

ANALYTICAL ARTICLES

Economic Bulletin

3/2021

BANCO DE **ESPAÑA**
Eurosistema

THE ROLE OF CENTRAL BANKS IN COMBATING
CLIMATE CHANGE AND DEVELOPING SUSTAINABLE
FINANCE

Clara Isabel González Martínez

ABSTRACT

The consequences of climate change affect both the financial system and the economy as a whole. Understanding the attendant risks and meeting the goals of the Paris Agreement, so as to restrict the rise in global temperature and mobilise the resources needed to achieve a carbon-neutral economy, is a global challenge for the political and economic authorities. International cooperation is also a must. Central banks are not impervious to these movements and are including on their agendas climate and sustainability-related aspects in various areas, both in the management of own portfolios and in supervision and financial stability. And it is also being discussed how to include these aspects in monetary policy frameworks. While the central role in this arena is, given their nature, for governments, central banks may have an important role as catalysts, leading by example to contribute to achieving the goals of the Paris Agreement. In Europe, the European Central Bank (ECB) and the National Central Banks (NCBs), including the Banco de España, are working to incorporate these matters into their own business areas.

Keywords: central banks, sustainable finance, climate change.

JEL classification: G10, G20, E58, Q50.

The author of this article is Clara Isabel González Martínez of the Directorate General Operations, Markets and Payment Systems.

Introduction

The year 2015 saw the signing of the Paris Agreement and the United Nations 2030 Agenda for Sustainable Development, along with the speech by the previous governor of the Bank of England, Mark Carney, entitled "*Breaking the Tragedy of the Horizon: Climate Change and Financial Stability*"¹. These marked a starting point for the launch of financial initiatives to mobilise the resources needed to achieve the transition to a carbon-neutral economy² and secure greater involvement by both the public and private financial systems. Globally, in the case of central banks, the creation of the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) in December 2017 has boosted work in several areas. Central banks are incorporating climate change and sustainability into their work agendas, with the aim of understanding the potential implications for monetary policy and for the financial system, defining their role in order to contribute to averting any resulting adverse consequences and promoting sustainable finance.³

In the case of the Eurosystem, the implications of climate change for monetary policy and the extent to which these aspects may be built into its design and implementation are being analysed as part of the strategic review currently under way. Further, the number of national central banks (NCBs) that are including sustainable and responsible investment (SRI) criteria in the asset portfolios they manage is increasing. For example, the 19 central banks of the Eurosystem and the European Central Bank (ECB) agreed on a common stance in February 2021 to include sustainable and responsible investment in their non-monetary policy euro-denominated portfolios, and to begin to disclose these positions within a term of two years. Also, recently, other central banks have been assessing the risks that climate change poses for financial stability and the banks they supervise, as well as for their own balance sheets.

1 Carney (2015) highlighted the fact that, given that the risks associated with climate change are characterised by their long and indefinite horizon, greater than is usual for economic agents' decision-making, their materialisation entails a cost for future generations that the current generation has no strong incentive to bear, hence the so-called "tragedy of the horizon".

2 See González (2021) for greater details on the institutional initiatives – public and private alike – under way in relation to sustainable finance.

3 The European Commission defines "sustainable finance" as the process of taking environmental and social considerations duly into account when making investment decisions, leading to more long-term investments in sustainable economic activities and projects. See European Commission (2018).

In particular, as regards the inclusion of sustainability as an objective in central banks' mandates, an NGFS analysis (2020a) notes that currently only 5% of them explicitly mention this as one of their primary objectives, and 18% as a secondary one. In the case of the Eurosystem, of which the Banco de España is a member, its secondary objectives include supporting the general economic policies of the European Union⁴ so as to contribute to the attainment of the Union's objectives set out in Art. 3 of the Treaty on European Union, which includes the protection and improvement of quality of the environment.⁵ As indicated, the consideration of climate-related aspects as part of the primary objectives is also being analysed. There is an extensive view among central banks globally that climate change is a challenge, as reflected in a survey by NGFS (2020a) of 26 central banks representing 51 countries. Other authors highlighting this are Couré (2018), Ayuso (2019), Delgado (2019a, 2020a), Hernández de Cos (2020), Lagarde (2020, 2021) and Schnabel (2020, 2021).

At the European level, as this article will show, there has been major progress in recent years. The ECB and the Eurosystem NCBs, including the Banco de España, are conducting analysis on climate-related and environmental aspects in different areas, and there is extensive international cooperation to better understand the implications of climate change for the financial system and for central banks in particular.

Network for Greening the Financial System (NGFS)

Central banks have stepped up their work in relation to climate change, especially since the creation of the NGFS at the Paris One Planet Summit in December 2017. The aim of this network of central banks and supervisors is to define and promote good practices, conduct analysis, foment climate risk management in the financial sector and contribute to mobilising the financing needed for a transition towards a sustainable economy. In the first document (NGFS, 2018), it was acknowledged that “climate-related risks are a source of financial risk. It is therefore within the mandate of central banks and supervisors to ensure the financial system is resilient to these risks”.

The number of this network's members has grown rapidly from the initial group of eight central banks and supervisors (the central banks of Mexico, the United Kingdom, the Netherlands, Germany and France, the French prudential supervision and resolution authority, the Swedish financial supervisory authority, the Monetary Authority of Singapore and the People's Bank of China) to 95 members and 15 observers from five continents as at June 2021.⁶ The countries represented accounted as at December 2020 for over 85% of global GDP and more than 75% of

4 See Art. 127 of the Treaty on the Functioning of the European Union.

5 See Art. 3 of the Treaty on European Union.

6 For details on the member countries see: <https://www.ngfs.net/en/about-us/membership>.

worldwide greenhouse gas emissions (NGFS, 2021a). The Banco de España was among the first to join, in March 2018, shortly after its creation. And among the recent new members are the United States Federal Reserve (December 2020), the central bank of Chile (February 2021) and the Reserve Bank of India (April 2021).

The structure of the NGFS comprises a Chair⁷, a Steering Committee and three working groups dedicated respectively to: i) microprudential supervision; ii) the macroeconomic implications and risks to the financial system; and iii) the promotion of sustainable finance and the incorporation of sustainability into the actions of central banks themselves, from the consideration of sustainability criteria in the management of non-monetary policy portfolios to the analysis of the implications for monetary policy. These are joined by two cross-cutting groups created in 2020: one to analyse existing data gaps and the other to identify the main areas for research.⁸

In 2019, the NGFS published six recommendations (see NGFS, 2019a). The first four are aimed at central banks and consist of: i) integrating climate-related risks into the monitoring of financial stability and microprudential supervision; ii) integrating sustainability factors into own-portfolio management; iii) bridging the data gaps; and iv) building awareness and intellectual capacity and encouraging technical assistance and knowledge-sharing. The last two are directed at public policymakers: v) achieving robust and internationally consistent climate and environment-related disclosure; and vi) supporting the development of a taxonomy of economic activities.

With a view to contributing to these recommendations, the NGFS is deploying its workstreams on the following matters, giving rise to the documents published and set out in Figure 1: i) the incorporation of sustainability criteria into central banks' own-portfolio management; ii) analysis of the macroeconomic implications of climate change; iii) the drawing up of guidelines for supervisors; iv) analysis of a potential differential risk between green, non-green and brown assets; v) the development of climate scenarios and guidelines for their use; vi) the study of the implications of climate change for monetary policy and their incorporation into monetary policy instruments; vii) analysis of market dynamics regarding green financing; and viii) the identification of data gaps. Moreover, several groups are working on disclosure from different perspectives and the NGFS is contributing to the discussions on taxonomy, acting as an observer on the International Platform on Sustainable Finance and the Platform on Sustainable Finance.⁹

7 Since its creation, the Chair of the NGFS has been Frank Elderson, who has sat on the Executive Board of the European Central Bank since 2020. The Secretariat of the NGFS is hosted by the Banque de France. The permanent members of the Steering Committee are: the European Central Bank, Canada, China, France, Germany, Japan, Malaysia, Mexico, Morocco, Netherlands, Singapore, Sweden and the United Kingdom. Moreover, the Bank for International Settlements is an observer.

8 Work is ongoing in this group to understand the potential implications of the loss of biodiversity for financial stability through a joint group with the International Network for Sustainable Financial Policy Insights, Research, and Exchange (INSPIRE), whose initial work is included in NGFS-INSPIRE (2021).

9 See González (2021) for greater details of these two platforms.

Figure 1

NGFS PAPERS IN 2019, 2020 AND 2021

2019	
<p>First comprehensive report «A call for action». Climate Change as a source of financial risk. (NGFS, 2019a)</p> <p>Macroeconomic and financial stability. Implications of climate change. (NGFS, 2019b)</p> <p>A sustainable and responsible investment guide for central banks' portfolio management. (NGFS, 2019c)</p>	<p>Publication of six voluntary recommendations, for central banks and supervisors, and for policymakers, of possible use for the rest of the financial system</p> <p>The review of the literature suggests that both the physical and transition risks associated with climate change have substantial macroeconomic and financial stability implications</p> <p>Draws together the findings of a survey of 27 NGFS members, 25 of which have now adopted - or plan to do so - sustainable and responsible investment principles in their own-portfolio investment frameworks</p>
2020	
<p>Guide for Supervisors: integrating climate-related and environmental risks into prudential supervision. (NGFS, 2020b)</p> <p>Status report on financial institutions' practices with respect to risk differential between green, non-green and brown financial assets and a potential risk differential. (NGFS, 2020c)</p> <p>NGFS climate scenarios for central banks and supervisors. (NGFS, 2020d)</p> <p>Guide to climate scenario analysis for central banks and supervisors. (NGFS, 2020e)</p> <p>The macroeconomic and financial stability impacts of climate change: research priorities. (NGFS, 2020f)</p> <p>Climate change and monetary policy: initial takeaways. (NGFS, 2020g)</p> <p>Overview of Environmental Risk Analysis by Financial Institutions. (NGFS, 2020h)</p> <p>Progress report on the implementation of sustainable and responsible investment practices in central banks' portfolio management. (NGFS, 2020i)</p> <p>Survey on monetary policy operations and climate change: key lessons for further analyses. (NGFS, 2021a)</p>	<p>Guide for supervisors in the form of six recommendations on the inclusion of environmental and climate-related risks in microprudential supervision</p> <p>From the survey of 49 banks, and some insurance companies, it cannot be concluded that there is a differential risk between green, non-green and brown financial assets. Among the challenges indicated: a lack of harmonised client data, and of internal resources. A forward-looking focus using the analysis of scenarios is needed</p> <p>First NGFS document on the development of climate scenarios, in collaboration with an academic consortium. Three possible scenarios are explored: orderly, disorderly and a global warming-dominated world</p> <p>Document with guidelines on the application of climate scenarios in the central banking and supervisory arenas</p> <p>Compilation of research priorities</p> <p>Analysis of the implications climate change might have for monetary policy, in particular for macroeconomic variables, in transmission channels, and incorporation into its analytical frameworks</p> <p>Reflects the characteristics of the main aspects of the ERA (environmental risk analysis) methodologies, and the main obstacles to their adoption by the financial services industry</p> <p>Update of the work on the incorporation of sustainable and responsible investment (SSRI) criteria into central banks' portfolio management. Most of the central banks surveyed include - or are considering doing so - sustainable and responsible investment practices in their portfolios</p> <p>Based on the analysis of the public information of 107 central banks, few banks have "sustainability" as an objective in their mandates. However, on the basis of a survey of 40 central banks, there is broad consideration of climate change is a challenge. The implementation of specific measures in their operational frameworks is still at a very early stage</p>

SOURCE: Devised by author drawing on NGFS.

Central banks' actions at the European level

In Europe, central banks are activating different tools to understand the implications of climate change for the financial system and, in particular, for their own activities. In the case of the ECB, there has been progress in the past two years in analysing

Figure 1

NGFS PAPERS IN 2019, 2020 AND 2021 (cont'd)

2021	
Adapting central bank operations to a hotter world: Reviewing some options. (NGFS, 2021b)	Analysis of the implications of climate change for central banks' operational frameworks and for monetary policy implementation. Possible changes in three types of policies are analysed: (a) lending operations, (b) collateral assets, and (c) asset purchases, specified in nine possible measures
Report Sustainable Finance Market Dynamics. March 2021. (NGFS, 2021c)	Highlights the main driving forces and challenges in the mobilisation of sustainable finances, with a particular focus on the analysis of progress in disclosure, risk management and capital mobilisation
Dashboard on scaling up green finance. (NGFS, 2021d)	Set of indicators and data that enable the status of and trends in green finance to be known via information related in the main to the real economy, the disclosure of information, mobilisation of resources and global investment initiatives
Progress report on bridging data gaps. (NGFS, 2021e)	Initial analysis of data gaps in the assessment of climate-related risks. Main challenges identified: availability, reliability and compatibility. Areas targeted for progress: taxonomy, dissemination and standards in metrics, labels and methodologies
Climate Scenarios for central banks and supervisors. (NGFS, 2021f)	Second iteration of climate scenarios published in 2020 extending the impacts at country level and economic and financial variables in six different scenarios

SOURCE: Devised by author drawing on NGFS.

how to contribute, within their remit, to limiting the potential economic and social consequences of climate change.¹⁰ The main areas in which the ECB is working encompass:¹¹

- Macroeconomic analysis of the consequences arising directly from climate change-related risk and of the policies aimed at mitigating and adapting this risk, and their incorporation into macroeconomic models and projections.
- Analysis of the repercussions of climate change for monetary policy implementation, which is part of the monetary policy strategy review under way,¹² bearing in mind the ECB mandate.
- Launch of a thematic strategy of sustainable and responsible own-portfolio investment.¹³ This policy also applies to the pension fund for its employees.

10 In January 2021, an in-house climate change centre was set up, reporting directly to the ECB President, to define its climate agenda and to coordinate issues relating to climate change and sustainable finance by working with other departments of the institution. It will be organised through workstreams focusing on: i) financial stability and prudential policy; ii) macroeconomic analysis and monetary policy; iii) financial market operations and risk; iv) EU policy and financial regulation; and v) corporate sustainability. Its structure will be reviewed every three years.

11 For greater details, see ECB (2021a).

12 See press release dated 8 July 2021: “[ECB presents action plan to include climate change considerations in its monetary policy strategy](#)”.

13 The ECB began to invest in the open-ended green bond fund for dollar-denominated bonds launched by the Bank for International Settlements (BIS) in January 2021. See [press release](#) dated 25 January 2021.

- Monitoring and assessment of climate-related risk from the financial stability standpoint¹⁴ and preparation of a top-down climate stress test considering transition and physical risks for a period of 30 years using forward-looking scenarios.¹⁵
- In the realm of banking supervision, the SSM included climate-related risks in its risk heat maps for 2019 and 2020¹⁶ and it has drawn up supervisory expectations for significant institutions describing how it intends to integrate climate-related and environmental risks.¹⁷
- It is also participating in European Union fora, contributing to the regulatory initiatives under way, and in international fora, sitting on the NGFS Steering Committee. The ECB also has its own environmental management system.

At the individual level, central banks in Europe are working on incorporating climate-related and environmental questions into their own actions. They are doing so both through monetary policy implementation (in the case of central banks not belonging to the Eurosystem¹⁸) and asset management, supervision and financial stability, as reflected in Table 1.

Given central banks' important role as asset managers, a greater number of these institutions has begun to integrate sustainable and responsible investment (SRI) principles into their own-portfolio management.¹⁹ In February 2021, the 19 banks of the Eurosystem and the ECB defined a common stance for the application of SRI principles in non-monetary policy euro-denominated portfolios, in line with the second recommendation of the NGFS. Further, they undertook to commence disclosing information in this connection within two years²⁰ (see Box 1 for greater details on information already released by some central banks). A contribution is thus being made from this area to the transition to a low-carbon economy and the fulfilment of the European Union's climate objectives.

In addition, some central banks have analysed the banking system's exposures both to sectors affected by the transition to a low-carbon economy and to climate events due to climate change (e.g. the central banks of Sweden, the Netherlands, France,

14 See ECB (2019a, 2019b, 2021b) and a first, pilot stress test exercise conducted jointly by the ECB and the European Systemic Risk Board (ESRB and ECB, 2020).

15 See De Guindos (2021).

16 The risk map for 2020 specifies that climate risks are more significant in the long term, i.e. at over three years.

17 See ECB (2020) for more details.

18 The Eurosystem central banks have a common monetary policy and their initiatives have previously been reflected on inclusion of the ECB's work.

19 See NGFS (2019c and 2020i) for greater details and a more global setting both for the incorporation of SRI and ESG (environmental, social and governance) principles.

20 See press release dated 4 February 2021: "Eurosystem agrees on common stance for climate change-related sustainable investments in non-monetary policy portfolios".

Table 1

EUROPEAN CENTRAL BANKS' SUSTAINABLE FINANCE AND CLIMATE CHANGE-RELATED MEASURES

Area	Authority
Monetary policy	European Central Bank (analysis as part of strategic review)
Integration of SRI and ESG criteria into own-portfolio management	Banco de España
	Banca d'Italia
	Banque de France
	Central Bank of Ireland
	National Bank of Hungary (Magyar Nemzeti Bank)
	Central Bank of Sweden (Sveriges Riksbank)
	Central Bank of Norway (Norges Bank)
Analysis of financial system exposures	Bank of Finland (Suomen Pankki)
	Swedish Financial Supervisory Authority (2016)
	De Nederlandsche Bank (2017)
	Bank of England (2018)
	European Central Bank (2019)
	Banque de France and ACPR (French Prudential Supervision and Resolution Authority) (2017 and 2019)
Supervisory practices	Banco de España (2019)
	National Bank of Belgium (2020)
	Stress tests
	De Nederlandsche Bank (2018)
	ECB and European Systemic Risk Board (2020 - pilot)
	National Bank of Denmark (2020)
	European Banking Authority (2021 - pilot exercise)
	Banque de France and ACPR (2021)
	European Central Bank (2021)
	Banco de España (2021)
Bank of England (2022)	
Supervisory expectations	PRA (UK Prudential Regulation Authority) (2019)
	German Federal Financial Supervisory Authority (BaFin) (2020)
	De Nederlandsche Bank (2020)
	European Central Bank (2020)
	Banco de España (2020)
Banco de Portugal (2021)	

SOURCE: Devised by author.

Spain, United Kingdom and Belgium, and the ECB).²¹ This is a prior step to the climate risk stress tests that are currently being developed. The first such test was carried out by the central bank of the Netherlands in 2018 for transition risks over a 5-year timeframe²² and others – such as those of the ECB and the Banco de España – are under design. From the supervisory standpoint, several central banks have

²¹ See González and Núñez (2021) for greater details of the actions being launched by central banks.

²² See Alonso and González (2021) for greater details of how climate risks stress tests are being developed by the central banks of the Netherlands, France and the United Kingdom.

drawn up their own supervisory expectations about how banks may be expected to incorporate climate and sustainability risks into their different organisational areas (e.g. in Germany, the United Kingdom, the Netherlands, Spain and Portugal).

The Banco de España and climate change

The Banco de España is integrating the analysis and assessment of climate and environmental risks from different angles into its activities. The work encompasses: participation in the ECB's strategic review of its monetary policy with respect to the possible inclusion of climate change-associated aspects; the integration of SRI principles into own-portfolio management; risk analysis and assessment from the regulatory and supervisory standpoint; cash treatment; and in-house environmental management.²³ Moreover, in the Strategic Plan 2024, launched in 2020, there are several avenues of work dedicated to sustainable finance and to climate change.

It is worth highlighting some specific actions and how they relate to the 2019 NGFS recommendations, namely:

- *Recommendation 1. Integrating climate-related risks into financial stability monitoring and microprudential supervision.* In 2020, supervisory expectations for the less significant Spanish institutions were published.
- *Recommendation 2. Integrating sustainability factors into own-portfolio management.* Since 2019, sustainability and accountability principles have been included as a basic tenet of investment policy for own-portfolio management.²⁴ Also since 2019, the Banco de España has participated in the dollar-denominated green bond investment fund launched by the Bank for International Settlements (BIS)²⁵ and also in the euro-denominated fund set up that month by the BIS.²⁶ The Banco de España has adopted the Eurosystem's common stance to include SRI principles in non-monetary policy portfolios and to begin to disclose information within two years. It also participates actively in the Eurosystem's work aimed at preparing the common stance and disclosure in this connection.²⁷
- *Recommendation 4. Building awareness and intellectual capacity and encouraging technical assistance and knowledge-sharing.* In recent years,

23 For greater details, see Delgado (2020b).

24 See Banco de España (2021a).

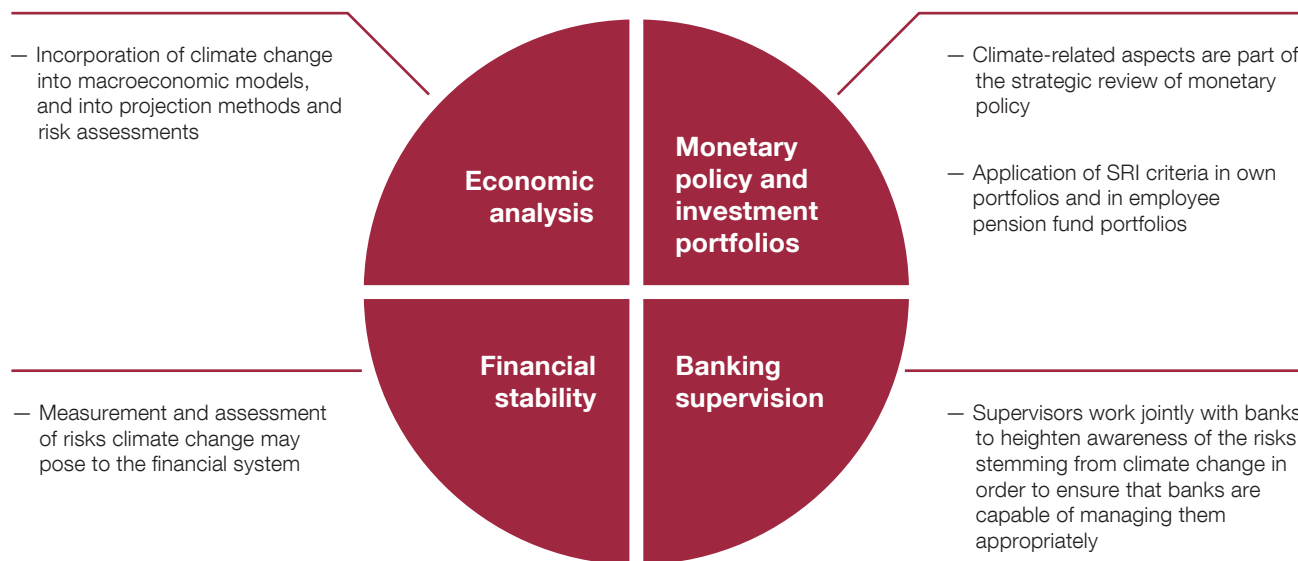
25 See the press release "The Banco de España is to participate in the green bond fund launched by the BIS", 26 September 2019.

26 See the press release "The Banco de España is to participate in the second BIS green bond investment fund", 25 January 2021.

27 See the press release "The Banco de España adopts the Eurosystem's common stance for sustainable investment", 4 February 2021.

Figure 2

MAJOR CLIMATE CHANGE-RELATED WORK AREAS IN THE ECB



SOURCE: Devised by author drawing on ECB (2021a)

there have been two high-level meetings with representatives of credit institutions and one with consultancies. In 2019, two workshops were organised on climate data providers and the role of rating agencies in assessing climate risks. There were also two conferences on the challenges of climate change for the financial system, one of which during the COP25. It is also worth citing various Banco de España publications: *Financial Stability Review* (Marqués and Romo, 2018; Delgado, 2019b; Gimeno and Sols, 2020; Aguilar, González and Hurtado, 2021), Occasional Papers (Alonso and Marqués, 2019; Romo, 2021; González and Núñez, 2021), Working Papers (Moreno and Caminero, 2020; Estrada and Santabárbara, 2021; Gimeno and González, 2022), Analytical Articles (González, 2021) and boxes from the *Financial Stability Report* (Banco de España, 2019) and the *Economic Bulletin* (Banco de España, 2021b).

As part of this important role of contributing to the public debate, the Governor, Deputy Governor and Directors General have all made speeches and participated in panels on this matter. Moreover, the Banco de España contributes actively in national and international fora under the auspices of the ECB, the Eurosystem, the European Systemic Risk Board (ESRB), the Single Supervisory Mechanism (SSM), the European Banking Authority and the Basel Committee. It has also participated actively in all

the NGFS workstreams since becoming a member in March 2018, with the Deputy Governor as a Plenary Member.

Lastly, Art. 33 of the Law on Climate Change and the Energy Transition, drafted by the Ministry for the Ecological Transition and the Demographic Challenge and approved by Parliament in May 2021, provides that the Banco de España, the CNMV (the National Securities Market Commission) and the DGSFP (Directorate General of Insurance and Pension Funds) shall, every two years, draft a joint report on the degree of alignment with the Paris Agreement climate goals and with European Union regulations based on future scenarios and on the assessment of risk to the Spanish financial system derived from climate change, and on the policies to combat it. The report shall be coordinated with AMCESFI (the Spanish Macroprudential Authority) and include the proposals, if any, which are considered necessary to mitigate risk. It will be published and submitted to the lower and upper parliamentary chambers.²⁸

Conclusions

In recent years, central banks have made progress in terms of their knowledge and, to a lesser extent, quantification of the macroeconomic and macro-financial implications of climate change and of the alternatives to counter its unwanted effects. Against this background, a good number of them have already incorporated sustainable and responsible investment principles into the design of their own-investment policies. More recently, discussions have also been under way on the possible role of these issues in the design of monetary policy frameworks.

Progress is, however, firstly determined by the need to properly understand the consequences of climate and environmental risks and their transmission channels to the economy and the financial system. And in this connection, information and data availability are vital. At the same time, it must be acknowledged that leadership in this battle falls necessarily on governments. Central banks, however, can play a significant role acting as catalysts in many spheres, contributing by example. By way of illustration, headway towards greater transparency in the market can be accelerated by introducing climate-related disclosure requirements for an issue or issuer to be eligible in respect of asset purchase programmes (Hernández de Cos, 2021).

8.9.21.

28 Furthermore, this Law will require greater disclosure of climate-related information of the financial sector. Art. 32 lays down greater reporting requirements, in terms of non-financial reporting obligations, in the form of an annual report on the integration of climate change for companies whose securities are listed on regulated markets, credit institutions, insurance and reinsurance companies, and companies by reason of size. Their specific content shall be set out by Royal Decree within a term of two years from enactment of the law, although the major areas indicated refer to governance structure, strategic focus, the real and potential impact of the climate change-associated risks and opportunities on the organisation, risk identification and assessment processes, and metrics and scenarios for their management. It is further established that, as from 2023, credit institutions shall have to publish specific decarbonisation targets for their loan and investment portfolio in line with the Paris Agreement.

REFERENCES

- Aguilar, P, B. González and S. Hurtado (2021). “The design of macroeconomic scenarios for climate change stress tests”, *Financial Stability Review*, Issue 40, Spring 2021, Banco de España.
- Alonso, A. and González, C. I. (2021). “Los productos financieros sostenibles desde el punto de vista de los supervisores y los reguladores: sector Bancario”, Chapter 16, *La sostenibilidad y el nuevo marco institucional y regulatorio de las finanzas sostenibles*, Editorial Thomson Reuters Aranzadi.
- Alonso, A. and J. M. Marqués (2019). “Financial innovation for a sustainable economy”, *Occasional Paper*, No. 1916, Banco de España.
- Ayuso, J (2019). “Discurso de apertura 2º Taller de Finanzas Verdes sobre la incorporación de los riesgos climáticos por parte de las agencias de rating”, 15 November 2019.
- Banco de España (2019). “The financial system and climate change”, Box 3.1, *Financial Stability Report*, Autumn.
- Banco de España (2020). “Banco de España supervisory expectations relating to the risks posed by climate change and environmental degradation”, 23 October 2020.
- Banco de España (2021a). “Financial asset and risk management”, Section 3.2, Chapter 2, *Institutional Report 2020*.
- Banco de España (2021b). “Recent changes in CO2 emissions in Spain”, Box 6, Quarterly report on the Spanish economy, *Economic Bulletin 2/2021*.
- Banque de France (2019). *Responsible investment report 2018*.
- Banque de France (2020). *Responsible investment report 2019*.
- Banque de France (2021). *Responsible investment report 2020*.
- Bernardini, E, I. Faiella, L. Lavecchia, A. Mistretta and F. Natoli (2021). “Central banks, climate risks and sustainable finance”, *Occasional Papers* No. 608, Banca d’Italia.
- Carney, M. (2015). “Breaking the tragedy of the horizon – climate change and financial stability”, speech at Lloyd’s of London, 29 September 2015.
- Couré, B. “Monetary policy and climate change”, speech at “Scaling up Green Finance: The Role of Central Banks”, Network for Greening the Financial System, Deutsche Bundesbank and Council on Economic Policies, Berlin, 8 November 2018.
- De Guindos, L (2021), “Stress testing the financial sector’s resilience to climate change”, ECB Blog Post, 18 March 2021.
- Delgado, M. (2019a). “Closing address at the 2nd Green Finance Workshop on the inclusion of climate risks by rating agencies”, Banco de España.
- Delgado, M. (2019b). “Energy transition and financial stability. Implications for the Spanish deposit-taking institutions”, *Financial Stability Review*, Issue 37, Banco de España, pp. 9-40.
- Delgado, M (2020a). “Appearance before the Parliamentary Ecological Transition and Demographic Challenge Committee”, 10 September 2020.
- Delgado, M. (2020b). “In Conversation with Ms Margarita Delgado Tejero”, NGFS, October 2020.
- ESRB and ECB (2020). *Positively green: Measuring climate change risks to financial stability*, June 2020.
- Estrada, A and D. Santabárbara (2021). “Recycling carbon tax revenues in Spain. Environmental and economic assessment of selected green reforms”, *Working Paper* No. 2119, Banco de España.
- ECB (2019a). “Climate change and financial stability”, Special Feature, *Financial Stability Review* Issue 1, May 2019.
- ECB (2019b). “Climate risk-related disclosures of banks and insurers and their market impact”, Box 4, *Financial Stability Review*, November 2019.
- ECB (2020). *Guide on Climate-related and environmental risks. Supervisory expectations relating to risk management and disclosure*, ECB Banking supervision.
- ECB (2021a). “The ECB and climate change”, Box 3, *Annual Report 2020*, April 2021.

ECB (2021b). "Climate-related risks to financial stability", Special Feature, *Financial Stability Review*, May 2021.

European Commission (2018). *Action Plan. Financing Sustainable Growth*, 8 March 2018.

Gimeno, R. and C. I. González (2022). "The role of a green factor in stock prices. When Fama & French go green", *Working Paper* No. 2207, Banco de España.

Gimeno, R. and F. Sols (2020). "Incorporating sustainability factors into asset management", *Financial Stability Review*, Issue 39, Autumn 2020, Banco de España, pp. 177-197.

González, C. I. (2021). "Overview of global and European institutional sustainable finance initiatives", Analytical Articles, *Economic Bulletin* 3/2021, Banco de España.

González, C. I. and S. Núñez (2021). "Markets, financial institutions and central banks in the face of climate change: challenges and opportunities", *Occasional Paper*, No. 2126, Banco de España.

Hernández de Cos, P. (2020). "Economic and financial policy geared to climate goals", speech at the Club Español de la Energía, Madrid, 25 February 2020.

Hernández de Cos, P. (2021). "What will be the impact of climate transition on monetary policy?", Central Banking Summer Meetings, 14 June 2021.

Lagarde, C (2020). "Climate change and the financial sector", speech at the launch of the COP 26 Private Finance Agenda, London, 27 February 2020.

Lagarde, C (2021). "Climate change and central banking", keynote speech at the ILF conference on Green Banking and Green Central Banking, Frankfurt, 25 January 2021.

Marqués, J. M. and Romo, L. (2018). "The risk of climate change in financial markets and institutions: international challenges, measures and initiatives", *Financial Stability Review*, Issue 34, Banco de España, pp. 111-134.

Moreno, A. I. and T. Caminero (2020). "Application of text mining to the analysis of climate-related disclosures", *Working Paper* No. 2035, Banco de España

NGFS (2018). *First Progress Report*, October 2018.

NGFS (2019a). *First Comprehensive Report. A Call for action*, April 2019.

NGFS (2019b). "Macroeconomic and Financial Stability. Implications of Climate Change", *Technical supplement to the First NGFS Comprehensive Report*, July 2019.

NGFS (2019c). *A Sustainable and Responsible Investment Guide for Central Banks' Portfolio Management*, October 2019.

NGFS (2020a). *Survey on monetary policy operations and climate change: key lessons for further analyses*, December 2020.

NGFS (2020b). *Guide for Supervisors: integrating climate-related and environmental risks into prudential supervision*, May 2020.

NGFS (2020c). *Status report on financial institutions' practices with respect to risk differential between green, non-green and brown financial assets and a potential risk differential*, May 2020.

NGFS (2020d). *NGFS climate scenarios for central banks and supervisors*, June 2020.

NGFS (2020e). *Guide to climate scenario analysis for central banks and supervisors*, June 2020.

NGFS (2020f). *The macroeconomic and financial stability impacts of climate change: research priorities*, June 2020.

NGFS (2020g). *Climate change and monetary policy: initial takeaways*, June 2020.

NGFS (2020h). *Overview of Environmental Risk Analysis by Financial Institutions*, October 2020.

NGFS (2020i). *Progress report on the implementation of sustainable and responsible investment practices in central banks' portfolio management*, December 2020.

NGFS (2020j). *Survey on monetary policy operations and climate change: key lessons for further analyses*, December 2020.

NGFS (2021a). *Annual report 2020*, March 2021.

NGFS (2021b). *Adapting central bank operations to a hotter world: Reviewing some options*, March 2021.

NGFS (2021c). *Report Sustainable Finance Market Dynamics*, March 2021.

NGFS (2021d). *Dashboard on scaling up green finance*, March 2021.

NGFS (2021e). *Progress report on bridging data gaps*, May 2021.

NGFS (2021f). *Climate Scenarios for central banks and supervisors*, July 2021.

NGFS – INSPIRE (2021). “Biodiversity and financial stability: exploring the case for action”, *NGFS Occasional Paper*, June 2021.

Romo, L. (2021). “Una taxonomía de actividades sostenibles para Europa”, *Occasional Paper* No. 2101, Banco de España.

Schnabel, I. (2020). “Never waste a crisis: COVID-19, climate change and monetary policy”. speech at a virtual roundtable on “Sustainable Crisis Responses in Europe” organised by the INSPIRE research network, 17 July 2020.

Schnabel, I. (2021). “From green neglect to green dominance?”, intervention at the “Greening Monetary Policy – Central Banking and Climate Change” online seminar, organised as part of the “Cleveland Fed Conversations on Central Banking”, 3 March 2021.

INTEGRATING SUSTAINABILITY FACTORS INTO CENTRAL BANKS' OWN-PORTFOLIO MANAGEMENT IN EUROPE

In recent years, more and more central banks have incorporated sustainable and responsible investment (SRI) criteria into their own-portfolio management. According to NGFS (2020i), a large majority of respondents in the questionnaire circulated to 40 central banks have either already begun to consider adopting SRI practices for the portfolios they directly manage – such as own portfolios, those of employee pension funds or those they manage on behalf of third parties – or are planning to do so.

Investment policies and the criteria to apply are still in many cases on the drawing board and under analysis. However, in February 2021¹ the Eurosystem, comprising the 19 central banks of the euro area and the ECB, announced the adoption of a common stance for the harmonised application of sustainability and responsibility principles to its euro-denominated own-portfolio management. At the same time, it was announced that information would begin to be published within two years and that the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) would be followed as an initial framework for disclosure, at least in the metrics and objectives category.²

Some central banks have already begun to design these investment policies and to apply SRI principles in the portfolios they manage directly, although their disclosure is still limited and heterogeneous. Based on the analysis of the public information available, central banks can be grouped into two blocks. First are central banks that have a specific publication, either a document dedicated to the principles applied to own-portfolio investment (such as France and the Netherlands) or press releases and sections of documents with differing degrees of detail (e.g. Italy and Hungary). The second group would include central banks that reflect this information, albeit not in

detail, either on their website (Finland), in their annual report (Finland, Germany) or institutional report (Spain), or in more extensive documents dedicated to the central bank's commitment to sustainability (Portugal) or in speeches by their senior officials (Ireland, Sweden).

As regards specific strategies, the Banque de France considers that, aside from climate-related aspects, environmental, social and governance (ESG) factors have an impact on the long-term course of its investments and the balanced growth of the economy. In March 2018, it approved its *Responsible Investment Charter*, which sets out the responsible investment strategy adopted by it and which comprises three pillars: i) to align investments with France's climate commitments, i.e. to achieve carbon-neutrality in 2050; ii) to include ESG criteria in asset management; and iii) to exercise voting rights and influence issuers. The first Responsible Investment Report was published in 2019, in compliance with Art. 173 of the French law relating to the energy transition³ and the TCFD recommendations. This document was re-issued in 2020 and 2021 with greater details on the criteria applied to each of the pillars for equity and sovereign bond portfolios, and on the progress made in relation to the previous year.⁴

In March 2019, De Nederlandsche Bank (DNB) incorporated into its corporate social responsibility framework the objective of investing its assets responsibly, so as to generate an appropriate return while minimising the ESG and financial risks of its assets in the long-term. The guiding principles of its management policy are included in the document *Responsible Investment Charter*, published in March 2019.⁵ Its responsible investment policy comprises five pillars: i) selection/analysis (screening); ii) integration; iii) promotion; iv) reporting; and v) development. DNB signed up to the Principles of Responsible Investment (PRI) of the United Nations in

- 1 See the press release dated 4 February: "[Eurosystem agrees on common stance for climate change-related sustainable investments in non-monetary policy portfolios](#)".
- 2 The TCFD was set up in late 2015 by the Financial Stability Board at the request of the G20. It was made up and led by private-sector representatives. It prepared a series of voluntary recommendations for the disclosure of information on climate-related financial risks, seeking consistency and comparability across four areas: governance, strategy, risk management and metrics and objectives. These criteria are being taken as a reference in different areas, including in the European Commission's developments in respect of information disclosure. In particular, the central banks that have already approved the TCFD recommendations are: Banco Central do Brasil, Banque de France, De Nederlandsche Bank, National Bank of Belgium, Bank of Finland, Bank of England and Prudential Regulation Authority, Bank Al-Maghrib, Hong Kong Monetary Authority and Monetary Authority of Singapore.
- 3 Art. 173 of the French law on the energy transition and green growth (enacted in December 2015) lays down several provisions on the reporting obligations of listed companies, institutional investors and asset managers of a certain size regarding the consideration of environmental and social parameters. An annual report must be published with information on and the methodology used for the analysis of issuers, based on ESG criteria, and on how the results of the analysis are taken on board.
- 4 See Banque de France (2019, 2020 and 2021).
- 5 Accessible at: <https://www.dnb.nl/media/4q5pxq43/dnb-responsible-investment-charter.pdf>.

2019, consisting of six voluntary recommendations for the incorporation of ESG considerations into investment practices.⁶ In its 2020 annual report it began, following the TCFD recommendations, to offer more details on the institution's work and, in particular, on how this strategy is being implemented.

The Banca d'Italia has integrated ESG factors into its investment framework, which is based on diversification and market-neutrality principles. Exclusion criteria are applied to those companies that operate mainly in sectors that do not comply with UN Global Compact principles (controversial activities in high-risk sectors such as tobacco, and nuclear, chemical and biological weapons), favouring firms with higher ESG scores, based on the assessment of an external data provider. Investment policies are applied in terms of specialised portfolios by geographical area.⁷

Another case is that of the National Bank of Hungary, which opted in 2019 to create a green bond portfolio within that for currency reserves for the promotion of this

market segment. This portfolio will have labelled green bonds that meet international standards, i.e. the funds are used to finance specific green investment projects providing environmental benefits. The creation of this portfolio is in line with environmental strategy and corporate responsibility objectives, and adheres to the institution's *Green Programme*.

The Bank of Finland has disclosed on its website that it invests and manages its financial assets in accordance with the central bank's objectives and bearing in mind investment activity-related risks and responsibility aspects. As a signatory to the PRI, it has been committed since 2019 to integrating environmental, social and governance issues into the Bank's own financial assets. Specifically, its responsible investment applies selection on the basis of compliance with internationally accepted standards, and thematic fixed-income investments in green, social and sustainability bonds and bonds issued by development banks. Its reports adhere to NGFS and TCFD recommendations.

6 The PRI are voluntary and based on the notion that ESG elements can affect how investment portfolios perform; these must therefore be taken into account aside from traditional financial factors. Specifically, there are six principles: i) to incorporate ESG issues into investment analysis and decision-making processes; ii) to be active owners and incorporate ESG issues into ownership policies and practices; iii) to seek appropriate disclosure on ESG issues by the entities in which investment is made; iv) to promote acceptance and implementation of the principles within the investment industry; v) to work together to enhance effectiveness in implementing the principles; and vi) to report on activities and progress towards implementing the principles.

7 See Bernardini et al. (2021).