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Climate change



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Call to arms on climate change

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Following Mark Carney's "breaking the tragedy of the horizon" speech in 2015, it became apparent central banks and regulators needed to sit up and take responsibility for risks emerging as a result of climate change.

Two years later, in December 2017, eight central banks and supervisors established the Central Banks and Supervisors Network for Greening the Financial System (NGFS). The goal of this network is to contribute to the analysis and management of risks in the financial sector and to mobilise mainstream finance to support the transition toward a sustainable economy. Seventeen months from its founding, the NGFS has 36 members drawn from five continents, and six multinational organisations as observers.

The NGFS published its first progress report at the end of 2018,¹ concluding that climate-related risks are a source of financial risk and, as such, fall within the supervisory and financial stability mandates of central banks and financial supervisors.

To implement appropriate supervision, the first step for central banks and regulators is to better understand the possible financial impacts – which can only be done if data governance is improved and appropriate monitoring frameworks put in place.

The NGFS has conducted its own assessment of climate risks for financial institutions,² but the tools and methodologies are still at an early stage, and there are several analytical challenges, including limited quality and availability of data, developing taxonomies and definitions, and a need to build intellectual capacities in translating the scientific understanding of climate change into financial risk assessments.

A discussion around actionable policies, however, has not been stalled by these setbacks, and central banks worldwide have already begun implementing regulation geared towards transitioning to a low-carbon global economy. In March, the Netherlands Bank became the first in the world to sign up to the principles for responsible investment, a set of environmental, social and governance criteria for investors.

It appears Carney's call to arms was heard, but there remains an abundance of work to be undertaken, and *Central Banking* hopes this report will provide some guidance on issues that so desperately need to be discussed. □

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1. Network for Greening the Financial System, *First progress report*, October 2018, <https://bit.ly/2CFcGbA>
2. Idem, *First comprehensive report*, April 2019, <https://bit.ly/2v6wAq3>

Why two degrees matters to central banks

Ulrich Volz explores why strong leadership is required from central banks and supervisors to ensure the financial sector will be in a position to weather climate risks.



Increasing public awareness of the perils of climate change and the political commitment of the international community to address these challenges, as embodied in the Paris Agreement – the central aim of which is to maintain a global temperature rise this century well below 2° Celsius. have intensified discussion on the role of central banks in addressing risks associated with climate change and in supporting the development of green finance.

This has not been a purely theoretical debate. A growing number of central banks and supervisors have already adopted green finance policies or guidelines, or have begun to incorporate climate risk into macro-prudential frameworks. This has given rise to the launch of initiatives such as the Sustainable Banking Network – a community of financial sector regulatory agencies and banking associations from emerging markets committed to advancing sustainable finance in line with international good practice – and the Central Banks and Supervisors Network for Greening the Financial System (NGFS). The latter was launched in December 2017 as a ‘coalition of the willing’ after the Group of 20 Sustainable Finance Study Group faltered over the US government’s hostility towards initiatives related to climate change mitigation and adaptation. The NGFS has grown from eight founding members to 36 members and six observers.

In April, the NGFS published a progress report, *A call for action*, **A call to action** which highlights climate change as a source of structural change in the economy and financial system, and asserts that it therefore falls squarely within the mandate of central banks and supervisors to deal with its consequences.

The report issues six recommendations to the central banking and supervisory community:

1. To integrate climate-related risks into financial stability monitoring and micro-supervision
2. To integrate sustainability factors into their own portfolio management
3. To bridge data gaps and make available data relevant to climate risk assessment
4. To build in-house capacity and collaborate within their institutions – with each other and with wider stakeholders – to improve understanding of how climate-related factors translate into financial risks and opportunities, and to encourage technical assistance and knowledge sharing
5. To support the recommendations of the Task Force on Climate-related Financial Disclosures
6. To support the development of a taxonomy that enhances the transparency around which economic activities contribute to the transition to a green and low-carbon economy, and those that are more exposed to climate and environment-related risks.

The NGFS report – and the agreement of all institutions involved on these recommendations – is a reflection of how the discourse has changed in a relatively short space of time. When Bank of England (BoE) governor Mark Carney presented his now-famous speech, *Breaking the tragedy of the horizon*, at Lloyd’s of London in 2015 – in which he highlighted the need for supervisors to address financial stability risks related to climate change – he received many sceptical responses and accusations of ‘mission creep’.

I have experienced this scepticism first hand. When I started a research

project on climate risk and green finance with Bank Indonesia almost a decade ago, friends and colleagues at other central banks were flabbergasted as to why a central bank would be interested in such a topic. When I wrote and presented a paper in 2014 on the role of central banks in greening the financial system – which highlighted how climate-related risk can impact macroeconomic and financial stability, and argued that central banks and supervisors have a role to play in addressing this – the standard response was that central banks were already overburdened with other tasks and that this was simply not their job.

What central bank mandates say The time when central bankers would risk their reputation by raising climate issues is over. A general consensus is emerging – as reflected in the NGFS report – that central banks and other supervisory bodies cannot ignore climate change. The impending climate crisis, which will have a potentially disastrous impact on our economies and requires urgent policy action, is undoubtedly changing the policy environment in which central banks are operating.

Climate change not only has significant implications for the core operations of central banks, it also poses the question of their broader role in addressing climate change-related risk and mitigation. However, there is no agreement on the extent to which climate change – or other environmental risks – should be incorporated into existing operational frameworks, or even whether central banks should play a supportive or promotional role in scaling up green finance. This may not be surprising, given the different histories and policy traditions of central banks in different parts of the world and the differences in their mandates.

How far central banks can go as an overall catalyst for mainstreaming green finance and incorporating climate risks into central banks' core policy frameworks depends significantly on their mandates. A close investigation of the legal objectives of central banks is therefore essential to substantiate the ongoing discussion against the background of the increasingly pressing issue of responding to global warming. In a recent study prepared for an NGFS conference on the role of central banks in scaling up green finance hosted by the Bundesbank – renowned and respected for its conservative credentials – Simon Dikau and I investigated the extent to which climate-related risks and mitigation policies fit into the current set of central bank mandates and objectives. To this end, we conducted a detailed analysis of these mandates and objectives using the International Monetary Fund's Central Bank Legislation Database, and compared these to current arrangements and sustainability responsibilities that central banks have adopted in practice.

Our analysis of 133 central bank mandates revealed that only 16 of the investigated central banks and monetary unions operate under a mandate that explicitly includes the promotion of sustainable growth or development as an objective. However, a further 38 central banks are tasked with supporting their governments' national policy objectives, which – thanks to the Paris Agreement and the UN's Sustainable Development Goals – should almost universally comprise sustainability. This means 54 central banks – or 41% of our sample – are mandated to either enhance the sustainability of growth and development or to support their governments' potential sustainability policy objectives. This is usually conditional on not interfering with achieving their primary objective, which typically includes price stability.

However, our analysis also shows how climate risks may directly impact



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the traditional core responsibilities of central banks – most notably price and financial stability. The implication is that central banks will have to incorporate climate and mitigation risks into their core policy implementation frameworks to efficiently and successfully safeguard price and financial stability, even if their mandates make no explicit or implicit reference to sustainability. Not all central banks that have joined the NGFS have an explicit or implicit sustainability objective in their mandates. However, they have all accepted climate change risks are a source of financial risk and have thus concluded that ensuring the financial system’s resilience towards these risks lies within their mandates.

A role of central banks in promoting sustainability in the financial system and greening the economy is more contentious, not least because of the possibility of distortion that direct interventions into the market aimed at greening the economy might have, but also due to potential conflicts with central banks’ primary goals. It is therefore essential that a supporting role of central banks is covered by their mandates. The fact central banks have a large number of instruments to affect the allocation of capital towards green investment does not necessarily imply they should be tasked to do everything they possibly could. Starting with existing central bank mandates – which differ across countries and monetary areas – and also taking into consideration different central banking traditions, discussion is needed about the extent to which central banks should support their respective governments’ sustainability policies.

The European Central Bank (ECB) and the European System of Central Banks (ESCB) provide good examples of climate change mitigation as a secondary goal. For the eurozone, Article 127 (1) of the Treaty on the Functioning of the European Union clearly defines price stability as the primary objective of the ESCB. However, it also states that “[w]ithout prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Union with a view to contributing to the achievement of the objectives of the Union as laid down in Article 3 of the treaty”. Article 3 (3) of the treaty, in turn, includes the objective of “sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment”. This implies the ESCB’s mandate does indeed include – *inter alia* and without prejudice to the objective of price stability – supporting the EU’s environmental objectives. This gives rise to the question of the extent to which political authorities and the public at large want the ESCB to play an active role in supporting environmental objectives.

**The eurozone –
2°, not 2%**

As discussions in the eurozone over the course of the euro crisis showed, it is not solely up to a central bank to interpret its mandate – ultimately, central bank policies need to be based on public and political support.

Benoît Cœuré, a member of the executive board of the ECB, recently addressed the underlying question of whether environmental issues are part of the ECB’s mandate, arguing that, while the treaty mandates the protection and improvement of the quality of the environment, it also opens up the question of “why the ECB should not promote industries that promise the strongest employment growth, irrespective of their ecological footprint”, thereby pointing to potentially conflicting objectives outside of the ECB’s core functions. On the issue of how climate change affects the conduct of monetary policy, Cœuré reasons it may “complicate the correct identification of shocks relevant for the medium-term inflation outlook ... increase the likelihood of extreme events and hence erode central banks’ conventional policy space more often, and ... raise the number of occasions on which central banks face a trade-off forcing them to prioritise stable prices over output”.

However, Cœuré argues that, generally, “there is scope for central banks themselves to play a supporting role in mitigating the risks associated with climate change while staying within [their] mandates”. Furthermore, regarding the threat of material climate-related risks, the ECB states, while it does not see these risks as a threat in the short term for financial stability in the eurozone, banks may be indirectly but substantially affected by “more frequent and severe extreme weather events or by the ongoing transition to a low-carbon economy”.

Central banking below sea level The case of the Netherlands Bank’s (DNB’s) mandate and objectives offers further insights into the complexity of assessing a central bank’s green role based on its legal objectives. As part of the ESCB, the DNB’s objectives and tasks are determined by the same provisions of the treaty that determine the mandates of all national EU central banks – namely price stability, support for the general economic policies of the EU and to act in accordance with open-market principles. Despite the absence of sustainability from its statutory act, today the DNB is credited for having formally integrated sustainability into its operational framework. This was because of a deliberate decision in 2011 by the then newly appointed board of the DNB to update the central bank’s mission statement.

Against the background of the 2007–08 crisis, financial stability was considered by the DNB’s board to be a necessary central pillar of its mission statement to differentiate the new approach from the pre-crisis one, which had proven to create “prosperity [that] had turned out not to be sustainable”. The DNB’s mission statement – both as a central bank and financial supervisor – since 2011 requires the DNB “to safeguard financial stability and thus contribute to sustainable prosperity in the Netherlands”. At the time, the term ‘sustainability’ did not necessarily have the same connotation as today regarding climate change and the greening of financial systems. Nonetheless, this has led the DNB to incorporate sustainability considerations in most of its core operations, including economic research. Furthermore, the DNB recognises the necessity to contribute to sustainable development. While Frank Elderson, executive director of the DNB and chairman of the NGFS, is careful to say that “as a central bank and supervisor, we must not overstretch our mandate”, he has also emphasised that the DNB does consider ways to “impact investment decisions and credit

allocation” and help “transform the financial infrastructure” to take into account the transition to a low-carbon economy to fall under its mission of “safeguarding sustainable prosperity”.

The BoE is an example of a central bank that makes no explicit reference to sustainability in its mandate, although it is – at least for the time being – a member of the ESCB and therefore bound by the same provisions of the treaty as all other central banks of EU member states. The bank’s proactive stance towards addressing climate risks has been condemned by some as being part of the bank’s mission creep of offering warnings on topics some consider too political. However, the BoE’s mandate obliges it to support the government’s economic policy and objectives for growth, which are set out in the Treasury’s annual remit for the Monetary Policy Committee. The latest remit explicitly and repeatedly sets out “sustainable and balanced growth” as the government’s economic policy objective. It could therefore be argued that the BoE is thereby also furnished with an indirect sustainability objective through supporting the government’s sustainable economic growth policy.

Carney strongly maintains the BoE’s responsibility to identify, warn against and mitigate any kind of threat to financial stability, including those from climate change-related risks. Regarding the BoE’s approach to mitigating climate risks or greening the financial system, Carney voiced distaste for a “surreptitious” approach or implicit guidance through central bank soft power and “against lowering capital requirements for a bank if they invest in a green project per se”. Instead, Carney expressed support for explicit climate change-related regulation or carbon pricing. Regarding a “promotional” role in enhancing green climate policy, Carney points to the limits of the mandated role of central banks, which, he maintains, cannot “substitute for governments in climate policy”.

The responsibility of central banks to mitigate climate risks is becoming increasingly accepted, and attention is now shifting to the question of how central banks should operationalise this. There are no easy answers, but the recent NGFS recommendations are a good starting point. Central banks need to step up efforts to further enhance their models to include climate risks and set out a set of transition scenarios to help simplify the analytical challenge – not only for themselves but for the financial institutions they are supervising. Developing scenario analysis, including orderly and unorderly scenarios, and stress tests will help highlight where action is most urgently needed.

Certainly, more data is needed for developing a better-grounded, more granular and holistic view of the risks. However, given the great urgency to address climate risks, it will be more important for central banks to be roughly right now than to be precisely right later. Waiting for financial markets to address climate risks by themselves would be foolish. Strong leadership is needed by central banks and supervisors to make sure the financial sector will be in a position to weather the storm and contribute to an adaptation of our economies to the new climate reality. □

This article draws on the study Central bank mandates, sustainability objectives and the promotion of green finance, co-written by the author and Simon Dikau, a PhD student at SOAS.

**The green
lady of
Threadneedle
Street**

**From theory
to practice**

Can central bankers turn finance green?

The Network for Greening the Financial System aims to bring about fundamental change. The central bankers who created it made a strong start but face serious challenges, writes **Dan Hardie.**



What are the most significant achievements of central bankers in the past 30 years? The list would include the US Federal Reserve’s adoption of quantitative easing in 2008 and Mario Draghi’s pledge to do “whatever it takes” to save the euro in 2012. In another 10 or 20 years, perhaps we will view the conference held at the Banque de France in December 2017 as equally significant.

The One Planet Summit inaugurated the Network for Greening the Financial System (NGFS).¹ Leading central bankers had already become more vocal on environmental issues before that meeting: Mark Carney – who led the Bank of Canada and then the Bank of England – Banque de France’s François Villeroy de Galhau and Netherlands Bank (DNB) governor Klaas Knot were among those to call for major changes to the financial system’s approach to the environmental crisis. But neither governments nor the private sector were taking action fast enough, the senior central bankers believed. They would have to do the job, one of extraordinary importance, themselves.

Many large reports have been published on climate change. One of the best-known recent efforts is the Green New Deal brought about by activists on the left of the US Democratic Party, and publicised by Congresswoman Alexandria Ocasio-Cortez. The first comprehensive NGFS report, published in April, is rather

different in tone to the Green New Deal. Its approach is detailed and rigorous, and does not promise that adopting its recommendations will solve all environmental problems. But it may well turn out to be the more important document.

The NGFS founding members who met in Paris in December 2017 were mostly from the European Union: the central banks of Germany, the UK and the Netherlands, as well as Sweden’s Financial Services Authority, and both the Banque de France and its regulatory subsidiary, the Autorité de Contrôle Prudentiel et de Résolution. **Starting points**

But it was not solely a European initiative; the Bank of Mexico was a founding member, alongside the Monetary Authority of Singapore and, perhaps most significantly, the People’s Bank of China. Their presence meant that the new network could not be dismissed as a club for European economies.

“The People’s Bank of China takes environmental issues very seriously,” says Morgan Després of Banque de France, who plays a leading role in administering the network. “It is one of the NGFS’s most enthusiastic members.”

At the Paris meeting, the founders issued an inaugural statement, declaring their willingness to “exchange experiences, share best practices, contribute to the development of environment and climate risk management in the financial sector, and to mobilise mainstream finance to support the transition toward a sustainable economy”. They set the task of conducting a “stock-taking exercise” in 2018.

The new network needed to form a clear picture of what reforms were necessary, and it needed an infrastructure. NGFS members began assigning staff members to research how the financial sector needed to change. Banque de France provided a secretariat, led by Després, to ensure the NGFS had the administrative infrastructure to deal with whatever tasks it undertook. The network was chaired by Frank Elderson, a member of the governing board of DNB.

In 2018, the network held conferences in Amsterdam – just four months after the founding meeting – Berlin and Singapore. In Amsterdam and Berlin, the NGFS mainly asked academics for their thoughts. At the Singapore conference, they talked to representatives from the private sector. The NGFS had what one official called “a great many contacts with the political side, which clarified many things for us”.

All this time, the NGFS was growing rapidly, as more and more central banks and financial regulators asked to join. By the time of its first birthday in December 2018, it had grown to 24 members.

Asked what the main challenges have been when administering the network, Després says: “It’s been rather a surprise – it wasn’t that challenging.” Other officials echo his words, and give the same reason he does: “People want to be there.”

“The difference in some members’ approaches,” Després adds, “means you needed to make sure what you produced was compatible between different organisations and relevant to a wide range of countries – to China as well as Germany, for example.” But officials say the network is productive despite these differences.

The NGFS officials used their discussions with academics, executives and politicians to clarify their initial goals. “Finding a common starting point is a challenge every new organisation faces, and I think we certainly did,” says Sabine Mauderer of Deutsche Bundesbank, who has played a significant role in the NGFS’s work.

An initial agreement was soon reached. In May 2018, the NGFS published mandates for three workstreams that would each research specific areas of green finance.² Around 25 institutions provided staff members to work on one or more of the different workstreams and would result in the first NGFS report.

The first, chaired by Ma Jun, chief economist at the People's Bank of China, looked at how environmental change would affect banking supervision. The second examined the environmental aspects of macrofinancial policy, and was chaired by the Bank of England's Sarah Breeden. The third, looking at bringing green finance into the mainstream, was initially led by Bundesbank executive board member Joachim Wuermelig, who handed over the NGFS role in April 2019 to his fellow board member, Mauderer.

Each of the three workstream leaders formed teams and began intensive research into their allotted questions. They occasionally met face-to-face, but were more likely to collaborate online. "There have been a few meetings, but we have a global membership, so we don't want to be flying people all over the place," notes Després, drily. Their research formed the basis of the first NGFS report, published in April this year, just 11 months after the formation of the workstreams.

During this time, the small network of eight institutions had grown rapidly. Both the European Central Bank and the European Banking Authority joined in the first year, as did central banks from six eurozone nations, plus Australia, New Zealand, Norway, Morocco and Malaysia. The NGFS now has 36 members, including financial services authorities or central banks from Japan, Canada, Switzerland, Colombia and Thailand. It also has six observers, all of which are transnational organisations.³

Most member organisations are from developed economies, and the EU is particularly well represented. Three of the eurozone's supranational authorities are members, along with regulators and central banks from another 11 EU nations. The NGFS includes the central banks or the financial regulators of all the Group of 7 economies, with one notable exception: the US.

Institutions from emerging economies bring different perspectives to the NGFS's work, Banque de France's Després says. "Their concerns are more about the environment at large," he notes. "They want to talk about soil, water and air pollution, as well as climate change. They also raise concerns about financial inclusion. We have to reflect that going forward."

Agreement on goals The April report contained six detailed recommendations for change. Four were aimed at central banks and financial regulators, the other two at governments, and, in part, the private sector. Remarkably, all the recommendations were unanimously agreed by the NGFS's fast-growing membership.³

Getting national governments to agree policies for dealing with climate change is notoriously difficult and, in a number of cases, has proved impossible. But central bank officials who worked on the NGFS report insist that none of the network's members rejected any recommendation as too politically difficult.

The first recommendation called for "integrating climate-related risks into financial stability monitoring and micro-supervision". To put this goal into practice, the NGFS aims to provide regulators and financial firms with a handbook on assessing and managing environment-related risks. The second called for central banks to integrate sustainability factors into the management

of their own portfolios. Again, the NGFS's seconded officials are working on providing a guide to best practice in this field.

Third, the report also called on central banks to bridge gaps in the data that different jurisdictions collect on the environmental aspects of finance. Mauderer of the Bundesbank calls the data gap “a big challenge for green finance”. When the NGFS started, she says, the researchers soon realised there were significant differences in how different central banks collected data related to the environment.

The report's fourth recommendation was, at least in part, what the NGFS had already been doing. It called for building central banks' and regulators' awareness of and “intellectual capacity” for dealing with the environmental aspects of finance. Resource-rich central banks were encouraged to provide technical assistance and share knowledge with their peers. Central banks – and institutions such as the International Monetary Fund – are already providing this kind of assistance in a wide range of other fields, and it is easy to see them extending it to environmental matters.

The final two recommendations, “point to actions that can be taken by policy-makers to facilitate the work of central banks and supervisors”. The private sector could also follow some of this advice, the report said.

The NGFS's fifth recommendation called on governments to aim towards “achieving robust and internationally consistent climate- and environment-related disclosure”. Disclosing such data could cause great difficulties for some business lobbies and perhaps governments aiming for higher growth. This proposal could clearly precipitate intense lobbying, and quite possibly some major disagreements between governments.

Finally, governments should support the development of a taxonomy of economic activities. This is another key goal, according to Bundesbank's Mauderer. “We lacked a clear, common, internationally accepted taxonomy of how ‘green’ or ‘brown’ different financial projects are.” An accepted taxonomy, she argues, would bring great benefits: “It makes investing green easier and it avoids ‘greenwashing’. This would increase the transparency of which activities are really green and which are not.”

The NGFS called for governments to bring experts and relevant stakeholders together to create such a taxonomy. The new framework should make transparent which projects contribute to a transition to a low-carbon economy, and which are more exposed to climate change-related risks. Such a taxonomy would enable far better assessment of those risks, while allowing the financial sector to funnel capital towards green and low-carbon investments.

It is questionable whether governments will be able to respond as nimbly to the task as the NGFS would like. At the launch event, the European Commission's Mario Nava said: “We hope, under the Finnish presidency by the end of this year, to bring a taxonomy home.”

That is one aspect of a very important question: how effective can central banks and financial regulators be in countering climate change if governments do not act? The report acknowledges that, “to some extent”, the first four recommendations require the implementation of the last two. But it adds: “This does not preclude central banks and supervisors from acting now.”

Bundesbank's Mauderer sees the role of governments as crucial. “In general, governments worldwide need to act within the limited timeframe that

is left to prevent major risks,” she says. But she is increasingly confident they will take action. “The pressure governments are facing is gigantic,” she says. “That will have an impact on the action plans they will lay out in the next two to three years.”

She cites the German government’s consideration of climate bonds as a promising development: “I am pretty sure we will see more efforts in this direction. “The EU has an action plan on climate change and many governments outside Europe are also becoming increasingly active on the issue,” she says. Perhaps the biggest achievement of the NGFS report, she argues, is that it put the financial aspects of climate change squarely before policy-makers.

The absentee Those who spoke to *Central Banking* about their work on the NGFS report are all proud of the way several dozen major institutions were able to reach consensus on specific goals. No member, they said, had insisted certain topics were too difficult to discuss.

But the US has been absent from discussions. The central bank and the regulatory authorities of the world’s biggest economy and most important financial sector have not applied to join the network. The Fed has had only informal contacts with the NGFS since its creation, say people with knowledge of the matter.

The NGFS insists the network can be effective without the US as a member. Members represent jurisdictions with over 30% of the world’s population and around 45% of its systemically important banks.

The reasons for the Fed’s non-participation in the NGFS are generally held to be political. There is resistance and strong hostility within parts of the US government – especially the Republican party – to environmental regulation generally, especially if it involves market-based caps on carbon output. Multilateral co-operation is also very unpopular with the same politicians.

Fed chair Jerome Powell said in a letter to lawmakers in April that climate risks do not “fit neatly” into the central bank’s financial stability framework: “Some potential risks are difficult to quantify, and especially if they materialise over such a long horizon that methods beyond near-term analysis and monitoring are appropriate,”⁴ he wrote. Democratic Senator Brian Schatz called Powell’s response “garbage”.⁵

There does not seem to be any great expectation among officials at the NGFS that the Fed will join soon. It is conceivable that it might be easier for the Fed and other US regulatory agencies to approach the NGFS if control of the US presidency and Senate passed out of the hands of the Republican party in a future election. But that is not assured.

Next steps Rather than end with vague statements of future intent, the first NGFS report commits the network to three precise goals.

Speaking at the report’s launch, Banque de France governor de Galhau called for “practical” action on climate change. “It is time to roll up our sleeves,” he said.

It will develop a handbook on managing climate and environment-related risk management for supervisory authorities and the institutions they regulate. The NGFS will also publish voluntary guidelines for using different environment-related scenarios in risk analysis.

Finally, the network will list best practices for incorporating sustainability

criteria into central banks' portfolio management, focusing especially on climate-friendly investments. Officials seconded to the NGFS say these goals should be delivered by early 2020.

Has the NGFS accomplished anything so far? It was not a foregone conclusion that such a network would attract so many central banks and regulators. The network's membership is also more diverse than might have been predicted. Even though NGFS's core is drawn from the developed world, and especially the EU, its members include institutions from emerging economies. The central bank of the world's largest emerging economy – the People's Bank of China – is not merely a member, but a particularly active and engaged one. **Interim results**

This could matter a great deal. If the NGFS's institutions trust each other and grow used to working together on environmental matters, they may collaborate in ways and on problems that we cannot yet predict.

There was also a strong chance that the network would have published nothing beyond a set of vague recommendations, expressed in 'uplifting language'. The NGFS also seems to have avoided that danger in its first 18 months. Some of the recommendations of its first report may seem more ambitious than others, but all of them are concrete.

It seems likely the NGFS will continue to grow, as more central banks and regulators apply to join – the Hong Kong Monetary Authority recently expressed its interest.⁶ If members continue to work harmoniously, they could avoid the internal tensions that have hindered some international institutions, such as certain UN agencies.

The informal nature of the NGFS relative to other big international institutions may well be important in avoiding that risk. The personnel of the NGFS are all secondees from other institutions. They are regulators and central bankers with a similar outlook: they speak the same language, in a broader sense than just having good English. Most of the member institutions are independent of their governments. These factors may prevent the NGFS from becoming an arena for national disagreements.

But the NGFS itself acknowledges that many of its first set of recommended actions will be ineffectual without determined action by national governments. The same is likely to be true in the future. The NGFS has made an assured start. But its long-term success will not be entirely in its own hands. □

Notes

1. Banque de France, December 2017, *Joint statement by the founding members of the Central Banks and Supervisors Network for Greening the Financial System (NGFS) – One planet summit*, <https://bit.ly/2JuTwZj>
2. Banque de France, May 2018, *Publication of the mandates of the NGFS technical workstreams and expansion of the NGFS membership*, <https://bit.ly/2w9QP6I>
3. NGFS, April 2019, *A call for action – Climate change as a source of financial risk*, <https://bit.ly/2v6wAq3>
4. J Powell, Board of Governors of the Federal Reserve System, April 2019, *Letter to Senator Brian Schatz*, <https://bit.ly/2LWXwDZ>
5. B Schatz, May 2019, <https://bit.ly/2VophK0>
6. A Shen, *Central Banking*, May 2019, HKMA unveils measures to combat climate change risks, www.centralbanking.com/4201676

The calm before the storm – The climate change 2019 survey

As climate-related risks to the financial sector become increasingly understood, central banks are demonstrating their willingness to develop capabilities to analyse the impact and modify their policies. A new survey indicates a watershed for central banks that could profoundly transform policies over the coming years. By Victor Mendez-Barreira and Karolina Šilytė, with research by Rachael King.

Executive summary

- Central banks do not typically consider climate change a major risk to financial stability, although this is changing, notably among industrial countries.
- Climate change is clearly a concern for central banks – and a key concern for some – but not all consider it an issue they as institutions should directly act on.
- The insurance and banking sectors are the areas of the economy where central banks believe climate change will have an impact.
- Most central banks do not collect data directly related to climate change risk, but a growing number are assigning resources to this and developing capabilities.
- Stress testing risks derived from climate change is in its infancy among central banks. But this will likely change in the near future.
- Green assets are becoming increasingly attractive as an investment proposition for central banks, which regard green credentials as criteria that should be taken into consideration in reserve management.
- The use of environmental, social and governance (ESG) criteria in balance sheet management is the preserve of a minority of central banks.
- Central banks do not think they have the tools to promote green sectors. Many contend this is beyond their mandates.
- An overwhelming majority of central banks do not require commercial banks to disclose their climate-related risks.
- Central banks do not in the main think it necessary to add a specific section to their mandate in order to mitigate climate change risks, although a significant minority think a change should be made.

Profile of respondents

The survey questionnaire was sent to 100 central banks in March 2019. By the middle of April, responses had been received from 34 central banks. The central banks responded on the condition of anonymity, and that neither the banks nor their officials would be cited in this report. Of these 34 respondents, 44% were from Europe and 41% were from emerging market economies. Almost all central banks that took part are from countries that have signed the Paris Agreement on climate change.

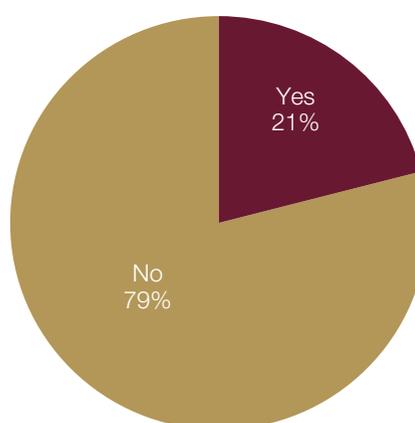
Region	% of respondents	Economic classification	% of respondents
Europe	44	Emerging	41
Americas	29	Developing	6
Africa	9	Industrial	35
Asia	3	Transition	15
Middle East and Oceania	15	No status	3
Total respondents	34	Total respondents	34

Has your country's government signed the Paris Climate Agreement? ¹	% of respondents
Yes	94
No	6
Total respondents	33

Percentages in some tables may not total 100 due to rounding.

Does your central bank view climate change as a major risk to financial stability?

Central banks do not typically see climate change as a major risk imperilling financial stability. However, it is becoming a concern among central banks from industrial and emerging market economies. Six central banks – or 21% of those who answered the question – said they consider climate change a significant risk that could have a negative impact on financial stability. Central banks from industrial economies made up more than half of this group, and one-third were from emerging market countries. A central bank from an industrial country



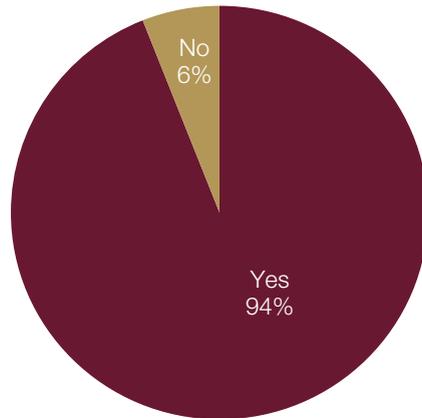
Six respondents did not reply.

explained its thinking, noting the impact on the bank as an institution and, more broadly, the system it oversees: “Financial risks from climate change have the potential to affect the bank’s core responsibilities both for the safety and soundness of the firms we regulate and for the stability of the financial system.” Several respondents who consider climate change a major risk to financial stability believe it is vital to tackle the issue in its early stages rather than allowing it to develop into an even bigger threat. “The risks to financial stability will be minimised if the transition begins early and follows a predictable path,” said one.

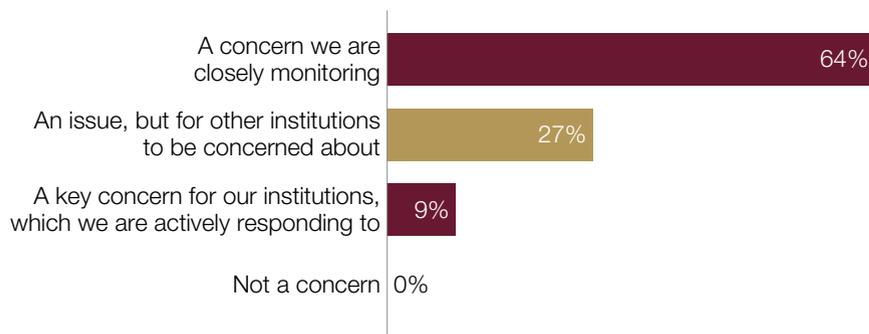
However, out of the 28 banks that provided an answer to this particular question, 22 (79%) indicated they do not view climate change as a major risk to financial stability. This group was clearly dominated by central banks from emerging market economies, which represented 50% of the group. Transition countries were second with 23%, followed by industrial and developing economies at 18% and 9%, respectively.

Is financial stability part of your central bank’s mandate?

Interestingly, climate change has emerged as a financial stability issue. Typically, central bank engagement with climate change initiatives has been couched in terms of this element of their mandate: climate change is not usually regarded as an issue for monetary policy.² While most respondents said financial stability is a part of their mandate, in the main they have yet to fully integrate climate change with that.



Which best represents your central bank’s view of climate change?



One respondent did not reply.

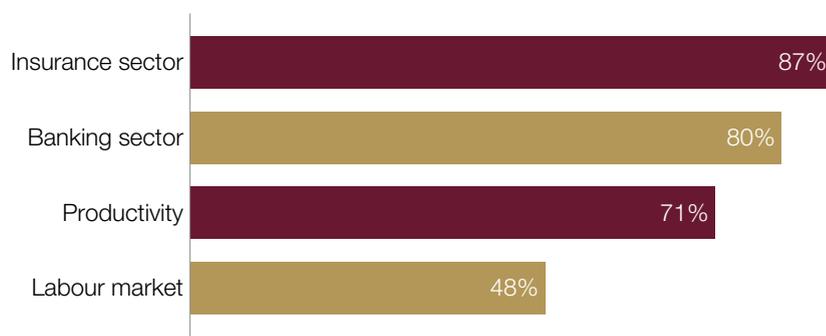
Climate change is clearly a concern for central banks, and a key concern for some, but not all regard it as an issue that they as institutions should act on. Twenty-four

central banks – almost three-quarters of respondents – reported it was a concern they were either monitoring or acting on. The group of 21 that said they were monitoring was dominated by emerging market economies, which made up just over half, followed by institutions from industrial economies, which accounted for 43% of the total. The three central banks that said they were actively responding to climate change were all from industrial countries.

A minority of respondents stated that climate change is an issue, but one for other institutions to worry about. In other terms, of the 33 central banks that responded, 27% said that climate change is indeed an issue, but that they fail to see a role for them in the fight against it.

This body of respondents was dominated by central banks from transition countries, which comprised 45%. Institutions from emerging and developing economy countries followed suit, with each taking a share of 22%. Central banks from industrial countries were the least prominent in this group, with an 11% share.

On which area(s) of your economy will climate change have an impact?



Three respondents did not reply.

The insurance and banking sectors are the areas of the economy on which climate change will have an impact. This was the view of the overwhelming majority of respondents, with 87% and 80% choosing them, respectively. In addition, just over 70% thought climate change would impact productivity. Overall, 24 (77%) central banks chose both insurance and banking and 17 (54%) selected the three most popular choices: insurance, banking and productivity. Of the 27 that chose insurance, most were from industrial or emerging market economies, with shares of 45% and 37%, respectively. The less prominent in this category were the central banks from transition countries, with a score of 11% and developing markets, with 7%.

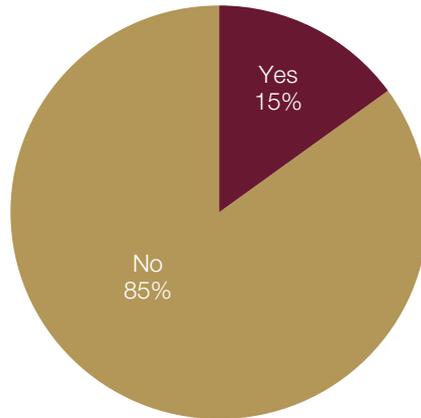
One central bank from a transitioning market economy stressed the pervasive effect climate change could have: “Climate change has a certain degree of impact on most of the sectors, but none of them could be singled out.” This was echoed by a central banker from an archipelago country: “All aspects of the economy reflect the risks associated with climate change, increased numbers and intensity of tropical cyclones and hurricanes, as well as the potential rise in sea levels.” A central bank from an industrial economy noted it was at an early stage in thinking about the impact: “We are at the stage of preliminary screening analysis

of potential impacts, and are considering all these areas.” Among the 25 central banks that indicated the banking sector would be impacted, just over one-third were from emerging markets.

In addition to the economic sectors included in the survey, some participants added climate change could have a negative impact on other economic spheres. One central bank from an advanced economy sees “climate change as having an impact on natural resource industries, in particular the energy sector. The potential of stranded assets in this sector could have an impact on productivity by reducing the capital stock.”

Although the previous question indicates that only a small percentage of respondents view climate change as a key concern that they are acting on, this question reveals how central banks see climate change as having a negative impact on these areas of the economy – sectors that include industries directly or closely related to the central banking system.

Data to analyse climate risk is often lacking. Does your central bank collect data specific to this issue?



One respondent did not reply.

Most central banks do not collect data directly related to climate change risk, but a growing number of institutions are developing capabilities in this area. Overall, 15% of respondents said they collect specific data to analyse climate risk. All of the institutions gathering this information are European, except for the central bank of one small South-east Asian economy. In data collection, industrial economies are clearly in the vanguard. They represent 60% of the total of institutions collecting this information.

In contrast, 85% of respondents reported that they do not have this capability. The Network for Greening the Financial System – the group of central banks and financial supervisors created in the wake of the Paris Agreement on climate change – has recently flagged the importance of data collection.³ This group of 28 survey respondents is mainly made up of central banks from emerging market and industrial economies, which represent 43% and 36% of the total, respectively. These two types of economy were also the most prominent among those that reported they are closely observing the processes and possible consequences of climate change.

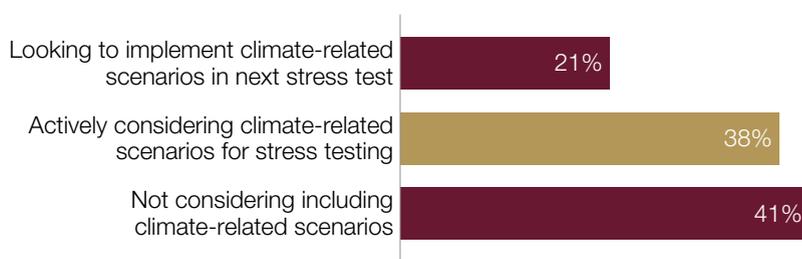
Nevertheless, several central banks are actively trying to overcome this challenge: “Even though, at this moment, no climate risk analysis has been conducted, an interdisciplinary group within the bank was recently appointed to address this matter,” said an emerging market central bank. Central banks that already have procedures in place and are collecting data are also trying to improve: “We already collect data relevant to climate risks as part of our standard regulatory data collections,” said an institution from an industrialised economy. “We plan to collect more specific climate risk data in the future.”

Does your central bank include climate-related risks in its stress tests?



One respondent did not reply.

If no, which best represents your central bank's view?



A disruptive energy transition

In 2018, the Netherlands Bank (DNB) carried out an exercise to better understand how a disruptive change in the energy model of the country could impact financial stability.⁴ This followed the recommendation of the European Systemic Risk Board in 2016 that European supervisory authorities should include a disruptive energy transition scenario into their stress-testing exercises.

The rationale behind the test was that – although the transition to an economy predominantly reliant on clean energy sources is a long-term process – it can generate risks in the short term. “In the transition to a low-carbon economy, risks to financial institutions and financial stability may arise,” said the DNB. “In particular, technological breakthroughs or abrupt changes in government policy may trigger a reassessment of asset values that could affect financial institutions’ balance sheets.”

For instance, if governments decided to implement carbon taxes or restrictions on carbon dioxide emissions, this could rapidly increase the costs of energy producers, airlines or infrastructure groups. “This is especially the case if such measures are implemented abruptly, as this would leave little time for firms to adapt to the new policy,” said the DNB.

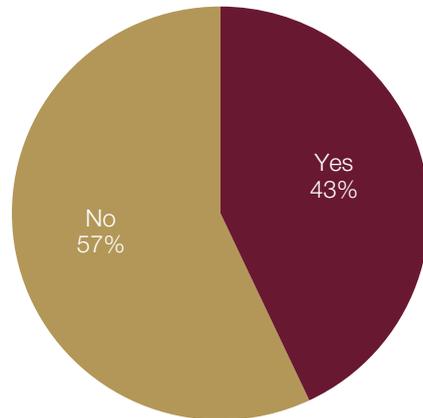
In its first comprehensive report, the Network for Greening the Financial System also included in its four recommendations for central banks “integrating risks derived from climate change into their macro and micro supervision”. The DNB’s study found that “the losses for financial institutions in the event of a disruptive energy transition could be sizeable, but also manageable”. The central bank says the stress test allowed it to understand that individual institutions can mitigate portfolio risks taking energy transition risks into account. And policy-makers can ease this change by implementing timely, reliable and effective climate policies. Although the study provided valuable insights, the DNB acknowledged that “as stress testing energy transition risks is a relatively new field of study, future work could help to further refine the results”.

Stress testing risks derived from climate change remains in its infancy but, while most central banks have yet to adopt and develop the procedures needed to develop these capabilities, this is likely to change soon. Seventeen central banks (59%) said they are either actively considering climate-related scenarios or looking to implement climate-related scenarios in their stress-test models. This group of countries was diverse, with equal numbers of advanced and emerging market economies, and with representation from all continents. Only one respondent, a central bank from an advanced country, said it includes climate-related risks in its stress-test exercises.

One major European central bank reported it has not incorporated climate risks in its stress-testing exercises but plans to in the future. Another European central bank has carried out exercises, but said it does not integrate climate related risks in its regular stress tests. In South America, a mid-sized central bank acknowledged its analyses of the financial system “include only credit, market, liquidity, and funding and contagion risk arising from hypothetical, adverse macroeconomic shocks”.

Would your central bank consider buying green assets in a quantitative easing programme?

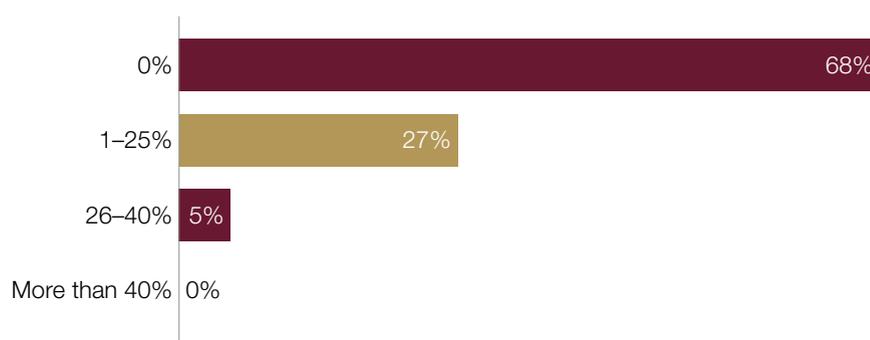
Green assets are increasingly attractive as investments for central banks, and a minority of respondents (43%) said they would consider buying them in a quantitative easing programme. This group was comprised mainly of advanced economies whose central banks have carried out unconventional monetary policies after the financial crisis. In contrast, 57% of central banks ruled out that possibility. This group is dominated by emerging and transition economies from Latin America, Africa and Europe, although one central bank from a European advanced economy was also part of the group.



Thirteen respondents did not reply.

What proportion of bonds purchased following the financial crisis were from the manufacturing, electricity and gas sectors?

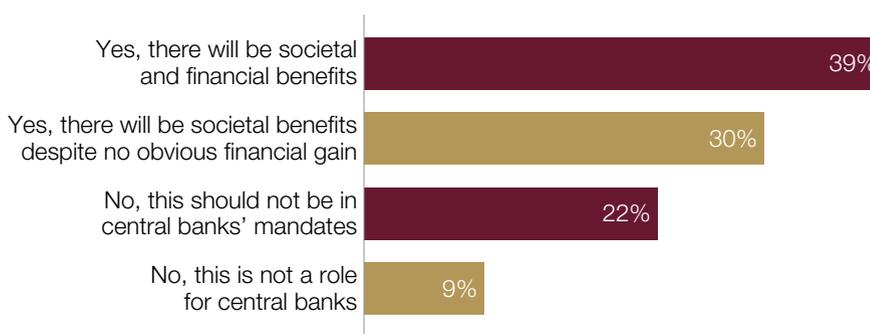
The bond-purchase programmes implemented in the aftermath of the global financial crisis have not led to major exposures to carbon-intensive sectors. More than two-thirds of respondents said they have not acquired assets from the manufacturing, electricity and gas sectors. Over one-quarter of respondents said the share of bonds they acquired from these sectors is 1–25% of their overall purchases. Just 5% of institutions addressing this question said the share of their bond buying was 26–40%. One European central bank said its “corporate bond portfolio is screened for violations against UN Global Compact norms”.⁵ As a result of these tests, some companies were removed from its investment in the past 12 months.



Twelve respondents did not reply.

The pressure on public institutions to review their exposure to carbon-intensive industries is only likely to increase. Although central banks are not divesting rapidly now, other public entities are. On March 8, 2019, the Norwegian Ministry of Finance proposed to “exclude companies classified as exploration and production companies within the energy sector from the Government Pension Fund Global (GPF Global)”⁶. As the world’s largest sovereign wealth fund, with around \$1 trillion under management, the GPF Global is often used as a benchmark by institutional investors. Its ESG investment requirements have resulted in the exclusion of dozens of firms from its portfolio.

Should reserve managers take green credentials into account when deciding on asset allocations?



Eleven respondents did not reply.

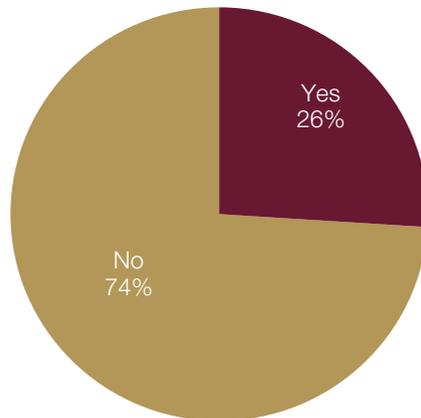
Central banks increasingly see green credentials as a precondition when choosing reserve assets. Sixty-nine per cent of respondents said reserve managers should take these factors into account when making investment decisions. This group is diverse geographically as well as economically. Over half were from emerging market economies and 40% from advanced countries. Within this group of 16, most said this would be beneficial for society as a whole and would also yield financial benefits. A smaller group were of a similar view that it would be good for society, but failed to see any clear financial gain. A northern European central bank firmly believes in the necessity to evaluate the green

credentials of its investments: “In investing on behalf of a third party, we expect investee companies to assess how exposed their long-term business strategy and profitability are under future climate risk scenarios.”

In contrast, almost 22% of respondents do not think these considerations should be in central banks’ mandates, and two say assessing green credentials is not the role of a central bank. A small European central bank explains the latter perspective: “Given the role of foreign reserves to shield the economy against potential shocks and vulnerabilities, tailoring central banks’ investment policies towards the specific class of assets may endanger the main objectives of foreign reserves management – which are safety, liquidity and profitability, in order of priority.” This investment approach concedes that central banks could allocate certain parts of their portfolios to green assets within the standard management, “but only if they meet standards for inclusion in the list of eligible assets for foreign reserve investments, which mainly consist of investment-grade fixed income assets”, the European institution adds. A major European central bank largely shares this position. It emphasises that the main purpose of foreign reserves is to ensure the central bank, at any given point in time, has sufficient liquidity in foreign currency to conduct foreign exchange operations. “Our portfolio is therefore composed of the most liquid and creditworthy fixed income assets in a few major currencies, leaving little room for a climate-related objective.”

Halfway between these points of view, a southern European central bank acknowledges that “sustainability issues are important, and central banks – being among the largest official sector investors – should explore the social impact of incorporating ESG criteria into their investment decisions”. However, it adds that “at this moment in time the academy and industry research is inconclusive on the financial gains derived from taking them into account”.

Does your central bank use ESG criteria when managing its balance sheet?



Three respondents did not reply.

Incorporating ESG criteria into balance sheet management is the preserve of a minority of central banks. Just over one-quarter of respondents said they use ESG – a group dominated by central banks from industrial countries. A big holder of reserves from Europe said it uses “voting rights in a part of our stocks portfolio to contribute to good corporate governance”. Additionally, it also has “an exclusion policy in place to exclude firms from the asset universe on the basis of not fulfilling our minimum ESG standards”. These criteria are implemented based on the

product(s) these companies make, as well as on their labour and production practices. While lacking an official ESG policy, a small Eastern European central bank “closely monitors developments in the area and seeks to contribute, where possible, to mitigate climate-related risks”.

Is your central bank able to explicitly promote green sectors?

Central banks regard themselves as ill-equipped to promote a greener economic system. In total, 94% of respondents said they lack the tools to specifically promote green sectors.

A majority of respondents in this category – 41% – come from emerging market economies. They are followed by central banks from industrial countries, accounting for 35%. For one respondent, the reasoning was clear and could be traced back to their mandate: “Supporting broader social goals and priorities are beyond the mandate of the national bank. The tools of the central

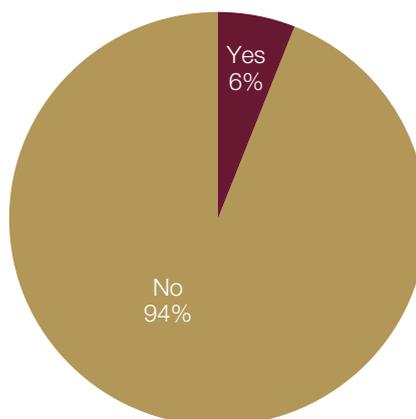
bank are designed to facilitate successful fulfilment of the final goals of the bank – sustaining price and financial stability in the country,” said one central bank.

Only a small minority of institutions say they have the tools to explicitly promote green sectors. Two respondents – one respondent from an industrial country, the other from an emerging market – say they have the resources and mechanisms to ease the economic transition to a less carbon-dependent system. One example of these measures is applying a discount rate to investments in the green sector. “Having a low discount rate for credit to the green sectors would help their development and provide incentives to invest into them,” said the participant from an emerging market economy.

In addition, only a handful of respondents said they would consider implementing specific policies to promote green sectors. The most popular was relaxing prudential regulation for green finance, which six respondents chose. Three said they would support credit for green loans, one of which commented: “Having a credit quota for green loans would be a good start; however, this requires another agency to certify what is green and what is not so the bank can evaluate the programme afterwards.”

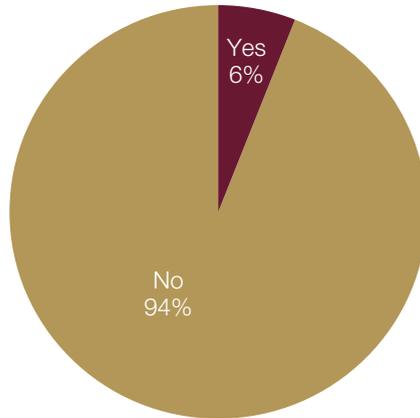
Most comments received indicated that these policy options are not within respondents’ powers. “These considerations are not part of our mandate. Prudential supervision is carried out by a different institution,” said a respondent from an industrial economy. A central bank from a developing country said its “role does not include prudential regulation or requirements. This mandate is assigned by law to the supervisor of the financial system.” Another added: “Although supportive of the above [green initiatives], the central bank is not the prudential regulator for the country.” Another institution said “is not in charge of setting credit quotas or capital requirements. The answer to this question refers to the macro-prudential regulation set by the bank in the form of foreign exchange controls.”

Nonetheless, some institutions said they might be in a position to implement some of these measures in the future. One central bank from Oceania said “these possibilities will all be studied, but it is too soon to conclude what may or may not be appropriate”, in terms of its mandate.



Three respondents did not reply.

Does your central bank ask commercial banks to disclose their climate-related risk?



Three respondents did not reply.

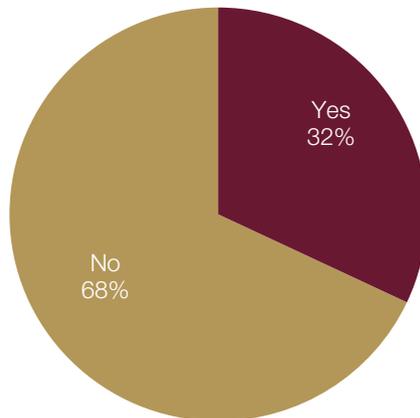
An overwhelming majority of central banks do not require commercial banks to disclose their climate-related risks. Fully 94% of respondents do not ask banks for their climate risk exposure. One central bank in this category said it expects “financial institutions to be aware of climate scenarios that are relevant to them and to take appropriate action should they threaten to materialise. We do not have a disclosure requirement at this point.”

However, central banks in this group are taking the first steps or considering amending their situations related to the disclosure of climate risks. “An initial letter to banks has been sent asking for information. This is a first step that could be followed by more specific disclosure guidance,” noted a central bank from an industrial economy. Another central bank from an emerging market economy added that it “is considering asking commercial banks this question”.

Of 31 respondents, two answered “yes” to this question. One of these, from an industrial market economy, commented that “this has been encouraged but not required. Disclosure is more of a focus for our prudential supervisor and our conduct regulator, which are different institutions.”

Of 31 respondents, two answered “yes” to this question. One of these, from an industrial market economy, commented that “this has been encouraged but not required. Disclosure is more of a focus for our prudential supervisor and our conduct regulator, which are different institutions.”

Should central banks have a specific section in their mandate to mitigate risks?



Nine respondents did not reply.

Central banks do not in the main think it necessary to add a specific section to their mandates to mitigate climate change risks, although a significant minority think a change should be made.

Over two-thirds of respondents rejected this possibility, while 32% said it could be a useful tool to tackle this global development. This larger group (of 17 respondents) was largely made up of emerging market countries, although six high-income economies were also in the group. Meanwhile, central banks from emerging market economies figured prominently among the eight in favour. One Caribbean-based respondent explained why it fully supported the idea: “Central banks could create funds to provide credit to green initiatives with a lower rate. Having a specific section [in the mandate]

Over two-thirds of respondents rejected this possibility, while 32% said it could be a useful tool to tackle this global development. This larger group (of 17 respondents) was largely made up of emerging market countries, although six high-income economies were also in the group. Meanwhile, central banks from emerging market economies figured prominently among the eight in favour. One Caribbean-based respondent explained why it fully supported the idea: “Central banks could create funds to provide credit to green initiatives with a lower rate. Having a specific section [in the mandate]

would definitely help designing the management process for such funds, and implementing a monitoring framework.”

In this regard, a regional divide appears among participants. Among central banks in favour of adding a specific section to their mandates to tackle climate change, 88% belong to non-western developing economies. Meanwhile, 53% of institutions that voted against the idea belong to industrialised western economies.

European central banks appear more reluctant to modify their current institutional frameworks than their peers from other regions. One major European institution thinks “to the extent that climate risks are proven to be relevant to central banks’ remits, it would help if this was explicitly in mandates”. However, another European central bank points out: “This would create potential conflicts of interest.” A southern European central bank noted it may not be necessary to modify mandates to add these risks to the rest of policy objectives. Climate change risks represent a threat to financial stability, and in doing so it could be argued that it is already embedded in mandates of central banks as guarantors of financial stability. □

Notes

1. At the UN Climate Change Conference, which took place in Paris in December 2015, 195 countries adopted the first-ever universal legally binding global climate deal. The agreement set out a global action plan to put the world on track to avoid the dangers of climate change by limiting global warming to below 2° Celsius. As of March 2019, 195 member states of the UN Framework Convention on Climate Change have signed the agreement, and 185 have become parties to it. The agreement’s long-term objective is to limit the increase in global average temperatures to well below 2° C above pre-industrial levels. Ideally, it aims to limit the increase to 1.5° C, as researchers believe this would substantially reduce the risks and effects of climate change. The agreement establishes that each country must determine, plan and regularly report on its efforts to mitigate global warming. The framework lacks a mechanism forcing members to set specific targets and timing, but each new objective should go beyond previous targets. As part of the agreement, authorities committed to build resilience and decrease vulnerability to the adverse effects of climate change. As financial systems transition to a low-carbon economy, banks and other institutions will need to shift billions of dollars away from fossil fuels and fill the gap with green investments.
2. Speech by Mark Carney made on September 29, 2015, *Breaking the tragedy of the horizon – Climate change and financial stability*. In particular: “There are three broad channels through which climate change can affect financial stability... First, physical risks: the impacts today on insurance liabilities and the value of financial assets that arise from climate- and weather-related events, such as floods and storms that damage property or disrupt trade. Second, liability risks: the impacts that could arise tomorrow if parties who have suffered loss or damage from the effects of climate change seek compensation from those they hold responsible... Finally, transition risks: the financial risks which could result from the process of adjustment towards a lower-carbon economy.” <https://bit.ly/2CYyj65>.
3. In its first comprehensive report, published in April 2019, the Network for Greening the Financial System stresses the importance of sharing data of relevance to climate risk assessment and making it publicly available in a data repository. The report also calls on central banks to develop in-house capabilities to better understand the impacts of climate change on the economy.
4. W Heeringa, D Jansen, B Kölbl, M Lohuis, E Schets and R Vermeulen, The Netherlands Bank, 2018, *An energy transition risk stress test for the financial system of the Netherlands*, <https://bit.ly/2Jv0oGS>.
5. The UN Global Compact (UNGC) is a non-binding UN pact that aims to encourage businesses globally to adopt environmentally sustainable and socially responsible policies. Governments and companies from 159 countries participate in the UNGC, which makes it increasingly difficult for carbon-intensive firms to avoid its scrutiny.
6. The Norwegian Ministry of Finance, March 2019, *Excludes exploration and production companies from the Government Pension Fund Global*, <https://bit.ly/2VEe838>.

A powerful new force – Central banks and climate-related risks

Increasing global concern about climate change is causing central banks to take notice of the issue and its potential implications. Amundi examines the findings of *Central Banking's* survey on climate change, in which 64% of respondents described it as a significant concern.

Amundi ASSET MANAGEMENT

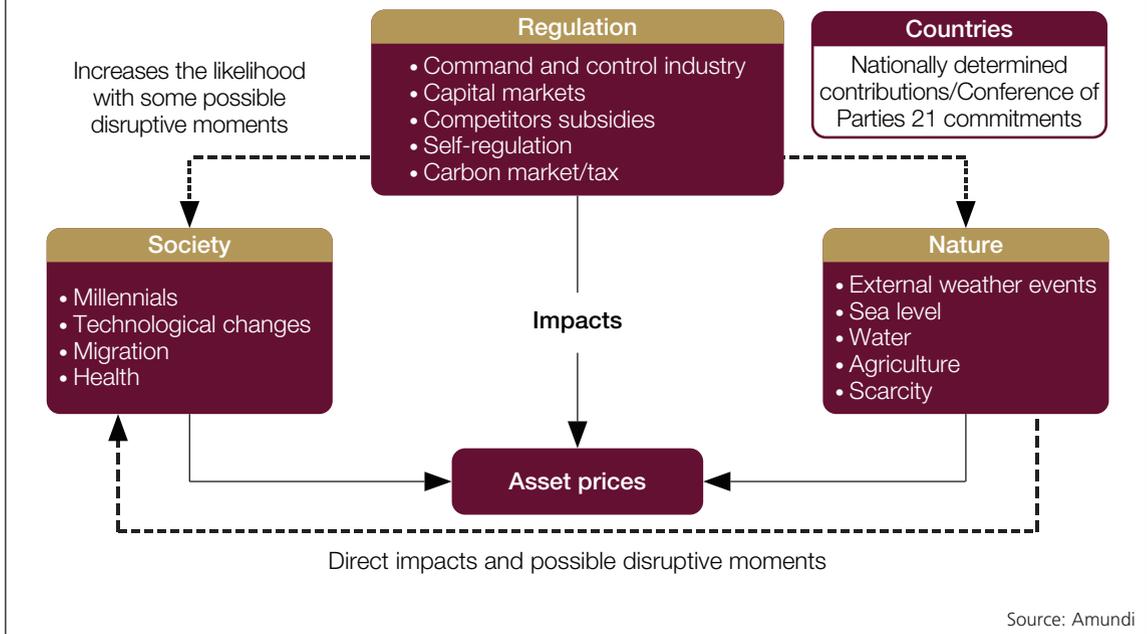
Climate change is now perceived as a primary risk to humanity,¹ and there is growing consensus that countries and corporates are facing major challenges in this area. Although latecomers, central banks are now paying attention to climate change worldwide. This is illustrated by the members of the Network for Greening the Financial System (NGFS), whose countries represent more than 44% of global GDP. Membership boomed from seven to 28 within one year of the NGFS's formation in December 2017. In a unique survey of 34 central banks worldwide conducted by *Central Banking* in partnership with Amundi (see pages 76–87), 64% of central banks recognise climate change as a clear concern they were closely monitoring. Fifty-nine per cent of central banks are considering climate-related scenarios or are looking to implement them in their next stress tests. This new mobilisation of central banks is sending a very impactful message to the finance community: that climate change is a genuine concern for central banks, as it should be for all investors worldwide.

Recognising the magnitude of the problem

According to studies based on data from Climate Action Tracker data, a range of potential future scenarios of global greenhouse gas emissions show that decisions taken today will severely influence climate warming by 2100. If no climate policies are implemented, warming of around 4.1–4.8° Celsius is estimated by 2100, whereas if current climate policies are implemented, warming of 3.1–3.7°C is estimated. However, even if all countries achieve their current targets and pledges set by the Paris Agreement on climate change, it is estimated average warming by 2100 will be 2.6–3.2°C. This will go significantly beyond the overall target to keep warming “well below 2°C”² and to “continue the action taken to limit it to 1.5°C”³.

There is a range of emissions pathways that would be compatible with limiting average warming but it would require a significant increase in the ambition of the current pledges. An adjustment is also necessary in the short term, which could bring about a potentially disruptive period. According to the survey, climate change is clearly a concern for central banks (64%) and a key concern for some, even if not all regard it as an issue that they as institutions should act on (27% of the respondents).

1. Multiple forces related to climate change impacting asset prices



The impacts of climate change on the economy and finance take on multiple dimensions in a dynamic and non-linear system. Multiple interactions between the different forms of risk – regulations, society, nature – and their consequences directly affect bank, asset prices and even society.² Different transmission channels exist through which gradual global warming, a transition to a low-carbon economy and extreme weather events can create turbulences, the effects of which would impact monetary policy. In addition to large physical and economic losses, unmitigated climate change could also affect the stability of the financial system.⁴ If these risks constitute one of the first financial risks, considering them is part of central banks' current mandate (see figure 1).

Institutional investors have already organised an initiative to ensure the world's largest corporate greenhouse gas emitters take necessary action on climate change. Climate Action 100+ is already gathering 289 investors across 29 countries, who together manage more than \$30 trillion in assets under management.⁵ Investors, as part of their risk management approach, are challenging the 100 most polluting companies on their strategies on climate change. For their part, central banks must also take the same path. The survey shows that 68% of central banks do not consider it necessary to add a specific section to their mandates to mitigate climate change risks. However, climate change risk is a problem that is, by itself, threatening financial stability. Some central banks have started studying the implications of climate change and the low-carbon transition for the financial sector and real economy, primarily due to their responsibility for economic stability. Following the lead of Mark Carney, governor of the Bank of England and chair of the Financial Stability Board, a multitude of central banks and financial regulators addressed this topic in their speeches at the NGFS Conference.^{6,7,8}

Central banks are jumping in

Since the announcement of the creation of the NGFS during the One Planet Summit in December 2017, eight founding members, 28 members and six observers have joined the network. This initiative encourages central banks, supervisors and financial institutions to contribute on a voluntary basis to the development of environment and climate risk management in the financial sector, and to mobilise mainstream finance to support the transition toward a sustainable economy. As there are opportunities as well as vulnerabilities for financial institutions and the financial system, there has been a concrete mobilisation of stakeholders to help strengthen the global response to climate risks and to meet the goals of the Paris Agreement.

Central banks are paying a lot more attention to climate risks, and the survey illustrates this trend, revealing that 59% of respondents are considering climate-related scenarios or looking to implement climate-related scenarios in their next stress tests. Comprehensive climate stress-testing would require improved provision and accessibility of high-quality data. According to the survey, 85% of respondents do not collect data directly related to climate change risk, but a growing number of institutions are developing capabilities. However, the more accurate the data, the better the understanding of all these risks to take action.

For the moment, we can already observe several environment-friendly interventions from central banks and financial regulators (see figure 2).

A new tool for central banks Many central banks attempt to take climate change into account in their investments in their own funds and pension funds. According to the survey, central banks increasingly see green credentials as a precondition when choosing reserve assets. Over 69% of respondents said reserve managers should take these factors into account when making investment decisions. They could, for example, invest in green bonds, which play a signal role. The market for green bonds has developed rapidly in recent years, with global issuance rising from less than €1 billion in 2008 to more than €167 billion in 2018.⁹ Euro-denominated net green bond issuance has increased tenfold since 2013. Another possibility is to use low-carbon indexes, which intend to help identify potential risks associated with the transition to a low-carbon economy while representing the performance of the broad equity market. These frameworks could help central banks anticipate these risks when they take decisions, and thus minimise their risk's exposure.¹⁰

In his 2015 speech, Carney, relying on the idea that what is measured can be managed, had already pointed out that the first step to manage climate-related risk was to precisely measure such risks. Some central banks have started assessing the exposure of their domestic financial systems to climate-related risks and integrating climate risks on economic scenarios. For example, the European Central Bank has begun computing the impact of climate-related changes on banks' capital positions and on the supply of funds to the economy. In particular, ECB executive board member Sabine Lautenschläger considers the channels through which climate-related risks are propagated to the economy as a whole.¹¹

"Increasing transparency makes markets more efficient, and economies more stable and resilient," former mayor of New York Michael Bloomberg famously said.¹² The real task in climate change lies in better understanding the risks, as central banks don't ask commercial entities to disclose their climate-related risk exposure. However, some banks have asked for clear guidance from regulators or more information about best practices or business opportunities. Central banks could implement a robust and internationally consistent climate and environmental

disclosure framework and a taxonomy that enhances the transparency around which economic activities contribute to the transition to a green and low-carbon economy and are more exposed to climate and environment-related risks – both physical and transition. NGFS members have collectively pledged support for the recommendations of the Task Force on Climate-related Financial Disclosures, which develops consistent climate-related financial risk disclosures for use by companies in providing information to all type of stakeholders.

The NGFS could help organise and co-ordinate the work of the different groups to unburden the financial industry with myriad different information-collecting exercises. Developed and developing countries have each become aware of climate risk issues on financial stability. In many developing and emerging economies, central bank mandates are more comprehensive and include sustainability, as well as social and economic objectives. They have been comparatively more active in promoting green finance and sustainable development.¹³

2. Environment-friendly interventions by central banks and financial regulators²

	Type of intervention	Concept	Selected current applications
Research	Assessment of climate-related financial risks	Develop and apply methodologies to identify and measure climate-related risks to financial institutions	De Nederlandsche Bank, Bank of England
	Macroeconomic modelling of low-carbon transition	Develop modelling tools to assess the wider impact of climate risks and the transition	Only outside central banks and regulators (private sector and academia)
Policy	Support to international activities on green finance	Enhance knowledge, co-operation and diffusion of good practices	Group of 20 Green Finance Study Group, Sustainable Insurance Forum, NGFS
	Disclosure of climate-related financial risks	Enforce or encourage disclosure of climate-related financial risks by firms and investors	Financial Stability Board Task Force on Climate-related Financial Disclosures, French Energy Transition Law
	Environmentally aligned prudential regulation policy	Incorporate environmental considerations into prudential regulation	Banque of Liban, Banco Central do Brasil
	Green central bank financing	Provide additional/subsidised liquidity to banks that lend to environment-friendly activities	Bangladesh Bank, Bank of Japan
	Lending quotas	Impose a minimum proportion of bank lending to flow to environment-friendly sectors	Reserve Bank of India, Bangladesh Bank
	ESG factors in asset eligibility criteria	Include environmental, social and governance criteria in the evaluation of the overall risk of an asset purchased or accepted as collateral	Only for own purchase, for example, DNB, Norges Bank
	Green quantitative easing	Purchase green assets as part of quantitative easing programmes	Assets purchased only if they meet central bank's eligibility criteria, such as European Investment Bank bonds



Conclusion The debate over the choice actors had to make between “going green” and “making profit” is outdated. The economic and financial structure has to deal with new risks that are materialising and do not fit the current framework. Not only central banks but all institutional investors must change their approaches to save the assets of their pensioners, and as an indirect impact to aid the mobilisation on climate change. Central banks are playing a pivotal role in society and can thus help the mobilisation of the financial world. The good news is that this movement has already awoken. □

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Green solutions – Supporting our clients along their green investment value chain

From extreme weather to transition risks, the systemic challenge of climate change lies in the interconnectedness of risk. Amundi is helping to shape solutions by integrating climate risks across its asset classes and pushing public debate forward.



With increasingly visible impacts, climate change has become one of the greatest challenges that humanity faces; the World Economic Forum *Global Risks Report 2018* indicated “higher-than-average perceptions of both likelihood and impact” of climate change-related risks.¹

For financial markets, this means investors are now facing many challenges that are likely to impact asset prices. Amundi has developed an integration of climate change-related risks in all its asset classes: equity, fixed income and real assets such as green infrastructures, and green real estate.

Frédéric Samama, head of institutional client coverage at Amundi, explains: “We started the process more than 10 years ago and have been running different initiatives in parallel. First, we tried to develop an understanding of the risks that our clients were facing. Second, we pioneered many financial innovations. To name some of these, we developed the first mainstream low-carbon indexes back in 2014 (and the first prototypes in 2011). This product has addressed the “tragedy of the horizon” [as described by governor of the Bank of England and Financial Stability Board chair Mark Carney] and generated some additional returns, making the case that, by being green, investors could outperform.

“More recently, we have launched, in partnership with the International Finance Corporation, a very large green bond fund aimed at financing green infrastructures in emerging markets. We also have partnered with electricity



company EDF to source and finance green infrastructure projects in Europe. Finally, we participate in the public debate by publishing papers on the topic or creating knowledge-sharing platforms on green finance.

“This approach is part of our DNA as a responsible investor. Back to the creation of the company, our chief executive officer, Yves Perrier, has positioned environmental, social and governance (ESG) [issues] as one of the four pillars of the firm.” 



Amundi is rated A+ by the Principles for Responsible Investment,² and has been named Asset Management Best Firm for SRI/ESG in Extel’s socially responsible investing (SRI) and sustainability annual surveys since 2015.³

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Climate change – Where can central banks contribute?

Climate change is becoming increasingly important to central banks thanks to its implications for financial stability. In a forum sponsored by **Amundi**, *Central Banking* convened a panel of experts to discuss the latest innovations, regulations and challenges the industry is facing in addressing climate change.



The Panel

Torsten Ehlers

Senior Economist, Bank for International Settlements

Audun Grønn

Special Advisor to the Governor, Norges Bank

Timothée Jaulin

Relationship Manager and Head of Supranational Entities Coverage, Amundi

Moderator: Victor Mendez-Barreira

Staff Writer, *Central Banking*

What are the latest climate change innovations and measures your institution has taken?

Audun Grønn, Norges Bank: Norges Bank became a member of the Network for Greening the Financial System (NGFS) in December, so we look forward to further work in this area. In March, the bank made a consultation in response to the Ministry of Finance on a public report on climate risk and the effects on the Norwegian economy. Norges Bank, as an institution, has also obtained a certificate for being an Eco-Lighthouse, a certification scheme for enterprises seeking to document their environmental efforts and demonstrate social responsibility. However, climate issues in the central bank operations field are still at an early stage.



From left: Audun Grønn, Torsten Ehlers and Timothée Jaulin

Torsten Ehlers, Bank for International Settlements (BIS): BIS is also an active member of various international forums on the topic, such as the NGFS, but has also been part of others – including the Group of 20 Green Finance Group and the Sustainable Finance Group – and is currently conducting research from various angles. We have begun an initiative to green our pension fund, and of course the BIS is also an asset manager for central banks, so we are offering an environmental, social and governance (ESG)-based product. We're also starting to put together a green bond fund – products marketed exclusively to central banks.

Timothée Jaulin, Amundi: Amundi has been very active in socially responsible investing (SRI) and ESG strategies. The first SRI form was launched in 1989, but we really started to work on climate risk in 2012, and I was involved through a research institute working on long-term investors and how they can contribute to generate positive externalities by investing either contra-cyclically or by taking into account long-term price risk. Based on that work, we launched our first low-carbon indexes in 2014, and then worked on mobilising investors with the UN Environment Programme and its finance initiative. We launched the Portfolio Decarbonization Coalition in 2014 in time for the 2015 UN Climate Change Conference (COP 21).

Why has climate change become increasingly important for central banks?

Audun Grønn: Climate risk is a serious issue, and the prime responsibility to mitigate climate risk lies with governments and with fiscal policy. It's important to use the market mechanism and pricing of emissions to influence the behaviour of market agents to move in a greening direction. With regard to central banks, climate risk may impact the macroeconomy and financial stability, and in a transition towards a low-carbon economy this can involve costs in the short term – and possibly also large costs depending on the policy measures to be taken to address climate change. This implies there could be some systemic financial risk ahead, which is something central banks are very preoccupied with. We should always work within our mandates, and, for central banks, that means taking a comprehensive or holistic view on all factors impacting the economy and the risks we face.



Torsten Ehlers

Torsten Ehlers: The key angle for central banks is probably the financial stability implications of climate change. There is research suggesting the potential implications are very severe. Of course, we don't know what the exact consequences of climate change will be, but the probability of a severe impact on the economy, and hence financial stability, means it's something that central banks should look at.

Timothée Jaulin: We share the assessment that there could be a risk to macro-financial stability in the medium to long term. This will go through a lot of impacts on economic actors and corporates, but also states and other types of institutions. As an asset

manager this is something we need to anticipate by measuring this potential risk and making sure it is priced in or that we can reduce exposure to it. We've been looking at it through the perspective of managing assets and trying to anticipate potential shifts in value for which we wouldn't be rewarded. Because central banks manage such large reserves, they can be exposed directly to consequences on the price of the assets on their balance sheet.

What sectors within the financial system are exposed to climate-related risks?

Torsten Ehlers: From a central bank's point of view, and given that most central banks since the financial crisis now have a mandate for financial stability, it is definitely the banking sector. Banks hold a wide range of loans of corporates and others across a wide range of industries. The second is obviously insurance – insurance companies are already affected to some extent.

Timothée Jaulin: Behind these climate risk issues are physical risk and transition risk. Some sectors are more exposed than others – insurance because it is exposed at the liability and asset side, but banks as well because they are exposed to the broader economy. And that's perhaps the key issue with climate change – that we think it will impact all sectors across the board. There will be many forces at work that would impact not only the banking, insurance and carbon-intensive sectors, but very likely all sectors that directly or indirectly generate carbon emissions.

What do you make of one of the main challenges to the community in analysing climate-related risks: the vocabulary and methodology used to analyse it?

Torsten Ehlers: There is still a lack of clarity regarding definitions, for instance, in the realm of financial instruments offered. We're talking about green instruments, but sometimes it's not so clear as standards might vary internationally. That's not easy for investors to figure out, as even for green bonds there are different providers of certification. One instrument that central banks have become more comfortable with is stress tests. Some central banks have started to do climate stress tests, but there are various issues around that: what are the right scenarios? What are the models to be used? There are also issues with data.

Timothée Jaulin Relationship Manager and Head of Supranational Entities Coverage, Amundi

Timothée Jaulin is relationship manager at Amundi where he oversees the business development and coverage of supranational entities globally. Joining Amundi in 2012 as a research co-ordinator for the Sovereign Wealth Fund Research Initiative, he contributed to the establishment of the Institutional Investment Solutions Engineering team. In both capacities, Jaulin has been closely involved in the development of some of Amundi's most innovative investment solutions, including the climate finance offering, and the launch of flagship initiatives such as the Portfolio Decarbonization Coalition and the Green Cornerstone Bond programme. Prior to working in Amundi's Paris headquarters, he worked for the French Treasury in Washington, DC, and for Amundi in New York and London. Jaulin is a graduate of École Normale Supérieure Paris-Saclay and holds a master's degree in theoretical and applied economics from the Paris School of Economics.



Audun Grønn: There is a need to reach a common vocabulary. We need clear definitions, with the help of international co-operation. There is also the issue of taxonomy and classification of economic activities, to understand their degree of greening or non-greening. Central banks have a function to acquire, analyse and spread knowledge of risks, partly to inform their own decision-making on monetary policy and the assessment of financial stability, but also via public reporting to help underpin other actors' decision-making in the economy.

Timothée Jaulin: Definitions are very important, as is common understanding of concepts, but this is very high level. When you try to translate that at a very granular level – perhaps the asset, sector or project level – it has to be considered that we want clarifications, but not to hinder the capacity to innovate. Also, we need to make everyone understand that carbon intensity doesn't stop at carbon-intensive sectors – the entire economy relies on carbon-intensive input, and it's something we need to be clear about to understand the chain of climate risk consequences.

Why are the market, central banks and other financial actors having difficulties accurately pricing climate-related risks?

Timothée Jaulin: It relates to the way risk models work; it's very difficult to have a factor that will have an impact now on something likely to happen in the future. This is true for basic asset pricing theory, but also for the other models that central banks and regulators may be using. It's a long-term risk with climate change, but it's also a risk with very fat tails, so you're combining the two main risk models that financial practitioners are using. Perhaps the other reason is that it is a world of uncertainty when it comes to the timing of regulation and technological changes.

Torsten Ehlers: It is important these risks are accurately priced. Starting with the presumption that some of these risks are not properly priced for understandable structural reasons, if these risks were properly priced a lot of investors would probably rebalance their portfolios towards greener assets because they have

fewer risks. The pricing is particularly difficult, as a big part of environmental risks has to do with policy – which policies are put in place to counter climate change would have a huge impact on valuing certain assets.

How can central banks better integrate climate-related risks in stress-testing exercises, which can be very complex and costly?

Audun Grønn: International co-operation would be quite important, both multilaterally and bilaterally with other key central banks. Norges Bank is still at an early stage in incorporating climate risk into stress testing, and so needs to thoroughly consider how to do this in the future, but sharing experiences and knowledge with other central banks would be a crucial part of that process.



Audun Grønn

Timothée Jaulin: If there is sufficient transparency and reporting on the results of the stress testing, this can potentially have an impact on agents' behaviour. In an ideal world, based on the result of the stress test we would see a change in the behaviour of companies when it comes to financing long-term fossil fuel assets that could potentially become stranded, and other types of stranded assets across sectors.

Having access to standardised, consistent and reliable data to analyse climate change is crucial. Why is achieving this a challenge for institutions?

Torsten Ehlers: There is more and more data available, yet it's still at an early stage. With the Task Force on Climate-related Financial Disclosures (TCFD) and the Bloomberg report, the idea is to have consistent reporting on carbon dioxide (CO₂) emissions by large companies, which has progressed very well. There are other data providers trying to do this, but when it comes to climate impacts there are various dimensions of data required, which you typically don't need for other exercises or risk assessments.

Timothée Jaulin: We've made significant progress on the availability of scope 1 and 2 greenhouse gas emission data, largely due to the work of the Carbon Disclosure Project (CPD), the TCFD and other regulations worldwide that incentivise corporates to disclose their carbon emissions. All sectors need to be concerned because, indirectly, they are all using carbon-intensive inputs, and to incentivise companies to help support the transition to a low-carbon economy all sectors must do their part. It's also very important to increase the availability of data related to solutions, hence the importance of positive metrics too.

Given the huge uncertainties around climate change, can a clear-cut risk assessment be delivered?

Torsten Ehlers: I would agree that the uncertainty is higher, but I wouldn't be so negative because a lot of the risks stem from expectations of what future

Torsten Ehlers Senior Economist,
Bank for International Settlements (BIS)

Torsten Ehlers is a senior economist in the financial markets group at the BIS headquarters in Basel. He has worked extensively on green bond markets, is a member of the Network for Greening the Financial System macro-financial workstream and represented the BIS in the Group of 20 Green Finance and Sustainable Finance Study Groups. Ehlers joined the BIS as an economist in September 2011, and was based at the BIS's Hong Kong office from 2013 until 2016. He holds a PhD from the University of Zurich, a master's degree in economics from Warwick University and an MBA from the University of Dortmund.



policies are going to be, and we can make some assumptions about that. For instance, we can make the assumption that a given country has ratified the Paris Agreement on climate change and they're going to fulfil their commitment, so that will imply a certain path of CO₂ emissions and hence a certain emissions reduction target.

Beyond technical exercises and data that should underpin analysis, is it necessary to modify current institutional agreements, or should central banks modify their mandates to include mitigation of climate change in their policy objectives?

Audun Grønn: Climate risk is a source of financial risk, and it is therefore important for central banks to take this into account in their overall risk assessments. When it comes to institutional arrangements and modified mandates, specific climate risks are not currently in central bank mandates, and I believe it should not specifically be in the mandate.

Should central banks take a more active approach and implement active policies to foster this change in the economy and the transition to a greener business model?

Audun Grønn: We have to be careful. It is important for central banks to raise awareness of climate risk among market participants and supervisors, but we should avoid the political sphere, and preserve central bank professionalism and independence. In promoting a transition towards a greener economy, central banks must always focus on safeguarding financial stability. We should be alert to and avoid special regulatory arrangements for green assets. Investors need to manage climate risk on a par with other risks. Of course, raising awareness of these risks may lead to a shift towards green assets, and subsequently a bigger market for those assets will be a natural part of regulation.

Timothée Jaulin: There is the Paris Agreement as a common framework and, based on that, policy-makers need to take action that will have an impact on the risks to which various businesses are exposed. Central banks should have the capacity to assess these risks and factor them in. You don't need a specific treatment for climate risk, but policies that are in line with the commitments taken by countries at COP 21.

Torsten Ehlers: Measuring risks correctly is the starting point, and to the extent that central banks can contribute by raising awareness – and, as supervisors, by having a dialogue with their supervised institutions – that would take care of most of the issues. We also have to acknowledge that, particularly in emerging markets, there are central banks that have also followed some of the policies previously mentioned.



Timothée Jaulin

Could the increasing transparency central banks are undertaking in disclosing climate-related risks be an example for the wider market to spread best practice?

Torsten Ehlers: Some central banks have done great work raising awareness – the Bank of England had one of their early reports on the financial stability impacts of climate change on the insurance sector. Other central banks, such as The Netherlands Bank, are seriously considering this topic, as is Banque de France and the People’s Bank of China. There is already a lot of progress being made, and the NGFS brings a lot of central banks together and has an important role of distilling all the work that has already been done.

Audun Grønn: I agree with spreading best practices, and also the role of the NGFS in addition to individual central banks. The NGFS has structured workstreams, so they’re looking into various issues, and it’s a systematic building-up of knowledge and competence in this area. If you look at the membership of the NGFS – it’s 36 central banks and supervisory authorities and six international observer institutions. It is heavily advanced-economy-oriented – particularly western Europe. There are also some central banks of advanced economies missing from the NGFS. I would not make a strong distinction between advanced and emerging economies in this context because every economy has the opportunity to join, and there are other international institutions where they can co-operate, such as the International Monetary Fund, the G20-based Financial Stability Board and the BIS.

Timothée Jaulin: Co-operation is already there, and I don’t see emerging market institutions really lagging behind. In Asia, many institutions have been at the forefront of these issues, especially on the topic of green finance. China has been a leader, but we have also seen Hong Kong make an announcement recently and the regulatory authority of Singapore sign a memorandum of understanding with the International Finance Corporation on the topic of green bonds. We’ve seen interesting initiatives in India, Bangladesh, Indonesia, Malaysia and Mexico.

Torsten Ehlers: I also see emerging markets taking the lead. There might be an issue of very small emerging markets that are already affected very heavily by climate change, and here the international community has some initiatives in place.

Audun Grønn Special Advisor to the Governor, Norges Bank
Audun Grønn has been special adviser to the governor of Norges Bank since 2016. He has served in various positions at Norges Bank since 1980, including director of the international and statistics departments. He spent eight years on the International Monetary Fund's executive board in Washington, DC, as senior adviser (1989–92), alternate executive director (2011–13) and executive director (2013–16), as well as one year as national central bank expert at the European Central Bank in Frankfurt (2005–06). Grønn holds a postgraduate degree in economics from the University of Oslo.



In analysing the adoption of investment criteria by central banks and ESG criteria, major institutional investors have moved away from carbon-intensive sectors. Should this practice be pursued by central banks in their portfolio management?

Torsten Ehlers: Different central banks have quite different investment needs and sometimes mandates, but there are various strategies in this direction – such as negative exclusion strategies – and positive strategies, such as a greater focus on assets associated with corporations or governments that have lower carbon emissions or more ambitious carbon reduction targets.

Timothée Jaulin: It's coming from public finance institutions, central banks, public pension funds, sovereign wealth funds and other institutions. One thing that is important for public finance institutions is the step before the 'how' – the 'why'. Why do you want to integrate ESG factors in your investment policy? Is it because of value reasons, to manage or protect the reputation of your institution? Or for risk management and return enhancement, or policy objectives? It's important to be clear about the reasons you are establishing an ESG policy.

Audun Grønn: For Norway's Sovereign Wealth Fund (SWF), the Government Pension Fund Global and the ESG investment criteria, this work is based on a mandate given by the Ministry of Finance, so it's a political mandate. Regarding environmental issues, the SWF has a dedicated green portfolio; for social criteria or exclusions, there is an Ethics Council giving recommendations to the central bank; and for governance issues relating to the transition to a low-carbon economy, there has been a lot of emphasis on good corporate governance. □

This is a summary of a forum convened by Central Banking and moderated by Central Banking staff writer Victor Mendez-Barreira. The commentary and responses to this forum are personal and do not necessarily reflect the views and opinions of the panellists' respective organisations.

Watch the full climate change webinar at www.centralbanking.com/4203536