



Climate-related disclosures of the BCL's non-monetary policy portfolios

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1. Introduction

Climate change and the transition towards a sustainable economy involve a wide range of macroeconomic risks, potentially impacting the valuation of financial assets, financial stability and the transmission of monetary policy. In response to these challenges, the BCL is striving to improve the identification, management and mitigation of climate risks within the limits of its mandate and in accordance with the Eurosystem stance.

This report reflects the BCL's commitment to transparency with regard to climate risks in its investment policy. The report represents the BCL's first climate-related financial disclosures on its non-monetary policy portfolios (NMPPs), which comprise the bank's own fund investments and the staff pension fund.

In February 2021, the Eurosystem announced that it will start making annual climate-related financial disclosures for its euro-denominated NMPPs within the next two years.¹ The disclosures follow the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) of the Financial Stability Board (FSB) and are in line with applicable Eurosystem methodology. The BCL has also taken into due consideration the guidance provided for central banks by the Network for Greening the Financial System (NGFS).² The BCL has decided to disclose climate-related information under all the four TCFD categories "Governance", "Strategy", "Risk Management" and "Metrics and Targets".

The disclosures presented in this report mark an important step towards increased transparency about the climate-related risks and the environmental footprint related to the BCL's NMPP investments. However, the information provided in this report is also highly dependent on the data sources. The disclosures will be refined over time, in line with increasing availability of climate-related data, enhancements in methodologies and growing practical experience in handling climate-related risks. Through improving transparency of its own activities, the BCL aims to contribute to the general availability of climate-related data and a better overall understanding of climate-related risks.

2. Governance

2.1 Overall Governance and organisational structure

The BCL's main task is to participate in the execution of the tasks of the European System of Central Banks (ESCB) / Eurosystem with a view to achieving its objectives.

¹ Press release "Eurosystem agrees on common stance for climate change-related sustainable investments in non-monetary policy portfolios", 4 February 2021. Climate-related financial disclosures are from here on simply referred to as "disclosures" to improve readability.

² Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures, TCFD, October 2021 and Guide on climate-related disclosure for central banks, NGFS, December 2021.

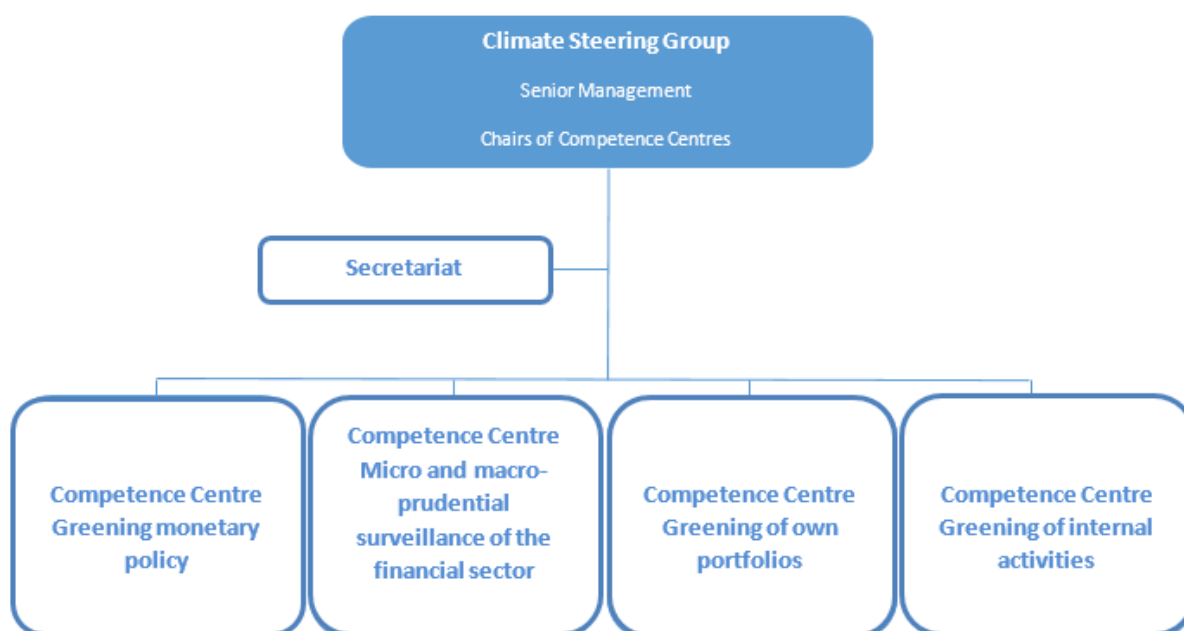
More specifically, the primary objective of the ESCB / Eurosystem is to maintain price stability. Without prejudice to the objective of price stability, it shall support the general economic policies in the European Union (“Union”) with a view to contributing to the achievement of the objectives of the Union as laid down in Article 3 of the Treaty on European Union.

Climate considerations and related risks are of relevance to the Eurosystem mandate, as reflected in the European Central Bank (ECB) Strategy Review and the climate-related action plan, as endorsed by the ECB Governing Council on 8 July 2021, with the primary objective to maintain price stability taking precedence.

Within the limits of Article 127(5) of the Treaty on the Functioning of the European Union and Article 2(6) of its Organic Law, the BCL shall also contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system.

To ensure effective coordination across the Bank on climate-related topics, the BCL set up, in its organisation, a Climate Steering Group (CSG) in January 2022. The CSG involves BCL Senior Management as well as the President and Secretary of each Competence Centre reporting to the CSG (see Chart 1). The CSG provides strategic guidance and centralises the work from the four Competence Centres on (1) Micro and Macro-prudential Surveillance of the Financial Sector, (2) Greening of own Portfolios, (3) Greening of Internal Activities and (4) Greening Monetary Policy.

Chart 1: Climate Steering Group



The Climate Steering Group meets at least every second month or more often if necessary. The aim of this structure is to provide input to decisions in the field of “climate action” in the various fields of competence.

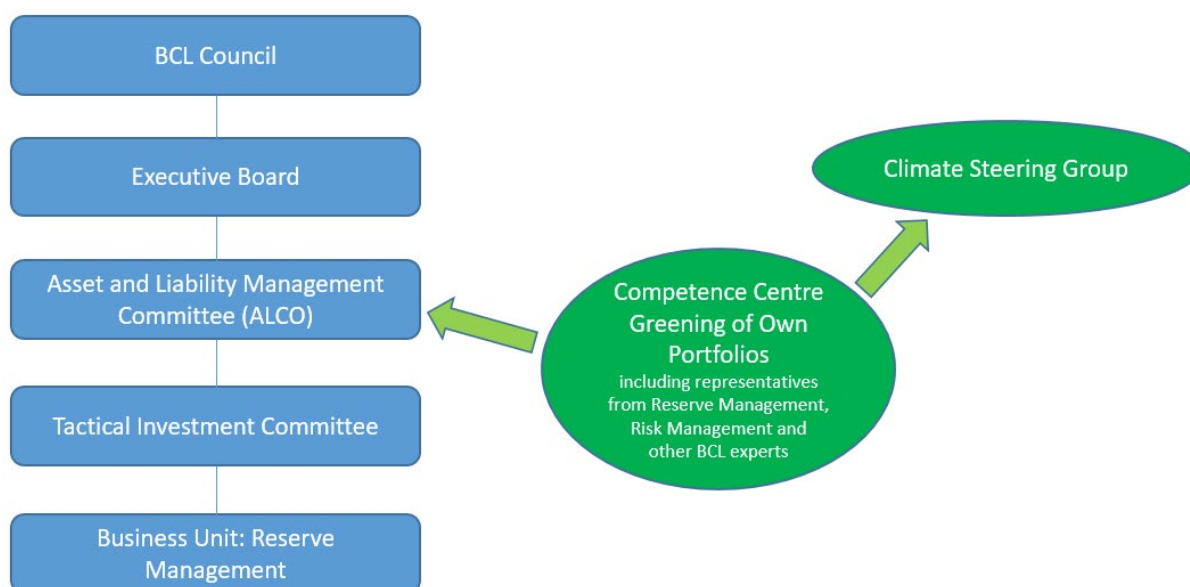
2.2 Non-monetary policy portfolios

Investments in the NMPPs of Eurosystem National Central Banks (NCB) and the ECB are managed under the responsibility of each NCB and the ECB. Nevertheless, the BCL's approach regarding its own investment policies for NMPPs is also guided by the common Eurosystem stance for identifying and monitoring climate-related risks in these portfolios.

In the area of NMPPs, the BCL has adopted an integrated approach for the governance of climate-related risks and opportunities, according to which climate change-related considerations are addressed within its existing governance structures.


Governance of the NMPPs is based primarily on the BCL's asset management framework, which encourages an integrated investment process that supports and is fully aligned with the strategic goals of the central bank. The decision making process related to the financial asset management of the BCL's NMPPs is based on a multiple level structure (see Chart 2). All levels take decisions, within the limits of their responsibilities, on the basis of adequate information and regular reporting.

Chart 2: BCL's Investment governance of NMPPs, integrating sustainability considerations



With regard to the management of the NMPPs, the Council approves the investment policy guidelines, which establish and prioritise general investment principles and outline the approach followed to implement these principles. The Council also approves the general set-up of portfolios and management guidelines related to the BCL's NMPPs.

The Executive Board defines the general risk management framework for the NMPPs in accordance with the investment policy guidelines. In this respect, it approves the investment limits framework for the management of the NMPPs on an annual basis, which is prepared by the Asset and Liability Management Committee (ALCO).



The ALCO is a strategic investment committee that monitors the balance sheet of the BCL in relation to its investment capacities and examines potential investment opportunities related to the NMPPs and their risk profile (market, credit and liquidity risks, including climate-related risks). The ALCO defines the strategic asset allocation based on the investment universe available and the general risk management framework defined by the Executive Board. In addition, the committee sets strategic benchmarks that reflect the asset allocation. The ALCO receives input from the CSG Competence Centre responsible for the greening of own portfolios.

The tactical investment committee is responsible for contributing to the management of the financial assets related to the NMPPs at a tactical level. The committee regularly monitors the evolution of the portfolios on a short term basis and may propose deviations to the strategic asset allocation of the relevant portfolios by defining valid tactical benchmarks.

The Reserve Management is responsible for the implementation of the investment decisions while the Financial Risk Management is responsible for controlling the risks involved.


The Competence Centre for the greening of own portfolios reports directly to the ALCO, in addition to the CSG, ensuring a holistic integration of the responsible investment considerations into the bank's existing institutional structure for managing its NMPPs. This Competence Centre permanently includes representatives from Reserve Management and Risk Management and meets on a regular basis. The Competence Centre is in charge of reviewing the environmental, social and governance (ESG) characteristics of the BCL's portfolios and considering potential updates to the metrics and methodologies applied. Moreover, it also follows-up on the Eurosystem stance regarding climate considerations in NMPPs and liaises with the ESG data providers in order to discuss improvements in data availability and quality. The Competence Centre prepares proposals to the ALCO for enhancing the investment process by incorporating sustainable and responsible investment considerations into the banks' strategic asset allocation for NMPPs. Final approval of the proposals rests with the Executive Board.

3. Strategy

3.1 The BCL's role in European and international fora on climate change

Climate change represents a major challenge, which requires a globally coordinated response. The BCL has been supportive of European and international coordination efforts to enhance understanding and consideration of climate-related risks.

In December 2017, on the occasion of the "One Planet Summit" in Paris, eight central banks and supervisory authorities created the NGFS to contribute to the response required to meet the COP21 goal to keep a global rise in temperatures this century to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 °C. Over the last few years, the NGFS has helped to strengthen the analysis of climate-related and environmental risks affecting



the financial sector, and developed tools and best practices to manage these risks. To date, the NGFS has released over 30 publications to help public institutions and market participants overcome climate-related challenges on a broad set of topics, ranging from supervisory practices to climate scenarios, disclosures, central bank operations, green finance, data gaps and litigation risks.

The analytical work of the NGFS is done in workstreams. The BCL joined the Network in September 2018 and it has been actively contributing to several workstreams ever since. In 2022, the NGFS reorganised its work. There are now four new workstreams, two task forces as well as three experts' networks. Currently, the BCL staff participates in three out of four workstreams, notably in the workstreams on "Supervision", "Monetary Policy", and "Net Zero for Central Banks". The BCL has also been represented in the experts' network on legal issues.

The BIS Innovation Hub (BISIH) launched its Innovation Network on 19 January 2021 to support BISIH priorities, share knowledge about technology projects and discuss innovative answers to problems relevant to central banks. The Innovation Network features six working groups, mirroring the BISIH's thematic priorities: Suptech and Regtech, Next-generation financial market infrastructures, Central bank digital currencies, Open finance, Cyber security, and Green finance. The BCL participates in the Innovation Network's working group on Green Finance, contributing to identification of technological solutions to existing problems in the field of sustainable finance.

In the context of the 2021 United Nations Climate Change Conference (COP26), the BCL issued an individual declaration³, which aimed to highlight the central bank's increasing efforts, within its mandate, to incorporate sustainability in its operations.


In February 2021, the ECB announced its decision to start working on disclosures of the NMPPs. In July 2021, the ECB also presented an action plan to include climate change considerations in its monetary policy strategy. These decisions and action plan follow the conclusion of the ECB strategy review of 2020-21, in which the reflections on climate change and environmental sustainability were of substantial importance. As a member of the Eurosystem, the BCL has actively participated to these preparatory works and action plan.

Within the Eurosystem, the Governing Council approved the establishment and the mandate of a Eurosystem Climate Change Forum on 6 July 2022. The Forum, of which the BCL is a member, is a voluntary network promoting effective ways of collaboration within the Eurosystem on climate change-related knowledge.

3.2 Strategy for non-monetary policy portfolios

The main objectives of the investment policy are to generate a stable income and to ensure, over the long term, a return that takes into account capital preservation and liquidity considerations.

³ <https://www.bcl.lu/en/Media-and-News/Press-releases/2021/11/declarationcop26/index.html>



Climate change is relevant to the management of the BCL's NMPPs as the physical effects of climate change and the transition to a net-zero economy may create financial risks with adverse economic consequences, which could also affect the safety of the bank's own funds' investments.

The BCL follows an integrated approach, monitoring climate risks as part of the overall risk management process, whereby climate risks do not form a new risk category but are assessed as an amplifying factor of existing categories such as credit, market and liquidity risk. As such, environmental sustainability aspects are embedded within the existing investment objectives. The BCL aims to mitigate climate-related risks by gradually aligning its own investments with the EU's long-term climate neutrality objective in support of the Paris Agreement.

In its support to the fight against climate change, the bank has been increasingly incorporating climate considerations and further ESG criteria in its own investment process since 2019, taking into account different dimensions such as portfolio specific objectives and constraints when considering the available responsible investment approaches. The BCL's implemented sustainability investment strategy has first concentrated on increasing the share of SRI⁴ fixed-income securities and decarbonizing the equity exposure.

While the portfolio's greenhouse gas emissions metrics are regularly monitored, the CSG Competence Centre continues to assess how additional responsible investment approaches could be defined for the BCL's NMPPs with respect to portfolio specific objectives and constraints.


In collaboration with external data providers, the BCL strives to improve coverage, address data quality concerns and continue its research in this domain. The idea is to gradually expand the responsible investment strategies pursued in the NMPPs across different portfolios and asset types, thereby adopting a more granular approach to identifying climate risks and opportunities.

4. Risk Management of non-monetary policy portfolios

The BCL's NMPPs are exposed to climate risks, which might lead to adverse outcomes in the event of a gradual change in risk factors or a climate shock. Transition risks and physical risks are distinguished. Transition risks concern the likelihood and impact of the economic consequences of the transition to a carbon-neutral economy. Physical risks, by contrast, concern the likelihood and impact of severe weather events or natural disasters occurring.

The bank actively identifies, assesses and manages the exposure of its non-monetary policy portfolios to climate-related risks. Climate risks are integrated into the risk management process in a

⁴ Socially Responsible Investment



bottom-up approach where climate risks do not form a new risk category but rather an amplifying factor of existing financial risk categories.

The BCL aims to integrate climate-change related risks of its NMPPs across the entire risk management cycle, ensuring a prudent, backward-looking, forward-looking and data-driven risk measurement. In order to develop a thorough understanding of the potential impact of climate change on its NMPPs, the exposure to climate risk is monitored using specific metrics such as emissions data.

5. Metrics and Targets

The BCL advocates monitoring and disclosing in line with the best available information and in a transparent way as to spur developments in the field. For that purpose the Eurosystem has jointly identified common data sources.⁵ The approaches and methodologies described in this report are based on the current best practices for greening central banks' NMPPs, the data available at the moment of the report, along with the relevant framework.⁶ They are therefore subject to further analysis and scrutiny and may evolve in the future in line with any new developments in the field of climate risk and sustainability. The BCL expects data availability and quality to improve over time, while metrics could also be subject to methodological changes in accordance with the common Eurosystem stance.

5.1 Metrics


In 2020, the BCL started monitoring the induced greenhouse gas (GHG) emissions of its own investments. The emissions data consider the total amount of GHG emissions released into the atmosphere as a result of the activities of a particular organisation, community or individual and are measured in carbon dioxide equivalents (CO₂e).⁷ In the context of the common stance for climate change-related sustainable investments in NMPPs, three metrics are considered.⁸

⁵ Institutional Shareholder Services (ISS), Carbon4 Finance (C4F), Worldbank

⁶ For the category "Metrics and targets", the Eurosystem developed a common disclosure framework that defines minimum standards for each member. In developing this framework, the Eurosystem considered recommendations of the Task Force on Climate-related Financial Disclosure (TCFD), the Partnership for Carbon Accounting Financials (PCAF) and the central banks and supervisors' Network for Greening the Financial System (NGFS).

⁷ Carbon dioxide equivalent (or CO₂ equivalent) 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.

⁸ The formulas for the three metrics are available in the appendix.

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- i. The *Weighted Average Carbon Intensity (WACI)* measures a portfolio's exposure to issuers' carbon intensity and weighs the carbon intensity⁹ of each issuer by their respective share of holdings in the investment portfolio. The TCFD endorsed this metric in its final recommendations report. Since issuers with higher carbon intensity are likely to be more exposed to carbon related market and regulatory risks, this metric delivers an “outside-in-perspective” (i.e. financial materiality) serving as proxy for a portfolio's exposure to climate transition risk. Data normalization allows for broad comparability relative to other portfolios and benchmarks.
 - ii. The *Total Carbon Emissions (TCE)* measures the absolute emissions associated with a portfolio, expressed in tons of CO₂e. Issuer emissions are allocated to investors based on an ownership approach weighting the investor's contribution to the issuer's total capital structure (e.g. equity, debt etc.). This metric delivers an “inside-out-perspective” (i.e. environmental materiality) and serves as proxy for a portfolio's environmental impact. The metric is widely applied across the financial industry. On the downside, the metrics' cross-portfolio and cross-time comparability is limited due to the absence of normalization regarding portfolio size.
 - iii. The *Carbon Footprint (CF)* measures the total emissions, as described above, normalized by the portfolio value. Comparability is ensured by dividing by the portfolio's size and expressing the carbon footprint in tons of CO₂e per EUR million invested.

The table below presents the WACI, the TCE and the CF of the BCL's euro denominated NMPPs, including the assets related to BCL's legal pension liabilities (1st pillar of the Luxembourgish pension system), as of 31 December 2022, comprising a mix of sovereign, supranational, agency and corporate bonds, as well as some equity holdings. Historical figures are also available for 2021 and 2020.

The various asset classes require different treatment in terms of emissions attribution and normalization. Sovereign issuers' emissions are attributed to the government bonds using Purchasing Power Parity (PPP) adjusted Gross Domestic Product (GDP) to evaluate the TCE and the CF. To compute the WACI, production¹⁰, consumption¹¹ and government emissions¹² are normalized by PPP

⁹ The emissions are normalized on issuer level by weighting with a measure of economic activity.

¹⁰ 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.

¹¹ 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.

¹² Direct emissions (e.g. from buildings, vehicles) and indirect emissions (e.g. emissions related to energy consumption, but also expenditures, subsidies, and investments) of the central government.

adjusted GDP, population and government expenditure respectively. The emissions of corporates, supranational and agencies are attributed to the securities based on the issuers' enterprise value including cash (EVIC) for the TCE and CF, while they are normalized by revenue for the WACI calculation. Metrics take into account Scope 1 and Scope 2 emissions¹³ as defined by the Green House Gas (GHG) Protocol.

Table 1: Climate-related TCFD metrics of the BCL's own euro denominated investments for year-end 2022¹⁴

Euro-denominated NMPPs	Sovereign			Non-sovereign			
	Sovereign and sub-sovereign bonds			Total	Supranational & agency bonds	Corporate bonds	Equities
	Production	Consumption	Government				
Portfolio size (€ mn)	142			1 236	1 030	122	84
Weighted average carbon intensity (tCO ₂ e / € mn revenue, GDP, consumption exp., or per capita)	208 (95%)	12 (95%)	67 (95%)	28 (76%)	4 (71%)	132 (100%)	96 (100%)
Total carbon emissions (tCO ₂ e)	28 704 (95%)	36 192 (95%)	2 074 (95%)	10 753 (75%)	61 (70%)	8 692 (100%)	2 000 (100%)
Carbon footprint (tCO ₂ e / € mn invested)	208 (95%)	262 (95%)	15 (95%)	11 (75%)	<1 (70%)	68 (100%)	24 (100%)

Sources: Institutional Shareholder Services, Carbon4 Finance, Bloomberg, World Bank, BCL calculations

Note: The percentages in the brackets below the metrics represent data availability, calculated as the percentage of investments for which all required data (i.e. emissions data and financial data) is available. The Portfolio size evaluates the investments in line with the accounting rules used in the official annual accounts, whereas the calculations of WACI, TCE and CF are based on the nominal value for bonds and on market value for equities.

Table 2: Climate-related TCFD metrics of the BCL's own euro denominated investments for year-end 2021

Euro-denominated NMPPs	Sovereign			Non-sovereign			
	Sovereign and sub-sovereign bonds			Total	Supranational & agency bonds	Corporate bonds	Equities
	Production	Consumption	Government				
Portfolio size (€ mn)	228			441	154	164	123
Weighted average carbon intensity (tCO ₂ e / € mn revenue, GDP, consumption exp., or per capita)	208 (100%)	14 (100%)	78 (100%)	83 (85%)	2 (56%)	121 (100%)	89 (100%)
Total carbon emissions (tCO ₂ e)	45 956 (100%)	64 281 (100%)	3 734 (100%)	15 597 (82%)	4 (50%)	10 601 (100%)	4 993 (100%)
Carbon footprint (tCO ₂ e / € mn invested)	208 (100%)	292 (100%)	17 (100%)	43 (82%)	<1 (50%)	66 (100%)	41 (100%)

Sources: Institutional Shareholder Services, Carbon4 Finance, Bloomberg, World Bank, BCL calculations

Note: The percentages in the brackets below the metrics represent data availability, calculated as the percentage of investments for which all required data (i.e. emissions data and financial data) is available. The Portfolio size evaluates the investments in line with the accounting rules used in the official annual accounts, whereas the calculations of WACI, TCE and CF are based on the nominal value for bonds and on market value for equities.

¹³ Under the definitions of this protocol, Scope 1 emissions refer to an entity's direct emissions, while Scope 2 refers to their indirect carbon emissions associated with the purchase of electricity, steam, heat, or cooling. Scope 3 is defined in the GHG Protocol as all the indirect emissions of an entity and its products, excluding those falling into Scope 2, i.e. it includes emissions across the entire value chain.

¹⁴ The climate metrics are always calculated with emissions being matched with financial (e.g. revenues, EVIC) data as of the end of the same year. However, due to the unavailability of climate data for the more recent cut-off dates, there is a time lag between the portfolio holdings and the underlying data. For the sovereign bond holdings of 2021 and 2022, the metrics use GHG emissions from 2020, the most recent data available at the time of this report, matched with the economic data from the same year. For the 2022 non-sovereign bonds and equity investments, climate and financial data of 2021 are linked to the holdings of 31 December 2022. The respective climate metrics for 2021 and 2022 are hence expected to be restated in subsequent disclosure reports to make full use of the year's climate data.

Table 3: Climate-related TCFD metrics of the BCL's own euro denominated investments for year-end 2020

Euro-denominated NMPPs	Sovereign			Non-sovereign			
	Sovereign and sub-sovereign bonds			Total	Supranational & agency bonds	Corporate bonds	Equities
	Production	Consumption	Government				
Portfolio size (€ mn)	238			555	268	198	89
Weighted average carbon intensity (tCO ₂ e / € mn revenue, GDP, consumption exp., or per capita)	220 (100%)	14 (100%)	81 (100%)	87 (75%)	<1 (48%)	120 (100%)	139 (100%)
Total carbon emissions (tCO ₂ e)	49 342 (100%)	68 969 (100%)	4 017 (100%)	14 693 (74%)	3 (48%)	9 891 (97%)	4 799 (100%)
Carbon footprint (tCO ₂ e / € mn invested)	220 (100%)	308 (100%)	18 (100%)	37 (74%)	<1 (48%)	52 (97%)	54 (100%)

Sources: Institutional Shareholder Services, Carbon4 Finance, Bloomberg, World Bank, BCL calculations

Note: The percentages in the brackets below the metrics represent data availability, calculated as the percentage of investments for which all required data (i.e. emissions data and financial data) is available. The Portfolio size evaluates the investments in line with the accounting rules used in the official annual accounts, whereas the calculations of WACI, TCE and CF are based on the nominal value for bonds and on market value for equities.

Sovereign bond holdings in NMPPs have declined since 2020, resulting in lower total carbon emissions for this issuer type. Relative measures improved somewhat with the WACI being 5% lower in 2022 compared to 2020 using production emissions. The results based on consumption and government emissions show a reduction of the WACI of 14% and 21% respectively over the same time period. The CF figures followed a similar trend.

The WACI and CF of the non-sovereign investments, grouping together private sector bonds and equities as well as supranational and government-related agency bonds, have gradually decreased since 2020. These two metrics were reduced by more than 60% at year-end 2022 compared to 2020, reflecting the increased investments in Supranational & agency bonds and the positive trend of the equity holdings, when considering Scope 1 and Scope 2 emissions.

The "Supranational & agency bond" holdings show comparably low WACI, TCE and CF levels. According to the data from specialised providers, many supranational entities, agencies and development banks have very limited own operations with a low level of emissions. Investments into this issuer type have increased substantially during 2022.

The BCL's equity investments' GHG metrics have been improved significantly by replacing its traditional equity ETFs¹⁵ by low carbon specific products. The CF was 56% lower in 2022 compared to 2020, while the WACI dropped 31%.

Private sector bond exposures were declining with most maturing positions not being reinvested. Relative emissions measures, such as the WACI and the CF, increased slightly between 2020 and 2022 as several issuers with low emissions matured while most of the main contributors still remained in the portfolios.

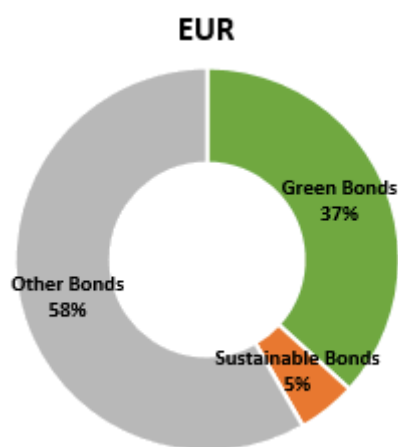
Within the limits of its mandate, and beyond the common Eurosystem minimum disclosure requirements, the BCL supports initiatives to mitigate climate change. In this context, the BCL has

¹⁵ Exchange Traded Funds

increasingly invested in so-called green bonds or other sustainable and socially responsible debt instruments following the labelling of an external provider¹⁶.

The assets related to BCL's legal pension liabilities (1st pillar) of BCL staff members have been shifted towards sustainable assets since 2019. The green/sustainable bond investments represented ca. 42% of all bond holdings at the end of 2022, a share that has been steadily increasing. The equity allocation is now fully invested in stock market indices that follow predefined SRI/ESG principles, such as progressive decarbonisation, maximising ESG ratings, excluding exposures to thermal coal, controversial weapons, tobacco, and other norm-based exclusions¹⁷.

Chart 3: Green, Sustainable & Social Bond Holdings in the Assets related to BCL legal pension liabilities in 2022



Source: Bloomberg's *Green, Social and Sustainability* bond indicators

The BCL's foreign reserves are also almost entirely invested in green bonds or other sustainable and socially responsible debt instruments. For operational reasons, the remaining part of these reserves are invested in cash and US Federal government debt securities (Treasury bonds).

¹⁶ The eligible instruments are identified using Bloomberg L.P. (Bloomberg)'s *Green, Social and Sustainability* bond indicators. Bloomberg's definitions of what constitutes a *green, social or sustainability* bond are based on the 2021 Green Bond Principles, the 2021 Social Bond Principles, and the 2021 Sustainability Bond Guidelines published by the International Capital Market Association. This assessment is done at issue level, based on the use of proceeds, and does not provide an appreciation of the sustainability of the issuer. *Sustainability* bonds have a combination of green and social activities as eligible projects.

¹⁷ Exchange Traded Funds, based on MSCI Inc. (MSCI) assessment.

Chart 4: Green, Sustainable & Social Bond Holdings in Foreign Reserves Portfolios in 2022



Source: Bloomberg's *Green, Social and Sustainability* bond indicators

It is important to note that the holding of bonds, labelled green or sustainable, does not have a direct impact on a portfolio's carbon footprint. GHG emissions are collected at issuer level and do not consider any specific characteristics of a bond's use of proceeds.

GHG metrics as well as the proportion of green, sustainable and social bonds are reported regularly to the Bank's investment committees.

5.2 Targets

The 2016 Paris Agreement committed to keep the rise in mean temperatures well below 2°C and aiming for 1,5°C above pre-industrial levels.¹⁸ In accordance with the assessment provided by the Intergovernmental Panel on Climate Change (IPCC), GHG emissions need to be at 'net zero' by 2050 to keep global warming at 1,5°C or by 2070 for 2°C.¹⁹ Net zero refers to achieving an overall balance between GHG emissions produced and those taken out of the atmosphere. Targets ensure forward-looking integration into the BCL climate risk management for NMPPs and reflect the BCL's commitment to reduce its investments' exposure to climate risks and improve its environmental footprint. In this context, the BCL aims to gradually decarbonise its own fund investments and targets an alignment with the objectives of the Paris Agreement to the extent possible. The BCL target, including possibly intermediate targets, will be refined over time, from a qualitative and quantitative perspective, along with the growing experience, better data availability and methodological improvements.

¹⁸ <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

¹⁹ <https://www.ipcc.ch/sr15/chapter/spm/>

6. Appendix - Formulas for GHG metrics

Weighted Average Carbon Intensity (in tCO₂e / €M revenue, PPP adj. GDP, population or total consumption expenditure)

$$WACI = \sum_i^n \left(\frac{\text{current value of investment}_i}{\text{current portfolio value}} \right) \times \left(\frac{\text{issuer's GHG emissions}_i}{\text{issuer's €M revenue or PPP adj. GDP, population, total consumption expenditure}_i} \right)$$

Total Carbon Emissions (tCO₂e)

$$TCE = \sum_i^n \left(\frac{\text{current value of investment}_i}{\text{EVIC or PPP adj. GDP}_i} \times \text{issuer's GHG emissions}_i \right)$$

Carbon Footprint (tCO₂e per €M invested)

$$CF = \frac{\sum_i^n \left(\frac{\text{current value of investment}_i}{\text{EVIC or PPP adj. GDP}_i} \right) \times \text{issuer's GHG emissions}_i}{\text{current portfolio value (€M)}}$$