



Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem

Central Bank of Ireland's Climate-Related Financial Disclosures 2024

June 2024

Contents

Foreword.....	3
Introduction.....	5
Governance.....	7
Strategy.....	8
Risk Management.....	9
Metrics and Targets.....	10
Metrics.....	10
Description of Metrics.....	10
Reported Metrics, Trends and Commentary.....	13
Additional Metrics.....	18
Targets.....	20
Annexes.....	22
Annex 1.....	22
Annex 2.....	23
Annex 3.....	24

Foreword

The risks associated with climate change, once seen as a distant threat, have shifted much closer to the present, with a higher frequency and severity of weather events in recent years. Global temperatures reached exceptionally high levels in 2023. The Central Bank continues to play its part, within our mandate, to support efforts to deal with the “tragedy of the horizon”¹.

According to the Copernicus Climate Change Service², unprecedented global temperatures led 2023 to become the warmest year on record – overtaking by a large margin the previous warmest year, 2016. In Ireland, 2023 was also the warmest year on record since data were collected 124 years ago, and the second consecutive warmest year on record, with the annual mean temperature for Ireland breaching 11°C for the first time. It was also one of the wettest years on record for the country³. It is clear that climate change is a major structural force that is already affecting the national and international economy and broader society. Addressing the associated challenges within the context of its mandate remains a strategic priority for the Central Bank of Ireland.

This is the Central Bank's second climate-related financial disclosures report. In 2023, the Central Bank continued to make progress on our sustainable investment agenda – towards **further decarbonisation, increased allocation to green, social and sustainable investments, and enhanced transparency in our climate metrics** (see **Box 1**). In order to support the Paris Agreement objectives, the Central Bank began replacing our existing equities benchmark with a new EU Paris-aligned benchmark (EU PAB⁴). We aim to achieve full alignment with the EU PAB for our entire equities portfolio by no later than 2026. We also continued to increase investments in Green, Social and Sustainability (GSS) bonds that support the green transition and other environmental/social objectives, and aim to further increase our holdings of these bonds in 2024. And, we have enhanced transparency on climate-related risks and the environmental

¹ *'Breaking the tragedy of the horizon - climate change and financial stability'*, Mark Carney, September 2015.

² Copernicus Climate Change Service, January 2024.

³ Met Éireann, January 2024.

⁴ In 2020, the EU legislated two climate benchmarks for indexes for financial assets – the Paris-aligned Benchmark (PAB) and the Climate Transition Benchmarks (CTB). The goal of a PAB is to align investment portfolios with the objectives of the Paris Agreement on climate change. The Paris Agreement aims to limit global warming to well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius.

footprint related to the Central Bank's Investment Assets, lowering the weighted-average carbon intensity of our non-sovereign holdings. We are also making a concerted effort – alongside our Eurosystem central banking peers – to publish climate-related information on our respective non-monetary policy portfolios, in line with a common framework developed by the Eurosystem⁵.

The climate change challenges the world faces are daunting. The first-ever global stocktake of the Paris Agreement that took place in 2023 confirmed that the world is not on track to limit global warming to 1.5°C. Nevertheless, in December 2023 the United Nations' Climate Change conference (COP 28)⁶ in Dubai closed with an agreement to transition away from fossil fuels in energy systems that helps signal the “beginning of the end” of the fossil fuel era⁷ – a development that gives the world hope. Addressing the climate change challenges will require substantial increases in public and private investment but delaying the necessary action would result in a more costly transition – environmentally and economically – in the longer term. As the horizon comes into greater focus, the Central Bank remains committed, within our mandate, to play our part in supporting the transition to a net zero economy.



Anne Marie McKiernan

Director of Financial Operations

5 June 2024

⁵ The Eurosystem's inaugural disclosures, based on the recommendations of the Task Force on Climate-related Financial Disclosures and the Partnership for Carbon Accounting Financials, were published in 2023. A list of Eurosystem disclosures can be found [here](#).

⁶ COPs take place every year, and are the world's only multilateral decision-making forum on climate change with almost complete membership of every country in the world. Officially, COP 28 stands for the 28th meeting of the Conference of the Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC).

⁷ The UNFCCC secretariat (UN Climate Change), December 2023.

Introduction

We are Ireland's Central Bank, responsible for maintaining monetary and financial stability and ensuring the financial system works in the interests of the community. We are part of Europe's monetary and banking unions, and of the world's network of financial regulators. Our values underpin how we interact with each other and reflect our aspirations, for ourselves and for our community. We believe in the importance of an independent central bank that is transparent, accountable and connected across all public policy domains, in Ireland, in Europe and across the world. As part of our overall mission, we are committed to being a socially responsible and sustainable organisation, which we believe will help us achieve our vision: trusted by the public, respected by our peers and a fulfilling workplace for our people. We are also conscious of our ability to be a positive influence on the behaviour of others by leading on and by promoting important sustainability issues such as climate change.

This report represents the Central Bank of Ireland's second climate-related financial disclosures for its non-monetary policy portfolio ('NMPP⁸' hereafter referred to as 'Investment Assets'). The inaugural Central Bank of Ireland climate-related financial disclosures were published in March 2023, in a coordinated approach with other Eurosystem National Central Banks. These disclosures follow the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) of the Financial Stability Board (FSB) and include information in each category, 'Governance', 'Strategy', 'Risk Management' and 'Metrics and Targets'.

Through providing transparency of its own activities, the Central Bank aims to strengthen awareness and understanding of climate-related risks and promote climate-related disclosures. As per the inaugural report in 2023, we are disclosing climate-related information on our combined euro- and foreign currency-denominated holdings. At the end of 2023, the Central Bank held approximately €17bn of Investment Assets.

⁸ The Central Bank's NMPP is more commonly referred to as its 'Investment Assets' in official publications.

Box 1 : Progress on Climate Objectives related to our Investment Assets

Adoption of an EU Paris-Aligned Benchmark: In 2023, the Central Bank commenced replacing our existing corporate equity benchmark with an **EU Paris-aligned Benchmark**. Once this transition is complete – no later than 2026 – the entirety of the Central Bank's **equity portfolio will be on a decarbonisation trajectory** in line with the Paris Agreement.

Increased allocation to Green, Social and Sustainability (GSS) bonds: The nominal amount of **GSS Bonds** held in the Central Bank's Investment Assets, which stood at €450m at the end of 2020, **increased further to reach €1.4bn at the end of 2023**. Our allocation to GSS bonds is expected to increase further as we have set a **target allocation of €2bn GSS bonds** by end-2024.

Positive trends in reported climate metrics: Notwithstanding the known limitations with climate data, the disclosures presented in this report **provide transparency** about the climate-related risks and the environmental footprint related to the Central Bank's Investment Assets. Notably, between 2020 and 2023, the **Weighted Average Carbon Intensity (WACI)** of the Central Bank's **non-sovereign holdings**, on a scope 1 and 2 emissions basis, has **reduced from 22 to 15 tCO_{2e} per €m**. For the same period, the **WACI of our sovereign holdings**, on a production emissions basis, has reduced from **214 to 185 tCO_{2e} per €m**.

The incorporation of sustainable investment principles into the Investment Assets held by the Central Bank continues to be a priority for us. This is reflected in the Central Bank's Strategic Plan 2022-2026, which emphasises the importance of understanding, anticipating and adapting to far-reaching changes taking place across the economy and financial system, includes those associated with climate change and the transition towards a more sustainable economy. Further, the Central Bank is committed to act as a socially responsible and sustainable organisation. As a member National Central Bank of the Eurosystem, we are implementing shared Eurosystem initiatives and efforts that contribute to the transition to a net zero economy and to EU climate goals, including the common Eurosystem stance for NMPP climate disclosures.

As an integral part of the Central Bank's culture of acting sustainably, we aim to invest our financial assets in a sustainable manner in accordance with our Board's (the Central Bank Commission's) approved risk appetite and consistent with the Central Bank's agreed Investment Policy Framework. The Central Bank

is also conscious of our ability to be a positive influence on the behaviour of others by leading on, and by promoting, important sustainability issues, such as disclosures on climate-related financial exposures.

The Central Bank established its Sustainable Investment Charter in 2022⁹. The purpose of the Charter is to guide us in considering how sustainable investment principles apply to our own investment practices. The impact of climate change is a strategic focus of the Charter as it represents a systemic risk that the Central Bank must consider as part of its approach to managing its discretionary Investment Assets. The Central Bank takes seriously the imperative to play its part in mitigating and acting on climate change.

Governance

The Central Bank's Commission has ultimate responsibility for strategic decision-making relating to the Investment Assets, including the approval of the discretionary Investment Policy Framework, of which the Sustainable Investment Charter is a part.

The Financial Markets Division is responsible for the day-to-day management of the Investment Assets within the risk management frameworks that have been approved by the Commission. The Organisational Risk Division maintains the Central Bank's investment benchmarks, reports on the level of risk exposure in and performance of the investment portfolios to the Commission's Risk Committee, and compliance with the Commission-approved prudential limits and policies.

The Central Bank strives to adopt an integrated approach for the governance of climate-related risks and opportunities for the Investment Assets; that is, climate change-related considerations are addressed within existing governance structures. Further, this integrated approach is informed by the wider organisation's strategic approach to addressing the effects of climate change, and the transition towards a more sustainable economy.

⁹ [Central Bank of Ireland Sustainable Investment Charter](#)

Strategy

The Central Bank's Strategic Plan 2022-2026 emphasises the importance of understanding, anticipating and adapting to the broad implications for economic and financial outcomes in the future, associated with climate change and the transition towards a more sustainable economy. The Central Bank will continue to seek to deliver long-term sustainable investment returns, as part of fulfilling its mandate, while safeguarding its stock of financial assets.

The adoption of a Sustainable Investment Charter in June 2022 was the first formal step on the Central Bank's evolving journey towards integrating sustainability in the investment and risk management frameworks of the Investment Assets. Incorporating sustainable investment principles supports the existing policy objectives of the Central Bank's Investment Assets.

The Central Bank has implemented measures in recent years that have supported the sustainable investment agenda. Since 2018, our appointed external equities asset managers are required to be signatories of the UN-supported Principles for Responsible Investment (UN PRI). The Central Bank implemented an expanded Exclusion Policy in 2022 that, in addition to screening of Tobacco companies, excludes from our investment universe companies with ties to controversial weapons, companies in violation of the United Nations Global Compact and companies deriving greater than 1% of revenue from coal mining, extraction, distribution, or refining. In 2023, the Central Bank began to transition its equities holdings from following a conventional global benchmark to an EU Paris-aligned Benchmark (EU PAB). The Central Bank is also continuing to use the Eurosystem's jointly identified common data sources to integrate climate considerations into the overall management of the Investment Assets, which also facilitates cross-country comparisons.

In terms of our fixed income investments, we have been investing in green, social and sustainability (GSS) bonds directly as part of day-to-day portfolio management. The Central Bank also participates in the Bank for International Settlements' (BIS) euro-denominated and dollar-denominated green bond funds for central banks, with an initial nominal 100m euro/dollar invested in each, respectively. At the end of 2023, the Central Bank set a target to increase its allocation to GSS bonds to €2bn (nominal equivalent) by the end of 2024.

Risk Management

A strategic priority for the Central Bank is to proactively identify, assess, and manage the exposure of its Investment Assets to long term climate-related risks. We continue to strengthen our understanding of climate-related financial exposures.

As a prominent public institution operating in the European financial system, the Central Bank recognises the importance of developing a thorough understanding of the climate risks that its Investment Assets may be exposed to. The Central Bank is working on improving this knowledge and exploring ways to best consider the impact of these risks.

The Central Bank takes a holistic view in managing the potential impact of climate-related risks via the Investment Assets on its balance sheet. Climate-related risks are not considered a new risk category within this process, but rather an amplifying factor of existing categories such as credit and market risks, which are managed as part of our financial risk management framework.

The Central Bank aims to invest its Investment Assets in a sustainable manner in accordance with the Central Bank Commission's approved risk appetite and consistent with the Central Bank's agreed Investment Policy Framework. As part of this process, climate considerations were integrated into the investment limits framework in 2023, in order to support the Bank's €2bn target for investing in GSS bonds.

Metrics and Targets

Metrics

Description of Metrics

Greenhouse Gas (GHG) emissions are measured and expressed as tonnes of CO₂ equivalent (tCO₂e)¹⁰ and usually reported under three 'scopes' as defined by the most commonly used global standard GHG Protocol (see **Box 2**). Our calculations of climate-related metrics are based on the sum of scope 1 and 2 GHG emissions.

Box 2: Scopes of corporate GHG emissions and emissions allocation for sovereign bonds

A company's direct and indirect GHG emissions are classified into three 'scopes'.

- **Scope 1:** Direct emissions from owned or controlled sources (e.g. emissions in the manufacturing process of goods, use of company vehicles, etc.).
- **Scope 2:** Indirect emissions from the generation of purchased and consumed energy (e.g. electricity, steam, heating, cooling).
- **Scope 3:** All other indirect emissions not included in scope 2 that occur in the value chain of the reporting company, including both upstream and downstream emissions (e.g. business travel, waste disposal, consumption of goods, investments).

While the method of classifying emissions of corporates is standardised, there is currently no standardised allocation method for sovereigns. In order to provide a high degree of transparency, the Eurosystem's common disclosure framework reports on both production- and consumption-based methods of allocating emissions to sovereigns.

- **Production:** Emissions produced domestically within a country's physical borders, including domestic consumption and exports. This definition follows the territorial emissions approach adopted by United Nations Framework Convention on Climate Change (UNFCCC) for annual national inventories. Production emissions are reported excluding and including the effects of land-use, land-use change and forestry (LULUCF). Land can serve as a carbon

¹⁰ Carbon dioxide equivalent (or CO₂e) is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential, by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential. For more information, see [Eurostat](#).

sink (absorbing more carbon from the atmosphere than it emits) or carbon source (releasing CO₂ into the atmosphere, e.g. deforestation).

- **Consumption:** Emissions related to domestic demand, accounting for trade effects. This method provides a broader view of a country's emissions and tackles the issue of carbon leakage that arises due to production shifts from where goods are consumed later.

The metrics, which form the basis of the Eurosystem's common minimum disclosure framework for NMPPs discussed in this chapter are: the 'Weighted Average Carbon Intensity', 'Total Carbon Emissions', 'Carbon Footprint' and 'Green Bond Share'. An additional metric reported by the Central Bank is 'Carbon Intensity'. Calculation of the metrics presented below follows recommendations of the TCFD and the Partnership for Carbon Accounting Financials (PCAF). Annex 1 sets out the precise definitions of each of these metrics, and the conceptual rationale behind each is set out below. To aid assessment of trends in metrics over time, we are publishing a time series.

The **Weighted Average Carbon Intensity (WACI)** measures a portfolio's exposure to carbon-intensive issuers, expressed in tCO₂e per € million revenue (or GDP in the case of countries). The carbon intensity of each issuer is computed by normalising their GHG emissions by a measure of economic activity. The portfolio WACI is then calculated by weighting the carbon intensity of each issuer by their respective share of holdings in the portfolio. The WACI is a central element of the Eurosystem's climate-related financial disclosures. High data availability, data normalisation and the widespread application of the metric across the financial industry ensure comparability across portfolios and time. The WACI delivers an "outside-in-perspective" (i.e. financial materiality), which serves as a proxy for a portfolio's exposure to transition risks.

The **Total Carbon Emissions (TCE)** metric quantifies the total absolute emissions associated with a portfolio, expressed in tCO₂e. GHG emissions are weighted by the investor's contribution to the issuer's total capital structure (e.g. enterprise value for corporates, GDP for countries) and summed up to determine the portfolio's total carbon emissions. Due to its non-normalised nature, the metric's comparability across portfolios and time is limited, with the size of the portfolio being the main driver of the level of TCE. The metric serves as a foundation of related normalised metrics such as the Carbon Footprint and the Carbon Intensity (see below). It provides an "inside-out-perspective" (i.e. environmental materiality), which serves as a proxy for a portfolio's carbon footprint.

The **Carbon Footprint (CF)** normalises the TCE associated with a portfolio by its market value, expressed in tCO₂e per € million invested. This complementary metric, helps overcome the limitation of the TCE metric and allows for comparability of the footprint across differently sized portfolios and across time.

By contrast, the **Carbon Intensity (CI)** metric measures a portfolio's associated TCE relative to its associated underlying issuer revenue (or GDP), expressed in tCO₂e per € million revenue (or GDP). In other words, the CI measures the carbon efficiency of a portfolio in financing economic activity.

Notwithstanding known limitations with climate data (outlined in **Box 3** below), the disclosures presented in this report aim to provide transparency about the climate-related risks and the environmental footprint related to the Central Bank's Investment Assets. The information provided in this report will be refined over time, in line with evolving market standards/frameworks for assessing climate risk, increasing availability of climate-related data and growing expertise in handling climate-related risks.

Box 3: Data limitations

The measurement of climate-related financial risks is gradually improving, but there remains both analytical and data gaps. This should be borne in mind when interpreting the contents of this report. As measurement approaches advance, including in terms of data availability and quality, the Central Bank will seek to incorporate these in its regular reporting in future. This Box outlines some of the data limitations that can affect the interpretation of the climate-related financial metrics used in this report, especially in making comparisons over time.

The metrics in this report draw on published data and on data and methodologies from external data providers used by the Eurosystem. The Eurosystem relies on climate data and financial data that are gathered from various internal and external public and non-public data sources. The main measurement limitations include:

The lagged nature of data: When performing calculations of climate-related metrics, it is important to note that, aside from the year-end holdings of the Central Bank's Investment Assets, which are up to date as of end-2023, a significant amount of input data are only available with time lags. The calculation of sovereign climate metrics is based, for the most part, on 2021 emissions data, while non-sovereign climate metrics are based on emissions data that are available up to 2022. For other inputs into the calculation of the

metrics, such as country-level data for PPP-adjusted GDP and population, as well as financial data for non-sovereign entities, are available up to 2022. Given the lagged nature of the data, disclosures of the Central Bank's climate metrics made in any given year will subsequently be revised and restated in light of updated data becoming available.

Impact of Covid-19 and data lags: As mentioned, the emissions data used for the calculation of climate-related metrics for sovereign assets are available up to 2021 (2022 in the case of non-sovereigns). As such, the effects of the Covid-19 pandemic on emissions are still reflected in the metrics. As a result, the sovereign metrics for 2022 and 2023 do not yet incorporate any rebound effects in countries' emissions associated with the general re-opening of world economies however, the metrics do include the post-pandemic rebound effects in countries' GDP in 2022.

Coverage: In calculating portfolio-level climate metrics, data coverage is an essential element to consider when comparing metrics across portfolios and across time. As such, where there is less availability of inputs to each metric calculation, the comparability of each metric is reduced. The coverage percentage denoted alongside each metric in this report (Annex 3) indicates data availability, which is calculated as the percentage of investments (i.e. the value of investments per the value of the portfolio) for which the required emissions and financial data are available. In general, for the data providers used for the purposes of this report, the availability of all required data is high for sovereign and corporate issuers, while coverage is less comprehensive for holdings of supranational and agency issuers.

The disclosure of climate-related financial risks will, in and of itself, act as an important catalyst to improve the availability of climate data and to accelerate the development of robust metrics and risk assessment methodologies. This is why it is important that organisations such as the Central Bank continue to make progress in disclosing their climate-related financial risks, even recognising gaps in data and measurement techniques, with a view to build on this experience to improve the quality of disclosures in future reports.

Reported Metrics, Trends and Commentary

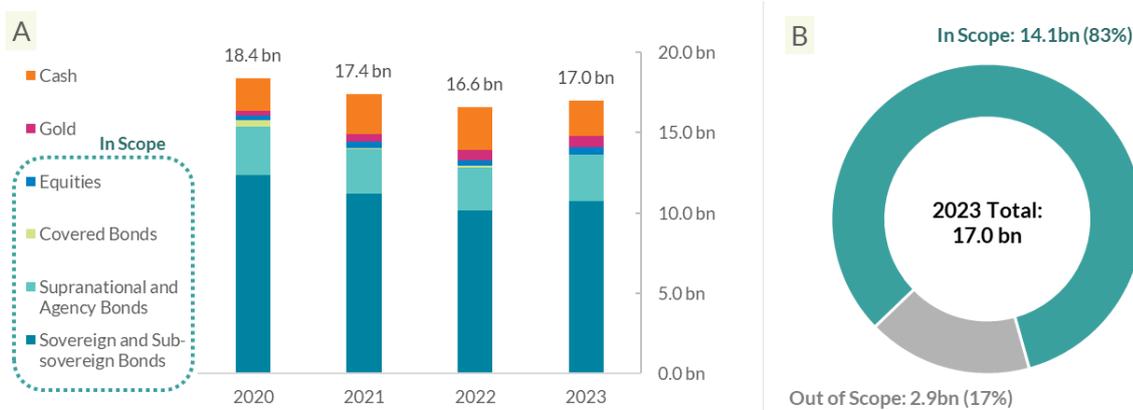
Composition of the Investment Assets

The Central Bank's investment approach, similar to that of many central bank peers in the euro area, is a conservative one founded on a primary allocation to highly liquid, high quality financial instruments such as sovereign, sub-

sovereign, supranational and agency fixed-income bonds. As at end-2023¹¹, the Central Bank held approximately €17bn of Investment Assets (see **Figure 1A**), comprised of approximately 72% of assets denominated in euro and 28% denominated in foreign currency. Sovereign bonds make up the largest proportion of the total Investment Assets (approximately 63%) while Supranational and Agency bonds (approximately 17%) comprise the largest portion of the non-sovereign Investment Assets.

83% of the Investment Assets' €17bn value are in scope for climate-related metrics

Figure 1 | Investment Assets, total value and asset allocation (A), and share in scope (B)



Source: CBI calculations.

Climate Metrics of the Investment Assets

The amount of the Central Bank's holdings in scope¹² of climate-related metrics is approximately €14bn or 83% of the total Investment Assets (see **Figure 1B**).

The coverage (data availability) for sovereign holdings is high at close to 100% while coverage across non-sovereign bonds is less comprehensive, in the range of 65-100% over the years considered. It is noted that within the non-sovereign portion of the Investment Assets, the reduced level of overall coverage (as explained in **Box 3**) is driven by data availability issues for Supranational and Agency issuers (as a result of the large relative share of these issuers in our non-sovereign assets). For holdings of equities and covered bonds, coverage is high at close to 100%.

¹¹ Please note that the Central Bank's 2023 holdings data in this report reflect unaudited figures. Audited holdings data are published in the Central Bank's Annual Report for 2023.

¹² Gold, Cash and Cash-like instruments are not in scope for climate metrics reporting.

Table 1 below shows the climate-related metrics, split by asset class, for the Central Bank’s Investments Assets, as at end-2023. **Annex 3** provides a comprehensive overview of historic metrics.

Table 1 | Climate metrics of the Central Bank’s Investment Assets as of end-2023

	Sovereign			Non-sovereign			Total
	Sovereign and sub-sovereign bonds			Supranational and Agency Bonds	Covered Bonds	Equities	
Portfolio Value	10.72			2.92	0.02	0.45	3.39
	Production Excluding LULUCF	Production Including LULUCF	Consumption	Scope 1 and 2			
WACI	185	171	14	7	2	58	16
Total Carbon Emissions	1,980,080	1,831,736	2,503,070	4,425	8	12,135	16,568
Carbon Footprint	185	171	234	2	0	27	7
Carbon Intensity	185	171	13	25	2	77	49
GSS Bond Share	1.4 (Green: 0.8)						

Sources: ISS, Carbon4 Finance, UNFCCC, World Bank, Bloomberg and CBI calculations.

Notes: Sovereign issuers: For sovereign bonds, metrics are provided for production-based emissions, excluding and including the effects of LULUCF. The attribution factor applied to sovereign bonds is PPP-adjusted GDP. As a result, when emissions are allocated on a production basis, the numbers reported for WACI, Carbon Footprint and Carbon Intensity are the same. **Non-sovereign issuers:** For supranational and agency bonds, covered bonds and equity, metrics are provided per asset class and aggregated, based on issuers' scope 1 and 2 emissions. **Scope:** Gold, Cash and Cash-like instruments are not in scope for emissions reporting. **Metrics:** Portfolio value is expressed in € billion. WACI and carbon intensity are expressed in tCO2e per € million revenue (non-sovereign issuers), PPP-adjusted GDP (sovereign issuers, production emissions), per capita (sovereign issuers, consumption emissions). Total Carbon Emissions are expressed as tCO2e. Carbon footprint is expressed as tCO2e per € million invested. GSS Bond Share is expressed in € billion nominal equivalent and covers holdings of sovereign and non-sovereign GSS bonds. Please see Annex 1 for further information on the relevant calculations and Annex 2 for further details on allocation, normalisation and attribution factors.

Sovereign and sub-sovereign bond holdings

Trends in the metrics of our sovereign bond holdings are shown in Figure 2 for the years 2020 to 2023¹³. These metrics cover both periods of reduced economic activity associated with pandemic-related restrictions, and the

¹³ Please see Annex 3 for a more detailed table of these historical climate-related metrics.

corresponding rebound in economic activity associated with the re-opening of global economies. The metrics are reported based on consumption emissions and production emissions excluding and including land use, land use change and forestry (LULUCF). In general, consumption emissions exceed production emissions, while the inclusion of LULUCF reduces countries' aggregate production emissions. The trends in the metrics can be summarised as follows:

- The **TCE** of the sovereign portfolio (**Figure 2A**) has decreased over the period, driven by the reduction in the absolute size of the Investment Assets following redemptions of euro-denominated hold-to-maturity bonds. This is evident across consumption and production emissions.
- The sovereign **CF**, which normalises the TCE by portfolio size (**Figure 2C**), reflects the impact of the euro-denominated redemptions, which have altered slightly the country composition of the portfolio.
- The **WACI** of the Central Bank's sovereign holdings (**Figure 2B**), based on production emissions, increased by 4% between 2020 and 2021, but has fallen since. This reflects the impact of the euro-denominated redemptions mentioned above, which caused a relative re-weighting of the Investment Assets towards higher emitting countries. The subsequent decarbonisation (17%) observed from 2021 to 2023 may be overstated and is driven by the fact that economic data is available up to 2022, which reflects increased economic activity of countries post-pandemic, while emissions data is available up to 2021 only¹⁴. (Please see **Box 3** for further details).
- A similar trend is observed for the **CI** metric (**Figure 2D**), based on production emissions.

Given that the latest available emissions data for sovereigns is for year-end 2021, post-pandemic effects on the metrics will continue to feed into future disclosure reports.

¹⁴ Trends in the WACI, based on consumption emissions, fluctuate less as consumption emissions are expressed per capita.

Trends in sovereign metrics driven by size and country composition of sovereign holdings

Figure 2 | Total Carbon Emissions (A), Weighted Average Carbon Intensity (B), Carbon Footprint (C) and Carbon Intensity (D) of sovereign and sub-sovereign holdings:



Sources: ISS, Carbon4 Finance, UNFCCC, World Bank, Bloomberg and CBI calculations.

Non-sovereign bond and equity holdings

For the non-sovereign part of the Central Bank’s Investment Assets, emissions and carbon intensity have trended downwards over the period (Figure 3). The trends in the individual metrics can be summarised as follows:

- **TCE** has fluctuated in line with year-to-year changes in the valuation of the equities portfolio, which is the largest driver of absolute emissions. In general, TCE has trended downwards since 2021, as a result of the aggregate impact of increases in the market capitalisation of stocks that we hold, in tandem with emissions reductions.
- The **CF** has remained stable over the period due to small absolute deviations in the footprint of Supranational and Agency bonds, which comprise the bulk of the non-sovereign portion of the Investment Assets (approximately 86%).
- The **WACI** of non-sovereign assets has also fluctuated over the period, predominantly due to the changes in the carbon intensity of corporate issuers in the equity portfolio. The effect of changes in the carbon intensity of corporate issuers is more muted for the WACI given the comparatively larger holdings of Supranational and Agency issuers in our non-sovereign

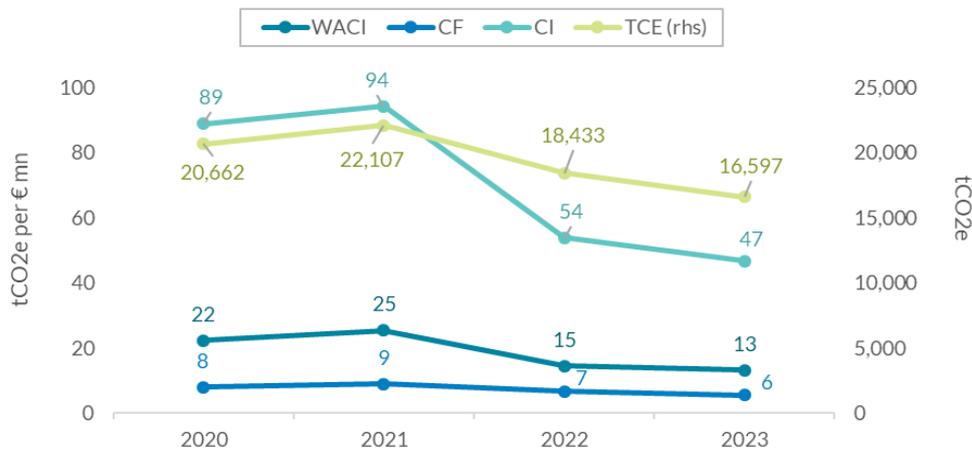
holdings, which have a relatively consistent level of emissions intensity year-on-year.

- The **CI** metric has reduced significantly over the period since 2021. This has been driven by the large improvement in the financials of corporate equity issuers, particularly in 2022, which caused an improvement in their carbon efficiency (i.e. corporate revenues have increased without a similarly sized increase in corporate emissions).

All metrics should be considered in tandem with the data coverage percentages given that data availability (or lack thereof) – in particular in the case of the Central Bank’s higher exposure to Supranational and Agency issuers – has a material impact on the aggregated metrics of the Central Bank’s non-sovereign holdings. Please see the tables in Annex 3 for further information, including the data coverage per asset class.

Non-sovereign TCE and CI has reduced largely due to evolution of corporates’ financials

Figure 3 | Trends in climate metrics for non-sovereign assets:



Sources: ISS, Bloomberg and CBI calculations.

Additional Metrics

In pursuit of increasing transparency beyond the common minimum disclosures, the Central Bank is again including additional disclosure of the **GSS Bond Share** of our Investment Assets and **Green Bond Avoided Emissions**¹⁵ (relating to our BIS green bond fund investments).

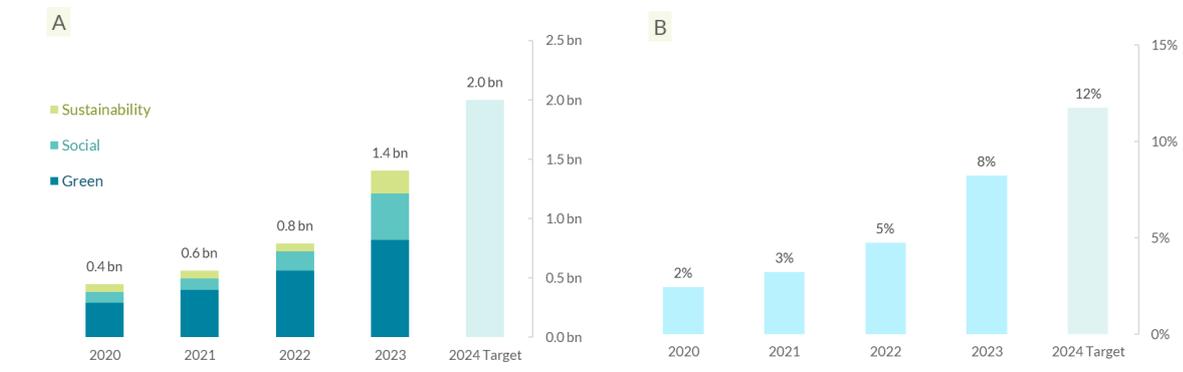
¹⁵ Avoided emissions related to investments in green bonds, whose proceeds finance green projects that “avoid” emissions.

GSS Bond Share

Over the period under review, the amount of GSS Bonds in the Central Bank’s Investment Assets increased from approximately €450m nominal equivalent at end-2020 to €1.4bn nominal equivalent at end-2023, as shown in **Figure 4**. This level of holdings is expected to increase further in the future following the Central Bank’s adoption of an Impact Investing Policy, which includes a targeted allocation to GSS bonds¹⁶. Please see the *Targets* section below for additional information on the Central Bank’s Impact Investing Policy.

Total GSS bond holdings in the Investment Assets rose to €1.4bn at the end of 2023

Figure 4 | GSS Bond holdings (A) and overall share of Investment Assets (B)



Sources: BIS, Bloomberg and CBI calculations.

Note: The 2024 Target referenced in Figure B is an estimated share based on the size of the Investment Assets at the end of 2023.

The Central Bank invests in GSS bonds as part of its day-to-day portfolio management. As at the end of December 2023, we held the following amounts (nominal equivalent) in issuance by countries, multilateral development banks, supranational organisations and sovereign-linked agencies:

- Green bonds totalling €0.8bn;
- Social bonds totalling €0.4bn; and
- Sustainability bonds totalling €0.2bn.

As part of the Central Bank’s holdings of green bonds, we invest in the BIS green bond funds for central banks. At end-September 2023, the **BISIP G1 (USD fund)** invested in green bonds, where the proceeds are used to fund projects in the

¹⁶ Our GSS bond investments are required to be, at a minimum, aligned with one of the International Capital Markets Association (ICMA) Green Bond, Social Bond and Sustainability Bond Principles, or certified under the Climate Bonds Initiative Climate Bonds Standards, or aligned with the EU’s Green Bond Standard.

following main categories: 28% in clean transportation, 26% in renewable energy and 21% in green buildings.

The environmental impact attributable to the Central Bank's share in the USD fund is an estimated level of "avoided emissions" of 61,415 tCO₂e per year. At end-September investment levels, 67% of this estimated impact is accounted for by projects in renewable energy. At end-September 2023 the **BISIP G2 (EUR fund)** invested in green bonds, the proceeds of which are used to fund projects in the following main categories: 29% in clean transportation, 25% in renewable energy and 15% in water and waste management. The environmental impact attributable to the Central Bank's share in the G2 fund is an estimated emissions avoided of 102,539 tCO₂e per year. At end-September investment levels, 52% of this estimated impact is accounted for by projects in renewable energy.

Targets

The Central Bank has set its **long-term target** to align its Investment Assets with the EU and the Irish State's decarbonisation objectives in support of the Paris Agreement. The EU's objectives stated in its 2050 long-term strategy targets EU climate neutrality by year 2050. This is in line with the Paris Agreement's objective to keep the global temperature increase to well below 2°C and pursue efforts to keep it to 1.5°C. Work is ongoing on how the Central Bank will move towards medium and long-term sustainability targets for its Investment Assets.

Achievement of the Central Bank's long-term target will depend, amongst other factors, on the degree to which governments succeed in meeting the objectives defined in the Paris Agreement. This is due to the Central Bank's conservative investment approach outlined above, where the majority of the Investment Assets is invested in sovereign/public sector bonds. The Central Bank expects governments to continue to lead the way in delivering the transition towards a net zero economy.

As part of our efforts to decarbonise the Investment Assets, we have commenced the process of replacing the existing corporate equity benchmark with an **EU Paris-aligned Benchmark (EU PAB)**¹⁷. The target date for completion of the transition is by no later than 2026. Once complete, the entirety of the Central Bank's equity portfolio will be on a decarbonisation trajectory in line with the Paris Agreement.

¹⁷ An EU PAB has the objective of a decarbonisation trajectory of at least 7% reduction of GHG intensity on average per annum, while the GHG intensity (including Scope 1, 2 and 3 GHG emissions), shall be at least 50% lower than the GHG intensity of the investable universe.

To contribute towards a broad set of positive environmental and social outcomes, the Central Bank has implemented an **Impact Investing Policy** in 2023. As part of this policy, we have set a target allocation to GSS bonds. This fulfils the Central Bank's commitment, as stated in our SI Charter, to investigate a target allocation to GSS bonds. Up until now, the Central Bank has been investing in GSS bonds as part of its day-to-day portfolio management. The Central Bank's Impact Investing Policy formalises this process and embeds a commitment to allocate capital towards GSS bonds in a targeted manner. Accordingly, we have set **a target allocation of €2 billion (nominal equivalent) of GSS bonds** by the end of 2024, subject to market availability. The Central Bank will regularly review its approach to impact investing and its target allocation to GSS bonds, to ensure that it continues to support, within its mandate, the transition to a greener and more sustainable economy.

Annexes

Annex 1

Elements of the Eurosystem disclosure framework for the TCFD category 'Metrics and Targets'¹⁸

Element	Details
Weighted average carbon intensity (WACI)	$= \sum_n^i \left(\frac{\text{current value of investment}_i}{\text{current portfolio value}} \right) \times \left(\frac{\text{issuer's carbon emissions}_i}{\text{issuer's revenue, PPP adj. GDP, population, or final consumption expenditure}_i} \right)$
Total carbon emissions (TCE)	$= \sum_n^i \left(\frac{\text{current value of investment}_i}{\text{EVIC or PPP adj. GDP}_i} \times \text{issuer's carbon emissions}_i \right)$
Carbon footprint (CF)	$= \frac{\sum_n^i \left(\frac{\text{current value of investment}_i}{\text{EVIC or PPP adj. GDP}_i} \right) \times \text{issuer's carbon emissions}_i}{\text{current portfolio value}}$
Green Bond Share	Of fixed income portfolios based on ICMA's Green Bond Principles (GBP).
Portfolio size	Expressed in € billions.
Asset classes	All asset classes of the portfolio, with metrics to be shown per asset class.
Data availability	Indicated as a percentage for each metric and asset class.
Data sources	Such as the names of the (climate) data providers.
Target	At least one broadly defined long-term target covering all non-monetary policy portfolios under management control of the central bank that is aligned with the objectives of the Paris Agreement and the EU's climate neutrality objectives. Targets can be set at portfolio level, central bank level, or a combination of both. Targets should ideally be quantitative, and long-term targets should ideally be enriched by intermediate targets.

In addition to the elements of the Eurosystem disclosure framework, the Central Bank publishes the carbon intensity metric, which is defined as:

$$\text{Carbon Intensity} = \frac{\sum_n^i \left(\frac{\text{current value of investment}_i}{\text{EVIC or PPP adj. GDP}_i} \right) \times \text{issuer's carbon emissions}_i}{\sum_n^i \left(\frac{\text{current value of investment}_i}{\text{EVIC or PPP adj. GDP}_i} \right) \times \text{issuer's revenue, PPP adjusted GDP, or population}_i}$$

¹⁸ TCFD formulas are provided [here](#). For the Eurosystem disclosure framework, they have been adjusted where necessary to reflect latest PCAF guidance and cover additional asset classes.

Annex 2

Carbon emissions allocation methods, normalisation and attribution factors

Allocation			
Issuer type	Factor	Remarks	Unit
Corporate Supra & Agency	Scope 1 & 2 emissions	Scope 1 comprises direct GHG emissions that occur from sources that are controlled or owned by an organisation (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles). Scope 2 comprises indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling.	tCO ₂ e
Sovereign	Production emissions	Emissions produced domestically within a country's physical borders, including domestic consumption and exports. This definition follows the territorial emissions approach adopted by United Nations Framework Convention on Climate Change (UNFCCC) for annual national inventories. Production emissions are reported excluding the effects of Land Use, Land Use Change and Forestry (LULUCF).	
	Consumption emissions	Emissions related to domestic demand, accounting for trade effects. This metric provides a broader view of a sovereign's emissions and tackles the issue of carbon leakage that arises due to production shifts from countries where goods are consumed later.	

Normalisation			
Issuer type	Factor	Remarks	Unit
Corporate Supra & Agency	Revenue	The total amount of income generated by the sale of goods and services related to the primary operations of the business. Commercial revenue may also be referred to as sales or as turnover.	€ million
Sovereign	Production: PPP adj. GDP	GDP is the sum of gross value added by all resident producers plus any product taxes and minus any subsidies not included in the value of the products. The Purchasing Power Parity (PPP) conversion factor is a spatial price deflator and currency converter that eliminates effects of differences in countries' price levels.	€ million
	Consumption: Population	Total population of a country.	People

Attribution			
Asset class	Factor	Remarks	Unit
Sovereign bonds	PPP adj. GDP	See description of "PPP adj. GDP" in normalization factor.	€
Equities			
Supra & Agency bonds	EVIC	The sum of the market capitalisation of ordinary shares at fiscal year-end, the market capitalisation of preferred shares at fiscal year-end, and the book values of total debt and minorities' interests.	
Corporate bonds			
Covered bonds			

Annex 3

Historical Climate Metrics for the Investment Assets

		Sovereign			Non-sovereign			
		Sovereign and sub-sovereign bonds		Supranational and Agency Bonds	Covered Bonds	Equities	Total	
Portfolio Value (€ billion)								
2023		10.72		2.92	0.02	0.45	3.39	
2022		10.14		2.70	0.08	0.35	3.14	
2021		11.22		2.75	0.08	0.40	3.23	
2020		12.34		3.04	0.38	0.30	3.73	
		Production Excluding LULUCF	Production Including LULUCF	Consumption	Scope 1 and 2			
WACI (tCO₂e per € million revenue, PPP adjusted GDP, or per capita)								
2023		185	171	14	6	2	58	13
		100	100	100	95	100	100	95
2022		188	174	14	7	1	73	15
		100	100	100	94	100	99	95
2021		223	205	13	10	2	124	25
		100	100	100	91	100	99	92
2020		214	196	12	10	1	149	22
		100	100	100	78	100	99	82
Total Carbon Emissions (tCO₂e)								
2023		1,980,080	1,831,736	2,503,070	4,454	8	12,135	16,597
		100	100	100	87	100	99	89
2022		1,905,486	1,761,741	2,400,698	4,909	21	13,503	18,433
		100	100	100	87	100	99	88
2021		2,498,038	2,299,819	3,132,396	5,654	20	16,433	22,107
		100	100	100	73	100	99	77
2020		2,636,611	2,422,230	3,268,861	5,111	40	15,511	20,662
		100	100	100	65	82	99	69
Carbon Footprint (tCO₂e per € million invested)								
2023		185	171	234	2	0	27	6
		100	100	100	87	100	99	89
2022		188	174	237	2	0	39	7
		100	100	100	87	100	99	88
2021		223	205	279	3	0	41	9
		100	100	100	73	100	99	77
2020		214	196	265	3	0	52	8
		100	100	100	65	82	99	69
Carbon Intensity (tCO₂e per € million revenue, PPP adjusted GDP, or per capita)								
2023	CI	185	171	13	23	2	77	47
		100	100	100	87	100	99	89
2022	CI	188	174	13	26	1	99	54
		100	100	100	87	100	99	88
2021	CI	223	205	12	52	2	142	94
		100	100	100	73	100	99	77

2020	CI	214	196	11	46	2	159	89
		100	100	100	65	82	99	69
Green, Social and Sustainability Bond Share (€ billion nominal)								
2023	GSS	<i>Total: 1.4</i>						
		<i>Green: 0.8</i>						
2022	GSS	<i>Total: 0.8</i>						
		<i>Green: 0.6</i>						
2021	GSS	<i>Total: 0.6</i>						
		<i>Green: 0.4</i>						
2020	GSS	<i>Total: 0.4</i>						
		<i>Green: 0.3</i>						

Sources: ISS, Carbon4 Finance, UNFCCC, World Bank, Bloomberg and CBI calculations.

Notes: Sovereign issuers: For sovereign bonds, metrics are provided for production-based emissions, excluding and including the effects of LULUCF. The attribution factor applied to sovereign bonds is PPP-adjusted GDP. As a result, when emissions are allocated on a production basis, the numbers reported for WACI, Carbon Footprint and Carbon Intensity are the same. **Non-sovereign issuers:** For supranational and agency bonds, covered bonds and equity, metrics are provided per asset class and aggregated, based on issuers' scope 1 and 2 emissions. **Scope:** Gold, Cash and Cash-like instruments are not in scope for emissions reporting. **Coverage:** The coverage percentage included in italic below each metric value, indicate data availability, calculated as the percentage of investments (i.e. the value of investments / value of portfolio) for which all required data for the calculation (i.e. emissions and financial data) are available. **GSS Bonds:** GSS Bond Share covers holdings of sovereign and non-sovereign GSS bonds.



T: +353 (0)1 224 5800
E: publications@centralbank.ie
www.centralbank.ie



Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem