

Finances and the Environment

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Policy Brief nº. 14

February 2019

ISSN 2014-7457

Executive summary

- Climate change imposes a cost on future generations that the current generation has no direct incentive to fix, giving shape to what Mark Carney, President of the Financial Stability Board (FSB) and Governor of the Bank of England, has called the “Tragedy of the Horizon”.

- To address this paradox, and above all to engender the necessary incentives, what better course of action than to have the financial markets put a price on the objectives and commitments agreed to at the Paris Summit? However, to reach this point, providing greater information transparency has first to be achieved. And there are, unquestionably, major information deficiencies in the case of climate-related financial risks.

- To overcome these deficiencies, a series of recommendations have been drawn up by both the FSB’s working group –the Task Force on Climate-related Financial Disclosure– and the High-Level Expert Group on Sustainable Finance, created to identify the challenges and opportunities the European Union faces to develop a sustainable financial policy.

- On the basis of these recommendations, the European Commission presented its Action Plan on Sustainable Finance in March 2018, outlining the steps to be taken by the European institutions to connect the financial system to sustainable development within the framework of the Capital Markets Union.

- Significantly, attempts have been made to provide a common definition of the term “Sustainable Finance”, which will include a specific taxonomy for the classification of “sustainability” at the European level. Once defined, this taxonomy will have to be gradually integrated into EU legislation so as to provide greater legal certainty for investors and other agents.

- Similarly, a commitment has been made to create standards and “labels” for green financial products, which will undoubtedly raise their visibility; moreover, these control and governance mechanisms should boost demand for them.

- Steps have also been taken to incorporate sustainability in financial entities’ prudential requirements. The aim here is that banks and insurance companies have incentives to fund sustainable assets while it penalises investment in carbon polluting assets.

- Besides the aforementioned recommendations, an increasing number of entities, above all in the asset management industry, are adopting more proactive assessment and communication strategies in relation to climate change and their carbon footprint. In some cases, they have gone as far as to commit to quantifiable objectives as they seek to reduce exposure to assets responsible for carbon emissions.

- Commitments to reduce such assets can also be valuable from the perspective of the optimisation of the profitability/risk binomial, as highlighted by a number of recent reports, either in terms of obtaining higher profitability from sustainable investments, or of recording lower delinquency rates in the funding of activities of this kind.

- Spain has been slow to incorporate these instruments (the first green bond issuance by a Spanish company – Iberdrola– did not occur until 2014) and more public-private initiatives are needed in this regard, such as those recorded in the majority of countries in the region.

- Evidence from these other countries indicates that institutional investment plays a key role in mobilising the savings of individuals into sustainable investments. Many investors are developing a growing awareness of

the advantages of sustainable investments and there is more and more evidence that investments of this kind can generate returns that exceed even those obtained from unsustainable investments (i.e. “it pays to be Green”). Numerous studies have examined the relationship between environmental, social and governance (ESG) criteria and financial profitability, but the findings of Friede *et al.* (2015) are particularly interesting given the meta-analytical nature of their study. They report that approximately 90% of studies find a nonnegative relationship between ESG and corporate financial performance, but, more importantly, the vast majority report positive results.

- In the Spanish case, although today sustainable investment represents a very small part of institutional portfolios, prospects are encouraging to the extent that a large majority of entities are committed to growing these investments, not so much as a result of regulatory requirements, but because of growing demands from their customers, as well as because of the perception that these investments can be as or more profitable than the rest.

1. Climate change. Implications for financial stability

1.1. Climate change policies: basic concepts and recent developments

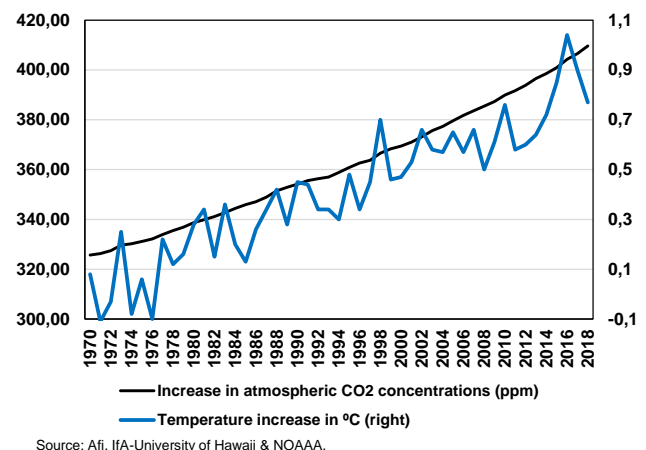
The destabilisation of the planet has long ceased to be a hypothetical threat. Today, many risks have shown their potential dimensions: climate change is one of the most obvious and most carefully documented, together with changes in land use, the loss of biodiversity and the degradation of natural resources.

The fight against climate change, recognised as an inescapable priority and one best met with a firm and coordinated commitment, has permeated all strata of society, becoming increasingly resistant to policy reversal decisions adopted, or announced, by certain governments. The most obvious example being that of the United States. The Trump administration’s declarations reversing commitments made at the Paris Summit have been met by an overwhelming response from the business world (including some of its most important and emblematic enterprises and leading asset managers) and from numerous State

governments, where the main fight against climate change is being waged.

The irreversible nature of the pledges taken rests on the evidence of global warming and its possible long-term effects for the planet. Greenhouse gas emissions have been subject to a year-on-year cumulative increase (see Figure 1). The scientific community warns that if atmospheric carbon dioxide concentrations rise above 450 particles per million (ppm), which is equivalent to assuming a maximum increase of around 2 °C of the planet’s temperature relative to pre-industrial values, the disastrous effects of climate change could run out of control (see the Fifth Intergovernmental Panel on Climate Change - IPCC - evaluation report).

Figure 1. Atmospheric CO₂ concentrations and global temperatures - compared to 20th century mean values



Source: Afi, IFA-University of Hawaii & NOAA.

This realisation led to the development of the concept of the “carbon budget”, i.e. “the amount of carbon dioxide emissions that we can emit while still having the possibility of limiting global warming to 2 °C above pre-industrial levels”. This threshold was first suggested by the 2018 Nobel prize-winning economist, William Nordhaus, back in 1977, a threshold that he would reiterate when receiving his award. Moreover, Nordhaus, argues that the best policy for achieving this goal is putting an adequate price on the economic activities that generate new emissions.

1.2. The Paris Agreements and their implications

The 21st meeting of the United Nations Framework Convention on Climate Change (UNFCCC) held in December 2015 in Paris established the global objective –approved by the 195 member States and, as of December 2018, ratified by a further 184– to limit the

increase in average global temperatures to 2 °C, and to continue efforts to limit this increase to 1.5 °C. These goals are intended to limit the risk of the environment reaching a tipping point beyond which it is considered that the consequences of climate change will be increasingly catastrophic and irreversible.

One of the programming and coordination tools identified “with a view to achieving the purpose of the Agreement” is the mandatory communication by each of the States, every five years (as of 2020), of their nationally determined contributions (NDCs). These operate as formal planning exercises of State policies to combat climate change in accordance with their needs and opportunities, but always in relation to the same previously agreed-upon global objective.

To date, the chief outcome is that progress has been made in decoupling economic growth from rising levels of carbon emission in many countries, but these emissions and atmospheric CO₂ concentrations continue to increase, as does the temperature of the planet (see Tollefson, 2018).

1.3. Potential climate change risks: physical, legal, transitional and stranded assets

A key element in successful “problem” management is ensuring that the problem is accurately identified and measured. Here, since the first IPCC reports, the empirical evidence has been unequivocal, a fact that has had a growing influence on the decision-making made to date.

But, unquestionably, the spur to greater transparency and the measurement of climate-related financial risks was provided by the Financial Stability Board, set up by the G20 to initiate international financial reform. Specifically, two influential speeches delivered by the President of the FSB and Bank of England Governor, Mark Carney – the first at Lloyd’s of London in 2015 and the second, the Arthur Burns Memorial Lecture, given in Berlin in 2016, represent a before and after for international economics and finance.

What Carney referred to as the “Tragedy of the Horizon” –that problem which requires the identification of climate-related risks for business enterprises and assets, but which do not form part of the decision-making base of managers and investors as they will be felt beyond the traditional horizons of most actors, i.e. the very long term– has become all too clear since, highlighting a very real risk that is likely even to

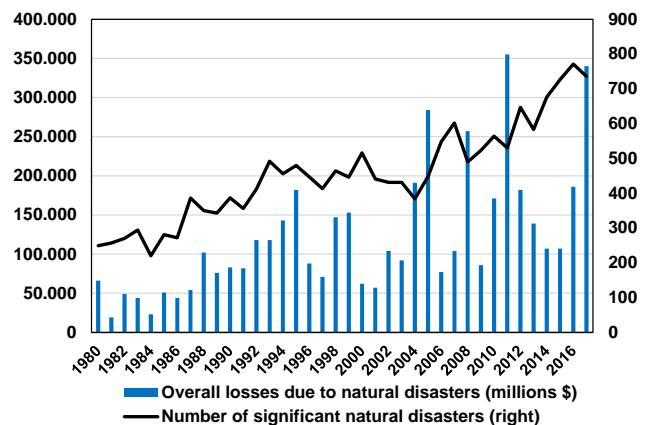
affect the global financial market both by omission and by accelerated action. As Carney was at pains to point out in 2015, “once climate change becomes a defining issue for financial stability, it may already be too late” imposing a cost on future generations that the current generation has no direct incentive to fix.

Faced by this problem, the first task in addressing the climate-related financial risk is to delimit and categorise it. Here, the transmission of climate risks to the financial system can be categorised within three risk modalities: physical, fiduciary, and transitional.

1. The modality comprising physical risks is the most apparent. The risks created by what are episodic or chronic shifts in meteorological conditions have an unequivocal impact on insurance companies’ liabilities and on the value of financial and non-financial assets. By way of example, Munich Re NatCatSERVICE registered 736 events with significant losses in 2017 worldwide, a figure that is higher than the average over the preceding ten years (see Figure 2).

Similarly, a recent study published by the Federal Reserve (Colacito *et al.*, 2018) estimated the potential impact of the rise in temperature on the US economy. In a scenario of medium or high emissions it estimates that the US economy could lose between 0.5 and 1% of long-term growth potential (between 2017 and 2100).

Figure 2. Loss in asset value attributable to natural disasters



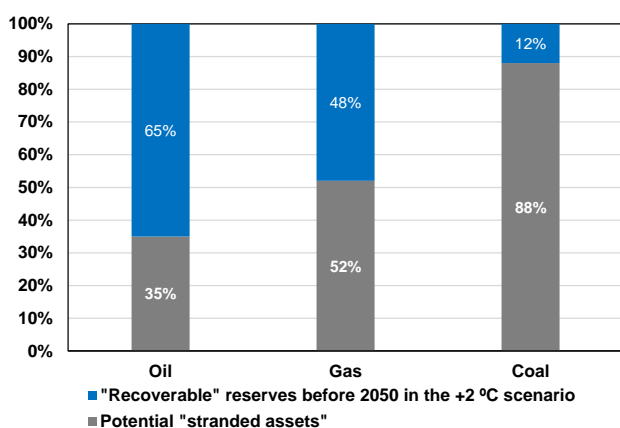
Source: Afi. MunichRe-NatCatService.

2. Second, we find those risks associated with the liabilities that could arise tomorrow if parties who have suffered damage from the effects of climate change seek compensation from carbon extractors and emitters. These are the so-called fiduciary risks.

Although in most cases it is governments that have to take the stand, business enterprises are beginning to face claims of this kind. In this way, plaintiffs seek to bring about changes in firms' future business plans, suing for the damages caused by climate change or the need for more information on the risks that companies pose in this regard. In this same category of fiduciary risks, we also need to consider the so-called reputational risks. As investor and customer awareness increase, in tandem with the work of groups of activists, intangible assets are likely to be eroded, including for example, the value of brands and, therefore, the competitive advantages companies hold.

3. The third category of climate-related financial risks are those known as transition risks, which are the costs likely to be incurred from the process of adjustment to a low- carbon economy. Changes in policy, in technology that accelerate the obsolescence of earlier investments, and in the consideration of assets at climatic risk, can result in the value of many assets having to be revised, given that compliance with the Paris Agreements requires maintaining a large proportion of existing fossil fuel reserves unexploited, the so-called "stranded assets". According to a study published in *Nature* in 2015, it is estimated that 35% of known oil reserves, more than half of the world's gas reserves (52%) and 88% of known reserves of coal will not be used (see Figure 3).

Figure 3. Global stranded assets before 2050 in the +2 °C scenario



Source: Nature (2015).

On the subject of the identification of assets (and exposure to them) affected by transitional risks, the European Systemic Risk Board (Gros *et al.*, 2016), an institution responsible for the macro-prudential oversight of Europe's financial system, calculated that the degree of exposure of financial institutions to

enterprises that base their business model on fossil-fuel resources was as high as 1 trillion euros (62% debt and 38% equity), and that the main stock indices could fall by 15-20% bearing in mind the impact on other assets dependent on carbon-intensive emissions. However, they find that equity losses under this scenario are much smaller than under a "no-mitigation" scenario of severe climate change.

1.4. Climate change and financial stability: The role of the *Financial Stability Board* and the recommendations of the *Task Force on Climate-related Financial Disclosure (TCFD)*

It is this potential loss in the value of a high number of assets that makes climate change such a relevant issue in terms of financial stability.

In the fight against climate change, and above all in the Paris Agreements on the stabilisation of global pollutant emissions, the role of the financial market agents – issuers, investors, supervisors and regulators– is critical. After all, the primary function of the financial markets is their ability to provide a relative valuation between the present and the future, which is fundamental for identifying appropriate incentives.

The prominence granted the financial markets in the fight against climate change accounts for the leadership role provided by the FSB since the Paris Summit. One of the Board's first decisions was the creation of a working group to devise a policy of climate-related financial disclosure (the TCFD).

Indicative of the importance attached to the TCFD, and in particular the breadth of its remit which extends well beyond that of public policy, are the names of the members that sit on the task force: its Chair, Michael Bloomberg, the former mayor of New York, and founder of the homonymous financial information firm, and four Vice Chairs from AXA, Banco Bradesco, the Singapore Exchange and Unilever, world leaders in the insurance sector, the largest financial institution in Brazil, one of the main Asian and global equity markets and a leading multinational in the food and consumer goods sector, respectively.

After almost two years of intense work, the TCFD issued its recommendations at the G20 summit in Hamburg in July 2017. These centred on four areas of business management where disclosure is deemed vital so that

financial agents can assess the financial risk of climate change:

- Disclosure of the organisation’s governance around climate-related risks and opportunities: describing the boards and management’s oversight of this business area.
- Disclosure of the organisation’s strategy in relation to actual and potential impacts of climate-related risks and opportunities on the organisation’s business plans, competitive advantages and associated financial planning, taking into account different climate-related scenarios, including a 2 °C or lower scenario.
- Disclosure of the organisation’s risk management, including how it identifies, assesses and manages climate-related risks and how these processes can be defined so as to incorporate them into the organisation’s decision-making and internal management.
- Disclosure of the metrics and targets used to assess and manage relevant climate-related risks and opportunities, in line with its strategy and risk management process, including the emissions generated by the organisation’s own activity (Scope 1), those indirect emissions due to the consumption of energy (Scope 2) and those that occur in the value chain (Scope 3).

For each of these areas, the TCFD has drawn up guidelines for the disclosure of information deemed to be relevant. It could be argued that the voluntary nature implicit in these guidelines detracts from the transparency that is sought, but nothing could be further from the truth. In fact, an organisation’s willingness to disclose information about climate-related financial risks becomes a differentiating factor between business entities, at the same time as it helps increase the alignment of investors with the corporate governance of companies in relation to climate-change issues, given that this is now established as a market standard.

All this is helping ensure that more and more financial entities, above all in the asset management industry, are adopting more proactive assessment and communication strategies in relation to climate change and their carbon footprint. In some cases, they have gone as far as to commit to quantifiable objectives as they seek to reduce exposure to assets responsible for carbon emissions.

1.5. The role of the Central Banks and financial regulators

In recent years, and from various overlapping areas, discussions have begun regarding the need for the central banks and financial regulators to play a more active role in fighting against climate change. Calls for greater involvement of the central banks are based on their ability to develop a wide range of non-conventional monetary policy instruments, regulatory loan incentives, guarantees or even capital requirements and the application of so-called “green quantitative easing”.

A first step in this direction would be to eliminate those biases that currently hinder the financial transition towards a more sustainable model. This is the case of the bond purchases made by the European Central Bank and the Bank of England, within the framework of their “Quantitative Easing” programs, which are clearly biased in favour of bonds issued by carbon-intensive firms, as highlighted in a recent study (Matikainen *et al.*, 2017). However, it should be borne in mind that when the public sector purchase program (PSPP) and the corporate sector purchase program (CSPP) began, the green bond market was very small (see section 3.2 of this *Policy Brief*).

Despite having a limited institutional mandate (essentially that of inflation control), some central banks have begun to study the implications of climate change and the transition to a low-emission economy for the financial sector, primarily given their responsibility for ensuring financial stability. The stranded assets identified to date are becoming elements of concern specifically because of this capacity to have an adverse effect on financial stability. Here, the ECB has recognised that the horizon at which climate change impacts the economy has shortened (Cœuré, 2018).

Similarly, a number of central banks (France, Holland and Sweden being the most proactive in this regard) have conducted analyses of the financial risks that climate change can represent for this sector. Moreover, the Bank of England has reviewed the specific exposure of the insurance sector to climate-related financial risks and is currently doing the same for the banking sector.

The ECB has bought “green bonds” within the framework of both the PSPP and CSPP programs. In the case of the former, the ECB acquired around 24% of global net green issuance, a figure that reached almost

50 billion euros (De Santis *et al.*, 2018), while, in the case of the latter, by the end of 2018, it had acquired about 20% of corporate green bonds in the eligible universe, which represented a volume of more than 30 billion euros.

An additional step that has been suggested by some central banks, and supranational organisations of financial stability, could be the incorporation of climate-stress scenarios in the “stress tests” of the banking and insurance sectors. This exercise, already considered by the Bank of England, would entail the inevitable consideration of climate risk at the portfolio level of the financial institutions, and so would represent a step forward in the reorientation of investments and financing towards a low-carbon economy.

The debate at this level focuses more on the identification of assets considered problematic than on the promotion of sustainable investments *per se*, given their link to financial stability. However, as the Central Bank Network for Greening the Financial System indicates in its first report, there is a problem of a lack of granular data that hinders the development of these analyses given that in many cases it has to be done at the asset level (NGFS, 2018).

2. Towards a Capital Markets Union and a sustainable financial system

2.1. From the Banking Union to the Capital Markets Union

With the Banking Union (BU) not yet complete, European financial integration sought to take an important step forward with the foundation of the Capital Markets Union (CMU), presented in 2014 as one of the most significant initiatives of the then European legislature.

The CMU’s Action Plan (presented on 30 September 2015) recognised that Europe’s capital markets were clearly not as well developed as those of the United States and any true Pan-European integration was lacking. The effect was to undermine their ability to play a key role in financing growth, as well as to contribute to a richer, more varied financial system – both from the perspective of issuers as well as that of investors– with greater financial stability, while being less vulnerable to shocks, such as that suffered by the banks of the eurozone between 2010 and 2014.

The Action Plan recognises six main strategic lines which make up the backbone of a future CMU in Europe.

1. The path to growth: financing for innovation, start-ups and non-listed companies.
2. Making it easier for companies to enter and raise capital on public markets.
3. Investing for the long term, infrastructure and sustainable investment.
4. Fostering retail and institutional investment.
5. Leveraging banking capacity to support the wider economy.
6. Facilitating cross-border investing.

The mid-term review of this Action Plan in June 2017 placed special emphasis on the role that capital markets can play in financing the transition to a more sustainable economy, where long-term risks and needs are met. Among other long-term sustainability challenges, the European Commission assumed that climate-change management depends on ensuring that finance flows are consistent with long-term decarbonisation objectives and climate-resilient development:

“We must ensure that the regulatory framework helps the financial sector adjust to the risks of climate change and environmental challenges, and that it mobilises and orients more private capital flows towards sustainable investments”.

In short, the Commission recognised that what was necessary was “a deep re-engineering of the financial system to make investments more sustainable”, committing itself to initiatives aimed at adapting information, credit ratings, accounting standards and supervisory processes to this goal, placing finance at the heart of this policy so as to achieve the objectives of the Paris Agreements.

2.2. The European Union and climate change

It is worth recalling that the European Union has, to date, been the fiercest proponent of the transition towards a low-carbon economy. In relation to 1990 levels, Europe has committed itself to reducing CO₂ emissions by at least 40% by 2030 and achieving an economy without net emissions by 2050 (European Commission, 2018a). This means that policies that

facilitate the transformation of companies towards business models that are more resource-efficient and more circular need to be adopted immediately. And, here, finances have an important role to play.

Current investment levels are considered insufficient to support a sustainable economic system in social and environmental terms. According to the Commission's own calculations, the European Union has to achieve an annual investment deficit of almost 180 billion euros to achieve its climate and energy objectives by 2030. This requires actions to renovate buildings to make them more energy efficient, the generation and transmission of energy using renewable sources, and low-emission transport, among others.

Yet, these investments exceed the current capacity of public budgets and, so, require the participation of private investors and the consequent deployment of instruments to mobilise them. Likewise, the regulatory framework has to be reoriented so that private capital flows meet the needs of sustainable investment by way of appropriate incentives while guaranteeing the system's financial stability. The existence of negative externalities that the market alone cannot correct requires that the regulations offer incentives and clear directives so that the market can reorient its investments.

2.3. Sustainable finances in the Capital Markets Union

To define a global sustainable finance strategy, the European Commission opted to launch a high-level expert group to identify and overcome existing barriers in relation to sustainable and long-term investment.

The final report of the High-Level Expert Group (European Commission, 2018b) maps out the challenges and opportunities facing the European Union as it seeks to develop a sustainable financial policy by identifying what it considers "the ways in which the financial sector can reconnect with the real economy to support the transition to a more resource-efficient and circular economy".

- A sustainable finance taxonomy: the final report designed a roadmap and a framework for this classification of investments. The report argues that if we are incapable of identifying the elements to invest in, we will hardly be likely to be able to

mobilise the levels of investment and financing for this purpose.

- The final report was in favour of making the Guidelines for the issuance of green bonds (International Capital Market Association, 2018) compulsory, and that such issuances should always be accompanied by a "second opinion" issued by an independent and accredited entity, which would give greater credibility to this type of issuance.
- The creation of an organisation (Sustainable Infrastructure Europe) responsible for accelerating investment in this type of infrastructure in Europe, based on a pilot experience in 2018 that could evolve into an independent agency in 2020.
- The upgrading of European disclosure standards to make climate change risks and opportunities "fully transparent" for investors and consumers. That is why it specifically recommended that the European Union endorse and implement TCFD guidelines, and explore how best to align them with the EU Non-Financial Reporting Directive, which requires large companies to publish periodic reports on the social and environmental impacts of their activities.
- Fiduciary duties with respect to sustainability considerations were explicitly stated as obligations of asset managers and investors, making it clear that these factors should be incorporated into investment decision-making.
- The experts asked the Commission to require the leading regulators –including the International Organisation of Securities Commissions, the European Banking Authority and the European Securities and Markets Authority– to update their guidelines and principles so that they make explicit reference to environmental, social and governance (ESG) factors and sustainability issues.
- It is noted that accounting rules, even if not intentionally, favour short-termism aimed at reducing investment risks. It is recommended to legislate so that accounting standards do not unduly discourage long-term investment.
- It is also important to highlight the role that the report gives to retail investors, suggesting different ways of empowering savers and small investors so that they appreciate the impact their investments have on sustainability. To do so, it recommends the introduction of minimum standards for sustainably denominated funds as well as the establishment of a voluntary "European green label" that enhances the visibility of some financial products over other investments.

In short, it is a significant report both for the recommendations it makes and for having served as a foundation for the European Commission as it developed its own policy for future action. It also constitutes an excellent pedagogical exercise, for understanding how to finance long-term growth in a sustainable way and how to contribute to the creation of a circular and low-carbon economy.

2.4. The Commission's Action Plan for financing sustainable growth

In March 2018, with the objective of "making Europe the centre of gravity for global investment in the low-carbon, resource-efficient and circular economy", the European Commission presented its Action Plan for financing sustainable growth, or its Action Plan on sustainable finance (European Commission, 2018c), based largely on the recommendations of the High-Level Expert Group analysed in the previous section.

The action plan includes 10 initiatives, including most significantly:

- Developing a common definition for the term "Sustainable Finance" that includes a specific taxonomy on "sustainability" at the European level, to be delimited in four areas: climate change mitigation; climate change adaptation; environmental activities; and social activities.

Once the taxonomy has been defined, it will have to be progressively integrated into EU legislation to provide greater legal certainty for investors and other agents, albeit under a criterion of technological neutrality.

- Creating standards and labels for green financial products. In this way it is hoped that the growing interest of consumers for labels of this type will be transferred to financial products (such as investment funds specialising in low-carbon economy, green bonds and even green mortgages that are developed under these standards), providing them with visibility, and with mechanisms of control and governance that should boost demand for them.
- Clarifying the fiduciary duties of investors and asset managers in terms of sustainability criteria.
- Incorporating sustainability in prudential requirements. The Commission will undertake an analysis of the most appropriate capital

requirements that "sustainable assets" of banks and insurance companies should have.

Here, the debate is focused on incorporating the explicitly favourable treatment of sustainable investments ("green-supporting factor") or the explicit penalisation ("brown-penalising factor") of more polluting investments. The idea is that financial institutions are given incentives to finance sustainable assets or that investments in polluting assets are penalised. Therefore, once the taxonomy of sustainable assets and investments has been defined, the most appropriate capital requirements best reflecting the risk faced by financial entities investing in these assets, can be determined.

There can be little doubt, therefore, of the will of European institutions to irreversibly align the transformative tension of finances with the path of sustainability.

3. Green bonds and other sustainable financial instruments

3.1. Financial market preferences for sustainable instruments

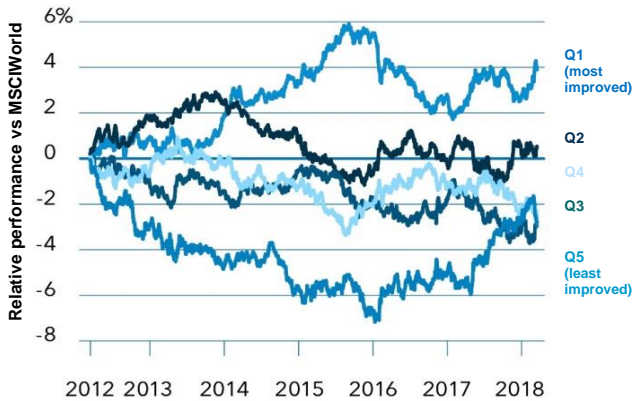
More and more entities, above all in the field of asset management, are adopting notably proactive assessment and communication strategies in relation to climate change and the carbon footprint. In some cases, they have gone as far as to commit themselves to quantifiable objectives as regards a reduction in their exposure to assets that cause this footprint.

These policies of differentiation in accountability, or even in their commitment to a reduction in exposed assets, may also be valuable from the perspective of the optimisation of the profitability/risk binomial, as some recent reports show, and most particularly as highlighted in a recent BlackRock report (2018). The latter undertakes an analysis of the "performance" of various investment portfolios, classified according to the carbon emissions of their activities with respect to annual sales. As Figure 4 shows, these results improve as these companies reduce the carbon intensity of their portfolios.

Perhaps for this reason, BlackRock, the world's leading institutional investor, sent out a letter to the heads of the companies in which it invests warning them of the

need for more transparency and information about the effects of climate change on their activities.

Figure 4. Equity performance by carbon intensity, 2012–2018



Source: Blackrock 2018.

Likewise, it is worth highlighting the statement of a group of 60 institutional investors (with assets under their management to the tune of more than 10 trillion dollars) issued on 17 May 2018, in a letter to the Financial Times, addressed to “their” related companies in the gas and oil sectors. They seek explanations as to how they intend tackling the necessary energy transition to an economy without net carbon emissions, as agreed to in Paris by more than 200 states, and regarding which several countries have already begun to legislate. The fossil fuel sector is not particularly dependent on the bond market for financing, so market demands for a transition in its activity are being expressed more vociferously by its shareholders, hence the importance of the positioning of these investors.

Alongside these initiatives, which are being adopted by a growing number of entities, above all in the field of asset management, the FSB is considering plans to incorporate regulatory recommendations that incentivise the measurement and reduction of the financial risks associated with climate change, given the threat they represent for global financial stability. These recommendations include the potential consideration of these risks in the “stress test” exercises applied to banks and insurance companies, and the possibility that bonds issued by these entities with a sustainable label (green bonds) could be counted towards compliance with capital conservation buffers, at least that part derived from this consideration of the risks associated with climate change.

A study conducted by the Economist Intelligence Unit (2015) for the asset management industry (excluding banking assets), estimates that, by 2100, the value at risk (VaR, which measures the size of the loss a portfolio may experience, within a given time horizon, at a particular probability) as a result of climate change to the total global stock of manageable assets would be around USD 4.2 trillion in discounted, present value terms. This figure is roughly on a par with the total value of all the world’s listed oil and gas companies or Japan’s entire GDP.

Regardless of the reliability of these figures (largely dependent on associated probabilities), the high orders of magnitude involved more than justify the attention that these new risks to global financial stability attract. And, in any case, they justify the specific information requirements placed on the whole of the financial and corporate sector

This transparency about actual and potential risks on the balance sheets of the financial services industry is a necessary condition to avoid the erosion of trust, so that investors, auditors, accountancy firms, and rating agencies will have to take into consideration these recommendations regarding disclosure.

In anticipation of this need, Standard & Poor’s, one of the world’s largest rating agencies, recently published a report (2017) in which, based on the FSB’s classification of climate risks, it highlights adaptation to compliance with these restrictions as a true risk factor, with probably major material consequences for their credit ratings.

Just as important as preparing for the measurement and management of climate-related risks is addressing the financing of projects for a society that is more resistant to the consequences of global warming. This would mean taking advantage of low interest rates and reduced demand for credit, which limits the possibilities of generating profits in the financial sector, to finance this transition to low-carbon emissions. Such transition efforts will take time, and sustainable financing could be linked to this process in both companies and states.

Here, the International Energy Agency (2015) has estimated that the full implementation of these climate pledges will require investments of around 13.5 trillion dollars in energy efficiency and low-carbon technologies from 2015 to 2030, which undoubtedly opens up new investment possibilities for banks, insurance companies and joint investment institutions.

The growth of green bond issues, which we address in the next section, is already a clear signal in this direction.

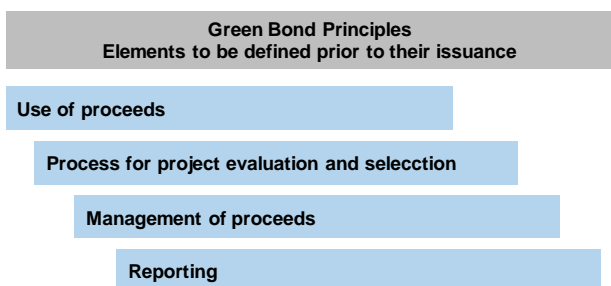
3.2. Green bonds: concept, evolution, and principal agent making up the market

For several years now, the asset management industry has been progressively incorporating more sustainable investment strategies. In the case of investments in equity (shares), this strategy means not investing in the shares of firms that do not comply with ESG criteria.

In the case of fixed income securities, the strategy is slightly different since it no longer centres on the firm but on the instrument. Thus, it is possible to buy bonds issued by companies that are transitioning to decarbonisation or which employ business models that are linked to more sustainable development.

It is here that the concept of green bonds has emerged, understood as those bonds whose funds are exclusively used for financing or refinancing, in part or in their entirety, eligible green projects, such as reductions in CO₂ emissions or financing the purchase of electric cars. These bonds must comply with the Green Bond Principles (GBP) that uphold the integrity of the green bond market through guidelines that recommend transparency, disclosure, reporting and the allocation of funding to specific areas of activity (see Figure 5).

Figure 5. Green Bond Principles



Source: ICMA.

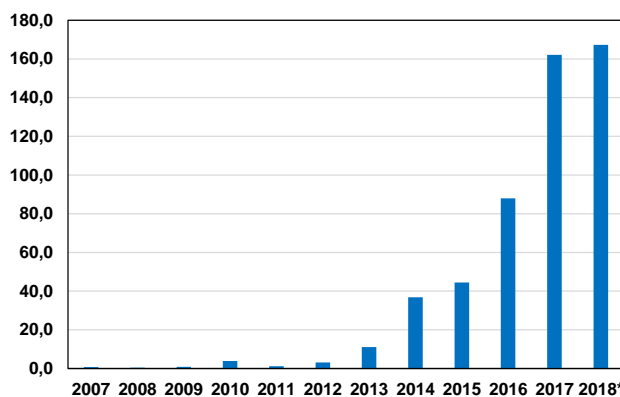
The starting point is compliance with best practices of voluntary adherence such as those set out in the Green Bond Principles (of whose governance framework *Afi* is an observer member) adopted within the framework of the International Capital Market Association (ICMA), or the approval of standards, such as those advocated by the Climate Bonds Initiative (CBI). These principles and standards establish the norms and facilitate the development of the market by reducing agency costs

(comparability and trust) between investors and issuers.

It should be noted that bonds of this type implicitly bear issuer credit risk, insofar as the coupon payments and the repayment of the principal are not linked to the project they finance. This presence of “issuer risk” in the green bonds accounts for the fact that, in the initial phases of their development, the main issuers were supranational. Indeed, the European Investment Bank (EIB) led the way in 2007 with its “climate awareness” bond.

The green bond market has grown exponentially since then, reaching, at the end of 2017, a balance of 372 billion dollars, and emissions that exceeded 160 billion in 2018 (see Figure 6).

Figure 6. Amount of green bonds issued since their introduction (billions of dollars)



Source: Afi, CBI.
 Note (*): Year end 2018, preliminary figure.

But the situation is changing, with the incorporation of new categories of issuers, such as firms in the utilities sector, and with the greater presence of supranational agencies and entities, so that currently the green bond market is divided between corporate issuers (30%) and the rest (70%), similar in this regard to the global fixed income market, albeit that among the firms there is a greater presence of utilities, as well as of supranational entities and agencies.

In order to establish the long-term potential evolution of this market, we must bear in mind that the current bond market stands at around 16 trillion euros in the European Union and could reach 20 trillion euros. But if the estimated needs for financing energy and climate commitments in the Union are 180 billion euros per year until 2030, this should represent an accumulated figure of around 2 trillion euros of green bonds issued

in that year, which would represent 10% of the total fixed income at that time.

3.3. Other financial initiatives that favour the transition

The transition to a low-carbon economy inevitably requires the parallel support of the financial system. Here, financial service providers need to revise their business and risk models so that they coincide with the new patterns of investment and activity that this transition requires. Fortunately, more and more financial institutions are recognising that sustainability is key to their future models, and so they send a clear signal to the market that change is essential and imperative for almost all sectors.

- In the case of the stock exchanges and stock markets, special mention should be made of the initiative known as the Sustainable Stock Exchange (SSE), a measure adhered to by more than 70 stock exchanges throughout the world, representing more than three quarters of the quoted stock markets. Its work focuses on developing market practices, coordinated by market agents, in terms of disseminating relevant information, reallocating capital through the introduction of green products, the development of training guides and activities to strengthen the sector's capabilities in this area, and the development of exchanges and processes of dialogue that stimulate the continuous development of standards for these instruments.
- In the case of banking entities, it is worth highlighting the financial initiative of the United Nations Environment Program (UNEP-FI), which is coordinating the work and exchange of knowledge with more than 100 international banking entities for the development of methodologies and tools that allow banks to understand how climate change impacts their business and activity.
- The asset management industry has also taken similar initiatives of note, most significantly, the Institutional Investors Group on Climate Change (IIGCC), which brings together 160 members from 12 countries and manages more than 21 trillion dollars. This Group has set itself the objective of mobilising capital for the process of decarbonisation of economic activity. In so doing, it carries out actions to coordinate the demands of its members, while collaborating with companies and policymakers in the development of new legislative

norms that offer a clear and long-term vision of the transition.

- Finally, the insurance industry was probably the first finance sector as a whole to envision the importance of the financial risks of climate change for its activity, given that it is affected both by its assets (investments) and its liabilities (insurance policies). Among the specific actions taken to better understand, prevent and reduce ESG risks, and to better manage the opportunities to provide reliable quality risk protection, the sector has developed the Principles for Sustainable Insurance (PSI Initiative).

All this shows that the financial sector's understanding of climate change is today a key factor in the management of risks and opportunities. Moreover, new green business opportunities serve as an additional incentive lending weight to the financial argument for the "greening" of activity and the development of savings, investment, debt, guarantee and insurance products linked to the identification of the climatic attributes of the economic activity that they finance or the underlying assets on which they are based.

4. Sustainable finances in Spain

4.1. Main operators in the green fixed income market. Comparison with European best practices

In the Spanish case, the relationship between the financial markets and climate change has centred on the specific initiatives of certain operators – primarily in terms of green bond issues, an activity in which various firms in the country's energy sector have participated as issuers, along with various financial entities, acting either as issuers or as investors.

In 2014, the electricity utility company, Iberdrola, struck out as a pioneer in the issuance of green bonds, and since then it has increased the periodicity of its issues and their overall amount, issuing more than 1.4 billion euros in 2018. Other energy utilities have followed its lead, achieving good market acceptance (see Figure 7). These companies stress that their issuances are linked to a clear strategy of investment in infrastructure for the decarbonisation of economic activity. They in turn bestow on the entity a positive reputation that, in general, compensates for the higher information requirements of these bonds, more, that is, than the

“price effect”. Given the regulatory requirements, the energy sector has already set itself a high standard for providing information, so in this regard the cost of issuing green bonds is negligible, facilitating the fact that this sector makes up the majority of issuers of these bonds, above and beyond, that is, the sector’s own energy transition.

Other national entities have issued bonds which they have “labelled” as social or sustainable. These adhere to similar guidelines to those of green bonds, but the funding obtained is used for either social purposes or a combination of social purposes and those accepted as “green”. The issuers include public entities, such as the Community of Madrid and the Barcelona City Hall, and financial institutions, such as Kutxabank and Caja Rural de Navarra, the goals differing in each case.

In the case of financial entities acting as underwriters or subscribers of green bond issues, the main Spanish banks have been quite intense in their activity. In 2017, they reported volumes of around 2 billion dollars, although this figure is considerably lower than that reported by the leading international agents in this field (Crédit Agricole, HSBC and Citigroup), whose operations exceeded 7 billion dollars.

Figure 7. Issuances of green bonds by Spanish entities. 2017 and 2018

Green Bond Issuer	Year	Period (years)	Quantity issued (\$)
Banco Bilbao Vizcaya Argentaria SA	2018	7	1.160.590.000
ACS Servicios Comunicaciones y Energia SL	2018	8	870.510.000
Iberdrola Finanzas SA	2018	8	870.337.500
Iberdrola International BV	2018	8	812.483.000
Adif - Alta Velocidad	2018	8	696.354.000
Iberdrola International BV	2017	8	1.179.510.000
Iberdrola Finanzas SA	2017	8	1.057.490.000
Gas Natural Fenosa Finance BV	2017	8	943.808.000
Iberdrola Finanzas SA	2017	8	891.090.000
Adif - Alta Velocidad	2017	6	680.304.000
Iberdrola Finanzas SA	2017	8	265.240.000
ACCIONA Financiacion Filiales SA	2017	13	78.027.950
ACCIONA Financiacion Filiales SA	2017	3	13.426.440

Source: Afii. Bloomberg.

Note 1: In 2017, Repsol issued a green bond that fulfilled Green Bond Principles; however, it is not included here as Bloomberg did not consider it as such on the basis of its purpose.

One interesting case is that of the green loans granted by BBVA to various Spanish entities, and which have been regulated by the same rules as those regulating the issuance of green bonds, that is, the Green Loan Principles coordinated by the ICMA. Other financial entities, including Bankia, CaixaBank, Kutxabank, Santander and Triodos España, have also opted for sustainability in their retail loans and for the funding of projects. They offer special conditions to operations dedicated to the improvement of sustainability (housing, reforms, purchase of vehicles, etc.) that, even when they do not adhere to international principles,

can be identified within the growing area of the financing of sustainable projects and assets.

However, the actions undertaken in Spain to date lag some distance behind the level of development reached in neighbouring countries, where initiatives include:

- Public-private debate launched in 2016 by the Italian Government to identify the practical and political elements required to mobilise the Italian financial system around sustainable development and climate action.
- Preparation, in 2018, of a guide by a consortium of leading Dutch banking entities on the capacity of the financial system to contribute to the transition to a circular economy.
- Definition, in 2017, by the main British financial entities of 15 steps that will facilitate the “greening” of their financial activity.
- Definition of a “green” label for French investment funds in the framework of the application of the Law on Energy Transition and Fight against Climate Change drafted in 2015 by the French Government.

In short, the Spanish financial and business sector has begun to form part of the large-scale international movement that considers the risks and opportunities of the fight against climate change and other environmental factors as an element of investment and risk assessment. Even so, current progress lags well behind that of its neighbouring countries. As such, future legislation on climate change and energy transition in Spain needs to promote development in this field and serve as a catalyst for the sector.

4.2. Spanish institutional investment in sustainable finance

Institutional investment plays a key role in channelling the savings of individuals into sustainable investments. This role depends, on the one hand, on the growing awareness that many investors are developing for sustainable investments, but also on the growing evidence that investments of this type can generate returns that exceed even those obtained by unsustainable investments, as was made apparent in Section 3.

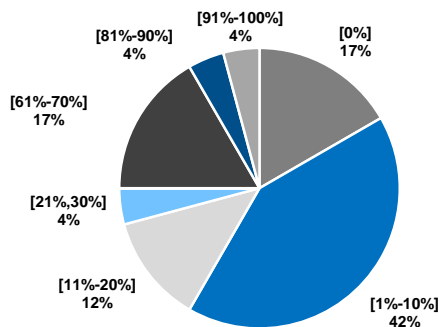
As such, it is hardly surprising that some of the leading institutional investors in the world have developed highly proactive strategies in relation to sustainable investments, both in terms of greater transparency in

their assessment of risks, and in their commitment to minimising them.

Within the framework of this growing international trend, below we seek to shed some light on institutional investment in Spain, in terms of its attitude to and strategies for sustainable investment. To this end, we carried out a field study involving the identification of a broad spectrum of such investors. We then recorded their perceptions in a survey specifically designed for this purpose. The field work was carried out in July 2018, and from an initial population of 87 institutional investors we obtained 24 responses, a sample that can be considered as being fairly representative.

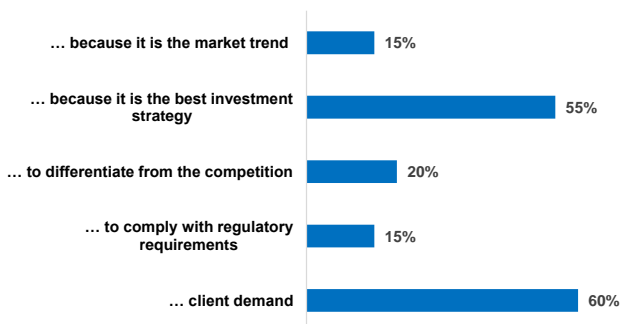
The growing appreciation of sustainable investments is made evident by the fact that only 17% of the entities do not have any sustainable investments in their portfolios. More than half (54%) have between 1 and 20%, while for 25% of the institutional investors sustainable investments today constitute a majority in their portfolios.

Figure 8. Sustainable investments as a percentage of portfolio



Source: Afi

Figure 9. Reasons for offering sustainable investments

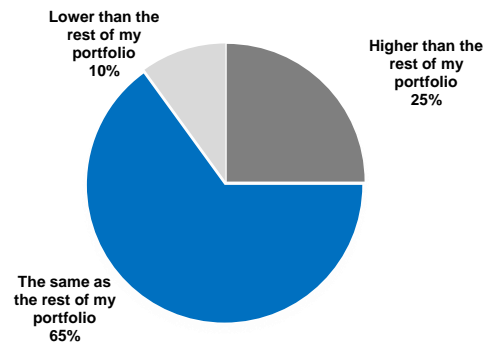


Source: Afi

The main reason given for incorporating sustainable investments in their portfolios (Figure 9) is client

demand followed by the consideration that it constitutes the best investment strategy. Undoubtedly, these are the two reasons underpinning the proactive attitude of asset managers in other countries, and they can be considered much more promising motives than simply the need to comply with regulatory requirements or the reflection of a market trend.

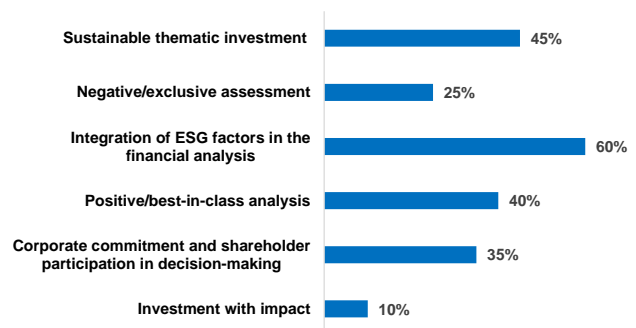
Figure 10. Relative profitability of sustainable investments



Source: Afi

Traditionally, it was considered that responsible investment meant having to accept a lower level of profitability. However, recent empirical studies not only fail to corroborate this, but they also show a slight enhancement in profitability, a conclusion that seems to emerge also from our field work. The majority of institutional investors (65%) reported that sustainable investments generate returns that are similar to those of other investments, while 25% believed that they give higher profitability, compared to just 10% who claimed the opposite.

Figure 11. Sustainable investment strategies adopted

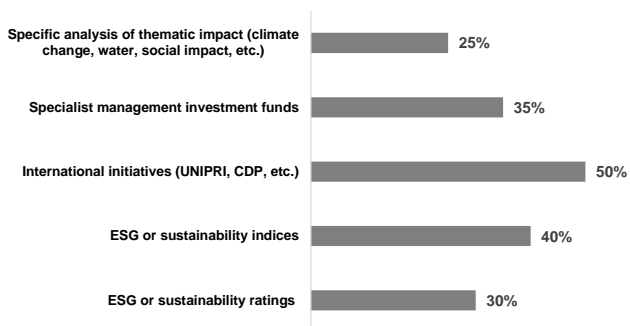


Source: Afi

Among the various strategies available for adoption when making sustainable investments, respondents tended to identify employing more than one specific

approach (i.e. 55% of respondents combine at least 2 methodologies), the most frequent being the integration of ESG factors in the financial analyses made (60%) and the definition of sustainable thematic investment funds (45%).

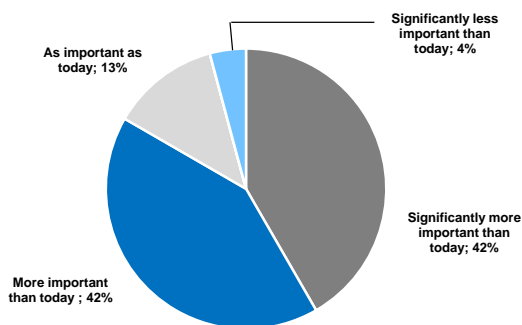
Figure 12. Benchmarking used in sustainable investments



Source: Afi

Spanish institutional investors reported using a wide range of international sustainability indices when “benchmarking” their investments (55%). International initiatives that establish standard criteria for member entities are the most used (50%), followed by the ESG indices (40%).

Figure 13. Future prospects for sustainable investments



Source: Afi

The evolution of portfolios designed in line with sustainable investment criteria is expected to follow an upward trend over the next two years according to the majority of collective investment institutions in Spain (84%); in fact, for 42%, this growth is expected to be substantial, which should narrow the gap caused by the delayed incorporation in Spain of sustainable investments in institutional investment portfolios.

5. Conclusions

The extremely high magnitude of the potentially negative impacts of climate change more than justify the attention that these new risks to global financial stability are attracting. At the same time, there is a pressing need to manage better the opportunities they afford so as to provide all agents with a reliable and quality option.

A key element in the promotion of sustainable finance is the availability of more information and greater communicative transparency. The model of requirements introduced in France in 2015 (namely, Article 173 of the French Energy Transition and Climate Change Law) would appear to be the right approach to adopt in this regard. Institutional investors and asset managers are required to analyse and report their climate risk exposure and to explicitly state the climate risks and opportunities in their portfolios. The knock-on effect this should have on all other entities (firms, institutions and supervisors) is remarkable and represents best practice for implementation in the Spanish context

Various analyses conducted to date conclude that sustainable investments are more profitable and/or less risky than others that do not take climate-related issues into question, and, therefore, that they should have a favourable impact on prudential requirements (a “green-supporting factor”). However, their application should be accompanied by a penalty for those activities that have an unfavourable impact (“brown-penalising factor”). These elements are of great importance for banking and insurance entities.

The future law on climate change and energy transition that has been proposed should boost the development of sustainable finances and act as a catalyst for the sector.

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