



Veblen Institute for Economic Reforms

How Banking Regulation can serve the Ecological Transition

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The Paris Climate Agreement commits signatory countries to making financial flows “compatible” with its climate objectives. Fulfilling this commitment requires the profound transformation of financial flows and the financial system, something that cannot happen without proactive regulation, prepared to fully integrate transition objectives into banking rules and supervision. This note contributes to the debate on the specifics of this integration, arguing not only for prudential measures but also for structural measures, actively influencing the transformation of bank balance sheets and forming part of a more global policy mix.

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The Veblen Institute for Economic Reforms is a non-profit think tank promoting policies and civil society initiatives for the ecological transition. We believe the current economic model is profoundly unsustainable and should be transformed in the spirit of social justice and respect of planetary boundaries.

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SUMMARY

As the IPCC pointed out in its April 2022 report, financial flows are currently a long way adrift of the pathway to carbon neutrality. A drastic change of direction is vital. However, the shift will not happen spontaneously; on the contrary, it requires a concerted effort by public monetary and financial authorities, central banks and supervisory authorities to “green” their actions. The former are willing to make their monetary policy frameworks greener but are still doing little. The latter are at the recommendations stage, but do not yet have any new rules to enforce. Above all, the debate on the greening of financial regulation is moving too slowly and remains too limited to the issues surrounding market transparency. So let’s put the question more directly: what would resolutely “proactive” financial regulation look like, regulation that would actively push institutions towards compliance with the Paris Climate Agreement?

This note focuses chiefly on banking regulation, its regulatory component, and how to make it a lever for the ecological transformation of the economy. Of course, all financial actors, whether banks or not, should be sensitive to climate risk. Our starting point is that consideration of climate risk by the financial sector is still inadequate and that mitigation of this risk will not progress quickly enough without regulatory pressure. As banks remain major players within the European financial system and are relatively more regulated than other financial actors, our analysis concentrates on why and how the greening of banking regulation should be implemented.

The main message of this paper is that **the greening of banking regulation** will need to **closely combine two types of approach** to be effective: the “**prudential**” approach through which regulators normally consider greening, but also the “**structural**” approach, which they will be more reluctant to take.

The greening of banking regulation provides an opportunity to strengthen two weak pillars of the current system: macroprudential regulation and structural regulation. Both are essential to the proper functioning of the banking sector, both in terms of its stability and its contribution to the financing of the economy:

- There has been too little building up of the **macroprudential pillar** since the financial crisis of 2007-2008;
- As for the **structural pillar**, it was dismantled by the financial liberalisation of the 1980s and has not been rebuilt since, even though Article 2 of the Paris Agreement (2015) specifically raised the issue of alignment between financial flows and climate goals, stressing the need to “make finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development”.

This combination of macroprudential and structural approaches will only be possible if ideological barriers are removed. It involves regulators being prepared to look at the role of banking and financial regulation not only in terms of financial stability, but also in terms of the allocation of financing. To do so, they will first have to recognise trade-offs between physical risk and transition risk as part of a “risk-based approach” inevitably result in too little action, taken too slowly, allowing the ecological imbalance to continue. More fundamentally, they will also have to recognise that markets are failing not only to produce information on climate risk

but also to allocate finance efficiently, taking planetary boundaries into consideration. Recognising this fact is only possible if we depart from the dominant theoretical framework based on the informational and allocative efficiency of the financial markets. **This ideological dissociation is the price to be paid if banking regulation is to be overhauled and banks are to be able to help finance the ecological transition. The greening of regulation offers the opportunity for this process.**

Regulators are now beginning to consider climate or ecological risk, but from a purely prudential perspective. We would like to draw regulators' attention to the fact that a prudential approach will not be enough. More specifically, **a microprudential approach based on the assessment of past individual risks will not be appropriate** for climate risk, while **the macroprudential approach will be necessary but insufficient.**

Indeed, **the “microprudential” framework, focused on the prevention of individual risks, is not appropriate for handling the systemic dimension of climate risk.** If, nevertheless, the greening of banking regulation were to begin with the inclusion of climate risk in microprudential capital requirements, then—at the very least—risk weights would have to be dropped and **sectoral leverage ratios** used. The measurability of climate risk should not be overestimated, nor should the door be opened—any more than it already is—to the manipulation of weights by institutions permitted to use internal models.

Financial risk and climate risk share a systemic dimension, which immediately places **action to mitigate climate risk at a “macroprudential” rather than “microprudential” level.** As the macroprudential framework is still relatively undeveloped, some will see this as a limitation to the greening of regulation; we prefer to see it as an opportunity to deepen it. **The macroprudential framework has the merit of existing** and offering a transposition to climate risk that is both possible and easily identifiable by regulators. In this note, we show that one of its existing instruments, **the systemic buffer,** would be particularly well suited to taking climate-related systemic risk into account. **This will be necessary but not sufficient.**

Indeed, **the greening of financial regulation needs to be done not only from the perspective of the financial risks induced by climate change and the ecological crisis, but also the problems that finance poses to climate and sustainability.** In its current form, finance contributes to global warming, loss of biodiversity, pollution, and more. **Faced with this dual materiality** of ecological risk, **the prudential framework has its limits. The greening of financial regulation cannot be restricted to this; it must also involve a structural approach.**

While the prudential framework is intended to be preventive, its main aim is to ensure that banks are able to absorb shocks or even losses. Climate risk, however, is characterised by radical uncertainty and the irreversibility of its occurrence. **The radical uncertainty of climate risk** was highlighted in the Green Swan report (2020). **It renders obsolete traditional risk management models** that are backward looking and based on measurable risks. When the loss is immeasurable and unpredictable, it cannot be protected by an *ex ante* estimate. Moreover, the comparison between the climate crisis and the financial crisis does not hold for long. A financial crisis, if not prevented, can be “managed” to reduce its economic and social consequences and allow a controlled return to pre-crisis conditions. Climate change, on the other hand, proceeds by **thresholds of irreversibility.** From this point of view, the prudential logic—which, whether micro or macro, basically consists of ensuring that the actors exposed to risk are able to absorb any losses—is not well suited to climate risk. **With the prospect of an**

irreversible climate crisis, it is not a matter of “preparing” for it financially, but of avoiding it happening and avoiding all its consequences, not only its financial consequences.

This involves **concerted action across both sides of the dual materiality**. It is through **structural regulation targeting the composition of bank balance sheets and the direction and destination of financial flows**, in addition to prudential rules which have little or no impact on the climate, that finance will reverse its impact on the climate. Through the recomposition of their assets and active participation in the financing of the ecological transition, banks will be able to protect themselves from climate risk and redirect financial flows towards sustainable pathways in the various dimensions of the ecological transition (climate change, biodiversity loss, pollution).

Much of the action will therefore impact the assets side of the balance sheet and its composition. The structure of banks’ balance sheets must change. This change cannot depend merely on voluntary commitments, which do not seem to be working. It will require **“structural” measures**, enabling the planned recomposition of the banks’ balance sheets. We propose a combination of:

- **A flow rule** to prohibit new financing of fossil fuels and guide new financing towards assets aligned with climate objectives;
- **A stock rule** to progressively reduce outstanding high-carbon investments;
- Alongside a **public-private (or public) hive-off structure**, depending on the stranding risk of assets not aligned with the objectives of a low-carbon economy, and a **strong degree of conditionality in terms of alignment sought**.

This recomposition of bank balance sheets will involve dealing with **the problem of “stranded assets”**, i.e. finding a way to progressively expel securities issued by companies in fossil, polluting or high-carbon sectors, whose value has fallen or will fall sharply. We believe there are three reasons for clearing balance sheets of this mass of stranded assets.

- The first is financial stability. Balance sheets need to be protected from the risk of financial instability arising from a destabilising pool of stranded assets.
- The second is the reorganisation of balance sheets and the necessary **reorientation of banks’ business models**, without the impediment of an “unnecessarily” risky balance sheet.
- The third is the **removal of the brake** that stranded assets on banks’ balance sheets would constitute: a bank has every incentive to continue financing non-aligned companies if it holds assets in those companies.

To **clear balance sheets of these masses of stranded assets**, securitisation solutions, such as those considered by the European Commission to deal with non-performing loans, or private bad banks, such as those suggested by the heads of asset management companies, will not be possible. **It is not a matter of ensuring the liquidity of these assets but of no longer trading them and of accommodating them on the balance sheet of an institution that will be able to bear the loss without significant damage**, while the activities associated these assets disappear or are transformed. **Mixed public/private structures** could be considered for assets where the risk of

stranding will not be too high or will diminish rapidly following the swift alignment of business models with low-carbon objectives. But if alignment is not sufficiently rapid, it will be necessary to rely on a **public hive-off solution**, or even to use the central bank, which could become **the “buyer of last resort of excluded assets”** through a **stranded asset purchase programme**, executed according to a defined schedule and at necessarily low prices, determined in close collaboration with the supervisory authorities. To avoid the moral hazard that can arise from the socialisation of losses, hive-offs will have to be subject to strict conditions:

- The divesting bank will have to reorient its future activities, completely excluding any new financing of high-carbon or polluting activities (quid pro quo) and the hive-off structure will support the reorientation of balance sheets;
- The transfer price should be low enough (significant haircut) to limit public losses and windfall effects.

This type of conditional hive-off would be doubly positive for the transition: it would lift the inertia weight of the stock of stranded assets from the banks’ balance sheets and would redirect the flow of new financing towards a low-carbon objective. **Hive-offs must always go hand in hand with structural action to promote the recomposition of balance sheets.**

The greening of bank balance sheets will not be possible without a **common and consensual benchmark that is sufficiently granular and scalable**. The taxonomy developed by the European Commission will come into force during 2022. It is still far from being consensual for reasons that include the fact that it defines “green” sectors and assets but not “brown” ones, and treats nuclear and gas as “green” or “transition” energies. It is also not granular enough and remains fairly static; a benchmark is needed that is sufficiently dynamic that it can take into account and encourage the transformation efforts of companies in all industry sectors, financial and non-financial. The public authorities will have to be heavily involved in developing this common benchmark and in the extra-financial rating system that will use it. **A public agency governed by all stakeholders**, which would be responsible for rating assets according to the taxonomy and for certifying banks’ carbon footprints, appears to be the best way to achieve this in a consolidated manner.

The greening of banking regulation will certainly not be an entirely smooth ride; among other impediments, it will face **institutional obstacles** due to the complexity of the process and the overlapping responsibilities of national and supranational authorities within the European governance system of financial regulation and supervision. There is a high risk of regulatory dilution and relaxation across the poorly integrated European area, where the principles enshrined in first-level legislative acts may then be diluted or undone by delegated acts that are supposed to support the practical implementation of these principles. One can choose to see this as a serious obstacle to the effective greening of financial regulation or, conversely, as an opportunity, insofar as **only a firm political will to green regulation will ward off the dangers of avoidance**. There will be no choice but to assert this will, otherwise the ecological transition will fail.

Lastly, the greening of banking regulation is certainly not the only lever for ecological transition; it must be done in connection with tax, monetary and, of course, fiscal policies, the real linchpin for ecological transformation. This so-called **policy mix** will have to become more intense and evolve into a true **climate policy mix**. This new, connected approach will inevitably change the institutional framework.

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Introduction

The greening of monetary policy¹ is now the subject of much research and discussion. The same cannot be said of the greening of banking and financial regulation, a process which is just as essential. In France, the debate was opened by Cardona and Evain (2021)² and continued by Evain and Calipel (2022)³; we believe there is more to add to the discussion by approaching it from the angle of the **“dual materiality” of climate risk**⁴: supervisory authorities and central banks must get to grips not only with the problem that climate change represents for the banking and financial sector but also with the problem that the banking and financial sector represents for climate change, given the current orientation of financial flows. This is where the so-called “dual materiality” of climate risk lies: the climate has a financial impact on finance and finance has a physical impact on the climate.

Tackling climate change as a financial stability issue can be done through prudential regulation, as well as transparency and reporting requirements, and this is likely to be the preferred route of action for public authorities. They will do so in a very gradual way and by trying to trade off, as best they can, the “physical risk” (losses relating to the damage and destruction of assets due to climate change), which increases with climate inaction, and the “transition risk” (devaluation of assets during the transition towards climate objectives), which, on the contrary, increases with climate action. However, this trade-off is an error. Firstly, because the delay caused by such a risk assessment will result in “liability risks” that are not taken into account. Secondly, and most importantly, by focusing on the financial impact of climate without considering the physical impact of misdirected financial flows, it underestimates the extent of the physical risk.

Acting on the problem that the allocation of bank financing causes to climate change, on the other hand, involves accelerating the transition by using structural action to redirect this financing, leading to the recomposition of banks’ balance sheets. In this note, we intend to show that **the greening of banking regulation is necessary, and that it must involve the greening not only of prudential measures but also of structural measures to decarbonise bank balance sheets**, without which the dual materiality of climate risk will be only partially mitigated.

In the attempt to achieve climate change mitigation, we believe that prudential and structural measures are complementary: the former, which are protective in nature, would aim to protect the balance sheets of financial institutions from their exposure to climate risks, while the latter, which are proactive, would support the reallocation of balance sheets towards the financing of sustainable economic activities (and the renunciation of unsustainable ones). By helping to support the transition to a low-carbon economy, and thus reducing future climate risks, proactive measures would make protective measures more effective. Without such proactive measures, the transition

¹ The Veblen Institute devoted an extensive dossier to this in December 2020: [“The ECB at a time for decisions”](#).

² Cardona M. and Evain J., [“Can financial regulation accelerate the low-carbon transition?”](#) I4CE Report, January 2021.

³ Evain J. and Calipel C. [Include mandatory banking transition plans within Pillar 2](#), I4CE Report, April 2022.

⁴ We will use the terms “climate risk” and “climate change” for convenience, bearing in mind that the ecological issue at stake is much broader and includes the collapse of biodiversity and pollution.

will be too slow and the risks (especially the physical risks) too high for protective prudential measures to be effective.

These structural measures are also justified by the radical uncertainty and immeasurable losses associated with an ecological crisis, which undermine the functioning of market finance and, in particular, its ability to allocate finance in a way that is consistent with the goal of carbon neutrality. Moreover, unlike the losses caused by a financial crisis, which can affect production potential for a long time but from which one can recover, those caused by an ecological crisis are, for the most part, irreversible. The imperative is therefore not to protect against them from a prudential perspective, but rather to avoid them completely through the genuine transformation of business models and the redirection of financial flows, processes that amply justify a structural approach.

In this respect, the greening of banking regulation offers various **opportunities**.

- Firstly, the opportunity to **expand the macroprudential framework**, which was set up after the financial crisis but which lurks in the background behind a still essentially microprudential approach; yet this macroprudential approach is key to preventing the risk of a systemic crisis that will be so painful for the economy. **We propose the use of a “systemic climate risk buffer”**.
- Secondly, the opportunity to **add structural provisions to the existing regulatory framework** that make it possible to impact the composition, i.e. the structure, of balance sheets and thus the direction of financial flows. This reorientation is essential for banks to be able to help finance the economy and its transformation. We propose the combination of a **flow rule**, prohibiting banks from any new fossil fuel financing (other than exceptions approved by the supervisor), and a **stock rule**, to reduce stocks of old, carbon-intensive financing, along with a **public-private or fully public hive-off structure**, depending on the stranding risk of assets.
- Thirdly, the opportunity to develop **common and standardised benchmark systems**, vital to the greening and decarbonisation of balance sheets, with the active involvement of public authorities.
- Greening will perhaps also prove opportune at the **institutional level**, because by confronting the risks of regulatory arbitrage and loosening caused by the institutional and geographical incompleteness of European financial governance, **it will put the political will of Member States to the test**, and will only succeed if national authorities take responsibility and stop putting the interests of their banking and financial sector ahead of overall stability.
- And lastly, it will require the coordination of different public policy instruments within a **climate policy mix**.

Section 1 of this note will show that the current approach to financial regulation will have to evolve, since its traditional foundations and objectives are inadequate to deal with climate change. Section 2 examines the instruments of green financial regulation, showing that macroprudential measures will be needed to protect bank balance sheets along with structural measures to rebuild these balance sheets. Section 3 examines the path to the greening of banking regulation from an

institutional perspective and identifies the danger of arbitrage and the risk of dilution that only a strong political commitment to the stated objectives of greening can avert.

1. What approach to green financial regulation is needed and what are the goals?

1.1 A look at the traditional justifications for public intervention in the banking sector

Regulation of the banking and financial sector allows for significant intervention from the public authorities, in the form of regulations that are more or less restrictive depending on the institution (banks, insurance companies, investment funds, stock exchanges, etc.), and that operate in conjunction with market mechanisms and internal control systems. In terms of the banking sector, the focus of this note, public authority intervention is justified on two grounds: firstly, the need to protect depositors and savers, and secondly, the need to prevent a systemic crisis, or at least mitigate the consequences of such.

These two justifications are not of the same order and lead to different forms of action. The first is basically microeconomic in nature and results in the application of prudential (microprudential) rules aimed at ensuring that institutions manage their individual risks (credit, market, operational risks, etc.) as best they can. The second is more macroeconomic in nature, leading to a macroprudential perspective focused on the prevention of systemic risk, with a more global and “top down” approach than the microprudential (“bottom up”) one. Until the financial crisis of 2007-2008, governments were primarily concerned with the individual risks of institutions and assumed that if these were well managed, overall risk would be limited. Moreover, their faith in the self-regulatory capacity of markets remained high, especially in their ability to avoid systemic crises. The financial crisis showed that systemic risk is not simply the sum of individual risks and that it is necessary not only to prevent individual risks more strictly but also to adapt regulation to prevent systemic risk. Since then, the second justification for public authority intervention has gained in importance.

However, despite the reforms driven by the Basel III accords signed in 2010, the regulatory and supervisory approach has not changed a great deal. The approach has remained essentially microprudential, with a few macroprudential touches, and its rationale does not go beyond financial stability. Banking sector regulation does not intend to supplant the market in the allocation of financing. Its underlying framework has, at best, questioned the informational efficiency of markets, but still takes for granted the allocative efficiency of markets (Bouleau, 2018⁵).

1.2 Banking regulation: currently more micro- than macroprudential

The regulation of the banking sector continues to rely on mainly microprudential regulation, on the activation of market discipline, as far as possible, through disclosure and transparency

⁵ Nicolas Bouleau, *Le Mensonge de la finance*, Editions de L'Atelier, 2018.

requirements, and on ensuring that sufficiently robust internal controls are in place. While recognising the need for a macroprudential approach, current regulation of the sector gives it very limited importance at present.

The Basel III agreements signed in 2010 and implemented at European level via the CRD IV directive have chiefly resulted in reinforced microprudential provisions:

- Capital requirements have increased in terms of both quality, through the redefinition of capital, and quantity, from 8% to 10.5% of risk-weighted assets;
- The standard risk-adjusted capital requirement has been supplemented by a simpler leverage ratio, which relates capital to total exposures (without risk weighting);
- Liquidity requirements have been introduced.

Several macroprudential instruments have been developed:

- A countercyclical buffer (CCyB), which gives the competent supervisory authorities the option to adjust the capital requirement according to the position within the financial cycle (the buffer is increased during the upturn of the financial cycle and decreased during the downturn);
- A systemic surcharge, which increases the capital requirement for systemically important institutions (the G-SII/O-SII buffer in European law, Art. 131 CRD IV⁶) according to their systemic score (established on the basis of five criteria: size, international activity, complexity, interconnections with other banks, and the substitutability of activities carried out);
- A systemic (risk) buffer (SyRB) (Art. 133 CRD IV), which covers systemic risks not covered by the capital requirements regulation, the countercyclical buffer (CCyB) or the systemic surcharge (G-SII/O-SII).

These instruments are still poorly calibrated (they do not raise the bar very high) and have not been activated in all signatory countries. As for the countercyclical buffer⁷, it only raises the capital requirement by a maximum of 2.5%; before the pandemic, only eleven countries within the EU had activated it, most of them rather weakly⁸. The systemic surcharge⁹, which—in theory—can reach up to +3.5% of capital, does not exceed +1.5% for 26 of the 30 institutions (+1% for 18 of them) that were on the FSB list as of 23 November 2021¹⁰. Within Europe, the surcharge is between +1 and +1.5% for eight G-SII groups and between 0% and +2% for 180 O-SII institutions. As for the systemic

⁶ Two surcharges are calculated: one for Global Systemically Important Banks (G-SIBs) listed by the Financial Stability Board (referred to as Global Systemically Important Institutions (G-SIIs) in CRD IV), and the other for groups that are systemically important on a national scale, designated as such by the competent national authorities (known as Other Systemically Important Institutions (O-SIIs) in CRD IV). Where a group belongs to both categories (a systemically important institution at both global and national levels), the higher of the two surcharges applies.

⁷ https://www.esrb.europa.eu/national_policy/ccb/html/index.en.html

⁸ Below 1% in 8 of the 11 countries, except in Ireland where it was 2%. See Jézabel Coupey-Soubeyran, Erica Perego and Fabien Tripier, “European Banks and the COVID-19 Crash Test”, Policy Brief No. 2020-32, CEPPII, May 2020.

⁹ https://www.esrb.europa.eu/national_policy/systemically/html/index.en.html

¹⁰ <https://www.fsb.org/wp-content/uploads/P231121.pdf>

risk buffer¹¹, it can—in theory—vary according to institutions or groups of institutions, as well as according to subsets of exposures, with no maximum limit but subject to European Commission authorisation, where necessary. Only 12 European countries apply it; France is not among them, preferring to use the countercyclical buffer.

1.3 Relationship with the failing market

The fact that current banking regulation remains essentially prudential is largely because it is designed to complement the failing (credit) market, not to replace it when it comes to capital allocation. Financial regulation does not depart from the dominant theoretical framework of finance, in terms of either its grounds for or modes of action. It is based on the recognition of “market failure”, but assumes that markets are the most efficient mechanism for allocating resources.

As a reminder, the underlying theoretical framework postulates three conditions for an efficient market: (1) the existence of a complete set of markets; (2) the existence of a competitive situation between actors; and (3) the existence of transparency of information allowing prices to reflect all available information. Failure to comply with these conditions leads to market failure. In this respect, the role of public policies (regulation, taxation, etc.) is to restore the proper functioning of markets. In other words, it is not a matter of coordinating the failing market in a different way in order to achieve a particular allocation of capital defined according to collective preferences, but of promoting mechanisms that are designed to favour the better functioning of the market and allow it to allocate capital according to individual preferences. As such, prudential regulation is intended as a supplement or even a support for the market, rather than as an alternative mode of regulation.

What we might term “structural” regulations are aimed at influencing the structure of bank balance sheets and the destination of bank financing, and are based on a different principle. They constitute a more direct mode of intervention; they do not repair or support the market, but rather replace—to a large extent—a market mechanism that is failing to allocate capital in line with objectives defined by public policy-makers, based on collective preferences. Regulations of this nature prevailed until the 1980s, in the form of credit control rules, sector targeting, subsidised rates, etc. They were then overturned by the financial liberalisation policy that was imposed in Europe and elsewhere. The deregulation of this period consisted of removing these forms of regulation, which were seen at the time as obstacles to financial development and growth, and a few years later (from the signing of the first Basel agreements in 1988) replacing them with prudential regulations that were no longer aimed at directing banking activity but at restoring market mechanisms.

1.4 Virtually no structural provisions in the current regulatory framework

The post-2008 banking reforms lacked the structural dimension of the reforms implemented after the great crisis of 1929. Following the 2007-2008 financial crisis, there were hardly any structural reforms, partly due to resistance from the banking lobby. There have been a few limited attempts at bank activity separation, but lists of exceptions have lengthy, with the structure of systemic

¹¹ https://www.esrb.europa.eu/national_policy/systemic/html/index.en.html

institutions everywhere remaining intact¹². The reforms have not sought to limit the size of institutions, nor to reduce the concentration of the sector to reduce systemic risk, nor to redirect the banks' activity towards financing that is useful to the economy.

This is probably the reason why banking business models have seen few changes. Reforms that could have had the greatest impact on this, such as financial transaction taxes or the genuine separation of banking activities, have been progressively diluted during intergovernmental negotiations and then abandoned (Kalaitzake, 2017; Howarth and James, 2019). In this respect, the greening of financial regulation could have a greater impact than the reforms undertaken in the wake of the 2007-2008 financial crisis. It could also involve more public banks, as well as development banks, and in this respect would also contribute to changing the model of banking governance (Plihon and Rigot, 2022¹³).

1.5 A framework ill-suited to tackling climate change

The traditional foundations and objectives of financial regulation are inadequate in the face of climate change. In its traditional theoretical framework, financial regulation is based on a vision of finance as a domain in which no collective preference is necessary a priori: the market coordinates individual preferences in order to achieve "optimal utility". Market failures are certainly considered possible, but financial regulation aims to respond to them with mechanisms that aim to restore the functioning of the market rather than by introducing collective preferences exogenously. In this framework, pollution and climate change, for example, are seen as "market failures". And the answer to these failures is usually sought in market solutions, such as the restoration of price signals or the "commodification" of nature. These solutions are not up to the challenges posed by the climate issue. The market is not necessarily the best answer to its own failures.

Above all, in its traditional framework, financial regulation tends to approach crisis risk at the level of individuals institutions and to assume that it can be calculated (it even delegates the calculation to institutions equipped with internal models validated by the supervisor). In situations of uncertainty, however, traditional risk management models are inadequate. This approach, which explains the predominance of the microprudential framework, has been problematic in terms of financial risk. In any case, it has failed in its preventive mission. To begin with, global financial risk cannot be reduced to the sum of individual risks: it is a systemic risk. Furthermore, because it involves interactions and phenomena of amplification, systemic financial risk cannot be reduced to a calculable probability.

The problem is even more acute when one attempts to transpose this framework to the consideration of climate change in financial regulation, due to the specificities of climate change that are now widely accepted.

¹² In the UK, the Vickers report recommended the ring-fencing of retail banking (this separation is already under pressure: <https://www.reuters.com/world/uk/britains-bank-ring-fencing-rules-create-complexity-review-shows-2022-01-19/>); in the US, the Volker Rule aimed to limit proprietary trading and to reduce the links between banks and hedge funds; in France, the Banking Separation Act tried, with very little success, to separate market activity from the list of transactions that are "useful" for financing.

¹³ Dominique Plihon and Sandra Rigot, "Public financial intermediaries and climate change" *Revue économique*, 2022/2 (vol. 73), pages 243-266.

- Firstly, climate change has a systemic dimension that cannot be addressed by simply regulating the individual behaviour of financial actors (Aglietta *et al.*, 2019¹⁴). In other words, climate change regulation is not conceivable in a microprudential framework. At the very least, it should form part of a macroprudential framework.
- Secondly, climate change is creating a situation of unpredictability, i.e. incalculable risks, against which traditional risk management methods (based in particular on backward looking models, i.e. on past observations) are ineffective (Bolton *et al.*¹⁵).
- Thirdly, as Keynesian theory shows, prices that are formed in financial markets are based on unstable and short-term collective conventions that are not able to take the long-term effects of climate change into account (Carney, 2015; Svartzman, 2020¹⁶). As such, climate risk management is not fungible within a standardised approach involving the calculation of risks that can be integrated into market prices.
- Fourthly, the costs of global warming are immeasurable and irreversible. And ecology is a global common good. In this context, neither the market nor the company is the appropriate mode of regulation. Companies will, by definition, never pay the real cost of the irreversible destruction they cause.

2. The instruments of green financial regulation: from prudential to structural

The current prudential framework for banking regulation needs to be adapted to cope with the financial instability aggravated by climate change. Current capital requirements significantly underestimate this risk of instability. In this context, it is important to consider the systemic nature of climate risk, and this justifies espousing the macroprudential approach. So far, this systemic approach has consisted of adjusting the prudential requirement according to a banking group's contribution to systemic risk and to the financial cycle during which the systemic risk arises. New types of systemic risk buffers need to be put in place to reflect the specific nature of climate risks and to mitigate these risks.

However, the dual materiality of climate risk means that we also need to tackle the danger that the banking and financial sector currently poses to climate change. Through the activities financed and the demand for financial returns, finance destabilises the climate as much as, if not more than, climate change destabilises finance. As such, financial flows need to be redirected to align with low-carbon objectives. The greening of prudential measures, even macroprudential ones, will not be enough. This redirection of flows requires structural measures designed to decarbonise balance sheets. By enabling the recomposition of balance sheets and thus making a greater contribution to the ecological transformation, structural action would *de facto* also have a prudential interest,

¹⁴ Aglietta M. (ed.), *Capitalisme, le temps des ruptures*, Odile Jacob, 2019.

¹⁵ Bolton P., Despres M., Pereira Da Silva L. A., Samama F., Svartzman R., "The green swan - Central banking and financial stability in the age of climate change", BIS, January 2020.

¹⁶ Carney M., "Breaking the Tragedy of the Horizon - Climate Change and Financial Stability", Speech at Lloyd's of London, London, 29 September 2015; Svartzman R., Dron D., Spain E., "From Ecological Macroeconomics to a Theory of Endogenous Money for a Finite Planet", *Ecological Economics*, 2019.

avoiding the losses associated with extreme and frequent climatic events that would occur if nothing is done to advance the transition. Central banks have shown that the worst-case scenario in terms of financial instability is one where the transition does not take place (Alogoskoufis *et al.*, 2021¹⁷), or takes place in a disorderly manner or too late (de Gaye and Lisack, 2022¹⁸).

2.1 Microprudential regulation—blind to climate risks

We have already seen that microprudential regulation is aimed at ensuring the resilience of financial institutions to the risks of loss to which they are exposed. However, the vast majority of financial regulators, including the Basel Committee on Banking Supervision (BCBS) where international standards are negotiated, agree that current prudential regulation does not incorporate the financial risks associated with climate change. In November 2021, the Basel Committee issued a consultative document containing a set of principles to “improve risk management and supervisory practices related to climate-related financial risks”¹⁹. It recommends that banks “identify and quantify climate-related financial risks and incorporate those assessed as material over relevant time horizons into their internal capital and liquidity adequacy assessment processes” (Principle 5).

This outlines the content of a future standard if an agreement is reached on this matter within the Basel Committee. The greening of financial regulation is likely to start with the inclusion of climate risk in the microprudential capital requirements framework. These requirements, which do not yet include climate risk, are based on two alternative approaches: one based on banks’ internal ratings (IRB approach), used by large banks, and the other based on predefined risk categories (standardised approach), used by smaller institutions. Neither of them currently incorporates climate change risk in any explicit way.

With the internal ratings-based approach, banks can use their own models to estimate the risk of their assets. These models must comply with certain methodological standards defined by the regulators, but they leave a lot of room for manoeuvre to the banks. These standards do not currently make specific reference to climate risks and do not, therefore, encourage banks to take them explicitly into account. Moreover, to be accepted by regulators, banks’ models must be validated against past observations. This method necessarily underestimates the impact of climate change, which has not yet been observed in its entirety. As banks’ climate risk management practices are currently inadequate²⁰, they are unlikely to be reflected in their risk calculation models. The standardised method uses asset classes to define their risks. Climate risk is not currently included in the definition of these classes either.

¹⁷ Alogoskoufis, S., Dunz, N., Emambakhsh, T., Hennig, T., Kaijser, M., Kouratzoglou, C., Muñoz, M.A., Parisi, L. and Salleo, C., “ECB economy-wide climate stress test”, *ECB Occasional Papers*, September 2021. See also Benoît Cœuré’s speech, at the conference “Scaling up Green Finance: The Role of Central Banks”, Network for Greening the Financial System, the Deutsche Bundesbank and the Council on Economic Policies, Berlin, 8 November 2018.

¹⁸ De Gaye A., Lisack N., “‘Too Little, Too Late’: Impact of a Disorderly Climate Transition”, *Eco Notepad* - Post No. 255, Banque de France, 8 February 2022.

¹⁹ “Bank for International Settlements, Principles for the effective management and supervision of climate-related financial risks”, Consultative Document Issued for comment by 16 February 2022, November 2021.

²⁰ In 2021, in “The state of climate and environmental risk management in the banking sector”, the ECB found that none of the banks under its supervision met the internal control expectations for climate risk that it had published in 2020 (“Guide on climate-related and environmental risks”).

The failure to include climate-related financial risks in capital requirements is a “technical oversight” of current regulation and not a deliberate decision by financial regulators. Indeed, under the Basel III standards underlying the current regulation, all material risks must be taken into account when estimating capital requirements, including climate risks (Alexander 2015²¹). Furthermore, climate risks materialise in the traditional risk categories (credit risk, market risk, etc.) that form the basis for this estimate (BCBS 2021²²). They should therefore *de facto* be included in the calculation of capital requirements. If they are not included, it is because the methodologies used in the internal ratings-based approach and the classes used in the standardised approach are not adequate for assessing them.

These technical shortcomings need urgent attention to ensure that microprudential regulation no longer omits climate risks. There are several ways of looking at the problem:

- the first, and perhaps most tempting for the banking sector, is to await the remedy of more sophisticated risk-measurement within internal models;
- the second is to rely on an adjustment to the weightings of the standardised approach;
- the third is to recognise that any adequate measurement of risk incorporating climate risk is impossible and to conclude that the prudential capital requirement should be detached from risk weights.

Let’s take a closer look at each of these three options.

Relying on the sophistication of risk measurement would undoubtedly result in the task being delegated to internal models and would reproduce the mistake made between Basel I (which imposed a poorly weighted capital ratio) and Basel II, which introduced the “advanced” approach based on internal models, and thus opened the loophole leading to the manipulation of weights—manipulation that is recognised and denounced but not effectively prevented. The output floor²³, a measurement used in the agreements signed in December 2017²⁴ but not yet transposed into the law of the signatory countries, will limit the advantage that large banking groups derive from their internal model but does not eliminate it. The banks’ margin for manoeuvre with these weightings would be even more problematic with climate risk.

Moreover, far beyond the financial risk, climate risk has all the characteristics of a “black swan” for which calculation raises serious methodological and data problems. These problems, especially those related to missing and inaccurate data, will not be resolved quickly, and probably never. Climate “risk” simply does not belong in the category of measurable risks. The need for immediate action to contain climate change therefore requires a shift to alternative approaches.

²¹ Alexander K., “Are environmental risks missing in Basel III?”, *Butterworths Journal of International Banking and Financial Law*, 30(2), 67-68, 2015.

²² Basel Committee on Banking Supervision, “Climate-risk drivers and their transmission channels”, April 2021.

²³ This agreement aims to restrict the use of internal models to a degree. The aim is to ensure that the risk-weighted assets calculation performed using the advanced approach is not too much lower than the estimate from the advanced approach. An output floor needs to be phased in so that the value of risk-weighted assets (RWA) under the advanced approach is at least 50% of that of the standardised approach in 2022, rising to at least 72.5% in 2027. The 2020-2021 pandemic has, however, postponed the transposition.

²⁴ Basel Committee on Banking Supervision, “Basel III: Finalising post-crisis reforms”, December 2017. https://www.bis.org/bcbs/publ/d424_fr.pdf.

Relying on an adjustment of weights would be in line with the recommendations made by Finance Watch (2020) in the report “Breaking the climate doom-loop²⁵”, namely:

- Weight fossil fuel exposures at 150%, consistent with CRR Article 128, which provides for a 150% risk weight to be applied to particularly high risk assets;
- Weight new financing in fossil fuel sectors at 1250% so that the corresponding activities are 100% equity-funded²⁶.

Such a weighting adjustment would force each institution to incorporate climate risk into its own risk management and would provide a strong incentive to move away from the financing of sectors not compatible with low-carbon objectives. Implicitly, however, it assumes that greening can take place within a risk-weighted capital ratio approach and does not, therefore, question the assumption that the risk on which this ratio is based, including climate or ecological risk, can be measured. It should also be noted that the greening of the risk-weighted ratio may have the disadvantage of encouraging banks to be selective about their assets, to the benefit of public securities if they become “green safe assets” and to the detriment of private assets, in particular corporate loans—nonetheless essential to their ecological transformation.

Abandoning the weights would mean incorporating climate risk not into a risk-weighted capital ratio but into the simpler leverage ratio, which would be adjusted according to assets’ climate risk exposure, reported by each institution to the supervisor. Adapting the microprudential framework to climate risk provides an opportunity to resume the debate on the comparative merits and limitations of the risk-weighted ratio and the leverage ratio (see Admati 2014²⁷, Mariathasan and Merrouche 2014, Barth and Miller 2018²⁸), where the Basel III accords left off. These accords did enable the introduction of a leverage ratio, without risk weights, but at a level of 3%: too low to be restrictive and to really cap the leverage of each banking group (all banking groups, whatever their size, have a leverage ratio of more than 3%²⁹). A climate risk-adjusted leverage ratio would cap leverage based on the carbon footprint of assets. It would limit the negative effect of the weighted ratio, which could prompt banks to green their balance sheets by concentrating on risk-free green public assets. It could be sectoral, as proposed by D’Orazio and Popoyan (2019³⁰), Le Quang &

²⁵ https://www.finance-watch.org/wp-content/uploads/2020/06/Breaking-the-climate-finance-doom-loop_Finance-Watch-report.pdf.

²⁶ This proposal is made assuming a capital requirement of 8% ($1250\% \times 8 = 100\%$), noting that CRR already applies a 1250% risk weighting in the case of holding companies (Article 89). Note that with a capital requirement of 10.5% (including the conservation buffer added in the Basel III accords), the weighting to reach 100% capital coverage would have to be 952% ($952\% \times 10.5 = 100\%$).

²⁷ Admati, Anat R., “The compelling case for stronger and more effective leverage regulation in banking”, *The Journal of Legal Studies*, 2014, vol. 43, no. S2, pp. S35-S61.

²⁸ Barth J. R., Miller S. M., “Benefits and costs of a higher bank ‘leverage ratio’”, *Journal of Financial Stability*, 2018, vol. 38, pp. 37-52.

²⁹ See Basel III Monitoring exercise, EBA/REP/2021/27, September 2021.

https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2021/1020673/EBA%20Report%20on%20Basel%20III%20Monitoring%20%28data%20as%20of%2031%20December%202020%29.pdf

³⁰ D’orazio P., Popoyan L., “Fostering Green Investments and Tackling Climate-Related Financial Risks: Which Role for Macroprudential Policies?” *Ecological Economics*, 160 (C), 25-37, 2019.

Scialom (2021³¹) and Scialom (2022³²), i.e. strong for assets held in carbon-intensive sectors, reducing as these sectors are transformed.

As Scialom (2022) points out, the radical uncertainty of the stranding risk of assets held in sectors that are too carbon intensive makes it impossible to assess this risk on the basis of past data and would fully justify the use of a sectoral leverage ratio rather than a weighted ratio, even one adjusted by a penalty that takes assets' carbon footprint into account (brown penalising factor); this would require an accurate (but inevitably incorrect) assessment of this stranding risk or the application of dissuasive regulatory weights such as those mentioned above in the Finance Watch proposal (2020). The sectoral leverage ratio would avoid the need to determine the weighting for specific asset classes. However, it would have to be calibrated by sector, which would obviously be no easy task.

This adjustment of microprudential measures to climate risk would allow each individual institution to take climate risk into account more effectively and, as such, to better protect itself, individually, from the financial risks induced by climate risk. But it will not be enough to protect the system as a whole, for the simple reason that systemic risk cannot be reduced to the sum of individual risks, or more simply because the "banking system" cannot be reduced to the sum of its component institutions.

Consideration of climate risk should not only be done at the level of each institution's risks (individual risks). It is crucial that it is done from a systemic perspective, given that climate risk carries not only individual risk but also systemic financial risk.

2.2 Climate risks are primarily systemic risks

Climate risks have all the characteristics of systemic risks. They have the potential to disrupt the financial system, with serious consequences for the stability of the system and for the real economy. Climate change-related economic shocks—physical and transition shocks, and especially the combination of the two—can become systemic, if widespread across the financial markets, when they trigger sharp declines in asset prices affecting multiple major financial institutions simultaneously. Even small economic shocks can become systemic when contagion between financial institutions amplifies an initially contained shock.

Climate risks affect large parts of the economy and the financial markets. As highlighted by the NGFS (2019³³), climate risks will have widespread and significant impacts and could potentially trigger significant losses for the financial sector. This is especially true since, given the uncertainty inherent in the calculation of climate risks, it is entirely possible that climate shocks will be much larger than currently anticipated by the financial markets. In addition, the insurance possibilities offered by markets through diversification are limited, as climate risks are likely to affect multiple assets and markets simultaneously.

³¹ Le Quang G., Scialom L., "Better safe than sorry: Macroprudential policy, Covid 19 and climate change", *International Economics*, 2021.

³² Scialom L., "Central banks facing the challenge of ecological transition", *Revue économique*, vol. 73, no. 2, March 2022, pp. 219-242.

³³ The Central Banks and Supervisors Network for Greening the Financial System (NGFS), "A call for action - Climate change as a source of financial risk", NGFS First Comprehensive Report, April 2019.

Climate shocks could also potentially trigger rapid falls in asset prices. Unforeseen climate-related events—for example, the acceleration of climate risks or a rapid change in technology, consumer preferences or environmental policies—could lead to significant forecast revisions by financial market participants. A change in these expectations, even long term ones, could result in significant asset price movements in the short term. Two considerations make an abrupt change in expectations a likely scenario: first, future climate costs are highly uncertain, which means that new information about them may trigger significant changes in investor expectations. Secondly, there is widespread agreement among supervisors that climate risks are currently not fully priced by financial markets, making them liable to sharp corrections.

Climate shocks can therefore be amplified by financial markets. A general decline in asset prices—following, for example, a change in market expectations about the costs of climate change—could trigger substantial reallocations of investor portfolios, leading to simultaneous large-scale sales of assets with high exposure to climate risk. Such events, initially triggered by a seemingly contained climate shock, can escalate into a financial crisis, especially when asset price changes begin to alter perceptions of counterparties' solvency and liquidity.

2.3 Current macroprudential regulation can and should be adapted to climate risks

In terms of addressing systemic risks, the EU's macroprudential framework provides an important toolbox for supervisors. To supplement the Basel III international regulatory framework, the EU has developed its own macroprudential policy tools through the CRD IV and CRD V directives. These include Systemic Risk Buffers (SyRBs³⁴). These tools require financial institutions to hold enough capital to mitigate specific systemic risks not covered by the capital requirements regulation, the countercyclical buffer (CCyB) or the systemic surcharge (G-SII/O-SII). The additional capital requirement is in addition to other regulatory capital requirements, i.e. the requirements imposed by microprudential regulations, countercyclical buffers and the surcharge for systemically important groups.

Systemic climate-related risks fall within the scope of systemic risk buffers. The EU Capital Requirements Directive (CRD V) calls on national supervisors in the EU to activate systemic risk buffers when their financial systems face long-term non-cyclical risks from the real economy. This is exactly the kind of risk posed by climate change. **Systemic risk buffers can and should, therefore, be used to address systemic climate-related risks.** A “systemic climate risk buffer” would then be applied (Monnin, 2021³⁵).

Current EU legislation on systemic risk buffers (CRD V) “allows national authorities to target specific sectors—by requiring banks to hold capital proportional to their exposure to those sectors—and/or specific institutions—those most exposed to the source of systemic risk. Both options can be used to address climate-related systemic risks: financial regulators can apply a buffer on assets in sectors most exposed to climate risks and/or on financial institutions particularly exposed to these risks,

³⁴ https://www.economie.gouv.fr/files/files/directions_services/hcsf/HCSF_20210318_Note_SyRB.pdf

³⁵ Monnin P., “Systemic Risk Buffers - The Missing Piece in the Prudential Response to Climate Risks”, CEP Policy Brief, June 2021.

and set the level of this systemic buffer according to the risks that climate change poses to the whole financial system.

For a climate-related systemic risk buffer to be effective, regulators must require each financial institution to have capital in proportion to its total individual exposure, i.e. an institution-specific buffer. This could be done by adopting an approach similar to the regulation for systemically important banks, namely a specific surcharge for each level—bucket—of bank climate risk³⁶. The alternative—a system-wide buffer, the same for each bank—would reduce its effectiveness and increase its cost: by not addressing risks directly where they are, its protective potential would be reduced, which could result in a higher overall cost for achieving a sufficient level of protection. In addition, a specific buffer gives each financial institution a strong incentive to reduce its individual exposure to climate risks in order to limit its capital costs. A system-wide buffer would not provide such an individual incentive.

Implementing a systemic buffer for climate risks requires some adaptation of the current macroprudential framework. Firstly, this framework currently anticipates sudden and destabilising risks to financial institutions over short periods of time. However, climate risks require regulators to look at a longer (medium term) time horizon with less abrupt price movements, albeit quantitatively as significant as in “traditional” risk scenarios. The calibration of macroprudential tools must take this time frame into account. Secondly, this calibration is currently performed on the basis of past observations. Since the magnitude and timing of future climate shocks have never been observed, financial regulators cannot rely on such data. They therefore need to review their current practices and implement new procedures, based on forward-looking models and not on observed data.

Finally, unlike for more traditional and well-known risks, financial regulators do not have data covering all positions of banks’ balance sheets and with an equivalent degree of accuracy for all counterparties. They therefore need urgently to develop a decision-making framework tailored to this situation and to move away from current practices that require a complete view of a risk across a financial institution’s balance sheet or system before implementing a prudential measure.

Adjustment of the capital requirement based on climate risk would be primarily designed to protect the banking sector from the risk of instability induced by climate risk and would only contribute to the ecological transition in this respect. However, the transition to a low-carbon economy requires a more global reorientation of financial flows based on low-carbon objectives, so that they no longer contribute to climate change by financing fossil fuel, polluting or biodiversity-damaging sectors and are instead directed towards sustainable economic activities. This contribution from the banking sector to the transition is vital, not only so that global sustainability goals can be achieved but also in order to reduce the climate-related financial risks that the sector will face in the near future. A reorientation of this type requires structural rules that go beyond any short-term prudential vision. Tackling the dual materiality of climate risk requires an adjustment to climate risk that combines both prudential *and* structural rules.

³⁶ The Basel III international regulatory framework uses a methodology based on risk scores and categories to classify global systemically important banks (G-SIBs) according to the risk they pose to the financial system and then to set appropriate capital buffers for each category of bank (see BCBS 2013).

2.4 Planned transformation of balance sheets using structural rules

If one accepts that the greening of financial regulation must first and foremost aim to redirect the financial flows coming from the banking sector and align them with climate transition objectives, then it goes without saying that this needs to be done by imposing rules that will have a real impact on the composition (or structure) of bank balance sheets.

The decarbonisation to be carried out is immense, and developments observed on banks' balance sheets are definitely not going in the right direction. As noted following the 2022 edition of the "Banking on Climate Chaos Report"³⁷, published by a group of NGOs including Reclaim Finance, "fossil fuel financing from the world's 60 largest banks has reached \$4,582 billion since the adoption of the Paris Climate Agreement. With 352 billion dollars of financing over the last six years, the Paris market represents the European Union's leading source of support for this industry, right behind London. 87% of this capital came from just three banks: BNP Paribas, Société Générale and Crédit Agricole".

Prudential regulation will not be sufficient to achieve the necessary reorientation of banks' financial flows, precisely because that is not its purpose. Have capital requirements had an impact on the asset mix of banks in the past? Have they reduced or increased consumer or corporate loans, or reduced or increased the proportion of private or public securities? The issue has been debated in relation to lending activity, with one of the classic objections of the banking lobby to higher capital requirements being their alleged negative impact on lending volumes. Empirical studies on the link between capital ratios and credit mostly find only a weak link. The Bank for International Settlements (BIS) identifies twenty-five estimates from five studies conducted between 2014 and 2018, most of which estimate the impact of a 1 percentage point increase in capital ratio on bank lending at between -0.5% and 1.25%³⁸. It is reasonable to conclude that prudential rules have relatively little effect on the structure of bank assets.

The role of prudential rules is not so much to act on the composition of assets, but rather on the composition of liabilities by limiting debt financing, in order to put banks in a position to absorb losses. This means that, in order to affect the composition of bank balance sheets—so that they are in line with climate objectives and do not compromise the ecological transition—structural rules are needed. The important thing in our view is to plan the decarbonisation of bank balance sheets on the basis of **two structural rules**.

- **The first would impact flows** by guiding investment into green industry and prohibit any new financing of fossil fuels, as recommended by the International Energy Agency.

³⁷ <https://reclaimfinance.org/site/2022/03/30/banking-on-climate-chaos-edition-2022/>

³⁸ https://www.bis.org/frame/cap_liq/impact-estimates.htm. It should be noted that this very useful tool from the BIS (*Literature and impact estimates*), which can be used to view the distribution of findings on the impact of prudential capital and liquidity ratios, does not include total assets or asset composition as impact targets studied. It is simply that there are no indexed studies on this impact, probably because there are no significant results in this area beyond the results obtained on credit, which do not necessarily provide information about the rest of the balance sheet.

- **The second would aim to reduce the amount of old, high-carbon financing** (the ban could also apply to polluting assets or assets that damage biodiversity): it would require the share of old financing not compatible with the common benchmark to be reduced by x% per year (an effort rate that depends on the initial proportion of assets to be removed from the balance sheet) over a period of time to be defined on the basis of the target date for climate neutrality.

The “planning” process mentioned above can be understood as the medium- or long-term scheduling of changes to the composition of bank balance sheets in line with decarbonisation goals, such as those defined by the French High Council for the Climate³⁹. Alternatively, it could form part of a wider ecological planning process, the philosophy of which would be inspired by France’s experience of indicative planning, which included value-based planning, from the post-war period until the 1980s⁴⁰.

The adjustment could be made on a constant balance sheet basis or could be an opportunity to reduce the size of the balance sheets of systemic institutions with high exposure to fossil fuels. In this respect, a structural adjustment plan, as we propose, could be a lever for financial degrowth, the important thing being not to preserve the size of the banking sector but to align it with the needs of the economy undergoing ecological transformation.

Let us take the example of an institution which, at the start date of this decarbonisation programme, say 2025, has a balance sheet where 80% of assets (securities or credits) still belong to activity sectors not compatible with the green taxonomy:

- Thanks to the flow rule prohibiting any new financing that is too carbon intensive (based on a “brown” taxonomy to identify assets associated with economic activities to be excluded), this proportion could not increase further. The ban on new financing of the fossil fuel sector could be accompanied by the channelling of credit towards the financing necessary for the ecological transformation of the economy (requiring the ability to refer to a common benchmark). The contribution made by credit to the ecological transformation of the economy will strongly depend on the type and destination of the credit. A wide range of instruments are available, acting either on the demand side (loan-to-value ratios, debt-to-income ratios, maturity, etc.) or on the supply side (credit floors or ceilings, interest rate floors or ceilings, countercyclical buffer, systemic risk buffer, etc.) to regulate the credit cycle and also to guide it to “where it is needed”. Credit guidance policies (such as the credit ceiling (*encadrement du crédit*) in France) were effective in directing credit to the corporate sector, prior to the financial liberalisation of the 1980s. After their abolition, the share of business credit decreased significantly (Bezemer *et al.*, 2018⁴¹). More credit went to real estate, contributing less to growth and more to financial instability. The major challenge of ecological transformation fully justifies the

³⁹ <https://www.hautconseilclimat.fr/>

⁴⁰ Plihon D., “La planification écologique - Une approche institutionnaliste [Ecological Planning - An Institutionalist Approach]”, *Les Possibles*, April 2020 -<https://france.attac.org/nos-publications/les-possibles/numero-23>; Hallak J., Plihon D., “Réinventer la planification à l’heure de la transition écologique [Reinventing planning for the ecological transition]”, Veblen Note, 2022.

⁴¹ Bezemer D., Ryan-Collins J., Van Lerven F. and Zhang L. 2018, “Credit where it’s due: A historical, theoretical and empirical review of credit guidance policies in the 20th century”, Institute for Innovation and Public Purpose, WP 2018-11, December 2018.

reinstatement of guidance measures to facilitate this transformation while ensuring financial stability (Bezemer *et al.*, 2018, *op. cit.*).

- Thanks to the stock rule, the share of carbon assets would gradually decrease to zero. Assuming a 2050 carbon neutrality date for this programme, the institution would have 25 years to move from 80% to 0%, requiring it to reduce this share by at least 3.2% of its initial value each year until depletion (which may be achieved before the deadline as some of these assets are hived off). In all probability, the price of the assets concerned would fall over the period and produce a devaluation. Assessment of this devaluation could be used to identify “stranded assets” (see below) and establish a hive-off rule: above y% devaluation, the asset would be identified as a “stranded asset” and would then be transferred to a hive-off structure, as discussed in the next section. It would not be permitted to use the fall in price of carbon assets and/or the increase in size of the balance sheet to make the adjustment (i.e. to achieve a reduction in the proportion of carbon assets without actually removing them from the balance sheet), in order to avoid stranded assets remaining on banks’ balance sheets.

The management of balance sheet recomposition would necessarily be based on a particular vision of what the desirable structure of “green bank balance sheets” looks like.

Three structures are possible a priori:

<u>Structure 1</u>		<u>Structure 2</u>		<u>Structure 3</u>	
green “originate to distribute” model		green “financial repression” model		green traditional “originate to hold” model	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
1. Green private securities		1. Green private securities		1. Green private securities	
2. Green public securities		2. Green public securities		2. Green public securities	
3. Green credits		3. Green credits		3. Green credits	

Note: Numbers 1, 2 and 3 indicate the components of the balance sheet structure by size, in terms of % of the bank balance sheet.

Structure 1 resembles that of a pre-2007-2008 financial crisis balance sheet, with the securitisation of bank balance sheets and the negative consequences observed. The difference is that carbon securities would be replaced by green securities. This is the structure that would result from a transition based largely on private investment financed by the financial markets.

Structure 2 would be that of banks forced to hold a high proportion of green public securities, within a scheme where the transition is based largely on public investments financed by market debt, compelling States to maintain the need for public securities; the greening of banking regulations via the weighted capital ratio would have the (negative) effect of encouraging banks to favour green public securities, considered the safest. The disadvantage of this structure is that it places public ecological financing in the hands of the market, with the risk of further increasing the financialisation of the economy and the state.

Structure 3 is the one favoured in this report, as it reflects the fundamental *raison d'être* of banks: to finance the economy—i.e. households and, importantly, companies that have little access to the securities market.

This structural plan for the adjustment of bank balance sheets would complement and reinforce the effectiveness of prudential adjustment. The reorientation of financing flows would help transform the structure of the economy and, in so doing, help limit climate change, while the prudential adjustment would be more of an adaptation. By accelerating the ecological transition, structural adjustment would reduce the exposure of bank balance sheets to the risk of financial instability induced by climate risk. In other words, structural adjustment would, in itself, have prudential virtues, or at least help to reduce both climate risk and the risk of financial instability. Employing structural regulation to effect balance sheet recomposition would therefore assist the efforts of prudential regulation to protect balance sheets against climate risk. However, the adjustment will make stranded assets increasingly visible. Once identified, these should not remain on the banks' balance sheets. How could the hive-off be carried out?

2.5 The hiving off of stranded assets

Stranded assets are assets—credits or securities—held in companies whose business model or carbon footprint is not compatible with carbon neutrality goals and who are not implementing major changes to achieve carbon neutrality. These assets will be worthless in the event of a successful transition. It should be noted that the stranding risk of an asset should be assessed by considering the companies' "efforts" to align themselves with the transition objectives. The assets of companies that do not make the necessary changes in time will end up stranded.

The problem is not limited to carbon. According to a study by the Banque de France, in addition to the stranded assets already accounted for, 42% of the total volume of securities held by French banks currently finance companies that are largely dependent on natural resources and contribute to the destruction of biodiversity (Banque de France, 2021⁴²).

Even if investors were to stop financing carbon intensive, polluting and biodiversity-destroying activities today, the balance sheets would still need to be purged of all past commitments in these same sectors, unless they have been transformed to align with ecological transition objectives. These carbon or polluting assets are subject to "transition risk": unless they incorporate a haircut for their carbon footprint, they risk becoming worthless and stranded on bank balance sheets once the transition to carbon neutrality is well underway. The Banque de France and the Bank of England estimate respectively that assets worth \$12 trillion and \$20 trillion will be affected by this future depreciation⁴³. This mass in itself constitutes a formidable weight of inertia, likely to slow down the

⁴² Banque de France, "A "Silent Spring" for the Financial System? Exploring Biodiversity-Related Financial Risks in France", Working Paper No. 826, August 2021. Authors: Romain Svartzman, Etienne Espagne, Julien Gauthey, Paul Hadji-Lazaro, Mathilde Salin, Thomas Allen, Joshua Berger, Julien Calas, Antoine Godin, Antoine Vallier: <https://publications.banque-france.fr/en/silent-spring-financial-system-exploring-biodiversity-related-financial-risks-france>

⁴³ See also "Half world's fossil fuel assets could become worthless by 2036 in net zero transition", *The Guardian*, 4 November 2021: <https://www.theguardian.com/environment/ng-interactive/2021/nov/04/fossil-fuel-assets-worthless-2036-net-zero-transition>

ecological transition given that no one has an interest in triggering the depreciation of assets that are currently still profitable.

We believe there are three reasons for clearing balance sheets of this mass of stranded assets.

- The first is financial stability. Balance sheets need to be protected from the risk of financial instability arising from a destabilising pool of stranded assets.
- The second is the reorganisation of balance sheets and the necessary reorientation of the banks' business models, without the impediment of an "unnecessarily" risky balance sheet.
- The third is the removal of the brake that stranded assets on banks' balance sheets would constitute: a bank has every incentive to continue financing non-aligned companies if it holds assets on those companies.

In addition to the protective and restructuring effect it would have for their holders, the isolation of these stranded assets would also contribute more broadly to the transition, enabling the economic structures that need to be transformed to be identified.

How should stranded assets be isolated? There are lessons to be learned from the divestment solutions that have been used to isolate non-performing assets such as non-performing loans. Solutions were sometimes private, either internal to the banking groups concerned or independent, and sometimes public or mixed. In 2017, the European Commission proposed the set-up of national asset management companies to tackle non-performing loans, so that banks could divest their bad loans. Since then, the Commission has shifted its focus to private securitisation solutions for non-performing loans.

In the case of stranded assets, the solution of private bad banks sometimes suggested (by Larry Fink, CEO of the asset manager Blackrock, for example) is difficult to envisage because the majority of these securities cannot and should not be reallocated. The aim is obviously not to make these assets easily tradable but, as far as possible, to remove them from the balance sheets of banks and any other investors.

It is therefore advisable to turn a priori towards mixed public/private—if not entirely public—solutions. A number of proposals along these lines have already been made, as identified and analysed by Daumas and Salin (2021⁴⁴). The Rousseau Institute (2021⁴⁵) and the United Nations Environment Programme Finance Initiative (UNEP-FI) favour a public solution involving the central

⁴⁴ Daumas L., Salin M., "A "climate bad bank" to navigate stranded assets? Exploring an emerging policy proposal", Brussels Economic Forum 2021
https://ec.europa.eu/economy_finance/arc2021/documents/posters/A_climate_bad_bank_to_navigate_stranded_assets_exploring_an_emerging_policy_proposal_paper.pdf See also the blog post summarising the article "Un élément de planification écologique - L'idée d'une structure de défaisance climat [An element of ecological planning - The idea of a climate-focused hive-off structure]", Mediapart, 8 April 2022.
<https://blogs.mediapart.fr/economistes-parlement-union-populaire/blog/080422/un-element-de-planification-ecologique-l-idee-d-une-structure-de-defaisan>

⁴⁵ Institut Rousseau, "Actifs fossiles, les nouveaux subprimes ? [Are fossil assets the new subprimes?]", 10 June 2021, Paris; <https://institut-rousseau.fr/actifs-fossiles-les-nouveaux-subprimes/>

bank. The International Energy Agency's proposals (2019⁴⁶), aimed at organising the closure of coal-fired power stations, and those of the Asian Development Bank, are open to public-private partnerships. The solution proposed by Daumas and Salin (2021) is also a mixed one, consisting of setting up "a network of decentralised bad banks under the supervision of a central coordinator attached to the financial authorities" with financing from the banks concerned and the central bank.

It seems to us that the question of whether the solution should be mixed or public in nature depends on the stranding risk of the assets, which is not an a priori given; it depends on the progress of the transition as a whole and the speed of transformation of each sector and of each company.

Mixed solutions could be considered in the case of stranded assets with a low stranding risk because they are held in companies that are in the process of aligning with transition objectives, assuming that this alignment effort is taken into account in the benchmark used. A hive-off fund, partly capitalised by the banks and partly by the public authorities, could then take over these assets at a discount. These assets would be retained by the fund. Their valuation would track the alignment effort of the issuing company. In the event of successful alignment, after a set retention period, the assets would be revalued and could be resold. The fund and the banks that divested the assets would have an interest in supporting the transformation of the issuing companies during the holding period. The supervisor would monitor the scheme closely and ensure that the assessment of stranding risk is not a lever for regulatory optimisation or circumvention.

For stranded assets with a high stranding risk, a public hive-off structure, if possible with a European dimension, would be more appropriate. The shortcoming of such a public solution is, however, well known. It amounts to socialising losses and unduly compensating actors responsible for the ecological crisis. As such, it would have to be accompanied by strong conditionalities. The sale of the stranded assets to the public hive-off structure would have to be subject to two conditions:

- Firstly, the divesting bank must reorient its future activities by completely excluding any new financing of high-carbon or polluting activities (*quid pro quo*); the hive-off structure would support the reorientation of balance sheets.
- Secondly, the transfer price must be low enough to limit public losses.

This type of "conditional" hive-off, by means of a public *cleaning bank*, would have a doubly positive effect for the transition, since, on the one hand, it would lift the inertia weight of the stock of stranded assets on the banks' balance sheet and, on the other, it would redirect the flow of new financing towards a low-carbon target. Hive-offs must always go hand in hand with structural action to promote the recomposition of balance sheets.

However, there are reasons to believe that a public structure with an autonomous budget could face the same difficulties as the Single Resolution Fund, which has only limited resources. This is not to say that the conditional hive-off of stranded assets, as described above, is impossible. But it endorses the idea of entrusting its management to an institution without budgetary constraints. The only institution in this situation is the central bank, which is able to create the money necessary for this hive-off operation. The latter could become "**the buyer of last resort of excluded assets**" through a **programme to take over stranded**, executed according to a defined schedule and at

⁴⁶ International Energy Agency, "Securing Investments in Low-Carbon Power Generation Sources", Technology Report, 2019.

necessarily low prices, determined in close collaboration with the supervisory authorities. Buy-back programmes were implemented to prevent the collapse of financial capitalism after the 2007-2008 financial crisis and again during the pandemic. It remains to be seen how necessary and urgent comparable programmes are in order to avoid collapse altogether in the face of the ecological crisis. However, they would require strong coordination between central banks and supervisory authorities, as well as with the fiscal authorities in charge of environmental policy (see below).

These assets would then end up being stranded on the central bank's balance sheet. What consequences would this have for its balance sheet? The central bank would create the monetary base needed to buy stranded assets (as it has done in its asset purchase programmes): bank reserves would increase by this amount on the liabilities side of the central bank. The central bank would record the amount of stranded assets purchased as assets. But, unlike traditional purchase programmes, the corresponding value would not be "current" since these assets would be stranded on the central bank's balance sheet without any possibility of resale. The transaction would be virtually equivalent to a central bank money issue with no counterpart payable since the asset acquired would be non-realizable (Couppey-Soubeyran and Delandre, 2021⁴⁷).

2.6 A common benchmark is needed to calibrate regulatory measures

The greening of banking regulation through the prudential and structural measures outlined above will need to be supported by a set of environmental assessment tools (for an in-depth discussion of these tools, see Kalinowski, 2022⁴⁸).

None of the adjustments presented above, whether prudential or structural, are possible without a common benchmark—sufficiently granular and dynamic—that enables degree of alignment with climate goals and, more broadly, ecological objectives to be assessed, or a reporting system (that collects information directly from companies). Both of these tools are essential. Without these, it will be impossible to identify green assets or assess the carbon footprint and alignment capacity of assets (credits and securities) on banks' balance sheets and, therefore, the climate-based calibration of prudential and structural rules will not be possible either.

Supervisory authorities, central banks and investors need a common benchmark, a standard, in order to identify green assets, move away from polluting and carbon-intensive assets and accelerate the realignment of finance towards low-carbon objectives. Private investors, both professional and individual, also need this guidance.

The European Commission tried to develop such a framework with its Green Taxonomy. Work on it began in 2018, the regulation defining the principle behind the taxonomy was adopted by the Parliament and the Council in 2020, and the phased introduction of the system is expected to be completed in 2023, subject to the subsequent adoption of delegated acts that will clarify and update

⁴⁷ See Annex 3 of "Monetary Transition: The Case for Money Serving the Common Good", https://www.veblen-institute.org/IMG/pdf/monetary_transition_jcs_pd.pdf

⁴⁸ "Mettre l'évaluation environnementale au service de la régulation financière [Making Environmental Assessment Serve Financial Regulation]", Veblen Institute Note, June 2022, Wojtek Kalinowski in collaboration with Julien Hallak and Cyril Cassagnaud.

the assessment criteria (see below). To be designated as sustainable, an activity must theoretically contribute to at least one of the six objectives of green finance: mitigating climate change, adapting to climate change, making sustainable use of water resources, supporting biodiversity, respecting the rules of the circular economy and waste recycling, and preventing and controlling pollution risks—without “substantially” undermining the other five.

But it is no panacea. For several reasons.

- To start with, the common benchmark must, above all, be **credible and consensual**. However, the political trade-offs made during the negotiation of the taxonomy shifted it away from its founding principle, namely that it should be based on “sound science and the precautionary principle”. As a result, significant risks of mischaracterisation have been introduced into the taxonomy: activities that exacerbate climate change may be labelled as “substantially contributing to climate change mitigation” or as “transition” activities. If these falsely-labelled “sustainable” activities become too extensive, the taxonomy becomes a tool for maintaining the status quo or even for exacerbating climate change, by directing financing towards these activities.
- Secondly, **as well as green activities, it is important that the benchmark can be used to identify “brown” activities and the capacity of these activities to be transformed**. The European taxonomy identifies green activities, but not (yet) carbon-based activities that need to be excluded, other than by the fact that they do not fall into the category of green activities or into either of the other two categories: “transition activities” or “enabling activities”⁴⁹. Instead, we need to be able to refer to a **“brown” taxonomy**, to really penalise polluting assets, as well as to an **“amber” or “neutral” taxonomy** so as not to disadvantage “neutral”—neither green nor brown—assets in this rebalancing of the market: it is not a matter of encouraging a windfall effect in green investment, but rather of diverting financial flows away from carbon assets and being able to perform a genuine reorientation of these financial flows. The report published in March 2022 by the European Platform on Sustainable Finance⁵⁰ makes proposals along these lines to the European Commission: the green taxonomy should be developed by adding a “red” category of harmful activities (typically coal), an orange or amber category of intermediate activities (gas and nuclear power could be included here⁵¹), and a category of neutral activities with neither good nor bad environmental impact.
- In addition, the framework should be **sufficiently granular**, defined at least by asset, at company level, to guide the recomposition of balance sheets and to aid the assessment of

⁴⁹ Transition activities are those for which there are no low-carbon alternatives, but whose greenhouse gas emissions support the best performance of the sector and are consistent with a pathway to decarbonisation. Enabling activities are those that produce high carbon emissions but enable the development of sustainable sectors (e.g. providing components or fuels for certain industries). Source Touteleurope.eu: <https://www.touteleurope.eu/economie-et-social/climat-quest-ce-que-la-taxonomie-verte-europeenne/>.

⁵⁰ “The Extended Environmental Taxonomy: Final Report on Taxonomy extension options supporting a sustainable transition”, March 2022. https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/220329-sustainable-finance-platform-finance-report-environmental-transition-taxonomy_en.pdf

⁵¹ <https://www.aefinfo.fr/depeche/670205-la-plateforme-europeenne-sur-la-finance-durable-propose-une-taxonomie-feu-tricolore-pour-sortir-d-une-logique-binaire>.

haircuts on stranded assets. However, the European taxonomy is not sufficiently granular, since it is defined by activity sector.

- Finally, a useful benchmark, being an instrument for managing transformation, must be able to adapt as the transformation proceeds. In other words, a benchmark needs to be **dynamic**⁵² (forward looking), whereas the European Commission benchmark is, on the contrary, static (backward looking), even though its adaptation is provided for by delegated acts. Ideally, the benchmark needs to be able to provide information on alignment capacity.

Despite all these reservations, the European Commission's green taxonomy does provide an initial step forward; but there is still a lot of room for improvement in bringing together the various criteria mentioned above. No benchmark will be perfect, as there are obvious potential tensions between the various features required.

For example, granularity is useful up to a certain threshold. If taken too far, it may reduce the benchmark's capacity to constitute a common and shared reference. Moreover, if this granularity is sought through the coexistence of different green rating systems or SRI (socially responsible investment) labels, there is a high risk of too much heterogeneity for investors to be able to refer to them. This is the problem with the current labelling systems, which are too heterogeneous to provide a reliable basis for evaluation.

In this respect, a public database would be useful⁵³, one that would complement systematic reporting requirements and provide investors, as well as researchers and associations, with reliable data with which to approach the issue. The European Single Access Point initiative⁵⁴ may make this possible. Public authorities could also process this data themselves, making it available to all: through analysis on the one hand, but more importantly by setting up a **public rating agency**, governed by all stakeholders, capable of offering well-founded, clear and transparent information that enables institutional investors—and citizens wishing to use their savings to help the transition—to get their bearings in green finance. This agency would also enable more agile, up-to-date management by updating ratings and highlighting financing needs based on technologies implemented and investments already made. It would allow the assessment of public policies to redirect financial flows.

Furthermore, its ability to be dynamic must not make the benchmark unstable. This would reduce the ability of public and private actors to refer to it. On the other hand, the stability of the European Green Taxonomy, which is not dynamic, should not be overestimated given the political interference that will necessarily be involved in its implementation and updating. The controversies surrounding the inclusion of gas and nuclear as “transition energy” within the European taxonomy

⁵² See “The Extended Environmental Taxonomy: Final Report on Taxonomy extension options supporting a sustainable transition”, Platform on Sustainable Finance, March 2022.

https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/220329-sustainable-finance-platform-finance-report-environmental-transition-taxonomy_en.pdf

⁵³ As proposed, for example, in the report “Choisir une finance verte au service de l'Accord de Paris. Évaluation des meilleures pratiques en matière de finance verte et d'organisation des places financières dans l'Union européenne [Choosing Green Finance for the Paris Agreement. Assessment of best practices in green finance and the organisation of financial centres in the European Union]” by Alexandre Holroyd in 2020.

⁵⁴ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12776-Transparence-financiere-mise-en-place-au-niveau-de-lUE-dun-point-dacces-unique-aux-informations-des-entreprises_fr.

are an illustration of how political factors interfere with the development of such standards. The legislative process leading to the creation of the taxonomy and the production of delegated acts by the Commission was influenced by the “economic patriotism” of national leaders, the dynamics of intergovernmental negotiations and epistemological clashes between expert institutions. Only a strong and convergent political will among EU countries will make it possible to neutralise, or at least attenuate, these interferences (see Section 3).

2.7 How can non-bank financial intermediation be greened?

While this note focuses on the greening of banking regulation, failing to act on non-bank financial intermediation exposes us to the risk that only part of the financial system will be greened, or that there will simply be a shift of carbon assets to the balance sheets of institutions that will not be subject to the same rules and that will not be forced to recompose their balance sheets in the same way. An effective way of accelerating the greening of non-bank financial intermediation (investment funds, asset managers, insurance companies, etc.) would be to make it mandatory for all these financial institutions within the European Union to perform the climate reporting recommended by the Financial Stability Board’s Task Force on Climate-Related Financial Disclosures (TCFD), while ensuring that the same simple and common methodology is applied to ensure standardised carbon footprints, and to simultaneously impose a tax that is proportional to the declared carbon footprint.

Financial transaction tax (FTT), a long-standing issue in European financial regulation projects, would also be an instrument that could promote the greening of finance. Firstly, the proceeds of the FTT, if an agreement is reached to implement it, could be used to combat climate change and, more specifically, to set up, for example, an agency to enforce climate reporting, process the related data and produce a public climate rating based on the reporting data. Secondly, as the FTT would further penalise short-termist investors who multiply transactions, it would help to extend investors’ investment horizon, essential for climate investments. It would contribute to this most effectively if its base were extended to intraday transactions, as this would make it possible to reduce the share of high-frequency trading, which has greatly contributed to reducing the holding time of assets and therefore the horizon of investors.

Going beyond that, a greening of the FTT could be envisaged by making the tax rate depend on the carbon footprint of the assets traded. This would make the design of the tax, which has already proved very divisive in discussions and negotiations on the subject, more complex. Dafermos *et al.* (2021⁵⁵) advocate a more intelligent proposal: a “Green Financial Transaction Tax”, which would see the most carbon-intensive funds, particularly index funds, subject to the tax. This would be a useful complement to another provision that they support to avoid leaving shadow banking out of the greening process: taking environmental criteria into account when calculating the haircuts applied to assets in the context of repo transactions (temporary exchanges of securities for cash) and margin calls in the context of derivatives transactions.

Finally, we must consider the strategic role that public financial intermediaries are likely to play in the process of greening the financial system, even if their policies in this area are still limited (Plihon

⁵⁵ Dafermos Y., Gabor D., Nikolaidi M., van Lerven F., “Greening the UK financial system - a fit for purpose approach”, SUERF Policy Note Issue No. 226, March 2021.

& Rigot⁵⁶). This is illustrated by the policy of the EIB, which presents itself as the European Climate Bank, within the framework of the European Green Pact, and that of national public investment banks, such as Bpifrance, which also presents itself as a climate bank.

3. Financial regulation in the climate policy mix: institutions, coordination and governance

There are several institutional dangers to the greening of financial regulation in the European context. The first relates to the complexity of the process and the overlapping responsibilities of national and supranational authorities within the European governance system of financial regulation and supervision: this may lead to regulatory arbitrage. The second stems from the coexistence, within a supervisory area that is not fully integrated, of legal acts that lay down the principles of regulation and of delegated acts that apply them in practice: when national authorities give priority to defending their own national banking and financial sector over the financial stability of the European Union as a whole, there is a high risk that these regulations will be loosened and diluted. Only a strong political will for greening will ward off these dangers, which could otherwise reduce the scope or effectiveness of green financial regulation. The latter will also have to be linked to other essential policies within a genuine climate policy mix. This new, connected approach will inevitably involve changes to the institutional framework.

3.1 A danger of arbitrage due to incomplete EU financial governance

While the financial governance developed by the Banking Union represents a better option than the Lamfalussy process, which relied essentially on the proper coordination of national agencies (De Vischer *et al.*, 2008), it remains incomplete and does not avoid potential conflicts in the distribution of competences between regulatory authorities. These conflicts undermined the ability of the Lamfalussy process to prevent the financial crisis of 2007-2008 and risk undermining the implementation of the greening of financial regulation.

The incompleteness of EU financial governance is both geographical and institutional. Firstly, geographically, by delegating micro- and macroprudential supervision to the ECB, the European authorities have increased the possibilities for regulatory arbitrage in the financial sector, taking advantage of differences in status and supervision between the euro and non-euro zones. On the one hand, final responsibility for supervising financial institutions located within the euro zone lies with the Single Supervisory Mechanism (SSM), where ECB representatives dominate the decision-making process. On the other hand, non-euro zone institutions are subject to decisions by the European Banking Authority (EBA), which has weaker regulatory powers than the SSM (Babis, 2019).

If this imbalance continues, two potential risks could materialise if financial regulation is truly greened. On the one hand, Western European financial institutions could take advantage of this asymmetry in supervision and regulation to circumvent the new greening rules by redirecting

⁵⁶ *Op. cit.*, 2022.

capital flows to countries outside the Banking Union. On the other hand, the control of governments outside the banking union over their national regulators and supervisors could also lead to problematic forms of “greenwashing”.

At institutional level, the incompleteness of the Banking Union is mainly due to its scope, which mainly involves the EU banking sector. However, non-bank financial institutions involved in shadow banking, such as pension funds and investment funds, represent a growing part of the financial ecosystem, where their investment decisions have a strong influence on the valuation and liquidity of financial assets, thanks to their strong connections with the traditional banking sector (Fichtner *et al.*, 2017).

The absence of specific rules for shadow banking could lead to risks of regulatory arbitrage and a dilution of the standards to support the greening of the economy. For example, if investment funds, such as Blackrock, Vanguard or State Street, decide to include certain polluting assets in their so-called “green” investment products, competition between regulatory standards could materialise and slow the drying up of financial flows to polluting activities. These risks are not negligible insofar as the current “reputational” strategies of investment funds are prompting them to make repeated pronouncements in favour of the greening of finance, while the composition of their investment products—as well as their voting decisions within the boards of directors of the companies in which they are shareholders—strongly qualify the seriousness of their commitment to sustainable investments.

3.2 The risk of loosening via delegated acts in a poorly integrated space

Furthermore, the transfer of regulatory and supervisory powers to a supranational level—initiated by the creation of the Banking Union—is not sufficiently complete to dispel the risks associated with regulatory dilution strategies applied by national authorities. We should remember that one of the causes of the 2007-2008 financial crisis was the divergent interests and cultures of national supervisors and regulators, who were more interested in protecting the business models of their own financial systems than in enforcing uniform European rules to avoid regulatory arbitrage. This same type of arbitrage could occur in both the production of green regulatory standards via the legal instrument of delegated acts and in supervisory practices that allow national authorities a certain level of discretion in the application of regulations.

Firstly, although the level 1 financial rules⁵⁷ contained in the Single Rulebook represent a harmonised regulatory framework, they are never sufficiently precise and need to be regularly updated in order to be used in financial supervision. In fact, it is the level 2 delegated acts, approved by the Commission and following the advice of the EBA, for example clarifications on the calculation of the short-term liquidity coverage ratio included in CRD IV, that provide financial supervisors with the relevant valuation standards and norms to apply the general principles of financial regulation.

However, the legal status of level 2 delegated acts provides states with the opportunity to dilute financial regulations more easily. Indeed, countries can form coalitions, through meetings of their regulatory agencies at the EBA or their national representatives taking part in the EU decision-making process, to push the Commission to bend the financial rules via delegated acts. While the

⁵⁷ For example, the Capital Requirement Regulation, the Bank Recovery and Resolution Directive and the CRD IV.

Council and the Parliament may object to the Commission's delegated acts, they must do so by a majority or qualified majority of their members respectively, without being able to propose amendments. Therefore, if either of these two institutions has a majority in favour of an objection, the delegated act is annulled in its entirety.

The democratic legitimacy of this legal technique is questionable. By cutting off the possibility of amendments, the procedure represents an infringement of the democratic deliberation process that should be the basis for the production of regulatory norms in our democratic systems. According to European jurists, this infringement is legitimised by a difference in the nature of the two levels of rules: level 1 rules are "political" in nature and are therefore subject to the traditional procedures for democratic deliberation; whereas those of level 2 are "technical" and, as such, are more in line with a rationale of efficiency than representativeness (Brandsma, 2016). Nevertheless, as the example of the taxonomy shows, this separation between political and technical issues is artificial: it is often the technical details of implementing new rules that ultimately enable some financial institutions to minimise their efforts to adapt to new regulations. The complexity of standards is often instrumentalised (Coupey-Soubeyran & Scialom, 2022).

To sum up, the centrality of delegated acts in the implementation of the Single Rulebook could undermine the greening of financial regulation. European States are likely to seek to favour their own industry by forming alliances to put pressure on the Commission in the formulation of its delegated acts. The legislative authorities will then be faced with a fundamental dilemma as they have no other leverage than to annul the delegated act in its entirety—as the European Parliament did in the case of the green taxonomy, preferring to delay the whole process rather than accept the inclusion of gas and nuclear as green or "transition" energy sources. Some of the proposals we put forward in this report, such as the introduction of systemic climate buffers, are particularly sensitive to this risk as the size of the buffer and the composition of the assets included are considered to be technical matters that will have to be updated via delegated acts.

Moreover, while the creation of a single European supervisor has reduced the discretion of national supervisory agencies, they still tend to protect their national financial sector from their European competitors through intergovernmental bargaining at meetings of the single supervisory mechanism (Violle, 2021). In other words, the governance of the Banking Union has certainly tightened national discretion, but it has not changed the predilections of national supervisors (to adapt European rules to the characteristics of their national sector to give it an advantage over their competitors) or the possibility of intergovernmental bargaining. The transposition of this issue to the challenge of greening finance is fairly straightforward: it is likely that national agencies will try to adapt the new green rules to the practices and characteristics of their national banking sector through intergovernmental bargaining, which would increase the risks of national discretion and, by the same token, of regulatory arbitrage by private banks.

3.3 What institutional solutions and principles are needed to address these dangers?

Good cooperation between the EBA and the ECB could overcome the geographical incompleteness of European financial regulation. Cross-appointments between the two institutions and regular communication channels should ensure this. However, it is fanciful to try to solve the problems raised by the discretionary powers of supervisory agencies and delegated acts through increased

centralisation in favour of ECB staff. First of all, quite apart from the excessive concentration of powers that would result, a supranational institution always needs national branches to deal with national traditions and cultures, which may differ greatly from one country to another and which justify cooperation between national and supranational agencies. The current structure of the single supervisory mechanism reflects this need for cooperation between national and supranational authorities. Furthermore, the practical implementation of financial regulation will always require delegated or executive acts; otherwise, regulatory standards would be even slower to adapt to the continuous evolution of financial techniques and practices.

Rather than seeking to solve these problems or to create potential scapegoats by increasing the transfer of powers to supranational agencies, national authorities must take responsibility, stop putting the interests of their own banking and financial sector ahead of overall stability, and stop trying to relax new supervisory and regulatory rules for the benefit of their national sector. Put another way, no technocratic band-aid will cure the lack of political commitment to the announced greening objectives (Van't Klooster, 2021). In order for this commitment to grow, connections between the financial and political spheres need to be reduced, connections that are currently maintained by revolving doors and the intertwining of bank and state balance sheets (France & Vauchez 2018; Scialom, 2020).

3.4. Global governance: coordination within the climate policy mix

In the face of the challenges presented by climate change, the greening of financial regulation discussed in this note is necessary but certainly insufficient. It must be coupled with the implementation of other complementary instruments available to the authorities, in particular taxation and monetary policy. This raises the question of the coordination of monetary, prudential and taxation policies, and the cooperation between the public authorities responsible for these policies (Bolton *et al.*, 2020, *op. cit.*).

The **climate diapason** affects each of these policies and raises the issue of how they are connected. The greening of financial regulation must therefore go hand in hand with the greening of monetary policy. It is a question of coherence between the actions of the institutions in charge of these policies and of their necessary alignment, in order to win the support of all the actors concerned. It is not conceivable to subject banks to prudential requirements adjusted to climate risks if, at the same time, their refinancing conditions (rates, volume, collateral, etc.) do not include climate criteria, and vice versa. This **need for coherence** is even greater for the ECB, which is responsible both for conducting monetary policy and for supervising systemically important banks in the euro zone. It has to orchestrate both. Any divergence in direction, e.g. one greening and the other not, or at very different rates or degrees, would be detrimental to the effectiveness and credibility of the greening achieved.

In addition to the need for coherence, the simultaneous greening of financial regulation (in its regulatory and supervisory aspects) and monetary policy will also, a priori, provide important synergies that produce mitigating action commensurate with the scale of the challenge. For example, the structural action to effect the recomposition of bank balance sheets, as we proposed above, and “green TLTROs” (targeted longer-term refinancing operations for climate and environmental objectives) would each boost the effectiveness of the other. Similarly, the tilting of

securities purchases towards sustainable economic activities (“green QE”) would enhance the liquidity of green finance and facilitate the inclusion of green assets on banks’ balance sheets.

The greening of financial regulation and monetary policy does not make sense without the greening also of fiscal policy, which is, or should be, the backbone of the ecological transformation (Krogstrup and Oman, 2019⁵⁸). Monetary policy and financial regulation must be linked to and facilitate this. This is also why the greening of monetary policy should not be limited to the “light green” options of greening refinancing operations, collateral and asset purchases within the existing institutional framework. The central bank would make a more active contribution to mitigating climate change and restoring biodiversity by financing the ecological transition, by providing fiscal policy with the financial means for take action (Coupey-Soubeyran, 2020⁵⁹).

This policy mix necessarily implies new rules and an adaptation of the institutional framework. The 2008 financial crisis led to the abandonment of the separation between monetary and financial stability policies, and to the linkage of monetary and prudential policies, giving a major role to central banks. The climate crisis should be prompting new “governance” of economic policies based on cooperation, as highlighted by publications from central banks (Bolton *et al.*, 2020, *op. cit.*). One of the principles of this new governance is that financial regulation policy should be coordinated with the other levers of economic policy—fiscal and tax measures—for example through the set-up of a new body such as an ecological planning council.

This expanded notion of financial regulation, contributing to the greening of financial flows, has not yet given rise to any real debate, a fact condemned by Cardona and Evain (2021⁶⁰). There are various objections to this expanded notion, on a number of different grounds. It places financial regulation within the overall framework of economic and social policy, which involves cooperation between all the public actors concerned, as we have just seen, and ultimately calls into question the principle of central bank independence. It also involves abandoning the principle of market neutrality held dear by central bankers and regulators, despite the fact that it has been used mainly as a pretext. Finally, it requires moving past the regulators’ traditional risk-based approach and towards a structural approach, involving the planned decarbonisation of balance sheets as we proposed earlier (see Table).

⁵⁸ Krogstrup S., Oman W., 2019, “Macroeconomic and Financial Policies for Climate Change Mitigation: A Review of the Literature” IMF Working Paper No. 19/185.

⁵⁹ “The Role of Monetary Policy in the Ecological Transition: An Overview of Various Greening Options”, Veblen Note, Veblen Institute, 2 December 2020. <https://www.veblen-institute.org/The-Role-of-Monetary-Policy-in-the-Ecological-Transition-An-Overview-of-Variou.html>

⁶⁰ Cardona M. and Evain J., “Can financial regulation accelerate the low-carbon transition? I4CE Report, January 2021.

TABLE: APPROACHES TO GREEN FINANCIAL REGULATION

Approaches to green financial regulation	“Preservation of market mechanisms”	“Risk-based approach”	“Structural approach”
Theoretical foundations	<ul style="list-style-type: none"> Market allocation of resources Consideration of market failures 	<ul style="list-style-type: none"> Market allocation of resources Consideration of market failures Systemic risk Economic and financial instability induced by climate risk 	<ul style="list-style-type: none"> Dual materiality of climate risk (financial impact of climate/physical impact of finance) Informational <i>and</i> allocative inefficiency of markets
Policies	Market discipline	(Macro)Prudential	Structural
Ecological approach	<ul style="list-style-type: none"> Internalisation of market failures using market solutions (carbon price, tradable allowances) Market price signal 	<ul style="list-style-type: none"> Mainly climate risk Indirect approach, from a financial stability perspective Mark Carney’s 3 risks (physical/transition/liability) Systemic climate risk 	<ul style="list-style-type: none"> All ecological risks (not only climate risk, also biodiversity) Green planning Immeasurable and irreversible ecological costs Ecological collapse
		Green swan ⁶¹	
Financial regulation policy	<ul style="list-style-type: none"> Good practice Communication of information Transparency 	<ul style="list-style-type: none"> Mandatory banking transition plan within Pillar 2 (I4CE)⁶² Extension of Basel III New green pillar Risk management Failure management 	<ul style="list-style-type: none"> Ecological regulation Orientation of financial flows Credit guidance (price and volume controls; allocation)

⁶¹ Bank for International Settlements & Banque de France, “Central banking and financial stability in the age of climate change”: https://www.banque-france.fr/sites/default/files/medias/documents/preface_green-swan_fvg.pdf

⁶² Evain J., C. Calipel, L. Nogues (2022), “Include mandatory banking transition plans within Pillar 2”, I4CE Institute for Climate economics, April 2022: <https://www.i4ce.org/en/publication/include-mandatory-banking-transition-plans-within-pillar-2/>

Financial regulation instruments	<ul style="list-style-type: none"> • Undistorted free market rules • Market discipline • Transparency • Disclosure • CSR 	<ul style="list-style-type: none"> • Adjustment of microprudential rules to climate risk • Systemic climate risk buffer 	<ul style="list-style-type: none"> • Two structural rules: <ul style="list-style-type: none"> ○ Flow rule: ban on new financing in fossil and carbon sectors ○ Stock rule planning to increase share of green assets and decrease share of carbon assets
Banks' balance sheets	<ul style="list-style-type: none"> • Greening • Balance sheet diversification (brown/green) 	<ul style="list-style-type: none"> • Partial decarbonisation • Adjustment of balance sheets 	<ul style="list-style-type: none"> • Total decarbonisation • Balance sheet restructuring, radical transformation
Monetary policy	<ul style="list-style-type: none"> • Market neutrality 	<ul style="list-style-type: none"> • Exclusion from collateral of assets with too much climate risk exposure • Reallocation of securities purchases to assets less exposed to climate risks • Exclusion from refinancing operations of counterparties with too much climate risk exposure 	<ul style="list-style-type: none"> • Purchase of securities supporting the ecological transition • Central bank refinancing linked to the environmental quality of banks' loans • Alignment of collateral committed by banks to the central bank with climate targets • Direct financing of the ecological transition
Fiscal and tax policy	<ul style="list-style-type: none"> • Shadow price of carbon • Carbon taxes 	<ul style="list-style-type: none"> • Public guarantees 	<ul style="list-style-type: none"> • Public subsidies • Public investment in ecological transformation (green infrastructure, green R&D, green education) • Public banks • Green planning⁶³

⁶³ Julien Hallak, Dominique Plihon, "La planification écologique - Une approche institutionnaliste [Ecological Planning - An Institutional Approach]", Veblen Note, 2021.

How banking regulation can serve the ecological transition

Transition speed	<ul style="list-style-type: none"> • Slow 	<ul style="list-style-type: none"> • Medium (trade-off between physical and transition risk) 	<ul style="list-style-type: none"> • Fast but orderly
References	<ul style="list-style-type: none"> • European Association of Environmental and Resources Economists (EAERE)⁶⁴ 	<ul style="list-style-type: none"> • Mark Carney (“Breaking the tragedy of the horizon⁶⁵”) • Bank for International Settlements (“The Green swan⁶⁶”) • NGFS⁶⁷ • ESRB • ECB⁶⁸ • EBA⁶⁹ • Irene Monasterolo⁷⁰ • Emanuele Campiglio⁷¹ 	<ul style="list-style-type: none"> • Yannis Dafermos (DEFINE - Dynamic Ecosystem-FINance-Economy-model)⁷² • Inge Røpke (ENERGISE project)⁷³ • Veblen Institute⁷⁴ • Louison Cahen-Fourot⁷⁵

⁶⁴ <https://www.eaere.org/statement/>

⁶⁵ <https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability>

⁶⁶ <https://www.bis.org/publ/othp31.htm>

⁶⁷ <https://www.ngfs.net/en>

⁶⁸ ECB, “Guide on climate-related and environmental risks. Supervisory expectations relating to risk management and disclosure”, November 2020.

<https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr201127~5642b6e68d.en.html>

⁶⁹ “The role of environmental risks in the prudential framework”, Discussion Paper EBA/DP/2022/02, 2 May 2022: https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Discussions/2022/Discussion%20paper%20on%20the%20role%20of%20environmental%20risk%20in%20the%20prudential%20framework/1031947/Discussion%20paper%20on%20the%20role%20of%20ESG%20risks%20in%20prudential%20framework.pdf

⁷⁰ Irene Monasterolo (2020), “Climate change and the financial system”, *Annual Review of Resource Economics*, 12, 299-320, <https://www.annualreviews.org/doi/pdf/10.1146/annurev-resource-110119-031134>

⁷¹ Campiglio, E. (2016), “Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy”, *Ecological economics*, 121, 220-230.

⁷² <https://yannisdafemos.com/an-ecological-macro-model/>

⁷³ <http://www.energise-project.eu/researcher/inge-ropke>

⁷⁴ <https://www.veblen-institute.org/The-ECB-at-a-time-for-decisions-1-2.html>

⁷⁵ Louison Cahen-Fourot, “Central banking for a social-ecological transformation”, *Ecological Economic Papers*, 40, WU Vienna University of Economics and Business, Vienna.

Conclusion

Finance and climate have a complex two-way relationship: on the one hand, climate change is a potential source of financial instability, and on the other hand, finance, as it currently operates, contributes to climate change. So far, monetary and financial authorities have focused on the impact of climate change on the financial system, and on banks in particular. The publications of the NGFS are aligned with this perspective.

This note has sought to explore the principles behind the greening of financial regulation and how it can be achieved. Its main conclusion is that there is a need to supplement the existing prudential framework in two areas. Firstly, to adapt and strengthen existing macroprudential supervision in order to take the systemic dimension of climate risk into account. Secondly, to introduce a new form of “structural” regulation, aimed at directing financial flows in line with climate imperatives, impacting the composition of bank balance sheets. Structural regulation would help to overcome the inefficiency of financial markets in allocating financial flows to non-carbon activities.

This note also examines the issues raised by this greening of financial regulation, including how to handle banks’ “stranded assets” invested in carbon intensive activities, as well as the need for a common benchmark (green taxonomy) for calibrating regulatory measures. This note also analyses the institutional dimensions of the greening of financial regulation. The implementation of these new regulatory measures could lead to regulatory arbitrage on the part of banks, given how incomplete the current financial regulatory system is within the European Union. Lastly, the note looks at the outline of the “green policy mix” that needs to be implemented, connecting the key economic policy instruments—prudential, monetary and fiscal—to support the shift in trajectory towards a decarbonised society.