BANCO DE PORTUGAL DECARBONISATION PROGRAMME



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Executive summary

The Banco de Portugal is committed to tackling climate change, within the scope of its mandate, and has made a public pledge to align its operations with the objectives laid down in the Paris Agreement and undertaken by the European Union and the Portuguese government.

The Climate Framework Law (Law No 98/2021 of 31 December 2021 – CFL) sets decarbonisation targets for the national territory and states that "The management bodies of ... independent administrative entities ... shall approve specific decarbonisation programmes for their services and institutions".

This report is the first issue of the Banco de Portugal's Decarbonisation Programme. The analysis and proposals submitted herein cover the Bank's operations and internal management as an organisation. This Programme does not cover the Bank's core business – safeguarding financial stability, maintaining price stability and offering economic advice – and its contribution toward energy transition, a matter addressed elsewhere and in accordance with the approach set out in Acting for Sustainability 2022-25.

The report describes the current situation with regard to the carbon footprint of buildings, business travel and staff commuting, cash issuance and management of the Bank's own portfolio of financial assets, as well as the decarbonisation measures already taken; sets decarbonisation objectives and targets aligned with the Paris Agreement and European and national legislation; and puts forward an action plan, identifying measures to be implemented by the Bank in the coming years.

The carbon footprint related to the Bank's **buildings** and **business travel and staff commuting**, measured according to the Greenhouse Gas Protocol methodology, decreased by around 70% between 2018 and 2022. This sharp decline reflects, on the one hand, measures taken by the Bank, most notably the purchase of green energy since 2020 and the adoption of a remote working policy in 2022, and, on the other hand, the effects of the pandemic on business travel, staff commuting and building occupancy.

A recent ECB study on the euro banknote production and issuance footprint, based on the Product Environmental Footprint (PEF) methodology, concluded that greenhouse gas (GHG) emissions associated with the production and **issuance of euro banknotes** are very limited compared to other activities. In the case of the Banco de Portugal, the impact of banknote production is already largely reflected in the calculation of the ecological footprint associated with the use of buildings. However, the environmental impact of cash issuance, which is the most impactful (in particular the scope 3 emissions from the transportation of cash by the Bank's business partners and the operation of ATMs), has yet to be accounted for in the Bank's footprint.

As part of a concerted effort at the Eurosystem level, the Bank released for the first time in 2023 the carbon footprint of its **own financial asset portfolio** for 2021 and 2022. Calculations were made on the basis of harmonised information and methodologies, by reference to the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) and the Partnership for Carbon Accounting Financials (PCAF) and using specialised databases (ISS and Carbon for Finance). Metrics cover the issue of financial asset portfolios for sovereign and non-sovereign bonds (supranational, agencies, corporate bonds and mortgage debt).

In this first Decarbonisation Programme, the Bank commits to achieving climate neutrality by 2050, with regard to its scope 1 and scope 2 GHG emissions resulting from its internal operations (use of the vehicle fleet and buildings, including purchased electricity). To that end, the Bank has adopted as an intermediate **milestone** a cut in such emissions, in comparison to 2018, by at least 60% by 2030, 80% by 2040 and 90% by 2050. The Bank also commits to gradually offsetting residual GHG emissions

by purchasing emission offsets (or through direct carbon capture projects) in order to achieve climate neutrality by 2050.

The targets now set consider, on the one hand, progress made to date and the national targets set out in the CFL and, on the other hand, the need to improve the quality, granularity and comparability of the Bank's environmental performance data and to acquire environmental management skills. These targets will be reviewed as part of the Strategic Plan for 2026-30, with the aim of making them more ambitious and comprehensive, namely by expanding them to include scope 3 emission targets.

With regard to decarbonisation targets for monetary issuance and the management of its own financial asset portfolio, the Bank will keep pace with the guidelines to be adopted by the Eurosystem.

To achieve the established decarbonisation objectives and targets and, more generally, to improve the Banco de Portugal's environmental performance, an **action plan** has been set out, consisting of various quantified and time-bound measures, in what concerns buildings; sustainable mobility; cash production and issuance; management of financial assets in its own portfolio; sinks and emission offsets; and other cross-cutting measures.

The second edition of the Decarbonisation Programme will be drawn up in conjunction with the Strategic Plan for 2026-30 and will form an integral part thereof. Subsequent revisions are expected to be made no sooner than every five years.

1 Background

The Banco de Portugal is committed to tackling climate change within the scope of its mandate. To that end, it has made efforts on several of its activities, as reflected, among other documents, in the strategic approach Acting for Sustainability 2022-25. One element of this approach is the reduction of the Bank's own carbon footprint.¹

Article 37(3) of the Climate Framework Law (Law No 98/2021 of 31 December 2021) provides as follows:

"The management bodies of ... independent administrative entities ... shall approve specific decarbonisation programmes for their services and institutions."

The CFL does not set a firm deadline for the approval of the decarbonisation programme, nor does it establish parameters to guide that programme. However, in the Banco de Portugal's Pledge on Climate Action, released on 3 November 2021 on the occasion of the United Nations Climate Change Conference (COP 26), the Bank had already committed to publishing a roadmap in 2023, to "align [its] own activities with the Paris Agreement in its 1.5 °C trajectory and with the EU goals for climate neutrality."

The analysis and proposals presented in this document fall within the scope of the Bank's operations and internal management. This work does not cover the Banco de Portugal's core business – safeguarding financial stability, maintaining price stability and offering economic advice – and its contribution toward energy transition.

Two major challenges, common to most organisations, have shaped the methodological options and concrete proposals presented below.

First, there is not enough appropriately structured, reliable, comparable, comprehensive and granular data to measure the carbon footprint and its developments with a high degree of confidence, or to assess the decarbonisation measures already taken.

Second, there is a lack of appropriate skills among the Bank's staff to perform this type of exercise, which requires vastly different technical knowledge from that usually available in a central bank. Thus, an external consultant was hired to provide specialised support to the Bank's staff in three areas:

- a) Validation of the Bank's carbon footprint calculations (buildings and mobility) since 2016. Some corrections and additional information have been inserted which, while not having materially changed the results, provide grounds for greater confidence in the soundness of the previous work, which serves as a basis for the Decarbonisation Programme;
- b) Setting of decarbonisation objectives, aligned with the Climate Framework Law;
- c) Identification of measures/action plan to be developed by the Banco de Portugal to achieve the proposed objectives;

The Decarbonisation Programme is composed of four chapters.

¹ The UN Climate Dictionary defines 'carbon footprint' as follows: "A carbon footprint is a measure of the greenhouse gas emissions released into the atmosphere by a particular person, organization, product, or activity."

Chapter 2 presents the data available on the Bank's carbon footprint progress, measured for different areas of its operational activity (buildings, business travel, staff commuting and acquisitions; cash production and issuance; financial asset management) and recaps the main measures already taken to reduce the footprint, most notably contracting the supply of power from 100% renewable sources.

Chapter 3 presents the Banco de Portugal's decarbonisation objectives, aligned with the Paris Agreement targets, and most notably with the objective of climate neutrality by 2050 and the intermediate targets for 2030 and 2040 set by the Portuguese government in the CFL. It also describes the underlying methodological options.

Chapter 4 lists a set of decarbonisation initiatives to be taken by the Bank by 2025. The proposed measures cover several operational and internal management areas of the Bank – buildings, corporate mobility, cash production and issuance, and management of its own financial assets portfolio – as well as a set of cross-cutting measures, including emission offsets, raising staff awareness and public procurement.

2 Banco de Portugal's carbon footprint

The Banco de Portugal has three main sources of information on the environmental impact of its activities:

- a) The carbon footprint associated with the use of the Bank's buildings, business travel and staff commuting, and the consumption of some materials (Section 2.1);
- b) The environmental footprint of monetary issuance,² calculated for the Eurosystem as a whole in accordance with the PEF methodology developed by the European Commission and applicable to goods and services (Section 2.2);
- c) Climate-related financial disclosures of the Banco de Portugal's own financial assets,³ denominated in euro and foreign currency, calculated following a harmonised Eurosystem methodology (Section 2.3).

2.1 Buildings and travel

2.1.1 Developments in the carbon footprint in 2018-22

GHG emissions related to the **use of the Bank's buildings, business travel and staff commuting, and the consumption of some materials** were calculated according to the GHG Protocol methodology (Table 2.1).

These calculations, available for the period 2018-22, cover emissions related to:

- The use of the Bank's buildings (fuels and fluorinated greenhouse gases) and vehicle fleet (scope 1);
- the production of electricity consumed by the Bank (scope 2);
- business travel, staff commuting, paper use and other consumption, waste treatment, water use and wastewater produced (scope 3).

Due to methodological difficulties and the unavailability of information, scope 3 emissions do not (yet) include the footprint associated with investments in physical assets or relevant activities in the Bank's value chain, such as cash distribution, or the investment of its own financial asset portfolio. The Bank has relevant information on the environmental footprint of these operations, following the work carried out within the Eurosystem. However, the available calculations rely on different methodologies and are therefore reported separately (Sections 2.2 and 2.3).

² Product Environmental Footprint study of euro banknotes as a payment instrument (europa.eu).

³ Climate-related financial disclosures of the Banco de Portugal's own financial assets – 2022 (bportugal.pt).

Emissions	2018	2020	2021	2022	Change 2018–2022
Scope 1	1,118	1,023	983	860	-23%
Scope 2	6,274	157	119	106	-98%
Scope 3	4,607	1,712	1203	2,560	-44%
Total	11,999	2,892	2,305	3,526	-71%
Memo item: scope 1+2	7,392	1,180	1,102	966	-87%

Table 2.1 • Developments in GHG emissions by the Banco de Portugal in 2018-22 (buildings and mobility; in tCO_2e)

Source: Banco de Portugal.

The marked reduction in the Banco de Portugal's carbon footprint (associated with buildings, business travel and commuting) between 2018 and 2022 (a 71% decline), as shown in Table 1, reflects the combined result of the impact of the pandemic and several measures taken by the Banco de Portugal to improve the environmental performance of its activities.

The pandemic notably led to a sharp reduction in scope 3 emissions related to business travel and staff commuting in 2020-21. In 2022, as activity gradually normalised post-pandemic, scope 3 emissions more than doubled against the previous year. While this upward trend is expected to proceed in the near term, emissions are expected to remain considerably below their 2018 level, given that the pandemic brought structural changes, such as remote working and less frequent business travel.

The various initiatives undertaken by the Bank in recent years and described in the following subsection have also made a very significant contribution to the decline in emissions in the period under review. Particularly noteworthy are:

- a) The purchase from 2020 onwards of renewable energy certificates, which guarantee that the energy consumed in the Bank's buildings in mainland Portugal comes from 100% renewable sources (this has virtually eliminated scope 2 emissions, which accounted for more than 50% of total emissions in 2018);
- b) The adoption of a remote working policy, resulting in a significant reduction in the footprint associated with staff commuting (on average, a 20% cut in these emissions for each day working remotely).

2.1.2 Main measures already taken to reduce the carbon footprint

On 29 January 2020 the Bank joined the Lisbon European Green Capital 2020 – Lisbon Climate Action 2030 commitment. The commitment was launched by the Lisbon City Council, whereby firms and other public and private entities took on an ambitious agenda under the motto 'CHOOSE TO EVOLVE: 2030 measures for 2030'.

The Bank has undertaken to implement ten initiatives in the fields of energy, water, circular economy and citizenship by 2030. Some of these measures have already been implemented, or are underway, along with other measures not included in the commitment.

The Bank's main initiatives to decarbonise its operational activity fall into three domains:

- Buildings and facilities;
- Sustainable mobility;
- Other initiatives.

The measures adopted are described below, but it should be noted that in many cases no information is available against which to assess their impact. This is an aspect where the Bank will need to improve in light of the Decarbonisation Programme (Section 4.6).

Buildings and facilities

The most impactful measure adopted by the Bank was the purchase of electricity from 100% renewable sources (excluding the regional offices of the Azores and Madeira, where the supply of renewable energy is still limited) from 2020 onwards. As stated above, this measure has virtually eliminated scope 2 emissions, which accounted for more than half of total GHG emissions in 2018.

The Bank has also taken a number of steps to reduce consumption and increase energy efficiency.

The lighting of the offices and common areas of the Bank's buildings is gradually being replaced with **LED lighting**. The switch is at around 60% and should be completed by 2025.

The Bank has been installing **motion sensors in lavatories** to ensure that the light only turns on when needed. The installation is close to 50% and is expected to be completed in 2024.

In 2023, in the Faro Agency and the Regional Delegation in the Azores, air conditioning was replaced with more modern and efficient equipment. The switch is planned to be extended to other buildings of the Bank.

Also in 2023, the installation of a **photovoltaic power plant** at the Carregado Complex was initiated. It is expected to go live by mid-2024 and to reduce dependence on the electricity grid by around 20%. The Bank has launched feasibility studies for the construction of more photovoltaic power plants in other facilities.

Sustainable mobility

In 2021-22, the Bank conducted a corporate mobility study, with the aim of promoting more sustainable mobility patterns for staff commuting and business travel. In this context, the Bank's vehicle fleet policy was changed in October 2023, with vehicles purchased by the Bank from 2025 onwards having to be electric or hybrid.

In September 2022 the Banco de Portugal adopted a remote work policy, allowing staff with compatible functions to work remotely two days per week. Although the main motivation for the adoption of this policy lies within the scope of Human Resources rather than of a decarbonisation policy, it still contributes to a substantial reduction in emissions, as it renders commuting unnecessary during part of the week.

Other initiatives

The Bank has also undertaken several initiatives with an impact on GHG emissions in procurement, consumption of goods and services and waste management.

In 2014 a new **printing/copying policy** was implemented, which led to a reduction in the consumption of paper and other supplies. In 2018 paper consumption had decreased by 20% from 2014; over the same period, the consumption of toner had dropped by 57%.

Measures were adopted in 2016 to **reduce the use of plastic packaging** and promote tap water consumption. By 2018, consumption had been cut by 1.35 million plastic cups and 70 billion plastic bottles.

In 2017 a **waste management policy** was adopted, whereby centralised recycling points were set up and 1,500 waste baskets were removed.

In 2019 **low-flow devices on faucets** were installed in the Edifício Portugal's lavatories, which led to a reduction in water consumption.

Turning to **public procurement**, the General Framework of Principles for Contractors of the Banco de Portugal was approved in 2020, whereby entities with which the Bank signs contracts for the provision of goods or services are required to observe the Bank's ethical standards and commitment to economic, social and environmental sustainability.

The Bank has also taken further steps to include environmental and social criteria in contracts for the supply of goods or services, including:

- Establishing environmental and social requirements in some of the contracts signed, e.g. electricity supply, purchase of cleaning services, catering services, purchase of screens, etc.;
- Getting to know the market better, through prior consultation to identify solutions to reduce the environmental impact of the goods and services purchased;
- Giving advance notice to the market of the launch of procedures with environmental criteria and choosing more appealing titles (e.g. provision of recycled and green paper);
- Aligning with best market practice, including, where possible, the national strategy for green public procurement, which is mainly targeted at:
 - The adoption of a green public purchasing policy;
 - The establishment of a best practice repository;
 - The incentive for product and technological innovation;
 - Motivating suppliers and service providers to develop solutions promoting environmental sustainability and aligned with the Green Public Procurement principles set out by the OECD.

2.2 Environmental footprint of cash

Cash issuance is the act of putting cash – banknotes and coins – into circulation and establishing the obligation of accepting them in payments or trade.

The ECB has the exclusive right to authorise the issue of banknotes in the euro area (legal issuer), which can be performed by itself or the national central banks (NCBs).

The production of euro banknotes is decentralised and pooled among euro area national central banks (NCBs), i.e. each NCB is responsible for providing a specific share of the annual production of certain denominations to cover its needs and those of other NCBs.

In the case of the issuance of euro coins, the ECB approves the volume of coins to be issued and each euro area Member State is responsible for its share in the issuance. In Portugal, euro coins are issued by the State, through the Ministry of Finance (Directorate-General for Treasury and Finance), minted by the Portuguese Mint and Official Printing Office (Imprensa Nacional-Casa da Moeda) and put into circulation by the Banco de Portugal.

Production allocated to the Banco de Portugal as a member of the Eurosystem varies yearly in terms of volume and denomination. To produce the banknotes allocated to it by the ECB, the Banco de Portugal contracts VALORA – Serviços de Apoio à Emissão Monetária, S.A. (hereinafter, Valora, S.A.), which it fully owns and which operates at the Bank's premises at the Carregado Complex.

Accordingly, Valora's energy and water costs and consumption, as well as its scope 1 and 2 emissions, are accounted for as part of the Banco de Portugal's consumption, costs and carbon footprint and are therefore included in the emissions reported in Table 2.1.

In its 2030 cash strategy, the Eurosystem has committed to monitoring and reducing the environmental footprint of euro banknotes and improving their lifecycle without undermining the availability of cash.

Hence, the ECB has invested very substantially in studying measures that foster the sustainability of euro banknotes and has encouraged NCBs to carry out activities that reduce the environmental footprint of banknotes in a wide range of fields, from the production of raw materials to banknote production, distribution, use and destruction.

In December 2023 the ECB released the results of an assessment of the environmental footprint of euro banknotes throughout their lifecycle. This study concluded that GHG emissions associated with the production and issuance of euro banknotes are very limited compared to other activities (Box 1 and Figure 2.1).

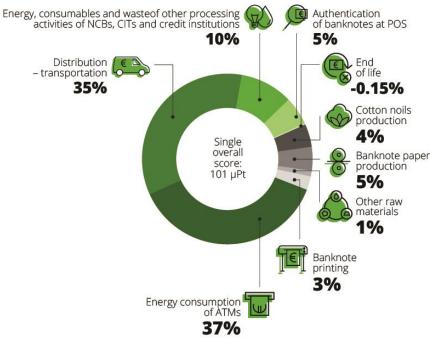


Figure 2.1 • Environmental impact of euro banknotes

Source: ECB, PEF study of euro banknotes as a means of payment.ECB, PEF study of euro banknotes as a means of payment.

Although the results of the assessment are presented for the euro area, it is relatively safe to assume that the main findings are also valid for Portugal: the greatest impact will stem from issuance (87% of the total euro banknote footprint), fuelled by cash transportation and the operation of ATMs – although the fact that Portugal has a larger share of electricity production from renewable sources could lead to a lower impact than that estimated in the context of the Eurosystem.

As mentioned above, in the case of the Banco de Portugal, the impact of banknote production is already largely reflected in the calculation of the environmental footprint associated with the use of buildings. However, the environmental impact of cash issuance, which is the most impactful (in particular the scope 3 emissions arising from the transportation of cash by the Bank's business partners and the operation of ATMs), has yet to be accounted for in the Bank's footprint.

Box 1 • Environmental footprint of euro banknotes throughout their life cycle

In December 2023, the ECB released a study on the environmental footprint of a euro banknote payment using the PEF method, which assessed the potential environmental impact of all stages of a euro banknote life cycle as a payment instrument, from its origination to final disposal. The method used – product environmental footprint (PEF) – is a life cycle assessment (LCA) developed by the European Commission that is applicable to goods and services. The entire process was formally validated by an external PEF auditor.

This assessment is based on 2019 data, the year when the issuance of the second series of euro banknotes was concluded, and it covers all stages of the life cycle of the euro banknote as a payment instrument, from origination to final disposal.

Data were collected from 19 national central banks of the Eurosystem, 11 printing works accredited to produce euro banknotes and 12 raw material suppliers. The ECB also used data provided by other stakeholders in the life cycle of banknotes. All the information collected was validated, processed and aggregated electronically, ensuring anonymity and the consolidation of results for the Eurosystem, but precluding the use of data only in the national context.

The assessment focused solely on the second series of euro banknotes, which means that the \leq 500 banknote, whose production was suspended in 2016, was excluded from the scope. However, because it is legal tender and, as such, can be used without restrictions in payments, it was considered equivalent to the \leq 200 banknote in the context of distribution and use as a means of payment. Among others, coins (expected to be included in the next exercise) and banknotes used as a store of value were excluded from the assessment.

The study concluded that the impact of producing and issuing euro banknotes, on average, per euro area citizen, relative to the annual use of euro banknotes in payments, was very limited when compared to other activities, and equivalent to the impact of driving a standard car for 8 km (consumption average of a petrol or diesel three-to-five seater car).

In the assessment, the ECB divided the life cycle of a banknote into two blocks: production (raw material acquisition,pre-processing and manufacturing) and issuance (distribution and use of the banknote as a means of payment and its end of life).

The analysis showed that production accounted for 13% of the environmental impact associated with the use of banknotes in payments, and issuance for 87%. In the latter case, the main contributors to the impact were Automated Teller Machines (ATMs), due to their energy consumption, and national transportation for distribution (the impact of cross-border transportation proved to be negligible).

The implementation of the Sustainable Cotton Programme (cotton is the main component in banknote paper production) in 2014, aiming at using 100% sustainable cotton fibres, has contributed to reducing the environmental impact of production.

In terms of issuance, replacing the current energy mixes for ATMs with more renewable energy sources may significantly decrease the impact of these machines, although the optimal scenario is the reduction of ATM electricity consumption.

Progressively replacing the use of landfills and incineration by less pollutant methods for the disposal of waste resulting from the destruction of banknotes may also contribute to a gradual reduction in the environmental impact of euro banknote use.

2.2.1 Measures to reduce the footprint of the cash lifecycle

Several measures have been taken at Eurosystem level and by the Banco de Portugal to reduce the footprint of the cash lifecycle. As mentioned above, the Banco de Portugal is not responsible for minting coins but puts them into circulation. As such, the following subsections focus on the production of euro banknotes and on measures downstream of both the banknote and coin production value chain.

Mitigating the footprint in the euro banknote production stage

Although a share of euro banknote production is allocated to the Banco de Portugal, Valora, S. A. is responsible for printing banknotes and has put in place several measures over the years to mitigate the environmental impact of this activity, such as:

- Hiring suppliers of raw materials certified by ISO 14001 (standard for environmental management systems) and implementing procurement requirements to promote the continuous improvement of environmental sustainability;
- Reducing the scrap rate, with an impact on the whole production chain i.e. lower consumption, transportation and waste without prejudice to the incineration of all security paper scrap;
- Taking measures to promote energy efficiency, including the gradual replacement of conventional lighting with LED lighting and establishing purchase requirements for more efficient equipment;
- · Optimising the production of plates with less frequent equipment cleaning operations;
- Integrating waste management in a circular economy project for the re-use of plain paper packaging
 materials, internal separation to promote common waste recycling and direct channelling of
 hazardous waste to treatment and disposal facilities, thereby eliminating temporary storage and the
 need for more transportation.

Mitigating the footprint in the issuance stage

The Banco de Portugal has worked on several areas with the aim of streamlining the cash lifecycle, which, in addition to cutting costs, also reduces the environmental impact downstream of banknote and coin production. This section addresses some of the measures taken over the years.

Cash recirculation, whereby cash handlers put euro banknotes and coins back into circulation, directly or indirectly, after checking their authenticity and quality, enables banknotes and coins to be kept in circulation for longer, without returning to the Banco de Portugal for handling. Consequently, among other things, the frequency of cash transportation and the amount of cash processed by the Banco de Portugal are reduced, thereby helping to reduce the environmental impact of cash. This is a lawfully regulated activity that the Banco de Portugal oversees in order to make the system more efficient.

Since 2014, initiatives have been set up to streamline the lifecycle of coins, in particular by using specific packaging conditions for depositing them at the Banco de Portugal.

Since 2017, a number of bilateral agreements have been concluded between the Banco de Portugal and other central banks for the exchange of coins. Under these agreements, fit coins, for which there was no expectation of a return into circulation, have not been destroyed. This has made it possible to cut coin production and, as a result, to prevent the unnecessary use of raw materials, other materials, energy and transportation.

By the end of 2023, two agreements had been signed with the Central Bank of Ireland (2017 and 2019), two with Národná banka Slovenska (2018 and 2023) and two with the Nationale Bank van België/Banque Nationale de Belgique (2020 and 2023, the latter split into two stages, the second of which will be implemented in 2024). The agreements provided for the delivery by the Banco de

Portugal of 31 million €2 coins, 1.3 million €1 coins and 2 million 50 cent coins, in exchange for 56 million €1 coins, 288 million 2 cent coins and 264 million 1 cent coins.

In 2021 the Banco de Portugal published an Instruction which obliges business partners that make deposits and withdrawals with the Banco de Portugal to use recyclable and also, preferably, reusable packaging materials.

2.3 Environmental impact of own financial assets

2.3.1 Environmental impact indicators: key metrics

O The Banco de Portugal published its first report on key environmental impact indicators in March 2023, alongside most Eurosystem central banks. This follows the public commitment made by the ECB in early 2021. In line with the procedure followed by the Eurosystem, all financial assets held were considered, excluding cash, deposits and derivatives. The published report refers to 2022 and also presents information for 2021. Key metrics are shown in Table 2.2.

Table 2.2 Environmental footprint of the financial asset portfolio – non-sovereign

	Total		Supra/Agencies (bonds			Corporate bonds		ered nds
	2021	2022	2021	2022	2021	2022	2021	2022
Portfolio size (EUR millions)	1,964	847	1,839	735	123	110	3	2
WACI (tCO2e per EUR million revenue)	23	31	3	3	163	169	1	1
	49%	76%	45%	73%	97%	95%	100%	100%
Total carbon emissions (tCO ₂ e)	11,157	9,348	62	34	11,095	9,314	0	0
	40%	60%	38%	57%	75%	79%	100%	100%
Carbon footprint (tCO ₂ e per EUR million invested)	8	9	0	0	124	102	0	0
	40%	60%	38%	57%	75%	79%	100%	100%
Carbon intensity (tCO ₂ e	221	199	3	2	307	252	1	1
per EUR million revenue)	40%	60%	38%	57%	75%	79%	100%	100%

Source: Banco de Portugal.

Table 2.3 Environmental footprint of the financial asset portfolio – sovereign

	Production		Consumption		Government	
	2021	2022	2021	2022	2021	2022
Portfolio size (EUR millions)	6,691	7,601	6,691	7,601	6,691	7,601
WACI (tCO ₂ e per EUR million of GDP,	207	201	11	12	107	114
government consumption or per capita)	100%	100%	100%	98%	100%	98%
Total carbon emissions (tCO ₂ e)	1,362,761	1,530,988	1,790,259	2,021,286	142,250	168,146
	100%	100%	100%	98%	100%	100%
Carbon footprint (tCO ₂ e per EUR	207	201	271	270	22	22
million invested)	100%	100%	100%	98%	100%	100%
Carbon intensity (tCO2e per EUR million	207	201	11	12	98	103
of GDP, government consumption or per capita)	100%	100%	100%	98%	100%	100%

Source: Banco de Portugal.

2.3.2 Main measures already taken under responsible investment

As with its physical operations, the Banco de Portugal has also taken several measures towards the gradual decarbonisation of its own financial asset portfolio.

Green bond investment

The Banco de Portugal was a founding investor in the USD-denominated BIS green bond fund launched in September 2019. In January 2021 it was also one of the central banks to invest, at launch, in the euro-denominated BIS green bond fund. The Bank also holds ESG obligations under its direct management.

Measuring the carbon footprint of financial assets

To measure its own financial asset portfolio footprint, the Banco de Portugal hired two specialised data providers (ISS and C4F) in March 2022, following a joint Eurosystem procedure.

Responsible Investment Charter

O In May 2022 the Banco de Portugal published its **Responsible Investment Charter**, which sets out the general guidelines for the Bank to promote environmental, social and governance sustainability in the performance of its mission. The guiding principles followed by the Banco de Portugal are:

- Commitment to sustainability and promoting sustainable finance;
- Adoption of responsible investment implementation strategies;
- · Environmental impact measurement and public disclosure;
- Ongoing evolution (reviewed every two years).

3 Decarbonisation objectives

When setting out its decarbonisation objectives, the Banco de Portugal takes as its main guidelines the provisions of the Paris Agreement, signed by both the Portuguese government and the European Union, and the commitments undertaken by the Portuguese government to implement this Agreement at national level, in particular the provisions of the CFL. The Bank also aims to align its Decarbonisation Programme with its in-house strategic planning exercise, particularly as regards the time horizons. The institutional perimeter to be covered in this programme does not include the Banco de Portugal's Pension Fund Management Company or Valora, S. A. – except where consumptions of the latter and those of the Banco de Portugal are inseparable.

The Paris Agreement was adopted on 12 December 2015 and entered into force on 4 November 2016. Its key objective is to ensure that the increase in the global average temperature by the end of the 21st century is held at levels 'well below' 2°C against pre-industrial levels, and that efforts will be made to limit that increase to 1.5°C. The Bank has already made a public commitment on

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several occasions to contribute to achieving that global objective, within the boundaries of its mandate.⁴

The CFL sets targets for achieving climate neutrality in Portuguese territory by 2050, i.e. zero net GHG emissions. These targets refer, on the one hand, to gross GHG emissions:

- a) By 2030, a reduction of at least 55% compared to 2005 figures;
- b) By 2040, a reduction of at least 65 to 75% compared to 2005 figures;
- c) By 2050, a reduction of at least 90% compared to 2005 figures;

On the other hand, they also refer to GHG sinks, both as regards forestry and land use, and coastal and marine ecosystems. Climate neutrality in 2050 should be the result of a combination of targets for gross emissions with targets for sinks.

The Bank considers that its effort should be at least equivalent in size to that stipulated in the CFL for the country as a whole. Translating this effort into quantified and time-bound targets requires defining three methodological aspects concerning features specific to the Bank. First, the scope of GHG emissions to be considered (scopes 1, 2 or 3⁵); second, what should be understood and accounted for as a GHG sink in the Bank's particular case, and third, the base year to be adopted as a reference for reducing GHG emissions.

3.1 Methodological options

3.1.1 Scope

It is crucial to first specify the scope in which the Bank's decarbonisation objectives will be set out, against the background of its operating environment.

Quantified and time-bound targets should be set for the reduction of scope 1 and scope 2 emissions, given that these are more directly controlled by the Bank, and thus its responsibility for action is greater. As regards scope 3 emissions, the fact that they do not result from the activity carried out directly by the Bank, but rather by stakeholders along its value chain, limits the ability to act effectively on those emissions.

It is therefore considered preferable not to set quantitative targets for the reduction of scope 3 emissions at this stage of the launch of the Decarbonisation Programme, which is still a learning stage and affected by very significant information gaps.

This will be an option to revisit in the future, benefiting from the knowledge gained in the meantime on the nature of these emissions' different categories that are relevant to the Bank (Table 3.1), as well as developments in the approach to these emissions in the context of the Eurosystem and other reference institutions. This topic needs to be kept in mind, given the weight of scope 3 emissions, even as they are currently accounted for, in the context of the Bank's total emissions: around 38% in 2018. Thus, although for the time being they not covered by the targets set, the

⁴ "Acting for Sustainability – The Banco de Portugal's approach to ESG sustainability 2022-25" (Jan 2022); "The Banco de Portugal Pledge on Climate Action" (Nov 2021); "Banco de Portugal's Commitment to Sustainability and Sustainable Finance" (Feb 2020).

⁵ According to the GHG Protocol Initiative methodology, scope 1 refers to direct GHG emissions from sources that are owned or controlled by the company (e.g. emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.). Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by the company. Scope 3 is the most comprehensive and diversified, corresponding to 'indirect GHG emissions', i.e. emissions that are a consequence of the activities of the company, but derive from sources not owned or controlled by the company.

proposals for action advanced in the following section already include a number of initiatives to be undertaken by the Bank with regard to these scope 3 emissions.

Table 3.1 Eligible scope 3 activities, GHG Protocol

Upstream or downstream	cope 3 categories		
1. Scope 3 emissions upstream	Purchased good and services		
	Capital goods		
	Fuel- and energy-related activities (not included in scope 1 or scope 2)		
	Upstream transportation and distribution		
	Waste generated in operations		
	Business travel		
	Upstream leased assets		
Scope 3 emissions downstream	Downstream transportation and distribution		
	 Processing of sold products 		
	1. Use of sold products		
	2. End-of-life disposal of sold products		
	3. Downstream leased assets		
	4. Franchises		
	5. Investiments		

3.1.2 Sinks and emission offsets

As regards GHG sinks, the Bank's standpoint is necessarily different from that considered for the country.

In fact, the direct relevance of natural sinks in the Bank's assets and activity is negligible and limited to the effect associated with locations such as the Quinta da Fonte Santa.

Consequently, considering other contributions in addition to the reduction of the Bank's gross emissions to achieve climate neutrality ("net zero") should include taking on commitments such as GHG emission offsets, as suggested in Chapter 4 – e.g. purchase of emissions allowances, or direct promotion of sink projects.

3.1.3 Base year

Finally, with regard to the choice of base year for which the reduction in GHG emissions is to be calculated (as a percentage), the CFL takes 2005 as a reference.⁶

However, the Bank does not have sufficiently reliable and comprehensive figures on its emissions prior to 2018 – in particular scope 1 emissions. The possible retroactive recalculation until 2005 of the figures calculated by the Bank in 2018 would always require taking simplifying assumptions of questionable accuracy.

A viable alternative to preserve the principle that the Bank's effort is considered at least comparable to the effort of the country as a whole, is to transpose the base year of the national targets in the CFL

⁶ This was the year when domestic emissions peaked: 89.278 million tonnes of CO2 equivalent – considering the net effect of land use, land-use change and forestry (LULUCF).

(2005) into the first year for which the Bank has its own comprehensive and reliable data (2018), recalculating the percentages of reduction as of that new base year.

With the implementation of this procedure, the national CFL targets for gross GHG emissions could be seen as follows:

- By 2030, a reduction of at least 43% compared to 2018 figures;
- By 2040, a reduction of at least 56 to 68% compared to 2018 figures;
- By 2050, a reduction of at least 87% compared to 2018 figures.

3.2 Decarbonisation targets

The Banco de Portugal commits to achieving climate neutrality in 2050, as regards GHG emissions associated with its in-house scope 1 and scope 2 operations.

Bearing in mind that the Bank should undertake an effort at least equivalent in size to that stipulated in the CFL, and without prejudice to setting specific operational targets associated with the measures that will be identified in Chapter 4, the Bank adopts the following decarbonisation targets:

For gross GHG emissions (Table 3.2):

- By 2030, a reduction of at least 60% compared to 2018 figures;
- By 2040, a reduction of at least 80% compared to 2018 figures;
- By 2050, a reduction of at least 90% compared to 2018 figures.

With regard to sinks and emission offsets:

- By 2030, an annual figure equivalent to at least 3% of gross emissions in 2018;
- By 2040, an annual figure equivalent to at least 5% of gross emissions in 2018;
- By 2050, an annual figure equivalent to that required to achieve a 100% reduction from the 2018 figures, as a complement to the above reduction in gross emissions for the same year.

Table 3.2 Banco de Portugal – descarbonisation targets

	Climate Framework Law (Portuguese territory; base year 2005)	Banco de Portugal (targets equivalent to those of the CFL; base year 2018)	Banco de Portugal – Decarbonisation Programme targets (base year 2018)
By 2030	55%	43%	60%
By 2040	65%-75%	56%-68%	80%
By 2050	90%	87%	90%

4 Action plan

This chapter presents a set of proposals to meet the decarbonisation objectives and targets set out in Chapter 3 and, more generally, to improve the environmental performance of the Banco de Portugal.

The proposed initiatives fall into six categories:

- i) Buildings;
- ii) Sustainable mobility;

- iii) Cash production and issuance;
- iv) Management of financial assets in the Bank's own portfolio;
- v) Sinks and emission offsets;
- vi) Other cross-cutting measures.

The following subsections present the proposed measures, including, where possible, estimates for their environmental impact and timeframes for implementation.

Following the methodology adopted in recent years, this action plan is underpinned by a gradual approach to the implementation of environmental measures. Such an approach is considered appropriate in view of the need to improve the available information base and to measure results; to acquire environmental management skills; and to align with developments in environmental practices in the Eurosystem.

4.1 Buildings

The Bank has ample scope to improve the energy efficiency of its buildings and equipment and reduce GHG emissions by adopting or completing the implementation of measures such as:

- Replacement of equipment (installation of more efficient air-conditioning systems; replacement of combustion-powered equipment with electrical devices);
- Replacement of conventional lighting with LED lighting;
- Installation of presence and motion sensors in lavatories;
- Implementation of a buildings management system at the Carregado Complex;
- Construction of a photovoltaic power plant at the Carregado Complex;
- Energy audit of all buildings;
- Office space rationalisation;
- Concentration of its Lisbon offices in a more sustainable building.

These initiatives are summarised in Table 4.1.

Table 4.1 • Buildings-related measures

Initiatives	Estimated environmental savings	Estimated implementation date
Purchasing renewable energy certificates	Neutralising scope 2 emissions	Yearly
Energy auditing	n.a.	2026
Implementing a buildings management system at the Carregado Complex	321 MWh	2030
Replacing gas equipment with electric equipment	231 tCO2e	2030
Replacing air-conditioning equipment	115 tCO2e + 633 MWh	2026
Replacing conventional lighting with LED lighting	3,381 MWh	2025
Installing presence and motion sensors	68 MWh	2024
Constructing a photovoltaic power plant at the Carregado Complex	1,400 MWh	2024
Rationalising office space	n.a.	2025
Streamlining Lisbon offices	n.a.	TBD

4.2 Sustainable mobility

As mentioned in Chapter 3, the Bank has conducted a study on **corporate mobility** (Table 4.2), which is now an integral part of the Decarbonisation Programme. In addition to the measures already taken regarding the Bank's vehicle fleet (in accordance with their expected operating life, to gradually replace combustion-powered vehicles with hybrid or electric vehicles), measures to encourage more sustainable business travel and staff commuting are in the planning stage.

Table 4.2 • Sustainable mobility measures

	Estimated environmental savings	Estimated implementation date
Replacing the Bank's vehicle fleet w/ electric/hybrid vehicles	397 tCO ₂ e	2030
Streamlining business travel	n.a.	2025
Streamlining staff commuting	Up to 1,075 tCO₂e (with the current teleworking policy)	2023

In addition, and as mentioned above, the **remote working policy** adopted in 2022, although not primarily driven by environmental factors, has contributed markedly to a cut in emissions related to staff commuting.

4.3 Cash production and issuance

The main ongoing and planned initiatives to improve the environmental performance of banknotes and coins, most of which are established at the Eurosystem level, include:

- Bilateral agreements between the Banco de Portugal and other central banks to exchange currency;
- Using 100% sustainable cotton in banknote production (i.e. cotton from organic production, fair trade, or integrated production). The Banco de Portugal purchases banknote paper for Valora via EuropaFi, which is already 100% sustainable (i.e. from the plant itself rather than from waste generated by the textile industry). The intention is to use 100% organic or fair trade cotton by 2027;
- Greater banknote durability is under consideration in the context of the development of the new euro banknotes (series 3). Some denominations of series 2 (€5, €10 and €20) already have a coating since the start of series 2 (except for the €20 banknote, which started in 2021);
- Waste treatment Eurosystem rules prohibit landfills and combustion, and the Banco de Portugal has exclusively used incineration since January 2021. At the same time, the Bank is assessing alternatives to the incineration of scrap unfit euro banknotes, either by re-using raw materials or by recycling banknote fragments.
- Green energy in the cash cycle the Banco de Portugal already purchases energy from 100% renewable sources and will be able to produce renewable energy for its own use in 2024, through the photovoltaic power plant that is being installed at the Carregado Complex.

Table 4.3 • Cash issuance measures

Initiatives	Estimated implementation date
Bilateral agreements between the Banco de Portugal and other central banks to exchange euro coins	Occasionally
Assessing alternatives to banknote waste treatment through re-use or recycling	2024
R&D on new euro banknote series (by the Eurosystem)	See calendar for new euro banknote series
Purchasing security paper made from 100% organic or fair trade cotton	2027

4.4 Management of financial assets in the Bank's own portfolio

The calculation and publication of key environmental impact indicators of own financial assets began in 2023. Setting decarbonisation objectives for financial asset management is currently under assessment within the Eurosystem.

Measures to be adopted by the Banco de Portugal will be aligned with those of the Eurosystem and, as such, are of a different nature from those applicable to buildings and mobility.

The planned initiatives listed in Table 4.4 and detailed below are phased in and cover both the continuation of the work already carried out and the setting out of additional measures.

Table 4.4 Asset management measures

Initiatives	Estimated implementation date
Increasing investment in green bonds	Ongoing
Setting decarbonisation objectives: - Short/medium term: corporate bonds - Medium term: sovereign bonds	Short/medium term
Action plan to implement decarbonisation objectives	From 2025 onwards
Engagement with issuers	Ongoing
Including new climate indicators in the annual publication (scope 3 carbon equivalent emissions and avoided emissions)	2024-25
Regular reviews of the Responsible Investment Charter	2024/five-year

Increasing investment in ESG bonds

Setting targets to increase the current exposure to ESG securities (as has been done by other central banks, notably in the Eurosystem), is part of the set of measures to be considered by the Banco de Portugal. The analysis of concrete proposals to increase the amount invested encompasses the resulting financial impacts, bearing in mind the cost/risk trade-off.

Setting decarbonisation objectives

The possibility of setting decarbonisation objectives for corporate bond portfolios is being considered. The analysis began in 2023 and will be further enhanced in 2024. In the Banco de Portugal's internal review, relative intensity metrics served as the basis for work, considering the recommendations of the TCFD. Weighted Average Carbon Intensity (WACI) is an appropriate indicator for setting objectives, but methodologies must be consolidated before setting specific objectives.

In the case of sovereign bonds, developments in the work of the Network for Greening the Financial System (NGFS) and the Assessing Sovereign Climate-related Opportunities and Risks (ASCOR) project are monitored. Any resulting measures will possibly be analysed in the medium term.

Action plan to implement the decarbonisation objectives of its own financial asset portfolio

Setting decarbonisation objectives, as part of the joint analysis under way within the Eurosystem and without prejudice to the Bank's independence regarding its own financial assets, will be followed by an action plan to implement the approved objectives.

For example, the Bank has already conducted a preliminary analysis of the impact on the exposure to the corporate debt market of a possible objective to decarbonise that portfolio, in line with the CFL and based on the WACI metrics. However, the annual review of the core values over the following two to three years, stemming from the current methodologies for calculating indicators, affects the pursuit of such objectives. Therefore, they will tend to be 'indicative' and their degree of success communicated in a transparent manner.

Engagement with issuers

Engaging with issuers is an active way of enhancing the publication of information on environmental sustainability indicators, with an impact on their performance.

In 2022 the Banco de Portugal launched this engagement when preparing the publication of its first report on key environmental impact indicators.

Including new climate indicators in the annual publication on the financial asset portfolio footprint (scope 3 carbon equivalent emissions and avoided emissions)

Calculating and publishing additional metrics is key for setting and monitoring objectives. In the short term, the analysis will focus on the calculation and publication of scope 3 equivalent carbon emissions in the annual report on environmental impact indicators, as well as on the publication of avoided emission metrics. With the latter it is possible to measure the positive impact of sustainable finance, in line with the work to be carried out by the Bank.

Regular review of the Responsible Investment Charter: in 2024 and approximately every five years going forward

The 2024 review will already benefit from the significant advances from the calculation of key environmental impact indicators and from the latest work. Subsequent reviews will be anchored on a five-year cycle.

4.5 Sinks and emission offsets

The Banco de Portugal's residual GHG emissions by 2050 could still amount to 10% of the gross emissions calculated in 2018 (complementing the 90% reduction in gross emissions set as the objective for that year), even after all the aforementioned measures have been successfully achieved.

Therefore, for the Bank to achieve climate neutrality, other types of measures – related to sinks and emission offsets – will be needed. These measures will be implemented throughout the programme period, in line with the targets set out in Section 3.2, and cover:

- First, the use of the natural sink corresponding to the forest park of the Quinta da Fonte Santa, an
 asset of the Bank performing a carbon sequestration function to offset its gross emissions. To this
 end, a rigorous and duly certified inventory of tree species in the property must be carried out in
 advance.
- Second, the possibilities for acquiring carbon credits by directly or indirectly promoting eligible projects will be looked into, so as to offset the remaining emissions.

4.6 Other cross-cutting measures

In addition to the above measures, related to the use and management of buildings, promotion of sustainable mobility, reduction of the environmental footprint of euro banknotes and of the Bank's own portfolio of financial assets, and sinks or emission offsets, the Decarbonisation Programme also envisages the development of a series of complementary, cross-cutting initiatives, which will enhance the Banco de Portugal's environmental performance.

Table 4.5 Cross-cutting measures

Initiatives	Estimated implementation date
Measuring the Bank's footprint / widening scope 3 coverage	Yearly
Creating a sustainability reporting template and process	TBD
Setting up and implementing a sustainable purchasing policy	2025
Training and raising awareness of staff	Yearly

Measuring the Bank's carbon footprint

The aim is to significantly improve by 2025 the coverage, quality, granularity and reliability of the measurement of the Bank's physical operation footprint (buildings, purchases of goods and services, investment in physical assets, business travel and staff commuting). This is a prerequisite for more comprehensive decarbonisation targets (including scope 3 emissions) and for more effective measures to reduce the footprint.

At the same time, the Banco de Portugal will continue to contribute to the Eurosystem's effort at better measuring the footprint of means of payment and of financial asset portfolios.

Creating a sustainability reporting template and process

The Banco de Portugal is committed to improving its sustainability reporting in line with recent developments in EU legislation, as embodied by the Corporate Sustainability Reporting Directive (CSRD), although the latter is not mandatory for central banks in the European System of Central Banks (ESCB). As part of a programme launched in 2023, extending into 2024-25, the Bank will seek expertise to assess the most appropriate regulatory framework for its activity and to establish its reporting model and its systematic reporting process.

Setting up and implementing a sustainable procurement policy

The Banco de Portugal acknowledges the importance of procurement decisions for its environmental footprint. By purchasing greener products and goods, the Bank lowers GHG emissions associated with the production, transport, and scrapping; and by choosing products made with recycled, recyclable or renewable materials it helps preserve natural resources.

Therefore, by 2025 the Bank will adopt a sustainable procurement policy, considering, inter alia, the following aspects:

- Assessing and setting objectives: assessment of the purchasing history and identification of areas to be improved in terms of sustainability; setting clear and measurable objectives for the sustainable purchasing policy, such as reducing GHG emissions, increasing the purchase of certified products and reducing waste.
- Identifying sustainable products: searching for products and suppliers offering more sustainable options, such as products made from recycled, recyclable or renewable source materials, proximity and type of product transport; opting for products with environmental certifications, such as the EU Ecolabel or other certifications relevant to the Banco de Portugal.
- Ongoing review and improvement: carrying out regular reviews of the sustainable purchasing policy, making any necessary adjustments, including adopting the best environmental sustainability practice; following up on new sustainable technologies and products.
- Innovation and research: encouraging innovation when implementing sustainable solutions in tendering procedures.

Training and raising awareness of staff

A comprehensive communication and training plan shall be put in place to raise awareness of and motivate the Bank's staff to adopt more sustainable practices in the working environment.

A dedicated training plan for staff will be established by the end of 2024, to complement the communication of the Decarbonisation Programme's targets and initiatives and environmental awareness-raising activities.

It is also important to share the progress being made by the institution in its decarbonisation effort on a regular basis. To this end, it is key to ensure that data is systematically collected and that information is processed and disclosed, including on the contribution of the measures being adopted to the reduction of emissions.