I4CE
INSTITUTE FOR CLIMATE ECONOMICS
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Can Financial Regulation accelerate the low-carbon transition?

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I4CE – Institute for Climate Economics is an initiative of Caisse des Dépôts (CDC) and Agence Française de Développement (AFD). This think tank provides independent expertise and analysis when assessing economic and financial issues relating to climate & energy policies in France and throughout the world. **I4CE** aims at helping public and private decision-makers to improve the way in which they understand, anticipate, and encourage the use of economic and financial resources aimed at promoting the transition to a low-carbon, climate resilient economy.

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Executive summary

Since the signing of the Paris Agreement, which aims to make financial flows consistent with climate objectives, the financial sector and financial regulators have increasingly mobilised. In recent years, significant progress has been made on the incorporation of climate risks into traditional regulation objectives – the efficient functioning of financial markets and financial stability – and the development of corresponding tools.

This "risk-based approach" is an important first step, but will it be enough to deliver on climate objectives? Indeed, the goal is to address the challenge of financing the low-carbon transition *i.e.* financing green activities (climate solutions) as well as transition activities (decarbonising of existing activities). However, we observe the persistent lack of investment to support this transition in spite of abundant liquidity and the rapid development of sustainable finance. How to ensure that "finance" works in favour of this crucial transformation of the economy and that financial flows are redirected accordingly?

Against this backdrop, the question is whether financial regulation could contribute more than it currently does to mobilising finance in favour of the low-carbon transition. This is why an increasing number of NGOs and researchers are calling on financial regulators to go beyond their traditional objectives in order to contribute to financing the low-carbon transition and to make the necessary changes to financial regulation. In the European and North American countries, positions on this issue are highly polarised, with regulators and supervisors being rather against it, especially where prudential regulation is concerned.

But before debating on the principle, it is necessary to consider whether financial regulation could really contribute to financing the low-carbon transition and examine the regulatory changes that would be necessary. However, few studies have focused on the tools and instruments that regulators in the developed countries could specifically use to achieve such an objective.

This report explores the specific actions that regulators could implement in order to accelerate the financing of the low-carbon transition. To do so, it first focuses on analysing the obstacles to this financing which are relevant to financial regulation, taking real problems as its starting point and going beyond simplified representations. It then identifies the levers that financial regulation could influence in order to overcome these obstacles and to propose possible options for regulation.

Financial regulation can accelerate the financing of the low-carbon transition

From the analysis conducted, it appears that financial regulation can complement the range of tools available to the public authorities to accelerate the financing of the transition. It goes without saying that it cannot – and should not seek to – replace fiscal, economic and environmental policies, which have a crucial role to play in guiding economic action. But financial regulation also has a role to play. It can act on three levels to facilitate the financing of the transition: improving financial actors' understanding of the challenges of the transition, correcting short-term biases in financial actors' preferences, and encouraging financial actors to get involved in projects with low returns.

Before looking at the regulatory tools available to accelerate the financing of the transition, it is important to point out that financial regulation is not in itself an obstacle to transition financing today. Indeed, the research conducted for this report reveals that there is no situation in which regulation is indisputably a direct and lasting barrier to the financing of the low-carbon transition. Some financial actors accuse prudential regulations of being detrimental to long-term financing, which is essential to transition financing. Yet empirical studies show that the effects of regulation on these types of financing are real, but limited in scope, and especially restricted to the adjustment period (2-3 years) following the implementation of new regulations. Over a longer period, these regulations could in fact have a beneficial effect resulting from improvements in the solvency and stability of financial actors.

LEVER 1.
Using regulation to improve financial actors' understanding of the challenges of the transition

The first obstacle to financing the transition that could be influenced by financial regulation is the global level of knowledge about the transition among financial actors. Despite positive momentum, this level of knowledge remains very low, especially among banking actors. This is an important obstacle that should not be underestimated.

Regulators and supervisors are already engaged in encouraging upskilling for financial actors. But they could do much more to provide this community with a common knowledge base and to build specific expertise. Several tools are possible: through changes to the Autorité des Marchés Financiers certification for actors in these markets, through specifying supervisory expectations regarding general training, or through the risk management requirements set by banking regulators, so that supervisors are able ensure that banks implement these training processes. Banking supervisors can also encourage training organisations to launch professional training programmes specialising in the financing of the transition.

In addition, regulators can support the development of simple tools to help financial actors to better understand the positioning of companies in relation to the challenges of the transition. They could thus establish a taxonomy of unsustainable activities. They could also require greater transparency and convergence between the methodologies of non-financial rating agencies. Moreover, further incorporation of climate issues into the Banque de France rating tool could help to produce standards aimed at SMEs and ISEs, which are difficult to reach with sustainable finance tools today.

These proposals would have a significant impact and can be implemented without delay. What is more, they would also contribute to meeting the objectives of the risk-based approach currently taken by supervisors.

LEVER 2.
Using regulation to ensure financial actors' preferences have a longer-term perspective

Warnings about the short-termism of financial actors are not new. This short-termism has been demonstrated empirically, and is increasing over time. It is particularly detrimental to the financing of the transition, which is built on medium- and long-term horizons. Several regulatory tools are available to help to correct these practices.

First, remuneration practices could be better regulated over time, by extending the deferral periods. In addition, climate impact criteria could be incorporated into variable remuneration.

To take action on short-termism, regulation could also correct index-based management biases: the solution is not so much to create green indexes or to improve transparency on potential ESG criteria, as to ensure real climate transparency for all indexes in order understand the climate impacts of the companies they concern.

Finally, financial actors' preference for the short term is partly the result of the investment choices made by savers. The way savings are channelled therefore also needs to be addressed. To do so, financial regulation can foster the integration of client preferences by ensuring that clients are questioned specifically about their willingness to contribute to the financing of the low-carbon transition (and not just about their preference for sustainable finance in general). It can also inform their choices through labels with climate requirements that are stricter than the Socially Responsible Investing label, which is by far the most widespread. Finally, it can establish a better offering of products directly channelled towards the financing of the transition (creating a "transition" term deposit account and offering "transition" unit-linked life insurance contracts).

LEVER 3.
Using regulation to incentivize financial actors to get involved in projects with low returns

Unsurprisingly, there is a problem with financing for low-carbon projects with low returns, or those with returns that are obtained too late in relation to financial actors' expectations. Financial regulation can encourage private financial actors to look more closely at these projects, and to move away from a purely financial approach.

One way to achieve this is to broaden fiduciary responsibility, which is still too often used as an argument to prioritise the objective of returns on investments, by requiring that it explicitly incorporates climate-related risk criteria and climate impact criteria (*i.e.* the double materiality of climate change), in addition to the incorporation of ESG criteria currently planned by the European Commission.

Prudential banking requirements can also be modified. Pillar 1, minimum capital requirements, does not seem to be the most promising tool to channel financial flows toward transition, since mechanisms such as the "Green Supporting Factor" or the so-called "Brown Penalising Factor" appear to be incomplete and insufficiently granular to favour the financing which really supports the transformation of economic activities. At most, the mechanism to reduce capital requirements recently set up at the European level for infrastructure could be revised so that it only applies to financing for green infrastructure.

Another path explored in this report is the use of prudential regulation (and notably the Pillar 2) to require banks to incorporate climate criteria into their financing decisions. More specifically, banks would be required to i) adopt a climate-related target (*e.g.* a net-zero emission target by 2050 or an alignment target), ii) design 5-year transition plans explaining how to reach the long-term target and iii) set-up a mechanism to integrate climate-related criteria into their financing decision process. The European regulator would set the general framework as well as indicators to monitor the progress achieved.

This report has identified specific solutions or options to be explored for using financial regulation to directly support the financing of the transition. The debate on this use of financial regulation needs to include all stakeholders and should not be restricted to just financial experts. It should focus on not only the objectives to be set for financial regulation, but also the regulatory instruments available, their climate effectiveness, the potential conflicts of objectives with the other objectives of financial regulation, and the governance changes required (evolution of the mandate of financial supervisors).

SUMMARY OF PROPOSALS
HOW FINANCIAL REGULATION CAN BE USED TO FINANCE THE TRANSITION

Content of proposals	Regulations to modify
Using regulation to improve financial actors' understanding of the challenges of the transition	
1. Stepping up training requirements for financial actors	
• integrating a general knowledge base into market authority certification • creating a specialised certification scheme for investment actors	• French Financial Markets Regulation
• specifying supervisory expectations in terms of general training for financial actors • encouraging training organisations for the banking sector to set up specialised training programmes	• CRD V & CRR 2 • EBA guidelines and standards
2. Encouraging the development of simple tools to understand the transition	
• developing a taxonomy of "unsustainable" activities	• European Level 1 Regulation
• increasing transparency on the methodologies and data used by non-financial rating agencies	• ESMA
• further incorporating climate issues into the BdF rating tool to connect with SMEs and ISEs	• French Central Bank
Using regulation to ensure financial actors' preferences have a longer-term perspective	
1. Integrating the challenges of the transition into remuneration policies for financial actors	
• extending the deferral period for the variable part beyond three years • encouraging the incorporation of climate impact indicators into variable remuneration	• CRD IV • Solvency II • AIFM and UCITS
2. Counteracting index-based management biases	
• introducing climate transparency for all indexes	• Benchmarks Regulation
3. Mobilising household savings to support the transition	
• better identifying and incorporating client preferences in terms of transition financing • clearly identifying the investments offered to savers to finance the transition • improving the range of financial products offered to savers to finance the transition (creating a "transition" term deposit account and offering "transition" unit-linked life insurance contracts)	• implementing legislations for Mifid II Directive and the Insurance Distribution Directive • Ecolabel for sustainable financial products • French Ministry of Finance and French Ministry of Ecological Transition
Using regulation to incentivize financial actors to get involved in projects with low returns	
1. Broadening fiduciary responsibility	
• making it compulsory to incorporate climate risks into investment decisions • incorporating climate impacts (negative, or even positive) into investment decisions	• AIFMD, UCITS, Mifid II, Solvency II and IDD
2. Stepping up incentives for financial actors	
• revising the existing mechanism to reduce capital requirements on infrastructure so that it applies to only but all green infrastructure projects	• CRR 2
• making it compulsory for banks to incorporate climate-related criteria into their investment decisions by i) adopting a climate-related target, ii) designing 5-year transition plans and iii) setting a mechanism to integrate climate-related criteria into their investment decision process. Exploring the implementation of indicators to monitor the progress achieved.	• CRD 5-CRR 2

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1. Introduction

Since 2015 and the signing of the Paris Agreement, which aims to make financial flows consistent with climate objectives, the financial sector and regulators have increasingly engaged in this process. Nevertheless, this dynamic remains insufficient to address the challenge of financing the transition to a low-carbon, resilient economy (hereafter referred to as "the transition") *i.e.* financing green activities (climate solutions) as well as transition activities (decarbonising of existing activities) (see **Part 2.2** for more details).

The Landscape of Climate Finance[1] published in 2019 estimates additional needs for the transition in France alone at between 15 and 18 billion euros per year until 2023, then 32 to 41 billion euros per year between 2024 and 2028. These investment needs cannot be covered solely by the public authorities, including in Europe despite the Commission Green Deal and some national Green recovery plans initiated to deal with the consequences of the Covid-19 pandemic. Therefore, private finance is expected to play an increasing role in supporting companies and households towards the transition.

The substantial gap observed between the investments needed to achieve the transition and the total investments actually made is the starting point for this report. This gap is set against the backdrop of an economy with an abundance of liquidity. The main cause of this shortfall in investments to support the transition is not therefore the scarcity of capital, but rather the fact that the capital available is not sufficiently invested in the low-carbon transition, despite the rapid development of "sustainable finance".

In this context, numerous studies have been conducted to propose policy and tax instruments as well as sectoral regulations and environmental standards. However, little has so far been said about the potential role of financial regulation in financing the transition. Clearly, this regulation cannot replace conventional economic and environmental policies, which have a crucial part to play in guiding economic agents. But could financial regulation play a role in the range of tools available to the public authorities?

Since 2015, numerous regulators and central bankers have publicly indicated that climate change is one of their concerns, since it poses a systemic threat to the whole of the financial sector[2]. Today, the challenge is no longer involving regulators and supervisors in the fight against climate change, but rather determining the objectives they must pursue and the best instruments available to achieve those objectives. In the developed countries, regulators have so far prioritised the traditional goals of financial regulation, in other words the efficient functioning of financial markets and financial stability, trusting that that this will also have a positive indirect effect on the "greening" of the economy. Despite the call by the NGFS to green the financial sector, regulators currently remain neutral with respect to today's economy, and do not seek to directly influence its structure.

Moreover, some regulators and financial actors persist in viewing finance as just a support function that should finance the economy as is. In reality, the practices of financial actors and their understanding (or lack thereof) of climate issues shape the economy and can accelerate or inhibit its transformation.

Given the urgent need for action to tackle global warming and in view of the key role the private finance sector must play in financing the low-carbon transition, the question is whether the traditional approach adopted by regulators is an optimal use of financial regulation with respect to the objective of "greening the financial sector".

This report has therefore endeavoured to analyse the different barriers to financing encountered by the actors in the transition and to determine whether financial regulation could provide a response to this problem.

The report focuses primarily on the case of France, where all of the interviews were conducted. But the largely European nature of financial regulation in France and the many common features within continental European finance make the French example very relevant to the majority of European countries. This is accentuated by the unifying effect of the European Union and its Action plan on sustainable finance. So far, the European Commission has favoured an approach aimed at developing sustainable finance and giving it credibility, in particular through the creation of different labels. However, in the context of its forthcoming renewed strategy, it is essential to go beyond this idea of "niche finance" in order to implement the transition across the whole of the financial sector.

The rest of the report is organized as follows. In section 2, we look at the challenges of financing the transition and the obstacles which are relevant for the financial regulation. In section 3, we identify levers to improve financial actors' understanding of the low-carbon transition. In section 4, we review regulatory solutions to overcome financial actor's preference for the short term over the long term. And in section 5, we explore ways to incentivize financials actors to consider low-profitability projects.

1 I4CE, Hainaut, Ledez, and Cochran, "The Landscape of domestic climate investment and finance flows", 2019
2 NGFS, " First comprehensive report: A call for Action". 2019

2. Financing the transition: a fragmented reality

KEY MESSAGES

- Financing needs for the transition are numerous and multiple, and after years of focusing on the financing of renewable energy, the spectrum must now be extended to include broader processes of change in all economic activities.
- The challenges of financing vary considerably depending on the company's positioning in the transition, its size, its sector of activity and its location.
- Three major obstacles emerge: the lack of understanding of the transition among financial partners; difficulties finding capital for medium- and long-term projects; and projects that appear to be insufficiently profitable to attract financial actors.

2.1. The initial debate on the mismatch between supply and demand for projects

This report is based on the premise that there are barriers to financing the transition, yet this view is not shared by all those in the financial community. For some, there is no problem financing the transition, but rather a lack of projects to finance, despite the willingness of financial actors to engage in the transition.

Although this debate and its issues are not central to the report, they merit further exploration in order to improve the financial community's understanding of what the transition means. This subject will be addressed chiefly in the box below, as well as more briefly in **Part 4.1: The prevalence of short-term profitability for investors**.

BOX 1: THE DEBATE ON THE MISMATCH BETWEEN SUPPLY AND DEMAND FOR PROJECTS

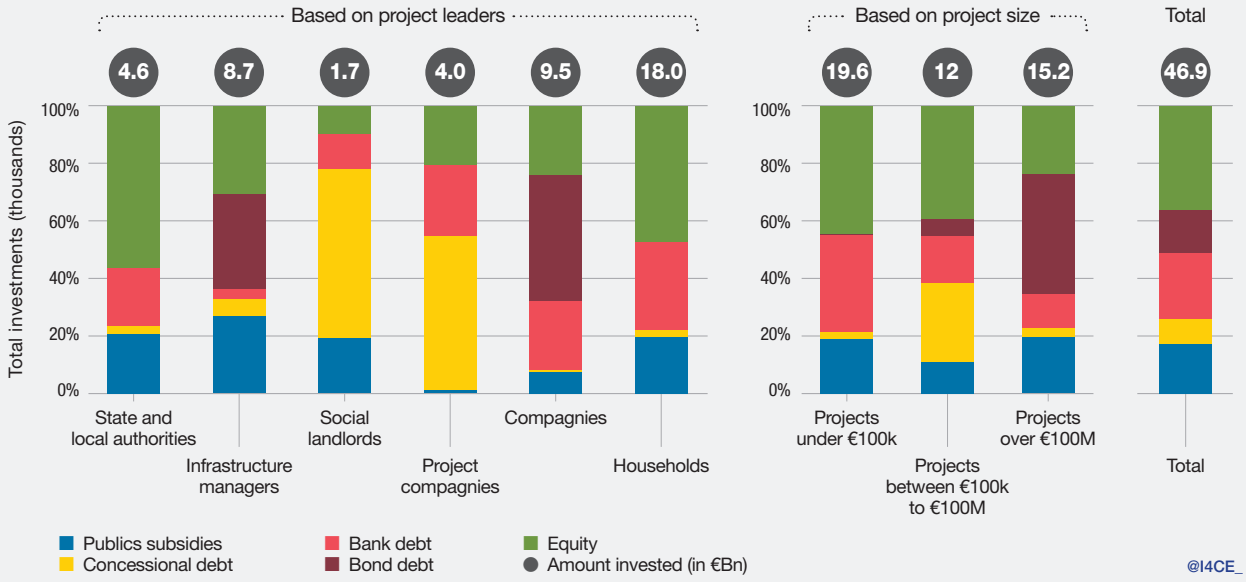
During the interviews conducted for this report, several financial actors said that there was no difficulty financing green projects, indicating instead a lack of projects to finance. At the same time, exchanges with actors in the real economy indicated difficulty finding funding to suit their climate strategy, which can lead them to either shelve projects, to postpone them or to reduce their scope.

Although it is difficult to settle this debate between the different views, it seems that on the one hand, there is a supply of finance that exceeds the number of existing projects for certain segments considered to be profitable, such as mature renewable energies (RE) and, on the other, there are projects that are not viable without public resources[3]. Between these two segments of financing for the transition are projects that struggle to obtain financing, a point already discussed in the report *Pour la création de France Transition*[4]. **Part 5.1** :The core issue of profitability, explores this issue in more detail.

For project leaders, this difficulty obtaining financing results in them either being far themselves from financial spheres, with the exception of banking advisors, or being discouraged by the technicity and the extra cost of obtaining combinations of different types of financing[5]. Indeed, a single project, especially if it has a long maturity, can require a combination of several types of financing, associating equity, debt, subsidies and different risk management mechanisms, as is the case for major infrastructure projects.

3 Cour des Comptes, «Le Soutien aux énergies renouvelables». 2018
4 Canfin and Zaouati, «Pour la Création de France Transition». 2018
5 Canfin and Zaouati.

FIGURE 1: FINANCING INSTRUMENT OF CLIMATE INVESTMENTS DEPENDING ON THE PROJECT LEADER AND THE SIZE OF THE PROJECTS, IN 2018



Where financial actors are concerned, there is a proliferation of instruments and financial engineering (green securitisation, social bonds, green bonds, sustainability-linked bonds, transition bonds, specialised funds, etc.)[6], with a high level of communication on greening, sometimes at the expense of science-based definitions.

However, this multiplication of financing options does not seem to fully reach project leaders (both project developers and managers), especially the smallest among them. This is confirmed by the interviews conducted with project leaders. This communication on green finance instruments seems to be aimed primarily at the financial community.

Adding a further difficulty, there is a clear disconnect between the different investment sectors (private equity, investment funds, banks, etc.), and financial regulation varies according to each of these actors. It is therefore difficult for a project leader to obtain a clear signal about the existence of a green finance solution. While this does not systematically constrain the project, it may reduce its level of ambition or defer it.

Faced with these difficulties signalling solutions to project leaders, financial actors have the impression there is a lack of projects, or a lack of signals on green and transition projects[7]. These difficulties emitting clear signals about the existence of projects within companies are due to a number of factors (see below, **Part 2**).

To change this perception of a lack of projects, major efforts are needed within companies and the financial community to educate actors on what the transition means, i.e. both the development of climate solutions (green activities) and the decarbonisation of existing activities. **Part 3, *Improving financial actors' understanding of the low-carbon transition***, presents this finding along with courses of action regarding financial actors.

Discussions on the taxonomy have highlighted the complexity of defining a sustainable activity and the fact that the transition is not just a shift from fossil fuels toward renewable energies. However, pending the implementation of the taxonomy, expected in 2021 for the parts on mitigation and adaptation, the signals enabling financial actors to understand where projects are situated in the transition remain unclear:

- for equity investments, despite progress made by companies on climate transparency, there is still insufficient data to analyse a company's low-carbon strategy.
- for banks: the challenge is more one of identifying the nature of the loans in their portfolio as well as of incoming projects, determining the positioning of projects in the transition and aggregating all of these findings at headquarters level.

6 Climate Bond Initiative, "Green Bonds Global State of the Market 2019". 2020
7 Canfin and Zaouati, "Pour la Création de France Transition". 2018

2.2. Segmentation according to company and project positioning in the transition

Although the expression "financing the transition" is commonly used, the underlying acceptations nevertheless vary considerably when looking more specifically at what people actually understand by this term. The welcome arrival of a European taxonomy should clarify these acceptations, since it defines activities considered to be sustainable[8]. At the other end of the spectrum are unsustainable or carbon-intensive activities, which might also have their own taxonomy in the next few years. This is at least what some regulators, the NGFS[9] and NGOs[10][11] are hoping, and is the focus of work by the expert group under the EU Platform on sustainable finance.

But what exactly does financing the transition mean? It is more than just a binary opposition between increasing green finance and drastically reducing unsustainable finance. It is in fact the transformation of the whole economy that must be financed, with the development of green activities (climate solutions) as well as the greening of carbon-intensive activities (the decarbonisation process of "transition activities") or their shutdown and decommissioning when they cannot be sufficiently decarbonised to meet a 1.5°C trajectory . So-called "grey" activities must also be taken into account (*e.g.* services, communications, tourism, etc.): these are situated between green activities (conducive to the transition) and carbon-intensive activities (clearly detrimental to it). This category is concerned as well, albeit with lower priority, and must also change to become sustainable.

These debates around the difficulty of achieving a clear definition of transitional finance were highlighted by Ben Caldecott[12]. He points out that this terminology is often poorly defined and lacks an agreed definition in the literature.

What we can learn from this debate, and the position we will adopt for the rest of the report, is the recognition of a need to finance not only the sustainable activities but also the decarbonisation of activities which are currently highly emitting. The challenge is to define these transition activities to avoid any greenwashing. Thus the decarbonisation must be sufficiently ambitious to place these activities on a trajectory compatible with the Paris objectives. Ben Caldecott defines funding this process as achieving compagnies' alignment with environmental and sustainable sustainability[13].

This approach, which focuses not on the nature of the object financed but on the financing of this global process of change, also enables the integration of social issues which, though they are not explored in this report, are nonetheless critical to the success of the transition and to its social acceptance, as recently demonstrated by the Yellow Vests crisis in France.

This report will therefore look at all types of financing: bank financing, bond and equity financing, unlisted investments and specialised financing. It will not consider public financing (public subsidies or financing by public entities), with the exception of pressure on profitability for public investors in **Part 5**, as well as self-financing and crowdfunding issues.

2.3. Segmentation according to company size

To understand the barriers to financing the transition, a first segmentation can be done according to company size. Indeed, the challenges and the methods of financing vary significantly according to this criterion.

2.3.1. The challenges of financing for SMEs and ISEs

In 2017, INSEE in France listed 139 000 SMEs and 5 400 ISEs (intermediate-sized enterprises), which produced 24% and 27% of total value-added respectively[14]. Despite the economic importance of these companies, no statistical tool is currently available to measure exactly where they stand in the transition. Before even attempting to analyse their problems of financing, it is important to be able to visualise the trajectories of change to be implemented.

For the SMEs and ISEs that correspond to one of the fields covered by the sectoral carbon budgets under the French National Low-Carbon Strategy[15], especially through their production facilities, buildings or vehicle fleet, two situations exist:

- Either they are directly positioned on markets or products that need to be greened (energy, food, mobility, etc.) and are in direct competition with less virtuous products. Indeed, these competitors may use fossil fuels without paying a

8 The taxonomy defines three types of activities eligible: sustainable activities - including transition activities - and enabling activities. For each category and sector, specific thresholds are defined.
9 NGFS, " First comprehensive report: A call for Action". 2019
10 Finance Watch, "Financing the European Green Deal". 2019
11 Reclaim Finance, "Contribution to the Sustainable Finance Strategy". 2020
12 Caldecott, «Defining transition finance and embedding it in the post-Covid-19 recovery, Journal of Sustainable Finance & Investment», 2020
13 This approach seems to have been adopted by European taxonomy for its category "transition activities". However, there are still many debates on the ambition levels of the thresholds related to the different sectors, and it seems premature to decide whether the thresholds eventually adopted will be consistent with this definition of transitional finance.
14 INSEE Références, "Enterprises in France". 2019
15 Ministère de la Transition Ecologique et Solidaire, «Stratégie nationale bas-carbone». 2020

sufficient carbon price, and, in most cases, consumers do not pay a premium for green products, or only a small one. In other words, these companies struggle to sell what they produce at a higher price, despite manufacturing costs that are typically higher. In this case, they mainly encounter problems of profitability, in highly competitive contexts.

- Or these SMEs and ISEs are covered by the SNBC, but their markets concern other companies (outsourcing, business-to-business). In this case, political and economic signals reach them with difficulty, since they are only affected indirectly. There are significant barriers to profitability, but also to general awareness about the transition, and investments to support the transition compete with other investment projects, in safety or regulatory compliance, for example[16].

The final case concerns SMEs and ISEs whose activities are not included in the SNBC, such as service activities. For these companies, it is even more difficult to position themselves in the transition and to consider action, in particular because they have no clear decarbonisation pathway to refer to and that they could present to their stakeholders.

Something these companies all have in common are the milestones of investment, in particular R&D expenditure as well as equipment renewal every 5 to 10 years. In these two key moments, the financial partners – mainly banks – should act as an accelerator to support the company towards sustainable investments[17] and to avoid the effects of path dependency[18] and technology lock-in. However, technical and financial roles tend to be relatively compartmentalised within these companies[19], and these exchanges on the sustainability of investments, and thus on overall corporate strategy, seem to be difficult to achieve. Yet, according to a study by Bpifrance Le Lab[20], the financial question is critical, since it is the main obstacle (ahead of the lack of customer recognition and of technological solutions) to the transition in these companies.

2.3.2. The challenges of financing for large listed companies

Where large listed companies are concerned, the challenges and the methods of financing are different, but difficulty obtaining financing is also apparent here. The growth of the green bond market[21][22] and the multiplication of climate commitments[23] indicate that large companies are increasingly engaged in the transition. Several external factors explain these developments, especially pressure from states, stakeholders, consumers and NGOs, but also the R&D capacities of large companies, which enable them to support these changes. Benefiting from a context of abundant capital, they can easily finance their projects, especially through green bonds, a product currently highly sought-after by investors[24].

However, the reality seems to be more nuanced than this initial finding, first because green bonds and transition bonds continue to account for a very small proportion of financing for listed companies. A study by Banque de France put the global outstanding amount of green bonds at 464 billion euros at the end of 2018, or 0.4% of total global outstanding bonds[25]. Second, because there are real difficulties for some segments, in financing the transition of certain infrastructures for example, which require both patient capital and a high level of risk that few investors are willing to take. This appears to be all the more true when a company is dedicated to a single activity, as is the case for some energy providers.

2.3.3. The specific case of households

For the sake of clarity and brevity, this report focuses mainly on the barriers to financing the transition for companies, which seem to be more affected than households by the obstacles and barriers of financial regulation. However, two subjects are at the crossroads between financing issues for companies and for households, and will be addressed in this report: prudential treatment of leasing (Technical annex); and the issue of savings (**Part 4.3: The lack of impact of prudential regulations on long-term or specialised financing**).

16 France and Pôle interministériel de prospective et d'anticipation des mutations économiques, *Les acteurs, l'offre et le marché de l'efficacité énergétique à destination de l'industrie*. 2017
17 Ducret and Lemmet, "French strategy for green finance". 2017
18 Past decisions on investments in technologies or economic models that lock companies into a carbon-intensive pathway and impair their capacity to transition to a low-carbon economy.
19 France and Pôle interministériel de prospective et d'anticipation des mutations économiques, *Les acteurs, l'offre et le marché de l'efficacité énergétique à destination de l'industrie*. 2017
20 Bpifrance Le Lab, «Les dirigeants de PME ETI face à l'urgence climatique». 2020
21 According to the Climate Bond Initiative, green bond issuance amounted to 259 billion dollars in 2019, and continues to increase. By way of comparison, it stood at 42 billion dollars in 2015.
22 Climate Bond Initiative, "Green Bonds Global State of the Market 2019". 2020
23 One example is the French Business Climate Pledge, launched at the One Planet Summit, which in 2019 included 101 companies totalling 1.65 trillion euros in revenue. These companies commit to GHG reduction and green investment objectives.
24 Climate Bond Initiative, "Green Bond European Investor Survey". 2019
25 Bulletin de la Banque de France, "The green bond market is expanding rapidly but needs to be measured more accurately". 2019

TABLE 1: SUMMARY OF OBSTACLES ACCORDING TO COMPANY TYPE AND SECTOR OF ACTIVITY

Company type and sector of activity	Obstacles encountered	Possible examples
SMEs and ISEs falling within one field of the SNBC	• Problems of profitability	• Replacement of a professional vehicle fleet by an electric alternative • Manufacturing of bio-based materials for energy retrofits
SMEs and subcontracting ISEs or B2B, falling within one field of the SNBC	• Lack of awareness • Problems of profitability	• Replacement of a production chain for vehicle spare parts by a less carbon-intensive process • Replacement of an oil-based process by a bio-based process in the packaging sector
SMEs and ISEs not included in the SNBC	• No decarbonisation pathway to follow • Lack of awareness	• Reduction in the carbon footprint of a software company • Changes in materials used for publicity in the advertising industry
All SMEs and ISEs	• Lack of training for financial partners to intervene in investment decisions	• Integration of costs of energy retrofits into investment decisions regarding commercial buildings
Large listed companies	• Difficulty financing projects that combine patient capital and high risk-taking	• Replacement of energy transport infrastructures by an option compatible with renewable energies
Infrastructure	• Difficulty financing project design and development phases • Few financiers present due to the high technical capacity required, the level of risk and the long maturities • High rates of remuneration demanded by investors	• Deployment of charging stations for electric vehicles • Construction of hospitals with low energy building (BBC) standards
Industrial processes	• Few financiers present due to the high technical capacity required, the level of risk and the long maturities • Problems of profitability for European products	• Industrialisation of green chemical innovations to replace oil-based processes • Industrialisation of third generation biofuels from algae
Construction and energy retrofits in buildings	• Lack of coordination between the different professions • Higher investment costs • Investment profitability assessment conducted with time horizons that are too short	• Use of bio-based materials in construction • Energy retrofitting of commercial buildings

2.4. Segmentation according to the nature of the activity financed

The energy and ecological transition is characterised by its global nature, with all individuals being concerned as well as all companies and sectors of activity. But it is also highly fragmented, with very different issues depending on the sector. When a segmentation of this type is used, our study reveals that three key sectors appear relevant to the analysis of obstacles specifically linked to financial regulation.

2.4.1. Financing of infrastructure

Infrastructure investments have grown since the 2000s and have become a new asset class in their own right for investors. Here, the term infrastructure is interpreted in its economic and financial sense: the financing of economic services (transport, energy production and distribution, waste processing, etc.) or social services (hospitals, prisons, universities, etc.) for the community. The main characteristics of this type of financing are the combination of substantial regulatory barriers to project entry and the need for long-term capital.

Infrastructures and their financing are one of the key challenges of a successful transition. Financing issues concern carbon-intensive assets that will need to cease operating earlier than planned, existing infrastructure that will need to evolve significantly, and the deployment of new infrastructure to achieve the low-carbon transition[26]. In 2016, The New Climate Economy estimated that the world needs to invest 90 trillion dollars in sustainable infrastructure between now and 2030, in other words 6 trillion dollars per year[27]. This calculation of investment needs is not yet available at the

26 Carbone 4, Borie, and Decq, "Infrastructure: a key asset category for the climate". 2019
27 New Climate Economy, "The Sustainable Infrastructure Imperative". 2016

French level, but figures give the amounts currently invested and show their strong growth. Thus, according to Carbone 4, the amount of capital raised by French funds in 2018 was €12.1 billion, compared to €4.2 billion in 2017[28].

There are many difficulties in financing infrastructure. First, because the economic equation of this type of asset is often largely determined by government strategy and subsidies. This creates a high degree of uncertainty about the sustainability of subsidies and long-term profitability, thereby reducing the attractiveness of investments. Moreover, financing mechanisms are not always provided for in public policy design. Indeed, the French National Low-Carbon Strategy sets major sectoral objectives, but there are gaps in the practical arrangements for financing. Second, there are significant difficulties in financing the "design" and "project development" parts of the infrastructure's life-cycle, which often implies lengthy commitments for financial actors and high levels of risk. High-risk projects of this type call for financiers with the technical capacities to structure or to commit to this type of financing, and who agree to take such a risk. They are few in number today and demand high rates of remuneration. Banks are not normally present in these development phases, as the level of risk is too high.

Beyond this development stage, there is generally an abundance of financing, and in some cases demand for projects even exceeds supply in mature sectors, such as renewable energies.

Although infrastructure financing through green bonds is particularly visible, it represents only a small proportion in relation to conventional financing, and there are difficulties linked to the long maturity of this type of asset.

Since there are many difficulties and considerable challenges, this asset class has benefited from different specific regulatory measures to facilitate its financing. The European Commission thus introduced a specific supporting factor, allowing for a more favourable prudential treatment of certain types of financing in order to support investments in infrastructure. This supporting factor entered into force in June 2020 (see Technical annex).

2.4.2. Financing of industrial processes

The second sector in which obstacles to financing may be linked to financial regulation is that of the decarbonisation of existing industrial processes. According to the SNBC, the share of emissions from the industrial sector stood at 17.4% of total French emissions in 2017[29]. The reduction target is to cut the sector's emissions by 35% by 2030 relative to 2015, and by 81% by 2050. As mentioned in The Landscape of Climate Finance[30], the SNBC and PPE (France's multi-year energy plan) analysis does not identify any investment trajectory or projected financing for this sector.

This decarbonisation of industrial processes can be defined as the shift from the research and development phases to the implementation of a low-carbon industrial activity. It concerns both the creation of new technologies emerging on the market and the replacement of old processes by new ones with lower emissions, such as the switch from oil-based materials to bio-based materials.

Although the carbon intensity pathways currently available in European industry require a broad range of supply-side measures (electrification, energy efficiency, circular economy, etc.) and should be accompanied by demand-side measures (material efficiency, longevity, reuse, etc.), it is essential to bear in mind that the technologies will undoubtedly be deployed in waves, with structural changes becoming more pronounced from 2030 onwards and emerging technologies becoming widespread thereafter. The objectives of the Paris Agreement will lead the industrial sector to significantly reduce its greenhouse gas emissions in the coming decades. In this context, the groundwork for these phases needs to be laid in the earlier phases, through investment in research and development, pilot projects, infrastructure and, more broadly, support for the transition[31]. Therefore, science-based transition pathways will need to be required for all industrial sectors and more broadly for all economic activities.

The financing of industrial processes has characteristics similar to that of infrastructure. The level of risk is typically high, due to the political, economic and technological uncertainties, and the investment horizons range from 7 to 10 years. The combination of these two factors creates considerable reluctance among financial actors.

The huge amounts of initial capital to be mobilised for this type of project mean that setting up bank financing is generally too complicated, because of the risk profile it generates. This leaves only equity investors as possible financiers, but they are few in number. This is compounded by the lack of specific expertise in industrial financing, which financial actors seem to have lost with the deindustrialisation of France since the 1980s. This finding is echoed by several of the actors interviewed, as well as by the Ducret-Lemmet[32] and Canfin-Zaouati reports. According to the latter, there is only "a small number of teams specialising in the ecological transition in French private equity, in comparison with the digital or health sectors"[33]. This therefore makes investments of this type more problematic and increases the perception of risk[34].

For the emerging sectors and the development of new technologies, such as hydrogen[35], it is still difficult to achieve

28 Carbone 4, Borie, and Decq, "Infrastructure: a key asset category for the climate". 2019
29 Ministère de la Transition Ecologique et Solidaire, «Stratégie nationale bas-carbone». 2020
30 I4CE, Hainaut, Ledez, and Cochran, "The Landscape of domestic climate investment and finance flows". 2019
31 Rissman *et al.*, "Technologies and Policies to Decarbonize Global Industry", 2020
32 Ducret and Lemmet, «French strategy for green finance». 2017
33 Canfin and Zaouati, «Pour la Création de France Transition». 2018
34 Conseil National de l'Industrie and Morel, «Le financement des entreprises industrielles». 2014
35 Ministère de la Transition Ecologique et Solidaire, «Plan de déploiement de l'hydrogène pour la transition énérgétique». 2018

economic returns until the costs of those technologies begin to come down.

With regard to heavy industries (steel, cement, chemicals, mechanical construction, manufacturing), the global supply of financing is currently abundant, and so far there is no green premium that could give European products the edge over their competitors. European companies currently present additional costs compared to the rest of the market and could be abandoned in the case of market contraction. The challenge for these sectors is therefore to transition while remaining competitive, in a context of intense international competition[36].

2.4.3. The financing of construction and energy retrofits in buildings

The SNBC sets the objective of a 35% reduction in emissions from the building sector by 2024-2028 in relation to 1990 emissions[37], and the French Energy Transition for Green Growth act sets the target of making the entire building stock "low energy" by 2050[38]. There are two types of low-carbon construction and energy retrofits in private buildings: those carried out by individuals, for which the problems of financing will not be explored in this report (see **2.3.3 The specific case of households**), with the exception of lease financing, and the challenges linked to the construction and retrofitting of industrial and commercial buildings.

In the case of construction, barriers to financing hamper the integration of transition objectives on insulation, material durability and energy performance. These difficulties mainly stem from the high level of coordination needed between the different professions (architects, engineers, economists, suppliers, tradespeople), a finding confirmed by the SNBC[39], and the acceptance of higher initial investment costs by customers.

In the case of retrofitting, despite ambitious public policy objectives (the SNBC provides for the retrofitting of 3% of the commercial building stock to French BBC – low energy building – standards every year), few retrofits of this type are actually undertaken. Indeed, the expected gains from energy savings may not be enough to repay the investments made towards energy efficiency, and especially all the costs of retrofitting. In this case, the difficulties of financing stem from the perception of a lack of profitability. This perception is due to the fact that profitability assessments are conducted with time horizons that are too short in relation to the total lifetime of installations. The Canfin-Zaouati report[40] looks in detail at the factors explaining investment gaps and the problems of financial profitability.

2.5. Segmentation according to project location

Finally, one last segmentation seems relevant when exploring the barriers to financing: that of the location of projects, and the extent to which they are integrated into a financial ecosystem.

First, the expertise of financial actors is highly concentrated in the large urban centres. Although the banking sector has better coverage across the French territory than equity investors, expertise on the challenges of the transition remains limited and concentrated in just a few large cities. The result is that financial actors have a limited capacity to identify and analyse projects at the territorial or regional level, especially where small projects are concerned. Second, some projects encounter problems of financing due to the difficulty of establishing linkages between highly decentralised projects, such as industrial anaerobic digestion or district heating projects. Moreover, the aggregation of such projects results in very high transaction costs[41].

This analysis of the various perspectives of financing the transition has enabled to identify three major obstacles: the lack of understanding of the transition among financial actors; difficulties finding capital for medium- and long-term projects; and projects that appear to be insufficiently profitable to attract financial actors. **Table 1** and **2** synthetise the mains obstacles which have been identified.

36 Rissman *et al.*, «Technologies and Policies to Decarbonize Global Industry», 2020
37 Ministère de la Transition Ecologique et Solidaire, «Stratégie nationale bas-carbone». 2020
38 Article 1 of the act provides that French energy policy should aim to "ensure the entire building stock is renovated according to 'low energy building' standards or similar by 2050".
39 Ministère de la Transition Ecologique et Solidaire, «Stratégie nationale bas-carbone». 2020
40 Canfin and Zaouati, «Pour la Création de France Transition». 2018
41 Canfin and Zaouati.

TABLE 2: EXEMPLES OF FINANCING DIFFICULTIES FOR COMPAGNIES AND FINANCIAL ACTORS

ENTREPRISES

UNDERSTANDING

The company does not know what tools to use to optimize its project (eg: grants, expertise, partnerships)

Energy efficiency of SMEs and VSEs, renovation

Companies do not know which projects meet the objectives of the transition

Industries (ex.: CCS vs hydrogen or biomass)

HORIZON

An ecological project costs more to start up (investment, working capital) than a conventional project

Alternative food distribution

Other investments are more profitable for the company in the short term

PROFITABILITY

The company's customers are not ready to pay more for the green (premium product)

Biomethane, biofuels

Foreign competitors force the company to keep prices low

Steel, chemicals

An innovative ecological project incurs a greater market risk

Alternative food distribution

FINANCIAL ACTORS

UNDERSTANDING

Funders do not know what the benefits are and misjudge the risks, or rely on history.

Global renovation, Green chemistry

There are entry barriers for funders: mastery of the legal context, technology, knowledge of experts

Infrastructures, decarbonisation of industrial processes

HORIZON

There is little patient capital

Global renovation, Green chemistry

For a given financial profitability compatible with the economic viability of the project, the supply of capital is insufficient

PROFITABILITY

Funders require more guarantees and / or a larger share of equity

Equity is more expensive than debt and penalizes the overall profitability of the project

AN INSUFFICIENT NUMBER OF PROJECTS LAUNCH AND FIND FUNDING

3. Improving financial actors' understanding of the low-carbon transition

KEY MESSAGES

- Despite positive momentum over the last few years, the global level of knowledge about the transition among financial actors remains very low, especially among banking actors.
- In this context, regulators must do more to encourage financial actors to make genuine training efforts, both to ensure they acquire a common knowledge base and to train experts in financial packages specific to transition projects.
- Efforts must also be made to develop tools that are easy to use and adapted to these actors in order to support them in understanding the challenges of the transition.

The numerous interviews conducted in the context of this report make it clear that despite some progress, there is still a real lack of understanding and ownership of climate and environmental issues, in all their complexity, by the vast majority of financial actors. This finding is also shared in the different reports on sustainable finance[42] [43] and transition financing[44]. The lack of technical expertise and capacities observed encompasses several fields: first, understanding of climate change itself, and of its physical and socioeconomic impacts. Next, understanding of mitigation and adaptation challenges and of the strategies deployed by states, with their associated risks and opportunities. And finally, the whole field of more technical knowledge, linked to the energy sector, new green technologies and industrial applications.

This situation is not due simply to a lack of willingness to take up the subject among financial actors, but also to the very complexity of the subject and to real difficulties articulating the challenges of financing the transition with the financial sphere. Indeed, economic and financial actors have neither a financing plan for the transition[45] nor a sectoral vision of the transition enabling them to easily transcribe climate issues into a financial perspective.

This situation varies according to the profile of financial actors. Market investors appear to be further ahead, especially due to the longstanding commitment of certain specialist asset managers, who are leading the way to better practices. However, despite progress in some investment banks, banking actors are lagging behind, and this is particularly detrimental given the weight of banks in the financing of the economy in Europe.

To support and accelerate the transition of companies, it is crucial that their financial partners have expertise on these issues. Low-carbon transition of companies will entail company-level net zero commitments and corporate transition plans. Financial actors should be able to ask the right questions, finance the relevant projects and steer companies onto low-carbon investment pathways through investor engagement.

3.1. Stepping up training requirements for financial actors

Training is one of the key tools to accelerate understanding of climate issues. This is recognised by supervisors, and in the fourth recommendation of its report, *A Call for Action*[46], the NGFS reiterates the need to promote training and to build capacity for analysis within financial institutions. Likewise, the European Central Bank, in its supervisory expectations on climate risks[47], states in expectation 5.2 that financial institutions should ensure that the functions involved in managing climate-related risks have the appropriate level of training.

Beyond the expectations expressed by supervisors, the challenge of training is in fact far greater, since it requires general upskilling for all financial actors on these subjects, not just for risk management departments. This need for broad-based training is coupled with the need to train new profiles of investors and bankers who specialise in financing the transition.

42 Finance for Tomorrow and Birdeo, "Sustainable Finance Job Profiles". 2020
43 Ducret and Lemmet, "French strategy for green finance". 2017
44 Canfin and Zaouati, "Pour la Création de France Transition". 2018
45 The reports by Ducret-Lemmet and Canfin-Zaouati draw attention to this absence and recommend the establishment of a financing plan for the French National Low-Carbon Strategy and the Multi-Year Energy Plan.
46 NGFS, " First comprehensive report: A call for Action". 2019
47 European Central Bank, "Guide on climate-related and environmental risks". 2020

3.1.1. A broad common knowledge base

The creation of a common base of core knowledge on climate issues for all financial actors is vital.

With regard to investors in listed and non-listed markets, some fund managers do specialise in the transition, but there are still too few of them, and too many conventional managers continue to view these as "niche" issues. For these investors, the main problem is deciding which data is relevant to analyse companies' climate risks and low-carbon pathways, and ensuring they have access to this data. The existing ESG type approaches are highly unequal and lack clarity regarding the underlying indicators used to analyse corporate exposures. With respect to indicators on alignment with the Paris Agreement, the methodologies currently used are an important step forward, but they are not yet sufficiently robust to be effective decision-making tools. Moreover, at present, they only cover alignment with a low-carbon pathway and not the other dimensions covered by the Paris Agreement (adaptation and sustainable development)[48].

Where banking actors are concerned, there is currently a real problem of capacities within retail banks to analyse lending to SMEs, ISEs and households, in particular in view of the challenges of the transition. Yet the subject is crucial, since banks are typically the only financial intermediaries for these companies[49][50]. Action to raise awareness about the importance of climate risks, or the pilot climate exercise conducted by ACPR[51], are a first step, but one that focuses too much on just risk management departments. Similarly, the implementation of climate transparency is still too often limited to just the CSR departments in banks.

Finally, there is the important issue of the capacity of these financial actors, and especially of banks, to carry the extra cost of this training for all of their teams.

To build this common knowledge base, regulators and supervisors have an important role to play, which goes beyond simply acknowledging the importance of the subject. They need to communicate more clearly on their expectations of financial actors in terms of the content of training, whether or not it is mandatory, and which departments are the top priority. The actions undertaken on ESG training are still too vague to address the specificities of climate risks and transition financing.

Market regulators can also further develop the work already begun in the context of AMF certification and consolidate the section on climate change and low-carbon transition issues within this certification. Some changes were already made in 2019 to integrate elements on sustainable finance, but their ambition remains limited.

As for bank regulators, although they do not have a tool similar to AMF certification, they can nevertheless strongly encourage banks to train their teams more broadly and can hold them accountable during the supervisory dialogue for actions undertaken in this field. As mentioned in the report *What role for financial regulation to help the low-carbon transition?*[52], the supervisory dialogue is an efficient tool to induce changes in the practices of financial institutions. This knowledge base must be sufficiently robust to enable bankers to question corporate clients about their climate strategy and to support them in their investments. The broad base should also help to support the development of sales of green savings products. A knowledge base of this kind has already been developed within training programmes for employees at AMF and ACPR in the context of the Finance ClimAct[53] project. A viable option could be to implement this type of training widely across supervised institutions.

3.1.2. Training specific to the development of green and transition projects

Over and above this common knowledge base, the next step is to enable the emergence of a new generation of finance professionals who specialise in financing the transition. This type of profile calls for a combination of strong technical and thematic skills, in order to understand the challenges linked to industrial technologies and processes, and specific financial expertise to be able to articulate several types of financing with longer terms.

Financial regulation can act in several areas to facilitate the emergence of professionals with a combination of strong technical and financial expertise.

For professions within the scope of AMF certification, it would be useful to build an AMF certification scheme specific to transition financing jobs. AMF is already working to develop specific optional certification linked to sustainable finance, but this is geared towards employees who are in contact with customers and is still based on an ESG approach. However, this certification should also be extended to managers, analysts and "structurers", and needs to include components specific to climate issues. This would help to avoid the high risks of greenwashing and would make the profession more attractive to the new generations[54], who have higher expectations in terms of climate commitments.

With regard to the banking professions, although there is no mechanism similar to AMF certification for managers, supervisors need to begin discussions with training organisations on changes in banking professions concerning

48 Institut Louis Bachelier and Raynaud, «The Alignment Cookbook». 2020
49 Observatoire du financement des entreprises, «Rapport sur le financement des PME et ETI en croissance». 2015
50 AFG, «Financement des PME». 2017
51 ACPR, "Scenarios and main assumptions of the ACPR pilot climate exercise". 2020
52 I4CE, Cardona and Berenguer, "What role for financial regulation to help the low-carbon transition?". 2020
53 Finance Climact " Progress Report 1". 2020
54 Finance for Tomorrow and Birdeo, "Sustainable Finance Job Profiles". 2020

the development of green and transition projects. At present, the training organisations for the banking professions, grouped under the Ecole Supérieure de la Banque, do not propose any modules on climate issues or transition financing.

3.2. Encouraging the development of simple tools to understand the transition

Although the importance of training and greater awareness is key to accelerating the transition among financial actors, these actors are also faced with a lack of suitable tools to support them. To address this problem, regulators can focus on the development of certain tools, accelerate their evolution or discard any tools and methods that are not sufficiently relevant. Numerous reports[55] look in detail at the challenges of regulating the different tools used by financial actors to understand climate issues, in terms of risk[56], scenario analysis[57], impact[58], labelling[59], etc. The following section proposes a rapid review of their individual challenges, with the exception of a more detailed focus on the rating tool.

3.2.1. Potential tools to facilitate understanding of the transition are currently in development

Developing a taxonomy for unsustainable activities

The Taxonomy of Sustainable Activities introduced by the European Commission further to the work by the Technical Expert Group[60] is one of the tools available to financial actors. It should be supplemented by the work of the Platform on Sustainable Finance and enter into force on 1 January 2022 for the objectives related to mitigation and adaptation.

The first challenge of the taxonomy for regulators is the creation of a taxonomy of unsustainable activities, since the existing taxonomy focuses on activities with low-carbon intensity (own performance), activities that contribute to the transition (transition activities) and activities that enable others to reduce their emissions (enabling activities). A taxonomy of unsustainable activities would facilitate the exclusion from financing of new projects falling under this category and reduce the risk of stranded assets. The development of a taxonomy of unsustainable activities was requested by the NGFS[61] and some NGOs[62] [63], and is currently being developed within the EU Platform on Sustainable Finance.

Accelerating ownership of the taxonomy by banks

The spirit and structure of the taxonomy were primarily designed for market actors, whether investors or listed companies. However, it is essential that banking actors as well as unlisted companies can take ownership of it, and the second challenge for supervisors is thus to make this classification implemented.

Regarding taxonomy, many banking actors have taken a wait-and-see approach. They mention difficulties identifying the loans they have in their portfolio as well as the high cost of making changes to their information systems. This is why it seems there is a challenge here for banking regulators: ensuring all banks prepare for the entry into force of the taxonomy in 2022.

Some of the most advanced banks are each developing their own framework, and consequently their own understanding of the transition. This is the case of Natixis, for example, which has developed a Green Weighting Factor, and of Crédit Agricole with its transition rating for listed and unlisted companies. There is thus a diversity of frameworks for the most advanced banks. This heterogeneity of analysis frameworks of banking actors is a second challenge for banking regulators.

Fostering the emergence of labels that are consistent with the taxonomy and deliver on customer promise

At the same time as the work on the taxonomy, labelling linked to sustainable finance is evolving. After a period of proliferation, the first challenge for regulators is to achieve a full consistency between the different labels (green bonds standards, Ecolabel for green savings[64], etc.) and the taxonomy. The second challenge is to guarantee the integrity of promises made to customers, in order to avoid the risks of greenwashing and of longer-term changes to the reputation of sustainable finance products.

Similarly, there is currently a strong drive to develop new sustainable finance products, such as sustainability-linked bonds or loans, which incorporate impact criteria and link the achievement of sustainable development goals to the cost of financing. This drive can be seen as positive, but may also lead to confusion, and can potentially encourage greenwashing practices while demand for sustainable products is booming and new actors who are less familiar with these challenges are entering the sustainable finance market.

By way of example, in September 2020 Germany launched the "twin bonds" concept, involving the issuance of a green bond along with a conventional "twin" bond, which can be

55 Hollroyd *et al.*, « Choisir une finance verte au service de l'Accord de Paris ». 2020
56 I4CE *et al.*, « Getting started on physical climate risk analysis in finance.pdf ». 2018
57 I4CE *et al.*, « Scenario analysis of the issues of the low-carbon transition ». 2020
58 IFC, « The Promise of Impact Investing ». 2019
59 Novethic, « Panorama des labels européens de finance durable ».
60 Technical Expert Group on Sustainable Finance, "Taxonomy: Final report". 2020
61 NGFS, "A call for Action". 2019
62 Finance Watch, "Financing the European Green Deal". 2019
63 Reclaim Finance, "Model contribution to the Sustainable Finance Strategy". 2020
64 This is also the work currently underway in the framework of the Ecolabel (see Part **4.4.2 Possible tools for action**)

exchanged in order to guarantee their liquidity. However, the "greenness" of this bond has been debated, on the grounds that it does not meet the level of ambition of the taxonomy. Indeed, one of the pillars of the taxonomy is its DNSH principle[65], yet in the case of the German bond, a significant proportion of the funds raised financed railway infrastructures, which could potentially be used to transport fossil fuels.

As with labels, these examples of innovation in financial products show the work that remains to be done by national and European regulators to improve consistency and to deliver on customer promise regarding the sustainable integrity of products sold as such.

3.2.2. Focus on ESG ratings for listed companies and SMEs

In financing decisions made by financial actors, the analysis of financial ratios based on profit and loss accounts and balance sheets features prominently. However, to enhance this analysis, which is chiefly based on past data, other data, characterised as non-financial, can be used, especially to understand the strategies and policies adopted by companies in relation to the low-carbon transition.

The challenges of regulation for ESG rating agencies

Since the 2000s, rating agencies specialising in non-financial rating have been created to analyse the environmental, social and governance performances of companies. Since these factors have a direct impact on companies' credit ratings, conventional rating agencies have also taken an interest in this subject. After several years of expansion and innovation, the European market is now undergoing a concentration process, in which most European agencies have been acquired by American market leaders. Examples of this include the acquisition of Trucost by S&P in 2016, the acquisition of a 40% stake in Sustainalytics by ISS, or the acquisition of Vigeo Eiris by Moody's in 2019.

Although this succession of acquisitions could be a sign that there is growing interest in climate issues among financial actors, it nevertheless raises several questions for the European regulator.

There is first of all a risk that the methodologies developed in Europe will be captured and possibly altered by several specific actors, especially rating agencies and standard-setters from North America. The Hollroyd[66] report looks in more detail at this problem and at the issue of company ratings that no longer reflect the European vision in terms of ESG risk assessment, which is more innovative and demanding. Indeed, European ESG approaches are generally informed by academic research, are based on European standards, and are consistent with the European double materiality approach.

Next, this movement does not solve the problem of the lack of transparency of climate assessments and the substantial differences between the various understandings of ESG analysis. The current tendency among service providers and non-financial rating agencies is to make climate assessments a "black box", given that the value-added of these actors is contingent upon their analytical tools remaining confidential.

Regarding the specific problem of climate-related information, it seems premature at this point to standardise climate risk analysis and alignment methodologies. However, it would be advisable to increase the transparency of rating agencies on the methodologies and collection processes of data used. Several options are possible, including external audits or certification to overcome the obstacles of the unreliability of climate risk data and analyses. Such efforts are currently underway at the European level, with the recent changes to the Non-Financial Reporting Directive (NFRD)[67] and the future regulations concerning ESG rating agencies and data providers.

The European Commission has clearly identified this subject, since it invited its stakeholders to make proposals in the context of the Consultation on the renewed sustainable finance strategy. In their response to this consultation, the French authorities also called for the development of a regulatory and supervisory framework for ESG rating[68].

The Banque de France rating tool for SMEs and ISEs

Although large companies and their financiers now habitually analyse this ESG data, the same is not true of SMEs and ISEs and their financial partners. However, in the provision of financing to these types of companies, the rating given by Banque de France may be decisive. Today, this rating is primarily based on the analysis of financial ratios, but it can be modulated by a qualitative analysis that encompasses non-financial criteria, including social and environmental responsibility.

However, the teams at Banque de France do not currently undertake enough of these analyses, due to a lack of awareness and detailed methodologies. Internal training efforts are still needed to better support analysts in integrating climate issues into their analyses, as are methodological efforts to develop tools.

These efforts need to be accompanied by the emergence of rating standards, and financial regulation has a role to play here in establishing what would be an appropriate non-financial analysis framework, in order to help financial and especially banking actors to position SMEs and ISEs within the transition.

65 Do No Significant Harm, a principle according to which, for an activity to be qualified as sustainable, it must meet one of the six objectives (mitigation, adaptation, pollution control, protection of water, circular economy and biodiversity), while avoiding significant harm to the other objectives.
66 Hollroyd *et al.*, «Choisir une finance verte au service de l'Accord de Paris». 2020
67 Directive 2014/95/EU – non-financial reporting directive (NFRD)
68 Banque de France *et al.*, "The French authorities' response to the consultation on the European Union's renewed sustainable finance strategy". 2020

4. Ensuring financial actors' preferences have a longer-term perspective

KEY MESSAGES

- Short-termism is observed among all financial actors, including long-term investors, and is an obstacle to the transition. This short-termism is exacerbated by a lack of data and tools as well as by accounting rules.
- Financial regulation can contribute to reducing the short-term bias by influencing remuneration practices and reducing pressures of index performances.
- Empirical studies concerning the impact of prudential regulations on long-term investments show they have a limited impact over the period of adjustment to new provisions, but this impact is not empirically demonstrated over longer time horizons.
- Investors' preference for the short term is also a result of the way personal savings are channelled. A regulatory system that fosters better integration of client preferences, informative labels and tailored investment offerings should help to channel personal savings towards the transition.

The current focus of investors on the short term to the detriment of the long term is a major obstacle to the financing of the transition. A number of factors hamper these types of investments, which typically require longer term financing than conventional investments, as is the case for green infrastructure and industrial decarbonisation projects. This section examines in turn four key points: the prevalence of short-term profits among financial actors; two non-prudential regulatory tools available to overcome the short-term bias; the lack of impact of prudential regulations on long-term financing; and regulatory options to channel households' savings to support the transition.

4.1. The prevalence of short-term profitability for investors

The short-termism of financial actors is a structural reality of financial markets that does not concern only investments linked to the transition, but which, in this case, is one of the obstacles to its financing. It is prevalent even among so-called "long-term" investors, as highlighted by some of the actors interviewed, as well as by several studies[69], including those by the OECD[70]. The majority of investors, including the latter, have high portfolio turnover and remain within a short-termist perspective[71].

Short-termism is not easy to define and varies according to individuals' understanding of the concept[72]. But it can be described as undue pressure exerted by the need to deliver rapid financial results, to the detriment of a more strategic long-term vision, which takes account of value creation for all stakeholders of a company.

These concerns about the possibility of short-termism among financial actors and their consequences for companies are not new, and they have been empirically demonstrated. For example, Andy Haldane, currently Chief Economist at the Bank of England, already echoed them back in 2011 in his speech "The Short Long", highlighting the excess discounting of future outcomes[73]. His analysis also demonstrated that these short-termist practices were gaining ground and spreading to all industrial sectors.

The aim here is not to denounce short-term financing as a whole – which provides a crucial range of financing options for companies depending on their needs –, or short-term investments on financial markets, which are also useful in ensuring the liquidity of the secondary market and contributing to the liquidity of banking actors.

However, as Mark Carney quite rightly said in his speech "The Tragedy of the Horizon"[74], this short-termism across the whole financial sector impedes the financing of the transition by financial actors, who struggle to plan ahead more than three to five years. But this short-termism also impacts the strategy of companies, which are under pressure from their financiers to deliver rapid financial results[75].

This results in a lack of long-term vision and can lead company managers to adopt strategies aimed at reassuring short-term investors, through restructuring policies or the

69 Bolton and Samama, "L-Shares". 2012
70 OECD Observer and Ervin, "Long-term investors: Getting the model right". 2012
71 Mercer, The 2° Investing Initiative and The Generation Foundation, "The Long and Winding Road". 2017
72 ESMA, "Report on undue short-term pressure on corporations from the financial sector". 2019
73 Haldane and Davies, "The Short Long". 2011
74 Carney, "Breaking the Tragedy of the Horizon – climate change and financial stability". 2015
75 Moussu, "Financial markets and short-termism". 2019

refusal to make investments. This is seen, for example, in the difficulty of financing the shift from combustion engine manufacturing to electric engines, since manufacturers and their financiers give too much priority to short-term sales and do not necessarily integrate the speed at which consumer demand for vehicles will shift in the future. However, the point of companies cannot be solely to create value for shareholders, who are just one group of stakeholders.

4.1.1. The lack of information and tools to enable a long-term perspective

Short-term biases make it difficult to grasp climate issues, but also to represent their timescale and the depth of the changes they require. They are one of the reasons financial actors stay on their usual trajectory of analysis, which favours individual short-term profits linked to carbon-intensive activities over the longer term financial and socio-environmental benefits of ensuring a more sustainable economy and limiting the magnitude of climate change.

As discussed in Section 3, financial actors suffer from a lack of tools to facilitate their understanding of the transition. This is also the case for the understanding of long-term horizons, a difficulty compounded by the lack of data. A wide range of analysis tools are available to financial actors, but even when these include climate components, their time horizons remain relatively short, limited to just a few years, instead of longer trajectories.

More therefore needs to be done, by developing new data and new risk and opportunity analysis tools, as well as scenario analysis tools to understand the longer-term trajectories of companies. These data and tools need to be based on long-term scenarios up to 2050 and beyond, and science-based sector transition pathways

Extending climate transparency to all investment spending

To achieve this, regulators have several options, beginning with transparency. Where listed companies are concerned, transparency on investments must be improved. For companies covered by the EU Non-Financial Reporting Directive (NFRD), the Taxonomy Regulation introduced transparency on investment spending that falls within the scope of the taxonomy. This transparency needs to be extended to all investment spending, including carbon-intensive investments, in order to determine the share of this spending that is aligned with the taxonomy, as well as the unstainable shares. This would make it easier to analyse companies' climate trajectories in the long term [76], as well as the strategies implemented and the possible lock-in effects. However, the creation of a taxonomy of unsustainable activities at the European level is a precondition for clarifying what is meant by climate-harmful investments.

Increasing transparency on engagement and voting policy

Increasing transparency on engagement and voting policy could also ensure investors' decisions have a longer-term perspective. Indeed, as shown by the ESMA report on short-term pressure [77], investor engagement in terms of ESG, especially where institutional investors are concerned, has an impact on the long-term strategies of European companies. It is necessary to first determine which indicators are the most appropriate for achieving this objective. This would increase the transparency of the strategies towards which investors direct companies and would induce them to change their short-term profit maximisation practices.

Establishing minimum eligibility criteria for climate risk and alignment methodologies

Regarding tools to measure alignment as well as methods to analyse climate risks, numerous studies indicate that these analysis methods lack maturity [78] [79]. For regulators, and especially French regulators in the context of former article 173 (now article LEC 29), it is now time to introduce minimum eligibility criteria for these methods and to clarify what is understood by the very vague notion of "alignment with the Paris Agreement" [80]. These clarifications should also be made at the level of the EU regulation on climate transparency.

4.1.2. The impact of accounting rules

Accounting standards and the discounting practices they introduce for investors have negative impacts on the financing of the low-carbon transition. Future cash flows are discounted to obtain the equivalent of a current value and to guide decision-making. Many studies explore this issue and highlight the limitations of this accounting calculation of the intrinsic value of a project over time [81]. Some studies, such as the one by Abdeldjellil Bouzidi [82], show that this preference for the present, created artificially by discount rates that are too high, makes it impossible to set up patient capital [83] and results in the loss of projects that would support the transition [84].

76 I4CE *et al.*, "Scenario analysis of the issues of the low-carbon transition". 2020
77 ESMA, "Report on undue short-term pressure on corporations from the financial sector". 2019
78 Institut Louis Bachelier and Raynaud, "The Alignment Cookbook". 2020
79 I4CE *et al.*, "Getting started on physical climate risk analysis in finance.pdf". 2018
80 I4CE, Cochran, and Pauthier, "A Framework for Alignment with the Paris Agreement: Why, What and How for Financial Institutions?". 2019
81 De Cambourg, Gardes, and Viard, "Ensuring the relevance and reliability of non-financial corporate information: an ambition and a competitive advantage for a sustainable Europe". 2019
82 Bouzidi, Grandjean, and Martini, «Régulation financière et urgence climatique - Pour des normes prudentielles et comptables plus vertes». 2017
83 Bouzidi and al., «Le capital patient - Un horizon pour la France et pour l'Europe». 2016
84 Bouzidi, Grandjean, and Martini

For all investments, even long-term investments, valuation is carried out through quarterly and fair value reporting. The IFRS 9 standard introduced in 2018 has negative implications in terms of short-termism. Indeed, it obliges investors to value assets at a "fair value", which leads them to report profits or losses from the first year and results in short-termist behavioural biases.

This type of valuation amplifies volatility and makes it more difficult for investors to project themselves in the long term. Reinforced by pressure from underwriters, the temptation for an investor to exit the investment as soon as it is profitable is therefore strong.

These negative impacts on long-term investments, and therefore on sustainable investments, led the European Commission to mandate EFRAG to explore alternative accounting method to fair value measurement for long-term equity investments[85]. An initial technical note by EFRAG[86], published in November 2018, confirmed these possible negative impacts on long-term investments. This report was followed by a technical note recommending the revision of accounting treatments for long-term investments and making recommendations for alternative options, such as the "recycling" of gains or losses on disposal of equity investments designated at fair value through other comprehensive income. This would help to reduce the effects of short-term volatility for long-term investments.

However, due to the change of Commission, these reports have so far had no effect. It is to be hoped that the Commission's renewed strategy will take them into account.

4.2. Two regulatory tools to address the short-term bias

Two other factors contribute to the short-term bias of financial actors: remuneration and index-based management. Financial regulation can act as a lever on both of these factors.

4.2.1. Integrating the challenges of the transition into remuneration policies

Pressure to maximise short-term returns is also accentuated by the way in which remuneration works for investors. In fact, managers' remuneration policies currently focus primarily on the creation of profitability on relatively short time horizons. This leads managers to demonstrate a strong bias towards short-term profitability, since their own salary is affected by it[87].

Among the different types of financial practices, this is even more apparent for private investment funds. The managers of these funds repeatedly highlight the dependence of their own salary on the performance of their funds. The goal of this system is to reassure investors by emphasising the alignment of their interests with that of managers. However, it results in a very strong bias towards short-term profitability among fund managers.

This incentive system is further accentuated by certain practices, such as that of carried interest. This is the primary source of income for managers, and typically amounts to 20% of gains on disposal of investments. Initially set up as a profit-sharing mechanism, this system is criticised because it leads managers to rapid disposals and accentuates short-termist visions.

BOX 2: THE CURRENT FRAMEWORK FOR REMUNERATION PRACTICES, RESULTING FROM THE 2008 CRISIS

The remuneration policy framework changed significantly after the 2008 crisis. Indeed, traders' bonus compensation practices were singled out as being potentially responsible for the crisis, and the high risk-taking and short-termist management behaviours they encouraged were also denounced.

Since then, bonus remuneration policies have been governed by a European regulatory framework and its transposition into French law. The people covered by this framework are those identified as "risk takers" or whose variable pay exceeds 100 000 euros.

In particular, the texts provide that at least 50% of variable compensation should be paid in the form of shares and that the payment of at least 40% of this variable part should be deferred for a minimum of three years.

The texts governing variable remuneration policies are the following:

- For banks (concerning their lending and investment activities): the transposition of the Basel III accord into the CRD IV Directive, itself transposed into the French Monetary and Financial Code by the order of 20 February 2014.
- For insurance companies: the Solvency II Directive transposed into the French Insurance Code by Order n°2015-378 of 2 April 2015.
- For asset management and private equity groups: the AIFM and UCITS Directives transposed into the French Financial and Monetary Code by Order n° 2016-312.

85 EFRAG, "Alternative accounting treatments for long-term equity investments".2020
86 EFRAG, "Technical advice on the accounting for equity instruments from a long-term investment perspective". 2018
87 Moussu, "Financial markets and short-termism". 2019

As previously discussed, this short-termism is particularly detrimental to transition projects, and especially to the emergence of new sectors and industrial processes with risk profiles that nevertheless require a high proportion of equity investments.

Several tools can potentially correct this biased incentive system: first, obliging financial actors to defer their remuneration for a longer period than they would in the existing system, which provides for a deferral of three years. This would help to reduce the undue pressure of short-termism. In addition to this deferral, a system requiring that remuneration for investors in investment funds is partly based on shares, to be held for the duration of the investment, would also foster longer term incentive compensation for managers.

Another possible option, which is beginning to develop in certain funds, is to advise or even oblige managers to associate remuneration policy with indicators other than just profitability, such as impact indicators[88]. Linking the remuneration of managers to the achievement of certain environmental and climate criteria would help to both avoid the risk of greenwashing in certain so-called ESG funds, and also to strongly encourage teams to understand the methodologies and criteria implemented. Regarding generalist funds, defining impact indicators can be similar to a DNSH approach. Without transforming these actors into positive impact funds, remuneration could vary according to negative impact criteria: if damage is committed, then the variable part is affected.

However, research on impact indicators is still in its infancy[89], and this type of regulatory options should await the arrival of more robust methodologies.

4.2.2. Counteracting index-based management biases

This pressure on short-term profitability is further increased by the development of passive management and the increasing importance of indexes in portfolio management.

This trend, which continues to grow in Europe and France, has accelerated in the context of the low rates and the fees often perceived as high presented by active management companies. However, this raises questions given the importance of French institutional investors in the financing of the economy. According to a 2017 survey by Af2i[90], these investors hold a volume of 3.14 trillion euros.

However, this growing importance of passive management focuses investors' attention on issues of index-based performance and short-term profitability[91]. This leaves little room for debates on climate issues and the impact of investments. Moreover, passive management also significantly limits the capacity of institutions for active engagement in the companies in which they invest. Finally, for those that opt for active management, investment issues are also focused on indexes, since they need to show that this type of management enables financial outperformance of conventional indexes.

The majority of institutional investors delegate their investment decisions to external companies, which manage 65% of their assets. This system also limits the possibilities for direct action and discussions on transition issues with the companies in which they invest.

These different practices tend to encourage approaches based on short-term performance, without questioning the longer-term climate impact of companies valued by indexes. In view of the amounts of capital concerned, the investment decisions made by institutional investors nevertheless have a significant impact.

The work begun by the European Commission in its Action plan[92] then by the Benchmarks Regulation[93] on criteria for "transition benchmarks" and "Paris-aligned benchmarks" is a first step, but it is far from sufficient. Moreover, the creation of these "green" indexes could pose a significant risk of creating a bubble, if institutional investors collectively reject conventional indexes in favour of "green" indexes. This could potentially result in an overvaluation of this type of assets and a bubble effect, without resolving the problem of company trajectories that are not currently aligned with the Paris Agreement and require support.

A "(speculative) green bubble" would be characterised by a significant increase in the price of assets considered to be green, an increase unrelated to the real value of those assets. This would be fuelled by a market surge caused by financial actors and characterised by a movement, in which prices would gradually become detached from the real economy. This phenomenon can lead to overinvestment in certain sectors and to situations marked by an abrupt turnaround in expectations and subsequent losses, with investors then suddenly abandoning this sector and causing a sharp fall in prices and a lack of confidence in the sector. Europe experienced a speculative bubble of this kind for solar panels in the early 2000s.

This is why it is important to go beyond the notion of a niche offering of green finance products, on the fringes of conventional finance, and to progress towards climate transparency for all indexes. The Benchmarks Regulation introduces an obligation of transparency on the integration of ESG and carbon footprint criteria for the providers of general indexes. This is also an encouraging first step but reflects a level of ambition that ultimately remains low, since it is primarily aimed at increasing transparency for the indexes

88 Aquino and Doran, "Impact Investing: Challenges of Impact Measuring". 2017
89 Aquino and Doran.
90 Af2i, "Investisseurs institutionnels - Enquête Af2i 2017". 2017
91 ESMA, "Report on undue short-term pressure on corporations from the financial sector". 2019
92 European Commission, « Action Plan on Sustainable Finance ». 2018
93 Regulation (EU) 2019/2089 amending Regulation (EU) 2016/1011 as regards EU Climate Transition Benchmarks, EU Paris-aligned Benchmarks and sustainability-related disclosures for benchmarks

that use ESG indicators. By contrast, for indexes that do not consider ESG factors, their only obligation is to specify that they are not pursuing these objectives.

Steps must therefore be taken towards greater climate transparency, with more precision than existing ESG approaches and more momentum than static carbon footprint measurements. This climate transparency for general indexes needs to be developed, to determine which indicators would be relevant. There is a real need for progress on this key issue, to enable those using indexes to grasp the climate impacts of the activities of companies valued by indexes.

4.3. The lack of impact of prudential regulations on long-term or specialised financing

According to many financial analysts and actors, some prudential regulations penalise long-term investments or specialised finance. These regulations are not specific to the financing of the low-carbon transition and apply to all financial activity. But transition financing is particularly hampered by them, given the level of long-term financing it requires. In this section, we summarise the findings of a review – conducted in the context of the preparation of this report – of the main regulations concerned by this criticism to determine whether the impact is proven and empirically demonstrated: prudential rules have no lasting impact on the provision of long-term financing.

TABLE 3: SUMMARY OF THE REVIEW OF POTENTIAL REGULATORY OBSTACLES

Regulatory provisions	Impact analysis
1/ Liquidity requirements for investment funds (IFs): • IFs must ensure coherence between the liquidity of units and the average duration of assets • The requirements are stricter for IFs open to individuals	• These requirements govern the "transformation" of IFs • They do not hamper "long-term" investments, but limit the capacity of IFs to invest in assets with little or no liquidity when they are open to individuals or want to meet the liquidity requirements of institutional investors themselves • Obstacles are mainly due to institutional investors' preference for liquidity, when they should be the key financiers of illiquid securities
2/ Bank liquidity ratios: • The liquidity coverage ratio (LCR) to fund cash outflow for 30 days • The net stable funding ratio (NSFR) to cover financing needs for 12 months	• Empirical studies do not identify any significant impact of the LCR on the distribution of loans in normal times (the implementation of the LCR had an adverse but temporary impact on corporate lending) • A small number of studies point to an adverse impact of the NSFR on the distribution of loans in general, but the IMF and the BIS urge caution in their interpretation.
3/ Capital requirements for banks: • The minimum capital rules determine the minimum level of own funds required of banks according to their risk-weighted assets • The leverage ratio imposes a minimum level of own funds according to total non-risk weighted assets	• Empirical studies establish a real but limited link between capital requirements and the distribution of loans in the short term (implementation phase of the regulation), but produce far more uncertain results for the long term • Ssome provisions deliberately penalise certain risky assets (share ownership, venture capital and private equity, as well as project finance) • Empirical studies find a marginal impact of capital requirements on infrastructure financing. The European Commission has nevertheless decided to reduce prudential requirements for some infrastructure projects
4/ Solvency rules for insurance companies: • Solvency rules determine the minimum level of own funds required of insurance organisations	• Initial European regulations penalised the investment in shares by insurers compared to that of bonds. But they were modified to reduce this impact. There are still few empirical studies on the real impact of the modified standards • The European Commission has introduced reductions for some infrastructure financing
5/ Capital requirements for leasing: • For equipment leasing, ownership of the asset financed is only partially taken into account (as a guarantee)	• Prudential banking regulations do not take full account of the specificities of leasing, which may lead to an overestimation of the risk of these operations in relation to conventional loans • The existence of a resulting impact on the financing of the energy transition has not been demonstrated by any empirical studies.

The following prudential rules have been reviewed: liquidity requirements for investment funds, liquidity ratios for banks, capital requirements for banks, solvency rules for insurance companies and prudential treatment of leasing operations (see Technical annex – Examining the impact of prudential regulation for financial actors).

The review of this raft of prudential regulations shows that these rules – as is their objective – impact the behaviour of financial actors. Indeed, they seek to influence the policy of maturity transformation (short-term resources/longer term jobs) of financial actors to reduce situations of excessive transformation that weaken their position in case of tension or crises. They change the behaviour of financial actors who, in view of investors' preference for liquidity or the difficulty of mobilising long-term resources, tend to prioritise short-term assets and especially more liquid assets on financial markets. Similarly, solvency rules (for banks and insurance organisations), whose primary objective is to ensure the financial stability of these actors, generally penalise ownership of shares as well as investments deemed to carry the highest risk (venture capital, private equity, project finance). The table above summarises the characteristics of these prudential regulations and their impact on the behaviour of financial actors.

The real impact of these regulations on the structure of financing in general is difficult to quantify. Existing empirical studies (mainly for prudential banking regulations) show a limited impact of these regulations on the distribution of loans. By requiring banks to provide buffers against the risks of losses, liquidity and transformation, prudential regulations also modify the cost of certain financing options (especially longer-term ones) and the incentives for banks to provide them[94]. But these indirect effects on the distribution of loans are especially measured in transitional periods of adjustment (2-3 years), and appear far more uncertain in normal times, since banks have numerous means of adjusting over time. Indeed, some studies identify a positive effect of these regulations on the distribution of loans in the longer term, once the adjustment period is over.

Several conclusions can be drawn from this review.

- existing empirical studies do not support the idea that prudential regulation is a significant obstacle to financing the transition, contrary to what financial actors themselves often argue;
- it is nevertheless essential to pursue robust empirical studies to continue to assess the impact of these different regulations in order to document any unintended consequences that may emerge in the long term.

4.4. Mobilising household savings to support the transition

One of the reasons given to explain the inadequacy of investments to support the transition is the lack of savings directly channelled into transition financing. Yet this is, in principle, an important tool, given the pool of savings present in Europe[95][96], and especially in France[97][98].

4.4.1. The situation

This inadequate mobilisation of savings to support the transition reflects two realities:

First, savers prefer liquidity and security, especially in France. This preference encourages liquid savings (in the form of current accounts, savings accounts) and relatively liquid savings (life insurance contracts in euros), rather than long-term investments in companies (shares or bonds, and especially investments in unlisted assets such as venture capital). This situation – which is the result of numerous factors[99] that are beyond the scope of this study – is detrimental to the investments needed for the transition, which are typically longer term and higher risk.

Second, savers choose few investments that are specifically geared towards financing the transition. Several factors can explain this: i) a lack of awareness among savers about the possibility of using their savings to contribute to financing the transition; ii) an inadequate range of investment products geared towards financing the transition; and iii) insufficient action by banking and insurance advisors to propose these investments.

4.4.2. Possible tools for action

Numerous tools could be mobilised to better channel savings towards financing the transition (especially fiscal tools, in the context of life insurance). This study will focus only on those falling within the scope of financial regulation.

The first tool concerns better integration of client preferences. This is an important point, because studies show that a significant proportion of individual investors have concerns about sustainability.

One study[100] reveals that 45% of French people are interested in responsible investments, but that three quarters of them still have "reservations" (they doubt whether these products are profitable and would like to have more information and guarantees about their social and environmental impacts).

94 "Financial regulatory factors affecting the availability of long-term investment finance" Financial Stability Board - February 2013
95 In 2015, European households held 34 trillion euros of financial assets, or 40% of total financial assets in Europe according to 2DII.
96 2 degrees investing initiative, « Non-financial message in a bottle – How the environmental objectives of retail investors are overlooked in Mifid II-PRIIPS implementation », 2017.
97 According to Banque de France, , household savings in France stood at 5.187 billion euros at the end of the first quarter of 2020, of which 3.465 billion euros of interest-rate products (1.662 billion euros for life insurance contracts in euros) and 1.636 billion euros of equity products (344 billion euros for unit-linked life insurance).
98 Banque de France, « Epargne et Patrimoine financiers des ménages – France et étranger -T1 et T2 2020 », 2020.
99 Especially fiscal factors with regard to life insurance and regulated savings.
100 AMF Household Savings Newsletter – No. 35 – September 2019.

The study also shows that existing labels are not well-known to the people interviewed, who say they have little trust in them (61% of respondents). Another study indicates that more than two thirds of the individual investors interviewed in Germany and France want to invest more "sustainably"[101]. Around 40% of the clients interested in these "sustainable investments" seek above all to have an "impact", and the majority of them say that they are willing to accept lower returns on investment if necessary. The study also mentions a lack of trust in the specific outcomes of investments as a considerable obstacle. The survey conducted in France for the Forum pour l'Investissement Responsable (FIR) and Vigeo-Eiris[102] confirms that more than 60% of respondents give importance to environmental and social issues in their investment decisions. But climate change is not their only concern, since it appears alongside other priority issues such as employment, pollution, human rights and local development[103].

This is an issue the European Commission tackled in the context of its Action Plan published in March 2018. Revisions of the implementing legislation[104] for the Mifid II Directive and the Insurance Distribution Directive were thus published for consultation in June 2020 and should be finalised in the next few months; they introduce the obligation for distributors of savings and investment products to question clients about their ESG preferences in the framework of the "suitability test". This test should first focus on the preferences of clients in terms of investment (knowledge, risk appetite, investment horizon, investment objective), before questioning them about their sustainable investment preferences, to avoid the latter taking undue priority over the investment objectives expressed.

But the questions to be asked still need to be determined. However, general questions about the desire for "sustainable" or "responsible" products (see article 9 of the Sustainable Finance Disclosure Regulation-SFDR[105]), or even about the "sustainable" characteristics of a financial product (see article 8 of the SFDR), are not enough to be able to offer savers products that directly meet their diverse preferences (see above). It is essential that questions focus specifically on the energy transition in order to assess whether clients wish to invest in financing this transition. These questions should also help to determine which trade-offs clients are willing to make, where necessary, between impact in terms of global warming and financial performance[106]. These answers will help to overcome the obstacle of potentially lower profitability (if confirmed) in view of the narrow understanding of fiduciary responsibility by managers who prioritise financial returns, especially in the short term.

The second tool consists in facilitating savers' choices by making it easier to read and understand the nature of the investments offered to them. Financial regulation can act here by creating labels. Regulators have generally chosen to develop labels for "sustainable products" (but a "sustainable performance" label could be considered for all financial products)[107].

Two labels now exist in France, the ISR label (Socially Responsible Investment), which is increasingly used for personal investment products, but is very broad and insufficiently binding, and gives no indications about the climate impacts of investments. The Greenfin label, on the other hand, specialises in the greenest activities: it is very demanding, but does not enable the development of a product offering for personal investments[108]. The reports by Ducret-Lemmet and Peyrol-Bouillon made recommendations for French savings labels, which are still largely relevant, concerning the merger of management bodies and the importance of giving these labels the means for their communication. The FIR studies[109] [110] also reveal poor knowledge of the ISR label among individuals and difficulties understanding the difference of approaches adopted in the various labelled asset classes.

In the context of its Action Plan, the Commission has planned to establish an Ecolabel for the sustainable financial products offered to individuals, based on the Ecolabel set up since 1992 for the environmental properties of numerous products purchased by individuals. Work has begun, several progress reports have been produced (2019, early 2020, October 2020), and the Commission has set the third quarter of 2021 as the deadline for this issue. The idea of using a simple label that is already familiar to European consumers is appealing, but the consultations launched with stakeholders have highlighted expectations that are difficult to reconcile in terms of realism and ambition. The debate focused on the architecture of the criteria to be used.

The label will concern certain savings products offered to individuals (investment funds and unit-linked life insurance contracts, current accounts and savings accounts, but also more complex insurance products). The most heated discussions focused on the level of ambition of the label (individuals' expectations, level of risk, diversification),

101 "EU Retails Funds' Environmental Impact Claims Do Not Comply with Regulatory Guidance", 2 Degrees Investing Initiative March 2020.
102 «Les français et la finance responsable – Vague 3», September 2020, IFOP.
103 These are the five issues considered in more than 70% of responses as "important" or "very important".
104 Commission Delegated Regulation (EU) 2017/565 and Commission Delegated Directive 2017/593.
105 Regulation (EU) 2019/2088 of 27 November 2019 on Sustainability-related disclosure in the financial services sector
106 Given the relative scarcity of savings products specialising in the transition, it is difficult to anticipate the average returns of such products compared to conventional products. But it cannot be ruled out that green products may have lower returns in the short term, with the opposite logically being true in the longer term. Savers therefore have a trade-off to make between short-term or medium-term financial returns.
107 In France, these choices were made by the Ministry for the Ecological Transition and the Ministry of the Economy and Finance. Private labels also exist, primarily outside France.
108 In its Indicator, Novethic identified as of 30/06/2020 some 797 "sustainable" funds open to individual investors, for a total of 315 billion euros, including 358 ISR funds (166 billion euros, or 53% of the total) and 21 Greenfin funds (8 billion euros, or 2%).
109 Chen, "Etude de l'évolution du label ISR public français et des fonds labellisés" October 2020
110 FIR "Communiqué de presse – le FIR publie une étude sur les fonds labellisés ISR. Des évolutions sont aujourd'hui nécessaires» October 2020

consideration of the transition and the general architecture of criteria, with the question of the level of flexibility left to financial actors to obtain this qualification and the readability for individuals of the exact nature of the product offered. The third technical report of October 2020[111] proposes a solution to reconcile these different expectations. In particular, it prioritises the inclusion in the eligibility criteria of companies engaged in the transition and in green growth to give funds a certain amount of flexibility and to diversify the assets underlying financial products.

The third report also largely responds to comments made by the think tank 2 Degrees Investment Initiative, according to which the indicators used, especially the share of activities considered to be "green" by the European taxonomy, do not help to determine the impact of financial products on GHG reductions; however, the Ecolabel is aimed at informing consumers about the existence of an impact ("environmental performance" according to Regulation n°66/2010 establishing the EU ecolabel)[112]. Based on the most recent research by academics and practitioners, the third report proposes incorporating requirements for managers of the products concerned to provide information about the measures taken to increase the impact of the investments offered (in relation to some 20 reference actions indicated).

As of the date of this report, this European work has not yet been finalised, and it is too early to make a judgement. But the Ecolabel could provide valuable information for consumers of financial products.

The third tool consists in improving the offering of investments targeted towards financing the transition. In general, the financial institutions need to be encouraged to offer this type of investment[113]. Clearly, greater consideration of client preferences, if it confirms that savers want to finance the transition, will naturally lead the financial institutions to adapt their offering. But financial regulation could strengthen this evolution.

First, new products could be proposed: savers are willing to tie up their savings for several years in a home ownership savings scheme or in life insurance; possibilities could therefore include a term deposit account or a plan (for a minimum duration of five years, for example) whose funds could finance transition projects through debt (which would interest banks because of their NSFR), or unit-linked life insurance contracts specialised in financing the transition.

The precedent of employee savings plans shows that regulatory provisions boosted products with a well identified social impact (since 2010, the law[114] obliges all company savings plans to offer at least one solidarity fund).

But beyond potential new products, some existing financial products can play a significant role. In this respect, life insurance, given the very large amounts collected (see above) and the stability of assets, is a priority. The French PACTE law[115] has made a first step in this direction by providing that life insurance organisations must offer certain types of investments. Since 1 January 2020, life insurance distributors must propose in every new life insurance contract at least one unit-linked product with the ISR label, the Greenfin France Finance Verte label, or a "solidarity" label. From 1 January 2022, for every new contract, distributors must offer at least one unit-linked product in each of these categories.

This first step is important on the symbolic level, but is expected to have only a limited impact in terms of the energy transition for at least two reasons:

- the obligation concerns unit-linked products that account for less than 20% of the amounts collected, compared to 80% for funds in euros;
- with the exception of Greenfin France labelled funds, the environmental impact of these unit-linked products is zero or marginal (solidarity funds and ISR funds).

Discussions therefore need to focus on ways to encourage life insurance companies to offer products (combining bonds and shares) aimed at financing the low-carbon transition.

The mobilisation of household savings to support the low-carbon transition is a major challenge. Only a global approach is capable of having a strong impact. Independently of potential fiscal measures, it is the combination of these three regulatory tools that can have a significant impact on the channelling of personal savings. The expression of clear preferences for climate-friendly investments by savers (including the trade-offs they are willing to make, where necessary, regarding immediate financial returns), the possibility of identifying investments consistent with these preferences thanks to labels that provide information on the real climate performance of funds, and an abundant, diversified offering of products should all help to significantly shift investments towards financial products that support the low-carbon transition.

111 "Development of EU Ecolabel criteria for Retail Financial Products – Technical Report 3.0: Draft proposal for the product scope and criteria" JRC Technical Reports European Commission October 2020

112 "The Draft criteria of the Ecolabel on financial products and the second technical report still fail to comply with the Ecolabel Regulation", 2 Degrees Investing Initiative, March 2020.

113 In the aforementioned IFOP survey, only 5% of respondents indicated that their advisor had already proposed a Socially Responsible Investment.

114 French Economic Modernisation Act of 4 August 2008.

115 Law N° 2019-486 of 22 May 2019 for business growth and transformation

5. Incentivizing financial actors to get involved in projects with low returns

- The obstacles to financing identified mainly concern projects with low returns, which struggle to attract financial actors of all types.
- To help to overcome these obstacles, fiduciary responsibility needs to explicitly integrate climate-related risks and the climate impacts of investment policies.
- Regulatory incentives are also possible, through new rules on banks' internal risk management rather than modifying the capital requirements imposed on banks.

5.1. The core issue of profitability

After the lack of understanding of the issues of the transition and the prevalence of short-term approaches, the third type of obstacle to financing the transition identified is that of profitability. There are three distinct cases among the different projects.

First, there are projects with returns that are in line with market expectations: for this type of project, demand from financial actors is typically high, even in the absence of a premium on the value of green assets. For these segments, such as mature renewable energies after their development, or large corporate projects financed by green bonds, there seem to be no major financing difficulties.

At the other end of the spectrum are projects whose eminently collective benefits, or promising but highly uncertain outcomes, justify the use of public subsidies. This is the case, for example, of major transport infrastructure networks such as the European Rail Freight Corridors or industrial research on emerging energies such as third generation biofuels[116].

Between these two cases is a third type of project, which will be the focus of this part: these are profitable projects but with returns that are not in line with financiers' expectations. Depending on the segment, this may imply expected returns that are not consistent with the level of risk taken, or returns that are obtained too late in relation to investors' expectations. Finally, these products may compete with investments that offer higher returns for financiers, as is the case with investments in the new technology sector in private equity.

This type of project requires a balanced, predominantly private financing model in order to align with climate ambitions. Public subsidies now enable a few such projects to exist. Without these subsidies, many of these projects would not be profitable enough to attract private investors which significantly limits the number of projects undertaken. This is the purpose of blended public-private finance to unlock additional projects that are inherently sustainable

This category includes, for example, agricultural anaerobic digestion projects, retrofits of commercial buildings (offices, hotels), new forms of industrial processes, or heavy goods vehicles with alternative engines.

This difficulty financing projects with "low returns" concerns both public and private investors.

5.1.1. For public investors

Public investors are expected to meet the objectives of State economic policy, in this case the deployment of the French National Low-Carbon Strategy. For these investors, achieving such objectives should take priority over high profitability requirements, and pressure on financial performance should be lower than for private investors. This is why tools such as the Value for Climate Action (formerly known as the Shadow Value of Carbon) have been developed, to facilitate public investment choices[117]. This idea behind this value is that it takes account of the value of one tonne of avoided CO_2 (or equivalent) in the socio-economic analysis of an investment.

However, several reports, in particular the one entitled *Pour la création de France Transition* by Pascal Canfin and Philippe Zaouati[118], note that public investors are not doing their part,

116 Cour des Comptes, «Le Soutien aux énergies renouvelables». 2018
117 France Stratégie and Quinet, «The Value for Climate Action». 2019
118 Canfin and Zaouati, «Pour la Création de France Transition». 2018

and are operating in safer segments, with no guarantee of additionality. At the same time, public investors still face high profitability objectives, with performance requirements that may be on a par with those of private actors.

5.1.2. For private financial actors

For private financial actors, the tools for action are different. In the absence of a price premium for green activities, *i.e.* at the same level of returns, there is currently no incentive to finance green and transition projects rather than unsustainable projects. This is confirmed by the majority of financial actors interviewed. Moreover, concerning green projects with lower returns, the actors interviewed indicate difficulty accepting this lower profitability in favour of more sustainable investments.

The IFC report *Creating Impact*[119] focuses on this articulation between the expectation of a climate impact and the desire for profitability and shows that investors' concerns about not achieving the expected returns currently limit the growth of impact funds. However, the report gives evidence that impact funds can achieve market returns and that strengthening the credibility of impact indicators would help investors to pursue objectives other than just financial returns.

In the interviews conducted, some financial actors nevertheless appear more open than others, especially given progress in integrating climate risks, but they are hampered by a lack of forward-looking data to support their choices internally or when dealing with their stakeholders.

To change this situation, and notwithstanding what blended finance can achieve, incentive efforts are necessary in order to make projects with low returns more attractive, and to thereby accelerate the mobilisation of private financial actors towards the transition.

5.2. Integrating climate perspective into fiduciary responsibility

Fiduciary responsibility is a set of obligations imposed on fund managers to ensure they act in the best interests of their beneficiaries, rather than serving their own interest. Their first duties are loyalty and prudence. The legal context underpinning this notion varies from one country to another. In common law jurisdictions, fiduciary duties are the main limits to the discretionary power of investment managers – under the auspices of the courts –, aside from contractual or regulatory obligations. In civil law jurisdictions, fiduciary duties are set out in the legal provisions defining the obligations of investment managers and in the regulatory texts interpreting these provisions.

An overly narrow interpretation of fiduciary responsibility appears to be an obstacle to the effective integration of climate issues. The predominant approach to fiduciary duty is too often simply maximising financial returns for clients. This is largely explained by the perception that ESG factors, and especially climate change, are non-financial and therefore outside the scope of fiduciary duties. This approach significantly contributes to short-termism and to the aforementioned prevalence of profit maximisation.

5.2.1. The work of the PRI[120] and UNEP[121] has clarified the situation at the conceptual level

The first report stressed that "many investors continue to point to their fiduciary duties and to the need to deliver financial returns to their beneficiaries as reasons why they cannot do more on responsible investment", and concluded very clearly that "failing to consider long-term investment

BOX 3: THE WORK OF THE PRI AND UNEP

The work undertaken between 2015 and 2019 with the investor community helped to establish a new definition of the fiduciary duties of investors (UNEP-PRI 2019), which require them to:

- incorporate ESG issues into investment analysis and decision-making processes, consistent with their investment time horizons.
- encourage high standards of ESG performance in the companies in which they invest.
- understand and incorporate beneficiaries' and savers' sustainability-related preferences, regardless of whether these preferences are financially material.
- report on how they have implemented these commitments.

The report presents the reasons why it is essential to incorporate ESG issues into fiduciary duties:

- the integration of ESG issues is now an investment norm advocated by the PRI's 2 500 signatories.
- ESG issues are financially material: incorporating ESG issues is a source of investment value and failing to consider them can have significant consequences for investment value.
- regulatory frameworks increasingly require ESG incorporation. The report thus identifies more than 730 provisions (soft or hard law) implemented in the top 50 economies, mostly since the early 2000s. These provisions include pension fund regulations, management codes and disclosure rules.

119 IFC, "Creating Impact - The Promise of Impact Investing". 2019
120 Principles for Responsible Investment – network of international investors set in 2006
121 United Nations Environment Program set by the United Nations in 1972

value drivers, which include environmental, social and governance issues, in investment practice is a failure of fiduciary duty" [122].

The final report of 2019 [123] considers that the matter of principle is now settled, but that progress is still needed in four areas:

- Completing regulatory frameworks, which still have some large gaps,
- Ensuring the actual application of these regulatory provisions,
- Extending the discussion on fiduciary responsibility to all stakeholders (financial advisors, defined benefit pension schemes, etc.),
- Understanding how investors can explicitly incorporate impact in terms of sustainability into investment decisions.

5.2.2. ESG incorporation in Europe

In Europe, investors' obligations are primarily defined by EU legislative and regulatory texts. The Commission's Action Plan of March 2018 [124] addressed the majority of the problems identified by the PRI and UNEP and largely included in the recommendations of the High-level Expert Group on Sustainable Finance [125].

Action 7 of the Plan consisted in clarifying the obligation for institutional investors and asset managers to take account of sustainability considerations and requiring their incorporation into investment processes. Moreover, disclosures to their clients on how this was achieved were insufficient. Consequently, end-investors did not receive the appropriate information and did not sufficiently take into account the impact of sustainability risks when assessing the performance of their investments over time. In this context, the European Commission presented:

- a regulation setting out obligations for disclosures on the way in which institutional investors and asset managers incorporate ESG criteria into their investment decisions and their risk management processes (SFRD [126], the implementing provisions for which are being prepared, and article 29 of the French Energy and Climate law [127]).
- proposals for amendments to the MiFID [128] II and IDD Directives to include ESG considerations in advice given to their clients by management companies and insurance product distributors.
- proposals for amendments aimed at clarifying the way in which asset managers, insurance companies and investment or insurance advisors should incorporate sustainability risks into their management and decision-making processes in several directives [129] (AIFMD, UCITS, Mifid II, Solvency II and IDD).

5.2.3. The shortcomings of this approach

These actions are real steps forward, but they will not be sufficient vis-à-vis climate challenges for two key reasons:

The first is due to the use of the ESG concept. The approach adopted is aimed at incorporating ESG considerations into the management processes of investors and fund managers. But the ESG concept (with its three components) is not precisely defined, which is particularly problematic for the financing of the transition. Certainly, environmental considerations should in principle include a "climate" aspect, but its content is left to the discretion of financial actors. Furthermore, in the ESG approach, this climate dimension will be just one element of the environmental dimension, which will itself be at par with the social and governance dimensions. In these conditions, it is unrealistic to think that ESG incorporation into investment risk monitoring and decision-making processes will translate into a significant impact towards the transition.

The goal is not to question the value of the ESG approach, but to consider that special importance should be given to the issue of climate change. Indeed, climate disruption would make it very difficult, if not impossible, to manage the other ESG elements, since it would profoundly challenge the operating conditions of companies; it is therefore essential to assess their resilience to climate risks. However, managing the consequences of climate change is not sufficient to manage the other ESG elements; the attention given to climate issues should not therefore overshadow the other ESG criteria. Thus, ESG incorporation should be accompanied by an explicit obligation to incorporate climate criteria, which cannot be offset or relativised by good performance in the other dimensions.

The second reason is that the notion of impact needs to be integrated into investment decision-making processes, as recognised by the PRI and UNEP themselves (see above): not only should fiduciary responsibility incorporate ESG criteria into investment decisions, it must also take into account how investment decisions impact ESG issues. This requirement is crucial in terms of climate change and refers to the notion of "double materiality" supported by the Commission. Impact indicators must therefore be introduced to supplement financial performance indicators and to reconnect with the real economy [130].

122 UN Global Compact et al, "Fiduciary duty in the 21st Century" 2015
123 UNEP FI and PRI "Fiduciary duty in the 21st Century – final report" 2019
124 European Commission, "Action Plan on Sustainable Finance" 2018
125 HLEG, "Final report – Financing a Sustainable European Economy" 2018
126 Regulation (EU) 2019/2088 of November 2019 on sustainability-related disclosure in the financial services sector
127 Loi n° 2019-1147 du 8 novembre 2019 relative à l'énergie et au climat
128 MiFID: Markets in Financial Instruments Directive. IDD: Insurance Distribution Directive.
129 UCITS: Undertakings for Collective Investments in Transferable Securities, and AIFMD: Alternative Investment Fund Managers Directive.
130 I4CE et al, "Minimum quality requirements for climate reporting – Options for pushing financial institutions' disclosure to the next level", 2021

5.2.4. The actions to be implemented

In Europe, where the legal basis for fiduciary duties is different to the one in place in the Anglo-Saxon countries, it is clear that incorporating climate criteria into fiduciary responsibility requires financial regulation, similar to what the Commission is currently doing for ESG incorporation in general. But to ensure the extension of fiduciary responsibility has a significant impact on investment decisions to support the low-carbon transition, it must be required to take explicit account of two aspects:

- the climate-related financial risks resulting from investment decisions;
- the impact of investments on climate change.

Aligning the fiduciary duties of financial institutions with climate considerations is a major challenge. Fund managers will need clear criteria in order to distort the structure of their funds in relation to that of the benchmark index and to justify different returns. On what basis will fund managers be able to make trade-offs between the low-carbon transition and profit-maximisation? Indeed, it cannot be ruled out that the incorporation of climate criteria may result in lower returns, at least in the short term.

Two regulatory tools must be explored:

- the incorporation into fiduciary responsibility of climate risks and of longer-term returns (combined with good knowledge of client preferences – see above) should facilitate the trade-offs required between short-term profitability and financing for the transition[131];
- the incorporation of climate impact criteria into investment decision-making processes will be crucial to justify fund managers' decisions. But it is clear that in this field, discussions and research are only just beginning. With regard to negative impact criteria, the work undertaken in the context of the European taxonomy to define the Do No Significant Harm concept should be used, at least as a first approach. With regard to positive impact criteria, research needs to continue. The recent introduction of impact indicators in the context of sustainability-linked bonds is a first path worth exploring.

5.3. Improving incentives for financial actors

The lack of sufficient financial incentives to support the transition (and the maintenance of incentives to support "unsustainable" investments) is often mentioned by financial actors on the grounds that they can only finance projects that are deemed to be profitable; this is the case for the most "engaged" among them, who indicate that there is no incentive to finance green projects that are not as profitable as conventional projects. For the others, the situation is even less favourable: they consider that there is no incentive to finance "green" projects in general, being more difficult to understand and potentially more uncertain, even if they are as profitable as other projects.

5.3.1. The role of regulatory incentives

In a context in which carbon pricing (at the global or European level) remains highly uncertain in the short and medium term, the question of alternative incentives should be raised. In this respect, the implementation of regulatory measures (for example technical standards or the prohibition of certain activities) can play a key role in compensating for an insufficient carbon tax level[132]. This report has just analysed the key role a broader fiduciary responsibility can be expected to play in influencing the decisions of institutional investors and asset managers, in the absence of a sufficient price signal (see **section 5.2**). It is worth noting the complementarity between the action of technical standards (certain activities that are limited or prohibited can no longer be financed) and a broader fiduciary responsibility (providing incentives to finance projects that would not be financed otherwise).

The question is therefore whether other financial regulation instruments can act as an incentive (whether positive or negative) for investors, but also for other financial actors.

The first issue raised by this question is that of the respective roles of incentives and penalties. Indeed, while some regulatory tools are more on the side of incentives (such as fiduciary responsibility or disclosure rules), others (such as capital requirements for banks) can be used to incentivise (see the "Green Supporting Factor") or to penalise (the so called "Brown Penalising Factor") certain activities in relation to current standards. In this debate on incentive/penalty trade-offs, different elements must be taken into account:

- What is the right balance between incentives and prohibitions/penalties to achieve social acceptance of the transition, which is key to its rapid and effective implementation, and what compensation potentially needs be put in place to improve this social acceptance?
- Prohibitions/penalties are effective, but often lead to conformity biases: financial actors implement the minimum level of regulatory obligations without incorporating them into their strategy or decision-making processes;
- Incentives are useful to facilitate acceptance of the transition, ownership of the issues and the development of technical capacities and tools (*e.g.* the internal discussions needed to implement the Green Weighting Factor at Natixis);

131 Asset managers now propose climate-oriented smart beta strategies that reduce returns when prices go up, but provide protection when they fall: (https://www.ftserussell.com/blogs/never-waste-crisis-sustainable-strategies-after-covid-19?utm_source=pardot&utm_medium=email&utm_term=05aug2020&utm_content=&utm_campaign=blog)

132 Haut Conseil pour le climat, « Rapport annuel 2020 – Redresser le cap, relancer la transition » 2020

- It is difficult to calibrate penalties, to avoid the transition being too sudden and precipitating problems of stranded assets [133], as well as incentives likely to produce "green bubbles" and to create a crisis of confidence for this type of asset;
- Finally, it is important to stress the difficulties of applying penalties in a sufficiently granular manner to take account of the specific situation of each company in the transition pathway.

In this search for regulatory incentives, one type of regulatory instrument merits further attention: solvency rules for banks.

5.3.2. The difficulties inherent in the use of capital requirements for banks as an incentive tool

The solution involving incentives through a prudential bonus system (such as the Green Supporting Factor) is of interest, especially as European regulations have already established mechanisms of this type to support lending to SMEs and certain infrastructure projects (see Technical Annex). However, a general mechanism reducing capital charges for all "green" activities does not seem to be appropriate.

The main concern raised by a general approach of this type is that it will erode the capital of banks and consequently their resilience at a time when the climate risk calls on the contrary for it to be increased [134]. The report recently published by NGFS, based on a survey of 49 banks from 18 different countries, "shows that the institutions have not established any strong conclusions on a risk differential between green and brown", in particular because of the lack of a clear taxonomy in most countries [135].

While it seems that a general mechanism like the "Green Supporting Factor" should be ruled out, the question arises as to the opportunity of reducing the prudential constraints on certain specific activities that are important to the transition in order to support their financing. This is particularly the case for "green infrastructure". It could be useful to revise the mechanisms to support certain infrastructure projects introduced recently by the European Commission in solvency requirements (banks and insurance organisations) (see Technical Annex). This revision would consist in limiting the mechanism in place to only "green infrastructure" projects (it currently covers "unsustainable infrastructure" as well), irrespective of the legal structure chosen for this financing (only some legal structures are currently eligible). The mechanism implemented in 2020 by the Commission would thus be redirected towards "green infrastructure". A monitoring system should be set up to assess the impact of this measure.

The opposite solution of penalties through an additional capital charge on unsustainable activities (like the so-called "Brown Penalising Factor") seems at first sight to address the reservations of the previous solution. Assuming that these activities are both detrimental to the transition and riskier from a climate change perspective, they could thus be penalised while simultaneously strengthening the capital structure of banks. But a deeper analysis indicates that this solution is also unsuitable. The (partially contradictory) concerns raised by this type of approach – which are all the stronger when penalisation factors are high – are manifold.

It could initially be feared that this type of measure might lack effectiveness. Indeed, unless it is implemented in all countries and for all financial actors, which is unrealistic in the short to medium term, there is a high risk of circumvention, either through "shadow banking"(in other words financial actors who are not supervised and can therefore replace those who are), or by banks in countries that do not implement equivalent measures. The latter risk will be particularly high if the companies penalised are likely to turn to these alternative financing options (for example oil and gas activities, for which the financing is very international). But even if this concern had some legitimacy, such a measure would still have a significant impact on the distribution of unsustainable loans.

Conversely, it could be feared that this type of penalisation could lead to a sudden change in the behaviour of banks and consequently that of the companies financed. Since the goal is to achieve net zero emissions by 2050 (see the Energy and Climate Law of 8/11/2019 for France, and the European Green Deal for the European Union), a low-carbon transition lasting at least 30 years needs to be financed. The short-term implementation of high penalties for unsustainable activities would thus run the risk of triggering an uncoordinated transition caused by a sudden readjustment of financial and economic actors' expectations. Yet such a scenario is considered as being of particular risk to the stability of the financial sector [136].

But these contradictory concerns, whose likelihood is difficult to determine, are not in fact the most important. Indeed, with the possibility of altering the behaviour of the actors involved in financing the transition, the main risk of such a measure would be that it might be insufficiently differentiated. The use of a single penalisation factor applied to sectors considered to be "unsustainable" would indiscriminately penalise all companies in the sector(s) targeted, without being able to take account of differences in the strategies implemented by the companies in a given sector to adapt to a low-carbon economy. However, it is essential that the banking sector can provide support and

133 European Systemic Risk Board "Too late, too sudden: Transition to a low-carbon economy and systemic risk" Reports of the Advisory Scientific Committee February 2016
134 I4CE, Berenguer, Cardona et Evain «Integrating climate-related risks into bank capital requirements" 2020
135 NGFS, "A Status Report on Financial Institutions' Experiences from working with green, non-green and brown financial assets and a potential risk differential", 2020
136 NGFS, "First comprehensive report: A call for Action", 2019

financing for the duration of the transition, in other words at least 30 years (see above), for the companies that commit to a real strategy of change, even in the most carbon-intensive sectors of the economy. With the exception of the thermal coal sector, which must be phased out more rapidly, an identical prudential regulation for all banks could not provide the granularity required or be sufficiently selective to penalise the activities that will remain "unsustainable" and to foster the radical transformation of the most carbon-intensive companies that truly commit to the decarbonisation process needed to drive the low-carbon transition.

In view of these obstacles and the difficulty of overcoming them, it is preferable to avoid using minimum capital rules (Pillar 1).

5.3.3. The need to explore a new regulatory pathway

To overcome the difficulties encountered by the previous options, another regulatory pathway needs to be envisaged in order to foster the progressive shift of all bank assets (loans and financial investments) and to avoid the counter-productive effects just mentioned. Indeed, the goal is to finance the low-carbon transition, and to divert lending away from activities that will remain "unsustainable" and will need to be phased out in order to channel it towards already "green" activities and those that are currently being decarbonised. A regulatory mechanism is thus needed that can make banks operate a granular distinction between the "green" and "transition" activities to be supported and the "unsustainable" activities that should be wound down. To achieve this, the expected regulation should require banks to not only use classifications of activities such as the European taxonomy (hopefully complemented by a taxonomy for unstainable activities), but also to assess the strategy of financed companies vis-à-vis the low-carbon transition.

The alternative solution that we propose to explore consists in using the bank prudential regulation (notably the Pillar 2) to require banks to incorporate climate criteria into their financing decisions. More specifically, they would be required to i) set a climate-related target (*e.g.* a net-zero emission target by 2050 or an alignment target with a reference 1.5°C scenario), ii) design 5 year-transition plans explaining how to reach the long-term target and iii) set up a mechanism to integrate climate-related criteria into their investment decision process[137].

Regarding the latter, one promising avenue is to integrate these climate-related criteria to adjust the analytical capital allocation[138] (hence with no impact on the prudential measurement). The mechanism consists in adjusting the internal bank capital allocation to take account of the impact of activities on the low-carbon transition. It should thus penalise the activities that are the most detrimental to the transition (to varying degrees depending on the intensity of the negative impact), and foster activities that support the transition (also to varying degrees).Why should banks be required to use a particular mechanism? This proposal is based on the assumption that analytical capital allocation is the most effective instrument to manage the allocation of credit in relation to other techniques.

This regulation would necessarily be set at the European level and be mandatory (*i.e.* integrated in the European banking prudential regulation). The European regulator would set the general framework (the same climate-related target for all banks, a template for 5-year plans and principles for integrating climate-related criteria into the investment decision process). Bank supervisors would be charged with the responsibility of monitoring the implementation.

The implementation would be decentralised, leaving it for each bank to design appropriate 5-year plans and set up the internal financing decision process adapted to its credit portfolio and to the nature of its activity. The decentralised implementation of this system would have a dual advantage: it would provide flexibility to respect the specificities of each establishment's activity and would facilitate ownership of the mechanism by the operational staff of banks, who would be mobilised to design and implement it.

However, this decentralised system raises one key challenge for regulators: how to ensure banks set up an internal system that provides a sufficient incentive to deliver the expected overall results for the financing of the transition? It therefore seems necessary to explore a monitoring mechanism to ensure that the expected "shift" in bank financing actually occurs with the speed and magnitude needed to meet the financing needs of the low-carbon transition. In this context, the Commission would not only determine the general framework to be implemented by each bank but would also establish indicators to monitor progress made. These indicators would eventually depend on the climate-related target selected. For instance, they could be alignment indicators (subject on the development of a robust consensual methodology) or the shares of "green", "transition" and "unsustainable" activities[139]. This is clearly a domain which would require additional research.

137 Proposals to make net-zero targets and transition plans mandatory for financial institutions have already been made – see for instance Caldecott (2020) and Robins (2020)

138 NATIXIS provides an interesting example of such a mechanism

139 Progress could be monitored either in relation to targets (for example x% of "green" or "transition" activities by a given date, or a y% reduction in "unsustainable" activities by a given date), or alternatively in terms of change (a given reduction in the scope of "unsustainable" activities and/or an increase in the other activities over a given period).

6. Conclusion

The linkages between financial regulation and the obstacles to financing the low-carbon transition can in theory be of two different types: first, situations in which this regulation creates a direct barrier to financing the transition and, second, situations in which financial regulation could provide a tool to overcome an obstacle to financing the transition.

1. The work conducted in the context of this report has not identified any situations in which regulation is indisputably a direct and lasting obstacle to the financing of the transition. The liquidity and solvency rules examined certainly lead to changes in the behaviour of financial actors and generally tend to reduce their preference for long-term investments. But the existing empirical studies do not establish a robust statistical linkage between these rules and a potential reduction in long-term financing beyond the transition phases in which financial actors adapt to new prudential rules. Nor are there any studies showing that the financing of the transition has particularly suffered from prudential rules.

   Two conclusions can be drawn from this aspect of the work:

   - it is important to relativise claims, especially made by financial actors, that prudential regulation is a significant obstacle to their contribution to financing the transition. The empirical studies do not support the idea that these rules have a significant and lasting impact on the financing of the transition.
   - but this is clearly an area in which careful attention is required: regulators need to work with the scientific community to organise an independent and rigorous mechanism to analyse the impacts of financial regulation on the nature and distribution of financing to support the low-carbon transition.

2. The work conducted has helped to identify obstacles to financing the transition to which financial regulation could help to provide solutions. In none of these situations does financial regulation appear as a "silver bullet" capable of replacing the implementation by the public authorities of clear strategic guidelines supported by a robust policy to drive the transition using the conventional methods of economic, fiscal and environmental policies. This policy action remains crucial and central.

Although it is not intended to replace other public policies, financial regulation is an instrument available to enhance the policy mix at the disposal of the public authorities. The work conducted has helped to identify three types of levers on which financial regulation can act in order to help overcome certain obstacles to financing the low-carbon transition.

Fostering understanding of the challenges of the transition among financial actors

To implement the essential training efforts that financial actors need to undertake, regulators and supervisors must become far more involved than they are today. They need to find regulatory tools to provide all financial actors with a common knowledge base and to build specific expertise on the transition: through AMF certification for financial market actors, and through supervisory expectations to ensure that banks implement these training processes.

But beyond this, they must also support the development of simple tools to better understand the positioning of companies in terms of the challenges of the transition, especially through non-financial rating by ensuring greater transparency and convergence of the methodologies used by rating agencies. Further incorporation of climate issues into the Banque de France rating tool can also help to produce standards aimed at SMEs and ISEs and to connect with these actors, who are currently difficult to reach with sustainable finance instruments.

Overcoming financial actors' preference for the short term over the long term

Warnings about the short-termism of financial actors are not new. This short-termism has been demonstrated empirically, is increasing over time and is particularly detrimental to the financing of the transition, which is built on medium- and long-term horizons. Several regulatory tools are available to help to correct these practices. First, remuneration practices could be better regulated and could incorporate climate impact criteria. The second tool for action on short-termism would be to correct index-linked management biases: the solution is not so much to create green indexes as to ensure climate transparency for all indexes in order to help align them with the Paris Agreement.

This preference of financial actors for the short term also reflects that of savers, and action is therefore also required to redirect savings. Among the different tools available (especially fiscal tools), financial regulation can play a role in fostering the integration of client preferences, informing their choices by means of credible labels, and providing incentives for a wider range of products to support the transition.

Incentivize financial actors to consider for projects with low returns

There is a problem of financing for projects with low returns, or those with returns that are obtained too late in relation to financial actors' expectations. Private financial actors must therefore be encouraged to look more closely at these projects and to move away from a purely short-term

financial approach. To achieve this, two regulatory tools can be considered.

The first is to incorporate climate risk and climate impact criteria into fiduciary responsibility, in addition to the ESG incorporation currently planned by the Commission.

The second is to use regulatory incentives that influence bank decision-making. In preference to solutions that alter the system of minimum capital requirements (Pillar 1) – which are incomplete and insufficiently granular –, the report explores the option of using prudential regulation (and notably the Pillar 2) to require banks to incorporate climate criteria into their investment decisions. More specifically, banks would be required to i) adopt a climate-related target (*e.g.* a net-zero emission target by 2050 or an alignment target), ii) design 5-year transition plans explaining how to reach the long-term target and iii) set-up a mechanism to integrate climate-related criteria into their investment decision process with the objective of financing the transition. The European regulator would set the general framework as well as indicators to monitor the progress achieved.

The following table synthetizes the regulatory proposals developed in this report.

SUMMARY OF PROPOSALS
HOW FINANCIAL REGULATION CAN BE USED TO FINANCE THE TRANSITION

Content of proposals	Regulations to modify
Using regulation to improve financial actors' understanding of the challenges of the transition	
1. Stepping up training requirements for financial actors	
• integrating a general knowledge base into market authority certification • creating a specialised certification scheme for investment actors	• French Financial Markets Regulation
• specifying regulators' requirements in terms of general training for financial actors • encouraging training organisations for the banking sector to set up specialised training programmes	• CRD V & CRR 2 • EBA guidelines and standards
2. Encouraging the development of simple tools to understand the transition	
• developing a taxonomy of "unsustainable" activities	• European Level 1 Regulation
• increasing transparency on the methodologies and data used by non-financial rating agencies	• ESMA
• further incorporating climate issues into the BdF rating tool to connect with SMEs and ISEs	• French Central Bank
Using regulation to ensure financial actors' preferences have a longer-term perspective	
1. Integrating the challenges of the transition into remuneration policies for financial actors	
• extending the deferral period for the variable part beyond three years • encouraging the incorporation of climate impact indicators into variable remuneration	• CRD IV • Solvency II • AIFM and UCITS
2. Counteracting index-based management biases	
• introducing climate transparency for all indexes	• Benchmarks Regulation
3. Mobilising household savings to support the transition	
• better identifying and incorporating client preferences in terms of transition financing • clearly identifying the investments offered to savers to finance the transition • improving the range of financial products offered to savers to finance the transition (creating a "transition" term deposit account and offering "transition" unit-linked life insurance contracts)	• implementing legislations for Mifid II Directive and the Insurance Distribution Directive • Ecolabel for sustainable financial products • French Ministry of Finance and French Ministry of Ecological Transition
Using regulation to incentivize financial actors to get involved in projects with low returns	
1. Broadening fiduciary responsibility	
• making it compulsory to incorporate climate risks into investment decisions • incorporating climate impacts (negative, or even positive) into investment decisions	• AIFMD, UCITS, Mifid II, Solvency II and IDD
2. Stepping up incentives for financial actors	
• revising the existing mechanism to reduce capital requirements on infrastructure so that it applies to only but all green infrastructure projects	• CRR 2
• making it compulsory for banks to incorporate climate-related criteria into their financing decisions by i) adopting a climate-related target, ii) designing 5-year transition plans and iii) setting a mechanism to integrate climate-related criteria into their financing decision process . Exploring the implementation of a indicators to monitor the progress achieved.	• CRD 5 – CRR 2

The debate on the use of financial regulation to deliver on economic policy objectives should include all stakeholders (regulators and supervisors, policymakers, NGOs, experts, etc.). Yet it is clear that this has not truly been the case so far, and the debate is still limited to experts. However, these issues are crucial, given the urgent need for action to mitigate climate change, and a wider audience must be reached in order to make this a subject of public debate, as it has been done with other technical debates, such as the one on monetary policy. This debate needs to focus on the objectives to be set for financial regulation, on the regulatory instruments available, on a reasoned assessment of their climate effectiveness, on potential conflicts of objectives and on the necessary changes in governance (*e.g.* changing the mandate of supervisors).

7. Annex

List of the interviews

Regulators (6 interviews)
- EU : DG FISMA : Emmanuel Buttin
- DG Trésor : Charlotte Gardes
- Banque de France : Vichett Oung
- ACPR : Laurent Clerc
- AMF : Julie Ansidei
- AMF : Vanessa Casano

Public operators (5 interviews)
- Bpifrance : Magali Joessel
- Bpifrance : Pascal Lagarde, Pauline Schertzer, Philippe Kunter
- Bpifrance le Lab : Aurélien Lemaire
- Caisse des Dépôts : Laurent Deborde
- Ademe : Vincent Kiefer

Private financial actors (4 interviews)
- Mirova : Ladislas Smia
- Meridiam : Julien Touati
- Crédit Agricole : Alban Aucoin
- Association Française des Sociétés Financières : Françoise Palle-Guillabert, Yves-Marie Legrand

Transition projet leaders (4 interviews)
- Bouzinac Industries : Jean Castillon
- MF : Fabiano Lo Fiego
- Dual Sun : Laeticia Brottier
- CIV France : Sébastien Cousin

Academics (1 interview)
- CIRAD : Antoine Ducastel

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