market and ultimately to the production process. This part of the cycle requires organization, as well as the process of distributing products to the market. Requires proper structures for sorting, storage, and safekeeping of goods, means of transport suitable for their transportation and in some cases specialist biologists or chemists for their proper utilization. All these processes should be done in the context of the circular economy, with the aim of reducing the consumption of raw materials and the lowest waste generation, while at the same time being as user-friendly as possible, since the average consumer is the one who should use the recycling structures primarily.
- ***Positive conditions for the circular economy:*** The previous 3 "structural elements" can be implemented by companies, small and large, but the right conditions will be needed in order to make the necessary change. Initially Education will play an important role in the development of tomorrow's citizens, so an education in schools with elements of

the circular economy will be able to raise the awareness of tomorrow's citizens about environmental issues through the recycling and use of renewable energy sources. At the same time, education in universities and colleges will create tomorrow's business executives who will be able to introduce the circular economy in their business philosophy. Another condition is *Financing,* as the needs for supply chain transformation, reorganization of the production process and support for research and development services will be great, making necessary the safe environment for investors but also the favorable conditions of loans from companies that wish to turn to the circular economy. In addition, *Cooperation Platforms* should be established and developed both between industries and sectors as well as between entrepreneurs, government, and consumers. Finally, a different *Economic Framework* would help support the circular economy. For example, a different tax system by passing on tax incentives to work

All the above aim to lead the world to the circular economy as quickly as possible and with the best possible results. However, they are not immediate solutions for politicians seeking to push their country in this direction, but are guidelines for the proper and effective enactment of laws and regulations in all countries, always with respect to the organization of the local community and the culture of the people, the economic associations and finally to a globalized circular system. However, these guidelines raise several issues, some of which require sufficient political courage to address.

1.2.1Obstacles against the circular economy

The best analysis of the problems that exist in the attempt to transition from the linear to the circular economy is provided by Felix Preston, who referred to the 7 basic problems of the modern era towards the circular economy.[18]

I. Integration into development models and goods-centered structures:

[18] Preston Felix (2012) "A Global Redesign? Shaping the Circular Economy", March 2012, The Chatham House.

Unfortunately, there are not many alternatives to the way markets are organized, which now they require the consumption of many resources in order to function. Any alternatives should absorb these development models and turn them into circular models, changing the requirements that their structures have for raw materials. The first goal is for markets to become independent of mineral resources and to focus on renewable energy sources, starting with the shipping part that each company uses. Subsequently, it can be extended to its facilities and finally to the production section. It is a process that will take place gradually and probably not to an absolute degree.

II. Political obstacles to the appropriate price for the use of resources:

Politics should contribute with rules and laws that will push the economy into an integrated circular system. Some of these rules should limit the use of raw materials such as carbon and lignite, , and replace them with renewable energy sources. There are two problems here. First, laws must be enforced, that they will affect the way that businesses operate but not so much as to lead the market to distortions or simply to benefit the big players by creating informal oligopolies. Secondly, there are many pressure groups that do not want this change, because their interests are being destroyed. Usually, these groups are made up of powerful entrepreneurs who have good relations with the political leadership.

III. High initial costs:

The road to a circular economy contains costs, which affect the speed at which this transition takes place. These costs are necessary, as they need new infrastructure, retraining of staff, redesign of the entire production process, promotion of new products in the market and of course support for the research and development of the company. They are costs that can not be skipped, no matter how high they are. It is the risk that the entrepreneur takes in his attempt to turn to a better organized system of economy.

IV. Complex international supply chains:

In modern society a product can be made in an Asian country and consumed in Latin American countries**.** This means that, in order to close a cycle properly, it may sometimes be necessary for the product residue to travel thousands of miles to its original place of production. This can lead to a doubling of the supply chain and of course an increase in production costs. It can also create a complex market and business supply system, which will lead companies to better

design their goods with the aim of increasing their lifespan and durability, while the simple and quick repair procedures will be a key part of the central planning of the businesses' new era.

V. Lack of social acceptance:

Businesses want also to benefit from the circular economy, it is essential that consumers know what products are produced through the circular economy and to what extent, as there are many consumers who will prefer these products to others, which they have been produced by conventional methods, even if their price is higher or the quality is different. Certainly, a lot of advertising campaigns and promotions from businesses will be required. Also, such products should have separate indications, such as recycled products or the European Ecolabel mark[19], a label, which has been originally implemented in 1992 by the European Union in order to motivate businesses to reduce their environmental footprint. Finally, a key part is the organization of information campaigns by the government but also by private organizations, companies and non-profit organizations, so that they can develop a sense of social responsibility among consumers-consumers and businesses-producers.

VI. Challenges related to the required corporate partnerships

The complexity of the supply chain, the change in the development models and the high initial costs make the corporate collaborations necessary, otherwise the transition will be quite difficult and only in the hands of the big players of each industry or in the extremely innovative ones. However, the problems also exist in the creation of a secondary market of raw materials, since today it is quite common for the raw materials to be available, but not yet utilized, as there is no appropriate technological upgrade in the rest of the companies. Thus, the price of goods is very cheap and very little profit is created. If this continues, other businesses are discouraged from investing in this market. However, it is very likely that many companies will cooperate through direct exchange of products or raw materials. These agreements can also be made between companies from completely different industries, as neither of them will risk losing a share in the specific industry, while on the contrary they become stronger.

VII. Innovations:

The part of research and development in a large company is a large investment that will pay off its costs in the future with the positives it will bring to it. In small and medium-sized

[19] Further information in https://ec.europa.eu/environment/ecolabel/

businesses this is often not even a goal, as the cost is high and the choice to follow the practices of other companies seems much cheaper and easier. For the circular economy, however, it will be a key pillar, as the whole economy will have to rely on innovations for all its parts, production, distribution, disposal, etc. The government and state research and development centres in conjunction with universities and research centres should establish a network of knowledge and innovation, in order to be able to help small and medium-sized enterprises but also the whole society in this step forward.

According to a survey of the circular economy in the European Union, in which more than 150 companies and 55 government agencies participated, the problems that Europe is facing are mainly cultural problems.[20] More specifically, about half of the participants said that the main problem was the lack of interest from consumers but also the reluctance of companies to integrate the circular economy in the corporate culture, while low prices of raw materials, such as oil, are considered a major obstacle. On the other hand, technological difficulties do not bother the participants so much, since only 29% believe that there is a problem with the limited circular design of the products. Finally, the participants pointed out that the problems are interrelated, as low prices of raw materials lead consumers to indifferent attitude towards the products of the circular economy and combined with the high initial investment costs lead companies to be reluctant to incorporate circular economy techniques.

These problems can also be solved through the market, that is, how businesses and consumers will react in the long run, but also through major political decisions. It is the duty of governments to help their country's economy take the next step, thus helping entrepreneurs, citizens, and the environment. Always with attention, as government policies often lead to market and society to distortions, and as Wilhelm von Humboldt had said in 1850 "*Government regulation is all coercive to some degree, and even when it is not, they accustom someone to wait for advice, guidance and help outside of himself, instead of shaping his own*[21] ".

[20] Kirchherr J., Piscicelli L., Bour R., Kostense-Smit E., Muller J., Huibrechtse-Truijens A., Hekkert M. (2018) "Barriers to the Circular Economy: Evidence From the European Union" Ecological Economics, vol 150, August 2018, p.p. 264-272, DOI: 10.1016/j.ecolecon.2018.04.028

[21] Humboldt W. (1850) "The limits of State Action" Liberty Funds Inc. U.S., Indianapolis, Indiana, U.S.A. 1993.

1.3. The European program

The European Union has been quite concerned with the issue of environmental protection, as it is constantly issuing directives and legislation on this issue, pushing its Member States to become greener. Since 1999, the former European Community has been trying to improve its environmental footprint, initially seeking to reduce the European citizens' waste by at least 30%, giving a directive for the legislation of the landfill services with respect to the environment but also for the reduction of the municipal waste.[22] Nine years later, in 2008, the European Union adopted a directive referring to Article 1: "*This Directive establishes measures to protect the environment and human health by preventing or reducing the adverse effects of waste generation and management and by limiting the overall impact of resource use and improving its efficiency*[23]". Priorities on waste are prioritized in the same directive. Greater emphasis is placed on prevention, followed by preparation for reuse and recycling, and finally on other types of recovery and product disposal. Therefore, it moves within the philosophy of the circular economy, since it tries to create a society with no losses

In the field of renewable energy, the first attempt was made in parallel with the signing of the Kyoto Protocol. During the eleven days of trading, the European Community, representing its 15 member states and 12 other European countries that will join in the coming years, was the most active group and demanded stricter measures on environmental protection. Finally, the European Union legislated in 2002 on the Kyoto Protocol and pledged to reduce its emissions by 8% in the first phase of its implementation, from 2008 to 2012.[24] There were big differences between its Member States, as Luxembourg pledged to reduce its emissions by 28%, Denmark and Germany by 21% while Greece had the opportunity to increase its emissions by up to 25%. For the second phase, for the years 2013-2022 the reduction must reach 23% compared to the pollutants of 1990, which is the base year. According to the EU report In 2014, its member states managed to reduce emissions by 19.2%, exceeding the obligation to the United Nations[25]. This decrease is also due to the shift towards renewable

[22] European Commission (1999) "Directive 1999/31 / EC on the Landfill of Waste" Brussels, 26/04/1999, Official Journal of the European Communities

[23] European Council (2008) "Directive 2008/98 / EC on Waste and Repeal of Certain Directives" Brussels, 19/11/2008, Official Journal of the European Union.

[24] Council of the European Union (2002) "Council Decision 2002/358 / EC, Approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the Common Fulfillment of Relevant Commitments" Brussels , 25/04/2002, Journal of the European Communities.

[25] European Commission (2014) "Commission Report on Progress in Achieving the Kyoto Objectives and the Europe 2020 Strategy", COM (2014) 689, Brussels, 28/10/2014.

energy sources, as in 2012 in the whole European Union less than a quarter of the total electricity produced came from renewable energy sources. EU directives and decisions They want to increase this number to 30% by 2030, while in 2011 the "Energy Roadmap for 2050" aims to eliminate up to 90% of the use of coal in the production process.[26]

The first comprehensive plan for the adoption of the circular economy by all Member States was designed in 2015 and had a budget of around € 6 billion from various European sources of funding, along with incentives for private investment[27]. From December 2015, when the relevant legislation was passed, until 2021, 54 actions related to this project have been carried out. More than 17 billion euros have finally been invested in them, while they created an added value of 147 billion euros through circular activities.[28] These investments have managed to increase their value eightfold, offering together with profit, work, and a better environment for people. In March 2020, another plan for the circular economy was adopted by the EU, regarding the extension of the actions of the previous plan, without having yet announced the budget of the plan due to the global health crisis[29].

European circular economy policy is based on 4 central pillars.

- ***Product design and production methods:*** One of the main goals of the circular economy is to change the production process, so that the new products will be more durable, easier to repair, recyclable and reusable with great ease. Also, valuable resources should be reduced in the production process, as well as environmentally hazardous raw materials, and replaced by other more environmentally friendly raw materials, preferably recycled materials, or waste from all industries. The EU provided incentives for the development of new methods of product design and production through the development of innovation but also through arrangements regarding the specifications for the ecological design of products. Compliance with these specifications is recognized using EU Ecolabel [30]on the products, so that they stand out to the purchasing public. In the context of ecological design there are criteria regarding the ease of disassembly and recycling of goods. At the same time, producers' costs

[26] European Commission (2011) "Energy Roadmap for 2050", COM (2011) 885, Brussels, 15/12/2011
[27] European Commission (2015). "Closing the cycle - An EU action plan on the Circular Economy ", COM (2015) 614, Brussels, 02/12/15.
[28] European Commission (2019) "Report on the implementation of the action plan for the circular economy", COM (2019) 190, Brussels, 04/03/2020.
[29] European Commission (2020) "A new action plan for the circular economy. For a cleaner and more competitive Europe ", COM (2020) 98, Brussels, 11/03/2020
[30] European Parliament (2010) "Regulation (EC) 66/2010 On the EU Ecolabel", 30/01/2010, Official Journal of the European Union.

increase if their products are non-recyclable or difficult to disassemble and reuse. Finally, a set of "good" techniques have been developed that help prevent or reduce pollution, are economically and technically applicable and are called Best Available Techniques (BREF).

- ***Consumption:*** Regarding the consumption, there are four main goals. The first is for consumers to reduce their waste, mainly through the information that they are going to receive from the local governments about waste management but also through financial incentives or reciprocity schemes. The second goal is to provide more information about the environmental impact of the products they buy, mainly by imprinting them on the packaging, such as EU Ecolabel. The third goal is to protect consumers from the irregularities of the companies, both through increased control and stricter environmental criteria and through the two-year guarantee that applies to all natural goods in the EU. Finally, the fourth goal concerns Europe's largest consumers, namely the countries-states and public procurement, which account for 20% of European GDP. In order to turn these contracts into environmentally friendly ones, the European Union has set up a framework of rules called Green Procurement (GPP), a process by which public authorities seek to award contracts for goods, services and projects with smaller environmental impacts throughout their life cycle, compared to goods, services and works performing the same primary function which would be the subject of the contract under other conditions[31]. By setting a good example to its Member States, the European Union operates primarily with GPPs for large procurement contracts.
- ***Waste Management:*** The initial goal of the EU is the avoidance of waste generation, while then aims at proper production, so that waste can be reused and recycled, energy is recovered and finally what is left is discarded in the most environmentally friendly way. In conjunction with the previous two pillars, waste management aims at the European Union for the proper design of goods, the awareness of citizens about goods and the development of networks for the proper segregation and recycling of goods. Most of the recycling focused on the recycling of packaging, while attention was paid to the most hazardous materials, mainly from industrial production. In the EU there are big differences in the ways states properly manage their waste. Greece, for example, still follows landfill practices, although it has increased its recycling rates in recent

[31] European Parliament (2014) "Directive 2014/23 / EU on the award of Concessions", 28/03/2014, Official Journal of the European Union.

years. Finally, the legal framework for the illegal transport of hazardous waste has been improved.[32]

- ***Strengthening the market of secondary raw materials:*** The European Union helps the market for secondary raw materials in many ways. Initially by motivating public and private companies to turn to this market, in order to stimulate demand, which today focuses on paper and aluminum. Also, the EU has been developed with the aim of free movement of goods and people, something that greatly helps the movement of waste from one industry to another that uses them as raw material. Finally, the creation of standards, the development of regulatory frameworks on the quality of recyclable materials and the constant updating of the course of materials in the circular economy (Figure 3) helps to build suppliers' confidence in these goods.

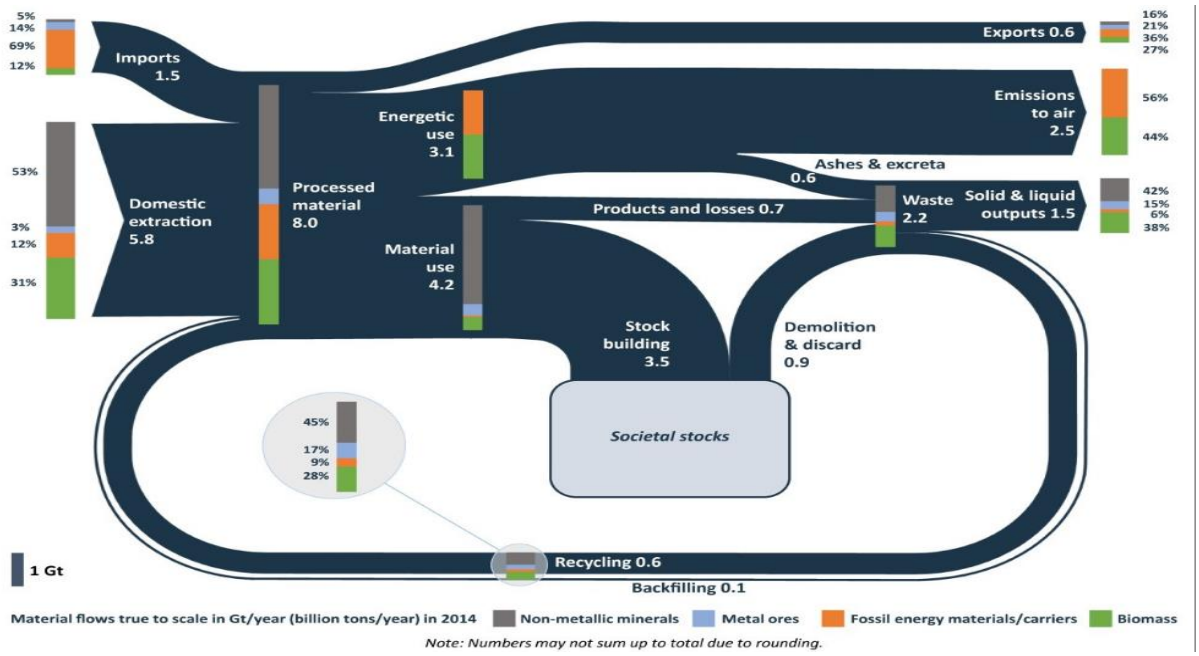
The above pillars are based on the bill of 2015, which is going to be completed in 2022. The European Union has already set up a monitoring framework for the circular economy based on 10 key indicators, which are systematically updated and the results are posted on the internet.[33] , and together with the indicators that the Member States of the European Union, they have compiled a report[34] on the success of the program until 2018. The results, according to the report, are positive, as: *"The implementation of the action plan for the circular economy has accelerated the transition to a circular economy in Europe. At the same time, a stronger, shared vision for the circular economy can clearly strengthen the ongoing efforts to modernize the EU's industrial base, in order to ensure its global competitive advantage, and for the preservation and restoration of the natural capital of the EU. "* Based on these results, the continuation of the program for the circular economy was designed with the central goal of achieving the goals of sustainable development of Agenta 2030 which was set by the United Nations. The new plan includes the continuation of the actions mentioned above and the effort to reduce plastics, the development of sharing services, further empowerment and consumer protection and of course even greater support for small and medium-sized enterprises in terms of innovation and development.

[32] European Parliament (2014) "Regulation (EU) 660/2014 Amending Regulation (EC) 1013/2006 on Waste Shipping", 27/06/2014, Official Journal of the European Union

[33] https://ec.europa.eu/eurostat/web/circular-economy

[34] European Commission (2019) "Report on the Implementation of the Action Plan for the Circular Economy", COM (2019) 190, Brussels, 04/03/2019.

‘Figure 3: The route of materials within the European Union economy



Source :Mayer A., Haas W., Wiedenhofer D., Krausmann F., Nuss P., Blengini G.A., “Monitoring the circular economy in the EU28 - A mass-balanced assessment of economy wide material flows, waste and emissions from official statistics”, Journal of Industrial Ecology, 25/09/2018, DOI: 10.1111/jiec.12809

But beyond the effort to achieve the goals within the Union, the EU. wants to lead the global effort for a circular economy, as this is to the benefit of all, both from an environmental point of view and from an economic point of view. Obviously it has also prepared the necessary action plan to stimulate the world economy[35]A key tool that the EU can use is the presentation of the results in recent years, so that through dialogue and the creation of "environmental" alliances it manages to move the economy towards the adoption of circular operating models.One of the first goals is to create a global agreement on the use of plastics, as it is one of the greatest threats to the environment, with a greater focus on reducing disposable plastics. Also, the EU wants to form an alliance for the global circular economy so that it can pass on the knowledge and laws that have worked effectively and make efforts to recognize and overcome barriers between countries through a global problem management. Finally, EU wants to start discussions on the management of natural resources and the creation of "Safe Operating Space", - the use of resources that, if transferred to other areas, they disrupt living conditions, such as water and minerals.

[35] European Commission (2020) “ Commision Staff Working Document, Leading the way to a global economy: state of play and outlook”, SWD(2020) 100, 11/03/2022

1.3.1. Greek legislation

In recent years, Greece is facing an economic crisis, which has not left much room for fiscal growth. The government during the crisis has had to deal with many financial problems, and the oversight by the International Monetary Fund and the European Union was very close, with few efforts to develop the circular economy limited to European directives and the use of European funds. , with little private contribution to this endeavor. However, even without the economic crisis, Greece would not be one of the first countries to focus on the circular economy, since it has always had a problem with its legislation, as there are many bills that are not interconnected, but they are part of a political strategy of each government.

Although in Greece some steps have been taken towards the circular economy, the problems remain many, according to research by the Institute of Alternative Policies "ENA". [36]One of these is the inefficient implementation of strategies and action plans along with the lack of regulatory frameworks for many of the sectors of the circular economy, such as waste management. Unlike the EU the relevant certification bodies are minimal, as well as the correct specifications for the production of quality recyclable raw materials. Also, the recording of all the necessary indicators and the updating of the relevant bills is done in small steps. From the consumers' point of view, their information is quite small and focuses mainly on some parts of the circular economy, such as recycling. Finally, the competent public bodies are not interested enough to invest in the circular economy taking advantage of European programs. Thus even today about 80% of waste goes to landfills[37].

Greece, like the other member states of the European Union, is obliged to transpose European directives and bills into national law of each country, but according to the EY survey on the circular economy in Greece, environmental bills are delayed to become law usually up to 2 years.[38] A typical example is the law on packaging, which became law in Europe in 1994, while in Greece in 2001 and some elements of it were not implemented until 2008. This weakness of Greece has led it several times before the European Court of Justice for violations of European

[36] Sotiropoulos A. (2019) "Circular Economy: A Model for Sustainable Development & Prosperity" 12/2019, Institute of Alternative Policies "ENA"

[37] Hervey G. (2018) "Ranking how EU countries do with the circular economy", 17/05/2018, Politico, Πηγή: https://www.politico.eu/article/ranking-how-eu-countries-do-with-the-circular-economy/

[38] Hervey G. (2018) "Ranking how EU countries do with the circular economy", 17/05/2018, Politico, Πηγή: https://www.politico.eu/article/ranking-how-eu-countries-do-with-the-circular-economy/

standards, mainly for environmental violations. In 2019, Greece was first in environmental violations with 25 cases, of which 11 were violations for which it has already been convicted.

The Action Plan for the Circular Economy was created in 2018 with the aim of taking the very important first steps towards the circular economy by 2023.

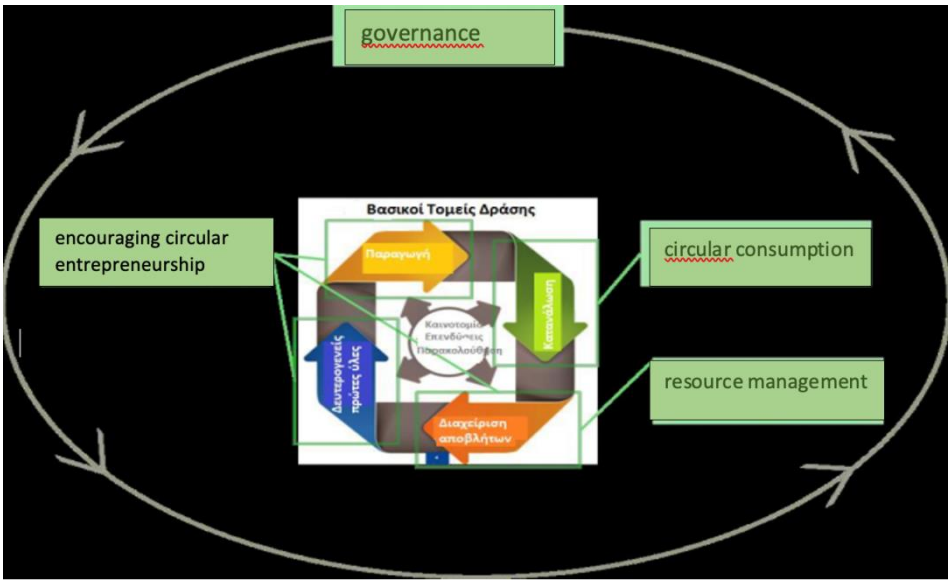
The main contents of the project were:

1. **Financial Instruments:** The main tools are the Community financing, ie the NSRF programs, the European research financing program (HORIZON), the Development Bank, the European Investment Bank, etc. At the same time, the goal is to create tax incentives for companies that will invest in the circular economy.
2. **Design and establish a regulatory framework and regulations, as well as remove bureaucratic obstacles:** The Greek Government realized that the biggest problem was not the financing but the lack of a proper legislative and regulatory framework in which Greek and foreign investors could develop their business ideas. The plan contained 22 actions related to the upgrading of legislation in Greece, including the completion of the legal framework for waste management, an issue that has plagued Greece a lot in recent years. It was also included the creation of a National Action Plan and the formulation of a new national policy, the upgrading of the construction framework for the exploitation of valuable raw materials in this sector.
3. **Linking small and medium-sized enterprises and the social economy with technological innovation and the development and support of pilot / demonstration activities in the circular economy:** One of the most important steps for the dissemination of knowledge and good practices was the creation of a Forum for the development of the circular economy, as well as the development of the Guide to Improving energy efficiency in the processes of production. It is worth noting that there was also the intention for extensive information programs on the secondary market of raw materials and the process of ecological product design. There was also the intention to create a Greek Circular Economy Award for highlighting the best Greek practices at national and international level.
4. **Improving governance -networking and speeding up procedures:** For effective governance, the Executive Secretariat was established with the task of coordinating and monitoring the implementation process of actions within the schedule, processing, and finalization of proposals for the integration of the circular economy, the supervision of the quality of the products produced, etc. The Circular Economy Observatory was also established to collect, analyze, and publish statistical data and indicators related to the

circular economy. Finally, training programs were developed for the administrations of sports industries.

The strategies that the Circular Economy Action Plan wanted to follow are shown in Figure 4. The first is Sustainable Resource Management, mainly increasing product efficiency, reusing water, recycling, and reviewing value chains. The second strategy is to Enhance the Circular Entrepreneurship by encouraging eco-friendly product design to achieve longer life, durability, ease of repair and recycling. At the same time, entrepreneurial innovation models are encouraged, for example the sharing economy, and of course the development of the secondary raw materials market. The latest strategy is the Circular Consumption through the information of all stakeholders, both consumers and public bodies, but also through the prevention of waste generation in the whole society.

Figure 4: Basic strategies for a circular economy in Greece



Source: Ministry of Environment & Energy (2018) "Presentation to KY.S.OIP: Circular Economy" 02/2018

Due to the situation in Greece in recent years, this plan took a long time to be created. The National Plan for Energy and Climate (ESEK) was developed in 2019 with the aim of defining the environmental policy of the next decade, 2020-2030. It is a rather ambitious plan.
ESEK aims to create the basis for achieving the following:

- A comprehensive model of sustainable development in all economic sectors.

- The combination of energy sector development with environmental protection with decisive measures to combat climate change
- Choosing energy policies with the best cost-benefit ratio for the energy transition
- The management and utilization of waste with modern technologies of circular economy.
- An attractive investment environment to support energy transition, with an emphasis on innovation and new technologies.
- Extroversion and innovation aimed at the development that will create new jobs.

2.ENTREPRENEURSHIP IN CIRCULAR ECONOMY.

2.1 Margins of Business Action in the Circular Economy.

The transition from the linear to the circular economy has several obstacles as presented above, but it also has many positives for everyone. According to the Ellen MacArthur Foundation, the transition to a circular economy is helping the environment and the planet as carbon dioxide emissions and greenhouse gas emissions in general will be reduced by up to 48% by 2030 in Europe, while at the same time they will be significantly reduced (up to 32%) the raw materials used in the production process while it will also lead to an increase in the efficiency of the land. Finally, externalities will be reduced by reducing the use of natural resources such as land, water, and air pollution. Consumer citizens can benefit in three keyways. First, the income of citizens can be increased mainly by reducing the cost of goods and services that the circular economy can achieve in the long run, second benefit is the greater utility they enjoy from the environment (more green and more ergonomic urban design) but also from the products, since now there will be more options for them and the knowledge about the available products will be greater, due to the way the circular economy is structured. The third benefit is the reduction of the uselessness of the goods since they will become more durable, will have a longer lifespan and will be easy to reuse. The state will be able to solve several problems simply by focusing on the circular economy as it will have great economic growth, in Europe they expect 11% GDP growth by 2030 only from the circular economy. At the same time, jobs are on the rise as the circular economy demands more labor-intensive jobs. Another positive result will be the increase of innovations and new technologies with the aim of a more efficient production process and a cleaner environment. Entrepreneurs making the transition from the linear to the circular economy can generate profits mainly through the reduction of operating costs, transportation, and distribution costs, but also by creating new sources of revenue through the supply of the secondary raw materials market. Also, the supply chain environment becomes more secure because recyclable raw materials do not come from far away, so it is difficult to be affected by demanding weather conditions or geopolitical disturbances. Finally, the circular economy will create entirely new markets or grow markets that are currently marginally profitable and dominated by public or private monopolies and oligopolies. The central pillar in the whole transition process is business. The support of the state and the acceptance of the society are required, but the most basic steps are taken by the

companies that choose to use their knowledge and available technology in the interests of all, orienting the productive process towards the circular economy.

In 2022, the circular economy is a huge investment opportunity, as large economies begin, some economies slower like China and others faster like Europe, to implement several direct or indirect support programs, especially for large companies. However, there are many programs that concern small and medium enterprises. According to the annual report on the gap in the circular economy[39], the circular economy constitutes only 8.6% of the world economy, having even lost 0.5% compared to 2018. This decrease is due to the increase in mining, the lack of circular design of large structures such as buildings and roads, especially in countries with high growth, and finally the small growth of the secondary market for raw materials.

2.2 Priority Areas in Europe and Greece.

The above key priorities also occupied the European Union during the preparation of the action plan for the coming years. The first project published in 2015 had 4 areas, in which it aimed to promote the circular economy, plastics, food industry, critical raw materials and constructions. With the revision of the program in 2020, these 4 areas remain in the spotlight, while new areas have appeared, so that the plan is now more complete. It mainly focused on upgrading value chains in various industries, such as electronics, vehicles, and textiles. Greece followed the European model, as many of the funding programs targeted the areas of action that Europe had defined, but also developed its own plan to serve its own needs. Thus, it focused on the development of RES, the energy upgrade of its infrastructure and the circular solutions in its largest economic sectors, namely tourism, shipping and the agricultural and agricultural sectors.

All these sectors are today great opportunities for business development that are already employed in these sectors but also great investment opportunities for new entrepreneurs. These opportunities for the economy in general can become a major "weapon" for entrepreneurs, but the industry of sport can benefit from them. We must not forget that the whole sports industry is not just sports but is a whole business world. For example, tourism that takes place for the sake of a sports event. Buildings and stadiums that are built solely for the exclusive use of sports games. According to all the above, many jobs can be created and offer great added value

[39] Daniels von C., Hoogzaad J., Wit de M., (2020) “The Circularity Gap Report 2020”, 21/01/2020, Davos, Presented at the World Economic Forum.

to the products and in general to the GDP of Europe but of course also of Greece. These are areas in which large investments will be made, if they have not already been made, both private and public, or better yet, community. Governments also tend to help with such investments in other ways, such as lower tax rates. Finally, the good practices that will be implemented will strengthen the public image of companies, at a time when consumers have more information about the products they buy, which contribute to the final decision whether or not to buy a product. The following sections will analyze the areas that Greece and the European Union have as a priority, therefore the large business opportunities, both for initial investment and to reduce costs or increase the profitability of an existing company. At the same time, some ideas will be presented that have already been implemented or will be implemented in Greece and Europe and are models for other companies in the sector. Finally, the sharing economy will be analyzed, an area that is emerging on its own by many new users as an alternative to survive as there is a shortage of resources necessary for their well-being, taking advantage of the modern environment of technology.

2.2.1 Plastic

The European Union is an example to the global economy of its initiatives to tackle plastics and microplastics. According to the European strategy for plastics,[40] Europe's goal is for all plastics to be used from 2030 onwards to be reusable or at least easily recyclable. This goal follows the ambitions of Europe, so that by 2025 55% of plastics will be recycled. Today, the European Union estimates that more than 300,000 tones of plastics end up in the oceans by its citizens, while about two-thirds break down and become microplastics, ending up in the food chain. In 2018, Europe's needs for plastics were almost 61.8 million tons, about 17% of world consumption, reduced compared to 2017. Of this, only 9.4 million tons were recycled while in Greece over 70 % of plastics ended up in landfills. The importance of the plastics sector in Europe's economy is shown by the fact that it employs around 1.6 million people and produces products worth a total of € 360 billion each year. [41]Europe's targets for reducing plastics will be achieved mainly through a ban on their use and better product design. However, there are several business opportunities in this field, both in the plastic waste collection process and in the recycling process and their reuse. For example, the sports company Nike presented a new

[40] European Commission (2018) "European Strategy for Plastics in a Circular Economy", COM (2018) 28, Strasbourg, 16/01/2018.
[41] Plastics Europe (2019) “Plastics - The Facts 2019”, 17/10/2019.

collection of recycled clothes and swimwear from reused plastics. This collection had a great impact on consumers. So perhaps a big step has been taken to change consumer mindsets and switch to a different product search model

The Dutch company Van de Sant managed to combine the two and become a fully circular company. The idea was to create furniture mainly for home use through the recycling of plastics, mainly as a raw material for 3D printing. The company also equipped various conference centers during the Olympic Games in London with its own furniture. All furniture was made from recycled plastic. The organizing team of the Olympic Games with this move wanted to show the public that they are ready to turn the page, to continue below and to adapt to the new data. In collaboration with various non-profit organizations, the company collects plastic packaging, bags, or plastic devices along with old furniture and metal accessories and turns them into new furniture, which are designed in such a way that they are easy to recycle. A simple chair consists of 25 kg of recycled plastic and 5 kg of recycled metal, while during its construction up to 8000 liters of water were saved. The goal of this company is to support small furniture design companies to help the environment and their businesses, as it offers consulting programs on the shift to the circular economy as well as training programs in island areas on the importance of plastic recycling, so as not to end up in the sea. Another example that reveals the hidden prospects in this field is the multinational company Veolia. The company partnered with the municipality of Rostock in Germany for the first time in 2012 in order to enable the municipality to meet the new requirements of the state to increase plastic recycling to 63% by 2022. The company was again an external partner in the London Olympic games as it was responsible for the garbage harvest but also for their proper management. The result of this collaboration was a large percentage of the waste being recycled and various souvenirs were made from this action. Until today, they have been able to recycle more than 1 billion plastic bottles each year, which are converted into small plastic shells without any incineration and then become the raw material for new plastic bottles in Europe's largest soft drink bottling industries. In this way they manage to save each year about 31,000 tons of oil and reduce by 110.00 the carbon dioxide emissions equal to the emissions of 14,000 citizens. At the same time, jobs have increased but also social sensitivity about recycling[42].

[42] "Bottle to bottle, from the source to the end user", πηγή: https://www.veolia.com/en/our-customers/achievements/industries/circular-economy/germany-rostock-0

2.2.2 *Food and Water Waste.*

Every year in the European Union about 20% of food ends up in the trash, although it is still fit for consumption, while 43 million people cannot secure a complete meal for 2 consecutive days[43]. From 1976 to 2006 more than 100 billion euros have been spent on tackling water scarcity, which is one of the strongest phenomena that have occurred during this period[44]. The above two elements highlight the need for their immediate confrontation by the European Union. The European Commission's main focus is on educating citizens not to waste food, to buy what they need and to give to those in need. The same is true for the businesse's side, as they are part of society, while there are pressures on the proper standardization of food, so that they can endure more. Of course, there is scope for business development in this area with the support of the European Union.

Regarding the reduction of water waste, the main reason has the large public water management companies and of course due to the complexity of the networks it is difficult to engage individuals or private companies in them. In Greece, many fast-growing areas are still outside the sewer system, often causing problems on the aquifer. In 2020, investments of 650 million were announced in the development of water supply and wastewater management infrastructures.[45] But in addition to the public investment that benefits large companies with experience in these projects, business opportunities arise in the design and development of more efficient water management materials. For example, more durable pipes for urban use in apartment buildings, faucets and shower heads that do not leak easily and even smart toilets that do not waste much water. Finally, a big category regarding water economy is the agricultural sector and the ways in which irrigation will become more efficient without wasting water but mainly without environmental pollution.

On the other hand, proper food management can help businesses reduce their costs and, consequently, increase their profits. More specifically, companies, such as restaurants, hotels and supermarkets, have high costs of purchasing and preserving food that is necessary for their operation. Champion123's research showed that a company that invests in optimizing the process of buying, preserving, and disposing of food will have an average of 14 times higher profits than the amount invested. Food waste is found throughout the life of the product, from

[43] https://ec.europa.eu/food/safety/food_waste/stop_en

[44] European Commission (2012) "Report on the review of European policy to address water scarcity and drought", COM (2012) 672, Brussels, 14/11/2012,

[45] "Theodorikakos: The 11 axes for the projects in the municipalities", 18/06/2020, lykavitos.gr

purchase to disposal. A company must choose nearby markets in order for the good to be fresh enough so that it can survive in the store longer. Proper transport and storage directly affect its lifespan and the quality that the customer will receive, especially from large supermarkets. Also, its use must be correct, so that there is no waste of valuable goods. Finally, the remaining products should not be discarded if they can be used elsewhere or by someone else but they should end up on farms as animal feed or composted for the benefit of the local community. If it is not possible for them to absorb the leftover food, offering it to people who need it is definitely a positive move for the whole society.

One of the most typical examples of proper management of food and water is the company Jeronimo Martins[46]. The company operates in Portugal, Poland and Colombia in the supermarket sector and has one of the largest food management programs. By 2018 it had donated more than 10,000 tons of food it could not sell but was suitable for eating, and more than 21 million euros to local communities to help inform citizens about food management. In addition, it developed two pioneering programs that helped prevent the dumping of over 20,000 tons of food. One is the transformation of the most "ugly" in appearance fruits into salads and soups ready to eat, while otherwise they would end up in the trash. The second is the offer of food with a short expiration date at lower prices. At the same time, the company with the proper organization of workplaces managed to reduce water consumption throughout the group by 357,000 cubic meters with solutions such as collecting rainwater for watering the outdoor gardens of the facility. Finally, it motivates its customers to think environmentally and reduce their waste both with posters and leaflets in the store and electronically.

Respectively, a program about the food and water management was developed for the duration of the Olympic Games in Rio. There were specially designed areas, where the athletes could get food and special and bins where they could dispose their leftovers. At the same time as much food as was not consumed did not end up in the trash but was given to the local community who needed it. Another fact which was environmentally friendly was that, in the opening ceremony of the Rio Olympic Games, a video was presented in order to raise the awareness of athletes about 60 Global Impact of Climate Change. In addition, the opening ceremony was linked to the tree planting that took place at the Deodoro Olympic Park, with an emphasis on environmental heritage. The event was organized by the Mayor of Rio de Janeiro. In particular, the athletes were invited to enter the Olympic Stadium to transport more than 11,000 seeds from 207 different domestic Brazilian trees, as well as the countries that took part

[46] Jeronimo Martins (2018) “Stories of Less is More”.

in the Games, emphasizing the issue of environmental protection. Thus, the Athlete Forest emerged, consisting of 11,237 plants, that is, the same number of athletes who participated in the Rio Olympics. Other actions planned were for the sustainability and they included combat of carbon emissions, and achievement of quality standards for water quality in all kind of water sports

2.2.3. Constructions and Buildings.

According to Eurostat, in 2016 35% of waste came from the construction sector, while at the national level it represents up to 12% of greenhouse gases. To achieve green growth, the design of the infrastructure must change, both for the way it will be chosen for the construction of each construction and for the efficient way of its operation. One of the main problems of the industry is the lack of recycling of construction materials during the construction or during the demolition of a building, which are quite easy to reuse in other constructions. Regarding the design of infrastructure and buildings, they should be as environmentally friendly as possible, for example they should have good energy efficiency, use natural elements for their operation and do not leave a large energy footprint.

In Greece, the goal set by the Ministry of Environment and Energy in ESEK is the energy upgrade of central government buildings and 15% of the total number of residential buildings by 2030. Approximately 60,000 buildings need to be upgraded each year to achieve this goal. The "Save at Home" program targets 55% of the residential buildings in Greece that have been built before 1980, in order to be transformed into high energy efficiency buildings, with changes of windows to heat the house, roofing with insulating materials and installation of solar water heaters. The program has a total budget of 778 million euros and is co-financed by the EU. but also, from national funds. In the part of the recycling of construction materials that are produced during the construction or in case of demolition of a building, Greece does not have data to prove how many materials end up in the recycling, but it is estimated that their quantity is very low.

Large companies abroad show the way to circularity in the construction sector. For example, the company ROCKWOOL specializes in the energy upgrade of homes using mainly stone wool with the aim of zero energy buildings. It also has facilities in 10 countries for the recycling of stone wool, as it is a material that can be recycled many times. In fact, in 2018 it managed

to recycle more than 130,000 tons, saving more than 94 million liters of water[47]. Another company, Delete,[48] in 2019 managed to recycle more than 280 tons of construction materials that they have been collected from demolition, with a profit of about 28 million euros. Due to the interest in the Scandinavian countries for recyclable materials, Delete has created its own line of furniture created with recyclable materials from demolition.

A typical example for the constructions was the Olympic Games in London. The stadium is part of the permanent facilities of the Olympic Park. Only for the Olympic Games were there additions of a temporary nature to increase its capacity. After the end of the Games, the capacity of the Stadium was reduced from 80,000 to 25,000 seats. Since 2016, the Olympic Stadium has a different appearance after the seats were removed, while the roof does not have the appearance that it had then. Finally, it is worth mentioning that the Olympic Stadium was granted to the football team "West Ham United" in 2016 for the next 10 years. The London Olympics are an example of the circular economy of buildings as most constructions were remodeled for the Olympic period but according to the original design, they knew in advance what their next use would be.

2.2.4. Electronic Products and Batteries.

In our time most people own several electronic devices: computer, refrigerator, TV as well as many devices that run only on batteries, such as mobile phones, tablets, etc. Many of these devices end up in the trash earlier than they should, without even having completed their life cycle, either because new technologies have emerged or because new, more attractive models have emerged. Of the total volume of these devices, it is estimated that only 39.4% was recycled in 2020, with Greece being close to the European average, recycling 32.9% of electrical devices, almost double the number compared to 2019[49]. One challenge with electrical appliances is their proper recycling, in order to recover the necessary materials and energy that is still contained within the appliances. Also, products must be designed in such a way that they can be easily recycled.

[47] ROCKWOLL International A/S (2019) "Sustainability Report 2018", 03/04/2019.

[48] Delete Group Oyj (2020) "Annual Report 2019", 20/03/2020.

[49] Eurostat "Recycling rate of e-waste", https://ec.europa.eu/eurostat/tgm/refreshTableAction.do;jsessionid=0-nNp820xgKmy7ydymJsTta77CosR_Y3hIgMifI58yhYC8mQSo_v!902293985?tab=table&plugin=1&pcode=t2020_rt130&language=en

When referring to electrical appliances, the batteries are included, for example the batteries used by each appliance. The European Union has enforced laws in this area since 2006[50], as lead is usually contained in batteries, a material that is hazardous enough to be disposed of in landfills. That is why there are thoughts in the European Union of disposing the single batteries and using only rechargeable batteries, thus reducing the amount of waste that has to be managed. A Pan-Hellenic battery recycling program has been operating in Greece for many years with great success, as in the first years a large information and public awareness campaign was carried out, according to the site of AFIS SA, which is responsible for battery recycling[51]. In 2019, 611 tons of batteries were recycled from 69,000 sorting points throughout the country.

In recent years, the recycling of electrical appliances has also developed as a social responsibility program in large technology companies. For example, in the last 12 years, Vodafone in collaboration with the Greek Scouts has recycled more than 57,000 mobile devices and mobile accessories.[52] Many companies in Greece have now developed remunerative recycling programs, based on which the consumer recycles one or more electrical appliances and benefits from a discount for the purchase of similar appliances. In 2019, more than 15,000 recycling points of small or large electrical appliances were operated throughout the country and more than 61,000 tons of electrical appliances were recycled, according to the company responsible for the recycling of electrical appliances, Recycling Appliances SA[53].

At the Rio Olympics in 2016, several medals awarded to the winners of the competitions consisted of recycled materials, mainly cars and medical equipment. The first time that all the medals in the Olympic Games are a product of recycling and in fact exclusively from electronic devices was in the Tokyo Olympics. The Tokyo Olympic Games organizing committee four years before the Olympics announced its intention for the medals to be a product of recycling, specifically from electronic devices. The goal was to make five thousand medals from recycled materials for the Olympic and Paralympic Games. A major campaign was launched asking citizens of the country to donate various electronic devices that were either damaged and would be discarded or no longer used. Mobile phones, cameras, camcorders, video game consoles and laptops were the main demands of the committee from the citizens to recycle and from this process the metals that would be used to make the medals of the games. The public responded

[50] European Parliament (2006) "Directive 2006/66 / EC on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157 / EEC". 26/09/2006, Official Journal of the European Union

[51] https://afis.gr/

[52] http://www.sep.org.gr/el/static/vodafone

[53] http://www.electrocycle.gr/basic-page/55/stoiheia-syllogis

and in a period of 18 months after the start of the campaign more than five million mobile phones and 48 thousand tons of other devices were collected. The target of 2.7 tons of copper was caught within 14 months from the start of the campaign while four months later 94% of the target for gold (30 kg) and 85% of the target for silver which was four tons were caught. In the following period, the remaining quantities were collected and so all the athletes received medals of recycled electronic devices.

2.2.5. Vehicles

Vehicles currently on the road in Europe (cars, trucks, motorcycles, etc.) are responsible for 70% of greenhouse gas emissions. The European Union, in an effort to reduce this form of pollution, in line with its commitments under the Paris Agreement, has developed a strategy for low-emission mobility.[54] This strategy had three objectives: greater transport system efficiency, low-transport alternative energy sources and low- and zero-emission vehicles. In this way it wants to lead Europe's citizens to hybrid or electric modes of transport, both private and public. This seems to have been achieved from a very early age, as in 2010 in Europe there were only 1,410 electric cars with 15 models available, while in 2020 the electric cars circulating on European roads were 136,871 with 28 models available[55]. Already in the first quarter of 2021 130,297 electric cars have been sold. Germany has a leading role in the market, but Greece is also moving towards e-mobility by announcing a subsidy program for the market of electric vehicles of all categories.

Europe's biggest problem with electric cars is the lack of charging stations. Today's electric cars can cover distances of about 250-350 kilometers on a single charge, which does not make them attractive for long distance travel, especially considering that at a simple charging station it may take about 2-4 hours to a complete charge . The EU subsidizes the installation of new electric car charging stations with more than 600 million, mainly with fast charging, while it pioneers the financing of research projects for the development of wireless electric car charging points. In 2019 there were around 100,000 charging points for electric and hybrid cars across Europe. Greece has only 38 stations, while on the largest European highways there is a fast

[54] European Commission (2016) "European Strategy for Low Emission Mobility", COM (2016) 501, Brussels, 20/07/2016.

[55] Tsakalidis A., Thiel C. (2018) "Electric vehicles in Europe from 2010 to 2017: is full-scale commercialisation beginning? An overview of the evolution of electric vehicles in Europe", Publications Office of the European Union, Luxembourg, 2018, doi:10.2760/8053.

charger every 60 kilometers[56]. The demand for fast charging points is starting to exceed the current supply in the European market. On the contrary, the Greek market is far behind in this area, especially in the most remote areas and islands. Thus, the country is excluded from a portion of tourists who wish to visit the country with the electric car, but also of the professionals who equip their fleet with electric vehicles.

Another issue with vehicles in Europe is their recycling. There are more than 386 million vehicles over the age of 10 in Europe, of which only 5% are electric or hybrid or generally do not run on petrol or diesel.[57] In the coming years, most of them will have to be withdrawn and replaced by more environmentally friendly cars, while they must be used as spare parts and raw materials in the car industry or wherever they seem useful, without leaving hazardous waste for the environment. Automakers need to design their vehicles so that they are recyclable, environmentally friendly, safe, have a longer lifespan and their components are easy to replace. Similarly, governments should make sure that cars are easily recycled, creating the right conditions for the development of recycling facilities and the development of the market for recycled raw materials. Finally, entrepreneurs need to turn to these markets, investing in their development by taking advantage of lower prices, while helping to protect the environment.

The German carmaker Dailmer has set a goal of reducing car production waste by 43% by 2030, while at the same time it wants to use 40% less raw materials. The first will be achieved with the development of a new environmentally friendly factory and the improvement of the energy needs of the other factories of the company. The second with the further development of its recycling network. More specifically, every year it recycles close to 5,000 vehicles and in combination with the returned spare parts creates a market of 20,000 new spare parts for its vehicles. At the same time, it uses car batteries and uses them in energy storage for the operation of its facilities[58].

Paris will begin testing electric air taxis at a new test site just outside the French capital, with the ultimate goal of creating at least two flights for Olympic passengers during the 2024 Games. "*Everything comes into play: partnerships, innovation, testing areas, regulations, funding,"* Djebbari said. *"All the ingredients of success are there, all that remains is for that to happen."* The first Olympic route will carry passengers between Paris-Charles de Gaulle and Le Bourget

[56] Policy Department for Structural Cohesion Policies (2019) "Research for TRAN Committee- Charging infrastructure for electric road vehicles", 06/2019, doi: 10.2861/62486.
[57] European Automobile Manufacturers Association (2021) "ACEA Report. Vehicles in use Europe 2021", 05/12/2021.

[58] Daimler (2020) "Sustainability Report 2019", 04/2022.

airports and a second will connect two Parisian suburbs. About 30 manufacturers agreed to test various parts of electric vertical take-off and landing aircraft (eVTOL) and the infrastructure would require a safe airport for them. The project involves aerospace companies such as Volocopter GmbH, Airbus SE, Vertical Aerospace Group Ltd and Lilium NV. The airport near Paris has already been adapted to include a landing and take-off area, treadmills, parking lots, warehouse design and more.

2.2.6. Renewable energy sources.

According to the European Green Agreement: "*Further decarbonization of the energy system is crucial to achieving the climate targets for 2030 and 2050*[59]." It is an agreement that seeks to renew Europe's targets for 2030, essentially pushing its member states to redefine their national targets in order to achieve a greener Europe. The central goal is to decarbonize the European Union's energy sources, as Greece intends to do by closing its lignite plants by 2028. From the Greek side, specific targets have been set for RES, to cover at least 35% of the country's energy needs by 2030, with several projects already being carried out or to be at an advanced level of studies. The Greek model for the development of renewable energy sources of course focuses more on wind farms and photovoltaics, which together account for 22% of total production in Greece, since wind and sun are elements that prevail in Greek nature, while they also have an important place. the hydroelectric plants that operate in Greece and produce about 7% every month[60].

At the same time, as stated in the National Plan for Climate and Energy, interventions should be made in the larger building complexes, in order to have an energy autonomy and of course to have a small energy footprint, starting from the central government buildings. Many private companies, however, try to do the same, in order to reduce their costs but also to reach customers with environmental sensitivities. One of them is Cosmote, a member of the OTE group. which has pledged to connect all its stores and other facilities with clean energy to save more than 37 GW of energy per year, enough to meet the needs of a city of 22,000 inhabitants[61]. Finally, the energy upgrade programs of the houses, as mentioned in paragraph 2.2.3, receive strong funding throughout Greece, especially in houses with poor energy efficiency.

[59] Ευρωπαϊκή Επιτροπή (2020)"Η Ευρωπαϊκή Πράσινη Συμφωνία", COM(2020) 640, Βρυξέλλες 11/12/2020.

[60] Independent Electricity Transmission Operator (IPTO) (2020) "Monthly Energy Bulletin, April 2020"

[61] Cosmote Press Release (2020) "New goals for climate change and environmental protection, Cosmote: sets a goal for 100% use of renewable energy sources and 90% reduction of greenhouse gas emissions" 03/06/2020

The 2020 Olympic Games held in Tokyo were extremely innovative. The government supplied the games entirely with renewable energy sources. The biggest sporting event in the world has been criticized in the past for the huge amount of garbage and pollutants it produces. Thus, Japan took the lead, using items that can be reused or recycled, up to 99%, while sending a message to society for a greener future. The goal of 100% renewable energy concerned the central venue of the event, the international broadcasting center and the Olympic Village where the athletes lived. The government, however, has also installed solar panels on roads.

2.2.7. Tourism

The tourism sector is one of the key priorities of the ESEK. It is an area that contains all the previous areas, since the organization of a tourist accommodation requires various electrical appliances, a large amount of food and water, a proper transport network and of course a large amount of energy. In Greece, tourism is the heavy industry, since 11% of GDP is a direct result of tourism, while this amount is close to or even more than 25% if indirect investments in it are calculated. In 2020 alone, 30 million tourists came to Greece from all over the world, leaving 21 billion in revenue for the Greek state[62]. These numbers tend to increase every year and with them, the investments in the tourism sector. The development of tourism, if not cyclical, will create problems in Greek society, as more tourism companies means more waste and more deterioration of the natural environment. Especially small remote areas, such as the islands that are flooded every summer by Greek and foreign tourists, usually have infrastructure that is not enough to meet the needs of the summer months.

Figure 5 shows the 6 main pillars of the conversion of a tourist accommodation into a green-circular:

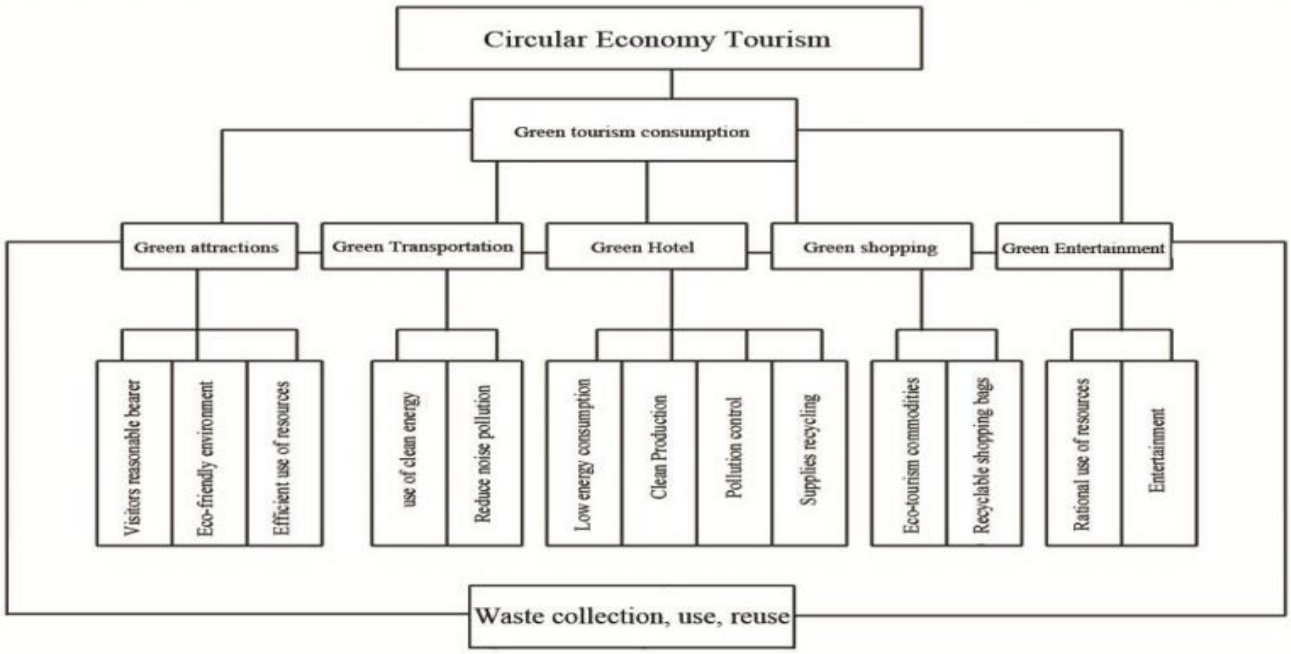
The first pillar is the green attractions, for example the reduced intervention in the natural landscape and the controlled number of visitors, in order to make proper use of the resources. The second pillar is green entertainment, the respect for the environment in which the event takes place and always in accordance with the relevant legislation. The third pillar is transportation, whether small (from the airport to the hotel) or larger (cruise), in which clean forms of energy must be used, electric or hybrid cars and LPG. The fourth pillar is the shopping segment, ie the ecological design of tourism products and of course the use of a disposable

[62] Ikkos A., Koutsos S. (2019) "The contribution of Tourism to the Greek economy in 2020 ", 05/2020, Institute of the Association of Greek Tourism Enterprises (INSETE).

plastic bag. The two previous pillars require special attention, as, if achieved, the waste reduction will be huge. The fifth pillar is green hotels, which must be energy efficient, have low energy consumption mainly from renewable energy sources, develop recycling programs and inform customers about the environmental actions they take. The last pillar is the collection and management of all waste generated in the tourism sector, in order to be reused, where possible, or at least to end up in appropriate disposal sites. The successful implementation of all or part of these measures is evaluated by some ecological certifications.

In Greece, unfortunately, the percentage of hotels that have ecological certification remains low, as, according to a survey of hotels in Halkidiki and Thessaloniki, only 33 hotels out of 1,088 have a relevant certification[63]. However, in Epirus is the hotel complex Aristi Mountain Resort & Villas, which has been awarded for 2 consecutive years as the best eco-hotel in the world with the Worlds 'Leading Eco-Lodge award from the World Travel Awards[64]. It is a hotel perfectly harmonized with the local environment, which has implemented a green policy to reduce the energy needs of all facilities, reduce plastic waste and local wastewater treatment, to reduce environmental pollution.

Figure 5: Tourism in the Circular Economy.



Source: Zhang X., Xiao C. (2015) "Research on the tourism circular economy mode-Mt.Emei scenic area", 06/06/2015, International Journal of Managerial Studies and Research (IJMSR), Vol 3 (6) , pp. 91-96.

[63] Mavroudis A. (2020) "Circular Economy and Tourism", Thessaloniki, 03/2020

[64] Reader.gr (2020) "To Aristi Mountain Resort &Villas στην κορυφή του κόσμου!", 03/2/2020, https://www.reader.gr/life/travel/taxidiotikes-protaseis/276248/aristi-mountain-resort-villas-stin-koryfi-toy-kosmoy

The circular economy can also be applied to small family tourism businesses. For example, the Strattons Hotel in England, with just 14 rooms, participated in a waste management program and managed to save 16,000 pounds in one year. The hotel now recycles 98% of its waste using even a composting system. They also select local products for the needs of the restaurant, where they now cook only when there is an order. Finally, they managed to save 2,800 pounds a year by using packaging that they could reuse for essential bath items, such as soaps and shampoos.[65]

The 2004 Olympic Games were a lever for tourism development for our country but also a vehicle for reorganizing the tourism product. The Olympic Games give to the host country, the country that organizes them a uniqueness through the promotion they create and the infrastructure projects that accompany the Games. Infrastructure projects, as they require self-financing, can bring the public-private sector into substantial cooperation by establishing a long-term and organized tourism strategy. The successful organization and performance of the Olympic Games was, for Greece, the starting point of a dynamically designed tourism policy.

2.3 Funding Source

One of the biggest problems in the circular economy is the high initial investment amounts, both for setting up a new business and for converting an existing business into a circular business. The European Union stands by entrepreneurs looking for opportunities for the environmental development of their businesses, as it is a pioneer in actions for the transition to a circular economy. From 2014 to 2020, Europe's programming had budgeted funding for action related to the circular economy totaling € 150 billion based on 3 key funding programs as well as private funding. The main program was Horizon 2020, a program totaling 80 billion euros, of which 29 were directly aimed at the circular economy and 24 billion were aimed at research and innovation[66]. The other two programs were smaller in size. COSME focused on small and medium-sized enterprises investing € 2.3 billion, while LIFE was a purely € 5.5 billion environmental program. All this money was used to meet the EU's key objectives, ie to focus on more recycling, better waste management, biodiversity empowerment, product design innovation, new "green" jobs, research and development, water and renewable energy management[67].

[65] WRAP (2012) “Strattons Hotel. Small hotel makes big savings”, 14/11/2012.
[66] European Commission (2013) “Factsheet: Horizon 2020 budget”, 25/11/2013
[67] European Commission (2016)”Cohesion policy support for the circular economy” 23/12/2016, https://ec.europa.eu/regional_policy/en/policy/themes/environment/circular_economy/

The budget for the years 2021-2027 is based on the same logic as before, as it aims to strengthen cohesion between the Member States of the European Union. The budget is 1,850 trillion euros. To be precise, the budget was 1.1 trillion, but due to the global health crisis, another 750 billion were added to deal with it. There are various funds and programs for the circular economy. Initially the European Regional Development Fund with a budget of 226 billion euros to finance NSRF programs. Also, as in the previous seven years, the LIFE program runs with approximately the same amount of funding and is based on 4 central programs to achieve its goals, giving directly for the development of circular enterprises 1,350 billion euros in the program Circular Economy and Quality of Life.[68] Another program that will support the investment needs of the circular economy is InvestEU, a guarantee program that aims to attract and direct private investment, while covering the financing of small and local projects needed to support private investment. The budget of this program is 15 billion with the aim of achieving investments of 38 billion euros by 2027 through investment feedback.

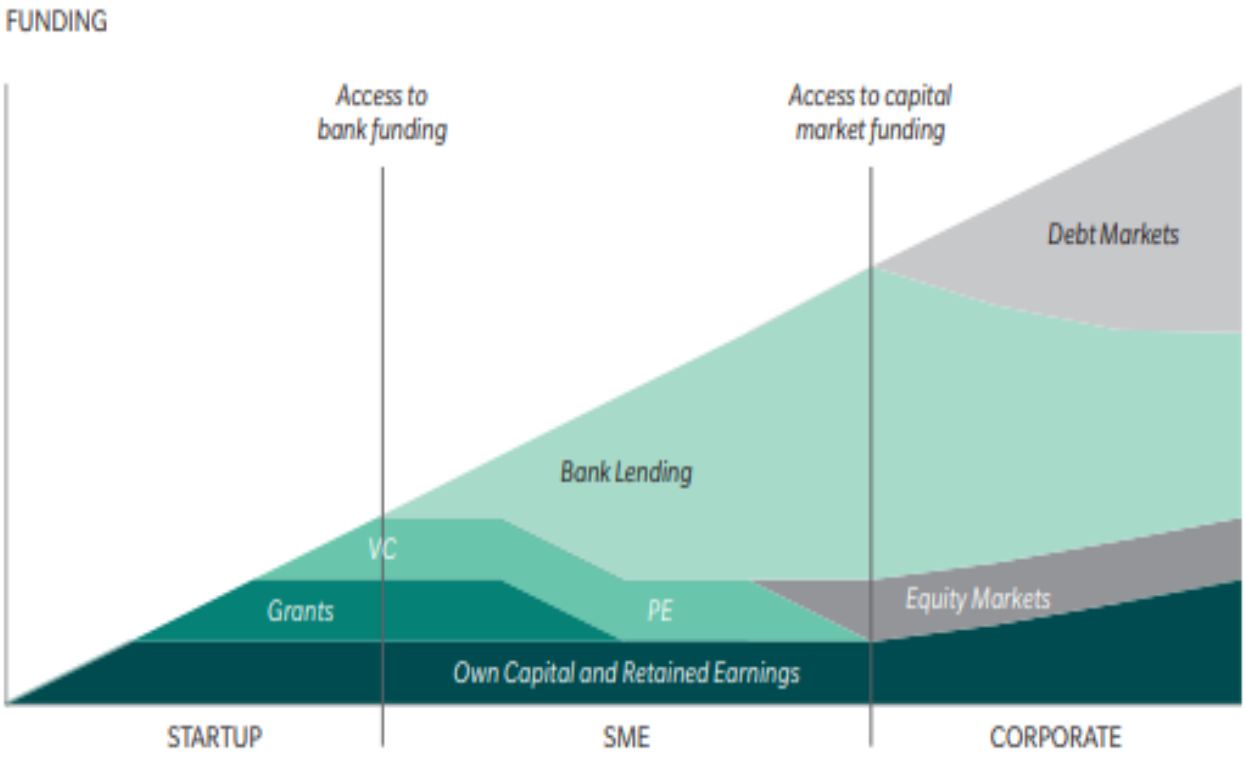
In addition to the state or community subsidy, there are also targeted loans from banks for the transition to the circular economy. The European Investment Bank has announced that it will stop lending to fossil fuel-based investments, but will focus on investments in renewable energy sources, energy upgrades and low-impact investments in general. There are many institutions, organizations and companies that aim to promote the circular economy, either through the effort of information or more directly by investing in circular economy projects. One such example is Closed Loop Partners, an investment company founded in 2014 and since then has made 45 investments in the circular economy in 5 countries around the world. These investments amounted to 270 million dollars, managing to hold in the economy 1.3 million tons of materials that would have been otherwise useless. Their immediate contribution to local communities is about 12 million and they have created over 250 new jobs[69].

In 2019, Oliver Wyman, an investment firm, published a survey on how to finance circular businesses. As shown in Figure 7, the way of financing also depends on the type of company [70]that is looking for financial resources. More specifically, a Startup business will be based on equity and investments of individuals who believe in this idea. A small business will add to these financial tools and bank lending that it can more easily secure, company type ratio. Finally, a large company will look for money in the debt markets, issuing shares or bond loans,

[68] European Commission (2020) "The EU budget for the future", Luxembourg, 18/03/2020 .
[69] Closed Loop Partners (2020) “Building the Circular Economy, Closed Loop Partners 2019 Impact Report”, 21/02/2020.
[70] Achimescu A., Neumann C., (2019) “Supporting the circular economy transition. The role of the financial sector in the Netherlands”, 2019, Oliver Wyman

while many times it has quite a large reserve in its coffers. According to the same research, it is more likely that a company focusing on the sharing economy will find the financing it needs while a business idea about the secondary market of raw materials will be more difficult.

Figure 6: Sources of financing for different types of businesses.



Source: Achimescu A., Neumann C., (2019) "Supporting the circular economy transition. The role of the financial sector in the Netherlands ", 2019, Oliver Wyman

3.CONCLUSIONS

The modern way of organizing economic life is quite polluting, as it is based on the linear economy and in combination with the increase of the population and therefore the need for more consumption of energy, food, water, and general consumer goods, threatens the viability of the planet. The alternative to this way of organization is the circular economy, an economy that saves resources during production and plans the efficient management, recycling and reuse of all production process waste and consumption. It gives essentially a new life to all the necessary resources for human existence, whether in plastic bottles, newspapers, cans, clothes, irons, concrete and whatever else the production process needs. Through the circular economy, everyone benefits: the environment, since waste is very reduced and, in many cases, non-existent, while energy needs focus on renewable energy sources and not on fossil fuels. The state benefits from economic growth resulting in a circular economy and new jobs. Businesses are the driving force of the transition to the circular economy, and they will have great economic expansion from these activities as they will be able to reduce their costs and develop their social action. Finally, all individuals benefit from the development of new goods and technologies that they can consume in sustainable, environmentally friendly cities. Last but not least, through examples we examined how the circular economy was applied in practice in the Olympic Games.

But until society can move towards a circular economy, several obstacles need to be overcome. The biggest obstacle is the high initial investment costs which are a deterrent mainly for smaller companies but also for the more linear-polluting ones. Politicians also need to understand the benefits that such a transition will bring, and businesses as well, so that the state and business and businesses can work better together. In addition, consumers need to be properly informed so that they can help in the transition either by participating in the programs or by pressuring the local communities to change habits, but also to reward with their choices the companies that choose the path of the circular economy. Finally, several technological innovations are needed to be able to meet the needs of the new economic system, mainly to replace the complex supply chains around the world.

The business opportunities for developing a circular economy are endless, as a single innovative idea that solves a supply chain problem or prevents the generation of new waste is enough to succeed in a circular economy. However, the EU and consequently Greece has selected specific sectors which are a target as there you notice the biggest problem.

This Thesis is the theoretical trigger for the further study of successful business ideas in the circular economy. Although several successful examples of the implementation of the circular economy are mentioned, the business plans that led to them are not mentioned. Future research is needed on the effort to develop a circular business in Greece, in order to analyze the problems that this effort had to face in the preparation, execution and of course the results it had, whether they were positive or negative, for the entrepreneur, the local community and the environment. Finally, the circular economy is a small part of the overall economic organization. It is necessary to check whether it is sustainable in a completely competitive circular economy but also whether entrepreneurs can remain focused on the goal of growth with environmental criteria and not with the sole purpose of their profit.

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