

# Climate-related Disclosures

for Non-monetary Policy Portfolios



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# Introduction

**This is the Bank's first publication on the disclosure of greenhouse gas (GHG) emissions in relation to the non-monetary policy portfolios (NMPPs) it manages, based on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).** The TCFD, which was established by the Financial Stability Board, released its first set of recommendations in 2017. It has issued substantial guidance since then and is now considered the *de facto* global standard-bearer for climate-related disclosures. The Bank has been a formal supporter of the TCFD since 2018. The TCFD recommendations are structured around four thematic areas which represent core aspects of how organisations operate: governance, strategy, risk management, and metrics and targets.

**Disclosure of GHG emissions is key to the transition to a net-zero economy.** As is the case for financial information, transparency on climate-related risks helps investors and other stakeholders take informed decisions. In addition, disclosure improves understanding of the financing of GHG emissions and is essential to drive action on climate change. Transparency on Scope 1, Scope 2 and Scope 3 emissions improves disclosure of the climate-related impact of financial investments. In following the TCFD recommendations, the Bank applies industry standards set by leaders in the field of sustainable finance. In this report, the Bank relies on unified disclosure practices based on international standards at issuer and investor level: the TCFD recommendations, the Global GHG Accounting and Reporting Standard developed by the Partnership for Carbon Accounting Financials (PCAF), and the thematic bond principles developed by the Climate Bonds Initiative (CBI) and the International Capital Markets Association (ICMA).

**In addition, the Bank published a Sustainable and Responsible Investment (SRI) Charter.** Climate-related disclosure is a cornerstone of SRI. While the SRI Charter describes the Bank's general approach to sustainable and responsible investment, TCFD disclosure is an annual exercise that sheds light on the Bank's handling of climate-related risks and opportunities. Given that sustainability has been formally recognised as a fourth objective for strategic asset allocation,<sup>1</sup> the SRI Charter is crucial to informing and guiding the Bank's investment decisions and the management of its non-monetary policy portfolios, including the achievement of targets related to climate change.

**Both initiatives, namely the first in-depth climate-related disclosures and the publication of an SRI charter, reinforce the Bank's commitment to sustainable finance, a path down which it first started years ago.** Indeed, several concepts underpinning the SRI Charter and the TCFD disclosures have been used by the Bank for some time, such as ESG scores, norm-based screening and the purchase of thematic bonds. The waiver of issuance fees for green bonds in the Bank's securities settlement system and its annual corporate social responsibility (CSR) report are yet more evidence of its long-standing focus on sustainability. The SRI Charter gathers this knowledge and experience into a single document which provides insight into the underlying principles that will guide future refinements and new developments.

<sup>1</sup> In addition to safety (the preservation of capital), liquidity and profitability.

As mentioned, these disclosures follow the TCFD recommendations for the reporting of climate-related financial information. This report is therefore based on the four thematic areas of these recommendations, namely governance, strategy, risk management and, finally, metrics and targets. The information provided herein is highly dependent on the data sources used and will be refined as the availability and consistency of climate-related data and experience managing climate-related risks increase.

Figure 1

Overview of the four thematic areas of the TCFD recommendations



**Governance**

The organization's governance around climate-related risks and opportunities

**Strategy**

The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning

**Risk Management**

The processes used by the organization to identify, assess and manage climate-related risks

**Metrics and Targets**

The metrics and targets used to assess and manage relevant climate-related risks and opportunities

Source: TCFD, October 2021, "Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures".

# 1. Governance

**This section discloses the Bank's governance of climate-related risks and opportunities.** It starts with describing the general governance framework for the financial assets that fall within the scope of these disclosures. It then explains how the governance framework applies to climate-related risks and opportunities. The role of the [SRI Charter](#) is then described before turning to specific governance issues pertaining to climate-related metrics and reporting. Finally, the bodies within the Bank responsible for the oversight and management of climate-related risks and opportunities are mentioned.

**The Bank's existing governance framework applies to climate-related risks and opportunities.** This framework forms the basis for all key decisions relating to the Bank's non-monetary policy portfolios. Specific climate-related and SRI aspects of the framework are highlighted below.

- The front office, which is responsible for day-to-day portfolio management, initiated the development of the SRI Charter and supports the TCFD disclosure process. A dedicated SRI officer has been appointed to oversee implementation of the charter.
- The middle office, which is responsible for risk reporting and risk management, contributed to the drafting of the charter. In addition, the middle office initiated the development of TCFD disclosures.
- Senior management discusses strategic aspects of the Bank's investment portfolios within the investment committee (IC), which is chaired by a member of the Board of Directors. The IC can either request changes to or approve proposals relating to the SRI Charter and climate-related financial disclosures. In the event of approval, the proposal is sent to the Board of Directors.
- The Board of Directors is responsible for taking final decisions on investment strategies. The Bank is committed to being a socially responsible organisation. Consequently, social responsibility forms an integral part of its investment strategy. Indeed, the Bank has recognised sustainability as one of its four objectives for strategic asset allocation, along with safety (capital preservation), liquidity and profitability (return).

## The SRI Charter guides the Bank's investment strategy.

- The SRI Charter provides high-level guidance on targets and informs strategic portfolio decisions, which are discussed within the investment committee and approved by the Board of Directors.
- The portfolio management framework is updated when application of the SRI Charter results in changes to the investible universe or to portfolio composition limits. Updates to the portfolio management rules are approved by the IC.



The middle office is responsible for **calculating and reporting on portfolio metrics and risks**, including climate-related ones.

- For reporting on SRI and climate-related metrics, pre-existing processes are used. Reports are submitted on a regular basis to senior management and the Board of Directors.
- For reporting on climate-related risks, risk analyses are performed and the outcomes are being integrated into the annual risk reporting cycle, which provides senior management and the Board of Directors with an overview of the financial risks relevant to the Bank. Going forward, the Bank intends to further develop and streamline its analysis of climate-related risks.

**Other bodies within the Bank also focus on climate-related risks and opportunities.**

- A Climate Hub has been set up within the Bank, composed of climate experts from various departments. The Climate Hub focuses on climate-related issues affecting the Bank's own investments, monetary policy, the financial system, the economy and society as a whole and serves as a platform for the exchange of knowledge and information. Key developments such as the SRI Charter and climate change risk analyses have benefitted from contributions by Climate Hub members. The Climate Hub also serves as a conduit to inform senior management and the Board of Directors on climate-related issues other than own portfolio reporting. Finally, the Climate Hub has compiled a [Climate Dashboard](#), which contains information and indicators on climate change for a wide audience.
- The Bank's corporate social responsibility (CSR) board has defined eight guiding themes for its CSR commitments ([A sustainable and inclusive organisation](#)). The CSR board consists of members of senior management and a member of the Board of Directors.

## 2. Strategy

This section describes the actual and potential impact of climate-related risks and opportunities on the Bank's business, strategy and financial planning.

### Identified climate-related risks and opportunities

Climate-related risks are primarily seen as factors that amplify existing financial risks, such as market and credit risks. In addition, given the importance of portfolio emissions targets, the Bank considers it important to monitor the risks related to meeting these targets. In fact, the ability to meet climate-related targets is strongly correlated with the climate performance of large firms and governments in developed economies.

The Bank follows TCFD guidance and has thus defined three time horizons relevant for the identification of climate-related risks and opportunities, although the precise mapping of risks and opportunities on these horizons is not always straightforward, considering the prevailing uncertainty inherent in this exercise.



#### SHORT TERM 12 months

**The short-term time horizon refers to the next twelve months.** This is a key time horizon used by the Bank for financial risk measurement, so this choice facilitates the integration of climate-related risks in the Bank's risk management framework going forward. On this horizon, climate-related risks are expected to take the form of shocks to market values due to a change in overall market beliefs on climate-related risks or idiosyncratic cases of corporate default, downgrades or spread changes owing to physical risk events.

In terms of **risks**, shocks to market values impact the valuation of the Bank's marked-to-market (MTM) bond portfolios and equity fund. In addition, failure to align its investment framework to international standards and societal expectations in the short term could expose the Bank to reputational risks.

As far as **opportunities** are concerned, shocks to market values can be associated with the emergence of a so-called climate spread. When not correlated with heightened credit risk, a climate spread may increase the return on future bond purchases. Even though this is an opportunity that could present itself in the short term, it is not one the Bank is actively pursuing. Another opportunity is the inclusion of characteristics such as climate resiliency and the GHG emission paths of issuers in the review of





portfolio mandates, including a review of in-house portfolio benchmarks. Yet another short-term opportunity is the possibility to move to a Paris-aligned benchmark for the equity fund, which would generate an immediate reduction in emissions as the portfolio composition is adjusted to the new benchmark. Such a move would help to reduce changes in portfolio value due to climate-related risk events over the medium-term time horizon.

**MEDIUM  
TERM  
1-10 years**

**The medium-term time horizon refers to the period between the next one to 10 years.**

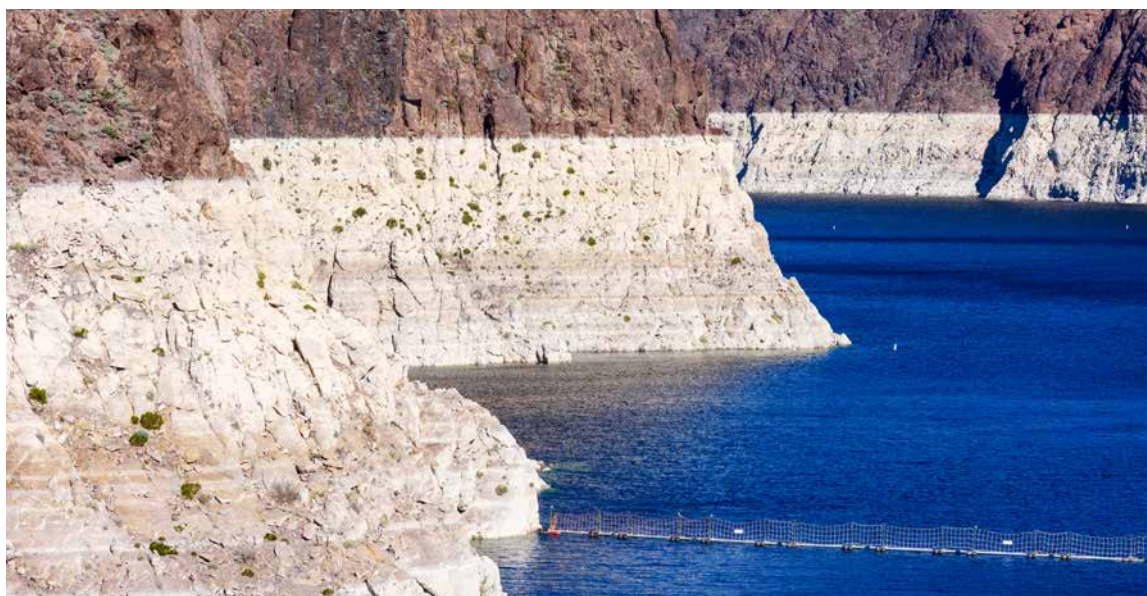
This covers the other key time horizon used by the Bank for financial risk measurement. Over this horizon, it is possible to reuse existing risk management tools such as balance sheet projections for the analysis of climate-related risks. It is expected that transition risks will increase significantly over this horizon and that physical risks will increase in materiality towards the end of the horizon, depending on the emissions path taken by the global economy.

With regard to **risks** over this horizon, shocks to market values will continue to impact valuation of the Bank's MTM bond portfolios and equity fund. The cumulative effect of transition risk costs and physical risk events will separate the climate winners from the losers, which will realise itself first for the corporate exposure type in the Bank's portfolios. This effect of accumulating risk events can lead to defaults, downgrades and changes in pricing and will be more important for HTM portfolios due to a more slowly changing composition. The Bank also considers the risk of having exposure to firms that are not Paris-aligned, a characteristic which, due to increased climate-related disclosure, will become significantly clearer over this horizon. This includes, but goes beyond, the risk posed by greenwashing. Finally, given the scale of sovereign exposure in the Bank's own investments, financial risks will arise if the cumulative cost of transition risk and physical risk events increases credit spreads or leads to a sovereign default or a downgrade and potential divestment.

On the other hand, supporting the transition to a net-zero economy, such as by investing in green bonds, gives rise to certain **opportunities**, including the opportunity to guide investment towards assets that present lower physical and transition risks. Indeed, the purchase of green bonds directly supports corporate and sovereign issuers on their journey towards the creation of a more sustainable (business) environment.

**LONG  
TERM  
10-30 years**

**The long-term time horizon is the next 10 to 30 years.** This horizon is the relevant time period for climate stress tests. Over this period, all bets are still off on how climate change mitigation efforts will play out: all relevant scenarios, such as those defined by the Network for Greening the Financial System (NGFS), are possible. In any case, while it is clear that transition risks will continue





to play a role, the impact of physical risks will largely depend on the scenario that ultimately materialises. This horizon is longer than most maturities in the Bank's portfolios, meaning climate-related risks are assessed with reference to stylised balance sheet compositions as current individual corporate exposures obviously do not reflect the balance sheet composition and related risks 10 to 30 years from now.

In terms of **risks**, the Bank's current portfolio management framework ensures that the credit quality of a portfolio remains in line with the risk appetite set by the Board of Directors. However, the composition of the Bank's portfolios is expected to change. Increased volatility, for example due to fluctuations in exchange or interest rates or in the credit migration matrix, will influence portfolio risk exposure and impact strategic asset allocation decisions. Furthermore, the transition to a low carbon economy is constantly progressing, meaning regular review of portfolios will be required. The Bank expects to have to update its investment framework regularly in order to remain in line with the applicable targets. Finally, for sovereign exposures, which represent the lion's share of the Bank's own investments, the number of issuers in the eligible universe is small. Some currencies and treasuries cannot be exchanged for other similar exposures within the strategic framework of the Bank. Changes in sovereign portfolio composition will occur due to changes in portfolio strategy, which makes it reasonable to examine the long-term climate-related risks of each specific issuer. The cumulative cost of transition and physical risk events could increase credit spreads or lead to one or more downgrades.

With regard to **opportunities**, the introduction of emissions targets for the Bank's portfolios is expected to steer portfolio composition towards firms that present below-average transition risks. In addition, the adoption of a [Sustainable and Responsible Investment Charter](#) is an essential part of the Bank's broader CSR strategy for its portfolios. The charter sets high-level climate-related principles which allow appropriate targets for each (sub) portfolio making up the Bank's own investments to be inferred.

## Impact of climate-related risks and opportunities

The need to identify climate-related risks and opportunities and the process of doing so have already had an impact on the Bank, including the following:

- the recruitment of experts on sustainable investment and the assignment of climate-related responsibilities to both front and middle office staff;
- key improvements to climate data collection capabilities, including two additional climate data providers;
- the inclusion of SRI and climate targets in the strategic asset allocation review process;
- active contribution to the [Eurosystem climate action plan](#) and to international fora such as the NGFS and industry conferences, which are also opportunities to gain knowledge;
- the inclusion of additional risk factors (including non-financial) in investment and risk decision-making.



## Resilience of strategy

The SRI Charter and the abovementioned climate-related risks, opportunities and targets have been reviewed internally against multiple criteria, including feasibility. The Bank's strategy builds on existing approaches and knowledge, applies international standards at different levels and takes into consideration the time horizons and scope of the various investment portfolios. The current diversified structure of the Bank's investment portfolios allows for multiple options to capture climate-related opportunities and to address climate-related risks. This strategy is deemed resilient. Nonetheless, the following weaknesses should be noted:

- The climate-related targets for sovereign exposures depend strongly on the ability of countries to meet their climate goals. The bulk of the Bank's portfolio is currently invested in government bonds due to the nature of central banking activities. Thus, should too many countries deviate from the goals they have declared publicly, it will become difficult for the Bank to maintain a portfolio composition that respects the targets which have been set.
- Financial risk limits, together with SRI Charter-related exclusions and climate-related targets, constrain the eligible universe. If the number of firms with an acceptable credit rating that meet their climate goals becomes too small, the current framework of constraints will make it impossible to create a diversified portfolio that respects all rules. Such a scenario is currently not expected to materialise, however.

To sum up, the world economy depends on a large majority of countries and companies meeting their climate goals. Likewise, achievement of the Bank's own climate goals is inextricably tied to the fulfilment of broader climate objectives by society as a whole. The slogan "there is no planet B" also applies to our investible universe: the Bank can only buy bonds from countries and companies established on this planet.

### 3. Risk management

This section discloses how the Bank identifies, assesses and manages climate-related risks.

#### Risk identification and assessment

The Bank continuously identifies, assesses and manages the exposure of its non-monetary policy portfolios to long-term climate-related risks, in particular transition and physical risks. An example of a physical risk is (heightened) exposure to the risk of flooding, while an example of a transition risk is exposure of an entire production chain to increases in GHG emission prices. The Eurosystem has jointly identified common data sources to assess these risks. Climate-related risks have been integrated into the Bank's risk management processes; it should be noted that these risks do not constitute a separate risk category but rather are considered an amplifying factor for existing categories such as credit and market risks.

The Bank's NMPPs are exposed to climate-related risks, which could lead to adverse outcomes in the event of a gradual change in risk factors or a climate shock. The Bank's risk management distinguishes between transition risks and physical risks. As indicated above, transition risks concern the likelihood and impact of the economic consequences of the transition to a net-zero economy. Physical risks, on the other hand, relate to the likelihood and impact of severe weather events or natural disasters.

Pursuant to both qualitative and quantitative assessments, the climate-related risks to which the Bank's NMPPs are exposed are considered to have only a minor impact on existing financial risks in the short term. The magnitude of these risks increases materially when moving to the medium- and long-term horizons.

The Bank is integrating climate-related risks to its NMPPs into its entire risk management framework. For risk monitoring and reporting, relevant climate-related metrics have been quantified. For risk identification and assessment, climate-related risks are being incorporated by expanding risk drivers and sensitivities to include relevant physical and transition risks, thereby ensuring prudent, forward-looking and data-driven risk measurement.

Moreover, the Bank aims to contribute to the development of climate-related risk management within the Eurosystem. New developments, such as climate stress testing, will be investigated and applied to the Bank's risk management framework when possible.





## Risk mitigation

The Bank adopts a holistic approach to management of the potential quantitative impact of climate-related risks to its NMPPs.

The Bank measures climate-related risks of its assets in terms of physical and transition risks embedded in sovereigns, supranationals, agencies and corporates. These metrics are being integrated into the Bank's risk management framework. The Bank aims to identify excessive concentrations of drivers of physical or transition risks in its portfolios. This analysis is performed for each portfolio and asset class separately, i.e. bonds issued by sovereigns, supranationals and agencies as well as corporate bonds and equities.

## 4. Metrics and targets

This section discloses the metrics and targets used to assess and manage relevant climate-related risks and opportunities.

For purposes of this disclosure, the Bank's non-monetary policy assets are assigned to one of three portfolios:

Statutory portfolio	This is a euro-denominated portfolio which size is determined by the sum of the capital, reserves and amortisation accounts for the Bank's tangible and intangible assets. This portfolio is subject to strict investment rules and primarily contains sovereign, supranational and agency bonds as well as non-traded shares in a few institutions.
EUR portfolio	This portfolio consists of all euro-denominated assets that do not form part of the statutory portfolio.
FX portfolio	This portfolio consists of all foreign currency-denominated assets.

Cash, derivatives, gold and special drawing rights are not included in any of these portfolios, given the absence of a standard to account for climate-related metrics for these assets. For each portfolio different asset classes are present: sovereign bonds, supranational and agency bonds, corporate bonds, covered bonds and equities.

Collectively, these three portfolios represent all NMPP financial assets under the Bank's management control. Other financial assets on the Bank's balance sheet (see the annual accounts) are typically either monetary policy assets or assets not fully subject to management control by the Bank.

### Methodology

#### Key emission metrics

The methodology used to calculate the metrics is based on guidance issued by the TCFD and PCAF. As this guidance does not address all methodological choices that have to be made, a detailed methodological approach has been developed by the Eurosystem.

The key data source is the CO<sub>2</sub>-equivalent emissions for which each issuer in the Bank's investment portfolios is responsible. For corporate, supranational and agency emissions, Scope 1, Scope 2 and Scope 3 GHG emissions data were used to determine the results set out below. In brief, Scope 1 emissions are those resulting from a firm's own operations. Scope 2 emissions are those generated by electricity production needed for own operations. Finally, Scope 3 emissions are those resulting from a firm's value chain as well as financed emissions.<sup>1</sup>

<sup>1</sup> Technically, the metrics disclosed in this report represent the (financed) share of the Bank's Scope 3 emissions.



For sovereign exposures, the concepts of Scope 1, 2 and 3 emissions have only recently been proposed by PCAF. As a result, our datasets have not yet been adapted to this important change. Instead, the current market standard is used:

- the (territorial) production metric as the main data source, representing the CO<sub>2</sub>-equivalent emissions produced within the borders of a sovereign state.
- The consumption metric is production emissions less emissions on exports, increased by emissions on imports.
- Finally, government emissions represent emissions related to a government's activities and investments.

The three main metrics are **weighted average carbon intensity (WACI)**, **total carbon emissions (TCE)** and **carbon footprint (CF)**. The formulas used to calculate these and other metrics used in this report are outlined in Table 1 in the Appendix.

- **Weighted average carbon intensity** measures a portfolio's exposure to carbon-intensive issuers, expressed in tonnes of CO<sub>2</sub> equivalent per million euros. The carbon intensity of each corporate issuer is determined by normalising the sum of its Scope 1 and Scope 2 GHG emissions by revenue. The portfolio WACI is then calculated by weighting the carbon intensity of each issuer with reference to its respective share of holdings in the portfolio. Fluctuations in portfolio WACI are driven by changes in revenue, emissions and relative portfolio weights of each issuer. It should be noted that changes in revenue and relative portfolio weights can, for their part, be driven by inflation and foreign exchange effects.

For sovereign exposures, the same approach is used, but Scope 1 and Scope 2 emissions are replaced by production, consumption and government emissions. As a result, there are three different WACI numbers for sovereign exposures, providing a complete view of this specific asset class. The three categories of sovereign emissions are normalised by PPP-adjusted GDP, population and government expenditure, instead of revenue for corporates.

- **Total carbon emissions** quantify the GHG emissions associated with a portfolio in tonnes of CO<sub>2</sub> equivalent. For sovereigns the three categories of production, consumption and government emissions are used, whereas for non-sovereigns the Scope 1 and Scope 2 emissions are used. GHG emissions are weighted based on the ratio of the asset value to the issuer's total value (e.g. equity and debt for firms, PPP adjusted GDP for sovereigns) and are summed up to determine the portfolio's absolute emissions. Fluctuations in portfolio TCE may be caused by changes in emissions, the absolute exposure amount or the capital structure of issuers. Increasing total portfolio size increases TCE by the same factor.
- **Carbon footprint** normalises the TCE of a portfolio by dividing this figure by the portfolio's value, expressed in tonnes of CO<sub>2</sub> equivalent per million euros invested, thereby allowing for comparability across differently sized portfolios and time. Fluctuations in portfolio CF may be caused by changes in emissions, relative portfolio weights or the capital structure of issuers. It should be noted that changes in capital structure and relative portfolio weight are in part driven by inflation and foreign exchange effects.

## Supporting metrics

Additional climate-related metrics, such as **total absolute emissions including Scope 3**, **thematic bond share**, **green bond share** and **carbon impact ratio**, are used to supplement the overview provided by WACI, TCE and CF.

- **Total carbon emissions, including Scope 3**, are determined based on the same approach as (total) absolute emissions but include Scope 3 GHG emissions. This metric is also expressed in tonnes of CO<sub>2</sub> equivalent and is only computed for non-sovereign emissions.
- The **thematic bond share** is the ratio of a portfolio's exposure to green, social and sustainability bonds to its total size. Thematic bonds are expected to meet ICMA's Green Bond Principles, Social Bond Principles or Sustainability Bond Guidelines, as confirmed by a second-party opinion, or to have been externally verified as conforming with CBI's Climate Bonds Standard.
- Similarly, the **green bond share** is the ratio of a portfolio's exposure to green bonds (determined in accordance with ICMA or CBI standards) to its total exposure. By default, this is a subset of the thematic bond share.
- The **carbon impact ratio** is the ratio of the sum of avoided and reduced emissions (or emissions savings) to induced emissions. The portfolio carbon impact ratio is derived as the exposure weighted average of the carbon impact ratios for the various green bonds it contains. Reduced and avoided emissions are calculated by data provider Carbon 4 Finance and defined as follows:
  - **Avoided emissions** are emissions avoided by a firm's products and services. They are calculated by comparing actual emissions with a sector-level baseline scenario (i.e. an IEA 2° scenario) or with substitution by low-carbon solutions. A company avoids emissions if there is a positive difference between its induced emissions, on the one hand, and the baseline emissions scenario, on the other hand.
  - **Reduced emissions** are the volume by which emissions are lowered through efficiency over time; an emissions reduction is a real decrease in a firm's carbon intensity over a period of five years.

## Strengths and weaknesses of the selected metrics

This section summarises some strengths and weaknesses of the metrics used in this report.

Firstly, all metrics require the use of either reported emissions (by the firm itself) or, in the case of no or incomplete reporting, estimated emissions. Either way, required emissions data can be lacking for some issuers. In the tables below, the percentage exposure for which emissions data were available is indicated.

Secondly, changes to the metrics over time can be caused by multiple factors. For instance, inflation effects will lead to a decrease in WACI, TCE and CF year after year for a static portfolio with stable emissions. For TCE, increased data availability will lead to an increase in the metric, even if the actual emissions financed by the portfolio have not changed.

It should also be noted that comparing a single metric across asset types presents certain challenges. For instance, the emissions of a sovereign include all production emissions within its territory, whereas corporate emissions for the three selected metrics include only direct emissions (Scope 1) and energy indirect emissions (Scope 2). Corporate emissions also contribute to sovereign emissions.

Furthermore, supranationals, agencies and financials generally have lower Scope 1 and Scope 2 emissions, whereas the bulk of their activities are the financing of other economic actors, i.e. Scope 3 emissions. The “GHG efficiency” of investments in supranationals, agencies and financials thus cannot be revealed by comparing their WACI or CF with those of non-financial corporates but rather requires looking at Scope 3 emissions as well.

Consequently, changing the relative contribution of each asset will influence the overall portfolio metrics. In that sense, looking only at the totals can give an inaccurate impression of the evolution of portfolio climate metrics. With that in mind, the current disclosure provides detailed information on each asset type and its relative size.

## Metrics

The climate-related metrics used for the statutory portfolio, the EUR portfolio and the FX portfolio are set out in Tables 1, 2 and 3, respectively.

Table 1

### Climate-related metrics for the statutory portfolio at year-end 2022

Statutory Portfolio 2022	Sovereign			Non-Sovereign			
	Sovereign and sub-sovereign bonds			TOTAL	Supra and agency bonds	Corporate bonds	Equities
	Production	Consumption	Government				
Portfolio size (€M)	5 593			1 730	1 398	0	332
WACI (tCO <sub>2</sub> e/€M) data coverage (%)	175 (100%)	14 (100%)	66 (100%)	10 (61%)	10 (75%)	–	– (0%)
Total carbon emissions (tCO <sub>2</sub> e) data coverage (%)	923 331 (100%)	1 589 161 (100%)	81 931 (100%)	1 683 (64%)	1 683 (79%)	–	– (0%)
Carbon footprint (tCO <sub>2</sub> e/€M) data coverage (%)	175 (100%)	301 (100%)	16 (100%)	2 (64%)	2 (79%)	–	– (0%)
Total carbon emissions (including Scope 3) (tCO <sub>2</sub> e) data coverage (%)				14 514 (64%)	14 514 (79%)		– (0%)
Thematic bond share (%)	5.4%			45.3%	45.3%		
Green bond share (%)	4.4%			23.0%	23.0%		
Carbon impact Ratio of Green bonds data coverage (%)	0.3 (80%)			0.7 (69%)	0.7 (69%)		

Sources: ISS, C4F, World Bank, Bloomberg and NBB calculations.

Note: The percentages in parentheses below the metric results indicate data availability, expressed as the percentage of investments (i.e. the market value of investments / the market value of the portfolio) for which all required data (i.e. emissions data and financial data) were available.

The statutory portfolio consists mainly of exposures to EUR sovereigns, with additional exposure to supranationals and agencies and limited equity exposure in the form of holdings in institutions. Supranationals and agencies are behind in their disclosure efforts, as is apparent from the data coverage values. The statutory portfolio has invested a significant portion in thematic assets, especially for the supranational and agency asset class. Compared to 2021 (see Table 5), the thematic bond share has increased for both sovereign assets and non-sovereign assets.

Table 2

## Climate-related metrics for the EUR portfolio at year-end 2022

EUR Portfolio 2022	Sovereign			Non-Sovereign			
	Sovereign and sub-sovereign bonds			TOTAL	Supra and agency bonds	Covered bonds	Equities
	Production	Consumption	Government				
Portfolio size (€M)	1 867			1 051	0	40	1 012
WACI (tCO <sub>2</sub> e/€M) data coverage (%)	168 (100 %)	13 (100 %)	65 (100 %)	112 (100 %)		2 (100 %)	117 (100 %)
Total carbon emissions (tCO <sub>2</sub> e) data coverage (%)	311 891 (100 %)	507 864 (100 %)	28 697 (100 %)	70 031 (100 %)		22 (100 %)	70 009 (100 %)
Carbon footprint (tCO <sub>2</sub> e/€M) data coverage (%)	168 (100 %)	274 (100 %)	15 (100 %)	67 (100 %)		1 (100 %)	69 (100 %)
Total carbon emissions (including Scope 3) (tCO <sub>2</sub> e) data coverage (%)				680 051 (100 %)		3 094 (100 %)	676 957 (100 %)
Thematic bond share (%)	0 %			0 %		0 %	
Green bond share (%)	0 %			0 %		0 %	
Carbon impact Ratio of Green bonds data coverage (%)							

Sources: ISS, C4F, World Bank, Bloomberg and NBB calculations.

Note: The percentages in parentheses below the metric results indicate data availability, expressed as the percentage of investments (i.e. the market value of investments / the market value of the portfolio) for which all required data (i.e. emissions data and financial data) were available.

The EUR portfolio is a combination of sovereign exposures, a limited number of covered bonds and the Bank's investments in an equity fund. The sovereign emissions have not changed meaningfully compared to year-end 2021 (see Table 6), due to limited changes in portfolio composition. For the Equity fund, which follows a custom-made ESG index, all climate metrics have not changed materially.



Table 3

## Climate-related metrics for the FX portfolio at year-end 2022

FX Portfolio 2022	Sovereign			Non-Sovereign			
	Sovereign and sub-sovereign bonds			TOTAL	Supra and agency bonds	Corporate bonds	Equities
	Production	Consumption	Government				
Portfolio size (€M)	8 262			2 681	1 157	1 523	0
WACI (tCO <sub>2</sub> e/€M) data coverage (%)	307 (100 %)	20 (100 %)	290 (100 %)	80 (84 %)	2 (63 %)	117 (99 %)	
Total carbon emissions (tCO <sub>2</sub> e) data coverage (%)	2 645 456 (100 %)	3 134 311 (100 %)	376 771 (100 %)	196 850 (84 %)	77 (63 %)	196 773 (99 %)	
Carbon footprint (tCO <sub>2</sub> e/€M) data coverage (%)	307 (100 %)	364 (100 %)	44 (100 %)	83 (84 %)	0.1 (63 %)	124 (99 %)	
Total carbon emissions (including Scope 3) (tCO <sub>2</sub> e) data coverage (%)				2 430 423 (84 %)	11 577 (63 %)	2 418 846 (99 %)	
Thematic bond share	0.1 %			38.3 %	53.4 %	26.8 %	
Green bond share	0.0 %			21.0 %	24.1 %	18.7 %	
Carbon impact Ratio of Green bonds data coverage (%)				2.2 (22.5 %)	2.6 (19.5 %)	1.9 (25.4 %)	

Sources: ISS, C4F, World Bank, Bloomberg and NBB calculations.

Note: The percentages in parentheses below the metric results indicate data availability, expressed as the percentage of investments (i.e. the market value of investments / the market value of the portfolio) for which all required data (i.e. emissions data and financial data) were available.

The FX portfolio is a combination of sovereign, supranational and corporate exposures. Thematic bond investments have increased materially for non-sovereign assets (see Table 7). For sovereign (and sub-sovereign) USD assets there remain very limited thematic bond options, which explain the current low share.

## Targets

The Bank's [SRI Charter](#) defines climate-related targets, listed here for reference purposes. The target for net-zero financed emissions for Sovereign assets makes use of the "production" total carbon emissions. The target for net-zero financed emissions for non-sovereign assets makes use of the total carbon emissions for Scope 1, 2 and 3. The reference level of both target is defined by the 2021 amounts. No conclusions can be drawn at this time as to whether the Bank is meeting these targets as subsequent long-term follow-up is required.

Note that the sharp increase in financed emissions for non-sovereign assets is the result of an increase of the exposure: the thematic asset portfolio has grown by EUR 500 million. The emissions of the entire firms are used for calculating the total carbon emissions metric, without accounting for the emission reduction impact of the financed green projects. Hence, the increase in financed emissions should be interpreted in conjunction with the sharp increase in the green bond shares of these portfolios. This is visible in the increased share of green assets.

Table 4

### Climate and other SRI-related targets

Target	Metric	Scope	Reference level	Current level	Target level
Net-zero financed emissions	Total carbon emissions <sup>1</sup> (production, tCO <sub>2</sub> e)	Sovereign assets	3 796 718	3 880 677	0
					End of 2050
Net-zero financed emissions	Total carbon emissions (Scope 1, 2 and 3, tCO <sub>2</sub> e)	Non-sovereign assets	1 733 944	3 124 988	0
					End of 2050
Publication of intermediate climate-related targets	N/A	N/A	N/A	Not published	Published for selected portfolios
					Q1 2024
Share of thematic assets	Thematic bond share (%)	Bonds	6.6 %	10.0 % (+3.4 %)	Trendwise increase
Implementation of updated screening rules	Operationally implemented	New purchases	N/A	Ongoing	Implemented by end of 2023

Source: NBB calculations.

1 As described earlier, the metric "total carbon emissions" are in tCO<sub>2</sub>e, accounting for all 6 GHG gasses defined by the IPCC.

## Historical data on metrics and targets

This section provides historical data on the metrics and targets disclosed in this report.

Table 5

Climate-related metrics for the statutory portfolio at year-end 2021

Statutory Portfolio 2021	Sovereign			Non-Sovereign			
	Sovereign and sub-sovereign bonds			TOTAL	Supra and agency bonds	Corporate bonds	Equities
	Production	Consumption	Government				
Portfolio size (€M)	5 713			1 482	1 150	0	332
WACI (tCO <sub>2</sub> e/€M) data coverage (%)	178 (100%)	15 (99%)	67 (100%)	14 (59%)	14 (76%)		– (0%)
Total carbon emissions (tCO <sub>2</sub> e) data coverage (%)	945 519 (100%)	1 643 506 (99%)	83 804 (100%)	1 490 (62%)	1 490 (80%)		– (0%)
Carbon footprint (tCO <sub>2</sub> e/€M) data coverage (%)	178 (100%)	311 (99%)	16 (100%)	2 (62%)	2 (80%)		– (0%)
Total carbon emissions (including Scope 3) (tCO <sub>2</sub> e) data coverage (%)				12 588 (62%)	12 588 (80%)		– (0%)
Thematic bond share (%)	4.4%			40.0%	40.0%		
Green bond share (%)	3.5%			22.9%	22.9%		
Carbon impact Ratio of Green bonds data coverage (%)	0.3 (100%)			0.7 (84%)	0.7 (84%)		

Sources: ISS, C4F, World Bank, Bloomberg and NBB calculations.

Note: The percentages in parentheses below the metric results indicate data availability, expressed as the percentage of investments (i.e. the market value of investments / the market value of the portfolio) for which all required data (i.e. emissions data and financial data) were available.

Table 6

Climate-related metrics for the EUR portfolio at year-end 2021

EUR Portfolio 2021	Sovereign			Non-Sovereign			
	Sovereign and sub-sovereign bonds			TOTAL	Supra and agency bonds	Covered bonds	Equities
	Production	Consumption	Government				
Portfolio size (€M)	2 464			946	0	40	906
WACI (tCO <sub>2</sub> e/€M) data coverage (%)	169 (100%)	13 (100%)	65 (100%)	110 (100%)		2 (100%)	115 (100%)
Total carbon emissions (tCO <sub>2</sub> e) data coverage (%)	412 803 (100%)	677 656 (100%)	37 900 (100%)	66 077 (100%)		22 (100%)	66 055 (100%)
Carbon footprint (tCO <sub>2</sub> e/€M) data coverage (%)	169 (100%)	278 (100%)	16 (100%)	70 (100%)		1 (100%)	73 (100%)
Total carbon emissions (including Scope 3) (tCO <sub>2</sub> e) data coverage (%)				619 785 (100%)		3 094 (100%)	616 691 (100%)
Thematic bond share (%)	0.0%			0.0%		0.0%	
Green bond share (%)	0.0%			0.0%		0.0%	
Carbon impact Ratio of Green bonds data coverage (%)							

Sources: ISS, C4F, World Bank, Bloomberg and NBB calculations.

Note: The percentages in parentheses below the metric results indicate data availability, expressed as the percentage of investments (i.e. the market value of investments / the market value of the portfolio) for which all required data (i.e. emissions data and financial data) were available.

Table 7

## Climate-related metrics for the FX portfolio at year-end 2021

FX Portfolio 2021	Sovereign			Non-Sovereign			
	Sovereign and sub-sovereign bonds			TOTAL	Supra and agency bonds	Corporate bonds	Equities
	Production	Consumption	Government				
Portfolio size (€M)	8 060			1 925	828	1 098	0
WACI (tCO <sub>2</sub> e/€M) data coverage (%)	308 (100 %)	20 (100 %)	288 (100 %)	88 (86 %)	2 (69 %)	133 (99 %)	
Total carbon emissions (tCO <sub>2</sub> e) data coverage (%)	2 438 396 (100 %)	2 888 083 (100 %)	346 013 (100 %)	67 497 (86 %)	84 (69 %)	67 413 (98 %)	
Carbon footprint (tCO <sub>2</sub> e/€M) data coverage (%)	308 (100 %)	364 (100 %)	44 (100 %)	41 (86 %)	0.1 (69 %)	63 (98 %)	
Total carbon emissions (including Scope 3) (tCO <sub>2</sub> e) data coverage (%)				1 101 571 (86 %)	7 079 (69 %)	1 094 493 (98 %)	
Thematic bond share (%)	0.2 %			25.9 %	40.6 %	14.8 %	
Green bond share (%)	0.2 %			11.4 %	16.5 %	7.6 %	
Carbon impact Ratio of Green bonds data coverage (%)	0.4 (76.2 %)			2.1 (17.2 %)	– (0.0 %)	2.1 (45.5 %)	

Sources: ISS, C4F, World Bank, Bloomberg and NBB calculations.

Note: The percentages in parentheses below the metric results indicate data availability, expressed as the percentage of investments (i.e. the market value of investments / the market value of the portfolio) for which all required data (i.e. emissions data and financial data) were available.

# Annex

## Elements of the Eurosystem disclosure framework for the TCFD category “Metrics and targets”

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

Source: NBB calculations.

## Additional Elements of the NBB disclosure framework for the TCFD category “Metrics and targets”

Element	Details
Thematic Bond share	$= \frac{\sum_{\text{thematic bonds}} \text{current value of investment}}{\sum_{\text{all bonds}} \text{current value of investment}}$
Green Bond share	$= \frac{\sum_{\text{green bonds}} \text{current value of investment}}{\sum_{\text{all bonds}} \text{current value of investment}}$
Carbon Impact Ratio of Green bonds	$= \frac{\sum_{\text{green bonds}} \text{current value of investment} \times \text{carbon impact ratio}}{\sum_{\text{green bonds}} \text{current value of investment}}$

Source: NBB calculations.



### ***Treatment of missing values***

For each metric, the analysis must account for missing values. The effect of excluding missing values from the calculation varies, depending on the metric.

For WACI, exclusion of missing values enhances the uncertainty of the result. Exclusion of a firm with above (or below) average emissions compared to revenue will decrease (or increase) the WACI value for the portfolio. In the absence of an indication of bias (i.e. missing data for firms with specifically high or low emission intensity) in the missing emissions data, there is no reason to expect WACI to be under- or overestimated.

For TCE, excluded emissions can obviously not contribute to the metric. If emissions data are available for only 75 % of exposures, this means that only 75 % of total TCE can be calculated. In this case, an unbiased estimate of TCE is 4/3 of reported TCE. This adjustment was not performed for the data set out in this document. This means that an increase in data availability can lead to an increase – or a less significant decrease – year after year in TCE.

For CF, missing emissions are balanced out by excluding the portfolio value contribution. This means that if there is no bias in the missing emissions data, there is no reason to expect CF to be erroneous in the upside or downside direction. A range of uncertainty remains, however.

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