From trickle to main stream

Central banks’ journey into sustainability
From trickle to mainstream | Central banks’ journey into sustainability
Executive summary

On 3 March 2021, the Bank of England became the first in the world to have its Monetary Policy Committee Remit updated to reflect explicitly that the government’s economic strategy entails supporting the transition to a net zero emissions economy, and to announce that it would henceforth adjust its Corporate Bond Purchase Scheme (CBPS) to account for the climate impact of the issuers of the bonds it holds. Only a few years earlier, the consensus in the central banking community had been that climate change was something for others to worry about. This began to change in late 2017 with the founding of the Network for Greening the Financial System (NGFS). And while the swelling membership of the NGFS to 90 members, of which 63 are central banks, suggests the consensus has flipped, in fact central banks are at very different stages in the journey towards fully internalising the relevance of climate change into their actions. And most are still at a very early stage. However, the collective journey is underway and is clearly gaining speed.

This paper offers three contributions:

1. A discussion of how climate change gradually imposed itself not only as a legitimate but also an essential issue for central banks to consider, and where the debate stands today
2. An overview of actual practices across the global central banking community
3. Recommendations for advancing on this journey for central banks at different stages

Conceptually, the journey began by acknowledging the potential relevance of climate change as a risk to financial stability, which is itself squarely within the mandate of most central banks, to recognising the relevance of climate change to investment activities (for non-policy asset holdings) — and most recently a public debate has opened up, at least in some jurisdictions, around integrating climate change in policy-related asset purchases too.

Most central banks in developed economies have now embarked on the sustainability journey, while their emerging and developing economy peers appear to be following suit. In our observation, financial stability has been the most active area. Across investment activities, implementation is still at an early stage. While responsible investing is not a new concept, most early starters began their journeys by aligning their investment practices with ethical values, implemented via exclusionary screens. Today, most central banks in the sample population started with risk management objectives (both reputational and financial), but newer approaches beyond exclusions are gathering interest as available solutions become more sophisticated. Indeed, we see some newer sustainability converts adopt more ambitious solutions than their early-bird peers.

To navigate this increasingly complex world, the following recommendations should help provide some guiderails as central banks develop their approaches to integrate sustainability in their activities. Some are mission-critical and apply to all central banks. Others are mandate- and preferences-dependent. The former include setting clear, climate-related objectives that distinguish between financial outcomes (managing how climate change impacts the bank’s activities) and extra-financial ones (how the central bank contributes to sustainability goals, such as reducing carbon in the atmosphere); adopting a framework for assessing exposures to sustainability-related risks in the central banks’ activities; and integrating material sustainability-related information into their investment and risk management processes. Recommendations focused on the sustainability impact of central bank choices, by contrast, would apply only to those central banks that see it as part of their mandate, or their social license to operate, to take such impact into consideration — recognising that choosing the status quo is an active decision that may have a sustainability impact too.
Evolution of central banks’ approach to climate change

Central banks (CBs) all over the world used to be united in thinking climate change was out of their remit.

This began to change with the founding of the NGFS in 2017, by eight CBs and supervisors who shared the view that climate risk is a significant financial risk; three years on, the network counts 90 members and 14 observers representing five continents, and its membership keeps growing apace. The creation of the NGFS marked the beginning of a dramatic evolution and set the frontier of CBs’ embrace of climate change (with the mainstream lagging behind, as will be seen below).
Phase 1
In 2017-2018, entailed acknowledging that climate change might impact financial stability. Since financial stability itself was part of many CBs’ remit, it was a relatively small step to add climate change to the mix of risks to monitor. Focus though was away from CBs themselves, and squarely on the objects of their supervisory scrutiny — namely banks and, to a lesser extent, markets. NGFS gained members in 2018 primarily on this basis. There was explicitly no consensus about the relevance of climate change beyond bank supervision and financial stability.

Phase 2
In 2019, entailed acknowledging climate change as relevant to CBs’ portfolio management activities, with broad consensus for “non-policy” investment activities and a more reluctant one for FX reserves — partly as a matter of philosophy and partly as a practical matter, since large chunks of FX reserves portfolios, sometimes their entirety, contain very little embedded climate risk (e.g., if made up of G10 government bonds).

Phase 3
In 2020, was when the red line that had hitherto been monetary policy began to be challenged. It still very much is one for the overwhelming majority of CBs, but at least in a significant minority there is now a debate. One central bank has started incorporating climate change into its operational framework, and another is actively and publicly thinking about it. Many more have started debating it behind closed doors.

Over time, the good practices advocated by the NGFS but initially implemented by few of its members have gained followers, and some are in good way to becoming mainstream within this group of CBs; but many CBs, particularly in emerging and developing economies, have yet to even join the NGFS, so the road ahead remains long.

CBs cannot be accused of being behind the curve however. 2020 was a pivotal moment for institutional investors as a whole for recognising the meaningful implications of climate change for their portfolios, and most are at an early change of implementing asset allocation changes in response.

We expect the same will happen with CBs’ management of non-monetary policy portfolios as they gain further familiarity and comfort with the strategies available, to take account of both the risks and opportunities presented by climate change and other sustainability considerations. The question of monetary policy frameworks by contrast is likely to remain a contentious one, and one where each central bank ends up charting its own path.


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Central banks’ sustainability practices

The extensiveness and forms of approaches used by NGFS CB members to integrate sustainability into their practices are varied and rapidly evolving. In this section, we first provide a worldwide panorama of central banks’ climate awareness. This section then explores where central banks stand at the time of writing — starting with CBs’ broad institutional approach to sustainability, an area where most NGFS-member CBs have identifiable practices, and moving on to financial stability, portfolio management and monetary policy, by decreasing frequency of sustainability adoption.

The methodology is described in the Methodology section of the Additional background. Please refer to the Sustainability Actions Matrix on page 22, for a CB by CB snapshot of the actions taken.
Worldwide panorama of central banks’ climate awareness

In this section, we look at membership in the NGFS as a proxy for acknowledging the relevance of climate change to a CB’s mandate and operations. CBs are under no obligation of joining the NGFS, and it is conceivable that some non-members might be embracing the same beliefs and practices as NGFS members. However, the costs of joining are non-existent and there are no expectations to be met, whereas the benefits from peer exchange, learning and signalling, are considerable. So, this simplifying assumption should not be overly distortive.

The picture that emerges is one where the largest and richest CBs have overwhelmingly bit the bullet of acknowledging climate change and joined the NGFS, while others generally have not. Thus, while most FX reserves are held by CBs that have joined NGFS, only a third of all CBs globally are members (Exhibit 1). There are large regional differences too: Europe and North America are the only regions where most CBs are NGFS members, although in most regions (except for Africa and Middle East) the largest CBs are members (Exhibit 2). Overall, while most developed market (DM) CBs are NGFS members, the vast majority of emerging market (EM) CBs are not (Exhibit 3), which is concerning given that generally speaking emerging markets are expected to be far more impacted by climate change (Exhibit 4). Among G20 countries, only three CBs have not joined NGFS yet (Exhibit 5). Consistent with the geography of sustainable investing globally, most NGFS member CBs are based in Europe (Exhibit 6).

Exhibit 1. Although most large CBs (as measured by FX reserves) have joined NGFS, only a third of all CBs globally are members.

<table>
<thead>
<tr>
<th>CB FX reserves USD (in $tn)</th>
<th>CB count</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
<td>130</td>
</tr>
<tr>
<td>10.1</td>
<td>10.1</td>
</tr>
</tbody>
</table>

Source: NGFS membership list as of 19/05/2021, FX reserves as of 30/10/2020 (Bloomberg, CB websites).
Exhibit 2. CBs holding the majority of global FX reserves have joined the NGFS, but Europe and North America are the only regions where a majority of CBs are members.

As % of total FX reserves per region
- World: 19% NGFS, 81% Non-NGFS
- Africa: 68% NGFS, 32% Non-NGFS
- Asia-Pacific: 10% NGFS, 90% Non-NGFS
- Europe: 12% NGFS, 88% Non-NGFS
- Latin America and Caribbean: 21% NGFS, 79% Non-NGFS
- Middle East: 84% NGFS, 16% Non-NGFS
- North America: 100% NGFS, 0% Non-NGFS

As % of total count of CBs per region
- World: 67% NGFS, 33% Non-NGFS
- Africa: 88% NGFS, 12% Non-NGFS
- Asia-Pacific: 70% NGFS, 30% Non-NGFS
- Europe: 29% NGFS, 71% Non-NGFS
- Latin America and Caribbean: 75% NGFS, 25% Non-NGFS
- Middle East: 94% NGFS, 6% Non-NGFS
- North America: 100% NGFS, 0% Non-NGFS

Source: NGFS membership list as of 19/05/2021, FX reserves as of 30/10/2020 (Bloomberg, CB websites).

Exhibit 3. While most DM CBs are NGFS members, the vast majority of EM CBs are not.

CB FX reserves (in $tn)
- DM: 0.5 NGFS, 4.5 Non-NGFS
- EM: 1.9 NGFS, 5.6 Non-NGFS

CB FX count (in $tn)
- DM: 1 NGFS, 34 Non-NGFS
- EM: 129 NGFS, 29 Non-NGFS

Source: NGFS membership list as of 19/05/2021, FX reserves as of 30/10/2020 (Bloomberg, CB websites).

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Exhibit 4. Climate map

Percent Loss in GDP per capita by 2100 Abiding by the Paris Agreement (RCP 2.6 Scenario)

Exhibit 5. CBs from most of the G20 have joined NGFS (size of each rectangle proportional to GDP; GDP figures in $tn, as of 2019).

Exhibit 6. The majority of NGFS CB members are from Europe.

Source: NGFS membership list as of 19/05/2021.

Source: World Bank and OECD National Accounts data files, as of 2019. $ refers to USD.
Institutional approach to sustainability

Sustainability in mandate

While a survey by the NGFS of 107 CBs undertaken in 2020 showed that only 23% of them had an explicit reference to sustainability either in their primary (5%) or secondary objectives (18%), this proportion is meaningfully higher when focusing on NGFS members and including implicit references (Exhibit 7).

Exhibit 7. Close to half of all NGFS CBs have sustainability explicitly or implicitly embedded in their respective mandates.

As % of total count of NGFS CB members per category

53% 43% 48%

Source: Review of annual CB reports, CB speeches, news reports, as of 3/01/2021, “Report on The Roles of ASEAN Central Banks in Managing Climate and Environment-related Risks” (November 2020). As in this latter paper, CBs included here as having sustainability in their mandate are both those with direct sustainability mandates and those mandated to support their respective country’s broader economic activities where these governments have undertaken green policies. Given that the research was concluded as of 01/03/2021, the total number of examined CBs is 62 and it excludes the Reserve Bank of India, which joined NGFS in April 2021.

Research and advocacy

Consistent with what we have observed in our direct engagements across the CB community, the public record suggests efforts to understand climate risks and explore ways to measure and manage these risks have dramatically increased in recent years. Although some CBs had to refocus their attention to immediate issues caused by the pandemic at its outbreak, 2020 saw a significant increase in CB climate-related initiatives.

Exhibit 8. Vast majority of NGFS CBs’ sustainability focus is on environmental considerations, with social ones lagging. DM CBs lead on both fronts compared with EM peers.

As % of total count of NGFS CB members per category

100% 75% 89%

65% 57% 61%

Source: Review of annual CB reports, CB speeches, news reports, as of 01/03/2021. Given that the research was concluded as of 01/03/2021, the total number of examined CBs is 62 and it excludes the Reserve Bank of India, which joined NGFS in April 2021.
Reserve Bank of New Zealand completed a comprehensive assessment to understand its own climate impacts, showing 58% of RBNZ’s emission was attributed to currency production and freight followed by business travel at 24%.

Exhibit 9. ESG research and broader advocacy are widely practiced by most NGFS members.

<table>
<thead>
<tr>
<th>Category</th>
<th>As % of total count of NGFS CB members per category</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESG research</td>
<td>94%</td>
</tr>
<tr>
<td>ESG advocacy</td>
<td>77%</td>
</tr>
</tbody>
</table>

Source: Review of annual CB reports, CB speeches, news reports, as of 01/03/2021. Given that the research was concluded as of 01/03/2021, the total number of examined CBs is 62 and it excludes the Reserve Bank of India, which joined NGFS in April 2021.

Exhibit 10. The number of sustainability-related speeches by CB leaders is growing exponentially.

<table>
<thead>
<tr>
<th>Year</th>
<th>Average</th>
<th>Annualised</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 - 2018</td>
<td>7</td>
<td>272</td>
</tr>
<tr>
<td>2019 - 2020</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

Source: BIS website https://www.bis.org/list/cbspeeches/, as of end March 2021, review of CB speeches under the Green Finance category.

Up to March 2021, almost 80% of the sample population have published research or hosted seminars on ESG. We also observed that the central bank community is becoming more vocal on climate and sustainability topics, with 68% self-reporting as having advocated for ESG (Exhibit 9). This trend has also become more pronounced when looking at the number of sustainability-related speeches given by central bank leaders in the past few years (Exhibit 10).

Day-to-day operations

52% of NGFS members disclose that they have been actively greening their operations (building, energy sources, waste management, travel, etc.). While CBs’ direct carbon emissions are likely to be small in most cases, attention to this dimension is symbolically important and can be another way for CBs to show leadership in the context of both their country’s financial sector and government apparatus.

Financial stability-related actions

Just under half of NGFS CBs have taken material action to assess climate-risk exposures in the financial system of their respective countries. 11% have even gone so far as to conduct comprehensive stress tests on the financial system, and this proportion is expected to grow as CBs share best practices and more have made plans to conduct this exercise. Fully half of EM CBs consider climate change a financial stability risk, against only a third of DM CBs. However, in this area too, likely reflecting capacity constraints, EM CBs are less likely than their DM counterparts to have taken concrete steps to address this source of risk (Exhibit 11).

The NGFS scenarios and other reference tools are invaluable help, but clearly more capacity-building will be needed for central banks to routinely incorporate climate change into their supervisory practices.
Exhibit 11. Explicit supervisory role\textsuperscript{5} in ESG policies and climate stress tests are less common.

<table>
<thead>
<tr>
<th>Category</th>
<th>Financial stability</th>
<th>Reserve management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macroprudential assessment</td>
<td>53% DM 39% EM 47%</td>
<td>59% DM 42% EM 50%</td>
</tr>
<tr>
<td>Considers ESG as a financial stability risk</td>
<td>32% DM 40% EM 36%</td>
<td>35% DM 32% EM 11%</td>
</tr>
<tr>
<td>Explicit ESG supervisory role</td>
<td>20% DM 26% EM 18%</td>
<td>24% DM 44% EM 0%</td>
</tr>
<tr>
<td>Conducts climate stress tests</td>
<td>18% DM 4% EM 11%</td>
<td>38% DM 0% EM 21%</td>
</tr>
</tbody>
</table>

Source: Review of annual CB reports, CB speeches, news reports, as of 01/03/2021. Given that the research was concluded as of 01/03/2021, the total number of examined CBs is 62 and it excludes the Reserve Bank of India, which joined NGFS in April 2021.

Exhibit 12. Just under half of all NGFS CBs have established broad ESG guidelines for their reserve portfolios, with DM CBs ahead of their peers in implementing ESG investing.

<table>
<thead>
<tr>
<th>Category</th>
<th>Reserve management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad ESG guidelines</td>
<td>59% DM 42% EM 50%</td>
</tr>
<tr>
<td>ESG screens</td>
<td>21% DM 11% EM 32%</td>
</tr>
<tr>
<td>Impact investment</td>
<td>24% DM 24% EM 24%</td>
</tr>
<tr>
<td>ESG data analysis</td>
<td>0% DM 0% EM 0%</td>
</tr>
<tr>
<td>ESG risk management</td>
<td>21% DM 0% EM 0%</td>
</tr>
</tbody>
</table>

Source: Review of annual CB reports, CB speeches, news reports, as of 01/03/2021. Given that the research was concluded as of 01/03/2021, the total number of examined CBs is 62 and it excludes the Reserve Bank of India, which joined NGFS in April 2021.

\textsuperscript{5} The data for Supervisory Role has been adjusted to exclude those CBs which do not have a primary supervisory role in their respective jurisdictions.

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Investment-related actions

The Responsible Investment Guide for Central Banks issued by the NGFS in 2018 provided a good overview of emerging practices for integrating ESG into different types of investment portfolios managed by CBs.

As our observations below and the subsequent NGFS progress report issued in late 2020 make clear, most CBs, even within the NGFS membership, are at very early stages of incorporating sustainability into their investment portfolios.

More specifically, focusing on FX reserves portfolios, 42% of NGFS CBs overall have adopted broad ESG guidelines; this percentage rises to 59% among DM CBs, and 21% for EM ones (Exhibit 12).

Central banks implement ESG in their investment activities for various reasons. These fall into two broad categories — either portfolio-related, e.g., to improve the risk & return profile, including to limit reputational risk; or to achieve extra-financial impact such as mitigating climate change or serving as an example. From our study, both types of objectives can be observed, although not always clearly distinguished. While most CBs refer to risk management aspects of their objectives, some also allow for impact investments done strictly within the existing boundaries of investment policies (for example, setting a preference for impact instruments whenever they provide comparable risk/return to the “regular” securities). All impact investments we have observed consist of allocations to green or sustainable bonds.

As shown in Exhibit 12, around 44% of DM CBs analyse ESG data and use them for risk management purposes; however none of the EM members report doing so, even though they are more likely to hold in their portfolios equity and other higher return-seeking asset classes that would lend themselves more to this kind of analysis.8

We find that close to one-third of NGFS CBs use exclusionary screens, and this proportion rises to 50% for DM NGFS members; by contrast only 11% of EM members do so.

The second most popular climate-aware investment strategy is the purchase of green bonds, practiced by roughly a quarter of NGFS member CBs, with this proportion rising to 1/3 for DM CBs and falling to 11% for EM CBs. This is a little paradoxical, as green bonds are usually considered a form of impact investing, something motivated by values rather than pure risk and return considerations. That said, for portfolios made up near exclusively of government bonds, green bonds are by far the most widely available strategy for introducing a climate dimension.

While the NGFS CB community continues to make impressive efforts, mainstreaming sustainable investments is hindered by challenges that have deterred many from taking the first step. However, in our view these challenges, while real, are manageable and cannot justify inaction.

Data

Information about E, S and G characteristics of different investments can be difficult to navigate. Even within public equities, the asset class with the best ESG data coverage, data availability, comparability and quality remain uneven across sectors, geography, size and even data providers. Moreover, even when the information is available, determining which ones are material and how to translate them into risk metrics is also challenging. Many CBs may be tempted to wait until the data environment is better.

However, regulation and industry efforts have propelled the development of data analytics and ways to

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incorporate them into investment and risk management processes, particularly as far as climate is concerned. Against that, the risk of taking no action increases over time, and doing nothing is also an active decision. Based on research from the BlackRock Investment Institute, there is potential for a 7% annualized return difference between the most and least sustainable equity sectors just over the next 5 years.9

There is still a long way to go in standardising ESG data, but undeniably there is already a critical mass available to start making meaningful adjustments to investments. This should not be viewed as a once-and-for-all solution, but rather, one step of many on this journey.

Portfolio composition

Many CBs have decided not to take actions to climate-proof their investment portfolios, as the latter consist mostly of high-quality liquid assets such as G10 government bonds. As such, they perceive their exposure to sustainability risks to be minimal. That said, sovereign and similar assets are not immune to climate risks, as BlackRock’s climate-aware capital market assumptions make clear. Methodologies are available to assess sovereign sustainability.10 And at least one central bank has developed a methodology to exclude from its investment portfolios bonds issued by sovereign or sub-sovereign governments with carbon emissions per capital above a threshold.11 More fundamentally, the protracted low safe interest rate environment is making more and more central banks reconsider their traditional asset allocation, and move toward higher-yielding asset classes such as mortgage-backed securities, corporate credit and equities.12 The more diversified CB investment portfolios get, the more important it will be for them to integrate ESG in their management.


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Perception

Some CBs do not want to take a stance towards any specific sectors, industries or companies. By using screens or incorporating sustainability criteria in their investment activities, which might be heavily scrutinised and questioned by their stakeholders, CBs could be exposed to potential reputational risk as a result. Screening out too much or too little could be equally contentious depending on the region. As such, some CBs are hesitant to take the first step of implementation, which typically involves some form of criteria-setting. One way around this conundrum is to follow industry standards such as carbon emission-related measures, and norms-based standards such as the United Nations Global Compact. Regulation has also helped to converge popular standards and definitions; recently we observe many CBs looking to align their equity and corporate bond holdings to EU Paris Aligned Benchmarks or EU Climate Transition Benchmarks, for example.

Despite the challenges mentioned, many CBs have set an example already by moving ahead with their implementations. While early starters are likely to stay closer to their baseline screens (typically informed by regulation), newer adopters have ventured into some of the more recent innovations designed to capture ESG risks in broad exposures, such as optimisation and best in class strategies. It is also observed that while minimising tracking error to the traditional benchmark was a key criterion in early stage adoption, more experienced ESG reserve managers now consider it secondary compared with other characteristics such as number of constituents and methodology. We include several case studies to share their experiences and lessons learned in this process.

Monetary policy

While climate risk is a relatively new topic in the context of monetary policy, 2020 has served as a reminder that systemic risks can take many forms. As the topics of sustainability and climate change become mainstream, it has become less controversial to consider climate risk in monetary policy. Today the debate is hot, but uptake is still relatively low compared with the other areas of CB activity, with 23% in the sample population considering impacts of climate change in their analysis on price stability, 21% overall (but as high as ¼ of EM CBs) incorporating impacts of climate change in their macro forecasting, and just 2 considering incorporating these factors in their purchase programs (Exhibit 13).

Why such a low uptake?

There are both principle and technical grounds for arguing that monetary policy frameworks should be climate change agnostic, or in CB parlance “market-neutral”. The extent to which these arguments are binding will vary over jurisdictions and over time, and hence, we expect, so will integration of climate change into monetary policy frameworks.
Arguments of principle

1. Democratic legitimacy. CBs are not climate policymakers. It would be undemocratic to turn themselves into one by substituting themselves to governments in setting rules about carbon reporting requirements for corporations (non-financials) or what constitutes a green or sustainable asset, or using their capital to support certain sectors of the economy at the expense of others. Against that, CBs don’t traditionally rely on governments to tell them what level of risk is acceptable in their portfolios, and if CBs believe there is a market failure in pricing climate risk, then they would be warranted to do their best to take it into account themselves, as indeed they increasingly ask of the financial institutions they supervise. Moreover, in some jurisdictions, the CB has a general mandate to support the policies of the government, and these policies now often include a commitment to reducing carbon emissions dramatically within the next decade. Therefore, an asset purchase policy that ends up subsidising the most carbon intensive parts of the economy may in fact not be consistent with those CBs’ mandate.

2. Loss of independence. The argument here is that if CBs are seen to favour certain sectors or industries in their asset purchases, at the expense of others, they are de facto entering the realm of government policies, and it’s a slippery slope from there to being asked to allocate capital in other ways at the behest of the government. But as long as the central bank can pursue any such secondary objective without prejudice to its primary mandate of price stability, it is unclear what the threat to its independence is.

3. Overpromising. Finally, there is a concern that if CBs overtly pursue climate-related objectives, the public may come to expect them to solve the bulk of the challenge by themselves, especially if other parts of the government do not deliver on their part. In this case, CBs would inevitably end up disappointing expectations, and face a backlash. This is a real risk, but not one that cannot be managed through careful communication about the goals and limits of any climate-related CB action.
Technical arguments

1. Climate change has no bearing on the operational tools in use. This is true for any central bank whose policy framework does not include purchases or repurchase agreements of assets issued by the private sector. A large proportion of CBs around the world fall into this category; but most large CBs do carry such assets on their balance sheets, in part as a legacy of the COVID-19-induced economic shock.

2. Integrating climate change considerations into the framework might limit ability to achieve primary mandate (by restricting the pool of assets eligible); this could be the case in principle, but CBs would have the ability to 1) modulate any climate-related criteria in such a way as to keep the exclusions manageable and 2) offset the shrinking in addressable assets perimeter by raising non-constrained asset purchases.

Central bank green asset purchases could be counterproductive. Two arguments are made under this heading. The most common posits that there is a shortage of green assets, notably green bonds, and if CBs start hoovering them up, they will make it harder for other investors to green their portfolios. The extent to which there is “greenium” or a price premium on green assets is varied and debated, but in any case markets are dynamic systems, green bond issuance is on a fast rising trend, and an anticipated large increase in demand could reasonably be expected to be met by an equally large increase in supply given existing transition financing needs. A longer-term argument is the one put forward by Bundesbank President Jens Weidmann that green central bank purchases might cause serious harm to green finance when they are discontinued because monetary policy no longer requires asset purchases. This risk, however, is no different than those that arise when CBs need to taper or stop rolling over any bond purchases. Experience suggests they indeed need to be managed, but also that they can be especially in an environment of structurally growing demand for green assets.


<table>
<thead>
<tr>
<th>Credit operations</th>
<th>Collateral</th>
<th>Asset purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Adjusting pricing to lending benchmark</td>
<td>4 Haircut adjustment</td>
<td>8 Tilting</td>
</tr>
<tr>
<td>2 Adjusting pricing to collateral</td>
<td>5 Negative screening</td>
<td>9 Negative screening</td>
</tr>
<tr>
<td>3 Adjusting counterparties’ eligibility</td>
<td>6 Positive screening</td>
<td></td>
</tr>
<tr>
<td>7 Aligning collateral pools</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Consequences for monetary effectiveness

Contribution to mitigating climate change

Effectiveness as risk protection measure

Operational feasibility

Potential impact: ● Strongly positive ● Positive ● Minimal ● Negative ● Strongly negative

The assessment is based on qualitative expert judgement, more formal quantitative analysis may be needed. It aims to guide the reader through the report and should not be interpreted as recommending any measure. Colour-coding is used to avoid any “netting” across criteria. The table uses a limited number of colours for reasons of simplicity. More nuanced analyses of options are provided in Additional background section.

Source: NGFS Publication, Adapting central bank operations to a hotter world: Reviewing some options, as of March 2021.

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An encouraging sign that these issues are no longer considered as entirely insuperable is the recent publication by the NGFS of a report assessing nine options to factor climate-related risks into their operational monetary policy framework.13

**Disclosure and reporting**

The first step of managing any risk is to measure it. As progress is made across industries and institution types, we also observe an increasing number of NGFS CBs making an effort with disclosure and reporting. Although still early days, we expect this will grow as more CBs consider becoming signatories of the UN Principles for Responsible Investing (only three currently are), where reporting obligations are explicit.

The Bank of England serves as an example to its peers as it published its climate-related disclosure report Climate-related disclosure report aligned to recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in 2020. Earlier this year, De Nederlandsche Bank (DNB) published its first Climate-related report which is also aligned with TCFD recommendations.14 The European central bank and the 19 national CBs of the Eurosystem will start making climate-related disclosures for the euro-denominated, non-monetary policy portfolios under their management within two years, aligned to the recommendations of the TCFD. This step is essential as CBs also assess their own performance, and exposure/contribution to climate risk across their own operations. This is no easy task; however, data and tools have already reached critical mass to allow for meaningful analysis.

As standards and methodologies converge across industries and regions, it has become more feasible to assess and analyse portfolio exposures with an ESG lens. This analysis provides transparency internally (and externally where applicable) on what the portfolio is exposed to, the impact these investments are making to the world and society and their evolution over time. Exhibit 15 is an example of an ESG analysis snapshot for a diversified fixed income portfolio.

**Exhibit 15. ESG snapshot for a diversified fixed income portfolio.**

For illustration purposes only.

13 Adapting central bank operations to a hotter world: Reviewing some options, NGFS, 2021.


For professional / qualified clients and institutional /professional / qualified investors only.
Conclusions

As the foregoing makes clear, the central banking community has already made significant progress in integrating the reality of climate change into all areas of CB responsibilities, at least conceptually. For the vast majority of CBs, however, there is a long journey ahead. Increased collaboration and knowledge-sharing between institutions will be a powerful vehicle to accelerate collective learning and establish standards and best practices well beyond central banks.

CBs at the start of this journey should clearly define what they want to achieve by integrating climate change into their activities, in the context of their specific mandate. In particular, they should decide whether their objective is limited to managing the impacts of climate change on the CB (such as its exposure to climate risk), or whether they are focused as well on the impact of their choices beyond the CB itself, such as contributing to the country’s progress toward a Net Zero emissions economy. This distinction is a critical step for successful implementation. In all cases, CBs should develop a framework for assessing their exposure to climate change across all their activities.
There are several ways to implement ESG into CB investment activities, namely 1) ESG integration 2) dedicated ESG strategies and 3) Investment Stewardship (applicable for equities and corporate bonds).

**ESG integration** refers to the approach of incorporating ESG insights into one’s risk management and investment processes.

ESG integration considers only one objective — to improve the portfolio’s financial return and risk characteristics. In this case, ESG considerations are not treated differently to other insights traditionally relied upon, and investors should explore: Is this risk material to my portfolio? If so, is it rewarded? How will this be priced into asset valuation? What time horizon should this risk be measured?

When implementing ESG integration, whether in investment activities or other parts of CBs’ activities, the following key steps should be considered:

- Does the governance structure require any adjustments to ensure relevant ESG insights are systematically incorporated into the usual operational processes?
- What are the resources required in order to equip investment and risk management teams to integrate ESG considerations into their processes? (This would include data and tools, but also knowledge and expertise)
- What are the relevant scenario analysis and stress tests?

ESG integration is a minimum step to be considered by all official institutions. It is not about achieving any ESG ratings or extra-financial impacts, but rather it is about being a prudent investor, and taking into account all available and relevant information that could impact investment risk and return of the portfolio.

Beyond this initial step, CBs with objectives beyond risk management may wish to consider dedicated **ESG strategies** — investments pursuing specific ESG characteristics or outcomes, as detailed on the following pages.

**Investment stewardship:** For investments in corporations, voting and engagement can sometimes be important tools to protect long-term value of portfolio holdings, as well as to achieve better externalities. This is not yet commonplace for CBs, as many consider the direct intervention too far past the central bank’s sphere of authority and potential perceived conflict of interest. Some CBs delegate this important task to third parties or their external managers (either as a part of the investment management service or as a standalone arrangement), which allows them to benefit from stewardship efforts while maintaining clear lines within their policy.

Naturally there are trade-offs involved, which each CB needs to resolve for itself, based on its mandate, the expectations of the citizens it serves and what is required by its social license to operate — and the extent to which it is exposed to climate risks by the natural, economic and financial ecosystem it sits in and by its own operational choices (e.g., private asset holdings for investment or monetary policy purposes). None of these elements are static, which means that decisions taken at any point in time will need to be kept under review. Some challenges will dissipate over time as data availability improves, government policy choices are unveiled, markets become better at pricing climate change, and collective learning is accumulated. In this context, it is clear that a CB that chooses to ignore climate change would be far more likely to fail on its mandate than one that actively seeks to take it into account.

For professional / qualified clients and institutional / professional / qualified investors only.
## Exhibit 16. Sustainability Actions Matrix

<table>
<thead>
<tr>
<th>General approach</th>
<th>EM</th>
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<tbody>
<tr>
<td>Central Banks</td>
<td></td>
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<tr>
<td>E</td>
<td></td>
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<tr>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Sustainability in mandate</td>
<td></td>
</tr>
<tr>
<td>Advocacy</td>
<td></td>
</tr>
<tr>
<td>Climate-related disclosure</td>
<td></td>
</tr>
<tr>
<td>Climate consideration in policy (M)</td>
<td></td>
</tr>
<tr>
<td>Consider climate risk in purchase programs (M)</td>
<td></td>
</tr>
<tr>
<td>Incorporate climate risk in forecasting (M)</td>
<td></td>
</tr>
<tr>
<td>Explicit climate consideration in policy/guidelines, or have explicit climate-related guidelines (R)</td>
<td></td>
</tr>
<tr>
<td>Investment implementation (Screened) (R)</td>
<td></td>
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<tr>
<td>Investment implementation (Impact) (R)</td>
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</tr>
<tr>
<td>Investment implementation (Other) (R)</td>
<td></td>
</tr>
<tr>
<td>Use of climate data and information (again, will count those that subscribe to broad ESG data) (R)</td>
<td></td>
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<tr>
<td>Risk management implementation (R)</td>
<td></td>
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<tr>
<td>Explicit climate consideration in policy/guidelines, or have explicit climate-related guidelines (AM)</td>
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<td>Investment implementation (Screened) (AM)</td>
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<td>Investment implementation (Impact) (AM)</td>
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<td>Investment implementation (Other) (AM)</td>
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<tr>
<td>Use of climate data and information (AM)</td>
<td></td>
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<tr>
<td>Risk management implementation (AM)</td>
<td></td>
</tr>
<tr>
<td>Explicit policy/objective with climate consideration (FS)</td>
<td></td>
</tr>
<tr>
<td>Macrop residential - Assessment of Climate Risk in Financial System (FS)</td>
<td></td>
</tr>
<tr>
<td>Climate risk stress tests (FS)</td>
<td></td>
</tr>
<tr>
<td>Supervision with explicit Climate consideration incorporated (FS)</td>
<td></td>
</tr>
<tr>
<td>Research and market intelligence (FS)</td>
<td></td>
</tr>
<tr>
<td>CB operations (building, energy supply, currency issuance etc.) (FS)</td>
<td></td>
</tr>
</tbody>
</table>

- The central bank implements the given sustainability action
- The central bank does not implement the given sustainability action

Source: Review of annual CB reports, CB speeches, news reports, as of 01/3/2021. Given that the research was concluded as of 01/03/2021, the total number of examined CBs is 62 and it excludes the Reserve Bank of India which joined NGFS in April 2021.

For professional / qualified clients and institutional / professional / qualified investors only.
## General approach
- Sustainability in mandate
- Advocacy
- Climate-related disclosure

## Monetary policy
- Climate consideration in policy (M)
- Consider climate risk in purchase programs (M)
- Incorporate climate risk in forecasting (M)
- Explicit climate consideration in policy/guidelines, or have explicit climate-related guidelines (R)
- Investment implementation (Screened) (R)
- Investment implementation (Impact) (R)
- Investment implementation (Other) (R)
- Use of climate data and information (again, will count those that subscribe to broad ESG data) (R)
- Risk management implementation (R)
  - Explicit climate consideration in policy/guidelines, or have explicit climate-related guidelines (AM)
  - Investment implementation (Screened) (AM)
  - Investment implementation (Impact) (AM)
  - Investment implementation (Other) (AM)
  - Use of climate data and information (AM)
  - Risk management implementation (AM)

## Asset management services
- Explicit policy/objective with climate consideration (FS)
- Macroprudential - Assessment of Climate Risk in Financial System (FS)
- Climate risk stress tests (FS)
- Supervision with explicit Climate consideration incorporated (FS)
- Research and market intelligence (FS)
- CB operations (building, energy supply, currency issuance etc.) (FS)

The central bank implements the given sustainability action  ○ The central bank does not implement the given sustainability action

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Additional background

The spectrum of ESG strategies

Exclusionary screens

For reserve managers who want to manage sustainability risk by avoiding certain exposures, exclusionary screens have been a popular first step. This is particularly true for those looking to manage reputational risk associated with investing in corporate bonds and equities. The appeal of this approach is that it is straightforward to communicate and understand what exclusions are conducted. Depending on the methodology, screened strategies excluding baseline items typically do not lead to significant tracking error to the starting universe, which can be a helpful feature as a first venture.

In practice, how to implement the exclusions could be more complex. Different methodologies assessing issuers against pre-set criteria could result in significant differences in what actually gets screened out; for example, screening out companies with 15% fossil fuel revenue threshold vs. 30%.

It is important to note that excluding issuers based on their sectors or practices against international norms does not necessarily impact the portfolio’s ESG scores or other metrics, unless the portfolio is specifically constructed to do so. For example, some ESG-screened indices may exhibit similar ESG ratings to their parent benchmarks, with some even exhibiting higher carbon footprints than the parent index.

Investment and risk restrictions would come into play too. For example, in equity portfolios, heavy exclusions can lead to tracking error that exceeds tolerance for CBs. This is less likely to be the case with corporate bond indices (typically constructed using sampling techniques) because they have a larger proportion of portfolio risk driven by broader risk factors such as interest rate. Similar issues are found with best-in-class approaches.

Best-in-class

Some reserve managers don’t want to simply cut out a portion of the investment universe and are venturing into best-in-class strategies. "Best-in-class" refers to a portfolio or benchmark construction process whereby weighting to the worst performing issuers is reduced (sometimes to zero), and weighting to issuers that are best performing is increased. What constitute “best” or “worst” would depend on the criteria that have been set, such as carbon intensity, or third-party ESG scores.

An optimization technique can be used to achieve other portfolio characteristics, such as minimize carbon footprint, improve ESG rating while staying within a certain band of tracking error to the existing index, and minimise turnover. It is common that exclusionary screens are applied in addition.

Thematic investments

Like other investment theses, some investors believe E, S and G drivers can be used to construct a portfolio to outperform the broader market over a set horizon.

For example, in the global transition towards a low carbon economy, one could believe that identifying winners and losers ahead of the transition process can be a significant alpha source.

This is so far less common amongst CBs, however it is picking up pace among other types of official institutions, such as public pension plans. It is worthwhile noting that like ESG integration, the most important objective for this approach is to generate positive financial risk-adjusted returns.

Impact investing

While the first three approaches focus on impacts of sustainability factors ON portfolios, impact investing includes an element of externality – looking at impacts OF portfolios on the world or society. Since 2019, we saw an increase in impact investing by CBs, with 24% of our sample population making dedicated allocations to green bonds. Based on recent speeches and commitments, this is set to increase.

Investing in green bonds adds additional complexities to the investment process; in addition to factors common across fixed income investing, reserve managers also must guard against risk of “green washing”. Sourcing these securities can also be more challenging at times given the high demand in this relatively young market. It requires extra due diligence and skills by reserve managers to monitor the use of proceeds and having a view on its validity as an impact instrument. To read more, see a recent blog from BlackRock How Green Is Your Bond?

Some CBs among those with a specific investment tranche are also considering investments in green real assets, such as renewable energy infrastructure.


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In this analysis, we reviewed publicly available information from 62 CBs from the NGFS membership base. Information reviewed includes the latest annual reports, public speeches, publications and central bank websites and NGFS reports.

This study explores integration of sustainability considerations across the typical responsibilities of a central bank, including monetary policy, reserves and other portfolio management, financial stability and own operations. Across these broad categories, we identify 27 possible actions a central bank could take in their management of climate and/or ESG risks. For each action and central bank, we assign a “yes/no” response based on the aforementioned information sources.

This methodology was established to maintain a level of consistency, however there are some obvious limitations.

• As these are based on publicly available information, some could be outdated given the time lag of certain publications such as annual reports.

• Some CBs have taken more action than they include into public documents, and so this data would likely underestimate the true level of activity.

• Although the methodology helps to maintain objectivity in our assessment, some level of subjectivity is inevitable.

The analyses presented in this note draw on three sources:

• A comprehensive review of existing publications and disclosures by the 62 CBs that were members of NGFS as at 1 March 2021, including information enclosed in NGFS publications.

• Case studies conducted with a handful of CBs by the authors and day-to-day interactions between the authors and a multitude of central banks.

• Publicly available information on the broader universe of CBs, including speeches.

We make the hypothesis that NGFS members are at the forefront of CBs’ journey integration of climate change into their practices, and that non-members will tend to be less advanced.

We focus on climate issues in this study because this is the primary sustainability dimension on which CBs, like most institutional investors, are focused.

Below is the Sustainability Actions Matrix, which summarises and illustrates the results of our research. This matrix represents, for each anonymised central bank, the types of actions for which it has implemented sustainability.

The UK’s Prudential Regulation Authority (PRA) published details of its Insurance Stress Test for 2019, which included an exploratory exercise in relation to climate change. An important first step and blueprint for the community.
Could you share with us how you incorporate sustainability?

Decision on ESG principles
Banca d’Italia’s sustainability approach was developed with a view of improving the management of financial and reputational risks. This approach is still evolving, as sustainability issues are becoming ever more important.

As a central bank, we base our decisions on robust analytical grounds. Thus, the first step on our ESG journey was a comprehensive literature review of the positive implications of ESG principles for corporate financial and operational performance. Corporates with better ESG practices can benefit from the competitive advantage resulting from innovation, operational efficiency and lower legal and reputational risks. As a result of our own research, we published a paper on carbon risk for electric utilities in Europe. In 2019, we began integrating ESG criteria into the internally managed equity portfolios invested in the euro area.

ESG implementation with ETFs
In 2020, we incorporated ESG principles into the selection of our ETF holdings in the US and Japanese markets. Comparing the existing ESG products was not an easy task, as there is a variety of ESG strategies. As an experienced equity investor, we wanted to pursue state-of-the-art ESG strategies, in particular as it relates to transparency. We based the assessment on standard market cap benchmarks and compared different strategies over one year. We also applied our standard selection criteria for ETFs, which take account of management costs, the presence of securities lending services, physical replication, diversification and domicile of the ETFs and so on.

Market cap benchmark or ESG equivalents — Internally Managed Portfolios
We can flexibly customise the sustainability strategy of our internally managed portfolios. We decided to keep the market cap benchmarks to control our deviation from the market. This allows us to monitor directly whether our ESG and environmental enhancements also improve the risk-adjusted return over time. Thus, for the larger share of our equity portfolio, we cautiously observe the fast-changing trend of ESG benchmarks in the market (for example, recently established indices have leaned towards climate and environmental considerations). However, this remains an area of investigation for us, also in light of the development of EU low-carbon benchmarks.

Our internally managed portfolio is built by means of a sampling technique based on a factor model. First, we define our ESG criteria and objectives and then we identify the best way to incorporate them into the investment process. Our investment strategy is thus based on three pillars:

1. Norm-based exclusions: We exclude firms that do not comply with the UN Global Compact as they are involved in controversial weapons and tobacco.
2. Best-in-class: We base our assessment on data provided by an external ESG provider and identify companies with better ESG performances.
3. ESG integration into the portfolio optimisation tool: We optimise the portfolio by reducing the tracking error, while raising the ESG rating vis-à-vis the benchmark. To enhance the risk-return-sustainability profile of the portfolio, we carried out further research, including the use of machine learning techniques, to explore additional information beyond ESG scores. This led us to incorporate carbon intensity into the optimiser. We were thus able to reduce the carbon footprint of the portfolio by 30% compared with the standard benchmark.

What were the biggest challenges when incorporating sustainability?

The first challenge was related to ESG raw data, which are not always available; if available, data may not be comparable or of good quality, making it difficult to broaden the range of ESG metrics, beyond ESG scores.
The second challenge was combining the ESG criteria and sustainability targets with the main principles underlying our pre-existing framework:

- We kept market neutrality: we do not want to significantly deviate from the market risk-return profile and sector composition.

- We have set limits on idiosyncratic risk via constraints on the active weights of the portfolio against the benchmark, and on the maximum stake held in each company.

- To contain market impact, we limit the share of daily turnover when trading any of our holdings.

- To prevent conflicts of interest, we do not invest in financials (banks, insurance, financial services), or Italian media companies.

No less importantly, the selection of data provider posed some challenges relating to the comparison of different methodologies and valuation services provided. When assessing the correlation of several ESG scores from various providers, you will notice heterogeneity due to the different selection and weightings of ESG metrics they use. We performed a thorough analysis of several providers and we ran a backward test over a 10-year horizon to assess which was best suited for the integration of ESG factors into our financial model.

**How does Banca d’Italia communicate on sustainability matters?**

We decided to announce a broad strategy at the start of ESG integration. In light of the lessons learned from our experience on sustainable investment, we can lay down a charter with a more precise commitment. Meanwhile, Governor Visco and other Banca d’Italia board members have repeatedly underlined the importance of climate-related and sustainability topics for investors and central banks, also sharing our experience and methodologies. We have also published several research papers to show our methodological developments in the area of sustainable investment.

Credibility is important for central banks. Communication is a powerful tool in this respect, and we want to make sure that we deliver in full on our sustainability commitments.

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What was the process of setting up the sustainability framework?

On 8 September, 2020, the Banco Central do Brasil (BCB) publicly launched a new dimension of its strategic agenda, the so-called Agenda BC#. Previously comprised of four pillars — inclusion; competitiveness; transparency; and education — the new dimension officially brought climate risks and social and environmental aspects to all decision-making processes of the BCB. The BCB has a relevant history of activity and even international recognition on the subject. Thus, the decision to launch the sustainability dimension of the Agenda BC# looked at both the need to better organize and communicate what the BCB has already done in the past, as well as to present its schedule to the public of concrete actions and efforts to remain on the frontier of the subject. Governor Campos Neto and Deputy Governor Fernanda Nechio both have been quite vocal in saying that the BCB must respond to yet another set of structural changes in the economy; the emergence of new risks; and the new demands of society. Climate events previously considered rare, have become more frequent. Such events have been accompanied by changes in main economic variables in the relevant horizon for monetary policy, in addition to bringing significant risks to the financial system. Climate shocks — fires, droughts, floods, extreme temperatures — affect relative prices in the economy and, therefore, can have an impact on monetary policy decisions. These same extreme events put the national financial system at risk, changing the demand for currency, values of physical assets and collateral, in addition to bringing high financial costs to society. To fulfill the objectives of the central bank determined by law — ensuring price stability and guaranteeing the soundness, efficiency and competitiveness — the BCB must prepare for and respond adequately to these structural changes in the economy. The central bank’s policy formulation must consider socio-environmental risks and the impact of extreme events on the Brazilian economy and on the financial system.

Can you share any significant achievement/progress against the objectives which you laid out in the Sustainability agenda?

The BCB's current set of measures for sustainability is arranged in five major areas — partnerships; policies; supervision; regulation; and internal measures (leadership by example). This is not an exhaustive set of actions; it is expected to grow and evolve over time. We have made progress across a number of these areas. For example, three public consultations are being launched by the BCB between March and early April 2021, to address: expanding transparency based on the recommendations of the Task Force on Climate-Related Disclosures (TCFD) — but not limited to climate aspects only; the regulatory improvement for the management of social, environmental and climate-related risks by financial institutions; and the definition of sustainability criteria relevant to the granting of rural credit. Regarding the TCFD recommendations, it is important to highlight that the BCB will go beyond climate aspects, the current focus of the TCFD framework itself. The Central Bank will also include in its regulatory framework the need for disclosure of ESG aspects as a whole — in an "enhanced TCFD initiative". In regard to the Green Bureau, in its role as regulator and supervisor of the financial system, the BCB should stimulate financial institutions to observe sustainable criteria in the granting of rural credit, in view of practices that are efficient in terms of production and environment. The models of rural production that balance these premises...
already exist; it is necessary to channel the flow of financial resources for enterprises that adopt such models. In addition, in early February 2021, the BCB revised its Integrated Risk Management Policy (the PGR-BCB). This review made it possible to formalize risk management practices and the monitoring of socio-environmental risk within the scope of the Banco Central do Brasil. Still related to risks, the scope of BCB’s Sustainability Integrated Risk Report has already been defined, and its first edition will be published in June/July 2021. The BCB’s Ordinance nº 94,631, 2017, that created the BCB’s Social and Environmental Responsibility Policy (PRSA), also established the need for its revision until 2022. The review is already underway and must be delivered in the first half of 2021. The new PRSA is expected to correct any distortions, giving greater emphasis to the business aspects of the BCB, that is, related to the fulfilment of its mission of guaranteeing the stability of the purchasing power of the currency and the financial system. The Policy was established with the purpose of: contributing to sustainable development in its three dimensions — social, environmental and economic; encourage Brazilian Financial System institutions to participate in the country’s balanced development process; and promote access to information, services and financial products suited to the needs of Brazilian citizens and companies. The BCB is internally discussing the possible investment of international reserves in green bonds. BCB has also been very active in organizing several sustainability events, particularly in the areas of regulatory and supervisory oversight.
From trickle to mainstream | Central banks’ journey into sustainability
The HKMA has been very vocal about sustainability, such as promoting green finance, setting standards, risk management and investment activities. Could you share why and how HKMA’s journey started, what were the key objectives when establishing these programs and how does that fit into your official mandate?

We started our journey in 2015 with Active Ownership. The HKMA was an active supporter of the Principles of Responsible Ownership (PRO) and require our external managers to comply for our Hong Kong (HK) equity portfolio.

We then explored the (broader) topic of ESG and adopted the ESG Integration approach. The HKMA does not take the route of exclusions nor positive screening. The only exceptions are those in place to comply with laws and conventions. We believe that the concept of responsible investment is highly relevant to our work. By putting an appropriate emphasis on responsible investment and sustainable long-term performance, we believe that this can achieve better investment results, and reduce risk associated with ESG related matters.

Our overriding guideline is to give priority to ESG investments where the long-term return on a risk adjusted basis is comparable with non-ESG equivalent. This approach afforded much-needed scope around ESG thinking and research to overcome stakeholder concerns that ESG implementation might incur concessionary return. ESG integration and active ownership are also required by external managers we appoint.

Our 2020 annual report includes a material section on sustainability.

Let’s focus on your investment programs and risk management processes: How have you incorporated climate considerations in these activities?

The data and taxonomy are always a concern, we believe it is best not to rely solely on ESG ratings. We use whatever data that is available from multiple sources and then dig deeper. On a climate-related instance, when we were presented with a proposal with a bundled multiple power generation renewable asset which included a coal-fired power generating plant, we requested the exclusion of the coal-fired plant in the proposal negotiation. Another example of our ESG data usage is with passive mandates where we ask benchmark providers to tailor the benchmark based on ESG criteria within a specified tracking error.

For corporate bonds, we incorporate ESG data in our core analysis. When assessing credit lines, we assign a material weighting to ESG scores also.

HKMA has been involved in many collaborations and made important contributions across many key issues, such as reporting standards and development of the sustainable funding market.

We see Hong Kong as an international financial centre and green finance is an area of growth and importance. Several initiatives were taken in the past two years, including co-founding the Green and Sustainable Finance Cross-Agency Steering Group to coordinate the management of climate risk in the financial sector and accelerate growth of green and sustainable finance in HK, becoming first regional anchor for the Asia Chapter of the Alliance for Green Commercial Banks, and setting up a Centre for Green Finance as a platform for capacity building and experience sharing and connecting investors and issuers.

HKMA is also one of the earliest central banks to sign up to UNPRI. Could you share your experience in the process, and how do you complete the reporting obligations?

We announced our intention to join the UNPRI in May 2019. Before signing we carefully looked at the reporting obligations. Despite having a grace period, in March 2020, we conducted a trial reporting in preparation of the mandatory reporting this year. Since then, the UNPRI has increased the granularity of reporting requirements, which makes it difficult for central banks given confidentiality concerns. We are in discussions with UNPRI on these concerns.

Is HKMA considering other climate disclosures such as those signed to TCFD recommendations?

The Green and Sustainable Finance Cross-Agency Steering Group announced in December 2020 that HK will be TCFD-compliant by 2025, so we will comply also. We have already looked at carbon footprinting and so forth, and plan to expand on other aspects such as scenario analysis and identifying areas of vulnerability to climate risks (on corporates, on sectors, etc.).

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The Riksbank’s approach to incorporating climate risk into its purchase programs is based on risk assessments, whereby you are managing excess risks caused by climate change under-counted by credit ratings, for which there is a minimum in the purchase program. Could you share some of the thinking behind the decision to the program, and how you reconcile risk management and market neutrality?

The board decided that we should purchase corporate bonds as a part of monetary policy measures aiming to alleviate the effects of the coronavirus crisis on the economy. We have limited our purchases to corporate bonds with an investment grade rating. This reflects the risk preference of the Riksbank Board of Governors. This means, in practice, that the Riksbank eligible universe is already smaller than the Swedish corporate bond market as a whole (due to eligibility requirements such as minimum credit rating).

Effective from January 2021, the Riksbank applies a norm-based negative screening to its purchases of corporate bonds. We look at the compliance with norms and standards including the UN Global Compact, the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights. These standards cover areas such as human and labour rights as well as environment and business ethics. The objective of this norm-based screening is to capture any additional risk coming from a sustainability perspective. This also contributes to managing government funds prudently and based on the Swedish state’s core values.

Issuers that do not comply with these international norms and standards may be excluded from the universe. The negative screening will only apply without compromising the monetary policy objective. Hence, any decision on exclusion will be subject to careful monetary policy and market functioning considerations. In this context, the principle of market neutrality will still be upheld within the eligible universe that meets sustainability-related risk criteria. Central banks have within their mandates to comply with legal principles that guide monetary policy — this is the case with Riksbank as well.

During implementation, what were the practical challenges (e.g., data consistency, etc.)?

When we looked at different ways to take sustainability into account in corporate bond purchases, we made a thorough analysis on what is practically possible, and we looked for different available metrics. We must apply data consistently across the universe to fulfil the legal principles that guide monetary policy operations. In the Riksbank eligible universe we have both listed and non-listed companies, and we found that the data availability is limited and uneven for our universe. In practice, it means that we had to work on challenges such as how to analyse issuers for which there are no data. In asset purchases made for monetary policy reasons it is important that the data used is applied consistently.

As I mentioned earlier, we are using norm-based screening as a complement to credit ratings in order to manage the risk from the investments. In addition to using third-party data, we also have to make our own assessment and weigh this risk reduction against the potential negative effect on the ability to achieve the objective behind the operation.

When deciding what criteria to use/how to assess climate risk, what were the key considerations?

For accountability purposes, it is important for a central bank to be able to understand and justify the choice of a metric. Apart from the data coverage, I mentioned before, we looked at whether the chosen metric is easy to understand (aka the metric used cannot be a black box) and what is the connection between the metrics and financial risk.

What were the practical challenges? Did the extra due diligence strain resources?

The markets department had to increase the number of staff to accommodate the extension of asset purchases and going into new asset classes. For corporate bond purchases, we established robust pre-trade/post-trade processes before we began purchasing bonds. Here we have close cooperation with the Monetary Policy Department (among others) in all the discussions related to asset purchases, including sustainability aspects.

When it comes to incorporating sustainability into asset purchases, it was a new area for us. We had to increase our expertise and reallocate resources within the department.
How do you reconcile “limiting climate change” as an objective with the bank’s official mandate?

When it comes incorporating climate risk aspects in our financial risk management, there is a clear legal mandate. The Riksbank sustainability policy also describes other climate-related initiatives that we take within the scope of our monetary policy and financial stability mandate. At this stage, most of the work aims primarily to increase the understanding of this important topic.

For example, the board has decided that we should publish the footprint for our holding of corporate bonds. However, we do not have a target for the footprint in our monetary policy asset purchase program. By being transparent about our own emissions footprint to the extent possible, we hope to provide incentives for others to do the same, which would be a step in the right direction.

We have also taken some decisions in our FX reserve management to incorporate sustainability into the management of the reserves. About two years ago, we did some asset reallocations with the aim of reducing the carbon footprint of the FX reserves’ assets without jeopardising the ability to achieve the primary objectives with the FX reserves.

Within the financial stability area, we mainly focus our work on analysing climate-related risks as a source of financial risk. In that sense, we do not have the tool to limit climate change directly. However, we can use our analysis and communicate about climate-related risks and what needs to be done to manage these risks in order to create awareness, and perhaps in that way, more indirectly contribute to limiting climate change. Further, we participate in international forums where concrete measures are prepared to promote sustainable development and reduce risks related to climate change.

Please see the economic commentary for more information:

Sustainability considerations when purchasing corporate bonds

Sustainability reporting – need for greater standardisation and transparency

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## Methodologies and assumptions

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Definition and methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSCI rating</strong></td>
<td>Aggregate MSCI ESG Rating - market value weighted ESG Rating for the fund. Individual holdings normalized based on sector peers.</td>
</tr>
<tr>
<td><strong>Sustainalytics percentile</strong></td>
<td>Aggregate score from Sustainalytics (separate ESG data provider). Market-value-weighted average percentile of fund holdings (sector normalized). Portfolios with a high percentile have higher quality ESG holdings.</td>
</tr>
<tr>
<td><strong>Controversial holdings</strong></td>
<td>The overall controversy assessment signals whether a company has a notable controversy related to a company’s operations and/or products, and the severity of the social or environmental impact of the controversy. This is ranking 0-10 with 0 being worse.</td>
</tr>
<tr>
<td><strong>ESG adjusted score</strong></td>
<td>MSCI Industry Adjusted Score from 0-10. Normalized score for each industry. -MV Weighted: Portfolio score calculated by weighting ESG scores by market value -DxS Weighted: Portfolio score calculated by weighting ESG scores by DxS</td>
</tr>
<tr>
<td><strong>Counterparty ESG score</strong></td>
<td>ESG score of counterparties for the derivative portion of the portfolio.</td>
</tr>
<tr>
<td><strong>Coal</strong></td>
<td>Companies generating &gt;10% revenue from coal mining or electricity generation.</td>
</tr>
<tr>
<td><strong>Controversial weapons</strong></td>
<td>Percent of holdings in companies that are involved in production and proliferation of controversial weapons.</td>
</tr>
<tr>
<td><strong>Controversial holdings</strong></td>
<td>Percent of holdings in companies with a controversy score of 0 from MSCI. Controversy score signals whether a company has a notable controversy related to a company’s operations and/or products, and the severity of the social or environmental impact of the controversy.</td>
</tr>
<tr>
<td><strong>Fossil fuel</strong></td>
<td>This field identifies companies with evidence of owning fossil fuel reserves regardless of their industries, including companies that own less than 50% of a reserves field.</td>
</tr>
<tr>
<td><strong>UNGC violators</strong></td>
<td>Percent of holdings in companies that fail to comply United Nations Global Compact principles.</td>
</tr>
<tr>
<td><strong>Tobacco</strong></td>
<td>Percent of holdings in companies involved in tobacco production related activities. This applies to tobacco producers and/or companies that derive &gt;15% of revenue from tobacco retail.</td>
</tr>
<tr>
<td><strong>Negative externalities</strong></td>
<td>Least preferred holdings for ESG/responsible/sustainable portfolios that have some negative societal externalities associated with them.</td>
</tr>
<tr>
<td><strong>Holdings with deforestation risk</strong></td>
<td>Currently captures worst rated names per WWF palm oil score card. Over time we will attempt to capture broader deforestation risk from agricultural and other human activities.</td>
</tr>
<tr>
<td><strong>Discussion on externalities</strong></td>
<td>Issuers with unclear externalities, or no data coverage. This is a catchall virtual bucket whereby an issuer is implicitly in this if not in the others.</td>
</tr>
<tr>
<td><strong>Engagement stats</strong></td>
<td>These figures represent counts of engagements by our BIS team in the latest calendar year. Engagement mappings to categories and issues are not mutually exclusive. Note that the total count of engagements includes multiple engagements with the same company.</td>
</tr>
<tr>
<td><strong>Emissions intensity - (Sales)</strong></td>
<td>Aggregate emissions for every million dollars of revenue for underlying holdings</td>
</tr>
<tr>
<td><strong>Emissions intensity - (Total capital)</strong></td>
<td>Aggregate emissions financed for every million dollars invested in the companies</td>
</tr>
<tr>
<td><strong>Sovereign GHG intensity</strong></td>
<td>GHG intensity of an economy (in tons per USD million GDP nominal). The higher the value the more carbon intensive the economy is.</td>
</tr>
<tr>
<td><strong>MSCI low carbon transition score</strong></td>
<td>A company level score that measures a company’s level of alignment to the Low Carbon Transition. Companies with higher Low Carbon Transition score are more aligned with the Low Carbon Transition compared to the companies with lower scores. (Score: 0-10)</td>
</tr>
<tr>
<td><strong>Paris aligned per TPI</strong></td>
<td>Holdings rated to be Paris aligned or better by Transition Pathway Initiative</td>
</tr>
</tbody>
</table>

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## Methodologies and assumptions (continued)

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Definition and methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Holdings with SBTs (Science Based Targets or Commitments)</strong></td>
<td>Exposure to holdings that have science-based targets or commitments. Science-based targets specify how much and how quickly a company needs to reduce greenhouse gas (GHG) emissions that is in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement.*</td>
</tr>
<tr>
<td><strong>Portfolio temperature alignment</strong></td>
<td>The implied temperature warming of holdings in the portfolio weighted by MV. Corporate data is based on Trucost data and sovereign data is based on MSCI data.</td>
</tr>
<tr>
<td><strong>Sust. dev. impact</strong></td>
<td>Percent of holdings with &gt;20% of revenues derived from any of the eleven social and environmental impact themes including nutrition, sanitation, major diseases treatment, SME finance, education or affordable real estate, alternative energy, energy efficiency, green building, pollution prevention and sustainable water. Also inclusive of all green bonds held in the portfolio.</td>
</tr>
<tr>
<td><strong>Positive externalities (P_EXT)</strong></td>
<td>Most preferred holdings for ESG/responsible/sustainable portfolios that have some positives societal externalities associated with them.</td>
</tr>
<tr>
<td><strong>Green Bonds</strong></td>
<td>Percent of holdings in bonds tagged as “Green” by GFI ESG Investing team. Green Bonds are fixed income instruments in which the proceeds will be exclusively applied towards new and existing “green” projects. Dark, Medium and Light shading represents the tiering of green bonds based on “greenness” or “impact” of proceeds use.</td>
</tr>
<tr>
<td><strong>Impact metrics of green bond holdings</strong></td>
<td>BlackRock analysis for green bonds held in the portfolio based on publicly available environmental impact reports as communicated by issuers in the MSCI Bloomberg Barclays Green Bond Index; not every issuer reports on every metric, hence no linear extrapolation should be performed.</td>
</tr>
</tbody>
</table>

* [https://sciencebasedtargets.org](https://sciencebasedtargets.org)

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