Green central banking

SUMMARY

Central banks are important actors in the transition towards net zero for three reasons. First, they can manage risks to the financial system and the economy as a whole that arise because of climate change. Second, central banks have themselves become market actors and can help to channel funds into sustainable investments in order to finance the green transformation. Third, they share their expertise to encourage behavioural changes. Measures undertaken by central banks to address these issues are commonly referred to as ‘green central banking’.

In July 2021, the European Central Bank (ECB) presented a climate action plan, which announced measures to include climate change considerations in its operations. The ECB set out the consequences of the climate action plan for its monetary policy operations in July 2022. The measures are far-reaching and imply a paradigm shift. They include revisions to the corporate sector purchase programme and the collateral framework.

This briefing explores the actions the ECB announced under its climate action plan and compares them to the actions taken by two of its central bank peers: the US Federal Reserve System and the Bank of England. As central banks are subject to their legal provisions, the briefing commences with a discussion of the central banks’ legal mandates. The comparison is then organised in four sections: (i) the conduct of monetary policy, (ii) prudential regulation, (iii) data and modelling, and (iv) how central banks can lead by example. An outlook on important developments in green central banking and the future impact of climate change on inflation concludes the briefing.
Introduction

With the Paris Agreement of 2015, the international community reaffirmed its commitment to combating climate change. Its signatories agreed to limit ‘the increase in global average temperatures to well below 2°C above pre-industrial levels’ and to pursue ‘efforts to limit the temperature increase to 1.5°C’. In recent years, governments have introduced national programmes, such as the European Green Deal or the Build Back Better framework in the United States, to achieve the objectives of the Paris Agreement.

Through so-called ‘green central banking’,1 central banks can react to the challenges posed by climate change. While the European Central Bank (ECB), in its climate agenda, acknowledges that it is governments and legislators who are primarily responsible for tackling climate change, it identifies three objectives to which central banks can contribute:

First, central banks can help to manage financial risks. In 2015, Mark Carney, the former governor of the Bank of England (BoE), raised the topic in a seminal speech. Carney identified different types of climate change-related risks for the financial system.2 Physical risks stem from the possible loss of a physical asset due to damage caused by the effects of climate change, such as extreme weather events or rising sea levels. Transition risks refer to the risk of a physical or financial asset losing its value as a result of a disorderly transition to a low-carbon economy. Physical risks are materialising today: estimates show that, since 1980, the cumulative damage from extreme weather events in the euro area amounts to 2.5 % of GDP.3 Commonly used climate scenarios estimate that, under current policy measures, damage could amount to 5 % of global GDP by 2050 and increase to 15 % by 2100.

Second, central banks can contribute by channelling financial resources towards the transition to a net zero economy. The European Commission estimates that Europe needs an additional €350 billion of investment per year in the energy sector alone to achieve its climate goal of a 55 % reduction in emissions by 2030. The financial sector will play a crucial role in mobilising these investments.

Third, central banks can share their expertise to encourage wider changes in behaviour. For example, central banks can conduct research and share best practices to advance awareness of the importance of climate change for the work of central banks. They could also incorporate climate change into their organisational framework to lead by example.

In December 2017, the BoE and seven other central banks and supervisory institutions founded the Network for Greening the Financial System (NGFS). The objective of the NGFS is to ‘contribute to the development of environment and climate risk management in the financial sector, and to mobilize mainstream finance to support the transition toward a sustainable economy’. As of April 2022, 114 institutions are members of the NGFS, including the ECB and the Federal Reserve System of the United States (Fed).

With its 2020-2021 monetary policy strategic review, the ECB introduced a climate action plan. The plan lays out how the ECB plans to incorporate considerations of climate change and climate change-related risks into its policy framework. On 4 July 2022, the ECB specified the objectives laid out in the climate action plan, announcing revisions of the corporate bond purchase programme, the collateral framework, and disclosure requirements. In a letter to the chair of the European Parliament’s Economic and Monetary Affairs Committee, ECB President Christine Lagarde said that ‘the ECB is firmly committed to further incorporating climate change considerations into its monetary policy framework, within its mandate’. Indeed, the newly announced measures imply a far-reaching paradigm shift for the ECB’s monetary policy.

The purpose of this briefing is to summarise the action undertaken by the ECB and compare it with the measures announced by two of its central bank peers – the BoE and the Fed. In order to compare the actions taken by the three central banks, it is important to understand the differences in their mandates and their institutional set-up, which is why this briefing starts with a discussion of the individual central banks' mandates.
Mandates

European Central Bank

The mandate of the ECB is set out in the Treaty on the Functioning of the European Union (TFEU). According to Article 2 of Protocol 4 of the TFEU, the primary objective of the ECB is to maintain price stability. Since the TFEU does not provide a definition of price stability, it is up to the ECB to define an inflation target. With the 2021 strategic review, the ECB adopted a symmetrical 2% inflation target. The same article also sets out a secondary objective of the ECB: 'Without prejudice to the objective of price stability, [the ECB] 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 on European Union'. The Union objectives laid down in Article 3 TEU include ‘a high level of protection and improvement of the quality of the environment’.

Compared to other central banks, the ECB enjoys a high degree of independence; in indices of central bank independence, the ECB commonly ranks among the most independent central banks worldwide. Accountability and transparency in communicating its actions warrant this high degree of independence.

Central bank independence is important to prevent governments from interfering in monetary policy to realise short-term economic gains, which would ultimately compromise the objective of price stability. Article 7 of Protocol 4 of the TFEU determines that the ECB is not allowed to ‘seek or take instructions’ from any institution of the EU or its Member States. Although the European Council appoints the President and the members of the Executive Board, they serve an eight-year term and only the Court of Justice of the European Union can remove them from office.

Federal Reserve System

Contrary to the ECB, the Fed has a multi-objective mandate, which obligates it to promote price stability and maximum employment. As both of these objectives are of equal importance for the Fed, its mandate is often referred to as the ‘dual mandate’. While there is no clear number for the maximum employment target, the Fed aims for an average inflation rate of 2%. As a central bank, the Fed is an independent institution, although indices of central bank independence consider the Fed less independent than the ECB.

Bank of England

The Bank of England Act of 1998 governs the objectives of the BoE. Like the ECB, the BoE’s primary objective is ensuring price stability and, subject to that, its secondary objective is supporting the economic policies of the UK government. However, the Chancellor of the Exchequer determines the exact targets for the BoE. The so-called remit letter, which is updated at least annually, spells out the government’s inflation target (currently a symmetrical target of 2%) and states the economic policy priorities of the administration. Due to the immediate influence of the government on the objectives of the central bank, the BoE as an institution may be considered less independent than its European and US counterparts.
Tools of green central banking

Conduct of monetary policy

The first area in which central banks can take action to contribute to the transition to the low-carbon economy is their inherent domain, the conduct of monetary policy. In a recent monetary policy report, the NGFS describes three areas in which central banks can adjust their operational frameworks to include climate-related risks: credit operations, collateral frameworks, and asset purchases. In credit operations, central banks provide liquidity to other entities, usually commercial banks, against collateral as security; the price for liquidity can be adjusted depending on the climate effects of the borrower’s own lending activities. This could mean offering preferential rates for banks lending money to green companies. Another option would be to demand higher rates from banks that invest heavily in carbon-intensive sectors. Furthermore, the central bank can adjust which assets are eligible as collateral to incentivise investment in green bonds.

In recent years, asset purchase programmes have been a key tool for central banks to provide the market with additional liquidity and control interest rates. Several studies have found that asset purchase programmes are biased towards carbon-intensive sectors and therefore contribute to climate change. To account for this bias, central banks can direct their asset purchases towards greener bonds or exclude particularly brown bonds from their frameworks.

European Central Bank

The annex to the ECB’s climate action plan provides a detailed roadmap of the measures in the plan. The ECB is committed to incorporating climate-related risks into the Eurosystem credit assessment framework (ECAF), which draws from the assessments of rating agencies and national central banks. The ECB emphasised the current assessment in its announcement on further measures under the climate action plan: although rating agencies have already achieved progress, the ECB concluded that the current practices on incorporating climate-related risks are not sufficient. The ECB therefore urges rating agencies to be more transparent and ambitious when evaluating climate risks. Furthermore, the ECB announced minimum standards for the credit assessment systems of national central banks for the end of 2024.

In July 2022, the ECB announced a revision of its collateral framework. The Eurosystem will cap the assets from companies with a large carbon footprint, which can be pledged as collateral at a certain share. This cap will only apply to assets from non-financial companies, which only make up 3% of the total assets pledged as collateral. The ECB expects the new criteria to come into effect before the end of 2024. In addition, the Eurosystem will start to consider climate risks, when adjusting the value of an asset for collateral (in so-called ‘haircuts’), by 2022. The revised framework aims to incentivise borrowers to consider the carbon footprint of assets for their investment decisions. The ECB had announced earlier that it would accept green bonds, which fulfil the criteria of the prospective EU taxonomy, as collateral.

Perhaps the most controversial proposal announced by the ECB is the introduction of a green ‘tilt’ in its bond purchases under the corporate sector purchase programme (CSPP) and the pandemic emergency purchase programme (PEPP). With this proposal, the ECB is implicitly revising the market neutrality principle, which has so far guided the CSPP and PEPP. Under the market neutrality principle, the ECB has mirrored the existing market structure, purchasing assets according to their relative market capitalisation. The guiding consideration behind the principle was that the ECB should not distort the asset pricing on financial markets.

Recently, the ECB announced that it would gradually decarbonise its bond holdings and thus move towards a principle known as market efficiency. The ECB can achieve the decarbonisation either by tilting its purchases towards low-carbon bonds or by excluding bonds of carbon-intensive firms without credible transition plans from the programmes altogether. Although the ECB has not published the details of the revision, it decided on a tilting approach, as the announcement does
not mention excluding certain asset classes from the CSPP or PEPP. The ECB intends to measure climate performance according to current greenhouse gas emissions, forward-looking carbon reduction targets and the extent of climate-related disclosures. The new framework will apply to a corporate bond portfolio worth €386 billion as of July 2022. This amounts to 8% of the ECB’s monetary policy portfolios under the CSPP and PEPP, which together are worth €4.95 trillion.

Arguing in favour of applying a market efficiency approach, a recent study finds that large carbon-intensive companies are more likely to issue corporate bonds, while the less carbon-intensive service sector accounts for a smaller share of bonds on the market. Therefore, asset purchase programmes following the existing market structure have an inherent bias towards carbon-intensive assets. Furthermore, the study argues that following market neutrality can still distort relative prices for assets due to non-linearities in the cost of capital. ECB Executive Board member Isabel Schnabel argued that the existing distribution of capital on financial markets is partly the consequence of a market failure: market participants fail to factor climate externalities adequately into the pricing of assets. This inefficient allocation of resources warrants ECB action, as part of its mandate according to Protocol 4, Article 2 of the TFEU is to favour ‘an efficient allocation of resources’. Additionally, a shift to market efficiency would ‘support the general economic policies in the Union’ regarding the climate goals.

Critics of the market efficiency principle argue that the ECB would overstep its mandate, by introducing a ‘green bias’ into its asset purchase programmes. This would be particularly problematic, as the ECB has no democratic legitimacy to undertake actions not covered by its mandate. Such action could weaken trust in the ECB and, in the long term, endanger its capacity to ensure price stability.

Federal Reserve System

The Fed has only briefly engaged in corporate asset purchases. Under the Secondary Market Corporate Credit Facility (SMCCF), it started to purchase corporate bonds in response to the COVID-19 pandemic. The programme was in place from 22 March to 31 December 2020; after the expiry date, the Fed gradually reduced its holdings. SMCCF purchases were based on the Broad Market Index, which mirrored the structure of the corporate bond market. Thus, the corporate asset purchase programme of the Fed also followed the principle of market neutrality. Climate change-related considerations were not relevant to the SMCCF.

Bank of England

Until recently, the principle of market neutrality provided the underlying rationale for the BoE’s corporate bond purchase scheme (CBPS), as it does for the CSPP of the ECB. Following a discussion paper, which pointed out the shortcomings of the market neutrality principle, a new framework for greening the CBPS took effect in November 2021.

Under the new framework, the BoE cautiously departs from the principle of market neutrality and is undertaking the first steps to green the CBPS. To achieve this goal, the framework uses four types of tools. First, the BoE sets out clear objectives. In the long term, until 2050, assets held under the CBPS should be consistent with net zero emissions. In the short term, the BoE aims to reduce the Weighted Average Carbon Intensity (WACI) of the CPBS by 25% between 2020 and 2025. Second, within sectors, the BoE tilts its asset purchases towards companies that perform strongly in transitioning towards net zero. The climate performance of companies is judged based on four factors: the current carbon intensity, past changes in emissions, the level of climate-related disclosures, and the company’s emission reduction target. Third, the BoE considers revising the eligibility criteria for the CBPS. The BoE approaches complete exclusion very cautiously and only considers it in specific cases; until now, the BoE has excluded producers of coal, energy producers without emission reduction targets and firms without a climate disclosure, which satisfies UK standards from the CBPS. Finally, the BoE plans to escalate its measures over time by setting requirements that are more ambitious. Additionally, companies with a weak performance on climate targets will face stricter measures.
A recent study published by the research network INSPIRE argues that the BoE’s revision does not address the underlying problems of market neutrality and ultimately fails to achieve the BoE’s WACI reduction goals. The key problem is that the BoE only tilts asset purchases within sectors. To improve the climate performance of the CBPS, the authors suggest the adoption of cross-sector tilting and the exclusion of fossil fuel producers and non-renewable energy providers.

Prudential regulation

Prudential regulation entails the role of central banks as risk managers and supervisors of the financial system. Within this category, macroprudential regulation refers to policy measures aimed at addressing financial risks for the economy as a whole, while microprudential regulation manages risks for individual financial institutes.

In a guide for supervisors, the NGFS sets out multiple recommendations on how to integrate climate-related risks into prudential supervision. The NGFS recommends assessing the vulnerability of supervised entities to climate-related risks through scenario analysis, also referred to as ‘stress tests’. As guidance for central banks and supervisory authorities, the NGFS has published a set of six climate scenarios, two each for an orderly or disorderly transition and for a future ‘hot house world’. The assumptions and pathways detailed in the scenarios will inform the assessment of climate-related risks by central banks. Additionally, the guide advises supervisory authorities to communicate their expectations regarding the management of climate-related financial risks.

Climate risk disclosure in particular, partly covered by the emerging concept of double materiality, is seen as an important prudential policy tool. Empirical evidence supports the relevance of climate-related disclosure by finding that investors consider assets of companies that disclose their exposure and contribution to climate risks as less risky. On a global level, the industry-led Task Force on Climate-related Financial Disclosures (TCFD) sets out the most commonly accepted recommendations for the disclosure of climate risks.

The NGFS guide further discusses the possibility of imposing stricter capital requirements for entities particularly exposed to climate-related risks. The Basel III framework sets international standards for capital requirements. Although Basel III leaves some room for discretion, most supervisors have not amended capital requirement rules; this is most likely due to the lack of data and methodology. As part of its holistic approach, the Basel Committee issued principles for the effective management and supervision of climate-related financial risks in June 2022.

European Central Bank

In 2021, the ECB conducted its first economy-wide climate stress test. Covering more than 4 million firms worldwide and about 2 000 banks, the exercise was the most comprehensive stress test conducted so far. The ECB conducted the assessment centrally, as a top-down exercise. It combined data on firms’ and banks’ individual exposure to physical and transition risks with the inherent amount of risk in three NGFS climate scenarios: an orderly, a disorderly, and a hot house world scenario. The ECB used these two metrics to calculate a measure for the probability of defaulting. The results of the economy-wide stress test show that risks are unevenly distributed across the euro area. Physical risks from heat stress and wildfires is concentrated in southern Europe, while northern and central Europe are more exposed to flooding. Transition risks mainly concentrate in highly polluting sectors such as energy and mining. Furthermore, the results reaffirm the importance of an orderly transition towards a net zero economy for financial stability: in 2020, the average bank will be 8 % more likely to default under the hot house world scenario than under the orderly transition scenario. In the medium to long term, benefits such as technological progress and lower energy prices are going to outweigh the initial costs.
European green bonds

The European green bond standard (EUGBS) is crucial for the efforts of the ECB to channel resources into the financing of the green transformation. Currently, there are no universal standards to define green bonds.

With the Regulation on European Green Bonds, the European Commission aims to establish a standard to strengthen the market uptake of green bonds by increasing credibility and preventing greenwashing. The EU taxonomy will be essential for the EUGBS, as it provides a classification system for sustainable activities. The EUGBS is intended as a ‘global gold standard’, which is likely also to affect financial markets outside of the EU.

Although the ECB’s climate action plan does not specifically mention green bonds, they are likely to play an important role in the ‘greening’ of financial markets. For example, the EUGBS can inform revisions of the CSPP or the collateral framework.

Recent evidence has shown that the announcement of the climate action plan by the ECB has decreased the yields of green bonds by 0.04% vis-a-vis conventional bonds. This decrease shows that market investors are willing to accept lower yields for green bonds, a phenomenon often referred to as ‘greenium’.

Furthermore, the issuance of eligible green bonds increased in the euro area after the announcement. The fact that second parties certified less than 50% of these bonds highlights the need for a common standard that effectively prevents greenwashing.

The ECB used these results as a basis for the supervisory climate risk stress test launched in January 2022. The stress test has three modules: a questionnaire on the banks’ own climate stress test capabilities, a peer benchmark analysis, and a bottom-up stress test. The ECB considers the first edition of the test a ‘learning exercise’ and will refine the methodology in the future.

The results of the stress test were published in July 2022 and show that most banks do not account for climate risks sufficiently. Of the 104 banks which were part of the stress test, 60% do not have a climate risk stress-testing framework and only 20% consider climate risks when deciding whether to grant a loan. Banks generated almost two thirds of their income from non-financial companies with clients from carbon-intensive sectors; often, a small number of these companies account for a large share of banks’ credits, which increases exposure to transmission risks.

Furthermore, many banks rely on proxies to estimate the emissions of their clients. In the future, collecting reliable figures will be an important task for banks. The ECB expects banks to adjust their risk management operations on the basis of individual feedback provided by the ECB and best practice guidelines due in the final quarter of 2022.

In July 2022, the ECB and the European Systemic Risk Board (ESRB) published a joint report on how climate shocks can affect the European financial system. The report builds on two previous ECB/ESRB reports on climate risk. The findings show that climate risks can quickly spread and harm companies and banks alike, notably in the event of a disorderly green transition. First, unforeseen climate shocks could have an abrupt impact on market prices, initially hitting the portfolios of investment funds, pension funds and insurance companies. Second, this sudden repricing could cause companies to default, resulting in losses for exposed banks. In a disorderly transition scenario, marked by an immediate and substantial increase in carbon prices, respective market losses of insurers and investment funds could potentially amount to 3% and 25% on stress-tested assets in the near term. The report adds further evidence on the systemic nature of climate risks and provides a foundation for a macroprudential policy response, in tandem with microprudential policies.

In the European Union, the Commission proposed to set requirements for corporate sustainability reporting. Until now, the Non-Financial Reporting Directive (NFRD) has governed climate-related disclosure, and in 2021 the Commission introduced the proposal for a Corporate Sustainability Reporting Directive (CSRD) to update the NFRD. Under the CSRD, more companies are mandated to disclose climate-related information and the requirements for sustainability reporting are more detailed. The co-legislators have reached a provisional political agreement on the new rules, implying a postponement of the date of application of the directive. As the ECB relies on the new disclosure standards for measures such as the revision of the CSPP and the collateral framework, ECB President Christine Lagarde urged the chair of the EP’s Economic and Monetary Affairs Committee for a timely adoption of the CSRD in a public letter.

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Federal Reserve System

The Fed is lagging behind the ECB in terms of climate stress testing, as it has not conducted a climate stress test so far. The New York branch of the Fed has published a report on climate stress testing, which describes the methodology for a possible climate stress test run by the Fed. Senior officials recently voiced their intent to conduct a climate stress test in the future: Fed chair Jerome Powell referred to climate stress tests as a ‘key tool’ during his confirmation hearing in January 2022 and vice chair Lael Brainard expressed her support in a speech at a research conference. Insiders in the financial industry expect the Fed to run a first climate stress test in 2023.

The US Securities and Exchange Commission (SEC) is the competent authority to implement regulations on the disclosure of climate-related risks. The SEC published a first draft regulation in March 2022 that is broadly consistent with TCFD recommendations. However, it has been criticised for loopholes in the disclosure of scope 3 emissions.

Bank of England

The BoE conducted the Climate Biennial Exploratory Scenario (CBES) in 2021. Like the ECB stress tests, the CBES builds upon three NGFS scenarios, including an early action, a late action, and a no additional action scenario. Based on these scenarios, the CBES assessed to what extent banks and insurers face physical and transition risks in a bottom-up exercise. The results, which the BoE published in May 2022, show that if banks and insurers do not respond appropriately to climate-related risks yearly profits can decrease by 10% to 15% depending on the scenario. As expected, adverse effects are higher in the late than in the early action scenario: credit losses projected by banks are about 30% higher in the former. However, the BoE notes that the results remain highly uncertain and that more work on approaches to managing climate-related risks and data availability is required. The BoE stated that the results of the CBES would not inform a decision on capital requirements. In June 2020, the BoE published guidelines for climate-related financial disclosure, which follow the recommendations of the TCFD.

Data and modelling

Relevant macroeconomic models, and particularly the availability of high-quality data, are an important prerequisite for central banks to make informed decisions. As green central banking is a relatively new topic, central banks have not sufficiently included climate change in their economic models and the statistical indicators they produce.

Regarding data availability, an NGFS progress report on bridging data gaps pointed out the importance of common global standards for disclosure requirements and the definition of sustainable activities (i.e. taxonomies) for ensuring that the datasets produced are reliable as well as comparable. The TCDF released recommendations on metrics, targets and transition plans, which list indicators of interest and point out the importance of internationally comparable and consistent data.

A recent INSPIRE policy briefing pointed out the importance of including climate variables in central bank’s forecasting models. To account adequately for climate change, central banks would need to extend their models in a way that considers various options in the energy sector (e.g. sustainable forms of energy) and assumptions about climate policies (e.g. carbon prices). The models would also need to allow for heterogeneity across regions and sectors, and for a realistic financial sector that can simulate the risk of the stranding of assets. The authors note that, in the short term, a suite of different climate models to support the macroeconomic ‘workhorse’ models is the most promising approach. In the long term, central banks should integrate climate variables in the ‘workhorse’ models themselves. Furthermore, the authors note the importance of cooperation with experts from other disciplines such as climate scientists and meteorologists.
European Central Bank

In a recent speech, ECB Executive Board member Philip Lane outlined the ECB’s approach to developing new statistical indicators on climate change. The current priority is to produce data sets on the exposure of financial institutions to climate-related risks, the carbon footprint of financial institutions’ portfolios, and the number and value of green bonds. The ECB aims to publish experimental indicators by the end of 2022 and plans to improve the data quality over the following years. With these new statistical indicators, the ECB can introduce considerations of climate risks into their macroeconomic models.\(^\text{10}\)

The roadmap of the ECB’s climate action plan states that the ECB will incorporate carbon pricing and climate-related fiscal policies into its macroeconomic projections. Additionally, the ECB will integrate climate risks into its ‘workhorse models’ to assess their impact on economic growth. The Eurosystem set up a Working Group on Economic Modelling and a Working Group on Forecasting, which will develop the detailed strategies.\(^\text{11}\)

Federal Reserve System

So far, the Fed has not introduced climate change-related factors into their macroeconomic models. In a speech, Governor Brainard stated that the Fed is collecting and processing relevant data but that bridging the existing data gaps will require ‘substantial work’, with the first climate stress test helping to inform further steps in data collection and modelling.

Bank of England

The Climate Financial Risk Forum (CFRF), an initiative of the BoE’s Prudential Regulation Authority, the Financial Conduct Authority and financial industry representatives, addressed the topic of data availability in October 2021. The report establishes that the more than 70 metrics should be organised according to five different use cases: physical risks, transition risks, portfolio decarbonisation, mobilising transition finance, and engagements in investee companies, which is relevant to the first four cases. Furthermore, the report stressed the importance of forward-looking metrics for informed policy decisions.

Leading by example

Central banks cannot only contribute to the green transformation of the economy by adjusting their monetary and prudential policy frameworks, but they can incorporate climate change in their organisational frameworks and lead by example. This, for instance, includes the disclosure and management of climate-related risks for non-policy portfolios, following NGFS recommendations. It also includes the establishment of new departments tasked with advancing and coordinating the greening of central banks, and membership of international initiatives such as the NGFS.

European Central Bank

The Eurosystem of ECB and the 19 national central banks (NCBs) agreed on a common stance for climate change-related sustainable investments in non-monetary policy portfolios in 2021. The common stance that will take effect from 2023 onwards includes sustainable investment practices and climate risk disclosure. Several Eurosystem members, including the ECB, have already implemented sustainable investment guidelines. For its staff pension fund, the ECB introduced new sustainable benchmark indices in 2022, which imply an immediate decrease in carbon emissions of assets by 50 % and a further decrease of 7 % per year. In its own funds portfolio, the ECB increased the share of green bonds to 7.6 %,\(^\text{12}\) To coordinate climate policy initiatives in different working areas, the ECB established the climate change centre, which directly reports to the President. The ECB joined the NGFS in May 2018, about half a year after its launch. Three of the Eurosystem’s NCBs (Banque de France, De Nederlandsche Bank and Deutsche Bundesbank) were founding members of the NGFS. ECB Executive Board member Frank Elderson was the chair of the NGFS from its founding until January 2022.
Federal Reserve System

The Fed has not introduced a sustainable investment strategy for its own portfolios so far, but it is still slowly incorporating climate change into its operations. For instance, its Financial Stability Report contained a section on climate change for the first time in 2021. The Fed joined the NGFS in December 2020 – significantly later than the central banks of other developed nations, such as the ECB and BoE.

Bank of England

In 2020, the BoE was the first central bank in the world to publish a climate-related financial disclosure report. The second disclosure report, published in June 2021, uses scenario analysis to explore the climate-related risks associated with the BoE’s asset portfolios. Furthermore, the report lists the carbon footprints of the non-policy portfolios, which have slightly decreased since 2020 and are still significantly below a G7 reference portfolio.

Since the BoE only holds UK government bonds for its pension fund and UK and other sovereign bonds for its own security holdings, the non-policy portfolios do not include green bonds. For cross-organisational coordination of climate-related activities, the BoE set up the Executive Director’s Climate Steering Group. The BoE assumed a pioneering role in advancing the discussion on green central banking: former Governor Mark Carney was the first central banker to address the relevance of climate change for central banks, and the BoE is a founding member of the NGFS.

In March 2021, the UK Chancellor of the Exchequer updated the mandate of the BoE to include an explicit climate target. The Chancellor’s remit letter on monetary policy tasks the BoE with supporting ‘strong, sustainable and balanced growth that is also environmentally sustainable and consistent with the transition to a net zero economy’. The remit letter on financial policy calls upon the BoE to ‘increase the resilience of the UK financial system to the risks from climate change and support the government’s ambition of a greener industry, using innovation and finance to protect our environment and tackle climate change’. Including climate change objectives in the mandate, a step no other major central bank has taken so far, further illustrates the BoE’s strong commitment to green central banking.

Outlook

Green central banking is still a relatively young concept. Climate stress testing and disclosure requirements for climate-related risks can contribute greatly to bridging the existing data gaps and to more evidence-based decision-making. It will be interesting to monitor how methodologies are going to develop in response to increased data availability. Furthermore, many initiatives, such as those recently announced by the ECB, have yet to be defined in detail, and their development will define the future of green central banking.

Until the recent ECB announcement, it seemed like the topic of green central banking had been taking a back seat in recent months, while the increases in inflation rates had dominated the debate. The ability of central banks to take effective climate policy action will depend significantly on future developments regarding price stability. In a recent speech, ECB Executive Board member Isabel Schnabel explained how the transition to a net zero economy could lead to three different types of inflationary shocks:

- Next to the bottlenecks in the supply chain, which became evident during the COVID-19 pandemic, the main driver of inflation is the significant increase in energy costs due to the Russian war of aggression against Ukraine. Schnabel refers to this phenomenon as ‘fossilflation’. Beyond the impact of the war, climate policy measures such as the EU emissions trading system will progressively contribute to the increase in prices for fossil fuels. Therefore, fossilflation will likely remain a relevant factor for inflation rates until the complete phase-out of fossil energy sources.
Another factor contributing to the high levels of inflation are price increases for agricultural products due to climate change. Partly, high energy prices translate into higher prices for agricultural commodities, but another cause is a phenomenon called ‘climateflation’. This entails a direct impact of climate change on price levels. These are particularly acute in the agricultural sector, where an increased frequency of droughts in recent years has led to higher prices.

Finally, the transition to a low-carbon economy itself is leading to higher price levels. Many technologies that are key to this transition, such as electric cars and solar panels, require a large amount of raw materials, such as copper and lithium. This will likely lead to additional inflationary pressure during the green transition.

Schnabel also noted, though, that renewable energy is already less expensive than fossil energy. When the infrastructure for renewable energies is sufficiently developed, energy prices are likely to be lower, on top of an increased level of energy security. Furthermore, fossil fuel price shocks, which have been significant drivers of inflation in the past, will have a drastically reduced impact on the economy. Navigating this uncertain world will require an adaptation of central banks' monetary policy frameworks as well as an adequate fiscal response in order to buffer supply shocks and frontload and speed-up public investment in green infrastructure and technologies.

**MAIN REFERENCES**


ECB/ESRB Project Team on climate risk monitoring, *The macroprudential challenge of climate change*, European Central Bank (ECB) and the European Systemic Risk Board (ESRB), July 2022.


**EUROPEAN PARLIAMENT SUPPORTING ANALYSIS**


ENDNOTES

1. The terms green central banking and green monetary policy are often used interchangeably. In this briefing, green central banking includes central bank activities that are not directly related to the conduct of monetary policy.

2. Carney also refers to liability risks, which contain claims of entities that suffered damage due to climate change, as a third type of climate-related risk. However, the literature deems physical and transition risks the most relevant.

3. See Climate change and monetary policy in the euro area, p. 27.

4. See The case for central bank independence, p. 29.

5. See The case for central bank independence, p. 29.

6. Possible standards for defining green bonds could be taxonomies such as the one proposed by the Commission.


8. See ECB economy-wide climate stress test, p. 15.


10. See Climate change and monetary policy in the euro area, p. 62.

11. See Chapter 3 of Climate change and monetary policy in the euro area for a detailed discussion on the implications of climate change and climate-related risks for different types of models used by the ECB.


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