

Securing and streamlining the delivery of financial development aid: Blockchain as a disruptive tool to meet the UN SDGs

-Final dissertation-

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Glossary

AAAA – Addis Ababa Action Plan

BCF – Blockchain Charity Foundation

BRICS – Brazil, Russia India, China, South Africa

DAC – Development Assistance Committee (of the OECD)

DFIs – Development Finance Institutions

EU – European Union

IMF – International Monetary Fund

LDCs – Least Developed Countries

MF - Microfinance

MFI – Microfinance Industry

MICS – Middle Income Countries

NGOs – Non-Governmental Organizations

OECD – Organization for the Economic Cooperation and Development

ODA – Official Development Assistance

SDGs – Sustainable Development Goals

SSDC – South-South Development Cooperation

UNCDP – United Nations Committee for Development Policy

UNDP – United Nations Development Program

UNHCR – United Nations High-Commissioner for Refugees

UNOPS – United Nations Office for Project Services

USAID – United States Agency for International Development

WB – World Bank

WFP – World Food Program

“As local as possible, as international as necessary”

“Digital technologies, which are revolutionising financial markets can be a game-changer in meeting our shared objectives”.

(UN Secretary General, António Guterres)

Introduction

This work responds to the will to contribute to re-shape and improve the governance of financial development aid, both at the international and local level, in a context of on-going discussions about how to improve the efficacy and efficiency of the overall system. If we trace back our view and count the incredible amount of money that has been devoted to international development aid since the Cold War Period, and afterwards we try to evaluate the real impacts in terms of progress and development, we would probably be shocked to see that there is actually not even a closer relation. This means, that international development aid has suffered since its beginnings from a lack of efficacy and efficiency, that has been translated in low poverty reduction rates and slow development progress tendencies. Governments and international organizations like the UN have been conscious about the problem and have tried to respond by creating new conceptual frameworks and policies aimed at boosting the system. However, they have not induced important transformative changes for developing and least developed countries, yet in many of them underdevelopment and other socioeconomic and political challenges have worsened due to multiple causes.

The failure to deliver positive impacts in those countries has raised many concerns among the population – either in developing and developed countries - about the capacity and legitimacy of public institutions to continue controlling the decision-making process and the management of financial development aid. General dissatisfaction and distrust has increased over the last years, and this has brought many segments of society to rebel and search upon more democratic and inclusive forms of governance in which individuals can become empowered agents with capacity to contribute in achieving a better world. The situation has finally been more evident after the consequences of the 2008 global economic crisis and ultimately with the giant challenges derived from the pandemic of COVID-19. Paradoxically, funds directed to development aid have decreased whilst humanitarian and development needs have increased and intensified worldwide.

In this scenario, it seems relevant to introduce new alternative ideas with enough disruptive potential to really contribute in making a change. A proposal that truly considers the challenges, the needs and the opportunities already existing and brings it up in a way that will benefit everyone, by leaving no one behind. This is precisely the aim of this work, and pretends to achieve it in two different ways.

The first, by introducing the need for a change in the way international development aid has been conceptualized after World War II and more intensified after the Cold War. This means to shift from seeing development as a practice and alongside capitalism to fully support the paradigm of global development, which takes into consideration people-centered approaches and localization practices when configuring development policies. Moreover, in this new global development approach paradigm, the governance of development aid should be in the

form of multi-stakeholder global partnerships, as was effectively decided with the approval and functioning of the Global Partnership for Effective Development Cooperation in 2016, endorsed by 161 countries, multilateral institutions like the UNDP and the OECD, bilateral donor agencies, private sector companies, civil society organizations, and other relevant networks and stakeholders at the regional and local level.

The second way introduces the new practical approach that accompanies the theoretical shift. Financial development aid consists in voluntary monetary flows given from one donor to a receiver with the aim of supporting and assisting in its economic, social and political development. It seeks to alleviate systematic challenges, such as poverty and the improvement of living standards, and thus it maintains a long-term vision. However, since the willingness is to overcome the main failures derived from the malpractices and mismanagements that mainly governments and central banks have made in this regard, the proposal necessary falls within the need to secure and streamline the delivery of financial development aid in such a way that it can contribute in meeting the UN SDGs. Hence, the proposal emerges after acknowledging the role private actors and civil society have and can play in the decision-making process and the implementation of policies due to their different capacities and sources of authority. Precisely, their expertise and social legitimacy are the main flaws lacking in international organizations such as the United Nations, and the elements they can bring to positively influence the route to sustainable development. Quasi intuitively, the practical proposal is, thus, the disruptive potential that the new technologies from the Fourth Industrial Revolution can mean in the financial development aid system. More concretely, how public Blockchain technologies can really contribute in improving the efficacy (securing) and efficiency (streamlining) of the ecosystem.

The proposal fits in a context in which this field of knowledge and practice is emerging, finding only few researches and reports dealing with how Blockchain can improve development and humanitarian aid, and even less approaching its relation to microfinance. Moreover, most of them mainly adopt a theoretical perspective, focusing either in a concrete and technical aspect (see Cuellar Benavides, J., 2018) or choosing a broader one covering possible applications, benefits and challenges of Blockchain technology in the development field (see Zwitter, A., Boisse-Despiaux, M., 2018; Zambrano, R., 2017). The UN is the most important actor at the international level introducing literature about the functioning and the potential of Blockchain technologies, as well as practical examples of its impact in helping to meet the UN SDGs (see UNDP, 2018. *White paper: The Future is Decentralised*). However, many of those projects are being tested in specific local projects with the aim to progressively scale them to other places. This speaks about the real interest for including Blockchain technologies when adopting holistic and comprehensive political agendas, particularly in the development field. Consequently, the innovation this proposal brings is a critical reflection about how development aid should be thought and implemented in the near future, by passing from a broader theoretical perspective through a practical concrete mechanism – the Blockchain technologies - which can be applied in the financial development field. The work chooses the weaknesses and limitations of the way financial development aid is delivered, and even more concretely micro-financial development aid, because it directly points to individuals in developing and less developed countries rather than to, often, corrupt states and commercialised banks. From this, the work proposes all the specific benefits that Blockchain technologies through the use of digital platforms can bring, again from a theoretical perspective accompanied by a review of selected different

applications coming both from the private and the public sector. The proposal is, thus, oriented towards the role the public sector can have when governing the digitalisation of financial development aid along with the expertise of the private sector. Because of this, the work balances a wide range of very recent electronic information coming from public and private sources. Nevertheless, since the private sector is the leading one in this precise field, it felt interesting to reinforce the work by carrying out an interview with someone working with Blockchain technologies applications, to see their view and their demands. (see Annex 1: Interview with Miguel Caballero).

In order to develop both proposals in a meaningful and comprehensive way, the work has been divided into three main parts. The first chapter introduces the conceptual framework that will be discussed and analyzed throughout the investigation, moving from the liberal approach to the postcolonial critique, and adding the multi-stakeholder partnerships as the future of public governance.

The second chapter goes deeper into financial development aid, initially describing what is it and how it is configured in the international system. Afterwards, the work focuses on the evolution of microfinance as a complementary policy to development, assessing its real impact as an anti-poverty tool. Then it introduces the technological boom that began to emerge in the late 2000s and which have origin to the use of digital platforms to offer, among infinite other uses, better financial services to those in need. Through the example of peer-to-peer platforms, the work tries to exemplify a clear response that FinTech companies with the help of the civil society lead against the mistrust in traditional international and local economic and political institutions, for the way they had been operating in developing countries. A response that clearly went in the direction of incorporating more financial mechanisms to tackle increasing challenges, and which becomes even more important in the light of the pandemic of COVID-19. Those initial platforms have been the prelude of the ones that we can use nowadays, some of which are progressively incorporating the use of Blockchain technologies to tackle previous deficits.

Finally, the third chapter addresses what is this technology and which relevant elements it offers for improving financial development aid and contributing in meeting the UN SDGs. It then supports the affirmations with some current Blockchain microfinancing applications either coming from the private companies and aid agencies, which maintain the leading voice, and from the UN agencies, which are still in an experimental stage. Describing the state of the art allows the work to end up putting into the table the current limitations experimented worldwide or by developing countries in particular, which ultimately prevent the whole implementation of Blockchain technologies. Those limitations are then counter-balanced with concrete proposals to overcome them. They are basically four: the potential for increasing existing inequalities and power asymmetries and the investment in capacity development and building trust as a solution; the urgency for building adequate technical and environmental infrastructures in developing countries; the necessity to adopt new international and national harmonized regulatory mechanisms about transparency and privacy; and the opportunity for really introducing more inclusive and multi-stakeholder kinds of governance in the field of financial development aid. Finally, the work concludes reaffirming this ultimate aspect, highlighting that the whole disruptive potential of Blockchain technologies will only be achieved if the international community is able to include in a proactive and empowered way all the relevant actors in the field: public entities, private companies, academia, NGOs and the civil society.

1. Main theoretical conceptualizations about development aid

In their book *Doctrines of Development*, Cowen and Shenton declared that "development comes to be defined in a multiplicity of ways because there are a multiplicity of "developers" who are entrusted with the task of development."¹ Certainly, it seems there is a consensus amongst the scholars about the ambiguity, and often contestation, of development as a concept, due to the difficulty of covering and compressing all the different visions, actions and practices it entails.² Yet, as Alan Thomas suggests, from a historical point of view this conceptual ambiguity has been confronted by usage and power, meaning that only some concrete actors in the development field have had sufficient capacity to impose their own interpretation.³ Precisely, the aim of this chapter is to offer a critical view on the main implications derived from how development aid has been thought and implemented throughout the 20st and 21st century. For this, it will introduce the main conceptual approximations towards development aid, and will identify persisting challenges and recent opportunities in the field.

1.1 From the liberal practice to the postcolonial critique

In a globalized capitalist world, the liberal development view has prevailed as the dominant in the international community, diminishing the relevance and popularity of other social change theories which argued against it and proposed different directions. Because of this, in many parts of the world the development action has focused basically on targeted practices, including foreign aid⁴ which from the donors' point of view would help to prevent and ameliorate socio-economic problems in the Global South (poverty, health, education, humanitarian effects of internal wars, environmental degradation due to malpractices).⁵ Such a limited view has constrained or even impede the possibility of using the development aid in larger and strategic long-term projects aimed at rebuilding the economic and social structures of underdeveloped societies. Strengthened after the Cold War, these targeted liberal practices can be understood from the *interventionism theory*, which has become the mainstream scheme at the international decision-making level because it sees development alongside capitalism, as a practice that needs to be related to it rather than a transformative process.⁶

The current state of the art as regards developmental aid is translated into two aspects: on one hand regarding the type and degree of intervention and on the other hand the actors with enough trusteeship to intervene, both materializing targets and techniques that better suited

¹ Cowen M., Shenton R. 1996. *Doctrines of Development*. London: Routledge, p. 4.

² Cornwall, A., "Buzzwords and Fuzzwords: Deconstructing Development Discourse", *Development in Practice*, Vol. 17, 2007, no. 4, p. 471-484.

³ Thomas, A., "Development as Practice in a Liberal Capitalist World", *Journal of International Development*, Vol. 12, 2000, p. 774.

⁴ Horner, R., "Towards a New Paradigm of Global Development? Beyond the Limits of International Development", *Progress in Human Geography*, Vol. 44, 2020, no. 3, p. 418.

⁵ *Ibid.*

⁶ Thomas, A., *op. cit.*, note 3, p. 775.

for the required goal.⁷ In fact, the non-market intervention or *intentional development aid* refers to the compendium of deliberate policies and actions that States, multilateral development agencies and private donors have directed mainly to poor areas of the world, in order to compensate them for negative consequences of unlimited economic growth. They constitute intentional constructive activity as one agent is trying to ensure the capacities' development of the other,⁸ acting on behalf in a unilateral way.

The legitimacy and capacity to undertake development actions has been traditionally exercised by States in a unilateral way, including colonial, imperialist and more recently soft-power actions towards other countries.⁹ A North-South divide could be clearly identified in these international development contexts,¹⁰ which gradually changed after World War II along the process of institutionalization and globalization of the international community. Since then, there is a massive proliferation of development agencies, some of which in the form of international organizations (e.g. the World Bank, the IMF and the UN development agencies), NGOs, and more recently large private corporations and philanthropic donors. All of them claim their entitlement to act in favor of development, but the truth is that there continues to be an important misalignment between the interests of development agents (donors) and the needs of the receiving populations.

Indeed, as the OECD recognized in its October 2020 report,¹¹ since 1990s DAC¹² donors increasingly earmarked¹³ their financial contributions to the multilateral development system for purely bilateral purposes, this resulted in agencies diverting the focus away from core mandates towards more narrowly defined donor-specific priorities. This increases their vulnerability, and it creates potentially adverse effects in the effectivity and efficiency of the delivered aid. Related to this, another important issue is how development aid is highly prone to corruption when it is spent through national public procurement systems which are weakly governed and highly corrupted.¹⁴ In these situations, donors prefer to use earmarked or a project aid subject to tighter controls, even though this blurs donor and recipient ownership, and reduces accountability relationships.¹⁵

All those facts were repeatedly raised in the High-Level Forums on Aid Effectiveness of Paris (2005), Accra (2008) and Busan (2011), after acknowledging that in many cases intentional development had proven to be like putting a sticking plaster on a gaping wound. On one side as the policies tended to lack aid coherence, meaning the positive and negative

⁷ Thomas, A., *op. cit.*, note 3, p. 776.

⁸ *Ibid*, p. 774-776.

⁹ The soft-power is a political approach in international relations for which a country achieves a goal by attracting another country to its culture, ideals or politics. For example, the United States in Latin America or South Korea's development approach in Africa. (Kim, J., Garland, J., "Development cooperation and Post-Colonial Critique: An investigation into the South Korean Model", *Third World Quarterly*, Vol. 40, 2019, no. 7, p.1256).

¹⁰ Horner, R., *op. cit.*, note 4, p. 415.

¹¹ Bosch, E., Fabregas, A., Fishcer F., 2020. *Earmarked funding to multilateral organisations: how is it used and what constitutes good practice?* [PDF] OECD, p. 2. Available at: <https://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/Multilateral-development-finance-brief-2020.pdf> [last accessed on 5 February 2021]

¹² International OECD forum of many of the largest traditional providers of aid. It currently has 30 members.

¹³ Refers to the concept when donors put conditions on how to spend the aid sent to multilateral agencies.

¹⁴ Dávid-Barret, E., Fazekas, M, Hellman, O. *et al.* "Controlling Corruption in Development Aid: New evidence from Contract-Level Data", *Studies in Comparative International Development*, Vol. 55, 2020, p. 483.

¹⁵ *Ibid*, p. 485.

impacts that actions could have over other areas. And, on the other side, because policies focused on alleviating problems were not resulting in sustainable progresses in developing countries, yet in some occasions contributed to increase their indebtedness and their overall political instability. For example, the Structural Adjustment Programs (SAPs)¹⁶ as the conditions imposed by the IMF and the World Bank to developing countries to obtain loans.

As a way of overcoming these flaws, the High-Level Forums also put on the table different challenges and opportunities aimed at improving the mainstream international development scheme. The last one, held in Busan (South Korea) in 2011, embraced new and strong commitments about ownership, inclusive participation and capacity development. About ownership, it meant that developing countries had to be included and held as equal actors in the formulation and coordination of projects. Inclusive participation signifies recognizing the valuable participation of private donors, foundations and civil society of developing countries in shaping the best strategy to improve the situation on the ground, but also to pay more attention to South-South cooperation (SSDC) as new emerging development partners. Regarding capacity development, it was necessary acknowledging that aid effectiveness would only improve if the focus was put towards mid and long-term results.¹⁷ Some of these commitments were reaffirmed in the second High-Level Meeting of Global Partnership for Effective Development Cooperation, held in Nairobi in 2016. However, this meeting signified a step beyond the previous ones by replacing donor-recipient relationships of the past by new multi-stakeholder approaches that could embrace diversity and the complementary contributions of all development partners.¹⁸ The southern providers (with the BRICS as the leaders) have progressively gained power in the global development scene, and thus have pushed for a partial rejection of traditional development aid principles and practices in favor of horizontal and inclusive types of cooperation.¹⁹

Though it would be naïve to believe South-South cooperation does not also imply relationships of domination (e.g. China's development cooperation in Africa), what it is for sure is a step beyond the North-South divide. In fact, the SSDC along with the changing responses of traditional donors²⁰ helps us understand the progressive transformation that the world has suffered in terms of development, and the need to integrate new conceptual frameworks and practical tools to better respond to it. It is clear that the globalized capitalism has brought more actors to the development field and a growing interconnectedness and changing inter-dependency patterns between countries. In this context, a great part of the academia and many international organizations, such as the World Bank,²¹ support the idea

¹⁶ Share the World's Resources, 2008. *Aid, debt and development: an overview* [online] Sharing.org. Available at: <https://www.sharing.org/information-centre/articles/aid-debt-and-development-overview> [last accessed on 8 February 2021].

¹⁷ It is mainly referred to incentive systems and public sector reforms, like: supporting country leadership, multi-stakeholder empowerment to fulfil the mandate, access to knowledge, approaches integrated to local contexts, participatory policy, among others, rather than technical cooperation. (Pretorius, C., Dendura, J., Dehove, M., 2011, *Supporting Capacity Development in PFM- A Practitioners' Guide*, [PDF] OECD - DAC, p. 21. Available at: <https://www.oecd.org/dac/effectiveness/48782679.pdf> [last accessed on 1 April 2021].

¹⁸ Kim, J., Garland, J., *op. cit.* note 9, p.1247

¹⁹ *Ibid.*

²⁰ Mawdsley, E., "The 'southernisation' of development?", *Asia Pacific Viewpoint*, Vol. 59, 2018 no. 2, pp.1-3.

²¹ In April 2016 announced the removal of the classification of "developed" and "developing" countries in the World Development Indicators, after having defended to change the development paradigm from the North teaching the South to simply invest in a stable and inclusive future (Horner, R., *op. cit.*, note 4, p. 423).

of taking *global development paradigm* as a more appropriate wider focus, considering all countries as sites of development.²² Basically, it advocates a mutual learning and a collaborative action across countries, in the same direction as the UN SDGs do.

If the international community progressively accepts global development as the new mainstream pattern, then it should consider that postcolonial projects will no longer fit in it. As Banuri pointed out, “if development means ‘what we can do for them’ then it is just a “license for imperial intervention.”²³ It perpetuates a historical colonial relationship in which the giver assumes a certain amount of control over the resources or economy of the receiver (e.g in terms of trade, the need for aid or technological dependency) to achieve greater goals and benefits that may not be in the best interest of the receiver.²⁴ However, even if this continues to be in place, the push towards a global development scheme can also be leveraged to become a push towards the materialization of many core ideas of alternative development theories.

Up to here, I have argued that the contestation of the liberal approach to development would be the global development and the post-colonial critique. Consequently, the next step is to introduce the *people-centred approach* as the preferential analogous development theory contestation to development as practice. Nothing new if we take into consideration that this same proposition has already been expressed by the OECD in 2020,²⁵ when stating that “many of the most important innovations for development come not from international system, but from those living and working in developing countries around the world.” In this sense, instead of targeting from the North, the main proposal of this alternative approach is what is known as localization: developing countries, and especially local people, should be empowered enough to become agents of their own development, by their individual means or through local organizations.²⁶ Deriving from this premise, development is no longer seen from the agencies’ points of view, but rather from as different views as local people get to be involved in the process. It seeks major social transformations by looking at restoring or enhancing basic human capabilities and freedoms.²⁷ And by this, it pursues the principles of justice, sustainability, and inclusiveness.²⁸

1.2 The multi-stakeholder global partnership (MSP)

Along with the statements expressed above, the IV High-Level Forum on Aid-Effectiveness

²² Horner, R., *op. cit.*, note 4, p. 425.

²³ Banuri, T., “Modernisation and its discontents: a cultural perspective on the theories of development”, Marglin, F., Marglin, S. (eds), *Dominating Knowledge: Development, Culture and Resistance*, Clarendon Press: Oxford, 1990, p. 1-33.

²⁴ Kim, J., Garland, J., *op. cit.* note 9, p.1253.

²⁵ Ramalingam, B., *Innovation for Development Impact: Lessons from the OECD Development Assistance Committee*, [PDF] OECD Publishing, 2020, p.18. Available at: https://read.oecd-ilibrary.org/development/innovation-for-development-impact_a9be77b3-en#page59 [last accessed on 1 March 2021]

²⁶ Thomas, A., *op. cit.*, note 3, p. 783.

²⁷ *Ibid.*

²⁸ Korten, D., “Steps towards people-centred development: vision and strategies”, Heyzer, N., Riker, JV., Quizon, AB. (eds), *Government-NGO Relations in Asia: Prospects and Challenges for People-centred Development*, United Kingdom, Palgrave Macmillan, 1995, pp. 165-189.

(Busan, 2011) is especially remembered as in the context of the economic crisis countries stressed to the maximum the need to develop multi-stakeholder global partnerships (MSP) if they were to achieve the commitments and the goals being set for the upcoming future. Indeed, one year later they created the *Global Partnership for Effective Development Cooperation*,²⁹ as a platform where all the actors could cooperatively contribute to deliver sustainable long-lasting results. The configuration of this platform was detailed in the subsequent II High-Level Meeting of Global Partnership for Effective Development Cooperation (Nairobi, 2016), after approving six inter-related strategic lines of action.³⁰ Firstly enhancing support to effective development cooperation at country level, meaning governments, local NGOs and agencies, private initiatives and civil society. Secondly, a biennial monitoring on the current development cooperation landscape, involving all the actors. Thirdly the sharing of knowledge and scale-up innovative development solutions. Fourthly enhance the private sector inclusion and their resources and experiences. Fifthly learning from different modalities of development, especially those advocated from the South-South cooperation. And last but not least, sixthly, strengthen transparency and accountability throughout the process and among all the actors.

Moreover, the MSP reached a unanimous support after the approval of the UN Sustainable Development Goals (hereinafter: UN SDGs) in 2015. On one side as the UN SDG 17 is exclusively dedicated to encouraging and promoting effective public and public-private and civil society partnerships and on the other side, because the overall achievement of the 2030 Agenda requires all the different sectors and actors to work together in an integrated manner.³¹

Certainly, the multi-stakeholder global partnership is meant to become the mainstream way of designing, managing and implementing innovative perspectives in development cooperation globally, as it most accurately reflects how power, resources, know-how and legitimacy are distributed in the 21st century society. Such multi-stakeholder partnerships, which are inclusive and holistic by nature, are thus necessary if sustainable development wants to be achieved.³²

In this sense, the 2012 *Global Partnership for Effective Development Cooperation*³³ has been endorsed by 161 countries, multilateral institutions like the UNDP and the OECD, bilateral donor agencies, private sector companies, civil society organizations, and other relevant networks and stakeholders at the regional and local level. Concretely, the OECD in 2020

²⁹ United Nations, n.d. *Global Partnership for Effective Development Cooperation (GPEDC) – United Nations Partnerships for SDGs platform*. [online]. Available at: <https://sustainabledevelopment.un.org/partnership/?p=25321> [last accessed on 4 February 2021].

³⁰ GPEDC, 2020. *Nairobi Outcome Document | Global Partnership for Effective Development Cooperation*. [online]. Available at: <https://www.effectivecooperation.org/content/nairobi-outcome-document> [last accessed on 4 February 2021].

³¹ United Nations, n.d. *Multi-stakeholder partnerships & voluntary commitments*. [online]. Sustainable Development Knowledge Platform. Available at: <https://sustainabledevelopment.un.org/sdinaction> [last accessed on 6 February 2021].

³² Overseas Development Institute and Foundation for Development Cooperation, 2003. *Multi-stakeholder partnerships Issue paper*. [PDF]. Kuala Lumpur: Global Knowledge Partnership, p. 2. Available at: <https://cdn.odi.org/media/documents/2117.pdf> [last accessed on 6 February 2021].

³³ United Nations, n.d. *Global Partnership for Effective Development Cooperation (GPEDC) – United Nations Partnerships for SDGs platform*, op cit.

revealed³⁴ that multi-stakeholderism was the way to secure successful innovation in the development field, whether this collaboration was pursuing specific objectives or rather to strengthen in this sense the development ecosystem as a whole. Yet there is a great margin of innovation from the DAC members' point of view, like the promotion of ownership and end user focus, the growing involvement of private sector, entrepreneurs and academia, or the role of technologies. And it is mostly working at the micro-level, for example with the range of efforts to introduce public blockchain technology or mobile technology for development. It is encountering bigger challenges for moving beyond a major larger scale because donors' reticence over new approaches and the inclusion of non-mainstream development actors still persist. Ultimately, the current state of the art is "incremental innovations that maintain the status quo than transformative approaches that disrupt it."³⁵

As a way to overcome such limitations, the UNDP in 2006³⁶ already pointed out that MSP "will only have the desired effect when all parties had the relevant capacities and the desired commitment to engage effectively", suggesting by this a "strong leadership and motivation, a network of conducive formal and informal institution to which to rely upon", and most importantly, "a balance in power relations between stakeholders." In the same vein, in 2016 the OECD³⁷ already defined the engagement of the private sector in many sectors and modalities of development cooperation (capacity development, finance, technical assistance, knowledge sharing, renewable energy, health and education, etc) ranging from informal collaborations to more formalised agreements. Afterwards, with the inclusion and acceptance of the UN SDGs at the global level, in March 2019 the Global Partnership for Effective Development Cooperation approved the "Kampala Principles for Effective Private Sector Engagement through Development Cooperation"³⁸. The five mutually reinforcing principles, which rely on accepted international standards, are set to guide in much more detail the private sector partnerships in development cooperation.

Having exposed the major conceptual approximation to development aid and the limitations associated with it, it comes along to say that there is an urgent need to start shifting towards models that could effectively respond to the challenges and demands of the 21st century by being more economically redistributive, efficient, socially inclusive, profitable, and durable. Therefore, as has been pointed out, the present work suggests that the progressive transformation of the liberal international development field necessarily encompasses the adoption of *global development* as the conceptual scheme, the notion of *people-centred* as

³⁴ OECD, 2020. *Innovation for Development Impact: Lessons from the OECD Development Assistance Committee*. The Development Dimension [online] Paris: OECD Publishing, p.36. Available at: https://read.oecd-ilibrary.org/development/innovation-for-development-impact_a9be77b3-en#page59 [last accessed on 6 February 2021].

³⁵ *Ibid.*

³⁶ Isatou Nije, N., Yocarini, L., 2006. *Multi-stakeholder engagement processes. A UNDP capacity development resource*. [PDF] United Nations Development Programme, p. 4. Available at: http://content-ext.undp.org/aplaws_publications/1463193/Engagement-Processes-cp7.pdf [last accessed on 6 February 2021].

³⁷ OECD, 2016. *Peer learning: Lessons from DAC Members on Effectively Engaging the Private Sector in Development Co-operation*. [PDF] The Development Assistance Committee: Enabling Effective Development. Paris: OECD Publishing. Available at: <https://www.oecd.org/dac/peer-reviews/Highlights-from-a-Peer-Learning-Review.pdf> [last accessed on 7 February 2021].

³⁸ GPEDC, 2019. *Kampala Principles for Effective Private Sector Engagement through Development Cooperation*. [PDF]. Effective Cooperation. Available at: <https://www.effectivecooperation.org/system/files/2019-07/Kampala%20Principles%20-%20final.pdf> [last accessed on 7 February 2021].

the approach, and the multi-stakeholder partnership as the strategy. Given their nature they get to reflect better the demands for more inclusive, democratic-horizontal and *bottom-up* governance; they allow an easier tracking of funds as they shorten the number of intermediaries and thus of committing corruption; and they assure major efficiency holistic outcomes by alienating the sending resources with the receiver preferences or necessities. A suggestion that was already pointed out in the “Report of the Intergovernmental Committee of Experts on Sustainable Development Financing”³⁹ from 2014.

2. Financial development aid

2.1 What is financial development aid

Financial development aid consists in voluntary monetary flows given from one donor to a receiver with the aim of supporting and assisting in its economic, social and political development. It seeks to alleviate systematic challenges, such as poverty and the improvement of living standards, and thus it maintains a long-term vision. At the international level, the development finance system is compounded by progressively more diversified actors, which provide a multiplicity of financing options oriented towards the further development of developing countries.⁴⁰

Nowadays, the main source of financing for development aid in LDCs is still the *Official Development Assistance* (ODA), which in 2014 accounted for nearly the 70% of the total amount of global financial development aid (see Table 1). It is sent by OECD DAC members to other countries figuring in their list of ODA recipients⁴¹ (bilateral aid), or to international development institutions (multilateral aid) through which aid is channeled, like the UN programs, the World Bank and the IMF. The financial aid is then provided by the official agencies of the receiving country and it has a concessional nature. The aid is therefore grants or loans adjudicated with the objective to promote progress and economic development, and they can focus on small local projects or on very huge policies at the national level.⁴² Grants are financial resources provided to developing countries free of interests and with no provision of repayment. And soft loans are financial resources which have to be repaid but with a variable lower interest rate than if borrowed to commercial banks.⁴³ Moreover, ODA

³⁹ United Nations, 2014. *Report of the Intergovernmental Committee of Experts on Sustainable Development Financing*. [PDF] United Nations, pp. 14-16. Available at: <https://www.un.org/esa/ffd/wp-content/uploads/2014/12/ICESDF.pdf> [last accessed on 8 February 2021].

⁴⁰ *Ibid*, p. vii-xii; United Nations, 2015. *Addis Ababa Action Agenda*. [PDF]. New York: United Nations, p. 2. Available at: https://www.un.org/esa/ffd/wp-content/uploads/2015/08/AAAA_Outcome.pdf [last accessed on 29 February 2021]

⁴¹ OECD, n.d. *DAC list of ODA Recipients – OECD* [online]. Paris: OECD Publishing. Available at: <https://www.oecd.org/development/financingsustainabledevelopment/developmentfinancestandards/daclist.htm> [last accessed on 9 February 2021].

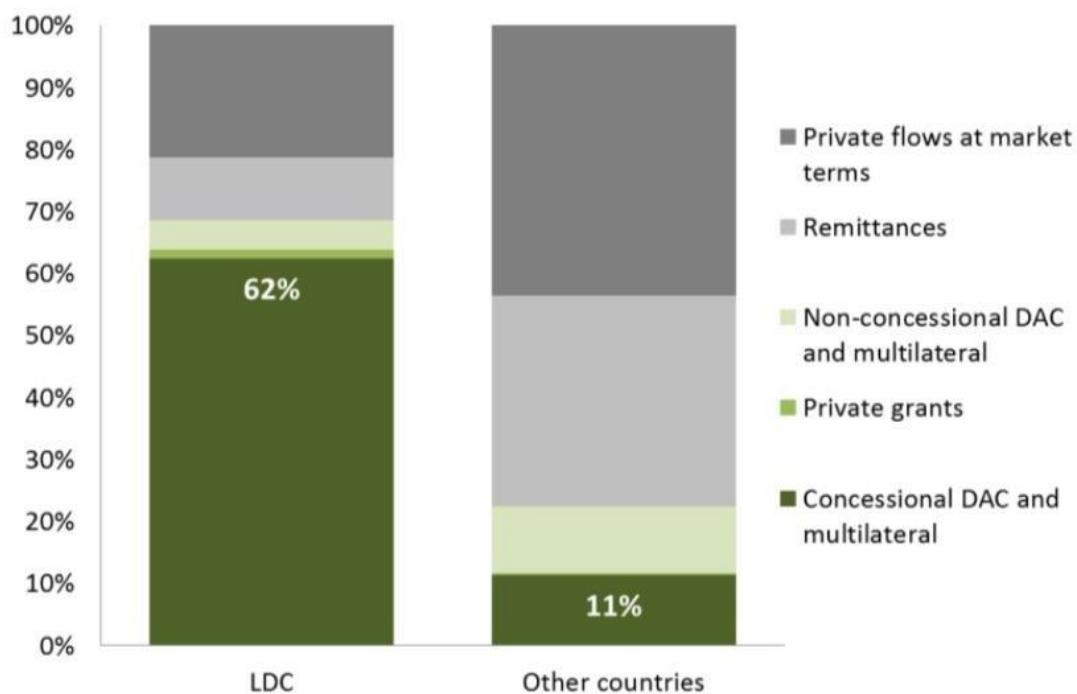
⁴² Agence Française de Développement, n.d. *Development aid: What's it all about?* [online] Available at: <https://www.afd.fr/en/development-aid-whats-it-all-about> [last accessed on 8 February 2021].

⁴³ OECD, 2021. *Official Development Assistance. What is ODA?* [PDF] Paris: OECD Publishing, p.4. Available at: <https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/What-is-ODA.pdf> [last accessed on 14 April 2021]

can also combine private sector instruments, like capital contributions to Development Finance Institutions (DFIs), individual non-concessional loans⁴⁴ and “individual equity investments to private sector companies in developing countries”.⁴⁵

Particularly, ODA plays a central role in the financing of social services in LDCs - over two thirds of their total external finance⁴⁶ since they do not have enough capacity for increasing the mobilization of domestic resources through national savings or tax collection in favor of development purposes. Indeed, ODA enables the creation of a more prosperous environment by creating the dynamics needed for private businesses to flourish.⁴⁷ This is why DAC members are pushing ODA to be better used as a lever to generate private investment and domestic tax revenue in poor countries to help achieve the UN SDGs.⁴⁸

Table 1. Composition of external finance in LDCs compared to other countries



⁴⁴ Differentiated from concessional loans because the former are provided at, or near to, market terms. (OECD, 2015. *Development Co-operation Report 2015: Making Partnerships Effective Coalition for Action*. [PDF] Paris: OECD Publishing. Available at: https://www.oecd-ilibrary.org/development/co-operation-report-2015/glossary_dcr-2015-60-en;jsessionid=-5okYGij7fOqizPkzgggVpYX.ip-10-240-5-186 [last accessed on 22 February 2021]).

⁴⁵ OECD, 2021., *op. cit*, note 44, p. 5

⁴⁶ UNCDP, 2015. *The role of ODA in the new financing for development landscape*. [Pdf]. UNCDP, pp. 1-3. Available at: <https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/CDP-excerpt-2015-2.pdf> [last accessed on 22 February 2021]

⁴⁷ Agence Française de Développement, *op. cit*, note 43.

⁴⁸ OECD, 2019. *Development aid drops in 2018, especially to neediest countries – OECD*. [online]. Available at: <https://www.oecd.org/development/development-aid-drops-in-2018-especially-to-neediest-countries.htm> [last accessed on 22 February 2021]

Source: OECD DAC statistics and World Bank data on remittances⁴⁹

*ODA is compounded by Concessional DAC and Non-concessional DAC

However, since 2013 the ODA bilateral and multilateral flows suffer from a decreasing tendency that has been fluctuating over the years. In addition, they have been vastly criticized because of the consequences that earmarked conditions have in the loss of aid effectiveness,⁵⁰ meaning that donors repeatedly mismatch the countries' needs with the allocated aid because of political or economic interests they might have. In consequence, only a few countries have graduated from the LDC status, while the remaining 48 have ended up in a condemned situation of aid-dependency and over-indebtedness, with high extreme poverty rates and low economic and social opportunities.⁵¹ Finally, UNCDP⁵² also highlighted the negative effects of aid dependency to LDCs, for example on institutions and governance, which previous scholars also found.⁵³ Concretely, that "the more ODA-dependence a state has, the worse their democratic and bureaucratic performance and corruption levels become", because the conflict on aid funds increases, and they feel less accountable for their actions⁵⁴.

In this respect, in the Addis Ababa Action Plan⁵⁵ (AAAA) of 2015, recalling on the Monterrey Consensus⁵⁶ (2002) and the Doha Declaration⁵⁷ (2008), countries committed themselves to reverse this decline, by allocating the 0,7% of GNI to developing countries and between 0,15-0,20% of GNI to LDCs. But the truth is that, even though in 2019 ODA increased in 1,4% compared to 2018, and reached USD 152.8 billion, this amount only

⁴⁹ OECD, 2016. *Taking stock of aid to least developed countries (LDCs)*. [PDF] Paris: OECD Publishing, pp. 1-2. Available at: <https://www.oecd.org/dac/financing-sustainable-development/Taking-stock-of-aid-to-least-developed-countries.pdf> [last accessed on 28 February 2021]

⁵⁰ UNCDP 2015., *op. cit.*, note 47.

⁵¹ OECD 2016., *op. cit.*, note 50.

⁵² UNCDP., *op. cit.*, note 47.

⁵³ Knack, S., "Aid Dependence and the Quality of Governance: Cross-Country Empirical Tests.", *Southern Economic Journal*, Vol. 68, 2001, no. 2, pp. 310-329; Knack, S., "Does Foreign Aid Promote Democracy?", *International Studies Quarterly*, Vol. 48, 2004, no. 1, pp. 251-266; Knack, S., Rahman, A., "Donor fragmentation and Bureaucratic Quality in Aid Recipients", *Journal of Development Economics*, Vol. 83, 2007, no. 1, pp.189-192.

⁵⁴ Charron, N., "Exploring the impact of foreign aid on corruption: has the "anti-corruption movement" been effective?", *The Developing Economies*, Vol. 49, 2011, no. 1, pp. 66-70.

⁵⁵ United Nations, 2015, *op. cit.* note 41, p. 26.

⁵⁶ Celebrated in Mexico in the framework of the International Conference on Financing for Development, it put an emphasis in the use of the public and private financing, and the adoption of a multi-stakeholder approach which included private companies, the civil society and other relevant stakeholders. (United Nations, 2003. *Monterrey Consensus of the International Conference on Financing for Development*. [PDF]. Monterrey: United Nations, pp. 9-10-22. Available at: <https://www.un.org/en/events/pastevents/pdfs/MonterreyConsensus.pdf> [last accessed on 28 February 2021]).

⁵⁷ Celebrated in Qatar in the framework of the Follow-up International Conference on Financing for Development, it reaffirmed the goals and commitments decided in the Monterrey Consensus, and updated on new emerging challenges. (United Nations, 2009. *Doha Declaration on Financing for Development: Outcome Document of the Follow-up International Conference on Financing for Development to Review the Implementation of the Monterrey Consensus*. [PDF]. Doha: United Nations, pp. 5-29. Available at: https://www.un.org/esa/ffd/wp-content/uploads/2014/09/Doha_Declaration_FFD.pdf [last accessed on 28 February 2021]).

represents 0,30% of the combined DAC's GNI.⁵⁸ In the AAAA, countries further stressed the need to increase transparency and monitoring throughout the international development finance system. And by 2016 the OECD released a new international guidance on fighting corruption in ODA financed projects, acknowledging that “development activities were very often accompanied by different forms of corruption, which caused the loss of billions of euros being channeled to private pockets instead of countries in need.”⁵⁹

The perpetuation of this situation is especially alarming if considering that to meet the UN SDGs in 2030 the world should annually increase additionally around \$2.4 trillion in development investment.⁶⁰ And ultimately, culminating with the fact that the COVID-19 has created long-lasting repercussions on developing countries, worsening their financial needs to which DAC donors are expected to respond with more resources.⁶¹

In this context, the 2020 Financing for Sustainable Development Report⁶² points out the need to put more efforts in increasing and improving access to ODA. But also, like the UN SDGs, it claims to mobilize additional financial resources coming from South-South cooperation, Development Financial Institutions (DFIs) and Multilateral Development Banks (MDBs), and other actors from the private sector (NGOs, philanthropists, private social investments) which are becoming more and more important in the international financial development system. The mobilization comes along with a call to improve the appropriateness and effectiveness of development cooperation, by considering the countries' background, priorities and needs, and matching donors' resources to it.

2.2 The international development finance system

In the 21st century the international development financial system has become more complex because more and new actors have proliferated (see Table 2) beyond ODA flows.⁶³ With a public and private nature, they have contributed to increase the range of available financial instruments, and as such, the global contributions to development aid, as demanded the UN SDGs. Nevertheless, all of them have different development paradigms and interests, which has led to the lack of aid coherence and has favoured less overall accountability. As a way of simplifying the system, the critical actors participating in it range from a public nature,

⁵⁸ OECD, 2020. *Aid by DAC members increases in 2019 with more aid to the poorest countries*. [PDF]. Paris: OECD, p. 1. Available at: <https://www.oecd.org/dac/financing-sustainable-development/development-finance-data/ODA-2019-detailed-summary.pdf> [last accessed on 28 February 2021]

⁵⁹ OECD, 2016. *New OECD guidance aims to reduce corruption in aid sector*. [online]. Available at: <https://www.oecd.org/corruption/new-oecd-guidance-aims-to-reduce-corruption-in-aid-sector.htm> [last accessed on 28 February 2021]

⁶⁰ Ingram, G., Mosbacher Jr, R., 2018. *Development finance: Filling today's funding gap*. [online]. Brookings.edu. Available at: <https://www.brookings.edu/research/development-finance-filling-todaysfunding-gap/> [last accessed on 28 February 2021].

⁶¹ OECD 2020, *op cit*, note 59, p. 1.

⁶² United Nations Inter-agency Task Force on Financing for Development, 2021. *Financing for Sustainable Development Report 2020*. [online]. New York: United Nations, p. 82. Available at: https://developmentfinance.un.org/sites/developmentfinance.un.org/files/FSDR_2020.pdf [last accessed on 28 February 2021]

⁶³ Knack, S., Smets, L., “Aid tying and Donor Fragmentation”, *World Development*, Vol. 44, 2013, p. 64

mainly the States and the multilateral international organizations, to a private one, with the growing resources delivered by private philanthropists and the private commercial sector.

2.2.1 The role of the States

States maintain a predominant role in financing for development aid, with a great imbalance in favor of bilateral channels rather than multilateral options. They are the ones in charge of setting international standards and priorities for the other actors to follow, but they cannot be analyzed as a homogeneous group with similar preferences, but rather a very diverse one compounded by the *traditional donors* and the *emerging donors*.

Traditional donors represent the 30 DAC members which deliver ODA flows to developing countries and remain the single largest source of external development finance in LDCs and MICs.⁶⁴ With a reminiscence of the North-South divide mentality, they manage to maintain the monopoly of international financial development cooperation. As for 2019, their main contributor was the United States⁶⁵ (in absolute terms). However, in the last decade *emerging donors* have entered with force into the arena, framing the new “South-South” alternative cooperation scheme, in which the objective of development is linked to obtaining explicit commercial goals. They are expanding in scope, volume and geographical reach, with China being the country with the biggest growing share.⁶⁶

2.2.2 The role of multilateral international organizations

Multilateral international organizations can take a variety of forms, but they all have in common two aspects. Firstly, they mainly rely on country contributions, and for such they are always facing budgets’ vulnerabilities. And secondly, that they can centralize, distribute and better align the different resources with the country needs. However, due to the proliferation of new multilateral entities, the organizations have become more fragmented and opaquer, facing problems of transparency and overlapping mandates, which ultimately once again affect the effectiveness of the aid being delivered and the credibility and legitimacy toward the society.⁶⁷

In 2010, data revealed⁶⁸ that over 200 organizations, funds and trust-funds work in multilateral cooperation, but the aid is basically monopolized by 5 main actors representing the 81% of resources being spent. If we exclude the DAC members, then we have the *UN funds and programs*, that represent approximately a total 10% of the overall international cooperation. Especially important are the UNDP and the UNCDF, which receive public and

⁶⁴ Prizzon, A., Greenhill, R, Mustapha, S., 2016. *An Age of choice for development finance: Evidence from country case studies*. [online]. London: ODI, pp. 3-4. Available at: <https://cdn.odi.org/media/documents/10652.pdf> [last accessed on 28 February 2021]

⁶⁵ OECD, n.d., *op cit.*, note 42.

⁶⁶ UNCTAD, 2020. *Robust and predictable sources of financing for sustainable development*. [online]. Available at: <https://sdgpulse.unctad.org/financing-development/> [last accessed on 28 February 2021]

⁶⁷ United Nations, 2014, *op cit.*, note 40, p. xi

⁶⁸ OECD, 2012, *Multilateral aid report*. [online]. Paris: OECD Publishing, p. 20. Available at: [https://www.oecd.org/dac/aid-architecture/DCD_DAC\(2012\)33_FINAL.pdf](https://www.oecd.org/dac/aid-architecture/DCD_DAC(2012)33_FINAL.pdf) [last accessed on 15 April 2021]

private investment. The latter combines being a development organization and a financial institution, seeking how to develop finance solutions at the subnational level.

The *European Union* represents the largest provider of ODA. It has a very complex and multi-layered financial architecture, receiving public and private investment.⁶⁹

And last but not least, *multilateral development banks*, such as the World Bank at the international level, and regional development banks like European Investment Bank, are also integrated and funded by countries. They deliver loans and grants to governments and the private sector of developing countries, plus technical assistance in implementing and monitoring the funded projects.⁷⁰ The financial aid is concessional when delivered to LDCs, and non-concessional when delivered to MICs governments and their private sector firms, which are the majority. Sometimes MDBs have provided policy-based loans, which mean financing developing governments in exchange of them implementing neoliberal – privatization and de-regulation - policy reforms. They are the proxy to earmarking and tied aid, and have had controversial bad effects in developing countries. They have also suffered from criticisms regarding their accountability avoidance and the lack of transparency. In the AAAA (2015)⁷¹ it is recognized the significant potential of MDBs and other international development banks, but it is also stressed the importance of undertaking internal reforms.

2.2.3 The role of Microfinance institutions (MFIs)

MFIs started to proliferate in the 1980s and especially in the 1990s, depicted as the decade when microfinance started to develop as an industry.⁷² As a way of delivering development aid, their objective was to provide financial services to low-income populations or rural isolated areas in developing countries, which had traditionally been marginalized from formal financial institutions. Initially they gave microloans – small loans at an affordable cost - to individuals and small-businesses in the informal economy which lacked access to traditional credit, from the perspective that it would help people get out of poverty and become self-sufficient. But the delivery of microloans was already being implemented for national governments before. Yet it was Professor Muhammad Yunus who re-shaped the mechanism and created the *Grameen Bank*⁷³ in 1976, which as a community development bank would provide financial help to poor entrepreneurial people in Bangladesh. Its success

⁶⁹ Development Aid, 2020. *European funding architecture: An insight into existing instruments and future changes*. [online] Available at: <https://www.developmentaid.org/#!/news-stream/post/57002/european-funding-architecture-an-insight-into-existing-instruments-and-future-changes> [last accessed on 28 February 2021].

⁷⁰ Development Aid, 2020. *Top multilateral development Banks – an overview*. [online] Available at: <https://www.developmentaid.org/#!/news-stream/post/76903/top-multilateral-development-banks-an-overview> [last accessed on 28 February 2021]

⁷¹ United Nations, 2021. *Multilateral development Banks*. [online] United Nations Inter-agency Task Force on Financing for Development. Available at: <https://developmentfinance.un.org/multilateral-development-banks> [last accessed on 28 February 2021]

⁷² Robinson S., M., 2001. *The Microfinance Revolution: Sustainable Finance for the Poor*. [ebook]. Washington: The World Bank, p. 54. Available at: <https://openknowledge.worldbank.org/bitstream/handle/10986/28956/232500v10REPLA18082134524501PUBLIC1.pdf?sequence=1&isAllowed=y> [last accessed on 28 February 2021].

⁷³ Grameen Bank, 2021. *Grameen Bank – Bank for the Poor*. [online]. Available at: <https://grameenbank.org> [last accessed on 28 February 2021]

became object of attention for national governments and other organizations around the world and has consequentially been widely replicated to other developing countries⁷⁴.

Thus, MFIs sought an inclusive approach in relation to financial systems, which demonstrated to be overall benefiting. However, there was also the other side of the coin, which revealed the limits of microcredit as an anti-poverty tool, arguing that MFIs had been responsible for creating more indebtedness and impoverishment.⁷⁵ In this sense, the international community understood that access to financial services (what is known as *financial inclusion*) was key to assure socio-economic development, and more recently to achieve the UN SDGs. In this sense, the microfinance system grew and was diversified. On one side, more financial tools were made available to better manage their money (microcredits, savings, insurances, transfers, payments), with the purpose of generating income but also to build assets, smooth consumption and manage risks.⁷⁶ And, on the other side, new players and institutions continue to emerge supporting microfinance and financial inclusion. Some of the most relevant are: The Microfinance Network⁷⁷, the UNCDF⁷⁸, NGOs, some commercial banks, credit unions, local cooperatives. Most recently, technology has been introduced in the microfinance industry as a powerful way of expanding access and availability to financial services worldwide. Though its full potential is still being discovered, the World Bank assured in 2018 that technology (internet and mobile phones) could help access financial services to the globally 1.7 billion adults remaining unbanked.⁷⁹

2.2.4 The role of private donors and public-private global funds

Over the last decade the category of private donors has also proliferated into a multiplicity of new actors, which are progressively seen as more essential because they can bring potentially more economic and technical resources needed to overcome the global development challenges. Amongst them, the most significant in terms of contribution are, by excellence, *private philanthropy* and the *private commercial sector*. Regarding the former, in 2018 the OECD⁸⁰ accounted \$7.8 billions of flows – mainly provided by the Bill and Melinda Gates Foundation, whilst the total ODA was \$167.8 billion. Philanthropic actors are that well seen because they have a solid structure flexible enough to adapt to new demands and partnerships. They are usually more focused to fund social issues, especially in the areas

⁷⁴ Cuellar Benavides, J., 2018. *Master Thesis. Blockchain: Decentralization as the Future of Microfinance and Financial Inclusion*. Master Student. Hautes Études Commerciales de Paris.

⁷⁵ *Ibid.*

⁷⁶ CGAP, 2021. *GCAP: Empowering the poor through financial services*. [online]. Available at: <https://www.cgap.org/> [last accessed on 28 February 2021]

⁷⁷ Created in 1993, the MFN is compounded by 25 microfinance world leaders serving over 100 million clients in 23 different countries. Those members are commercial banks, financial institutions and NGOs. <https://microfinancenetwork.org>

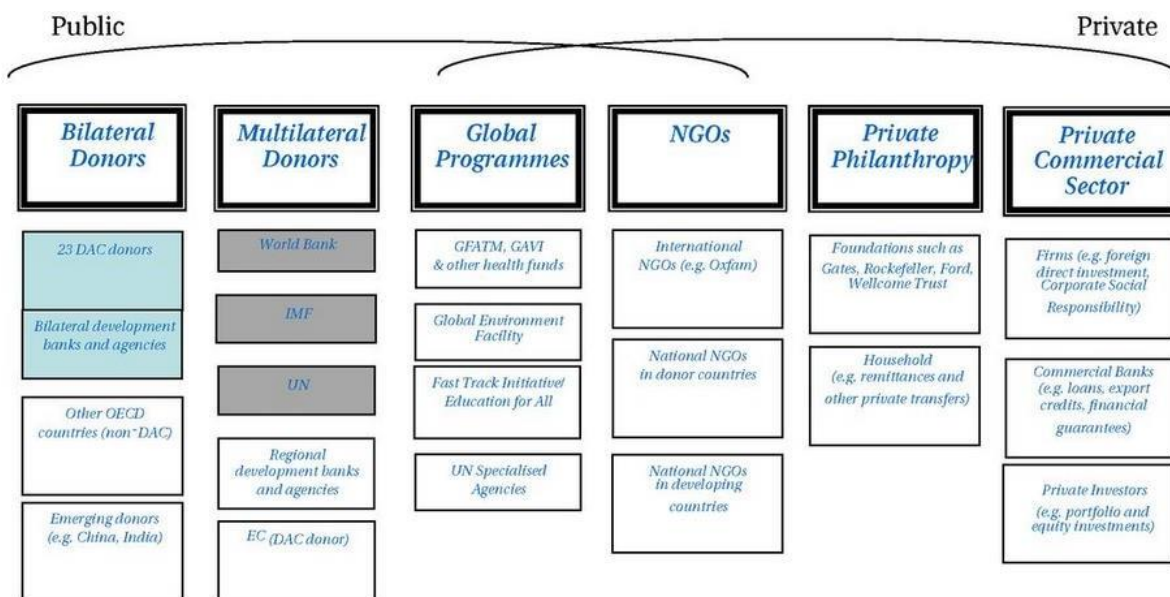
⁷⁸ In 1990s started supporting microcredit institutions, and established as the leader in the field of microfinance. (Microfinance Network, 2021. *Microfinance Network: A global community of leading microfinance players*. [online]. Available at: <https://www.uncdf.org/> [last accessed on 28 February 2021]).

⁷⁹ World Bank, 2018. *Financial Inclusion on the Rise, But Gaps Remain, Global Findex Database Shows*. [online]. Available at: <https://www.worldbank.org/en/news/press-release/2018/04/19/financial-inclusion-on-the-rise-but-gaps-remain-global-findex-database-shows> [last accessed on 28 February 2021]

⁸⁰ OECD, 2019. *The role of philanthropy in financing for development*. [online]. Available at: <https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/beyond-oda-foundations.htm> [last accessed on 28 February 2021]

of education and health. Along with the private commercial sector, both private donors are become more protagonists in the international development system because they are massively introducing new types of disruptive technologies with the commitment of contributing to more ambitious development purposes, e.g. with the use of blockchain or Artificial Intelligence. But, aside from the innovation effervescence, the exponential reliance of development finance to private donors could pose serial threats towards public accounting structures or the democratization of financial development aid. A challenge that this article will try to refute in the subsequent chapters, by arguing, again, for the implementation of a multi-stakeholder development governance as the way of coordinating, securing, and streamlining the delivery of financial development aid.

Table 2. Critical actors of the International Development Finance System



Source: OECD DAC/DCD and OECD Development Centre (2006)⁸¹

2.3 The evolution of financial development aid: the case of microfinance

After World War II and the implementation of the US Marshall Plan in 1947 to recover the devastated European continent, foreign aid in the form of ODA became the main financial instrument for developing international cooperation.⁸² As noted in the previous chapter, ODA is a top-down instrument that donor countries continue to use in a bilateral or multilateral

⁸¹ Cohen, D., Drechsler, D., Jütting, J., Reisen, H., Solignac Lecompte, H., Zimmermann, F., 2007. *Financing Development: Aid and beyond*. Development Centre Perspectives. [online]. Paris: OECD Publishing, p. 12. Available at: https://read.oecd-ilibrary.org/development/financing-development_9789264027596-en#page8 [last accessed on 29 February 2021].

⁸² Lacalle Calderon, M., Alfonso Gil, J., Rico-Garrido, S., “Foreign Aid and Microfinance: A new policy proposal for financing development”, *Iberoamerican Journal of Development Studies*, Vol. 2, 2015, no. 2, p. 108.

way towards developing countries. However, it has not been exempted of criticisms precisely about the donors' interests when delivering the aid and the expected effects on receiving countries. Indeed, the Academia has repeatedly and vastly highlighted the big differences that "exist between the declared objective of any particular policy intervention, and the hidden political agenda drawn up by the main international development institutions and the rich country governments that control these institutions."⁸³ With this context, during the last decades the international community has been immersed in multiple debates about how to improve the efficacy and efficiency of the international development cooperation system.

Alternatively, new financial instruments emerged as a critical response to this macro approach to development that ODA represented. The case of microfinance (MF) has probably been the most notorious and important, because it means the opposite vision and practice to traditional aid development approaches. It is configured as a bottom-up instrument targeting poor individuals and small-businesses in the informal economy which have been prevented from accessing traditional banks. It is an anti-poverty tool based on providing micro financial services directly to local people – most of them loans- taking into consideration their needs and with the objective of generating income, increasing consumption, strengthening small business, creating more jobs and ultimately of creating resilience and boosting the local economy. It has a more sustainable focus because it builds upon local's demands and aims at achieving the world's financial inclusion. An approach to which the international community has been progressively transitioning to, viewing MF as a necessary complement to financial development.⁸⁴ In this sense, since the 1980s and especially the 1990s-decade MF gained the attention of a variety of actors worldwide, shifting into a commercialized de-regulated growing industry.⁸⁵ As MIX Market shows,⁸⁶ in 2017, 762 MFIs were reported. Year over year lending growth remained steady at a rate of 9.8% in the number of active borrowers and 14.3% in the gross loan portfolio. In absolute numbers meant that the number of active borrowers grew to 120 million and the gross loan portfolio stood at \$112 billion.

Nevertheless, the global positive trend of MF cannot escape what many voices have raised in the last years,⁸⁷ and this is the uncertainty about whether or not it has contributed to improve or rather worsen the levels of poverty, debt, growth and development of the receiving countries. Indeed, some of them even point out that in reality the microcredit model has been successful in penetrating the neoliberal political agenda at the local level, "effectively helping developing states to "lock in" in a state of under-development."⁸⁸ Those critiques have served to re-think how microfinance institutions could be transformed in a way they could address multiple market failures and thus effectively provide durable positive impacts to communities. Quasi intuitively, the light has been put in the disruptive role that technology and big tech companies can produce in the financial development aid sector, with the proliferation of digital platforms of peer-to-peer micro-lending.

⁸³ Bateman, M., "The Rise and Fall of Muhamad Yunus and the Microcredit Model", *International Development Studies*, 2014, no. 1, p. 26

⁸⁴ Lacalle Calderon, M., et al. 2015, *op. cit.*, note 83, p. 108.

⁸⁵ Bateman, M., *op. cit.*, note 84, p. 2

⁸⁶ MIX, 2019. *Global Outreach and Financial Performance Benchmark Report 2017-2018*. [online]. FinDev Gateway, pp. 1-2. Available at: https://www.findevgateway.org/sites/default/files/publications/files/mix_market_global_outreach_financial_benchmark_report_2017-2018_1.pdf [last accessed on 1 March 2021]

⁸⁷ Lacalle Calderon, M., et al. 2015, *op. cit.*, note 83, p. 1.

⁸⁸ Bateman, M., *op. cit.*, note 84, p. 18

In the following section it will be argued that the microcredit model acts as an antipoverty tool, moving from its initial purpose with the foundation of the Grameen Bank in Bangladesh to the commercialization of the industry, with examples such as the *Yunus Social Business* and the *Consultative Group to Assist the Poor*. With this it will be assessed to what extent this complementary approach to development represented a failure for the international community, and how new digital platforms offer the opportunity to implement MF's whole transformative potential by bringing efficiency delivery gains.

2.3.1 Microcredit as an antipoverty tool: from the Grameen Bank Model to the commercialization of Microfinance

In 1976 Professor Muhammad Yunus from Bangladesh created a research project on how to design a credit delivery system for the rural and poor people that could help to reduce poverty rates and also stimulate small businesses in the country. Those small loans were meant to represent start-up money at an affordable cost, so with lower interest rates than those of traditional banks, since the target groups never had the opportunity to access banking services. They were always evaluated as high-risk clients due to their lack of guarantors and collateral, and thus thought as unable to save or repay a loan or launch a business that could generate profits.⁸⁹ They were left alone, not even included in the nation's economy, with the only possibility of resorting to different types of "loan sharks" that would lend the money with extreme and predatory attached conditions. In contraposition, the main principle defended by Yunus was that microcredit was more effective than charity in terms of alleviating poverty and development because it was focused on solidarity lending. In trusting the potential of people to become self-employed through their own micro-financed businesses, from the perspective that poverty was not created by poor people, but rather a condition imposed by the system which prevented them from doing what they were capable of. Then, instead of calling those people as "informal sector", what they needed was to be included and countered in the nation's economy as the "micro-entrepreneurial sector" because this is what they were doing, undertaking different activities to survive. With this mindset, Yunus founded the *Grameen Bank* in 1983 as an independent not-for-profit development bank with the purpose of creating social businesses. From his point of view, the banking system should be used for bringing wealth from the top to the bottom, investing in social businesses that could help people progress make people grow u⁹⁰

Microcredit was considered for Yunus a tool for socioeconomic development of the communities, and initially only included the provision of microloans to those lacking of credit. He thought that giving small amounts of money to poor entrepreneurs and small businesses will be the most efficient policy to combat poverty and improve the standards of living of the communities, because it would activate the chain of strengthening small businesses, generating income, increasing consumption and creating more jobs, which ultimately would resort in more resilience and a boost to local economy. In addition, it would

⁸⁹ Lacalle Calderon, M., et al. 2015, *op. cit.*, note 83, p. 115.

⁹⁰ News Berkeley, 2020. "Father of microfinance" Muhammad Yunus talks Student leadership, COVID-19. [online]. Available at: <https://news.berkeley.edu/2020/11/13/father-of-microfinance-muhammad-yunus-talks-student-leadership-covid-19/> [last accessed on 28 February 2021]

improve the levels of nutrition and sanitation, the quality of houses, and prevent families from pulling out children of schools to put them to work.

Among the targeted people, Yunus especially focused on women – obtaining more than 95% of the loans - as they have historically suffered more restrictions to access ordinary credits or even generate incomes due to the patriarchal gender roles. With this, women became more empowered in the society, but also more reliable in the eyes of the lenders. They found women tend to share better the existing resources among the family and allocate it better depending on the priorities, and achieve a 99% of repayment rate.⁹¹

The provisions for the delivery of the loans relied on two types of mechanisms. The first one was to establish a relationship between the bank and the entrepreneurial person. The second was to establish a relationship between the bank and several entrepreneurs which were applying for the loan and other services. In both cases the system was based on trust, without establishing written legal contracts nor formal joint liabilities to assure the repayment. Loans had a sufficient long-term period to enable borrowers to generate the sufficient income after which they would have to make a weekly repayment.

As said, the main challenge of microcredit was to provide loans at an affordable cost, estimated by taking into consideration administrative and transactions costs by the bank (offices, salaries, a personalized service, microfinance operations relatives to loan size, etc). A very difficult task that resulted in high interest and fee rates above 30% on average⁹², which borrowers had to pay along with their own transaction costs such as travelling and negotiating with the bank, acquiring all the required documentation, etc. While MF's operators argued those costs were unavoidable if the objective was to provide financial inclusion to everyone, the reality showed that in most cases those costs turned to be unacceptable for the population. It became a bottleneck when people had to earn at least up to the percentage rate of return if they did not want to end up poorer than they were before accepting the loan. Thus, putting them in jeopardy because it was highly improbable that they could fulfill and actually obtain benefits. This triggered the critique that the high costs of traditional microfinance loans were indeed limiting their effectiveness as a poverty-fighting tool. Which resulted in the controversial debate about whether or not the foundational approach to microcredit was being achieved, if poor people were ending up paying the highest cost.

Notwithstanding this, in the 1980s decade the Grameen model started to gain a lot of attention from the international community because its data showed two things. The first, that microcredit could provide a large-scale outreach profitability.⁹³ And the second, that besides the high-interest rates critique, people still responded with a high repayment rate and a low default of the loans.⁹⁴ In such a vein, many international development agencies and US right wing foundations started to financially support the idea, attracted by the fusion between capitalism and social responsibility, as well as by the relationship that microcredit could

⁹¹ Harvard Business Review, 2012. *Muhammad Yunus*. [online] Harvard Business Review. Available at: <https://hbr.org/2012/12/muhammad-yunus> [last accessed on 4 February 2021]

⁹² MacFarquhar, N. 2010. *Banks Making Big Profits From Tiny Loans*. [online]. Available at: <https://www.nytimes.com/2010/04/14/world/14microfinance.html?pagewanted=all> [last accessed on 8 February 2021]

⁹³ The ability to reach poor and isolated people. Robinson S., M., 2001. *op. cit.*, note 73, p. 54

⁹⁴ Karlan, D., Mann, r., Kendall, J., Pande, R., Suri, T., Zinman, J., 2016. *Making Microfinance More Effective*. [online]. Available at: <https://hbr.org/2016/10/making-microfinance-more-effective> [last accessed on 4 February 2021]

mean for development. Then many and multiple models of microcredit institutions started to emerge and expand worldwide, serving diverse needs to different types of population.

During the 1980s and the 1990s MF was inevitably starting to develop as an industry, but some fundamental practices needed to be changed in order to achieve its full potential. Up to this point, the Grameen Bank and other microcredit institutions relied mostly upon subsidies from external development agencies and national governments.⁹⁵ But then international development policies also got affected by the neoliberal context, and the microcredit model suffered a radical transformation, shifting from relying to subsidies to a market-driven orientation. Under the USAID domination as the world's most important international development agency, this meant a reorientation towards the commercialization and de-regulation of the microcredit idea, from a not-for-profit work towards a financially self-sustainable for-profit model.⁹⁶ In such a fashion, at that time the UNCDF also started supporting microcredit institutions, establishing itself as the leader in the field of MF. As an autonomous voluntary funded UN organization affiliated with the UNDP, it has always worked for the poor in the 46 least developed countries. Indeed, it was established in 1966 already with the purpose of assisting those countries in their process of development by the means of supplementing existing sources of capital assistance with grants and loans.⁹⁷

Bolivia became the first country in which this neoliberal microcredit model was hugely implemented⁹⁸ with the creation of the microfinance bank *BancoSol* in 1993. Other important examples are *Compartamos Banco*, created in Mexico in 1990 and nowadays the largest microfinance bank in Latin America or the *Equity Bank* created in Kenya in 1984 shifting from a microfinance to the commercial largest bank in Africa. On the contrary, other MFI institutions managed to continue under their own initial not-for-profit orientation. Both best examples are from Bangladesh, being the first the same Grameen Bank, which started to get most of its funding from the central bank of Bangladesh, and the *BRAC*, and NGO created in 1972 and one of the largest MF providers in the world.

At the beginning of the 2000s the Microfinance Industry (MFI) grew and spread around the world with the purpose of becoming a consolidated commercial sector. It was, indeed, the international development community's most generously funded and supposedly most effective anti-poverty intervention.⁹⁹ Their role was even more important since poor population was also increasing and they were to satisfy the unmet demand on a larger scale. However, in order for this to be possible the MFI started to understand that a new paradigm was needed. New principles and standards were to be applied to tackle institutional inefficiencies and better adjust to the different needs of the people. In fact, strong evidence¹⁰⁰ was starting to come again stressing the limits and ineffectiveness of microcredit as an anti-poverty tool. Concretely, it pointed that microcredit did not only fail to increase borrowers' income but rather drove them to a debt trap.¹⁰¹ As the succeeding ratio for those kinds of

⁹⁵ Bateman, M., *op. cit.*, note 84, p. 5

⁹⁶ *Ibid.*

⁹⁷ UNCDF, 2021. *History – UN Capital Development Fund (UNCDF)*. [online]. Available at: <https://www.uncdf.org/history> [last accessed on 17 February 2021]

⁹⁸ Bateman, M., *op. cit.*, note 84, p. 5

⁹⁹ *Ibid.*, p. 3

¹⁰⁰ *Ibid.*, p. 24; Roodman, D., 2012. *Due Dilligence*. Washington, D.C: Centre for Global Development; Barder, O., 2021. *Aid Effectiveness: Being Clear about Objectives*. [Blog]. CGAP, Available at: <https://www.cgap.org/blog/aid-effectiveness-being-clear-about-objectives> [last accessed on 17 February 2021]

¹⁰¹ Bateman, M., *op. cit.*, note 84, p. 7

small businesses was highly uncertain, people in most cases used the loans for consumption, sometimes acquiring more than one to other companies. Then, microcredit also failed in its empowerment task and in its objective of improving overall living standards, especially the better levels of nutrition and school enrollment.

In response, in 2004 the Consultative Group to Assist the Poor¹⁰² (CGAP) developed the “Key Principles of Microfinance”¹⁰³ aimed at addressing how microfinance could become a powerful tool to combat poverty. Among those, they accepted the limitations of the loans by recognizing that poor households also needed access to different financial services when, for example, they were without income or could not repay. Therefore, they introduced loans, savings, insurance and money transfer services. Microloans would continue the task of generating income and building new assets in the form of small-businesses. Savings accounts would help them to balance their consumption and also to better cope with risks. And insurance would allow them to keep the businesses’ earning in the event of illness, medical expenses, or natural disasters.¹⁰⁴

However, besides all the intended efforts to improve the MF model, when the global financial crisis started to become real in 2007, the attacks to it became even harder because at the macro level it continued to prove that on average it was not having a positive impact in alleviating poverty. Nor it was increasing the levels of income and net employment.¹⁰⁵ In a way, the government of the UK conducted a systematic review and found that all the previous positive evidence of microcredit in developing countries could not be reliable because it has always been conducted by interested parties.¹⁰⁶ Critiques were now more profound, attacking the fundamental idea for which the contemporary microcredit model was no longer a bottom-up redistributive mechanism challenging the political and economic system, but rather it was just “legitimizing and perpetuating it”.¹⁰⁷ The first argument to support it was the fact of constructing a narrative and a practice in which the only way out of poverty and development was by starting small businesses. Following the neoliberal individualist logic for which everyone could be capable of doing it and fortunate enough of benefiting from it. And yet this represented a fundamental misunderstanding of some social and economic social development principles. The first, the assumption that in these poor communities there would be enough spending power thanks to which the increasing supply would match with the demand. Put it in other words, it was believed that “local supply of goods and services would create its own demand to absorb it,” a failed assumption commonly made in anti-poverty and development actions.¹⁰⁸

In the microcredit case, it enhanced the creation of massive supply of basic goods and services at a low price, but did not consider how income would be generated to allow the

¹⁰² Global Partnership of 30 leading public and private development organisations, including bilateral and multilateral agencies, private foundations and development finance institutions. It encompasses the most important donors in the development field. It is administered by the World Bank as a trustee, but it has a separate governance and funding.

¹⁰³ GCAP, 2004. *Key Principles on Microfinance*. [PDF]. Washington: CGAP, pp. 1-2. Available at: <https://www.cgap.org/sites/default/files/researches/documents/CGAP-Consensus-Guidelines-Key-Principles-of-Microfinance-Jan-2004.pdf> [last accessed on 1 March 2021]

¹⁰⁴ Lacalle Calderon, M., et al. 2015, *op. cit.*, note 83, p. 116.

¹⁰⁵ *Ibid*, p. 9

¹⁰⁶ *Ibid*, p. 7

¹⁰⁷ *Ibid*, p. 4

¹⁰⁸ *Ibid*, p. 8

people to actually purchase the items. In fact, the expanding unnecessary supply of old and new items increased the competitiveness but also reduced the profits per capita of these small-business owners, therefore increasing the risk of failure. A situation that could easily condemn more people into situations of more poverty and insecurity, because in order to repay the loan they would be forced to use savings, reduce consumption, sell familiar assets, etc. Moreover, the creation of small businesses allowed larger businesses to take advantage of their vulnerability, by purchasing their items at a lower cost, knowing they were not unionized, they could not pay taxes, neither able to respect health or labor legislation. This contributed to exacerbate inequalities and disparities among the population. And finally, the commercialization and de-regulation process that affected the microcredit model also included a severe privatization round of the most basic services (health care, water and education) in developing countries. Thus, poor people were also being paid (accessing to microloans) to secure their access and consumption of those goods and services.

This negative impact on the poor came along with exposures of malpractices in the MFI, with different actors at the top of the industry – owners, individual donors, managers, etc - having gained spectacular profits at the expenses of over-expanding the businesses and over-indebting the people. It was a situation of “accumulation by dispossession”¹⁰⁹ that paradoxically had gained the positive attention and the social legitimacy of the international development community as a whole. The African continent would be a great example for this precise situation, because while it still holds the highest rates of poverty in the world it is the place with more microenterprises and self-employed people. Microcredit continues to arrive from the developed world, but it is being wrongly directed. The same happened in Bangladesh, where the poverty has been reduced but microcredit has not had any direct effect in it, but rather has inflicted a lot of microcredit borrowers into high levels of indebtedness.¹¹⁰ On the contrary, in Latin America the same Inter-American Development Bank admitted that the market-driven microcredit model introduced in the 1990s did not serve any of its purposes. Poverty and inequality raised because a lot of businesses were enhanced but none of them guaranteeing enough productivity rates to produce benefits.

In this context of Microfinance seeming to be in real threat, the MFI had to find a way to recover its legitimacy and continuing operating in the field. In such a vein, they redefined it through the broader concept of “financial inclusion” to mean that providing poor people access to different services of the financial system – essentially by having a bank account, through which to save, pay and transfer by the mobile phone, and to access credit savings, insurance - will help them develop and get out of poverty.¹¹¹ Another assumption that can be thought as going in the wrong direction, putting a lot of effort in the financial sector rather than providing these people with the basic social services and infrastructures needed to overcome inequalities and generate income.¹¹² Nevertheless, many studies made by the World Bank and others in multiple parts of the world¹¹³ found out a “positive relation

¹⁰⁹ Harvey, D., 2006. *A Brief History of Neoliberalism*. Oxford: Oxford University Press

¹¹⁰ World Bank, 2013. *Bangladesh Poverty Assessment: A Decade of Progress in Reducing Poverty, 2000-2010*. [online]. Available at: <https://www.worldbank.org/en/news/feature/2013/06/20/bangladesh-poverty-assessment-a-decade-of-progress-in-reducing-poverty-2000-2010> [last accessed on 17 March 2021]

¹¹¹ World Bank, 2012. *Global Financial Development Report 2013: Rethinking the Role of the State in Finance*. [online]. Washington: World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/11848> [last accessed on 25 February 2021]; Cuellar Benavides, J., 2018. *op. cit.*, note 75.

¹¹² Bateman, M., *op. cit.*, note 84, p. 25

¹¹³ Cuellar Benavides, J., 2018. *op. cit.*, note 75.

between the Financial Depth (the ratio of private credit to GDP) and the change in the share of the lowest quintile in total national expendable income,” which implies that providing major access to financial services contributes to a general economic growth and also to raise the levels of income of those citizens with less economic resources.

Related to this, Professor Yunus did recognize the bad effects that the commercialization and de-regulation movement could have caused to people in some places of the world, but still maintained its position in favor of it as a good mechanism to correct unemployment and poverty after the global financial crisis. Indeed, in 2011 he founded the *Yunus Social Business* (YSB),¹¹⁴ a social business fund focused at financing and investing in strong social business in developing countries dedicated to reduce poverty and enhance development. However, they can only apply for financing or investment those businesses that can declare themselves as solid – creating jobs, generating income and creating a positive impact into society – and thus can be clearly scalable,¹¹⁵ that contribute to the achievement of the UN SDGs can actually apply for financing. In this sense, this low-cost capital is the middle option for those social businesses that cannot access commercial banks, because they are bigger than they need, nor microcredit because it is too small. In Yunus words, “it is a new and more humane form of capitalism.”¹¹⁶

With this rapid review of the evolution of microcredit from 1970s onwards, it would be fair to say that its success as an anti-poverty tool in developing countries remains uncertain. Data shows the model has been replicated to more than 43 countries in the world, and according to MIX Market,¹¹⁷ in 2017, 762 MFIs were reported. Year over year lending growth remained steady at a rate of 9.8% in the number of active borrowers and 14.3% in the gross loan portfolio. In absolute numbers meant that the number of active borrowers grew to 120 million and the gross loan portfolio stood at \$112 billion. In fact, in MF we can also identify the macro-micro paradox.¹¹⁸ Meaning that while there is no solid evidence of the positive impact that MF has produced in the macroeconomic activity, at the micro level we can either find positive, neutral and negative results. The positive effects have been observed when the MFIs have been well-managed¹¹⁹ – with sustainable procedures both for the MFIs, the donors, the borrowers and the communities -, being able to generate, in this order: a tremendous increase in the number of saving accounts, which in turn has smoothed consumption among the poor and has allowed them to start new businesses. Automatically those new businesses have created new jobs but at the same time have not negatively affected the poor population which already had a job.¹²⁰ The increase in the occupation rate has facilitated a durable consumption, and also has allowed more families to access education and better health. Finally, social capital has emerged among those MF clients, as a result of sharing experiences, generating knowledge, helping each other, etc.

¹¹⁴ Yunus Social Business, 2021. *Yunus Social Business*. [online] Yunus Social Business. Available at: www.yunusfb.com/blog/tag/Global+Social+Business+Summit [last accessed on 2 March 2021]

¹¹⁵ Term used to refer when a business grows, by making more money and increasing its market share faster than its costs.

¹¹⁶ Bateman, M., *op. cit.*, note 84, p. 22; Yunus, M., 2007. *Creating a world without poverty: Social business and the future of capitalism*. New York: Public Affairs; Yunus, M., 2010. *Building Social Business: The New Kind of Capitalism that Serves Humanity's Most Pressing Needs*. New York: Public Affairs

¹¹⁷ MIX, 2019. *op. cit.*, note 87

¹¹⁸ Lacalle Calderon, M., et al. 2015, *op. cit.*, note 83, p. 119.

¹¹⁹ *Ibid.*

¹²⁰ Cuellar Benavides, J., 2018. *op. cit.*, note 75.

Nevertheless, to affirm that the contribution of microcredit as anti-poverty tool remains doubtful does not imply that this complementary approach¹²¹ to development has meant a failure for the international community. Indeed, what this review has served is to acknowledge that its main problem derives or from its theoretical approach or from its practical way of operating. Both aspects can turn microcredit and MF into a failed policy, but if oriented and managed adequately it can have a great potential to improve the effectiveness and efficiency of development. Moreover, it can decisively contribute to meet the 17 UN SDGs,¹²² as it is estimated that an increasing of \$2,5 trillion of funding will be needed to achieve them by 2030.¹²³ It is, thus, a matter of formulating sustainable MF strategies that will produce more benefits to the developing societies, whilst reducing the costs both for the lender and the borrower side. New financial strategies that can only be well-implemented if they identify and overcome the underlying market failures and conditions of every developing country context. Nevertheless, what this historic review helps us to understand is that financial strategies are per se complementary to development, meaning that other actions, mainly through public interventions, will be needed to address those market failures at the same time.¹²⁴

In this vein, the present work proposes to implement a bottom-up approach to MF, in which financial options are not a one-size-fits-all¹²⁵ but rather adapted to every borrower' situation. Precisely, this new feature emerges from the criticism made to microcredit saying that was in a way patronized because it did not leverage enough all the aspects surrounding the borrower nor its needs. What happened then was a situation of information asymmetry between the supply-lender side and the demand-consumer side, a very common condition for market failure. The supply-lender side had to manage two evident scenarios, the adverse selection and the moral hazard. The first meant that lenders were in trouble to identify which clients would be more or less risky because they were not engaging in its capabilities to return. The second meant that lenders were also in trouble to know how much effort and care clients would need to return or to avoid more losses. On the other side, the consumers were in a clear situation of vulnerability. They were in need for money and thus they accepted to access MF services, even if in some cases they might not have the resources nor the knowledge to understand the different types of products, the conditions, let alone to contrast if those options were adequate enough according to their situation. Somewhat this was largely triggered after the commercialization and de-regulation of the microcredit model. Also, some of those consumers could face incomplete property rights, basically difficulties in having the

¹²¹ Referring to MF as a complementary approach derives from the fact that, contrary to what Yunus and neoliberal elites thought at that time, the capacity to combat poverty and to develop in a bigger scale does not rely on the individuals nor on its entrepreneurial personality. Rather, it is achieved when massive public investment is being allocated to transform and improve social basic infrastructures from which to provide the population with the basic social needs. The guaranteed provision of those social needs is what would rise the living standards of the population, contributing to decrease the levels of inequality among the population.

¹²² GCAP, 2004. *op cit.*, note 104.

¹²³ United Nations, 2019. *Citing \$2,5 Trillion Annual Financing Gap during SDG Business Forum Event, Deputy Secretary-General Says Poverty Falling Too Slowly*. [online]. Available at: <https://www.un.org/press/en/2019/dsgsm1340.doc.htm> [last accessed on 2 March 2021]

¹²⁴ Karlan, D., Mann, R., Kendall, J., Pande, R., Suri, T., Zinman, J., 2016. *op cit.*, note 95.

¹²⁵ Karlan D., Kendall, J., Mann, R., Pande, R., Suri, T., Zinman, J., 2016. *Research and impacts of digital financial services*. NBER Working Paper Series. [online]. Cambridge: National Bureau of Economic Research, p. 1. Available at: https://www.nber.org/system/files/working_papers/w22633/w22633.pdf [last accessed on 15 January 2021]

whole control over its properties and assets, like many women continue to face, which can in turn reduce their access to financial services but also their capacity to return them.

Additionally, another market failure condition that was identified was that high transaction costs were contributing to major inefficiencies of the microcredit model. For the consumer, those costs mainly derived from the fact that banks were sometimes located far away from rural populations, they were offering poor services and long-wait times, they were requiring different documents and to meet specific financial or economic criteria, or even high-withdrawal fees. Indeed, clients need extensive monitoring and interaction with loan officers in order to benefit from and repay their loans. So basically, the three major barriers that the poor faced when trying to access MF services were the time, the cost, and the difficulty to obtain an identity and to continue engaged in the whole process up until the whole return of the credit.¹²⁶

As argued previously, the economic theory suggests that correcting those market failures is the way to boost the financial market's full potential, in developing countries too. Then, if we want the MF to be more effective and efficient, the sustainable strategies need to facilitate the following aspects:¹²⁷

- 1) Symmetric and free information flows for both sides
- 2) Rational choices from both sides according to their capacities
- 3) The enforcement and protection of rights from both sides
- 4) Low entry barriers and transaction costs for the consumers
- 5) More transparency and good governance

Quasi intuitively, recent evidence is pointing that those sustainable strategies need to take into consideration the disruptive potential technology can have in the development field, and particular in the financial development sector. Concretely, digital platforms can improve the effectivity and efficiency of MF services¹²⁸ because they can tackle all those market failures largely present in developing countries, and do it by moving a bit closer to the bottom-up approach suggested before. Firstly, they reduce transaction costs, since all the procedures can be made digitally no matter where the person is¹²⁹ and secondly, information asymmetries reduce because both sides can be in constant contact. This, in turn, favors a closer relationship between the lender and consumer, which is directly associated with higher repayment rates. From the lenders' side the adverse selection happens digitally following certain algorithms that calculate the needs and the concrete situation of the borrower. From the borrowers' side, digital platforms can introduce simplified on-time guides to explain all the options and procedures available to obtain the products that best fit according to their needs and particular situations. Thirdly, digital platforms can facilitate innovations in product and service design according to the targeted population. And fourthly, digital platforms can broaden the reach of financial products, especially to remote areas which otherwise would experiment serious difficulties to reach a traditional bank, as it is the problem nowadays. Indeed, while 1.7 billion adults in developing countries remain unbanked¹³⁰ - 56% of which are women-, many of them do have mobile phones and internet connectivity (see Table 3). Thus, as said by the

¹²⁶ *Ibid*, p. 5

¹²⁷ Karlan, D., Mann, R., Kendall, J., Pande, R., Suri, T., Zinman, J., 2016. *op cit.*, note 95.

¹²⁸ Cuellar Benavides, J., 2018. *op. cit.*, note 75.

¹²⁹ Karlan, D., Mann, R., Kendall, J., Pande, R., Suri, T., Zinman, J., 2016. *op cit.*, note 126, p. 5

¹³⁰ World Bank, 2018, *op cit.*, note 80.

World Bank in 2018 and the *Consultative Group to Assist the Poor*, technology could help to bring all these unbanked people the financial services they need, through mobile money accounts or app financial accounts.¹³¹

In this sense, digital platforms offer major efficiency gain possibilities because they can facilitate the alignment between the MF models, which can be private and public, and those services which would more effectively benefit the poor. Basically because the latter would be more empowered, would have a major capacity to decide the financial services that wants, and this will give lenders major incentives to adjust their preferences with those expressed needs. Also, digital platforms reduce the possibility of corruption when transferring money¹³² and can increase the scalability of financial services because the revenues that poor households might obtain from it would be lower than the costs.¹³³

The emergence of digital platforms offering financial services is a phenomenon that began in the late 2000s, in response to the technological boom. Its rapid and constant advancement offers infinite new business opportunities, like the FinTech companies represent. These are different types of technological companies – meaning big, small or even startups – devoted to offer financial services to those in need in developing countries, with the possibility of reaching far more people than traditional providers can: banks (public and private), MFIs, credit unions and cooperatives.¹³⁴ These new private actors have shown the positive impact that digital platforms and technologies can produce in the financial development arena. A contribution that other actors have recognized as important and necessary, to the extent that they have progressively incorporated the idea of digital financial inclusion.¹³⁵

¹³¹ CGAP, 2021. *Frequently Asked Questions about Financial inclusion*. [online]. CGAP. Available at: <https://www.cgap.org/about/faq> [last accessed on 25 March 2021]

¹³² *Ibid*

¹³³ UNCDF, 2021. *Strategic Framework 2018-2021 – UN Capital Development Fund (UNCDF)*. [online]. Available at: <https://www.uncdf.org/article/3207/strategic-framework-2018-21> [last accessed on 3 February 2021]

¹³⁴ CGAP, 2021. *op. cit.*, note 132.

¹³⁵ UNCDF, 2021. *Inclusive Digital Economies – UN Capital Development Fund (UNCDF)*. [online]. Available at: <https://www.uncdf.org/inclusive-digital-economies> [last accessed on 3 February 2021]

Table 3: The number of people remaining unbanked in the world in 2017(USD, millions)



Source: Global Findex Database¹³⁶

Note: Data are not displayed for economies where the share of adults without an account is 5 percent or less.

2.3.2 Digital finance services can bring efficiency delivery gains

During the 2000s decade internet connection and mobile phones started to expand in developing countries as a central part of international and local development policies, and also of initiatives coming from private NGOs and for-profit companies.¹³⁷ It was thought that “mobile technology could serve as key accelerator and ensure no one was left behind in the development process.”¹³⁸ As part of it, small scale digital financial programs started to be tested with the aim of fostering the financial inclusion of all those citizens in developing countries which still remained unbanked. In this sense, digital financial inclusion was not a final goal per se, but rather a very effective mean for poor households to engage, participate and benefit from the multiple services in the formal local economy. Moreover, those benefits could be achieved more efficiently because digital platforms had the possibility of reducing many market failures that prevented many people from leaving the informal economy. Such potential was based on its own architecture, which could facilitate access to infinite types of services and allow a direct and constant contact with those services and people. But most importantly, its feasibility relied on the effort of financial operators to understand every particular country context, its market, the socioeconomic structure, and the role local agents could play in boosting the digital financial inclusion.

¹³⁶ World Bank, 2018, *op cit.*, note 80.

¹³⁷ UNCDF, 2019. *Leaving no one behind in the digital era* [PDF]. pp. 1-6. Available at: <https://www.uncdf.org/article/4931/global-strategy-leaving-no-one-behind-in-the-digital-era> [last accessed on 8 March 2021]

¹³⁸ *Ibid.*

Since then, public and private stakeholders have worked intensively in more developing countries to develop multiple sources of finance using different types of technology, following the commitments expressed in the AAAA and 2030 Agenda of 2015. Among those, the ones falling within the scope of this work are: the UNCDF, the traditional MicroFinance Institutions, and the FinTech companies. Both three have been selected because they represent the current multi-stakeholder partnership found in many financial development interventions. Each of them provides different resources and capacities, contributing to meet unmet demands and closing existing development gaps between the population.

The UNCDF is a critical actor in the field of financial inclusion, as revealed by its two-decades experience in expanding inclusive financial markets and local development finance systems.¹³⁹ Through digital platforms, it has managed to reach 18 million people using mobile financial services in 28 developing countries in East and West Africa, Asia and the Pacific. This country-presence has given UNCDF experts a broader knowledge on how to effectively expand digital finance in all those developing countries. As a development organization and financial institution, UNCDF uses ODA to provide investment capital in the form of grants, soft loans and credit enhancements, and technical assistance to both the public (local governments) and the private sector (domestic banks). It acts mainly at the subnational level, as an early stage investor to de-risk financial opportunities that can be leveraged by institutional financial partners and private sector investors.¹⁴⁰

The digitalization of financial development aid has been part of formal UNDP Strategic Plans, especially in the last ones of 2014-2017 and 2018-2021. In both it is targeted the achievement of UN SDGs number 1 (“No poverty”) and number 17 (“Partnership for the Goals”) in the 46 LDCs, since it is recognized that most of the money that goes to LDCs often concentrates in specific countries and sectors, basically extractive industries, real estate or narrow infrastructure corridors.¹⁴¹ The way that UNCDF plans to achieve innovative finance solutions is through three strategies. The first is one of financial inclusion making use of digital and other new technologies. The second one is focused on the local development finance to drive public and private funding towards the expansion of local and sustainable economies. The third, the LDCs investment platform to support local infrastructures and businesses in the last mile. These are all those “niche market opportunities where finance is not yet flowing predictably because of real and perceived risk; where there is a potential to mobilize additional capital flows; and where there is scope to achieve significant development results.”¹⁴² Those three strategies are approached in collaboration with public and private entities from around the world, like the *Better than Cash Alliance*.¹⁴³ It is a UN partnership of 77 members, including 32 governments, 28 international organizations, 8 companies and 9 resources partners. It is aimed at accelerating the transition of developing countries’ economies from cash to digitally sustainable. The process to digital

¹³⁹ UNCDF, 2021., *op. cit.*, note 134

¹⁴⁰ UNCDF, 2019., *op. cit.*, note 138

¹⁴¹ UNCDF, 2021., *op. cit.*, note 134

¹⁴² UNCDF, 2021. *Least Developed Countries Investment Platform*. [online]. Available at: <https://www.uncdf.org/least-developed-countries-investment-platform> [last accessed on 20 February 2021]

¹⁴³ Better than Cash Alliance, 2021. [online]. Available at: <https://www.betterthancash.org/#> [last accessed on 20 February 2021]

finance services brings with cost savings, increases transparency and major efficiency delivery gains.¹⁴⁴

Traditional MicroFinance institutions and mainstream banks are also engaged in the idea of facilitating the financial inclusion and financial payments through the development of digital ecosystems in developing countries.¹⁴⁵ Indeed, technological innovation in the microfinance industry is inevitable, to the point that MFIs will be obliged to digitalize either their information gathering processes and/or their delivery channels if they want to continue being competitive and survive.¹⁴⁶ They serve a strategic role because of their investment possibilities, their vast network of local contacts and clients, and their extensive knowledge of local economies. This is why UNCDF also engages with them using a calibrated and risk-informed mix of instruments to develop finance solutions in LDCs. However, MFIs in particular might face important challenges when substituting face-to-face human interactions, because the building of trust has been the main aspect making MF to succeed in developing countries. This was somewhat experienced by M-Pesa, a popular payment and microcredit system through mobile phones invented in Kenya in 2007.¹⁴⁷ The level of success has been that it is used by 96% of the rural population, it has lifted an estimate of 2% of the country's households and it has empowered 185 thousand women to move into SMEs¹⁴⁸.

As new emerging actors, private fintech companies and foundations are becoming key players when accessing more finance for local development. They have plenty of economic and technical resources that are progressively being devoted to prove how new types of disruptive technologies can make a change in advancing financial inclusion and development. However, there is no consensus on which kind of technology and architecture could bring the best results for MicroFinance industry.¹⁴⁹ Because of this, it felt interesting to highlight the case of the *peer-to-peer digital platforms*,¹⁵⁰ alternative financial services created by private companies to expand the availability of microcredit to the micro-entrepreneurs in the developing world. The difference from MFI is that, in this case, the lenders are not institutions but rather individual investors from all over the world, who can choose to which borrowers to lend. As an online service, those platforms match lenders with borrowers at a lower cost than MFIs and traditional banks would do. For the borrower, interest rates are lower, set by the competing lenders or by the intermediary company. And for the lender, low entry investment amounts are required. Moreover, those platforms offer a great opportunity to invest in socially and economically transformative projects in developing countries, and to do it in a conscious way, by keeping informed of the borrowers' evolution.

¹⁴⁴ UNCDF, 2021., *op. cit.*, note 134

¹⁴⁵ *Ibid.*

¹⁴⁶ Baldeh, A, de la Peña, B., n.d. *When microfinance goes digital: opportunities, challenges and dangers for microfinance institutions and their clients – Progreso* [online]. Microfinanzas BBVA. Available at: <http://www.fundacionmicrofinanzasbbva.org/revistaprogreso/en/when-microfinance-goes-digital-opportunities-challenges-and-dangers-for-microfinance-institutions-and-their-clients/> [last accessed on 1 March 2021]

¹⁴⁷ *Ibid.*

¹⁴⁸ Small and Medium Enterprises. (Cuellar Benavides, J., 2018. *op. cit.*, note 75).

¹⁴⁹ Cuellar Benavides, J., 2018. *op. cit.*, note 75.

¹⁵⁰ Crowdfunding platforms, 2021. *Best P2P Lending Platforms | Peer to Peer Investing*. [online]. P2P Lending | Crowdfunding. Available at: <https://crowdfunding-platforms.com/> [last accessed on 27 March 2021]

There are many examples of peer-to-peer digital platforms, within which have been selected the case of Zidisha and Kiva. *Zidisha*¹⁵¹ is a US micro-lending community, founded by Julia Kurnia in 2009, after seeing the high operational costs that borrowers in developing countries were experimenting with traditional micro-lenders. It became the first micro-lending service to connect lenders and borrowers – which post the projects by themselves - internationally without a MFI as intermediary. Lenders can fund borrowers to enable them develop their businesses, and whilst repaying the loan, borrowers can share updates about their evolution. Indeed, Zidisha has managed to offer the lowest cost for the borrowers to access microloans. They are below 10%, and include the service fee of 5% for each loan raised – which serves to cover money transfer costs - as well as the interest rates paid out to lenders. In this scenario borrowers can retain more profits, making it less probable to end up in a situation of over indebtedness. Which is to say, this type of micro-lending can have a more positive impact in reducing poverty. And from the lenders' side, Zidisha has a reserve fund used to compensate them in the event one loan is not repaid on time. Until now, Zidisha has managed to lend \$18.041.184 to fund 268.426 different types of projects in Ghana, Indonesia, Kenya, Nigeria and Namibia.

*Kiva*¹⁵² is a US non-profit crowd-lending platform, founded in 2005 and operating in 80 countries. In a similar vein like Zidisha, it unlocks capital for all those entrepreneurs in developing countries unable to access credit in traditional banks. Projects are posted in the website and lenders can scroll and select those which match more with their interests, knowing that there is a minimum contribution of only \$25 and they will not be charged with interest rates. Differently than Zidisha, Kiva operates through field partners (MFIs, schools, NGOs, or social enterprises), which help to connect with the borrowers, administer the loans on the ground, and cover administrative costs. They are the ones who post the borrowers' businesses profiles on the website, and additionally some of them provide training, financial literacy classes or health services. Entrepreneurs repay the loan to the field partners with some interests, which are also charged with some interest rates when they send the loan to Kiva. A part from that, there is also the figure of the trustee, which vouches for borrowers who want to apply for direct loans instead of being administered by field partners. Most of those loans receive 0% of interests, and are funded directly to the borrower. Until now, Kiva has managed to lent \$1.4 billion to 3.5 million borrowers, 85% of them being women. This means that 1.810.982 loans have been founded, most of which have gone to support farmers, people in conflict zones, and a higher education.

All those alternative models outline a new reality that has come to stay. They emerge as a response of mistrust in traditional international and local economic and political institutions, for the way they have been operating in developing countries. Thus, they try to solve their inefficiencies and malpractices when recollecting and delivering financial development aid to those most in need. And the way to do so is by directly empowering the citizens, by acknowledging that aid effectiveness and progress is only achieved when it is based in solidarity redistribution. Each individual has the potential to help many others, and in general the potential to change the world. Those alternative models represent a radical new way of securing and streamlining the delivery of financial development aid because they have in

¹⁵¹ Zidisha, 2021. *Zidisha: Help remarkable people achieve their goals*. [online]. Available at: <https://www.zidisha.org/why-zidisha> [last accessed on 1 March 2021]

¹⁵² Kiva, 2021. *Where Kiva works / Kiva*. [online]. Available at: <https://www.kiva.org/about/where-kiva-works> [last accessed on 1 March 2021]

their core the willingness that individuals have to see real changes in the world. To secure because intermediaries are reduced and in most cases money is lent directly to borrowers, with which lenders can establish a close relationship. And to streamline because every day more lenders and borrowers are joining those platforms, and thus more transformative projects can be funded. Moreover, they enhance and induce a broader change in the way aid has been delivered traditionally, meaning with the following. Firstly, that North-South cooperation is no longer seen from a paternalistic unconcerned point of view, but rather from a solidarity cooperative point of view. Individuals from both sides get to know each other, get to share the preoccupation for the business to succeed, and after all the wish to achieve more progress. And secondly, that lenders can be from any part of the world, even from the same country, thus it also contributes to enhance South-South cooperation and to reduce inequalities within countries.

However, those alternative models still represent a small complement to the micro-financial development aid ecosystem, largely dominated by traditional MFIs. A situation that is expected to suffer important changes in the short and medium run after the massive introduction of disruptive new technologies, which can add a whole new potential to the way financial aid is being managed. This will be examined in the subsequent chapters, which will focus firstly on explaining the importance that financial development aid has in meeting the UN SDGs, as well as the role that Blockchain can have in achieving so if it is integrated as a mainstream technology to improve financial development cooperation.

2.4 How do digital technologies applied to financial development aid contribute to meeting the UN SDGs?

As we get closer to 2030 the international community seems to have more added difficulties to tackle global challenges and meet the UN SDGs. The economic and financial shocks associated with COVID-19 have been the last manifestation of many other trends such as the declining of ODA to LDCs, and the increasing environmental shocks affecting in major proportions developing countries. In this context, sustainable finance becomes more difficult and with it the ability to achieve the UN SDGs by 2030. Because of this, in 2020 the Inter-Agency Task Force on Financing for Development of the UN Department of Economic and Social Affairs launched a report about *Financing for Sustainable Development*,¹⁵³ in which it pointed out that in order to arrest this backslide governments, businesses and individuals should take action in two directions. Firstly, to “harness digital technologies in support of sustainable finance” and secondly to boost the “growing interest in sustainable investment”.

In regard to the second one, the UN also acknowledges the importance of alternative models to financial development aid, which calls as “human-centred finance.” In those it includes business leaders taking into consideration sustainability factors to achieve long-term financial success, but also individual investors supporting sustainable finance. However, it needs to be emphasized that all the voluntary actions which have progressively emerged in the recent years in the sustainable finance industry are still insufficient to arrive to the level

¹⁵³ United Nations Inter-agency Task Force on Financing for Development, 2021., *op. cit.*, note 63, p. xviii

of change to achieve the UN SDGs. In this sense, it calls upon policymakers to help transition upon sustainable investment.¹⁵⁴

In regard to the first one, digital technologies can have a tremendous impact in financing all the UN SDGs, through financial markets, public finance and other financial development pathways. Indeed, we already count with a wide range of examples where digital technologies have made a difference across all UN SDGs¹⁵⁵. They can facilitate more people to access to more products and services at a reduced cost, they can enable a more sustainable and resilient growth, and ultimately bring more energy efficiency and a decarbonized society.¹⁵⁶ In particular, in the financial development field digital technologies can bring important benefits to the way aid is delivered to the poor and under-served. From the financial sector, it can facilitate payments, intermediation and risk management between the lenders and the borrowers. And in the public financial management, it can help in tackling corruption and leakages, it can enhance transparency, accountability, accessibility and citizen participation,¹⁵⁷ and to gain more efficient aid deliveries. Indeed, achieving major rates of financial inclusion worldwide is one of the greatest benefits digital technologies have brought into the financial development system, thanks to the key role that FinTech companies have played and will play. Digital technologies are, thus, a corrective measure to traditional approaches such as Microfinance, which has proven unable to overcome structural problems such as elevated operation costs, lack of financial sustainability and scalability, lack of transparency and bad governance, and important information asymmetries¹⁵⁸.

Being really aware of the need to increase financing for development and make the most of the period of digital disruption we are living in, in 2018 the UN Secretary General António Guterres additionally established the Task Force on Digital Financing of the Sustainable Development Goals,¹⁵⁹ as part of his broader *Roadmap for Financing the 2030 Agenda for Sustainable Development: 2019-2021*. Its main objective was the same drawn by the 2020 report, being to give recommendations and catalyse ways to harness digitalization in accelerating financing of the UN SDGs.¹⁶⁰ It departs addressing five core questions, two of them being how has the digitalization already contributed to financing progress towards the UN SDGs, and what are the digitally enabled opportunities for financing the UN SDGs. As a general point, accepts that that digitalization can have a transformative impact by empowering people in financing, meeting their own priorities as savers, lenders, borrowers,

¹⁵⁴ *Ibid*, p. xix

¹⁵⁵ World Economic Forum and PwC, 2020. *Unlocking technology for the Global Goals*. Frontier 2030: Fourth Industrial Revolution for Global Goals Platform [online]. Cologny: World Economic Forum, pp. 8-37. Available at: http://www3.weforum.org/docs/Unlocking_Technology_for_the_Global_Goals.pdf [last accessed 63, p. 16]

¹⁵⁵ UNDP, 2021. *The role of technology and anti-corruption measures in fighting COVID-19*. | UNDP. [online]. UNDP. Available at: <https://www.undp.org/content/undp/en/home/blog/2020/the-role-of-technology-and-anti-corruption-measures-in-fighting-.html> [last accessed on 4 March 2021]

¹⁵⁶ United Nations Inter-agency Task Force on Financing for Development, 2021., *op. cit.*, note 63, p. 16

¹⁵⁷ UNDP, 2021. *The role of technology and anti-corruption measures in fighting COVID-19*. | UNDP. [online]. UNDP. Available at: <https://www.undp.org/content/undp/en/home/blog/2020/the-role-of-technology-and-anti-corruption-measures-in-fighting-.html> [last accessed on 7 March 2021]

¹⁵⁸ Cuellar Benavides, J., 2018. *op. cit.*, note 75.

¹⁵⁹ UNDP and UNCDF, 2021. *About the Task Force – DFTF* [online]. Available at: <https://digitalfinancingtaskforce.org/about-the-task-force/> [last accessed on 7 March 2021]

¹⁶⁰ UNDP and UNCDF, 2021. *Executive summary – DFTF*. [online]. Available at: <https://digitalfinancingtaskforce.org/executive-summary/> [last accessed on 7 March 2021]

investors and taxpayers. Those priorities are somehow represented by the UN SDGs.¹⁶¹ Concretely, the Task Force has four goals:

1. Digital financing becomes an integral part of sustainable development strategies
2. Digital financing improves alignment of trillions of dollars with the UN SDGs
3. Pathfinder initiatives advance digitally enabled UN SDG-aligned financing¹⁶²
4. Innovative governance harnesses digitalization in financing the UN SDGs

Among all the key digital technologies the UN refers to Blockchain (or Distributed Ledger Technology – DLT) as one that has the potential to drive progress in a lot of different fields covered by the UN SDGs¹⁶³. It can be implemented in the development field to “offer new ways to track aid and tackle corruption, facilitate smart-aid contracts and cut costs for international payments”¹⁶⁴. Regarding financial aspects, it can reduce barriers to market entry and facilitate the decentralization of key functions of financial markets, enabling transactions to be more transparent, secure and cheap. It notices that Blockchain has enabled the emergence of new financial players, as are the peer-to-peer digital platforms. Those are progressively disintermediating the financial market, and their vast potential is definitively starting to gain attention among national governments, international organisations, venture capitalists, the private sector and financial institutions, in general which see those alternative financial models as a clear threat to its hegemony¹⁶⁵.

3. The disruptive potential of Blockchain technologies in financial development aid

Before the pandemic of COVID-19 reports estimated that in order to meet the UN SDGs for 2030 an additional investment of \$2.4 trillion a year was needed. The achievement of these goals is an objective per se, because it would mean a substantial progress in the overall development of the world, especially in developing countries. Moreover, major rates of progress are directly transformed in major opportunities to invest in certain markets. Indeed, it is estimated that reaching those goals would open \$12 trillion of market investment opportunities in mainly four sectors: food and agriculture, sustainable cities, energy and materials and health and well-being¹⁶⁶. However, this promising panorama clashes automatically with the current reality of financial development aid, in which recent challenges have multiplied whilst financial resources devoted to tackle them – mainly ODA - have reduced along with their efficacy. Something that was very much stressed by the UN Secretary General António Guterres in the General Assembly High-Level Dialogue on

¹⁶¹ UNDP and UNCDF, 2021. *Digital financing and the SDGs – DFTF* [online]. Available at: <https://digitalfinancingtaskforce.org/digital-financing-and-the-sdgs/> [last accessed on 7 March 2021]

¹⁶² UNDP and UNCDF, 2021. *Pathfinder initiatives – DFTF*. [online]. Available at: <https://digitalfinancingtaskforce.org/pathfinder-initiatives/> [last accessed on 7 March 2021]

¹⁶³ Barbara, 2018. Digital technology for the sustainable development goals. [Blog]. *Diplo Foundation*, Available at: <https://www.diplomacy.edu/blog/digital-technology-sdgs> [last accessed on 9 March 2021]

¹⁶⁴ Cuellar Benavides, J., 2018. *op. cit.*, note 75, p. 37.

¹⁶⁵ United Nations Inter-agency Task Force on Financing for Development, 2021., *op. cit.*, note 63, p. 26

¹⁶⁶ Ingram, G., Mosbacher Jr, R., 2018, *op. cit.*, note 61

Financing for Development in 2019¹⁶⁷, in which he said “Financing is the test of our seriousness [...] without resources, we simply will not deliver for people or planet. [...] (The world) is not on track to achieve the Goals”. With this he pointed to the fact that we need adequate, predictable and sustainable funding, coming both from the public and the private sector, flowing to projects in developing countries. Innovative funding mechanisms were put on the table, highlighting the role the private sector can play in fulfilling certain financing gaps. And besides funding, there is also the structural concern about the lack of efficiency of financial development aid, since it continues to reproduce the same logics of power already addressed by the Four High Level Forums on Aid Effectiveness¹⁶⁸ and further by the Global Partnership for Effective Development Cooperation¹⁶⁹ (Nairobi, 2016), and the Kampala Principles on effective private sector engagement in developing cooperation¹⁷⁰ (2019). This means, a lot of countries continue to dis-align their development actions with the accepted principles of ownership, predictability and transparency, inclusive partnership, the use of indicators to monitor the progress, among others.

If this was the situation in 2018-2019, with the irruption of the pandemic of COVID-19 the lack of funding and efficiency of development aid has become an even major struggle. As UNDP estimates¹⁷¹, global human development could fall for the first time since 1999, with the triple hit to health, education and income. For example, 44 million people are expected to be pushed into extreme poverty by 2030 due to COVID-19. While many challenges have worsen, on the other side new opportunities continue to emerge for reaching the Goals, all of them requiring a great bunch of new financial investments¹⁷². In addition, most of them also rely on the multiple benefits that technologies have demonstrated, ultimately seen with the pandemic¹⁷³. Thus, it is highly relevant to explore how new technologies can address socio-economic challenges by helping to meet UN SDGs especially in developing countries¹⁷⁴.

“Blockchain technology has been heralded by many as the next big thing, ascertaining that in the next two decades it will transform society even more than the internet has transformed media”¹⁷⁵. Precisely, it falls within the scope of this work to propose how the disruptive potential of the Blockchain technology can provide a positive impact in the management and delivery of financial development aid. From this point onwards, it will be presented how Blockchain can serve as a corrective mechanism to achieve a major impact of microfinance

¹⁶⁷ United Nations, 2019. *Declining Aid, Rising Debt Thwarting World's Ability to Fund Sustainable Development, Speakers Warn at General Assembly High-Level Dialogue*. [online]. Available at: <https://www.un.org/press/en/2019/ga12191.doc.htm> [last accessed on 10 March 2021]

¹⁶⁸ Roma (2003), Paris (2005), Accra (2008), Busan (2011).

¹⁶⁹ GPEDC, 2020, *op. cit.*, note 30.

¹⁷⁰ GPEDC, 2019, *op. cit.*, note 39.

¹⁷¹ UNDP, 2021. *COVID-19 and the SDGs | UNDP*. [online]. UNDP. Available at: <https://feature.undp.org/covid-19-and-the-sdgs/> [last accessed on 14 March 2021]

¹⁷² UNDP and Pardee Center for International Futures, 2020. *Impact of COVID-19 on the Sustainable Development Goals: Pursuing the Sustainable Development Goals (SDGs) in a World Reshaped by COVID-19*. [online]. Available at: https://sdgintegration.undp.org/sites/default/files/Impact_of_COVID-19_on_the_SDGs.pdf [last accessed on 15 March 2021]

¹⁷³ United Nations Inter-agency Task Force on Financing for Development, 2021., *op. cit.*, note 63

¹⁷⁴ Zambrano, R., 2017. *Blockchain: Unpacking the disruptive potential of blockchain technology for human development*. [online]. New York: International Development Research Centre, p. 5. Available at: <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/56662/IDL-56662.pdf?sequence=2&isAllowed=y> [last accessed on 18 March 2021]

¹⁷⁵ Cuellar Benavides, J., 2018. *op. cit.*, note 75, p. 37.

solutions in developing countries, aimed at fostering financial inclusion in the short run and sustainable progress in the long run. As said in the previous chapter, micro-financial development aid has in its core the democratization of financial resources, meaning by this allowing access to credit and other financial resources to poor people which have traditionally remained excluded from financial institutions. This bottom-up inclusive approach has over the years conflicted with the overall uncertain results that microfinance has proven to produce in a lot of those countries, mainly due to the way in which it has been managed and implemented. Basically, power and information asymmetries have persisted between the lenders and the borrowers, as well as a lack of transparency and accountability derived from a commercialized for-profit governance in most of the cases, that has caused corruption, over-indebtedness of the poor and over-profits for the ones at the top of the pyramid. However, as the World Bank and other institutions recognized, if microfinance is implemented correctly it can really help people to generate economic wealth and progressively reduce the levels of poverty in developing countries¹⁷⁶.

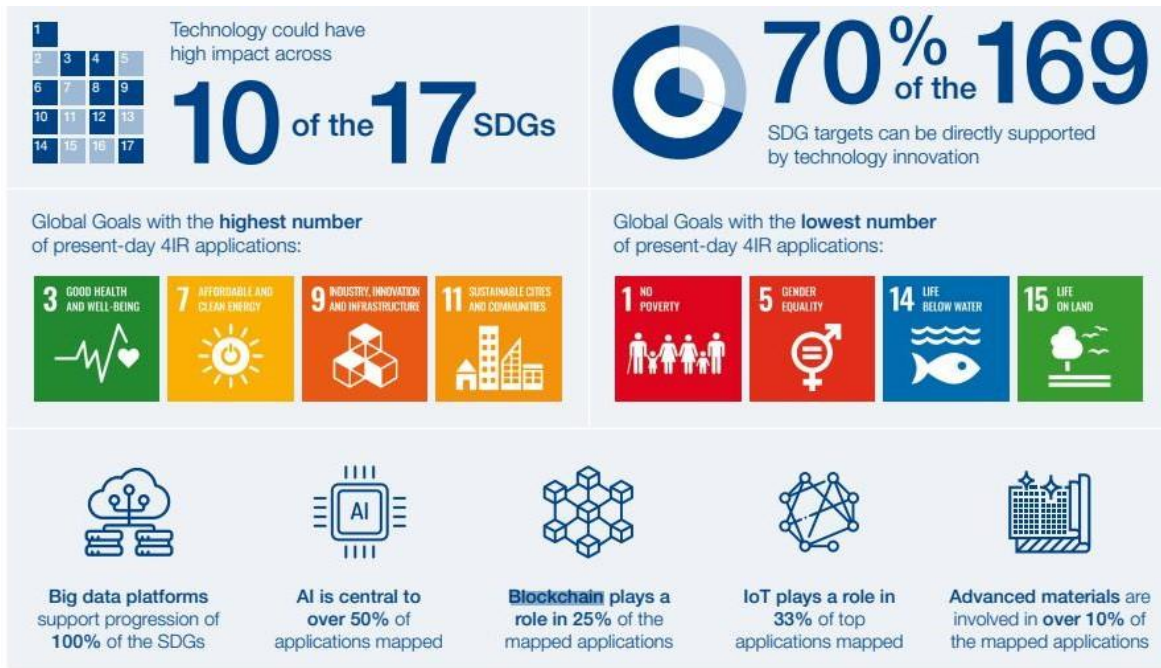
In this sense, it is basic to highlight how the Fourth Industrial Revolution, represented by the key digital technologies: cloud computing, big data, Artificial Intelligence, Internet of Things and Blockchain, can enable different transformative changes that are thought to be key to achieve the UN SDGs (see Table 4)¹⁷⁷. In this sense, Blockchain emerges as the perfect corrective mechanism to enhance microfinance and in general of financial development aid because it can help in three main aspects. The first, because it can bring more transparency to systems and platforms, transforming the way in which funds are monitored and managed. The second, because it allows a more decentralized and sustainable management of the resources, favoring aid efficiency and financial inclusivity. The third, because it enables the creation of, and access to new financial mechanisms. This is indeed related to increase and improve the accessibility to microfinance options, as Blockchain can truly deliver on the promise of democratizing investment and access to financial services and information, as well as on the wealth creation and redistribution process across the world.¹⁷⁸

¹⁷⁶ Smith, S., 2020. Blockchain Promised Democratization of Finance – Collaborating with Microfinance Can Make This a Reality. *Forbes*, [online]. Available at: <https://www.forbes.com/sites/seansteinsmith/2020/10/07/blockchain-promised-democratization-of-finance--collaborating-with-microfinance-can-make-this-a-reality/?sh=106171b602b3> [last accessed on 15 March 2021]

¹⁷⁷ World Economic Forum and PwC, 2020., *op. cit.*, note 156.

¹⁷⁸ Smith, S., 2020, *op. cit.*, note 177.

Table 4: Which goals have the most Fourth Industrial Revolution applications today?



Source: World Economic Forum in collaboration with PwC¹⁷⁹

The relevance for studying how Blockchain can contribute to secure and streamlining the delivery of financial development aid corresponds mainly to three aspects. The first, that the international community is eager to find new financial mechanisms with which to be able to help developing countries to combat poverty, progress and achieve a level of sustainable progress. The second, that while countries are decreasing its resources devoted to ODA, the role of the private sector – especially Fintech companies along with individual donors – is progressively becoming more important, due to its capacity of finding innovative solutions that could bring major efficiency gains. And the third, that even though these innovative solutions are still dominated by the private industry, their disruptive potential is gaining every day more attention from the public sector, as the one having the sufficient legitimacy and authority to leader the development cooperation agenda. In this vein, the UNDP already stated in its pioneer white paper of 2018 “The future is decentralized”¹⁸⁰ that “the transformative power of blockchain technology should not be seen as a threat to existing systems of governance but rather as an opportunity for national governments and international institutions to defend the rights of those they represent and to accelerate our collective progress towards meeting the UN SDGs”. And it illustrated how blockchain has and can bring new levels of efficiency and effectiveness to the fields of development aid, supply chain management, renewable energy, economic growth, among others. Additionally, the UN has also created the *Blockchain Commission for Sustainable Development*¹⁸¹, aimed

¹⁷⁹ World Economic Forum and PwC, 2020., *op. it.*, note 156.

¹⁸⁰ UNDP, 2018. *White paper: The Future is Decentralised*. [online]. UNDP. Available at: <https://www.undp.org/content/undp/en/home/librarypage/corporate/the-future-is-decentralised.html> [last accessed on 3 February 2021]

¹⁸¹ Blockchain Commission for Sustainable Development, 2021. *Blockchain Commission for Sustainable Development*. [online]. LinkedIn. Available at: <https://www.linkedin.com/company/blockchaincommission/> [last accessed on 14 March 2021]

at developing a multi-sectoral framework when utilizing blockchain to develop solutions to tackle global challenges. The Commission maintains a multi-stakeholder participation, with the presence of the UN, member states, international organizations, private entities and civil society. Indeed, afterwards it has launched “Blockchain for Impact” (BFI), a collaborative advocacy and action platform designed to serve the growing community with leaderships from the global blockchain ecosystem. And the UNDP has partnered with Blockchain, the World Economic Forum and other UN agencies and programs to concretely explore blockchain uses in relation to development.¹⁸²

Analyzing the potential that Blockchain technology can have in the financial development aid field means assessing the capacity to effectively tackle human development challenges in a better way than other previous mechanisms have been able to¹⁸³. For this it will discuss to what extent can Blockchain improve micro-financial development aid, and then present the existing applications of Blockchain and the UN SDGs. However, it also implies to acknowledge which are the current constraints that difficult or limit this potential. This will be also discussed in this chapter, for example the viability of certain infrastructures and the adaptability of regulations both in developed and developing countries. Finally, it will conclude with a proposal on how to address the future governance of Blockchain in the development field. A debate that somehow has to take into consideration the need to leverage what the different actors can bring up to this, meaning by this the balance between who has the resources and capacities versus who was the legitimacy and authority to decide and implement. A reality that can be managed from the multi-stakeholder approach.

3.1 What is blockchain?

Since the middle of the 20th century the world is immersed in what can be understood as the Fourth Industrial Revolution¹⁸⁴, characterized by a fusion of technologies that is blurring the lines between the physical, the digital and biological spheres. This new world’s era cannot be compared to the previous ones because it is evolving in an exponential rate, meaning by this that the speed and the depth in which changes occur are completely transforming entire systems of production, management and governance. Indeed, its scale (velocity), scope and complexity (impact) are expected to alter all the spheres of our life. Thus, it can bring positive impacts – raising global incomes, improving the quality of life, making the global chains more efficient, opening new markets and boosting economic growth -, but also certain challenges. – increasing inequalities and social tensions as a result of disrupting labor markets, high-sophistication in terms of capital requirements, human capacity and institutional environments. It is specifically worrying the situation of developing countries, if they want to become active players and not just end-users or consumers of these

¹⁸² UNDP Europe and Central Asia, 2018. *Blockchain research to support Sustainable Development Goals*. [online]. Available at: <https://www.eurasia.undp.org/content/rbec/en/home/presscenter/pressreleases/2018/blockchain-research-to-support-sustainable-development-goals.html> [last accessed on 9 March 2021]

¹⁸³ Zambrano, R., 2017., *op. cit.*, note 175.

¹⁸⁴ Schwab, K., 2016. The Fourth Industrial Revolution: what it means, how to respond. [Blog]. *World Economic Forum*, Available at: <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/> [last accessed on 7 March 2021]

technologies¹⁸⁵. Enhancing the former whilst minimizing the latter urges a new kind of governance able of responding in an integrated manner, only achieved by involving all the relevant stakeholders in the matter: the public and private sector, the academia and civil society.

Those technologies do not only refer to the unlimited possibilities that people have with their smart phones. But also to other astonishing discoveries such as Artificial Intelligence, the Internet of Things, 3-D printing, robotics, quantum computing, nanotechnology, biotechnology, among others.

Blockchain is also included in this scenario as a newer technology, developed by Satoshi Nakamoto after publishing the white-paper “Bitcoin: a Peer-to-peer Electronic Cash System¹⁸⁶” in the 31st of October 2008. This short white-paper gave origin to Bitcoin, by formulating the use of digital money (from now on, cryptocurrency) without the need of having a third trustee – normally a central bank - when doing electronic transactions (decentralized) from one peer to another one. In a context of global financial crisis, people lost even more confidence in the global financial system. Thus, Bitcoin emerged as an alternative to the global economic system, as a way of fighting against the established power, aspiring to become the new global order¹⁸⁷.

Bitcoin was a financial platform, and as such required a mechanism that could substitute the task associated to the third-trustee. This was achieved through a digital ledger – which relied on the Blockchain technology - to record all the digital transactions among people using cryptocurrencies (tokens¹⁸⁸ or bitcoins). Thus, Blockchain technology emerged as one of the core pillars of Bitcoin, linked mainly to the financial sector. This new Bitcoin software or protocol¹⁸⁹ (or “genesis block”) was launched the 3th of January 2009 by Nakamoto and Hal Finney as an Open Source, and it remains this way. This means that the digital ledger recording transactions is public, all the actors¹⁹⁰ intervening have real-time and full access to data recorded in the database, without requiring authorizations. And it is also distributed and decentralized (this is why blockchain can be also called a Decentralized Ledger Technology

¹⁸⁵Zambrano, R., 2017. *op. cit.*, note 175, p. 17.

¹⁸⁶ Nakamoto, S., 2008. *Bitcoin: A Peer-to-Peer Electronic Cash System*. [online]. Bitcoin. Available at: <https://bitcoin.org/bitcoin.pdf> [last accessed on 13 March 2021].

¹⁸⁷ Caballero, M., 2019, *Bitcoin. Blockchain y Tokenización para inquietos*. 1st ed. Madrid: Bubok Publishing S.L., pp. 70-72

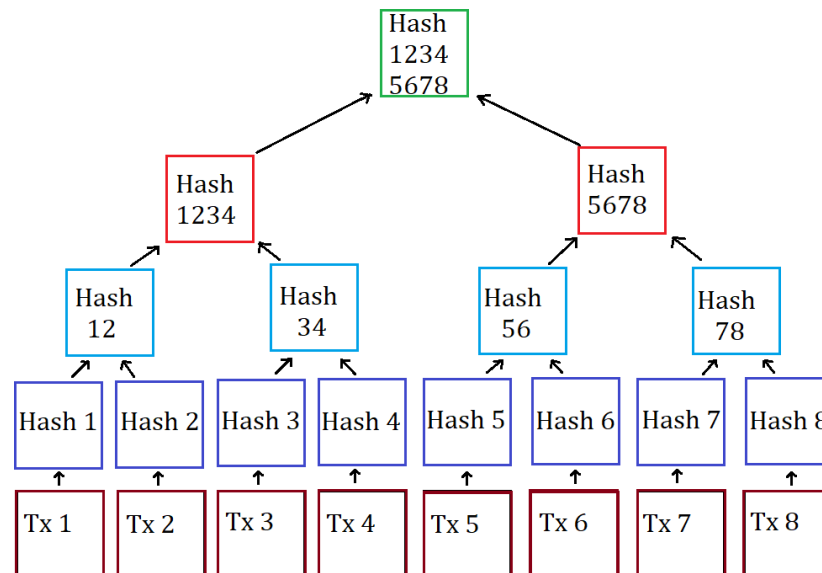
¹⁸⁸ A token is a representation of any physical or digital asset. (*Ibid*, p. 176. See Chapter 25).

¹⁸⁹ Every cryptocurrency has its own protocol, meaning by this its own rules applied to Blockchain. In the case of Bitcoin, the dimension of each block is of 1 MegaByte, and every 10 minutes our node (computer) will add the block to the chain, accumulating the maximum number of transactions that it can. Satoshi Nakamoto designed a maximum limit of tokens (the cryptocurrency of bitcoin) in 21 million. This is one of the greatest contributions because having a fix supply of tokens has many advantages in economic terms. It is often called a deflationary model. *Translation from Spanish to English*. (*Ibid*, p. 78-79).

¹⁹⁰ Bitcoin and every blockchain is composed by three main users that have different objectives. The first are the *developers*, which are the group of programmers maintaining and improving the network’s code and dealing with problems regarding the scalability, velocity and security of the network. Their work is approved by the nodes. The second are the *users*, which are the group of people or enterprises using the network to generate transactions using tokens. The users are the ones giving value to the network, being able to use tokens as money in all its senses. And the third, the *miners*, are a variation of the nodes’ operators conforming the infrastructure that maintains the network. Basically, they are responsible for creating and amplifying the blockchains, providing the security and trustworthiness that the network needs to guarantee the veracity of transactions. *Translation from Spanish to English*. (*Ibid*, p. 74-75)

– DLT) , so all the network nodes (computers) store an up-to-date copy of transactions in blocks that conform a chain, and thus no single node has complete system information¹⁹¹. In this peer-to-peer network (P2P) all the nodes are interconnected, but if one node goes down the other ones remain and data and information keeps flowing. The transactions that are generated are encrypted with a code (*hash*) and ultimately saved in blocks, in the form of a Merkle tree. In Table 5 we can see how the different transactions, at the bottom of the tree, are being grouped until forming one single block – with a unique *hash* or *identifier* and a unique time stamp that registers the date and time-, that will be added to the chain¹⁹², forming a blockchain. This technology uses cryptographic tools to bring security along with transparency. On the one hand, because it uses a private key only known by its owner and used to encrypt the transaction. On the other hand, because the sum of private keys will be used for the nodes to create a public key cryptography to be part of the network and to publicly identify it. However, no public key can be used to decipher a private key.

Table 5: The Merkle tree applied to Blockchain and Bitcoin



Source: Changelly (2020)¹⁹³

The Merkle tree brings efficiency and transparency because it facilitates the task that the nodes have in a decentralized network of verifying the transmitted information. Once the network nodes have validated the transactions through a reached consensus, the block is added to the existing blockchain. In this sense, it is different from traditional financial operators or other systems (such as governance mechanisms) using centralized networks because in here it is the network itself that provides trust among the peers. Consensus is achieved when nodes use their computing power, with the proof of work of an algorithm, and other networks validate the information. Moreover, blockchain also brings integrity to the data because it is immutable. It is impossible to change or falsify blockchain blocks, and

¹⁹¹ Zipmex, 2020. Distributed VS Decentralized Blockchain Systems. [Blog]. *Zipmex*, Available at: <https://zipmex.com/learn/distributed-vs-decentralized/> [last accessed on 12 March 2021]

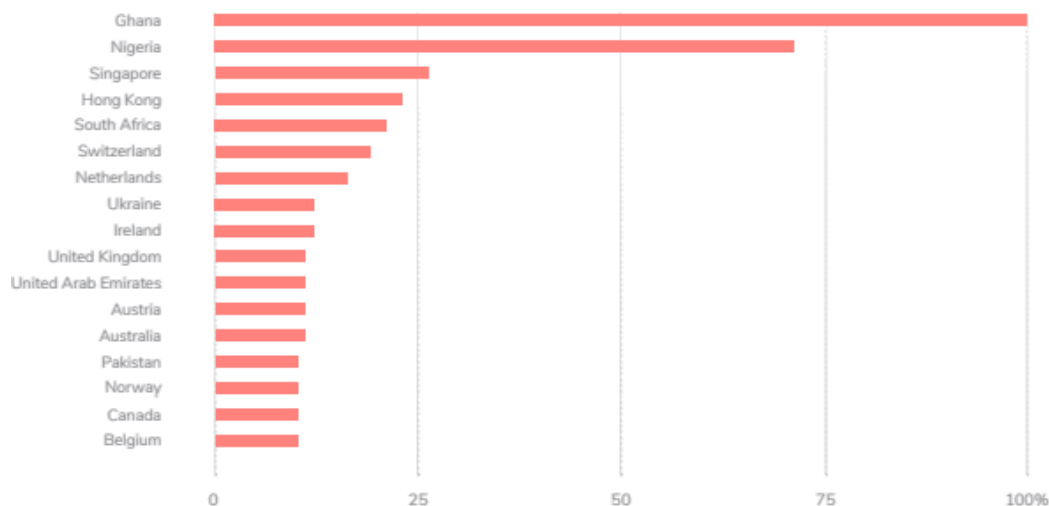
¹⁹² Zambrano, R., 2017. *op. cit.*, note 175, p. 22

¹⁹³ Rousey, M., 2020. Features of using the Merkle tree in blockchain and Bitcoin. [Blog]. *Changelly blog*, Available at: <https://changelly.com/blog/merkle-tree-explain/> [last accessed on 17 march 2021]

users cannot complete an invalid transaction. Also, anonymity is highly achieved because users do not need to provide personal details to be a part of the network, and thus no one can make profit about it, as it is the case of social media.

The great potential of Blockchain beyond the financial sector (with Bitcoin and other cryptocurrencies following this first protocol, like Ethereum¹⁹⁴) was progressively acknowledge in 2014 onwards for many innovators and venture capitalists. The exponential growth started in 2016 (see Table 6), being deployed for more countries for a variety of purposes, and also for large and traditional financial institutions, which are seeking how to use this technology to improve their activities and practices¹⁹⁵. However, the current uses of blockchain are still focused on private sector services, such as remittances and intellectual property rights, but also in the fields of agriculture and food security. Therefore, the interest of public administrations and international organizations in the matter is justified by the fact that many different services could be largely improved, specially in developing countries. For example: land-titles, identity services, anti-corruption mechanisms, electoral processes, and aid distribution and development actions (including in here microfinance).

Table 6: Country interest in Blockchain technologies, by Google searches (2012-2017)¹⁹⁶



Source: International Development Research Centre, based on Google Trends (2017)

Note: Most of the searches are identified in developed countries, whilst the implementation of this technology is mainly directed to developing countries

¹⁹⁴ Ethereum is the second largest crypto project of the world after Bitcoin, but it pretends to be the biggest decentralized computer. Its main differences compared to Bitcoin is that Ethereum has a responsible figure, named Vitalik Buterin, and that its nodes can store transactions and execute programs. In 2014, Vitalik and others created its own token, an Ether, and in 2015 they launched the first version of the web, the so-called genesis block. From this point onwards a wide range of new decentralized applications have emerged around Ethereum. *Translation from Spanish to English*. (Caballero, M., 2019, *op. cit.*, note 188, p. 121-123)

¹⁹⁵ Cuellar Benavides, J., 2018. *op. cit.*, note 75, p. 38; Zambrano, R., 2017. *op. cit.*, note 175, p. 20

¹⁹⁶ Zambrano, R., 2017. *op. cit.*, note 175, p. 20

3.2 Elements of Blockchain technology (BT)

Having explained the emergence of the BT and its basic notions and conceptualizations about how it works, it is now important to highlight which are the key characteristics that make this technology as relevant as it is becoming. Specifically, this section will introduce and describe the core principles that can be useful when defending that the BT can serve as a positive tool to improve current systems of governance, such as financial development aid.

To recapitulate, the potential of BTs derives from its three main novelties: The composition of the blocks, the consensus mechanism, and the decentralization and openness of the ledger¹⁹⁷. These novelties bring the following technical benefits¹⁹⁸.

Regarding the composition of the blocks:

- *Privacy and quasi anonymity:* since every block is encrypted with a hash (digital code), which can be public or private, no personal information can be used by third parties to obtain profit. Moreover, users do not need to provide personal details to become a part of the network, they can use pseudonyms.
- *Security:* the cryptography cannot be broken, thus transactions cannot be manipulated, copied nor used to re-spend it again.
- *Rapidity:* transactions are completed, registered and validated very rapidly. In Bitcoin this time is of 10 minutes, and in Ethereum of 15 seconds¹⁹⁹.

Regarding the consensus mechanism:

- *Immutability and integrity:* the information contained in the blocks cannot be changed nor falsified unanimously because the transactions can be linked to the user and in order to approve them all the other nodes need to validate them. In the same vein, in order to change the code or the blockchain operations a majority of the nodes, which are a lot, need to reach a consensus on the new direction. This scenario is highly unlikely, as well as the probability of hacking the blockchain.
- *Transparency, traceability and auditability:* the information about transactions is available in real-time to all the nodes, none of them being able to hide or manipulate it. This transparency assures the traceability and auditability of all transactions, who have sent them and to where.
- *Trust and governance:* trust relies in all the nodes that conform and ensure the network viability. All of them have, in principle, the same bargaining power and political leverage.

Regarding the decentralization and openness of the ledger:

- *Democratic:* the decentralized nature implies that every member of the network holds a copy of each electronic transaction. Since there is no central authority, there can be no point of failure. Indeed, there can be no censorship because no one can unilaterally decide which content to approve or invalidate. Yet each system or protocol is designed

¹⁹⁷ Cuellar Benavides, J., 2018. *op. cit.*, note 75, p. 38

¹⁹⁸ *Ibid*, p. 40; Zambrano, R., 2017. *op. cit.*, note 175, p. 30

¹⁹⁹ Caballero, M., 2019, *op. cit.*, note 188, p. 129.

with certain rules that are approved or changed by consensus, whilst central banks are the main ones deciding how to manage the money.

- *Inclusiveness*: the software is public and available, including the cryptographic tools, to every user having an equipment of more than 2 GB of RAM and a hard drive of 1 TB, which most of them have. The limit of growth that the BT has depends on the existence of users, miners and nodes maintaining and improving it²⁰⁰.
- *Uncontrollable, non-censurable, unstoppable*: since there is no central authority validating and controlling the information, no one can unanimously control, censure or stop the network.
- *Resilience and reliability*: ensured when there is a need to reach consensus for verifying, clarifying and transferring assets correctly.
- *Sustainability*: the fact that users can obtain economic incentives from participating in the network ensures its economic sustainability.

Apart from this, Blockchain, Bitcoin and in general cryptocurrencies have a *smaller environmental impact* in terms of energy consumption – which mainly comes from renewable energies (see page 116 from Caballero, M., 2019) - and yearly cost in billions of USD compared to the mining of gold and the banking system, which in majority rely on fossil fuels (see Table 8 from Annex 1). This point clearly knocks down many arguments and studies claiming exactly the opposite²⁰¹

However, it would be naïve to only show the potential benefits that Blockchain can have in the mid and long term when in the current context there are still some other characteristics that limit its expansion throughout the world. They are not negative per se, but rather challenges that policymakers and the international community as a whole should take into consideration. They are the following.

- *Complexity*: Blockchain technology and cryptocurrency protocols are not really comprehensive at the eyes of the majority of the population, specially to many people in developing countries, because they use complex technical wording. Thus, the challenge is for the public sector along with the private sector to spread the knowledge about the crypto world by using a basic and understandable language.
- *Centralization*: though most of the people with a computer device can participate in the network as users, few people can actually do it as miners, which are the ones in charge of running the Proof of Work²⁰² algorithms. It is the way it is because miner nodes use sophisticated and expensive hardware, and thus only a few (here we refer to companies²⁰³) do have this power to control the market. This is critique is mainly applied to Bitcoin protocol. Thus, the challenge is for the private sector to develop new alternatives that could enable more competition and inclusiveness in this field. In this

²⁰⁰ *Ibid*, p. 84.

²⁰¹ Zambrano, R., 2017. *op. cit.*, note 175, p. 31

²⁰² The Proof of Work algorithm (PoW) is a term used to explain the mathematical process in which miner nodes compete to find the header hash (the encrypted code of the final code that will be added to the chain). As long as there are more blocks in the chain, the difficulty of finding this hash increases, and as such the competition and the computational effort between the miner nodes. (see Caballero, M., 2019, *op. cit.*, note 188, p. 116)

²⁰³ Data for Ethereum shows similar patterns. (Ethereum, 2021. *Top 25 Miners by Blocks*. [online]. Etherscan. Available at: <https://etherscan.io/stat/miner?range=7&blocktype=blocks> [last accessed on 22 March 2021])

regard, there are other two additional protocols that are applied in Ethereum and other protocols: the Proof of Stake (PoS) and the Delegated Proof-of-Stake (DPoS). In the first the computational effort needed to validate transactions has changed for the amount of tokens each user has. So the power of the blockchain is concentrated among those of the network who have more tokens. In the second each user can become a miner, regardless of their overall participation in the network, but they can also delegate their capacity to mine to another node. Those who will end up mining will be the ones having more delegated votes²⁰⁴.

3.3 To what extent can blockchain improve micro-financial development aid?

Throughout the evolution of microfinance as an anti-poverty tool it has been proved that its uncertain results derive from the way it was implemented in developing countries and not for its core principles. The objective was to significantly reduce the number of people remaining unbanked, by providing them access to loans and grants with which to create their own business. The intent to democratize access to financial resources and information was indeed a very powerful mechanism regarding development cooperation, because it was not an assistance kind of policy, but rather an empowering one. Nevertheless, in many cases it resulted in big failures, as people were unable to return the debt and end up even poorer than before. The factors explaining this critical situation are, precisely, the ones that could be radically improved with the use of public Blockchain technologies through digital platforms.

The objective of financial development cooperation is to achieve aid effectiveness, which translates into the efficacy that capital deployment has in achieving economic or human development. Then, if micro-financial development aid did not achieve its purposes was because the way in which this money was delivered was inefficient, so to say, did not take enough into consideration the context in which it was operating. This was clearly understood by the UNDP when it launched the pioneer white paper of 2018 “The future is decentralized”²⁰⁵, stating that “a more transparent and auditable system for tracking funds was needed to ensure effective programs are better supported. [And that] Just a 3% improvement in delivery would free up billions in capital efficiency”. This speaks about the need to ensure more *security* when delivering financial development aid, in the form of funds and resources. Moreover, the other part of the equation urges to improve the efficiency of this aid, which translates into the need to ensure a more *streamlined* delivery to all these people which have been traditionally marginalized from financial and MFIs, either because of their geographic isolation or because of their socio-economic situation. Whatever the reason is, in the current reality the relevant actors in the development cooperation field are being confronted with a straightforward imperative: to formulate sustainable strategies through better service delivery. And here is where public Blockchain technologies emerge as a disruptive alternative to secure and streamline the delivery of financial development aid.

²⁰⁴ Caballero, M., 2019, *op. cit.*, note 188, p. 117-118.

²⁰⁵ UNDP, 2018., *op. cit.*, note 188.

In the following table the author has tried to summarize in a comprehensive way the comparison between the aspects hindering MFIs and how public Blockchain based digital platforms could solve those issues²⁰⁶.

Table 7: Public Blockchain technologies correcting MFIs limitations

Micro-financial institutions limitations	Public Blockchain potentials
<p>Failure to bring major financial access, in the form of “banking the unbanked”. Because financial and MFIs do not have the capacity to arrive to all the people in need.</p>	<p>One of its main goals is to increase and improve the access and the delivery of financial resources, through the use of mobiles phones or computer devices, much more spread worldwide. Public Blockchains are Open Source. → <i>democratizing and streamlining the delivery</i></p>
<p>The lenders (banks, MFIs or local organizations) unilaterally decided who was eligible for a credit, following a maximalist approach. This meant a lot of authorizations without taking into consideration their specific needs, their real options of succeeding and returning the debt, etc. = problem of adverse selection and moral hazard. Since only a few were successful in developing its business = <i>lower return rates, lenders obtaining large profits and increasing inequalities between the borrowers</i>. This was one of the main criticisms imputed to MFIs and banks.</p>	<p><i>Decentralized governance</i>, through a P2P mechanism, no need for a central authority. It is public either on the lender and supply side. <i>Profits are lowered and diversified</i> through the lenders’ side because there will be more competing supply. <i>Adverse selection and moral hazard are corrected</i> because of the direct and constant contact between the lender and the borrower, through the digital platform. This <i>reduces information asymmetries</i>. Projects will be selected based on their capacity to succeed, but afterwards it will be possible to re-equilibrate lenders’ preferences to borrowers’ needs = <i>trust increases</i> on both sides, and also the probability of <i>higher return rates</i>. More sentiment of <i>ownership and partnership</i> between people. More reputation and confidence on the industry.</p>
<p><i>High operating costs</i> derived from the task of individualizing microcredit options = <i>high interest rates of about 50-100%</i> charged to borrowers, ending up in a debt trap.</p>	<p>Lenders freely chose the amount of money in relation to the borrowers’ needs. <i>Competition</i> is introduced on the side of the lenders because borrowers can choose whether or not to agree on the terms. The result is <i>low interest rates</i> of about 10%-</p>

²⁰⁶ FinTech Ranking, 2020. What is blockchain doing in microfinance? [Blog]. Available at: <https://fintechranking.com/2020/02/11/what-is-the-blockchain-doing-in-microfinance/> [last accessed on 21 March 2021]; Zwitter, A., Boisse-Despiaux, M., “Blockchain for humanitarian action and development aid”, *Journal of International Humanitarian Action*, Vol. 3, 2018, no. 16; UNDP, 2018. *op. cit.*, note 188; Bateman, M., *op. cit.*, note 84; Cuellar Benavides, J., 2018. *op. cit.*, note 75; see Annex 1.

	12% and, thus, major probabilities of business success and higher return rates.
<i>High administrative costs</i> for the borrowers = <i>time lost</i> travelling to the banks, slow transaction speeds, <i>additional costs and fees</i> for transactions and documentation.	<i>More time and cost efficient</i> because all the operations are done digitally. Through the use of Blockchain the cost of processing, storing and transferring the information decreases exponentially. So, faster and higher transactional data can be achieved, whilst preserving privacy. People do not need to prove their identity and eligibility through several documentation.
<i>Lack of transparency, standardization, traceability and accountability</i> of the funds and the borrowers = information asymmetries between the lender and the borrower. Lenders could take advantage of borrowers' vulnerabilities, with a great <i>potential for corruption</i>	Public Blockchain technologies require a shared consensus between the nodes to approve transactions and add them to the block. Transactions are registered and all the nodes have a real-time information of where the information has gone and for what. There is no chance to hide or manipulate it, or any other corruption or opportunistic behavior. This <i>transparency assures the traceability and auditability of all transactions</i> , not only in terms of assuring the money arrives to both lenders and borrowers, but actually to measure the effectiveness of the impact that financial aid has had. More integrity and immutability of the data because information cannot be changed nor falsified unanimously. This brings <i>verifiability to the network</i> → <i>secures the delivery</i> .

Source: Compilation based on the cited resources

All in all, after this comparison it seems viable that public Blockchain technologies can contribute in improving how financial development aid is administered, delivered and used by both the sender and the receiver side. Precisely, public Blockchain technologies can be well applied in development cooperation as a substitute to banks and MFIs in developing countries because they are more useful and disruptive in those places lacking adequate infrastructures and trusting operators or intermediaries. “It can make receiving aid easier and more dignified”²⁰⁷, not only because it can be tracked but also because it can be matched with other financial resources besides microcredit, such as remittances flows and charitable funds. Moreover, the capacity to continually assess the impact the aid is having – thanks to the direct contact with the receivers - allows organizations, governments and individual lenders to have greater amounts of verified information about it. Then they can use it to decide on better

²⁰⁷ UNDP, 2018. *op. cit.*, note 188, p. 10.

grounds if the aid has fulfilled the mandate, if it can be improved and how to do it, and the possibilities to scale the action to other places.

Overall, public Blockchain technologies can provide more tranquility to the financial development cooperation system because it actually tackles the main limitations or concerns identified in the several High-Level Forums on Aid Effectiveness (Paris, 2005; Accra, 2008; Busan, 2011) and afterwards in the second High-Level Meeting of Global Partnership for Effective Development Cooperation (Nairobi, 2016). About *ownership*, it means that individuals in developing countries are the ones becoming empowered to launch their own projects according to their priorities or their needs, and donors are the ones fitting into this reality and not the other way around. This is also linked to *alignment* and the fact of not putting conditions to the aid but rather undertake a constant contact to adapt the donors' preferences to the borrowers' needs. This change of paradigm from the bottom to the top changes the traditional logic of development and aid completely. Public blockchain technologies can also contribute to *harmonization* and *results-oriented actions*, in the sense that projects and programs could be easily tracked and information about the impact could be shared faster to other lenders or development organizations. Indeed, communication about the everyday progress and results would be flowing constantly from both sides. And this, at the same time, linked with *mutual accountability and transparency* about the shared responsibilities and commitments regarding the money and the project behind it. Finally, this alternative proposal is also oriented at improving *capacity development*, by investing in transformative actions and projects with a mid and long term timeline. If people succeed in their businesses, they will generate more income, their level of consumption will increase, more jobs will be created and ultimately poverty rates will decrease and local economy will boost and become more resilience. And definitively public Blockchain governance goes hand-in-hand with enhancing *inclusive partnerships* among the public and private sector, foundations and civil society. Every actor with their own capacity and resources can help this technology to roll out its full disruptive potential.

In addition, the incorporation of public Blockchain technologies to the financial development sector, specially through the use of open digital platforms, can have a major impact in favoring the UN SDG nº 17, which calls to strengthen the means of implementation and revitalize the global partnerships for sustainable development²⁰⁸. Indeed, target 17.3 is devoted to “mobilizing additional financial resources for developing countries from multiple sources”, and target 17.6 to “enhance North-South and South-South and triangular regional and international cooperation [...] through a global technology facilitation mechanism”. Those targets, among others, are directly connected with the objectives that Blockchain technologies are pursuing. And specially if we take into consideration how the scenario has changed with the pandemic of COVID-19. The UN at the end of 2020 stressed that global foreign direct investment (FDI) was expected to decline by up to 40% along with remittances to low and middle income countries. Therefore, public Blockchain technologies through the use of digital technologies can unlock big flows of capital to developing countries, because it can enable major access to infinite new donors in all the world.

²⁰⁸ United Nations, 2021. *Goal 17 | Department of Economic and Social Affairs*. [online]. Available at: <https://sdgs.un.org/goals/goal17> [last accessed on 22 March 2021].

3.4 Blockchain microfinancing applications and the UN SDGs

In its white-paper “The future is Decentralized” from 2018 the UNDP traced a direct link between the role of public Blockchain technologies and the UN SDGs. It declared the following:

“SDGs will require experimentation and innovation, leverage ‘whole of government’ approaches that cut across silos, bring about shared understanding of interlinkages and trade-offs between the various goals, and highlight major leverage points for interventions. We also believe that block chain technology can accelerate and amplify our efforts because it is relatively quick to develop and relatively easy to adapt to such a wide range of tasks²⁰⁹”.

To justify it, the paper addressed how this technology can contribute in meeting broad objectives covered by the UN SDGs to eliminate poverty, protect the environment and promote equitable economic development. By explaining how useful can it be for all the actors in the field (governments, policymakers, private enterprises and civil society) to establish trust, tackle corruption and distribute resources. Therefore, presenting its disruptive potential to tackle many pitfalls regarding aid-effectiveness, firstly from a theoretical perspective and secondly by supporting it with positive experimental projects around the world. This last part will be presented throughout the chapter.

As the first point, it shows how Blockchain can improve the way in which subsidies or micro-financial aid is administered and delivered, thanks to the verifiability, resilience and transparency of the system. Thanks to it actors operating in developing countries can have the necessary data infrastructure to know about the programs’ efficiencies, to identify misconducts or possible corruption, and with it elaborate better projects to be scaled somewhere else. Indeed, Blockchain technologies operating through digital platforms eliminate the need for intermediaries, which in turn would shorten the process to access this credit or subsidy as well as the possibilities for fraudulent operations when collecting and verifying the data.

As the second point, it shows how important establishing verified identities is for development action to be effective. From accessing financial services, managing property rights, promoting good health and quality education, and others, people need to have control over its identity, through secure platforms. Though this might seem a bit odd to someone, in 2017 the World Bank estimated over 1.5 billion people in the world which still could not prove their identity. Thus, this people become invisible in a lot of senses, since, for example, they cannot be eligible for subsidies or external payments. In this sense, public Blockchain technologies can be of great help for agencies and partnerships operating in the field because it can allow them to issue secure, immutable and verified digital identities to all the people. Then, more people would be eligible to obtain financial development aid. This would enable those actors to plan their actions more accurately. The potential of public blockchain platforms is that its neutrality permits it to be mutually shared among many actors, so collaborations and data transfers could be easily done. Consequently, aid results would be more effective and efficient.

As the third point, it shows how important remittances are for economies in developing countries, specially in alleviating many households from poverty. Again, the World Bank

²⁰⁹ UNDP, 2018. *op. cit.*, note 188, p. 8.

estimated in 2017 that remittances amounted to \$444 billion, representing three times more than global ODA, and accounting for at least 3% of the GDP in 60 developing countries. However, the financial structure to transfer this money is profoundly old and inefficient. Transactions are in many cases slow and expensive, due to high fees, and yet many people who receive this aid are also unbanked or remotely isolated. In this situation, public Blockchain technologies have proven to be a great solution to large segments of populations remaining unbanked. Digital wallets and cryptocurrencies are opened and not very expensive (you only need a mobile phone or computer device). They do not rely upon intermediaries nor hold big infrastructures, reducing quasi totally the time and the costs of making and receiving transactions. Moreover, major transparency and less corruption would be achieved since both sides would be clearly identified and the funds could be traced in real time. Indeed, Blockchain wallets continue to increase year by year, with more than 68 million users in February 2021²¹⁰, being used a lot of them for cross-border transactions.

Other points show the benefits Blockchain technologies can bring in improving supply chain management (related to UN SDG nº 12: “Responsible consumption and production”), access to affordable and clean energy (related to UN SDG nº 7), and the exercise of property rights (related to UN SDGs nº5: “Gender equality”, nº 10: “Reducing inequalities” and nº 16: “Peace, justice and strong institutions”).

More recently, the World Economic Forum in collaboration with PwC published in January 2020 a paper entitled “Unlocking technology for the Global Goals”²¹¹, in which they stated technologies of the Fourth Industrial Revolution could have a high impact across 10 of the 17 UN SDGs, with Blockchain playing an important role in 25% of the mapped applications (see Table 4). However, the impact was not equally distributed among all the goals, as the paper shows a great correlation between the private-sector markets and the most matured goals. In this sense, whilst UN SDG nº 3 (“Good health and well-being”), nº 7, nº 9 (“Industry, innovation and infrastructure”) and nº 11 (“Sustainable cities and communities”) have been highly prone to large investments from big companies, other UN SDGs related to market failures (nº 1: “No poverty” and nº 5: “Gender equality”) or the public good (nº 14: “Life below water” and nº 15: “Life on land”) have not received very much attention. But this assumption does not apply to the same extent to all the technologies. To our interest, the paper acknowledges that Blockchain technologies in particular have a high maturity of implementation in UN SDGs nº 1 and nº 7. Regarding the first, it highlights the importance that Blockchain-enabled crowd-finance for development projects and charitable organizations have when combating poverty in developing countries. Moreover, it reassures and complements the information explained previously, by declaring a high maturity of public Blockchain technologies implementation in land-registry platforms, community-distributed market places and peer-to-peer trading, digital identity solutions, among others. And regarding UN SDG nº 7, it ascertains a high maturity of Blockchain implementation in alternative energy asset financing mechanisms (e.g Blockchain finance platforms and mobile money) and a medium maturity in Blockchain platforms to crowd-finance clean energy infrastructure development. Both examples serve to totally verify the assumption of this

²¹⁰ Finances online, 2021. *Number of Blockchain Wallet Users 2021/2022: Breakdowns, Timelines, and Predictions* [online]. Financesonline.com. Available at: [https://financesonline.com/number-of-blockchain-wallet-users/#:~:text=As%20such%2C%20the%20number%20of,Blockchain.com%2C%202021\)%20](https://financesonline.com/number-of-blockchain-wallet-users/#:~:text=As%20such%2C%20the%20number%20of,Blockchain.com%2C%202021)%20) [last accessed on 24 March 2021]

²¹¹ World Economic Forum and PwC, 2020, *op. cit.*, note 156.

work. Precisely, that public Blockchain technologies can serve as a corrective mechanism to secure and streamline the delivery of financial development aid, overcoming limitations experienced through the MFIs models. In addition, the potential of Blockchain could be also applied to the use of funds in the humanitarian sector, e.g with smart contracts to automatize funding already forecasted and thus avoid political interferences and biases²¹².

3.4.1 The state of the art

Having a general picture of the potential applications that public Blockchain technologies can have in the field of micro-financial development aid allows us to acknowledge that it is still considered as a new and emerging technology. Most of the discussions about its impacts and contributions to society are happening at the theoretical level, whilst it is estimated that more than 1.000 different small-scale projects have been launched around the world with specific objectives and a short timeframe. Thanks to those, the international community is progressively considering which are the current technical, social and political obstacles which impede those technologies from being introduced into society, and which are the best ways through which to overcome such limitations²¹³. As it has been the case with other technologies in the past, to ensure Blockchain's full implementation in the mid and short run relevant actors in the field must take into consideration and calibrate how is power and leverage distributed in the present political economical context. In other words, to distinguish the different types of governors participating in the process of global governance of public Blockchain technologies.

In this direction, the evolution of technologies has been lead and influenced by big technological companies from the private sector, which have set themselves up as epistemic and moral authorities. They have provided material capabilities, expertise and executive abilities, but they have also introduced new ethical or moral values with the intention to influence – and in most cases improve – the governance of social, political and economic spheres. Public Blockchain technologies are no exception to this trend, and this is the reason why in the present scenario we can find a clear hegemony and predominance of applications coming from the private sector companies and private aid organisations, also in the financial development field²¹⁴. Regardless of the specific purpose those applications try to improve, what they all have in common is their willingness to transition from centralised institutions towards more decentralised networks, in which individuals become more empowered without denying the role national and international institutions have to play²¹⁵. Thus, institutional authorities are also questioned to position themselves and engage in the development of this technology²¹⁶, contributing with their major legitimacy to set the agenda, formulate sustainable policies and introduce monitoring and evaluation mechanisms. Something that many governments and international organizations like the UN are starting

²¹² Zwitter, A., Boisse-Despiaux, M., 2018, *op. cit.*, note 207, p. 6.

²¹³ United Nations, 2021. *Blockchain and Sustainable Growth | United Nations*. [online] United Nations. Available at: <https://www.un.org/en/un-chronicle/blockchain-and-sustainable-growth> [last accessed on 26 March 2021]

²¹⁴ Based on extensive research about the current Blockchain applications in the financial development field.

²¹⁵ UNDP, 2018. *op. cit.*, note 188, p. 34.

²¹⁶ United Nations, 2021., *op. cit.*, note 214.

to do in the wake of UN SDGs and other international set standards, for example with the *Secretary-General's Strategy on New Technologies*²¹⁷. Indeed, this strategy is summarised with five guiding principles, four of which address the need to work upon inclusive partnerships between the public (governments and organisations) and the private sector (businesses, civil society, academia) to achieve long-lasting results regarding the implementation of these new technologies (artificial intelligence, Blockchain, biotechnology and robotics).

In the following two parts of this third chapter the work will undertake an analytical revision about a selection of different types of public Blockchain applications that both the private and public sector are trying to implement in the financial development field, pointing at its main differences and contributions to society. It will be seen that in many cases those applications rely on the collaboration of both actors.

3.4.2. Private companies and aid agencies: the leading voice

Private companies and aid agencies have had a leading voice when incorporating technologies as means to innovate in the financial development field. Previously in this work it has been showed the emergence of digital platforms during the 2000s decade as a response to critical voices complaining about the real effects micro-financial development aid was having in many countries. Pioneer examples like Kiva in 2005 as a non-profit crowd-lending platform, and Zidisha in 2009 as a micro-lending company have served as a point of departure of the following initiatives that have appeared afterwards. Currently, we can identify different digital platforms of impact investing and solidary crowd-lending which are based not only on the profitability investors can obtain but also on the positive impact the investment can have in the receiving society and the environment²¹⁸. In the same vein, we are seeing a growing interest for what has come to be understood as “crypto-economic philanthropy”, which basically means philanthropy organizations and individual donors making cryptocurrency donations through blockchain-based platforms²¹⁹. Thus, the innovation relies, on the one hand, on the fact that those platforms have proliferated and diversified into different types of models targeting different types of receivers. And, on the other hand, that progressively more of them are incorporating Blockchain technologies and cryptocurrencies as the way to operate. Let's address these ones first, by focusing in just a few²²⁰.

²¹⁷ UN Secretary General, 2018. *UN Secretary-General's Strategy on new technologies*. [online]. New York: United Nations. Available at: <https://www.un.org/en/newtechnologies/images/pdf/SGs-Strategy-on-New-Technologies.pdf> [last accessed on 23 March 2021].

²¹⁸ Todo Crowdfunding, 2021. *Comparativa Plataformas Crowdfunding P2P – El Comparador P2P Definitivo 2021*. [online]. Available at: <https://todocrowdfunding.com/comparativa-crowdfunding/>

²¹⁹ Greenfield, R., 2020. *9 Blockchain for Social Impact Predictions for 2020*. [Blog]. Robert Greenfield IV, Available at: <https://robertgreenfieldiv.medium.com/9-blockchain-for-social-impact-predictions-for-2020-7e10fbffe0c1> [last accessed on 27 March 2021].

²²⁰ Due to a limited extension, this work has had to selected a representation of recognised platforms.

Philanthropic platforms using Blockchain:

- 1) *Blockchain Charity Foundation*²²¹ (*Binance*): It is a non-profit organization initiated by *Binance*²²², following a transparent and secure philanthropy for the social good. It is the first that has adopted blockchain technology and cryptocurrencies, thanks to which donors can actually see how their contributions are making changes when combating poverty and inequality and seeking sustainable progress throughout the world. There are no intermediaries between donors and beneficiaries, and all transactions are recorded. Basically, it helps people with no smart phones – especially in Africa - to own crypto wallets to receive and transfer cryptocurrencies that can serve as alternative money to protect their properties. Again, reaching to people who have been traditionally excluded from formal social and financial services. The platform became more important since July 2018 when it partnered with UNDP, to support the application of blockchain technology to provide innovative solutions to development challenges, with a special focus in the Asia-Pacific Region²²³. Afterwards, BCF has also partnered with other governments and global institutions, becoming the predominant platform in the field²²⁴.
- 2) *BitGive Foundation*²²⁵: It is a non-profit organization founded in 2013 using Bitcoin and Blockchain technology for practical applications for nonprofits and humanitarian work in developing countries. It provides transparency and accountability to donors, sharing the information and the projects in real-time. The platform has progressively become more important, partnering with international NGOs such as Save the Children, or Code to inspire²²⁶, a tech non-profit training program using technology education as an action to fight inequality of Afghan women.

Crowd-lending or impact investing platforms:

- 1) *EthicHub*²²⁷: Spanish collaborative financing platform, connecting small farmers – coffee producers - from Mexico with the financing needed to work their land's productivity and sell their crops in a more equitable supply chain. The intention is to generate a new ecosystem in which all stakeholders (donors and recipients) win mutual relationships and collaboration, to generate a self-funded and robust local market, as well as socioeconomic and environmental impact in those small communities and the same personal development of individuals. Donors also have the opportunity of buying the coffee from the farmers,

²²¹ *Binance Charity*, 2020. *A revolutionary Donation Platform*. [online]. *Binance Charity*. Available at: <https://www.binance.charity/> [last accessed on 26 March 2021]

²²² A blockchain ecosystem and the largest cryptocurrency exchange by trading volume

²²³ UNDP Asia and the Pacific, 2018. *Blockchain Charity Foundation and the UNDP announce partnership to explore blockchain for social good*. [online]. Available at: <https://www.asia-pacific.undp.org/content/rbap/en/home/presscenter/pressreleases/2018/blockchain-charity-foundation-and-undp-announce-partnership-to-e.html> [last accessed on 15 March 2021]

²²⁴ *Binance*, 2018. BCF: Blockchain for Social Good. [Blog] *Medium*, Available at: <https://medium.com/binanceexchange/bcf-blockchain-for-social-good-8c24164400d5> [last accessed on 20 March 2021]

²²⁵ *BitGive*, n.d. *About us – BitGive Foundation*. [online]. *BitGive Foundation*. Available at: <https://www.bitgivefoundation.org/about-us/> [last accessed on 20 March 2021]

²²⁶ *Code to inspire*, 2021. *Building Afghanistan 2.0 with #AfghanGirlsCode We are the first coding school for Women in Afghanistan*. [online] *Code to inspire*. Available at: <https://www.codetoinspire.org/> [last accessed on 25 March 2021]

²²⁷ *EthicHub*, 2021. *What is EthicHub?*. [online]. *EthicHub*. Available at: <https://www.ethichub.com/en/what-is-it-and-how-does-it-work> [last accessed on 25 March 2021]

and thus establishing even a close relationship between them. The platform is directly compromised in meeting 9 UN SDGs²²⁸, and has received numerous national and international recognitions. It uses a blockchain technology connected to Ethereum's public network called xDai, and the same token to finance the loans and pay the correspondent costs. Donors can invest a minimum of 20€, and will be returned the cost of the loan plus the interest rate charged to borrowers, which is about 8%.

- 2) *Microwd*²²⁹: Spanish micro-credit NGO focused at helping women entrepreneurs in 56 communities of Nicaragua, Peru and Mexico, as they show lower risk of default and more potential for social impact. Donors can invest their money in businesses from ten different sectors, and help women get out of poverty. The minimum investment is of about 100€, and the interest rate charged to borrowers of about 25%. The platform operates in fiduciary money. There is an intermediary operating in the field, ensuring borrowers comply with their responsibilities. The platform is directly compromised in meeting 8 UN SDGs²³⁰.
- 3) *Lendahand*²³¹: Crowdfunding platform based in the Netherlands serving the gap between entrepreneurs in emerging markets and available funding to develop. Since most of these people cannot access traditional financial institutions, the investment of donors can help fight poverty, by stimulating local economies and providing for more local opportunities. More than 2.824 different projects have been funded in developing countries. The minimum investment is of about 50€, and the interest rates are higher or lower (between 3%-4%-5%) depending if it is a direct investment or an investment via local partner. The platform operates in fiduciary money. It has been repeatedly awarded for its positive impact on societies and environment.

Bigtech companies working in the field

Maintaining P2P platforms as the framework, many large technological companies by their own also use Blockchain technologies to help overcome some limitations related to micro-financial development aid, as explained previously. This is the case of *Aid:Tech*²³², an Irish-based company working in bringing social and financial inclusion to undocumented and unbanked people in developing countries, by delivering them digital entitlements through digital platforms using blockchain based-digital identities. This enables organisations using the platform to do fast and instant peer-to-peer disbursements to beneficiaries through their digital wallets, whilst reducing administrative and operating costs, maintaining transparency and traceability, and avoiding corruption or mismanagement of the aid. This was to avoid many inconveniences happening with paper-based vouchers that development agencies administered in the field for people to buy goods. In this sense, these new electronic vouchers are encrypted with QR codes that contain the person's identity when buying products, therefore there is no need of using a banking system. When this person would be in need of more money, the P2P platform would deliver it, without the need of generating another QR.

²²⁸ Concretely: nº 1-2-7-8-9-10-12-15-17

²²⁹ Microwd, 2021. *Trusting one another is better than not trusting*. [online] Microwd. Available at: <https://www.microwd.es/en/> [last accessed on 25 March 2021]

²³⁰ Concretely: nº 1-2-3-4-5-8-10-17

²³¹ Lendahand, 2021. *Crowdfunding a better world one investment at a time*. [online]. Lendahand. Available at: <https://www.lendahand.com/en-EU> [last accessed on 25 March 2021]

²³² AidTech, 2021. *Disbursements via Digital ID*. [online]. Aid:Tech. Available at: <https://www.aid.technology/> [last accessed on 25 March 2021]

The system secured and streamlined the delivery of financial development aid. It helped to combat fraud and monitor vouchers transactions in real time (always preserving its privacy), allowing aid agencies to have extensive reliable data with which to measure the impact of the services and the possibility of scaling it. Indeed, this project was first implemented in December 2015 between Aid:Tech, the Irish Red Cross and Lebanese humanitarian experts with Syrian war refugees in northern Lebanon. It was the first time that international aid was delivered completely transparent using public Blockchain technologies. The success of the project allowed the company to introduce additional services in the electronic voucher like micro-insurance, remittances, social and welfare services like healthcare and micro-pensions, etc²³³.

International and national aid agencies

In the private sector we cannot underestimate the important role that international and national NGOs play in tackling humanitarian and development challenges in the field. Usually they are the ones in the frontline having to cope with the vast array of development aid limitations that have been exposed throughout this work. In such a vein, in 2010 *Start Network*²³⁴ was created, as a British consortium of 55 international and national NGOs using Blockchain technology to ensure a transparent and effective management of public funds delivered to people affected by crises. They wanted to radically change systemic problems like slow and reactive funding and centralised decision-making, in three different ways: 1) Transforming the humanitarian financing model from reactive to proactive, 2) A more balanced and inclusive decision-making process with those who work in the field (bottom-up approach), 3) Facilitating collective innovation to solve humanitarian challenges. The use of Blockchain technologies has enabled a fastest, transparent and traceable distribution of financial aid. It started in 2016 thanks to a grant of the government of Estonia, a leading country in the implementation of this technology. Start Network partnered with the platform *Disberse* to test blockchain in small disbursements from donors to NGOs and then from NGOs to country teams using digital wallets. Since 2010 they have partnered with 7.000 other actors in 200 countries and territories. The network offers financial infrastructure that brings effective and efficient and predictable funding to support populations.

3.4.3. United Nations agencies: in an experimental stage

Since 2018 Blockchain technologies have been progressively introduced in the organization, as a tool that can facilitate and democratize its work, especially in the development aid and humanitarian sector. Many theoretical discussions have taken place about the disruptive potential of Blockchain in meeting the UN SDGs, precisely in a context in which the organization has decreased its worldwide reputation as a result of failing to deliver positive impacts, as well as the high rates of UN development assistance aid lost to corruption²³⁵.

²³³ UNDP, 2018., *op. cit.*, note 181, p. 15

²³⁴ Start Network, 2021. *A new era of humanitarian action*. [online]. Start Network. Available at: <https://startnetwork.org/about-us> [last accessed on 25 March]

²³⁵ Pollock, D., 2020. *Blockchain For Good: How The United Nations is Looking to Leverage Technology*. [online]. Forbes, Available at: <https://www.forbes.com/sites/darrynpollock/2020/02/27/blockchain-for-good-how-the-united-nations-is-looking-to-leverage-technology/?sh=5dd33d45543d> [last accessed on 26 March 2021]

Probably, the international meeting that has been especially important at the UN-level was the full-day session “Blockchains for Sustainable Development”, at the 2018 World Investment Forum, held at the UN Headquarters in Geneva. As a multi-stakeholder debate, governments, companies and civil society discussed about the practical applications of Blockchain technologies, the opportunities and challenges in meeting the UN SDGs, and finally about policy and regulatory risks and opportunities for governments. Indeed, it was a good opportunity for the whole UN system to engage in the use of Blockchain. This was already pointed out in 2017 for Yoshiyuki Yamamoto, the former Special Advisor for UN Engagement and Blockchain Technology at UNOPS²³⁶, which declared how the technology could revolutionize aid distribution.

After it, some agencies and programs started to implement the technology in small scale projects in concrete countries, basically applied to improve the efficiency and efficacy of development aid. Some of those projects aimed at engaging inter-agency collaborations, and others were in conjunction with the private sector. All of those are captured by the UN Innovation Network Blockchain Group²³⁷, formed by UN employees and other non-UN as observers. The Network provides a wide range of different tools to spread the knowledge of Blockchain across the UN entities, like the Practical Guide²³⁸, the Introduction to Blockchain course, the Blockchain Learning Group, the Cryptocurrency Working Group and the Atrium, which is an inter-agency platform and decentralized collaboration tool that allows UN entities to learn and experiment with the Blockchain technology. This way collaborations are enhanced, duplications of work are reduced, and potential of impact is maximized. The Atrium uses a private Ethereum Blockchain as the test network, which allows all entities to assess their applications and run the nodes.

Two years later the results have been sufficiently positive to explore the disruptive potential of Blockchain applications in the wide development aid field. For example, with cash and remittance transfers, supply chain tracking, record keeping, digital identity, increasing transparency and tracking of aid funds, etc. However, the technology is still far away from its maturity and full incorporation at the UN-level. During this new decade and the following it is being expected to reach major long-lasting impacts to many developing countries through large scale projects and initiatives²³⁹. Some of those experimental projects related to financial development aid are the following.

- 1) “*Building Blocks*”, WFP and the UNHCR²⁴⁰: The WFP is the largest humanitarian agency delivering cash to people victims of conflict, poverty or under situations of under-development. With the intention of improving this aid, in 2018-2019 the agency launched this pilot project in which Blockchain technology was used to deliver cash assistance more efficiently to 106.000 Syrian refugees living in refugee camps in Jordan.

²³⁶ Yamamoto, Y., 2017. *Could bitcoin technology revolutionize aid distribution?* [online]. UNOPS. Available at: <https://www.unops.org/news-and-stories/insights/could-bitcoin-technology-revolutionize-aid-distribution> [last accessed on 2 March 2021]

²³⁷ UN Innovation Network, 2021. *Blockchain*. [online]. UN Innovation Network. Available at: <https://www.uninnovation.network/blockchain> [last accessed on 10 March 2021]

²³⁸ UN Innovation Network, n.d. *A Practical Guide to Using Blockchain within the United Nations*. [PDF]. UN Innovation Network. Available at: <https://atrium.network/guide> [last accessed on 10 March 2021]

²³⁹ See Annex 1; Pollock, D., 2020., *op. cit.*, note 236

²⁴⁰ World Food Programme, 2021. *Building Blocks*. [online]. *World Food Programme*. Available at: <https://innovation.wfp.org/project/building-blocks> [last accessed on 26 March 2021]; UNDP, 2018., *op. cit.*, note 181

Differently than Aid:Tech project explained before, the WFP used digital biometric registration data from the UNHCR. The scan of their eyes was authenticated and recorded on a private Blockchain, establishing by this their identity whilst preserving privacy. This scan is the method served to authenticate when wanting to purchase something in local markets, as funds are linked to digital identities. This way WFP has a transparent traceable record of every transaction, optimizing financial resources and preserving security and privacy for refugees. The success of this initiative has resulted in exploring how the digital platform can support wider unrestricted cash distributions inside the refugee camp. In addition, the project will partner with UN Women's Cash for Work Program to allow Syrian women in those refugee camps to withdraw cash or make direct purchases.

- 2) *“Blockchain for Remittances”*, UNCDF²⁴¹: Nepal is heavily dependent on its citizens' remittances, and they play an important role in the country's growth and development. However, the financial services available on both sides (migrant workers and recipients) were not suitable for their specific realities, causing inefficiencies and information asymmetries with the traditional banking system. In this sense, in 2019 the UNCDF partnered with Laxmi Bank (a commercial bank in Nepal) and New Street Tech (a Blockchain private company in India and the Middle East), to explore the use of Blockchain technology to improve the delivery of financial services in the excluded population from Nepal. Similar projects have been launched by other UN agencies and the private sector²⁴² in Tajikistan (between Bitspark and Atfinlab – an internal start-up created by the UNDP) and Serbia (between Aid:Tech and UNDP), both countries deeply relying on remittances and with many population still remaining unbanked.
- 3) *“Credit Bureau for the Future”*, UNCDF and UNDP²⁴³: In 2018 a new partnership between the Government of Sierra Leone, UNCDF, UNDP and the non-profit digital technology platform Kiva, was created to provide the citizens with adequate access to financial services, since most of them remained unbanked. The innovation of the project was based on the creation of a national digital identification system using Blockchain technologies, through which to control your personal information and access financial services. The initiative wanted to end up building an advanced national secured credit bureau, and had the potential to transform the situation of financial inclusion in the country. Moreover, if the model reveals as successful it could be exported to other developing and developed countries.
- 4) *“UNICEF Crypto Fund”*, UNICEF: In 2019 UNICEF created its Crypto Fund project with the aim of accepting cryptocurrency donations (bitcoin and ether) to finance start-up public blockchain projects aiming at improving the situation of vulnerable children

²⁴¹ UNCDF, 2019. *Blockchain for Financial Inclusion in Nepal*. [online]. UNCDF- Available at: <https://www.uncdf.org/article/4513/blockchain-for-financial-inclusion-in-nepal> [last accessed on 27 March 2021]

²⁴² UNDP, n.d. *Beyond bitcoin: Using blockchain to advance the SDGs*. [online]. Available at: <https://feature.undp.org/beyond-bitcoin/#group-5-things-blockchain-can-do-for-the-sdgs-CWDXIGekKN> [last accessed on 3 February 2021].

²⁴³ UNCDF, 2018. *Kiva, Sierra Leone and United Nations Agency Partner to Implement “Credit bureau of the Future”*. [online]. UNCDF. Available at: <https://www.uncdf.org/article/3948/kiva-sierra-leone-and-united-nations-agencies-partner-to-implement-credit-bureau-of-the-future> [last accessed on 28 March 2021]

in emerging and developing countries. For it, it partnered with Ethereum Foundation, in charge of providing the technical assistance. It is the first initiative of this type in the UN, and at the end of 2020 it made 12 investments in public goods across eight countries. The importance of introducing this initiative at this high level lies in the fact that donors, recipients and society as a whole can track where the funds go, and transactions can be made rapidly. This way, reducing inefficiencies and bringing total transparency. A precedent that is expected to be followed by other UN agencies and governmental organizations in the short future²⁴⁴.

In addition, it is appropriate to mention that Blockchain technologies can be developed in the financial development field because it also exists what is understood as Decentralized Finance (DeFi). It is the concept to explain the ecosystem in which financial services are available on a public Blockchain network, this is, everyone can access them without having to rely on a third authority like a bank. As said, it removes intermediaries between buyers and sellers and lenders and borrowers. In order to function it needs stable-coins, such as cryptocurrencies, financial services like lending and exchanging, and smart-contracts to provide the framework (conditions) for linking both parties in a transaction. We have seen that nowadays DeFi and the different technologies and platforms applied are still an emerging sector with an infinite potential to be developed. Indeed, it is expected to radically transform the financial system, and thus financial development aid²⁴⁵. One concrete example is *Alice*²⁴⁶, a totally decentralized and transparent platform for investors, governments and NGOs using financial services for social good.

3.5 Current limitations regarding the implementation of Blockchain technologies

The implementation of Blockchain technologies and Decentralized Finance as a whole is still in an incipient phase at the international level, with many challenges remaining if it aspires to achieve radical transformations in many areas of our live. Due to its nature, if we only focus on the financial development field we must include in this discussion the current disparities that exist between developed and developing countries that ultimately prevent these technologies to pursue its disruptive potential. Moreover, since this work tries to propose a broader and multi-stakeholder approach when addressing governance issues, it is also necessary to address how these disparities and broader challenges in general could be overcome in the future. Somewhat that imperatively encompasses the public and private sector to agree upon certain structural aspects.

In this vein, the first concern that has been raised by many public authors but also acknowledged by some in the private sector²⁴⁷ is that the wide spread of technologies can end up *reproducing situations of inequality and power asymmetries* between countries and

²⁴⁴ UNICEF, 2020. *The UNICEF CryptoFund*. [online]. UNICEF. Available at: <https://www.unicef.org/innovation/stories/unicef-cryptofund> [last accessed on 30 March]

²⁴⁵ Sharma, R., 2021. *Decentralized finance (Defi) Definition and Use Cases*. [online]. Investopedia. Available at: <https://www.investopedia.com/decentralized-finance-defi-5113835> [last accessed on 28 March 2021].

²⁴⁶ Alice, 2021. *The future of impact finance*. [online]. Alice. Available at: <https://alice.si/> [last accessed on 29 March 2021].

²⁴⁷ See Annex 1.

peoples. Mainly, between the providers of intellectual and physical capital²⁴⁸ (which can be innovators, shareholders, and donors in this case), located generally in developed countries, and the receivers depending on the capital, which in this case are vulnerable, usually low-skilled or illiterate, and low income individuals from developing countries. This is the critical moral debate this work has also tried to show, and that underlines all the discussions about financial development aid in general. If it is true that Blockchain technologies aim at introducing more ownership and transparency in the way funds are administered towards developing countries, the next step that should be taken into consideration is enhancing *capacity development* and *building trust* among individuals that will be using these technologies. This means to develop programs that accompany the deployment of technologies along with the spread of technical capacities and basic knowledge for the population on how to manage and secure private assets and data through digital platforms²⁴⁹. Indeed, this is a clear difficulty for the private sector, which has to create more comprehensive and inclusive digital tools according to the particular contexts where they will be operating. But also for the public sector and NGOs, which will have to help by providing political, economic and social assistance and experience in the field in order to avoid this digital divide. However, this will take years because nowadays people in the development cooperation field are just starting to know and consider Blockchain technologies.

Besides this cross-cutting concern, there are other issues that require the attention of the international community. They are the following²⁵⁰:

- a) Building the *adequate infrastructures* in developing countries. It is already known that one of the main limitations preventing MFIs from pursuing its goal was the lack of infrastructures through which to secure and streamline the delivery of financial development aid. If this is to be overcome, there are different types of infrastructures that the public and the private sector must consider when implementing Blockchain technologies in developing countries. Indeed, since in many places there did not exist previous infrastructure nor competing industries alike, it is thought that the process will be easier. All of them are meant to help reducing operation and administrative costs, and by this achieving a more adequate, faster and efficient delivery of financial services.
 - *Technical*: this refers to all the telecommunications and electronic infrastructures needed to have broadband internet connection and thus assure a continued and fast access to platforms using Blockchain technologies. For example, a mobile network.
 - *Environmental*: related to the previous, this refers to having enough energy resources to support the expected level of energy consumption depending on the amount of people accessing to internet connection and Blockchain technologies' platforms.

²⁴⁸ World Economic Forum and PwC, 2020, *op cit.*, note 156.

²⁴⁹ Zambrano, R., 2017., *op. cit.*, note 175, p. 23.

²⁵⁰ Zwitter, A., Boisse-Despiaux, M., 2018, *op. cit.*, note 207, pp. 5-6; Cuellar Benavides, J., 2018. *op. cit.*, note 75, p. 35; Zambrano, R., 2017., *op. cit.*, note 175, p. 23; UNDP, n.d., note 243; ZOS Lending Network, 2019. Decentralized Finance in Developing Countries: Its Potential and Constraints. [Blog]. *Medium*, Available at: <https://medium.com/the-capital/decentralized-finance-in-developing-countries-its-potential-and-constraints-5e5fc8fb8651> [last accessed on 30 March 2021]

- b) Adopting new international and national *regulatory mechanisms*. In the 2018 World investment Forum session about “Blockchain for Sustainable Development” it was stated the convenience to create a legislative framework to ensure that Blockchain technologies were used to achieve major social goals. By acknowledging everything said in this work, it is thought that the first main steps that should be taken in this regard are three.
- *International legal frameworks*: Internationally-agreed standards and principles should harmonise and guide countries when approaching and implementing Blockchain technologies at the international and national level, and especially in the fields of development cooperation and humanitarian aid. Those frameworks should be the result of private sector needs balanced with public sector collective objectives and interests. In this regard, frameworks should be aligned with international public law, humanitarian law and human rights law, and also address questions preventing the abuse for private sector gain, like the use of taxations.
 - *Data and privacy protection policies*: Ambitious regulatory policies and processes need to be embraced in developing countries to secure information and individuals’ privacy, and with this avoid great disparities between countries.
 - *Transparency and anti-corruption measures*: One of the biggest problems identified in the failures of ODA and national financial institutions when delivering aid was the embedded corruption and lack of transparency that many developing countries face and which ultimately prevent efficacy and efficiency results. To avoid it, developing countries should also introduce transparency and anti-corruption policies following the benefits that Blockchain technologies can already bring in this regard.
- c) Deciding which type of *institutional governance* is the most appropriate. The introduction of Blockchain technologies by the private sector and the multiple gains they offer in relation to new forms of decentralised governance forces the international community and especially the public sector to make a step beyond and decide which kind of public global institutional arrangements are the most appropriate for this context. Those decisions will then be easily reproduced at the national level. The key demands that have been raised are two.
- *Inclusive policies*: Another important cause of the failures of development cooperation aid is the lack of ownership policies have when they are being drafted. For a long time, people in the field have been prevented to participate in decision-making process directly affecting themselves, and thus the results have ended up worsening their situations. The use of Blockchain technologies offer a fantastic opportunity to transform this situation, facilitating in such a way the transformation towards a more bottom-up approach. Consequently, by enabling individuals and developing countries to become more empowered, they would be more capable and proactive to create favourable policies, to implement pilot projects and prototypes, and to allow more talent and expertise to grow.
 - *Multi-stakeholderism*: In this particular context there is no single actor holding unanimously the power, the resources and the capacity to deal with how Blockchain technologies are being implemented and regulated. This

discussion can be traced back to the different types of authority explained before, and puts the international community in a progressively more common scenario in which the global governance is shifting towards multi-stakeholder models. Since the private sector and the civil society are protagonist actors in the emergence, deployment and well-functioning of Blockchain technologies, the public sector cannot go in any other direction. Instead, the public sector will have to accept this reality and find a way to adapt to it while preserving its essential and basic role as guarantee of rights and public goods.

3.6 The horizon of future financial development aid: the multi-stakeholder approach

Throughout this work it has been presented the urgency to transform the way in which development aid, and particularly financial development aid, has been thought, decided and implemented worldwide. By pointing to its deficiencies the criticisms have warned about the perils and consequences of avoiding the participation of the society as a whole in a matter which, in turn, affects us all. In this regard, the UN SDG nº 17 highlights the need to establish global partnerships for sustainable development as the only possible international strategy to achieve more progress without leaving no one behind. The proposal of Blockchain technologies in the field of financial development cooperation is a feasible way of facilitating those partnerships beyond the public level. However, in order to assure the disruptive potential can be deployed, it is mandatory to firstly consider which are the most effective ways for achieving so. And this debate is automatically materialized in the UN *Blockchain Commission for Sustainable Development*²⁵¹, already created in 2017 and aimed at developing a multi-sectoral framework when utilizing blockchain to implement solutions against global challenges. The Commission maintains a multi-stakeholder participation, with the presence of the UN, member states, international organizations, private entities and civil society. Indeed, afterwards it has launched “Blockchain for Impact” (BFI), a collaborative advocacy and action platform designed to serve the growing community with leaderships from the global blockchain ecosystem. Therefore, the multi-stakeholder approach seems to be the most appropriate form of governance in this emerging field too, and will only be strengthened in the upcoming future. An important transformation in the history of financial development aid that has come to stay²⁵².

²⁵¹ II SDG, 2018. *Commission White Paper Explores Blockchain Use for SDGs // News*. [online]. SDG Knowledge Hub. Available at: <https://sdg.iisd.org/news/white-paper-explores-blockchain-use-for-sdgs/> [last accessed on 15 March 2021]

²⁵² United Nations, 2021. *op. cit.*, note 214.

Conclusion

The intention of this work has been to introduce a new theoretical and practical proposal to secure and streamline the delivery of financial development aid using emergent Blockchain technologies through digital platforms, in the context of on-going international discussions about how to improve the efficacy and efficiency of the field. For it, it has offered a brief historical evolution about financial development aid, mainly focused on microfinance, and afterwards it has tried to compare how can Blockchain technologies correct and improve the limitations identified, by offering its major potentialities to achieve the UN SDGs and other specific goals related to financial development aid. The reason for doing so have been to present the extent to which Blockchain technologies can impact in the field, providing as examples a selection of good practices coming both from the private sector and from the UN. Those have not been chosen randomly, but rather to proof that the future governance of financial development aid will only achieve its effectiveness if it fulfills to introduce a bottom-up approach that takes into consideration and leverages the needs and the capacities of all the relevant actors: public entities, private companies, academia, NGOs and the civil society.

Concretely, the work has first tried to present a synthesis about the main conceptual debates regarding development aid, pointing to the present shift of paradigm, from the liberal practice to the postcolonial critique, as well as the unanimous support to engage in multi-stakeholder global partnerships to achieve the settled commitments. In this regard, the work has highlighted that the liberal development view through interventionist theories has prevailed as the dominant in the international community especially after the Cold War. Development has been sought alongside capitalism, as a practice that needs to be related to it rather than a transformative process. Consequently, in many parts of the world the development action has maintained a very limited view, focusing basically on targeted practices, including in foreign aid. This has constrained or even impede the possibility of using the development aid in larger and strategic long-term projects aimed at rebuilding the economic and social structures of underdeveloped societies. This liberal view has been traditionally exercised by States – and specially by OECD DAC members, until post World War II in which the international community sees a proliferation of different types of actors: development agencies, NGOs and large private corporations and philanthropic donors. Though this diversification is aimed at bringing more financial resources to growing challenges, the truth is that efficacy and efficiency is in most of the cases limited because there are important misalignments between development agents and receiving populations. This persisting critique is at the core of the four High-Level Forums on Aid Effectiveness celebrated in Rome (2003), Paris (2005), Accra (2008) and Busan (2011), which served to stress that the lack of coherence and effectivity of aid development policies was coming, precisely, because spill-over effects were not taken into consideration and because practices focused on alleviating poverty were not resulting in sustainable progress.

In this scenario amid the global economic crisis after 2008 the international community was forced to shift into global development paradigms which take into consideration people-centred approaches and localization practices when configuring development policies. This coincided in time with the approval of UN Sustainable Development Goals in 2015. In this new global development approach paradigm, the governance of development aid should be

in the form of multi-stakeholder global partnerships, as was effectively decided with the approval and functioning of the Global Partnership for Effective Development Cooperation in 2016, endorsed by 161 countries, multilateral institutions like the UNDP and the OECD, bilateral donor agencies, private sector companies, civil society organizations, and other relevant networks and stakeholders at the regional and local level.

The present theoretical conceptualizations of development aid have served the work to particularly address the functioning of international financial development aid, which consists in voluntary monetary flows given from one donor to a receiver with the aim of supporting and assisting in its economic, social and political development. It seeks to alleviate systematic challenges, such as poverty and the improvement of living standards, and thus it maintains a long-term vision.

Nowadays the main source of financing for development aid in Least Development Countries is still the Official Development Assistance, delivered by OECD DAC members to a concrete list of ODA recipients (which accounts for bilateral aid) or to international development institutions (which accounts for multilateral aid), in the form of grants or loans. However, this aid has been vastly criticized because it has been reduced over time and has maintained in many cases an earmarked condition, losing efficacy and effectiveness. This is particularly alarming considering the recent challenges with the pandemic of COVID-19 to meet UN SDGs by 2030. Because of this, in the 2020 Financing for Sustainable Development Report the UN points out the need to put more efforts in increasing and improving access to ODA. But also, to mobilize additional financial resources coming from South-South cooperation, Development Financial Institutions (DFIs) and Multilateral Development Banks (MDBs), and other actors from the private sector (NGOs, philanthropists, private social investments) which are becoming more and more important in the international financial development system. All those actors are shaping the political governance of financial development aid, as the alternative proposal of this work has tried to show.

Afterwards, the work has gone deeper into the evolution of microfinance as a complementary approach to development, assessing its real impact as an anti-poverty tool. It has explained from the origins of Microfinance with the Grameen Bank Model of Muhammad Yunus in 1976 in Bangladesh to the commercialization of Microfinance in the 1990s decade throughout the world. In this sense, microfinance was developed thinking that giving small amounts of money to poor entrepreneurs and small businesses will be the most efficient policy to combat poverty and improve the standards of living of the communities, which have been traditionally excluded from banks and financial institutions. But loans were provided with high interests and costs associated, which people could not afford to pay. However, the Microfinance model gained large-scale outreach profitability and became attracting by international development agencies like the UNDP and US right win foundations. It grew and developed as an industry during the 1990s and consolidated as a commercial sector in the 2000s. But critiques emerged in the first place arguing the failure to alleviate poverty and generate progress were indeed strengthened during those years and especially when the global economic crises started. Not only the ultimate objective of the policy was challenged, but also the fact the fundamental idea for which the contemporary microcredit model was no longer a bottom-up redistributive mechanism challenging the political and economic system, but rather it was just legitimizing and perpetuating it.

The rapid historical review serves the work to shed light upon those hard critics, by arguing that the problem of the mechanism derived from the way it was thought and implemented towards developing countries, and thus the solution required a better orientation and management according to the particular contexts. As well, that financial strategies in development aid were a continuum of policies that needed to be aligned and harmonized to achieve the desirable objectives. Meaning by this that whilst micro-financial development aid is assessed in this work as a complementary approach progressively becoming more important in the global ecosystem, in order for it to be successful public interventions had also to address the given market failures at the same time.

This better orientation and management is precisely the proposal of this work, which speaks about the technological boom and the infinite new business opportunities that began to emerge in the late 2000s. In this regard, the work focuses on the leading role Fintech companies are having when using technologies to offer better financial services to those in need, specifically with the positive impact digital platforms can have when accessing more finance for local development and also bringing efficiency delivery gains. The digitalization of financial development aid has been accepted by the international community at the UN level, citing for example the UNDP and the UNCDF, but also traditional MicroFinance institutions and mainstream banks are engaged in the idea of facilitating the financial inclusion and financial payments through the development of digital ecosystems in developing countries.

The chosen examples are the peer-to-peer digital platforms, which emerge as a response of mistrust in traditional international and local economic and political institutions, for the way they have been operating in developing countries. The way to do so is by directly empowering the citizens, by acknowledging that aid effectiveness and progress is only achieved when it is based in solidarity redistribution. Each individual has the potential to help many others, and in general the potential to change the world. Those alternative models represent a radical new way of securing and streamlining the delivery of financial development aid because they have in their core the willingness that individuals have to see real changes in the world. To secure because intermediaries are reduced and in most cases money is lent directly to borrowers, with which lenders can establish a close relationship. And to streamline because every day more lenders and borrowers are joining those platforms, and thus more transformative projects can be funded. Moreover, they enhance and induce a broader change in the way aid has been delivered traditionally, meaning with the following. Firstly, that North-South cooperation is no longer seen from a paternalistic unconcerned point of view, but rather from a solidarity cooperative point of view. Individuals from both sides get to know each other, get to share the preoccupation for the business to succeed, and after all the wish to achieve more progress. And secondly, that lenders can be from any part of the world, even from the same country, thus it also contributes to enhance South-South cooperation and to reduce inequalities within countries.

To understand the present importance of peer-to-peer platforms for financial development aid, the work starts by describing the first examples of Zidisha as a micro-lending community and Kiva as a non-profit crow-lending platform. Then it addresses the need to incorporate more technologies in the field which could help to significantly contribute in meeting UN SDGs by 2030, in a critical context in which socioeconomic challenges have worsen due to the pandemic of COVID-19. The perfect introduction to speak about the Fourth Industrial Revolution and the transformative changes enabled by different key digital technologies.

Concretely, about the disruptive potential that Blockchain technologies can have as a corrective mechanism to enhance microfinance and in general to secure and streamline the delivery of financial development aid.

Throughout the last chapter the work has assessed the capacity of Blockchain technologies to effectively tackle human development challenges in a better way than other previous mechanisms, by comparing the alternatives it can offer to MicroFinance multiple limitations. It has indeed highlighted three main aspects. The first, that it can bring more transparency to systems and platforms, transforming the way in which funds are monitored and managed. The second, that it allows a more decentralized and sustainable management of the resources, favoring aid efficiency and financial inclusivity. The third, that it enables the creation of, and access to new financial mechanisms. This is indeed related to increase and improve the accessibility to microfinance options, as Blockchain can truly deliver on the promise of democratizing investment and access to financial services and information, as well as on the wealth creation and redistribution process across the world.

The work has supported those affirmations with some current Blockchain microfinancing applications either coming from the private companies and aid agencies, which maintain the leading voice, and from the UN agencies, which are still in an experimental stage. Describing the state of the art allows the work to end up putting into the table the current limitations experimented worldwide or by developing countries in particular, which ultimately prevent the whole implementation of Blockchain technologies. In order to avoid reproducing situations of inequality and power asymmetries, the main actors in the system should focus on capacity development and building trust among individuals who will be using the technologies. Besides that, other issues must be addressed like building adequate infrastructures in developing countries, adopting new international and national regulatory mechanisms, and deciding which type of institutional governance is the most appropriate for the matter. The latter offers the possibility to reaffirm the same words expressed at the beginning of the work, which are the two key conceptual and practical elements to incorporate in the upcoming decision-making process of financial development aid. The first, inclusive development policies preserving a bottom-up approach. The second, the multi-stakeholder governance between the relevant actors (UN, member states, international organizations, private entities and civil society) needed to assure the disruptive potential of Blockchain technologies can be deployed. Important transformations in the history of financial development aid that have come to stay.

In this regard, the work has proven the main hypothesis, being this that Blockchain technologies through the use of digital platforms can clearly help in improving the delivery of financial development aid, by making it more secure and streamlined. The proposal has not only been theoretical, but it has also been successful in describing the current applications that are being implemented, showing clear disparities between the public and the private sector. Whilst the private sector is the leading actor in terms of innovation, the public sector is starting to acknowledge about the importance of introducing Blockchain technologies in the field of financial development aid and many others. In this work it has been selected the view of the UN due to its international and general character, but it has been useful to prove the tendency of convergence between both types of actors in what regards the role technologies will play in the governance of financial development aid. The selection of this field has responded to its essential role in achieving the UN SDGs by 2030. Moreover, the work has also brought a critical side, by highlighting the main limitations experienced both

in developed and developing countries that ultimately act as an impediment for the full deployment of those technologies. Because of this, the work can conclude that the application of Blockchain technologies in the financial development field is still in an initial phase, and their disruptive potential will achieve greater importance during this decade and the following²⁵³.

²⁵³ See Annex 1.

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Annex 1: Interview with Miguel Caballero

Miguel Caballero is an industrial engineer from Barcelona, and one of the most recognised Spanish experts on Blockchain technology and assets tokenization. He is the co-author of the Masters in Blockchain taught at Tutellus, the biggest educative platform of the Hispanic world. He also teaches in IE Business School, Esade Business School, La Salle, and others. He is the author of the book “Bitcoin, Blockchain y Tokenización para inquietos” (2019), which has been used throughout this work to get a general picture of the technical aspects about Blockchain. However, the most ambitious part of this work is the last one, in which it is analysed if the BT can really be a disruptive tool to secure and streamline the delivery of financial development aid and help to meet the UN SDGs. In this sense, Miguel Caballero was contacted to arrange an interview in which to ask about his opinion regarding this last matter. Here is the transcript.

1. How would you define BT in this scenario of global challenges?

When we refer to Blockchain technology we need to concrete it, and for this I propose to use the appellative “public” or to directly speak about “*cryptoeconomy* and *tokenization*”.

a. What differences can we find since its emergence? Is it booming? Which are the perspectives in the short-mid run (2-5 years)?

In this sense, the Blockchain has evolved a lot and in many spheres. More presence in the market, in terms of the people accepting it, the number of users, the type and diversification of new technology, the own ecosystem...The current reality has nothing to do with the beginnings of Blockchain and Bitcoin in 2009, neither with the context of 2015. In the short and mid run the expectations are to be exponential. The amount of money entering the crypto market is tremendous, and I do not believe this would stop nor deaccelerate. We are now in a context in which the interest rates are negative, this means the value of money is decreasing. To this we need to add the fact that central banks are operating by themselves in the emission of more money. In consequence, every time there will be more people investing money in the crypto world, and for this the expectations of growth are exponential.

b. In general, which are the main positive and negative traits the BT can bring to society?

In public Blockchains the positive aspects regard the freedom of every individual to choose what to do with its money, and the independence from a third-authority. The negative aspects appeal to the great responsibility every individual has to control its own money. If you lose the keys of your electronic wallet you lose your money. There is a risk in there that people need to be prepared for. Unfortunately, not everyone is ready for it.

2. The BT emerges and proliferates from and within the private sector. Progressively we are seeing how the public sector gets more interested in the disruptive potential the BT can have in many fields, producing more efficacy and efficiency. Many other traditional financial institutions and microfinance institutions are doing the same.

- a. **Why do you think those actors are interested in incorporating this technology?**
- b. **Which are the main limitations that exist in the public and financial sector for the BT to grow and expand? Are these limitations shared throughout the world or are there clear differences between developed and developing countries?**

I believe that the limitations experienced in developing countries is that most of the people are unbanked. But banks are never going to reach these people because they cannot obtain profit from it. However, there is no need to do that to enter the crypto world. Users only need a mobile phone, which most of the people in the world have.

In this respect, banks will need to accept this reality, and I believe they will end up purchasing enterprises or microfinancing applications or start-ups having crypto products, because their infrastructures are too much bigger for reaching this targeted people.

On the one side, unfortunately developing countries are never a priority for large corporations. There is a lack of strategic interest. These corporations and the governments in general maintain a kind of reticence for the crypto world, and as such have a negative perspective towards it. They want to prohibit it, to regulate it, by emphasizing its high volatility. But they do not take into consideration the positive aspects, what can blockchain bring to society. Having this in mind, I think many years or even decades still remain before those actors change its perspective, from seeing the crypto world as a threat to an opportunity for helping a lot of people in developing countries.

From a public global governance point of view, it is really difficult to find “cryptofriendly” countries with a favorable regulation. At the global level we need to take into consideration the excessive power the United States along with the US Securities and Exchange Commission²⁵⁴ (SEC) have in the matter. Everything that those both actors say sees no contradiction from other countries. Thus, limitations are more or less shared throughout the world. In Europe there are places like Portugal and Estonia that tend to favor crypto businesses. But in developing countries there is nothing we can do now, we will need to wait many years until they implement a crypto-friendly regulation.

3. The financial development aid is a field in which the UN is trying to explore the potential that the BT could introduce. At this point the organization is just starting, and we can already find some local-based projects in collaboration with the private sector.

- a. **In your opinion, how could BT help in improving the financial development aid and humanitarian aid? Which are the opportunities BT can provide to boost its efficacy, efficiency and security? To what extent can it be disruptive?**

From the perspective of collaborative microfinancing applications, I believe that Blockchain could really make a difference. It is very opportunistic since nothing has been done in this direction. Platforms that can collect money from developed countries and send it to developing countries with competitive interest rates can be highly beneficial for them. Precisely, their problem lies in extremely high interest rates for accessing loans, ranging from

²⁵⁴ US. Securities and Exchange Commission, 2021. *Supporting small business*, [online] SEC. Available at: <https://www.sec.gov/> [last accessed on 30 March].

50%-100% annually, something in Europe is totally prohibited. In fact, interest rates above 25% are considered a crime. Thus, when those digital platforms offer interest rates of 12-13%, people in developing countries perceive it as nearly zero. Therefore, I believe that the introduction of blockchain and cryptocurrencies to those platforms would definitively help those countries to develop. But always thinking from the microfinancing perspective, following the example of Bangladesh or Ethic Hub.

b. Which are the main shortcomings developing countries could encounter when introducing BT in financial development aid? Could we consider that the main factors limiting the expansion of BT are the differences in every country's capacities? Which could be the first actions policymakers should take to correct this situation?

Since we are in an initial moment, there are many different limitations. For example, we do not find enterprises offering this type of services. The risk of default is always obvious in this field, but if you have high interest rates you are compensating on the other side if this happens. Then, I believe that what is needed is: more enterprises, a wide distribution of resources, better communication and more time. Finally, it is fundamental to develop technological products and services that are easy for people in developing countries to understand and use. Indeed, users in developing countries do not need to worry about understanding how Blockchain works, but rather to know they can access a microloan to develop its own microbusiness.

4. To what extent the BT could help to meet the UN SDGs?

I think Blockchain can really contribute in meeting the UN SDGs. Indeed, many people claim Bitcoin, Blockchain and the cryptocurrencies are highly energy consuming and thus can be a clear pitfall for the environment and a huge limitation for the sustainable development. However, this argument is totally false, as this graphic shows the incredible difference in energy consuming that Bitcoin currently represents in comparison to the mining of gold and the banking system.

Besides that, I believe that Blockchain can help in the good direction because in the end it is aid, it is a form of economic and financial development and it is clearly aligned with the UN SDGs.

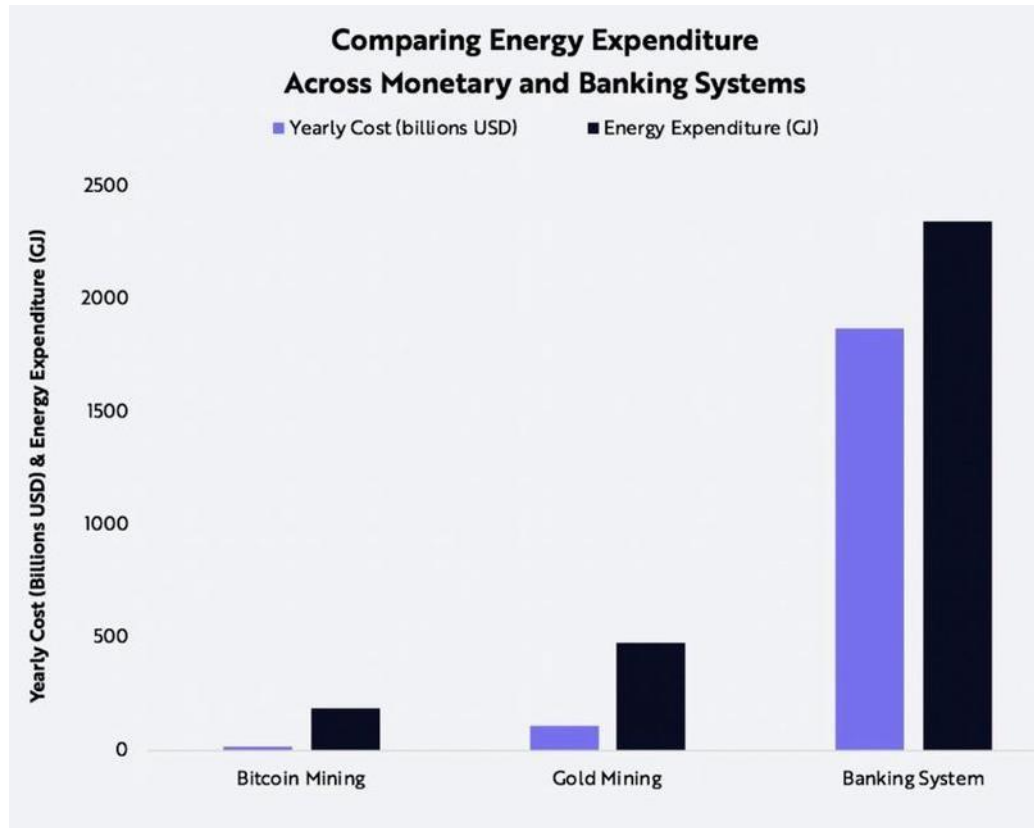
5. From a public governance perspective, which role should the relevant stakeholders at the international level – public, private sector, the academia and the civil society – play in the present and future management of this technology?

The role of the public sector should be to avoid prohibiting and excessively regulation, instead to let the market grow and progress without external forces. There is enough money, the problem is sometimes the public sector does not allow enterprises do their job.

The role of the private sector should be of spreading the knowledge to more users, and in this scenario the public sector could help by providing assistance to those enterprises. Specially, what lacks in all the world but with more intensity in developing countries is financial education, and this is fundamental.

I do not really defend this type of governance in which the public and the private sector work together because they are incompatible. I do not believe the public sector could really help if it is positioned as the leader. Instead, it should let the private sector do whatever it is necessary.

Table 9: Comparing energy expenditure across monetary and banking systems (2018)



Source: Dan Held, crypto expert²⁵⁵.

²⁵⁵ Held, D., 2018. PoW is Efficient. [Blog]. *Medium*, Available at: <https://danheld.medium.com/pow-is-efficient-aa3d442754d3> [last accessed on 30 March 2021].