

Central Bank Portfolios and the Climate Transition: From Market Neutrality to Leadership Through Transparency

An analysis based on the Banco de España's experience and the climate-related disclosure of its investment portfolios*

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Abstract

Central banks have gradually brought climate change into the core of their institutional agendas, extending the discussion beyond financial stability and supervision to the management of their own investment portfolios. This article examines the Banco de España's approach to integrating sustainable and responsible investment criteria into non-monetary policy portfolios. Drawing on the Banco's climate-related disclosures and on the broader Eurosystem framework, it argues that the most important contribution of central banks like the Banco de España does not lie on the ability to move market prices through portfolio rebalancing, but on its capacity to lead by example through the creation of standards, transparency, methodological discipline and institutional credibility. The article reviews the guiding principles, the specific constraints, the difficulties of data and metrics—particularly in portfolios dominated by SSA (Sovereign, Supranational and Agency) issuers—and the role of climate disclosure in the strategy of a central bank to improve the quality of the financial debate on the climate transition.

Keywords: central bank investment policies, sustainable and responsible investment, climate-related metrics.

1. INTRODUCTION: A NEW DIMENSION FOR OWN INVESTMENT PORTFOLIOS

For decades, the management of central banks' own investment portfolios rested on a relatively stable set of principles: safety, liquidity, efficiency, prudence and, in many cases, market neutrality. The emergence of climate change as a source of financial risk has challenged this framework. The question is no longer simply how climate change and the entailed risks affect the balance of the central bank; accumulated evidence has shifted the debate towards how those risks should be measured, managed and disclosed without exceeding institutional mandates.

* This article reflects my own views, not necessarily those of the Banco de España. It offers an expanded version of my intervention at the the conference *Climate Risk and Sustainable Finance: Bridging Policy, Research and Practice*.

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The case of the Banco de España is particularly instructive. Since 2019, sustainable and responsible investment (SRI) principles have formed part of the investment policy for its own portfolios —that is, those portfolios that are not related to monetary policy (see Table 1). This decision preceded the common stance adopted by the Eurosystem in 2021 to apply SRI principles to these portfolios (see ECB, 2021). Following up on this Eurosystem common approach, since 2023, the Banco de España also publishes an annual report specifically devoted to the climate-related aspects of its non-monetary investment portfolios, structured around five blocks: governance, strategy, risk management, metrics and targets.

Table 1

Investment principles, management implications and associated climate challenges

Principle	Management implication	Associated climate challenge
Efficiency	Optimise risk-adjusted return within the mandate.	Integrate climate metrics without unnecessarily weakening financial efficiency.
Professionalism	Apply robust, documented and comparable processes.	Use verifiable data and transparent methodologies.
Market neutrality	Avoid distorting price formation.	Reconcile gradual decarbonisation with market depth and liquidity.
Prudence	Preserve a conservative risk profile.	Assess physical and transition risks without assuming exposures inconsistent with the mandate.
Sustainability/SRI	Incorporate environmental, social and governance criteria.	Define eligible assets and measure their climate contribution.

This experience reveals an underlying tension. On the one hand, a central bank must act prudently, avoiding market distortions and preserving its primary objectives. On the other, it cannot ignore the fact that climate change affects credit, market stability and liquidity and entails reputational risks. The Banco de España’s response has been gradual, transparent and methodologically disciplined: creating a dedicated SRI portfolio, participating in specialised funds, increasing direct investment in green, social and sustainability bonds where taxonomies allow, and disclosing climate indicators in coordination with the Eurosystem.

This experience places investment practice at the centre of the climate-finance debate. Central banks are not ordinary asset managers. They operate under public mandates, are accountable to society and influence financial markets through credibility more than through their transactions. For this reason, the way a central bank designs and explains the climate profile of its own portfolios can become a benchmark for market participants, public issuers and other official institutions. Climate-related disclosure is therefore not a peripheral communication exercise; it is part of a wider institutional discipline through which risks are identified, assumptions are made explicit and progress can be assessed over time.

This article adopts a deliberately pragmatic view of sustainable investment. Climate alignment is not treated as a single number to be maximised in isolation. In central bank portfolios, climate indicators must coexist with liquidity needs, credit-quality constraints, reserve-management considerations and operational requirements. This is what makes the Banco de España's approach relevant: it shows how climate objectives can be embedded in an investment framework without presenting them as a substitute for the core duties of any institution.

2. MANDATE, NEUTRALITY AND LEADERSHIP BY EXAMPLE

The starting point is the distinction between monetary policy portfolios and own non-monetary portfolios. The former serves the primary objective of monetary policy. As part of the Eurosystem, the Banco de España builds and manage these portfolios according to the Eurosystem decisions on the appropriate stance of the single monetary policy of the Euro Area. Non-monetary policy portfolios perform, however, own investment, reserve or asset-management functions, always subject to the limits set in its mandate and/or related to potential interference with monetary policy. In these portfolios, the integration of climate criteria benefits from more direct operational room to apply sustainable investment principles without changing the stance of monetary policy. This room is anyway limited by the other investment principles commented above.

Market neutrality remains an important constraint. Unlike monetary policy operations, where the impact on financial conditions is part of the transmission mechanism, own portfolios must be managed in a way that does not distort price formation. This limits any ambition to “move the market” through purchases or sales. However, it does not prevent any central bank from improving information standards, validating measurement practices and reinforcing long-term signals. In this sense, leadership by example matters more than the relative size of the portfolio (see figure 1).

The Banco de España's practice shows that institutional leadership cannot be reduced to a statement of intent. It requires practical developments in terms of governance, data, methodologies, traceability and accountability. Annual disclosure of climate indicators makes it possible to compare portfolio developments over time, recognise methodological limitations

Figure 1

Institutional impact chain



and make visible the progress towards objectives compatible with the Paris Agreement and European climate legislation.

Leadership by example is especially relevant where market conventions are still evolving. Climate disclosure remains affected by heterogeneous definitions, uneven data availability and competing views on how different emissions should be treated. When a central bank publishes its assumptions, even with caveats, it contributes to standard-setting. It also signals that imperfect information is not a reason for silence, but a reason for transparency. Otherwise, uncertainty can easily become an obstacle to action: if market participants wait for perfect taxonomies, complete datasets or universal methodologies before changing behaviour, they are very likely to react too late. Central banks can help to break that deadlock by showing a credible path of gradual improvement.

At the same time, the concept of leadership must be interpreted carefully. A central bank should not use portfolio management to pursue policy objectives that belong to elected governments. Nor should it imply that the management of its own portfolios can compensate for delayed fiscal, regulatory or energy-policy decisions. The appropriate contribution lies elsewhere: in risk awareness, analytical capacity, transparency and consistency. By applying these principles to its own balance sheet, the central bank strengthens the credibility of its broader messages on climate-related financial risk.

3. THE BANCO DE ESPAÑA SRI STRATEGY

The strategy can be summarised in three lines of action. First, sustainable and responsible investment was incorporated as a formal principle of investment policy (see table 1). Second, a separate thematic portfolio was created for assets that meet SRI criteria, mainly fed by specialised investment funds in a first moment. Third, direct investment in assets that meet the criteria has progressively gained momentum as taxonomies, data providers and classification methodologies have become more robust and comparable.

In the early years, participation in specialised funds was particularly useful. It made it possible to benefit from external selection and verification processes at a time when the boundary between eligible and non-eligible assets was still uncertain and the central bank had not had time to build expertise. Over time, the development of taxonomies, green bond standards and private data providers jointly with the knowledge accumulated by the Banco de España have facilitated an increase in direct investment. This development matters because it reduces dependence on intermediary vehicles, strengthens internal analytical capacity and reinforces institutional learning.

Disclosure adds several important details to this picture. Since 2023, the Banco de España has published an annual climate-related financial disclosure report on its non-monetary policy investment portfolios, as part of a common Eurosystem strategy. This coordinated disclosure facilitates comparability across central banks thus reinforcing the power of the exercise. The reports initially followed the *Task Force on Climate-related Financial Disclosures* (TCFD) framework (see TCFD 2017); since 2024, those recommendations have been embedded in the *International Sustainability Standards Board* (ISSB) standards. This evolution underlines the Banco de España and Eurosystem commitment to climate transparency and to continuous improvement in data quality, disclosure methods and climate-risk management, within the limits of currently available information.

Since 2023 the coverage of the exercise has been extended in several dimensions including asset composition and methodology. The reports always include a careful analysis of the changes in the indicators, which helps to enrich the debate and prevents misleading interpretations of the data. An example can help to illustrate this point. The last report (Banco de España, 2026) showed a coverage ratio of 57% (that is, 57% of the total non-monetary portfolios were covered by the analysis). This meant 5 percentage points less than the previous year. Yet the report emphasises that in the same period gold (a non-financial asset excluded from the analysis because there is no commonly accepted methodology to measure its related emissions) increased from roughly 17% to 24% of the portfolio due to a revaluation effect, not to any change in holdings. This illustrates a point that is often overlooked: changes in indicators sometimes reflect changes in variables that have little to do with portfolio management decisions.

Reports have also refined the treatment of metrics. In 2026, for instance, relative metrics for scope 3 emissions of non-sovereign issuers were added. Also, it was removed the government approach for sovereign issuers and there was a harmonisation of the wording of objectives. These changes may appear technical, but they are analytically important. Climate disclosure is not simply about publishing numbers; it is about publishing numbers that are meaningful, comparable and not misleading. Reducing the number of approaches used for sovereign issuers, for instance, can improve clarity if it eliminates indicators that are difficult to interpret or that generate inconsistent readings across portfolios.

As commented above, the reports dedicate a full section to governance. The governance architecture is more sophisticated than a simple investment rule. It brings together investment policy, financial investment guidelines, risk committees, operational departments, risk-control functions and, in our case, the ESG office. This integrated model is preferable to treating climate as an overlay applied at the end of the investment process. If climate risk is a financial risk, it should be embedded in the ordinary risk-management cycle. If sustainable investment is part of institutional strategy, it should be reflected in governance, reporting lines and periodic review.

4. DATA, METRICS AND THE PROBLEM OF SSA DOMINATED PORTFOLIOS

The greatest practical difficulty for a central bank to materialise its strategic decisions on the climate aspects of its non-monetary portfolios lies, still, in the availability and quality of data. Central bank portfolios are often concentrated in sovereign, supranational and agency assets. This feature distinguishes them from other portfolios where equities or corporate bonds have usually a greater weight. Most, if not all, climate metrics were initially designed for non-financial companies, where it is more straightforward to attribute emissions to a specific productive activity. Measuring the climate characteristics of public issuers, by contrast, requires solving more complex conceptual problems (see table 2).

Table 2

Methodological challenges to measure the climate risk of SSA assets

Methodological challenge	Why it matters	Practical response
Double counting	May overstate the aggregate carbon footprint when sovereign, sub-sovereign and agency issuers are combined.	Separate production-, consumption- and government-based approaches; document the chosen criterion.
Data lag	Reduces timely monitoring capacity and weakens market signalling.	Use prudent estimates and update series when definitive data become available.
Forward-looking indicators	Paris alignment requires the assessment of future pathways, not only past emissions.	Incorporate scenarios, national targets and transition plans when they are verifiable.

A first problem is double counting. If a portfolio includes sovereign debt and, at the same time, regional or agency debt from the same country, territorial emissions may be counted more than once unless consistent criteria are applied. A second problem is the time lag in public-sector emissions data, which are often published later than data for private issuers. A third problem is the forward-looking dimension: it is easier to assess corporate transition plans than to translate national pathways, public policies and climate commitments into homogeneous portfolio metrics.

The challenge of developing forward-looking indicators is likely to become even more relevant as the climate assessment of SSA holdings expands beyond historical emissions. Assessing Paris alignment requires not only measuring past performance but also evaluating the future direction and resilience of public issuers. Transition plans are a central element of this assessment, as they provide information on national targets, policy commitments and

expected emissions pathways. Forward-looking analysis may also need to consider how issuers' exposure and vulnerability to physical and nature-related risks could evolve under different climate and socioeconomic scenarios. These dimensions are also reflected in the ECB's climate and nature strategy, which identifies the green transition, the increasing physical impacts of climate change and nature-related risks as priority areas for further work.

Translating these dimensions into comparable forward-looking indicators will, however, be difficult. National transition plans may differ in scope, legal status and implementation capacity, while projections of physical and nature-related risks are highly location-specific and sensitive to modelling assumptions. Their assessment may therefore require a combination of projected emissions, policy scenarios and geographic exposure measures, complemented by qualitative judgements on policy credibility, adaptation capacity and financing needs. Against this background, indicators matter, but methodological notes and annexes matter as well. Without them, a climate metric can easily be misinterpreted. Any improvement in emissions intensity does not automatically mean that a portfolio is aligned with a net-zero pathway. Conversely, a temporary deterioration does not necessarily imply a failure of strategy if it results from an exchange-rate movement, a change in market values or the inclusion of more complete data. Climate indicators should therefore be treated as diagnostic tools rather than mechanical performance scores. And need to be accompanied always by a careful assessment.

5. A PRACTICAL EXAMPLE: WHAT THE 2026 BANCO DE ESPAÑA'S PORTFOLIO CLIMATE REPORTS SHOW

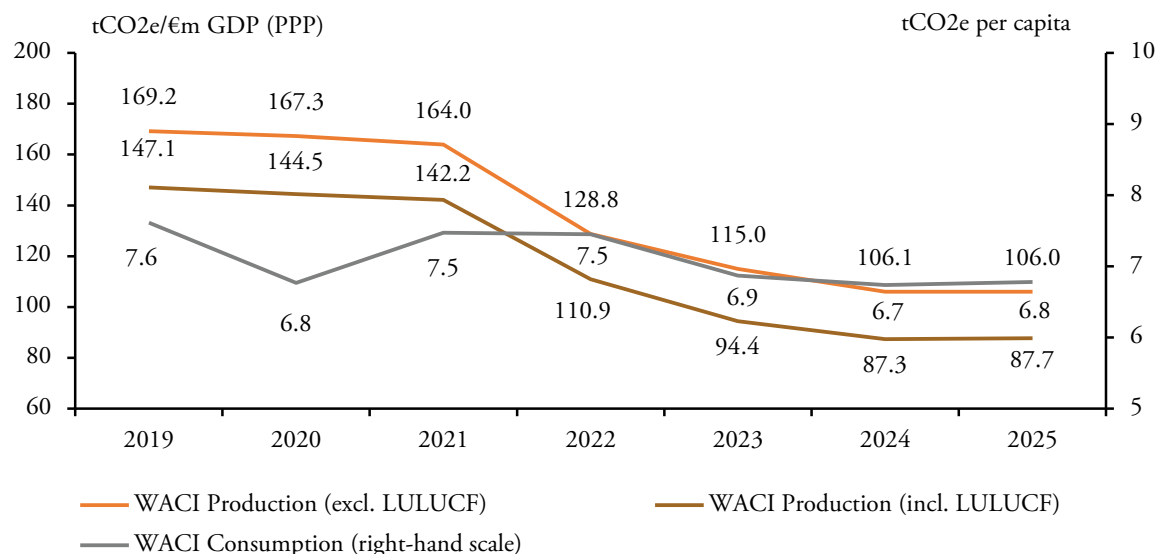
The 2026 edition, published on 2 June 2026, follows the logic of previous editions and its structure reflects the five standard dimensions of climate disclosure agreed by the Eurosystem: governance, strategy, risk management, metrics and targets. In this section the focus is on metrics and targets, where the evolution of the main indicators is analysed.¹

While the report includes a wide range of indicators, Weighted Average Carbon Intensity, or WACI, may be considered as one of the most well-known standard indicators for portfolio climate content. For sovereign-dominated portfolios, WACI is often expressed in tonnes of carbon-dioxide equivalent per unit of GDP, adjusted for purchasing power parity. According to this indicator, the report shows a marked decline in the WACI of euro-denominated sovereign portfolios. The series falls from around 147 tCO₂e per million euro of GDP in 2019 to around 87 in 2024, equivalent to a reduction of approximately 41% over the period and an annual geometric reduction close to 10% (see figure 2).

¹ Just a summary of the main results of the report is offered here. For more detailed information, including on the definitions of indicators and the data sources, please refer to the report Banco de España (2026).

Figure 2

WACI according to different approaches: sovereign bonds in euro-denominated portfolios, 2019-2025



Note: LULUCF emissions refer to emissions from land use, land-use change and forestry.

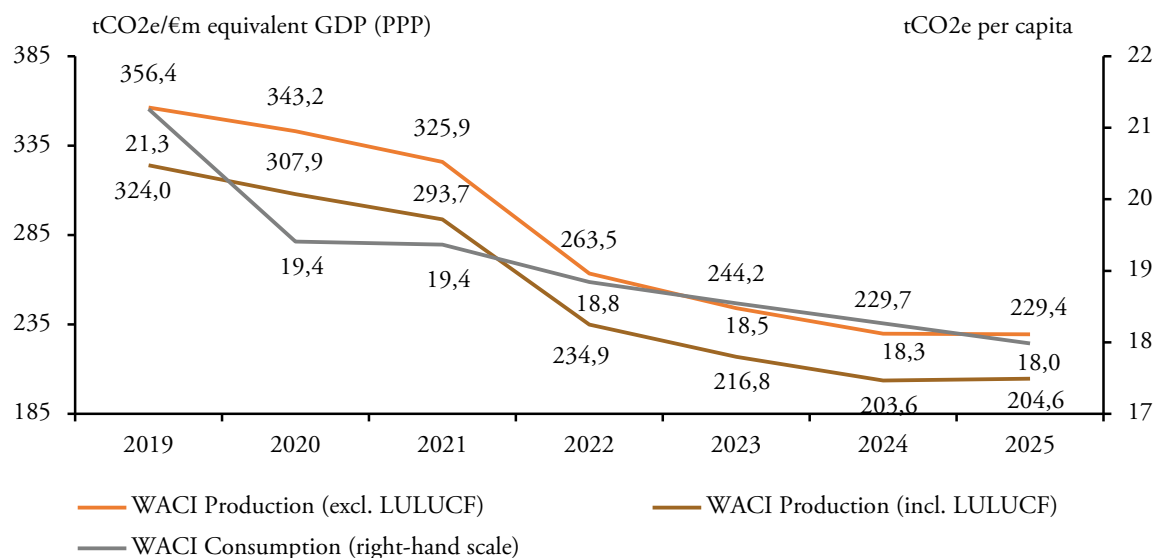
Source: Banco de España (2026).

For foreign-currency portfolios, the same approach shows a reduction from around 324 tCO₂e per million-euro equivalent of GDP in 2019 to around 204 in 2024, a decline of roughly 33% using the latest greenhouse-gas data available in the exercise (see figure 3). The level remains higher than for euro-denominated portfolios, which is consistent with differences in issuer composition and currency allocation. From a portfolio-management perspective, however, the level of the indicator is only part of the story. The trend, the quality of coverage and the reasons behind changes are equally important. A fall in WACI may reflect decarbonisation by issuers, portfolio reallocation, valuation effects or changes in data sources. A proper assessment therefore requires all these channels to be considered.

Another relevant indicator to assess the Banco de España's SRI strategy is the investment in green bonds. As can be seen in figures 4 and 5 this indicator shows an upward trend: in 2019, green bonds accounted for less than 1% of total investment portfolios. In 2025 the total share had jumped to 6.7% in 2025, with 9.4% in euro-denominated portfolios and 5.1% in non-euro portfolios. These figures suggest gradual progress, consistent with a prudent approach and with the liquidity and eligibility constraints typical of a central bank. Green bonds tend to be less liquid in secondary markets, partly because many investors hold them to maturity owing to mandate requirements. At the same time, central banks' own legal and operational constraints may limit their ability to participate in primary issuances.

Figure 3

WACI according to different approaches: sovereign bonds in non-euro-denominated portfolios, 2019-2025

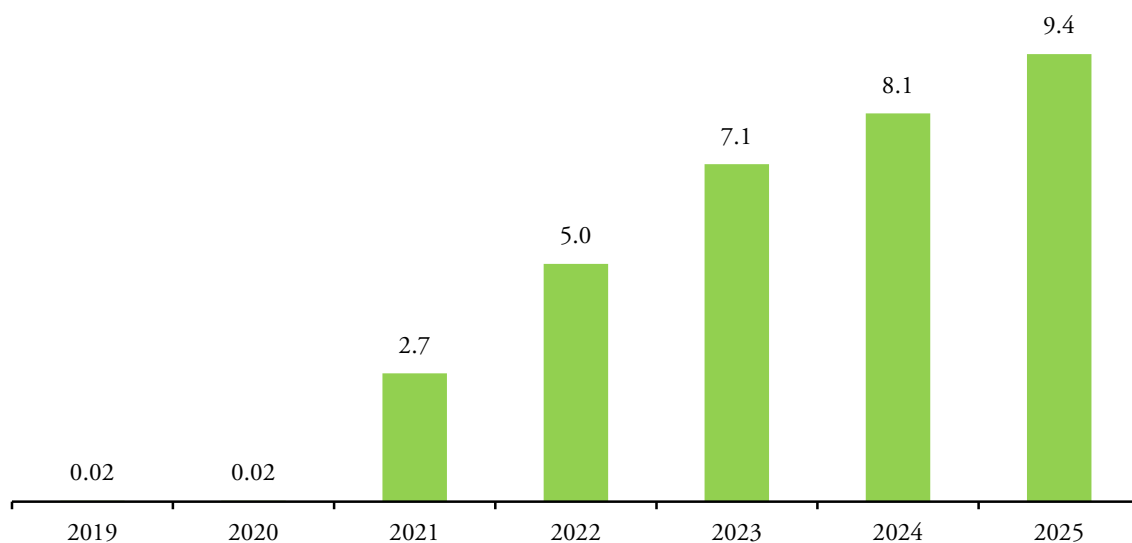


Note: LULUCF emissions refer to emissions from land use, land-use change and forestry.

Source: Banco de España (2026).

Figure 4

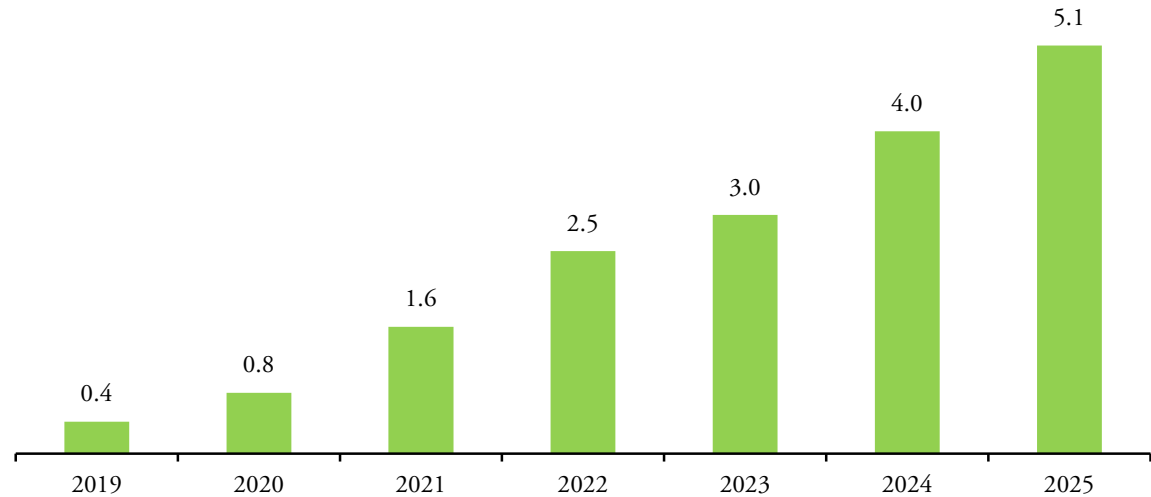
Green investment as a percentage of the holdings in euro-denominated investment portfolios (%)



Source: Banco de España (2026).

Figure 5

Green investment as a percentage of the holdings in non-euro-denominated investment portfolios



Source: Banco de España (2026).

Avoided emissions are also relevant for understanding the practical contribution of green investments. The 2026 report estimates avoided emissions for Bank for International Settlements (BIS) Investment Pool (BISIP) funds and for direct green-bond holdings (see tables 3 and 4). For the euro-denominated BISIP, estimated avoided emissions stood at

Table 3

Additional metrics relating to indirect holdings of euro and US dollar-denominated green bonds

	2021	2022	2023	2024	2025
Avoided emissions euro-denominated BISIP fund (a) (tCO ₂ e)	151,437	393,594	299,670	205,800	205,335
(b)(%)	95	96	84	90	97

	2020	2021	2022	2023	2024	2025
Avoided emissions US dollar-denominated BISIP fund (a) (tCO ₂ e)	69,856	65,175	43,286	48,307	46,628	47,568
(b) (%)	100	94	95	83	81	85

Notes: (a) Annual avoided emissions estimated for each fund, attributed based on the holding therein. Data at end-September each year. (b) The percentages in italics beneath the metrics denote the level of data availability. Previous years' figures have been updated per the data revisions.

Sources: Banco de España (2026).

Table 4

Additional metrics relating to direct investment in green bonds (a)

	2024	2025
Avoided emissions of direct investment in green bonds (a) (tCO ₂ e)	1,234,417	1,176,978
(b) (%)	71	91

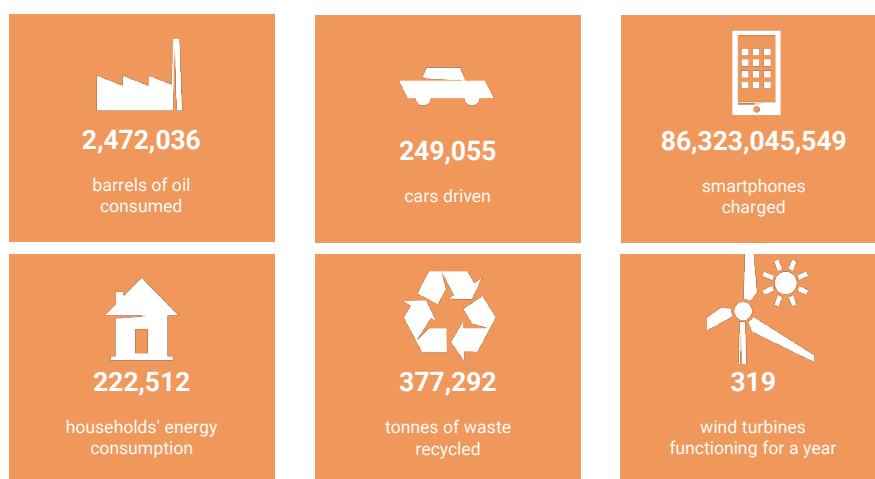
Notes: : (a) Data at end-March each year. (b) The percentages in italics beneath the metrics denote the level of data availability.

Sources: Banco de España (2026).

approximately 205,335 tCO₂e in 2025, with data coverage of 97%. For the US-dollar BISIP, the corresponding figure was approximately 47,568 tCO₂e, with coverage of 85%. Direct green-bond holdings were associated with estimated avoided emissions of around 1,176,978 tCO₂e in 2025, while data coverage improved to 91% from 71% in the previous year.

The scale of this environmental impact is sizeable. As shown in figure 6, these estimated avoided emissions are equivalent to the annual greenhouse-gas emissions of almost 250,000 cars. They are also comparable to the CO₂ emissions from roughly 2.5 million barrels of oil consumed, the charging of more than 85 billion smartphones, or the annual electricity use of over 215,000 households. To put this in perspective, the impact is equivalent to recycling more than 375,000 tonnes of waste or operating more than 300 wind turbines for

Figure 6

Equivalencies of the environmental impact of estimated avoided GHG emissions. Direct investment in green bonds (2025)

Sources: Banco de España (2026).

an entire year. These green-bond-financed projects also contribute to the UN Sustainable Development Goals.

However, these avoided-emissions figures should be read with caution. They are not the same as the carbon footprint of a portfolio, and they depend on project-level assumptions about what would have happened in the absence of the financed activity. Even so, they are useful when analysing labelled bonds whose proceeds are directed to green projects. They connect the financial instrument to a real-world environmental outcome and provide an additional perspective lens alongside portfolio carbon intensity. For professional investors, the combination of portfolio-level metrics and project-level impact indicators is increasingly important.

As the report only covers the Banco de España’s portfolios, the analysis follows a “time-series” approach, that is, it focuses on the evolution of the different indicators along the time. However, one of the main advantages of the coordination and harmonization between the National Central Banks (NCB) of the Eurosystem is that the time series approach can be complemented by a “cross-section” one. From this perspective, figures 7 and 8 show the same WACI indicators showed above but for the different NCBs and the Eurosystem.

Figure 7
WACI (production approach including LULUCF). Comparison across the Eurosystem. EUR-denominated sovereign bonds

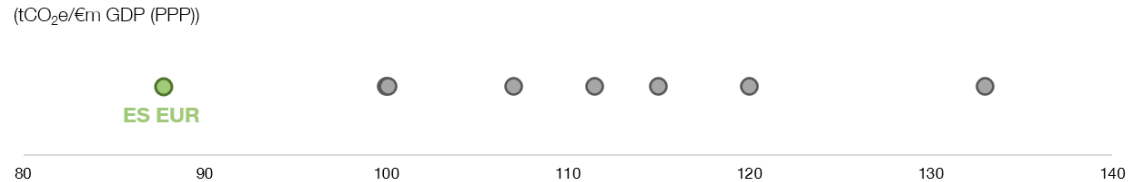
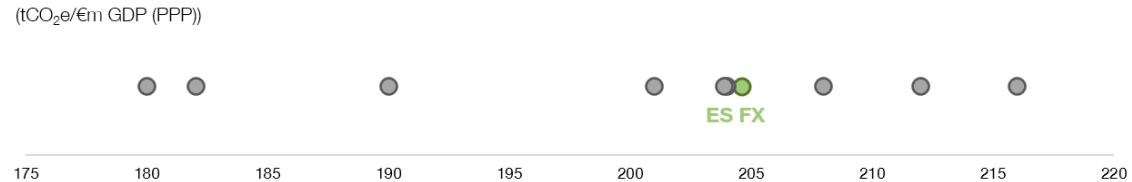


Figure 8
WACI (production approach including LULUCF). Comparison across the Eurosystem. FX-denominated sovereign bonds



Note: LULUCF emissions refer to emissions from land use, land-use change and forestry. Green dots represent other NCBs indicators.

Source: Eurosystem Climate-related financial disclosures (2026).

As can be seen, Banco de España's euro-denominated sovereign bond holdings have the lowest production-based WACI including LULUCF emissions among the comparable portfolios of other Eurosystem central banks. As to the WACI of its non-euro holdings, the relative position is worse, but it is worth noting that in this case the different indicators are more homogeneously distributed across NCBs. This latter result partly reflects the relatively similar currency composition of NCB's foreign-exchange portfolios and, consequently, their exposure to a comparable set of sovereign issuers.

6. SOME LESSONS LEARNED

The Banco de España experience may offer several lessons. The first one is that integrating climate considerations does not require waiting for perfect data. The absence of complete information should not become an excuse for inaction; rather, it requires assumptions to be documented, limitations to be acknowledged and methods to be improved gradually. The second lesson is that any approach must be adapted to the nature of the portfolios. Portfolios dominated by public issuers require metrics that differ from those used for corporate portfolios. The third lesson is that international coordination is essential: the value of disclosure increases when methodologies are comparable and when different agents send a common signal to the market.

There is also a caveat worth emphasising —or a lesson in realism. Central banks cannot replace governments in climate policy. Taxes, sectoral regulation, public investment, energy planning or territorial adaptation, *inter alia*, belong to the broader domain of economic policy. They belong to areas outside the reach of central banks. Central banks can only contribute within their mandates: by increasing awareness of the risks leveraging on the management of their balance sheets, incorporating prudent sustainability criteria in this management and raising the standard of financial transparency.

A further implication concerns communication. Climate disclosure is often technically dense, but public institutions must make it intelligible to readers who are not climate-data specialists. A professional article can help bridge that gap by translating methodology into institutional meaning. The key message is that sustainable investment by a central bank is neither symbolic activism nor a mechanical compliance exercise. Rather, it is a disciplined way of recognising that climate change affects financial risk, that central bank portfolios should not ignore this reality and that transparency can improve market practices.

For central banks operating in smaller or less liquid markets, these lessons are particularly relevant. The availability of eligible green assets may be limited, and concentration risk can

arise quickly if sustainability criteria are applied too narrowly. In such contexts, the objective should not be to maximise a single green-bond share at any cost, but to establish a credible process: define eligibility, measure exposures, disclose limitations, engage with common standards and review the strategy periodically. The Banco de España gradual increase in green-bond holdings illustrates this balance between ambition and prudence.

7. CONCLUSIONS

The incorporation of climate considerations into central banks' portfolios represents an important development in public asset management. It does not mean abandoning the classic principles of prudence, efficiency or neutrality, but rather reinterpreting them considering financial risks that materialise over long horizons, with imperfect information and systemic effects. The Banco de España has chosen a gradual and transparent path: formalising SRI principles, creating a thematic portfolio, increasing investment in green assets and disclosing climate metrics annually and in a coordinated manner.

The value of this strategy can hardly be assessed by measuring the share of green bonds in the portfolio or by following the evolution of the aggregate carbon footprint shown by a particular indicator. Its deeper contribution is institutional: creating habits of measurement, recognising limitations, improving data, making practices comparable and demonstrating that sustainability can be incorporated without sacrificing financial rigour. In a context in which markets need credible signals and robust methodologies, leadership by example becomes a powerful form of public intervention.

The 2026 disclosure exercise strengthens that conclusion. It certainly shows progress in the share of green bonds and reductions in key indicators. But also shows improvements in data analysis coverage and refinements in methodology. Climate reporting is a living process. Scope, metrics and assumptions evolve as data improve and as international standards mature. That evolution should not be interpreted as instability; rather, it is a sign that disclosure is becoming more rigorous.

The broader policy lesson is that climate-related financial work should be judged by its contribution to better decisions. In central bank portfolios, better decisions mean identifying relevant risks, avoiding hidden concentrations, improving the quality of information, preserving the integrity of the mandate and supporting more transparent markets. The Banco de España experience shows that these objectives can be pursued together. It is not a model of rapid transformation through large-scale reallocations, but a model of institutional credibility built through method, disclosure and consistency.

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