

Sustainable development supported by responsible and digital Finance: Reality or sustainable illusion

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ABSTRACT

In this paper, we will explore the relationship between digital banking, responsible Finance and sustainable development. We will review the concept of sustainable development briefly shedding light on its theoretical background (history and definition), its three pillars and some limits and issues related to the concept. In addition, we will try to emphasize the correlation between sustainable development and the new digital financial players, namely Fintech who are providing Digital Financial Services (DFS) through digital channels. Some definitions of DFS and Fintech are given in order to provide a clear idea about those concepts for a better understanding of their ecological impact. Indeed, this correlation is seamlessly supported by a high-paced digitization of the banking and financial industry. The overall purpose of this article is to highlight how those new digital players (Fintech) and responsible Finance (Green bonds and ecological credit cards) can contribute to the endorsement and the enhancement of sustainable development for a better social inclusion, more equity and green friendly initiatives for economic growth.

Keywords: Sustainable Development, Digital banking, Fintech, Sustainable Finance, Green bonds

RESUMÉ

In this paper, we will explore the relationship between digital banking, responsible Finance and sustainable development. We will review the concept of sustainable development briefly shedding light on its theoretical background (history and definition), its three pillars and some limits and issues related to the concept. In addition, we will try to emphasize the correlation between sustainable development and the new digital financial players, namely Fintech who are providing Digital Financial Services (DFS) through digital channels. Some definitions of DFS and Fintech are given in order to provide a clear idea about those concepts for a better understanding of their ecological impact. Indeed, this correlation is seamlessly supported by a high-paced digitization of the banking and financial industry. The overall purpose of this article is to highlight how those new digital players (Fintech) and responsible Finance (Green bonds and ecological credit cards) can contribute to the endorsement and the enhancement of sustainable development for a better social inclusion, more equity and green friendly initiatives for economic growth.

Mots clés : Sustainable Development, Digital banking, Fintech, Sustainable Finance, Green bonds.

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1. INTRODUCTION

Companies were always confronted with their responsibilities. Historically, these responsibilities were focused more on economic incomes and legal transparency, than social and ecological issues, in order to embellish the image of the company and build its reputation. Since the 1960's, a redefinition of the concept "social" has prevailed on a global scale thanks to the works of Bowen, "Social Responsibilities of the Businessman" (1953) and Goyder's "The Responsible Corporation" (1961).

During the last few decades, companies have been forced to assume their social responsibilities. Thus, besides profitability, they begin to focus on social, ethical and ecological issues, while being involved in sustainable development. Notwithstanding, merging the world of Finance with sustainable development seems to be utopian, economically speaking. Indeed, the financial and banking players have always sought maximum benefits despite the collateral damage made to the environment.

However, more individuals and customers tend to prioritize the sustainability, more the financial players (banks, financial investors, multinational financial services corporations...) have to consider ecological issues in their global strategies. According to IPSOS survey (2017), 41% of people believe that, products from socially responsible investments can strengthen trust towards the same financial institution that offered them.

Nowadays, the banking and financial sector has been radically changed thanks to the digital transformation journey. Indeed, the new entrants such as, Fintech, Information technologies (IT) companies and innovating start-ups, are becoming a serious threat for the traditional financial providers

such as banks, finance companies, microfinance institutions, and insurance companies (International Finance Corporation, IFC, 2017).

The relevance of digital financial services (DFS) and Fintech is increasing all around the world as a bridge that can help to enhance the financial and social inclusion and reduce poverty. In fact, "Countries are demanding deeper access to financial markets, and the World Bank Group will focus on delivering Fintech solutions that enhance financial services, mitigate risks, and achieve stable, inclusive economic growth" (World Bank Group President Jim Yong Kim, The Bali Fintech Agenda, 2018).

Many studies have discussed sustainable development issues, its importance and implications. Whereas significant research has been published in academic journals about the three pillars of sustainable development and digital finance, the interlink review between sustainable development and digital banking and financial industry remains missing and insufficient. Reviewing existing literature affords an opportunity for a better understanding of the existing state of the research, as well as outlines the research area evolution. On one hand, the overall purpose of this paper is to understand, analyze and summarize findings related to sustainable development. On the other hand, the increase of digital finance and new players such as Fintech can be an opportunity for a better financial and social inclusion for more social and economic equity. Firstly, a theoretical framework linked to sustainable development and limits seems to be necessary to place the concept within the appropriate literature. This will help us to have a better understanding of sustainable development, its three pillars and the main criticism toward the concept. Secondly, a clear layout of DFS and the Fintech players' impact on the improvement of sustainable development is

established. This analysis is then used to shed light on the impact of digital finance adoption on the enhancement of financial and social inclusion while taking the ecological issues into consideration. It also summarizes the main conclusions, determines relevant gaps that need more emphasizing, and require further research.

2. SUSTAINABLE DEVELOPMENT: BACKGROUND, DEFINITION AND LIMITS

a. Definition and historical background

Among all the definitions in the literature, the one given by the Brundtland report remains the most comprehensive and explicit. Indeed, it summarizes very concisely and effectively the core of the concept in simple words. It was the summery report after the first United Nations World Commission related to Environment and Development held in 1987. According to this report, sustainable development is "a development that meets the needs of the present without compromising the ability of future generations to meet their needs" (Brundtland report, 1987).

This definition leads us to underline two main points. Firstly, the today's needs are increasingly burdensome and difficult to fill especially for a population living in precarious conditions. This statement is endorsed by Oxfam report (2018) revealing that 1% of the richest have benefited of 82% of wealth created in the world the previous year. Secondly, this race to the satisfaction of our needs, especially for the richest ones, should not be at the expense of ecology and exhaustible natural resources. Accordingly, three elements have to be emphasized:

- Economic growth and profitability must take into consideration environmental issues.
- Establishment of facilitating conditions for an equitable society with high social inclusion rate.
- Setting up international protocols aiming to prevent the natural resources depletion while ensuring that they will be put into practice.

Otherwise, the concept of sustainable development has gone through several upheavals since the emergence of the concept. Indeed, we have witnessed a growing awareness related to the concept on a global scale recently, due to international policies about ecological issues that concerns almost all countries. Hence, in order to have a global idea about this evolution, the most relevant key dates can be summarized as follows:

- The years 1850 & 1860: Development of ecological thinking and the concept of "Ecology" through the work of the biologist Ernst Haeckell and the poet Henry David Thoreau²;
- 1963: Publication of "The Silent Spring", which denounces the consequences and drawbacks of pollution;
- 1972: First Earth Summit in Stockholm;
- 1987: United Nations World Commission summit about Environment and Development and publication of the Brundtland Report about Sustainable Development;
- 1992: Earth Summit in Rio;
- 2005: Entry into force of the Kyoto Protocol elated to global warming;
- 2012: Rio + 20 Earth Summit also known as the United Nations Conference on Sustainable Development (UNCSD).

Since 1995, United Nations Framework Convention on Climate Change (UNFCCC) lead conferences every year (COP; Conference of the Parties) around the world in order to emphasize ecological issues, environment protection and evaluating the progress in dealing with climate change. Therefore, as reported by the United Nations website, world leaders and politicians adopted the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) in 2015. These new Goals focus on quality and equity in education, no

¹ The word "Ecology" was invented by Ernst Haeckel in 1866 in reference to the relationship that organisms have with each other and the relationship between organisms, the physical and chemical characteristics of their habitats.

² Henry David Thoreau (1817-1862) has simultaneously developed a thought of ecology, nature and disobedience. The choice of "life in the woods" being a return to a lost nature, but also a withdrawal from society.

hunger, no poverty, more clean and affordable water. This is supposed to mobilize efforts all around the world for the sake of ending all forms of poverty, inequalities, injustice and environmental degradation.

b. Limits and issues of the concept

In order to be aligned with a successful sustainable development strategy, three pillars must be respected. In other words, the sustainable development undertaken by institutions (States, companies ...) must be:

- Economically efficient: ensuring economic profitability and prosperity for countries through sustainable production and consumption.
- Socially equitable: reducing social inequities in the world by a better satisfaction of human needs and prioritizing social equity.
- Ecologically sustainable: protecting natural resources in the long term, by ensuring the ecological balances.

Thus, sustainable development requires "the balanced integration of the economic, social and environmental goals of public institutions, with the concern of enhancing equity as well as to preserve the interests of future generations" (MC Smouts, D. Battistella & P. Vennesso, 2003).

In terms of implementing an efficient sustainable development strategy, the "social" must be a purpose for a more equitable living and ecological sustainability. The "economy" has to be ecologically sustainable to growth bearing in mind our manufacture and consumption means. Finally, the protection of natural resources and the environment is, overall, a prerequisite.

Nevertheless, any concept mobilizing concrete involvement from everyone, is not accepted with arms wide open by all actors. Indeed, for some researchers, the concept of "sustainable development" is in itself biased because it is based on the concept of "development", which inspires mistrust and suspicion. According to Rist (1996), the "purpose of development" has served for six decades to legitimize, as well in the North as in the

South, numerous economic and social policies that could led for a well-being for all. Globalization has taken over, but far from promising development, we are now just trying to fight against poverty by proposing growth as the only option (Rist, 1996).

Other supporters of the "Degrowth Theory" also remain doubtful about the concept of "sustainable development" while it is often associated with growth. Who says economic growth, says necessarily, technical progress and industrialization. "To be interested in protecting the environment and the ecology without considering the technical progress, the technological society, the sake for efficiency is to engage an operation that is not only useless, but fundamentally harmful" (Ellul, 1972).

Thus, those authors argued that we cannot talk about sustainable development, which cannot be endless and sustainable since that natural resources are limited and transient. Mathias stated that the very idea of joining the two concepts "sustainable" and "development" makes the concept of "sustainable development" a "schizophrenic" concept. Whereas the "sustainable development" pretends to solve environmental issues using the continuous economic growth, the main cause of all ecological issues is the same economic growth: "It is a matter of looking for development with concern for the environment, as long as this concern does not hinder the development in question" (Mathias, 2005).

Praised by some and disavowed by others, sustainable development must incontestably move from theory to practice taking tangible actions by all of us, as individuals living on this planet as well as by government, companies and world leaders. Yet, the industrial companies are more involved in the ecological issues, the financial and banking industry is not left behind. Indeed, they can be a huge energy consumer while being known for discriminative financial player. Thus, they need to rethink their business models by including the ecological and social factor into consideration more seriously.

3. SUSTAINABLE DEVELOPMENT AND DIGITAL BANKING: WHO SERVES THE OTHER?

The current use of the Internet and information and communication technologies (ICT), especially with the fast-paced expansion of technological innovations, makes us realize that we are only at the beginning of the digital transformation journey. Indeed, thanks to the IT revolution and web 2.0 tools, every aspect of human’s life has been radically changed: from transportation and education, to travelling and communication. The sustainable development has also taken advantage of this digital revolution in the financial and banking industry.

3.1 Sustainable development: “bricks & mortar” vs “pure players”

Selling products or services through physical stores or branches has always been, for decades, the only delivery way for retailers to offer their merchandise to the customer. This business model was ubiquitous in all kind of industries: food, fashion, supermarkets and of course the financial and banking industry. The Cambridge dictionary defines Bricks and mortar as businesses existing as a physical building (a shop or branch), rather than doing business only online.

Since the bricks and mortar model refers to the classic retail banking industry with a physical bank branch, the number of branches in the world matters because they are avaricious in power consumption. Indeed, according to the World Bank (2017), there are 12.5 branches per 100,000 adults in the world, this means a total of 665000 branches with a world population of 7.6 billion people. Taking account of cooling, computers, monitors, servers, heating, automated teller machine (ATM) and all electronic devices, we are likely up for a total consumption for banks close to 100 terawatt hours a year. Therefore, it is a very greedy model in power consumption and thus very ecologically harmful. Moreover, people have to take many trips to their bank branch to manage their accounts and operate financial and banking transactions. Which

contributes to increase air pollution and CO2 emission.

At the other end of scale, under this financial services delivery, called “Pure players”, these actors have chosen to overpass the classic banking retail by opting for digital channels solely. The transaction is not only remote, but also online in real time (Chabaneix, 1997). In other words, the pure players are companies that have no physical presence. Instead, they are operating exclusively online using the ICT and digital channels to communicate, interact and reach prospects and consumers in order to offer their products and services.

As far as the environmental issues are concerned, this model provides very positive and palpable ecological consequences compared to previous model since there are no bank branches. Consequently, no waste of lightning, water, no electronic tools connected 24/7, no ATM’s running all the time. Even customers have easily embraced those digital financial services. A Deloitte consulting survey (2018) stated that only 12% of French customers did use banking services in their bank branches.

We can describe the main digital banking services and their ecological impact as shown in table 1.

Main digital banking services	Digital means	Ecological impact
Remote access to numerous banking services 24/7 (Cash transfer, daily account management, online account opening...)	Voice assisted application (voice first) Mobile application (mobile first) Online banking websites (responsive design)	- Less paper consumption and thus preserve biodiversity, environment and deforestation. - Rides to bank branches will be reduced strongly and thus, less pollution, CO ² emissions and greenhouse gas effects.
Online Taxes and other expenses payment (rental expense...)	Smart ecological ATM	- Preservation of air quality.
Online shares management and loan application		- Electronic devices and IT tools will last longer.

Bank branches paperless in which all banking services are digitized = 0 paper	Smart ecological bank branch Digital tablette with an easy-to-use touch screen.	
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Table 1: Digital banking services and their ecological impact

Having said that, the most relevant pure player actors in the financial and banking industry that contribute tremendously to enhance sustainable development and financial/social inclusion, are Fintech players since Fintech is a global phenomenon (Mackenzie, 2015).

3.2 FINTECH AS A MAIN PURE PLAYER ACTOR FOR SUSTAINABILITY

“Banking is essential, Banks are not” (Bill Gates, 1994)³. These last years, we are witnessing the incarnation of what Bill Gates said 25 years ago in the wake of the advent of DFS and Fintech players. Digital Financial Services can be defined as the broad range of financial services accessed and delivered through digital channels, including payments, credit, savings, remittances, insurance and financial information. The term “digital channels” refers to the internet, mobile phones (both smartphones and digital feature phones), ATM, POS terminals, NFC-enabled devices, chips, electronically enabled cards, biometric devices, tablets, phablets and any other digital system (AFI, 2016).

Concerning Fintech definition, several ones can be found in the literature. For instance, “Fintech is a service sector which uses mobile-centered IT technology to enhance the efficiency of the financial system. As a term, it is a compound of ‘finance’ and ‘technology’ and collectively refers to industrial changes forged from the convergence of financial services and IT” (Kim Park, & Choi, 2016). Another definition provides more details: “Fintech refers to the application of technology within the financial industry. The sector covers a

wide range of activities from payments (e.g. contactless) to financial data and analysis (e.g. Credit scoring), financial software (e.g. risk management), digitized process (e.g. authentication) and perhaps most well-known to the wider public, payment platforms (e.g. peer to peer lending).” (Barberis, 2014). Even the Oxford Dictionary has set a definition to the concept of Fintech suggesting that Fintech are computer programs and other technology used to support or enable banking and financial services: Fintech is one of the fastest-growing areas for venture capitalists” (Oxford English Dictionary, 2016).

Offering more financial solutions efficiency, easier to use, faster and above all, low-priced and environmentally friendly, this disruptive innovation has been adopted quite rapidly. According to Ernst & Young Fintech Adoption Index 2017 report, the average of Fintech adoption globally is 33% compared with 16% in 2015. Besides, all financial transactions gaps have been fulfilled by Fintech. From mobile peer-to-peer payment platforms, to personal financial management, crowdfunding, robo-advisors as well as digital currencies and distributed ledger technologies. While the use of Fintech is based on having a smart phone to operate all kind of financial operations easily, the average of world mobile subscription penetration in 2017 is 103% (Ericsson mobility report, 2017). This increased use of smart phones facilitates, seamlessly, the adoption of Fintech services and the ability to operate financial transactions. Therefore, contribute to enhance the financial/social inclusion of under-served groups, which was and still difficult and complicated to do for a large citizen all over the world in the classic retail banking.

It worth noting that having easy access to financial services can help as a support to reduce the poverty level and social inequity (Asli et al., 2015). As reported by the Global Findex Database report (2017), 1.7 billion adults do not have a bank account, 66% of them, however, have a mobile phone that could allow them to access to financial services. In addition, the report explains that technology could promote financial and social inclusion by replacing cash transactions with digital transactions.

³ See Falk Rieker, “Does the future need banks?” (2 April 2013) SAP, available at <<http://blogs.sap.com/banking/2013/04/02/does-the-future-need-banks/>>

In summary, it can be stated that the progress of DFS through Fintech players and different digital channels, namely mobile and digital banking, can help the international community to balance with efficacy the three pillars of sustainable development: socially, economically and ecologically. Consequently, achieving the overall purpose of universal financial access, taking into consideration environmental issues, and therefore a better financial and social inclusion and well-being.

4. BANKING/FINANCIAL INDUSTRY FOR A SUSTAINABLE DEVELOPMENT

Basically, sustainable Finance looks for reaching economic growth while respecting the social and ecological impact. According to the EPSC Strategic Notes (2017), sustainable finance refers to any type of financial service integrating Environmental, Social or Governance (ESG) criteria in business or investment decisions, for the lasting benefit of both clients and society at large (Financing Sustainability: Triggering Investments for the Clean Economy, 2017). We will highlight two main activities in this section, namely eco-friendly credit cards and green bonds, which contribute to foster benefit for customers and financial institutions.

4.1 Eco-friendly credit cards

In order to put in practice the ecological consideration in their strategies, the financial actors (banks, multinational financial services corporation...) have designed an ecological credit card that respects the environment. Thus, the overall purpose was to remove the polyvinyl chloride (PVC) which is a strong, versatile and cheap synthetic polymer, and substitute it with recyclable materials.

A case in point is the Belgian bank NewB that has developed a payment credit card which meets the sustainable development three pillars: ethical, ecological and economic. Indeed, the GoodPay Prepaid MasterCard is made from corn residue, thus biodegradable. In addition, for each transaction, five cents are donated to a good cause like fighting against exclusion, protecting the environment or promoting solidarity. Another example is held by

Credit Agricole of France who implemented an eco-friendly card since 2014. Made on the basis of polylactic acid (PLA) which is an eco-friendly raw material, Crédit Agricole's ecological card can even be recycled when it expires.

The banking industry in Morocco is also concerned by the ecological issues as well. The Société Générale Marocaine des Banques (SGMB) has promoted an eco-friendly card called "C'Bio". It is made from vegetable plastic allowing the bank and their customers to take part into the environment protection issues.

Another example of Moroccan bank that respects the environment is the BMCI (Banque Marocaine pour le Commerce et l'Industrie). Besides being the first bank to win the CSR (Corporate Social Responsibility) label in 2014, BMCI have been distinguished on several criteria, such as non-discrimination, providing green products/services, balance of power, Top Management effectiveness and responsible contracts. Furthermore, the BMCI provides "green packs" supporting actors who are willing to invest in ecological projects. Moreover, the bank offers credit cards made of 90% biodegradable material. Finally, the Human capital is also involved in this ecological policy, since employees have reduced their paper consumption by 29% from 2012 to 2015⁴.

4.2 Green bonds

Fast-paced growing market, "Sustainable Finance" or "Green Finance" intended to accelerate energy transition through new funding mechanisms e.g. Green bonds. Such bonds are issued by a company, a public service institution or banks in the financial markets for the purpose of financing projects that contribute to the ecological transition and preserving the environment. A "Green bond" is different from a regular bond by its label, which suggests a commitment to exclusively use the funds raised to finance or re-finance "Green" projects, assets or business activities (ICMA, 2015). The difference compared to conventional bonds

⁴ Official website of BMCI : <http://www.bmci.ma>

concerns two points. Firstly, the issuer agrees on the precise use of the collected funds which must be for projects with a positive impact on the environment. Secondly, an annual publication report must be done, giving investors a reporting about how well these projects are progressing.

The green bonds are targeting different sectors, as shown in Figure 1. For instance, there are projects targeting global warming and carbon emissions such as "Climate bonds". Another example can be cited which is the "Water bonds". They focus more on the management of scarce resources such as water. The Netherlands, for instance, have issued such bonds to finance adaptation to rising sea levels. As far as the social equity concerns, "Social bonds" take over the financing of projects with a social impact on people welfare. For example, projects facilitating access to school, supporting vaccination campaigns or creating jobs in tenuousness areas and poverty.

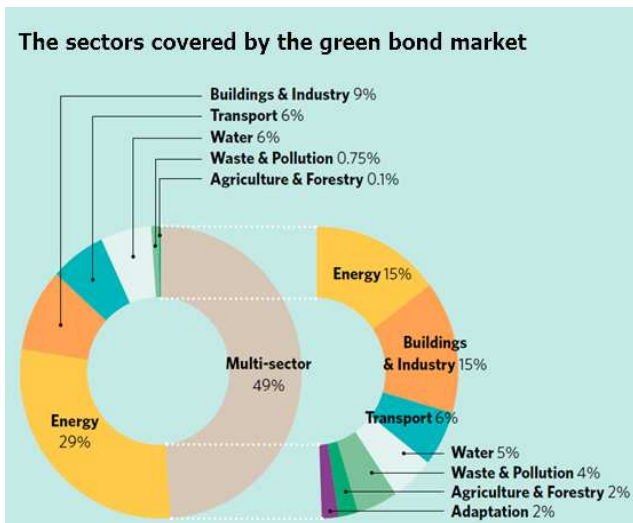


Fig. 1: The different use of green bonds issuance
Source: CBI, 2016

The energy sector leads the green bonds investment so far. Indeed, companies and governments are more likely focusing on this field rather than others, as we can see more emphasis on electric power mostly for cars, green energy such as wind energy, photovoltaic solar energy or even

methanation (Anaerobic digestion)⁵. Still, the Green bonds related to water are very weak and more efforts must be done to enhance the access to clean water and sanitation, especially that, more than 2 billion people are living with the risk of reduced access to freshwater resources (UN, 2018).

An observation of note is that most reports discuss the fast growth of the green bond market. According to IFC (International Finance Corporation)⁶, new green bond issuance has grown by 78% on 2017, to more than \$155 billion worldwide. That number is expected to reach \$250 billion in 2018. Most of them came from Asia and Europe, as shown on Figure 2. In fact, France is well away with a good head start. Indeed, the report published by the Climate Bonds Initiative (CBI) in April 2018 reveals that France should continue to bring market growth. With more than 37 billion euros in cumulative emissions since 2012, France ranks third in the world and first in Europe.

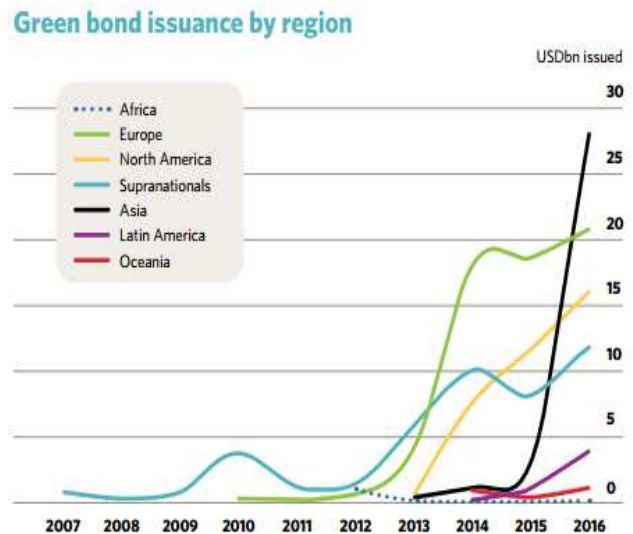


Fig. 2: Green bonds issuance by region
Source CBI, 2016

The feebleness of the African Green Bond market compared to Asia, Europe and North

⁵ Anaerobic digestion is a collection of processes by which microorganisms break down biodegradable material in the absence of oxygen. The process is used for industrial or domestic purposes to manage waste or to produce fuels (Wikipedia).

⁶ "Green Bond Impact Report", (2017), IFC Investor Relations, International Finance Corporation.

America is very noticeable. In Africa, the Green Bond issuances are led, mostly, by Banks or big companies. For example, the Moroccan Agency for Solar Energy (MASEN), has issued in 2016 the amount of 1.15 billion MAD (\$115 million) as the first Moroccan green bond. The issue was guaranteed by the Government and certified by Vigeo Eiris. It consisted of a private placement with the involvement of other main actors, like Al Barid Bank, the Moroccan Pension Fund, Attijariwafa Bank, and the Central Reinsurance Company. In October 2016, the Moroccan Capital Market Authority published a guide related to green bonds, in order to enable the growth of the green bonds market (Aassouli et al., 2018). Other countries, including Kenya, Nigeria, and South Africa have declared their plans to break through the green bond market as well.

5. CONCLUSION

According to Karlan et al., (2016), 2.5 billion people in the world are living with less than 2 USD a day and struggle very hard every single day to get out of poverty. Classically, this escape can be done by finding an employment or launch businesses through entrepreneurship. However, finding a job or being an entrepreneur is not the easiest thing to do in these last years (financial crisis, joblessness rate, the increase of jobseekers...). Hence, people resort to financial tools e.g. personal saving, insurance, credit and especially cash transfer from friends and relatives to help them finding a way out from misery.

The accessibility of DFS enables Fintech companies to help deprived population in emerging countries, to be part of the financial system with the ability to undertake financial and banking transactions, send and receive money, loans, etc. Therefore, a tremendous contribution to improve the financial and social inclusion and human wellbeing while respecting ecology.

No one can deny the relevance of having green strategies to achieve sustainable development in a global scale and the SDGs by 2030. This cannot be done without taking into consideration the customer and investor who are more likely sensitive toward

the ecological issues. Indeed, 72% of individual investors want sustainable development issues to be included in savings products (Ipsos Survey, 2017).

Nevertheless, there may be a little bit of 'darkness' in this 'green' ambition. Besides the criticism toward the concept of "sustainable development" (Rist, 1996 ; Ellul, 1972 & Mathias, 2005), the new digital technologies are like the "Aesop Tongue". With the existence of large server farms as big as a whole city, the manufacture of smartphones or computers, even sending emails, Internet and new technological innovations are really a big consumer of energy and a large source of pollution. According to a study conducted in 2010 by the French Agency for the Environment and Energy Management (ADEME), an e-mail consumes between 0.3 and 4g of CO² and up to 50g with large attachments sent to several recipients.

Still, the banking and financial players needs to rethink their business model by taking into account the ecological factor more seriously. This involves adopting responsible technological financial innovations with an ecological issues concern, promoting social inclusion and equity in order to be able to remain competitive while being "green friendly". Nevertheless, we noticed a lack of indicators for measuring the impact of digital finance on the sustainable development, which could be an interesting direction for future research

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