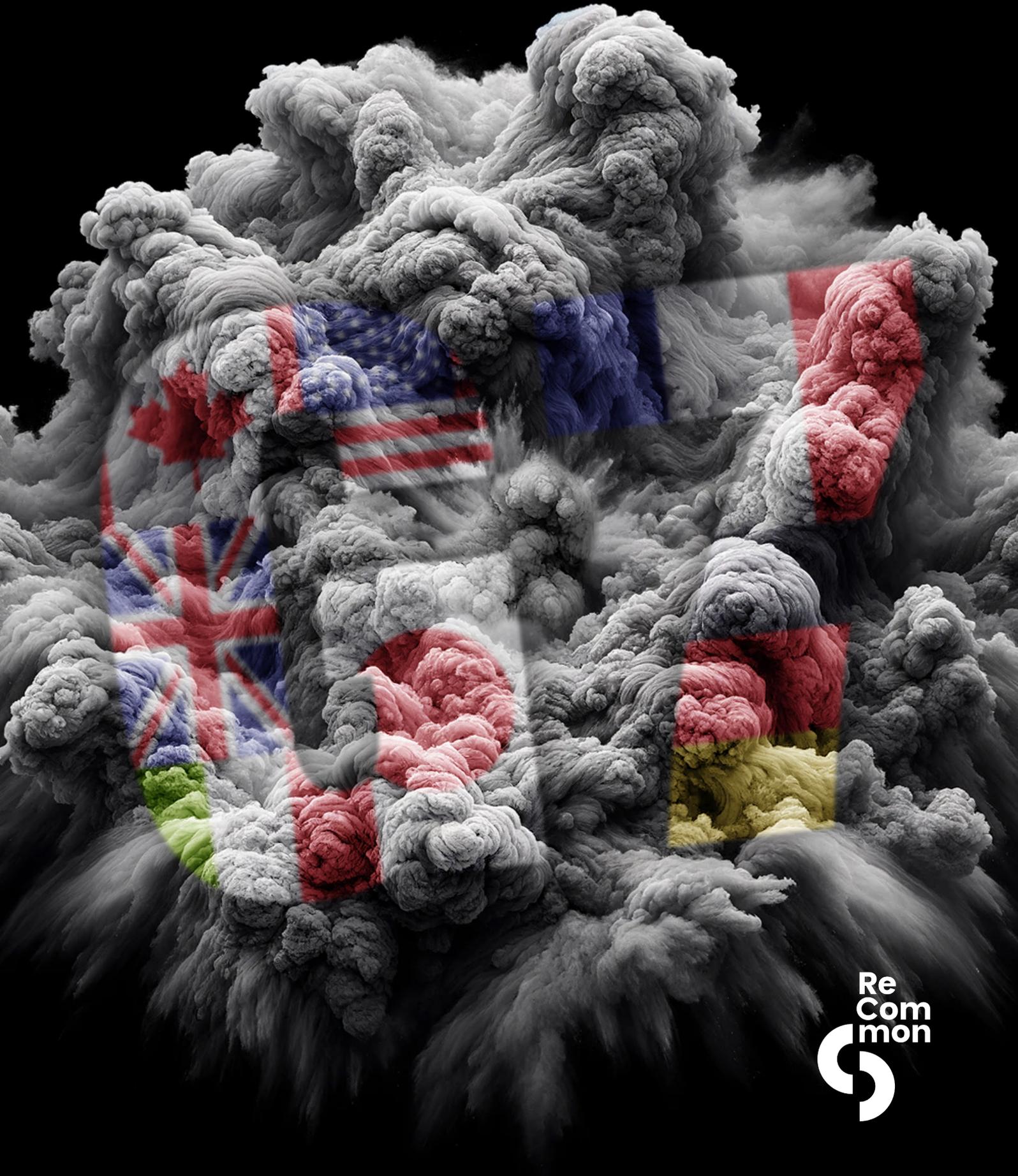


# UNSUPERVISED

MAY 2024

## THE CARBON POLLUTION OF THE WORLD'S LARGEST BANKS



# TABLE OF CONTENTS

<b>1. EXECUTIVE SUMMARY</b>	<b>4</b>
KEY FINDINGS	5
RECOMMENDATIONS FOR 2024	7
RECOMMENDATIONS FOR 2025-2026	8
<b>2. INTRODUCTION</b>	<b>9</b>
<b>3. APPROACH AND SCOPE</b>	<b>10</b>
3.1 APPROACH	10
3.2 SCOPE	10
<b>4. KEY FINDINGS</b>	<b>12</b>
4.1 THE G7 BANKING SECTOR – A HIGH-CARBON SECTOR	12
4.2 CARBON-INTENSIVE INDUSTRIES’ IMPACT ON FINANCED EMISSIONS	12
4.3 ABSOLUTE V INTENSITY EMISSIONS	13
4.4 LACK OF TRANSPARENCY AND COMPARABLE DATA	15
<b>5. THE CASE FOR INTERNATIONAL PRUDENTIAL REFORM FOR CLIMATE SAFETY AS A PREREQUISITE FOR FINANCIAL STABILITY</b>	<b>16</b>
5.1. THE GLOBAL PRUDENTIAL FRAMEWORK	16
5.2 THE CURRENT PRUDENTIAL FRAMEWORK DOES NOT ADDRESS THE CLIMATE CHALLENGE TO FINANCIAL STABILITY	16
5.3. POLICYMAKERS HAVE A RESPONSIBILITY TO DESIGN A MANDATORY PRECAUTIONARY REGULATORY RESPONSE TO CLIMATE CHANGE	17
5.4 THE SCALE AND URGENCY OF THE CLIMATE CHALLENGE REQUIRES AN ACCELERATED RESPONSE FROM THE GLOBAL STANDARD SETTERS	18
5.5 THE VIEW THAT FINANCIAL REGULATORS NEED CLARITY ON POLICY BEFORE ACTING IS MISTAKEN	18
<b>6. RECOMMENDATIONS FOR INTERNATIONAL PRUDENTIAL REFORM: POLICY PRIORITIES</b>	<b>19</b>
6.1 RECOMMENDATIONS FOR 2024	19
6.2 RECOMMENDATIONS FOR 2025-2026	20
<b>7. METHODOLOGY</b>	<b>21</b>
7.1 FINANCED AND FACILITATED EMISSIONS	21
7.2 BUSINESS LOANS	21
7.3 MORTGAGES	23
7.4 DATA COLLECTION	24
<b>8. LIMITATIONS AND BARRIERS</b>	<b>26</b>
<b>APPENDIX</b>	<b>27</b>
ASSESSED BANKS	27

# ABBREVIATIONS

BCBS	Basel Committee on Banking Supervision
ECB	European Central Bank
EEIO	Environmentally Extended Input-Output
FSB	Financial Stability Board
G7	Group of 7
G20	Group of 20
GHG	greenhouse gas
G-SIBs	Global Systemically Important Banks
NACE	Nomenclature of Economic Activities
NGFS	Network for Greening the Financial System
NZBA	Net Zero Banking Alliance
PCAF	Partnership for Carbon Accounting Financials
RWA	Risk-weighted assets
tCO <sub>2</sub> e	tonnes of CO <sub>2</sub> equivalent

# ACKNOWLEDGEMENTS AND CREDITS

This report is being published by ReCommon. They commissioned an independent research team to design and conduct the indicative quantitative analysis in this report. ReCommon wishes to acknowledge the support of The Sunrise Project and contributions from E3G, WWF, Finance Watch, Public Citizen and the New Economics Foundation.

ReCommon is an Italian based organisation that carries out investigations and campaigns against corruption and the destruction of territories in Italy, Europe and the world. ReCommon challenges corporate and state power responsible for the plunder of territories, and works to create spaces for change in society. We believe that people come before profit, but we are witnesses of social devastation, continuous violations of human rights and environmental disasters that are the result of a political and economic logic that is driving society in the opposite direction.

Design: Paul Wright.

## Disclaimer

The estimates of financed emissions in this analysis using publicly available information should not be seen as conclusive or final, nor do they cover the full range of activities by the selected institutions. The figures presented in this report should be seen as indicative estimates only.

The opinions expressed in this report are based on the documents referenced in the endnotes. We encourage readers to read those documents. The information in this report, or on which this report is based, has been obtained from sources that the authors believe to be reliable and accurate. However, no representation or warranty, express or implied, is made as to the accuracy or completeness of any information obtained from third parties.

# 1. EXECUTIVE SUMMARY

The Sixth Assessment Report from the Intergovernmental Panel on Climate Change (IPCC)<sup>1</sup> notes that climate-related risks are higher than previously assessed and calls for “rapid and far-reaching transitions across all sectors and systems” to secure a sustainable future for all. Addressing the environmental crisis with a progressive and effective transition to carbon neutrality and a nature-positive economy is a pre-condition for the resilience of economic and social systems, and the stability of the financial system itself. Financial stability is also an “important prerequisite for orderly transition”, as noted in 2023 by Group of 7 (G7) finance ministers<sup>2</sup> although financial stability alone is insufficient to achieve an orderly transition (transition-aligned allocation and treatment of financial stock and flow is also required).

To date, neither governments nor relevant supervisors and regulators have taken enough action to limit the financing of the fossil fuel industry and the financed emissions of the world’s largest banks. Banks have continued to provide vast amounts of finance to the fossil fuel industry since the signing of the Paris Agreement on climate change<sup>3</sup> and a recent study examining the impact of voluntary climate commitments by banks on their lending activity “cast[s] doubt on the efficacy of voluntary climate commitments for reducing financed emissions”.<sup>4</sup>

This report provides an indicative assessment of the size of the global carbon footprint that is financed by the most systemically important banks in the G7<sup>a</sup> – in other words, the G7



banking sector’s “financed emissions”.<sup>b</sup> The analysis was undertaken using the market-leading carbon accounting methodology from the Partnership for Carbon Accounting Financials (PCAF) which is underpinned by the greenhouse gas (GHG) protocol. This approach calculates the indirect (Scope 3, Cat 15) emissions of the reporting bank, across a range of economic sectors.

This study is an assessment of the financed emissions stemming from commercial credit<sup>c</sup> exposure and from residential mortgages in 2022 for those banks within the G7 countries<sup>d</sup> identified by the Financial Stability Board (FSB) as

globally systemically important banks (G-SIBs). It also assesses such financed emissions for those other banks that are required to disclose the main indicators outlined by the BCBS methodology on a consolidated basis. In all, the report covers a total of 29 banks. The full list of banks is provided in the appendix.

Mortgages have been included as part of the assessment due to the fundamental role that they play within overall credit exposure of banks and national economies, but also the material GHG emissions impact that residential real estate can have in the decarbonisation of banks.

a Including systemically important banks from other countries in the EU and the EU single market as the EU is a non-enumerate member of the G7.

b Financed emissions are the greenhouse gas emissions associated with a financial institutions’ loans and investments in a reporting year.

c Commercial credit is used throughout this document to refer to credit exposure to companies. Banks can refer to this in different language including corporate lending, wholesale credit exposure, commercial credit exposure and more.

d Including the EU and EU single market

## KEY FINDINGS

The results demonstrate that the financed emissions of the G7's systemically important banks are extensive, and that those banks are not disclosing enough data about their exposure to carbon-intensive industries or adequately mitigating climate-related risks.

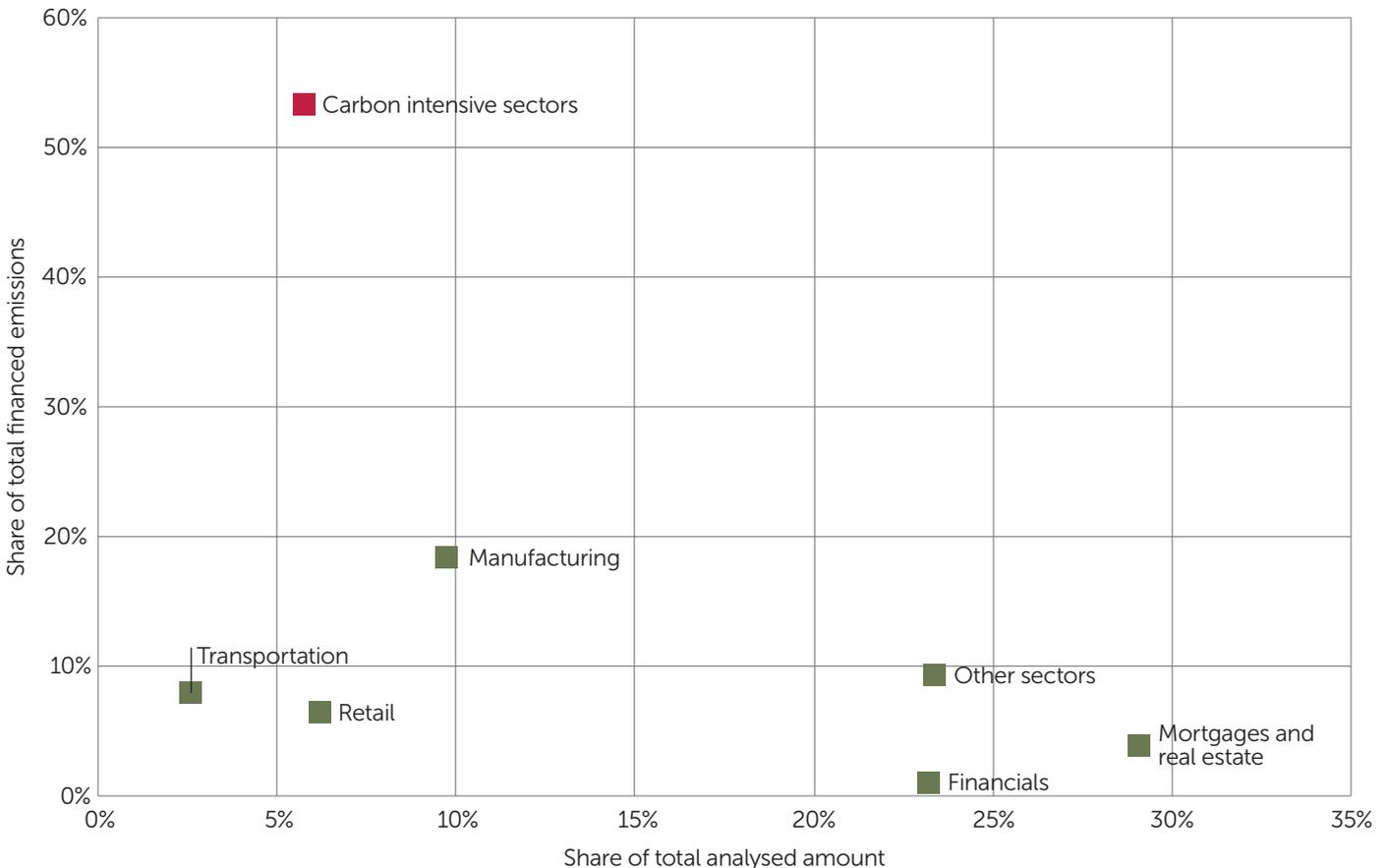
- The estimated absolute GHG emissions associated with the banks analysed amounted to 2.7 billion tonnes, based on year-end disclosures from 2022. Although not like-for-like, for a sense of scale it is worth noting that this is higher than the emissions of Germany, Italy, UK and France combined.<sup>5</sup>
- Despite comprising only 6% of the total lending exposure analysed, carbon-intensive sectors such as agriculture, oil and gas, mining and utilities (grouped in figure 1 as carbon-intensive sectors) account for over 50% of the estimated financed emissions.



The estimated absolute GHG emissions associated with the banks analysed amounted to 2.7 billion tonnes, this is higher than the emissions of Germany, Italy, UK and France combined.

- Although a growing number of the banks disclose climate data, the majority disclose only intensity metrics and do not disclose absolute emissions. Only 12 of the assessed banks disclosed absolute emissions data for more than one sector. Banks should set and disclose absolute and intensity emissions targets. Indeed, a reduction in carbon intensity due to increased financing for non-fossil activities does not necessarily imply a reduction of absolute GHG emissions which instead requires a timely phase out of financial support for fossil fuels.
- Poor disclosure practices remain a strong barrier to transparency. Whether by choice or inability to access data, the lack of a consistent climate and financial performance disclosure frameworks creates one of the greatest barriers to researchers in understanding the exposure of banks to carbon-intensive industries.

**Figure 1: Share of portfolio by sector and their contribution to total financed emissions, illustrating the impact of carbon-intensive industries on financed emissions**



The indicative figures generated by this analysis should not be seen as conclusive or final and are likely a significant underestimate of the total G7 banking sector's financed emissions. The assessment does not include the emissions associated with the securities underwriting and advisory services, asset management or other investment activities of any of the banks. Furthermore, commercial credit exposure – meaning the exposure of banks to corporates, companies and industrial activity as a result of such loans – is only a portion of the overall credit exposure and assets of a bank.

In addition, the Scope 3 emissions of borrowers is not included in the accounting for most sectors. It is only included in the results for a handful of banks that disclosed Scope 3 emissions for oil and gas or other carbon-intensive sectors.

This report makes the case for global prudential regulatory reform, examining the existing design of the global prudential framework for banks and highlights the shortcomings of the existing rulebooks and underlying assumptions when it comes to climate change and corresponding transition

challenges. Far from incentivising an early and orderly transition conducive to maximising financial system resilience, the current rules perpetuate short-term behaviours and incentives, supporting the economic system's carbon lock-in and thus putting financial stability at risk. We propose a course of action for the G7, the G20, the Financial Stability Board (FSB) and the Basel Committee on Banking Supervision (BCBS) to correct this as soon as possible. While this report has a focus on climate-related financial risks as it relates to banking, addressing the risk across the entire financial system is equally critical in

**Figure 2: Overview of the scope and coverage of climate disclosures by bank in 2022**

Bank	Share of portfolio analysed with reported financed emissions data (2022)	Reports absolute emissions for more than one sector	Reports absolute emissions for ONLY ONE sector (E.g. O&G)	Reports physical intensity targets for other sectors
Bank of America	3%	Yes	No	Yes
Bank of Montreal	16%	Yes	No	Yes
Barclays	0%	No	Yes	Yes
BNP Paribas	0%	No	No	Yes
BNY Mellon	0%	No	No	No
BPCE	1%	No	Yes	Yes
Citigroup	28%	Yes	No	Yes
Credit Agricole	1%	No	Yes	Yes
Deutsche Bank	13%	Yes	No	Yes
DZ Bank	0%	No	No	Yes
Goldman Sachs	0%	No	No	No
HSBC	1%	No	No	Yes
ING	0%	No	No	Yes
Intesa Sanpaolo	5%	Yes	No	Yes
JP Morgan	0%	No	No	Yes
Mizuho	59%	Yes	No	Yes
Morgan Stanley	0%	No	No	No
MUFG Mitsubishi UFJ	2%	No	Yes	No
Nordea	0%	Yes	No	Yes
RBC Royal Bank	25%	Yes	No	Yes
Scotiabank	38%	Yes	No	Yes
SMFG Sumitomo Mitsui	0%	No	No	No
Societe Generale	0%	No	No	Yes
Standard Chartered	35%	Yes	No	Yes
State Street	0%	No	No	No
Toronto Dominion	69%	Yes	No	Yes
UBS	33%	Yes	No	Yes
Unicredit	1%	No	Yes	Yes
Wells Fargo	3%	No	Yes	Yes

order to avoid regulatory arbitrage and risk exposure leakage to less regulated sectors (e.g. non-bank financial intermediaries).

The significance of climate risks has spurred the FSB and the G20 to assess existing gaps and improvements needed across the traditional pillars of regulation, supervision and disclosure. While this work is underway, decisive action is needed now to ensure we have a chance at transitioning towards the global climate objectives and preventing irreversible devastating climate disruptions.

## RECOMMENDATIONS FOR 2024

We have set out below recommendations for international prudential regulatory reform. The recommendations build on the appetite signalled by the current Brazilian G20 presidency to consider financial regulatory reform to mitigate climate and environmental risk, including global prudential reform. Support on this issue from the G7 would be very helpful.<sup>e</sup>

- **G7 finance ministers should support prudential regulatory reform in key multilateral economic and financial fora** such as the G20 Finance and Sherpa Tracks and the newly created coordination Task Force for the Global Mobilisation against Climate Change (TF CLIMA), the FSB, the IMF, the World Bank and the Coalition of Finance Ministers for Climate Action.
- **G20 finance ministers, or Finance/ Sherpa Tracks coordinated within TF CLIMA, should:**
  - **reach consensus** that timely international prudential reform is a critical component of the systemic finance reform agenda for climate safety;

- **highlight** that an orderly transition best contributes to financial stability and that prudential frameworks should support such a transition;

- **agree that prudential reform in the banking sector should be completed without further delays** based on the existing Basel III framework and its three pillars, including macroprudential measures;

- **agree on key principles to drive** such prudential reform:

- **A precautionary approach**, recognising the limits of modelling and data when it comes to prudential regulation for climate change, and the need to reflect climate and environmental risks in the global prudential framework.

This can be achieved by establishing a strong micro and macroprudential supervision through: (a) integrating this precautionary approach into Pillar 1 on minimum capital requirements as well as macroprudential instruments by requiring more capital for environmentally harmful activities;<sup>6</sup> (b) managing concentration risk at micro and macro level; (c) using all regulatory tools to mitigate credit, market and operation risks stemming from climate and nature risks; (d) reviewing the implementation of these supervisory requirements with corrective actions taken in cases of non-compliance.

- **Forward-looking tools** that work over short, medium and long-term horizons such as transition planning informing internal governance, risk management and supervisory review, and transition plan disclosures. It is particularly important for G7 and G20 finance ministers to acknowledge the critical link between an improved common understanding of the design of transition plans, their uptake across real economy and financial sector firms, and the enhanced effectiveness of the prudential framework that would result from this.

Governments, financial regulators and supervisors should: (a) require financial institutions to develop and disclose science-based targets and credible climate and nature transition plans on a mandatory basis; (b) require financial institutions to engage clients and portfolio companies to set clear expectations to disclose credible transition plans and act on escalation processes in the event of no or insufficient action.

- **Inclusivity**, acknowledging that differences in countries' emission reduction targets, so-called nationally determined contributions (NDCs), and transition pathways between developed and developing economies call for a balance to be found between fairness in reform implementation and the need to secure harmonisation and prevent arbitrage.

---

<sup>e</sup> Likewise, the IMF should acknowledge and support such reforms in line with the positions expressed by the IMF managing director or in key publications such as the IMF's Global Financial Stability Report.

➤ **The BCBS should focus on the following policy priorities:**

- undertake wide-ranging stakeholder engagement in connection with its forthcoming publication of a paper<sup>7</sup> on the use of climate scenario analysis by banks and supervisors to help inform future work in this area, as well as with the Network for Greening the Financial System (NGFS);
- revise the systemic risk buffer to address the systemic dimension of climate change and prevent the build-up of systemic risks;<sup>8</sup>
- review the large exposures threshold, building on the thinking already done in this space by the European Central Bank (ECB);<sup>9</sup>
- revise the credit risk weights for a targeted set of exposures subject to high transition risk, including examining limitations and issues

in key Pillar 1 requirements posed by the reliance on corporate external credit ratings that do not adequately reflect climate and environmental risks;<sup>10</sup>

- review the requirements of Pillar 2 on the supervisory review process, including supervisory expectations and guidelines to incorporate transition planning practices;
  - finalise modifications currently being considered for Pillar 3 of the Basel framework on market discipline, including transition plan disclosure requirement.
- **The NGFS** should incorporate the insights of climate science into its climate change scenarios to make assessments of the economic consequences of climate change realistic, including accounting for its magnitude and irreversibility.
- **The FSB** should focus on the following policy priorities:

- consider climate and environmental-related risks from a broader financial stability perspective, i.e. beyond the banking and insurance sectors;
- accelerate its work on transition plans and transition planning from the prudential perspective.

## RECOMMENDATIONS FOR 2025-2026

- The G7 and G20 finance tracks should continue to provide political support for this work and potential ongoing efforts by the FSB and the BCBS.
- The BCBS should incorporate private sector-wide transition planning, climate and environmental risks and capital considerations into the Basel Framework across key standards (risk-based capital requirements/ risk-weighted asset calculation for credit risk, liquidity coverage ratio, the Core Principles for Effective Banking Supervision).



## 2. INTRODUCTION

The IPCC's Sixth Assessment Report<sup>11</sup> published in 2023 was very clear about the fact that the world is heading, at best, for a hothouse scenario: some climate policies are implemented in some jurisdictions, but global efforts are insufficient to halt significant global warming. In its last report, the Stockholm Resilience Centre has depicted a picture of the polycrisis our economies and societies are facing, and it must be urgently addressed.<sup>12</sup> Six out of the nine planetary boundaries have been crossed, increasing the risk of generating large-scale abrupt or irreversible environmental changes that will affect our living conditions and bring major disruptions to our economies and financial systems.

According to Pablo Hernandez de Cos, the chair of the Basel Committee on Banking Supervision (BCSB), "climate-related financial risks... are perhaps the most existential medium-term threat to the global banking system".<sup>13</sup> The IMF noted in December 2023 that making

### CLIMATE-RELATED FINANCIAL RISKS... ARE PERHAPS THE MOST EXISTENTIAL MEDIUM-TERM THREAT TO THE GLOBAL BANKING SYSTEM

*Pablo Hernandez de Cos, the chair of the Basel Committee on Banking Supervision*

an orderly transition to net zero by 2050 could result in global gross domestic product being 7% higher than current policies. There are important benefits to acting early, as the cost of unmitigated climate change will by far outweigh the cost of timely regulatory action.<sup>14</sup>

The main aim of this research project is to provide an indicative and up-to-date assessment of the size of the global carbon footprint financed through the G7's banking sector, based solely on publicly available data. Although evaluated on an indicative basis, this analysis aims to provide a better understanding of the GHG

emissions financed by the G7 banking sector, via an analysis of large and systemically important institutions. We aim to highlight the exposure of the G7 banking sector, based on the data key actors have made publicly available, to promote action on climate by the G7 and the G20 at key meetings this year.

While work is underway, further decisive action – rather than a reliance on ineffective voluntary commitments<sup>15</sup> – is needed from governments, and from relevant regulators and supervisors to ensure the financial sector is aligned with the goals of the Paris Agreement on climate change.



# 3. APPROACH AND SCOPE

## 3.1 APPROACH

Carbon accounting is the process of consistently measuring, tracking and reporting GHGs generated, avoided or removed by an entity over time. This analysis has been conducted in line with the Global GHG Accounting and Reporting Standard for the Financial Industry (the Global Standard) parts A (financed emissions) and B (facilitated emissions), developed by the Partnership for Carbon Accounting Financials (PCAF).<sup>16</sup> The guidance on both financed as well as facilitated emissions has been used as part of this assessment based on data availability.

The analysis was completed using the year-end disclosures from 2022. All data used as part of this assessment is based entirely on publicly available information. This includes information on financial disclosures, which was acquired through sources including but not limited to annual reports, Basel III (Pillar 3) disclosures and Form 10-K reports filed at the US Security and Exchange Commission. Emission factors and macroeconomic data were similarly acquired through publicly available datasets, such as Eurostat. Statistical information used in GHG emissions calculations were likewise sourced from national statistics on housing, energy consumption and more. Please refer to section 7 for more details.

## 3.2 SCOPE

### 3.2.1 Banks

The banks selected for the assessment are those 29 banks from G7 countries, and other EU and single market countries<sup>17,18</sup> that fell within the G-SIB Buckets 0-4 in 2022, under the indicator-based measurement approach for assessing the systemic importance of global systemically important banks issued by the BCBS. This list includes both banks identified as G-SIBs by the FSB as well as other banks that have



an overall exposure of significance which requires them to disclose the main indicators outlined by the BCBS methodology on a consolidated basis. This approach enables the inclusion of a broader set of banks within the G7, EU and the EU single market considered as being of global systemic importance in comparison to the annual selection provided the FSB.<sup>19</sup> The full list of banks is provided in the appendix.

### 3.2.2 Financial data analysis and emissions accounting

The PCAF Global Standard is built on the Greenhouse Gas Protocol and provides carbon accounting guidance for financial institutions to measure and report their financed emissions across a number of asset classes including listed and unlisted equity, corporate bonds, business loans, commercial real estate, project finance, mortgages, motor vehicle loans and sovereign debt.

Financed emissions can be defined as the GHG emissions resulting from the

activities carried out by companies to which a financial institution provides loans, investments or both. These company emissions are attributed to the financial institution based on its share of ownership through an attribution factor. Financed emissions therefore follow the following calculation rationale:

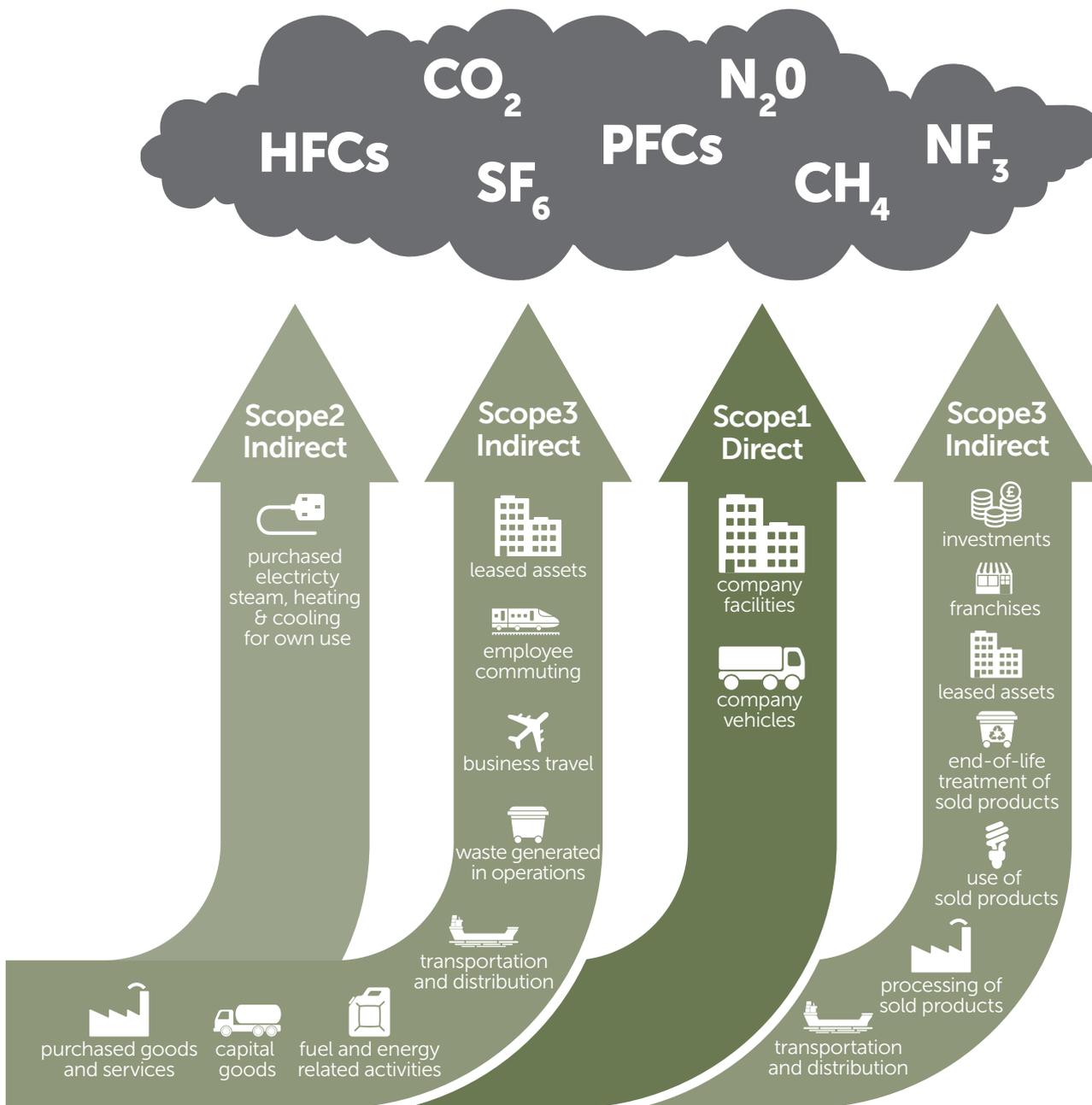
$$\text{Financed emissions} = \frac{\sum \text{Attribution factor} : \times \text{Company emissions}}{c}$$

(c = borrower or investee company)

The attribution factors for business loans and residential mortgages are set out in detail in section 7.

The GHG emissions of these activities are categorised into direct and indirect emissions, and further categorised by scopes into Scope 1 (direct), Scope 2 (indirect) and Scope 3 (other indirect). See figure 3 below.

Figure 3: Overview of Greenhouse Gas Protocol scopes and emissions across the value chain



The research team applied the guidance for business loans and unlisted equity from the Global Standard to estimate the emissions stemming from a bank's commercial credit exposure.<sup>f</sup> The guidance focuses on absolute Scope 1 and Scope 2 emissions of borrowers across all sectors. For sectors where Scope 3 emissions reporting is material, the guidance outlines that

financial institutions shall follow the EU Technical Expert Group's timeline for carbon-intensive sectors. This entails that institutions shall report Scope 3 emissions for oil and gas companies from 2021 onwards with additional sectors added from 2023.<sup>g</sup>

The research team applied the guidance for mortgages provided by the Global

Standard. As defined by the standard, this asset class includes on-balance sheet loans focused on "the purchase and refinance of residential property, including individual homes and multifamily housing".<sup>20</sup> The guidance focuses on the Scope 1 and 2 emissions of residential homes.

<sup>f</sup> Commercial credit is used throughout this document to refer to credit exposure to companies. Banks can refer to this in different language including corporate lending, wholesale credit exposure, commercial credit exposure and more.

<sup>g</sup> For 2022, most institutions should have some level of reporting or disclosure of their Scope 3 financed emissions for oil and gas.

# 4. KEY FINDINGS

## 4.1 THE G7 BANKING SECTOR – A HIGH-CARBON SECTOR

The 29 assessed banks financed an estimated 2.7 billion tCO<sub>2</sub>e absolute emissions in 2022. Although not like-for-like, for a sense of scale it is worth noting that this is higher than the emissions of Germany, Italy, UK and France combined.<sup>21</sup>

### 4.1.1 Likely An underestimate

The absolute emissions figure is an underestimation of the annual financed emissions for all banks. This is due to the following overarching reasons:

- Scope 3 emissions of the borrowers are not included in the accounting for most sectors. They are only included in the results for a handful

of banks that disclosed Scope 3 emissions for oil and gas or other carbon-intensive sectors.

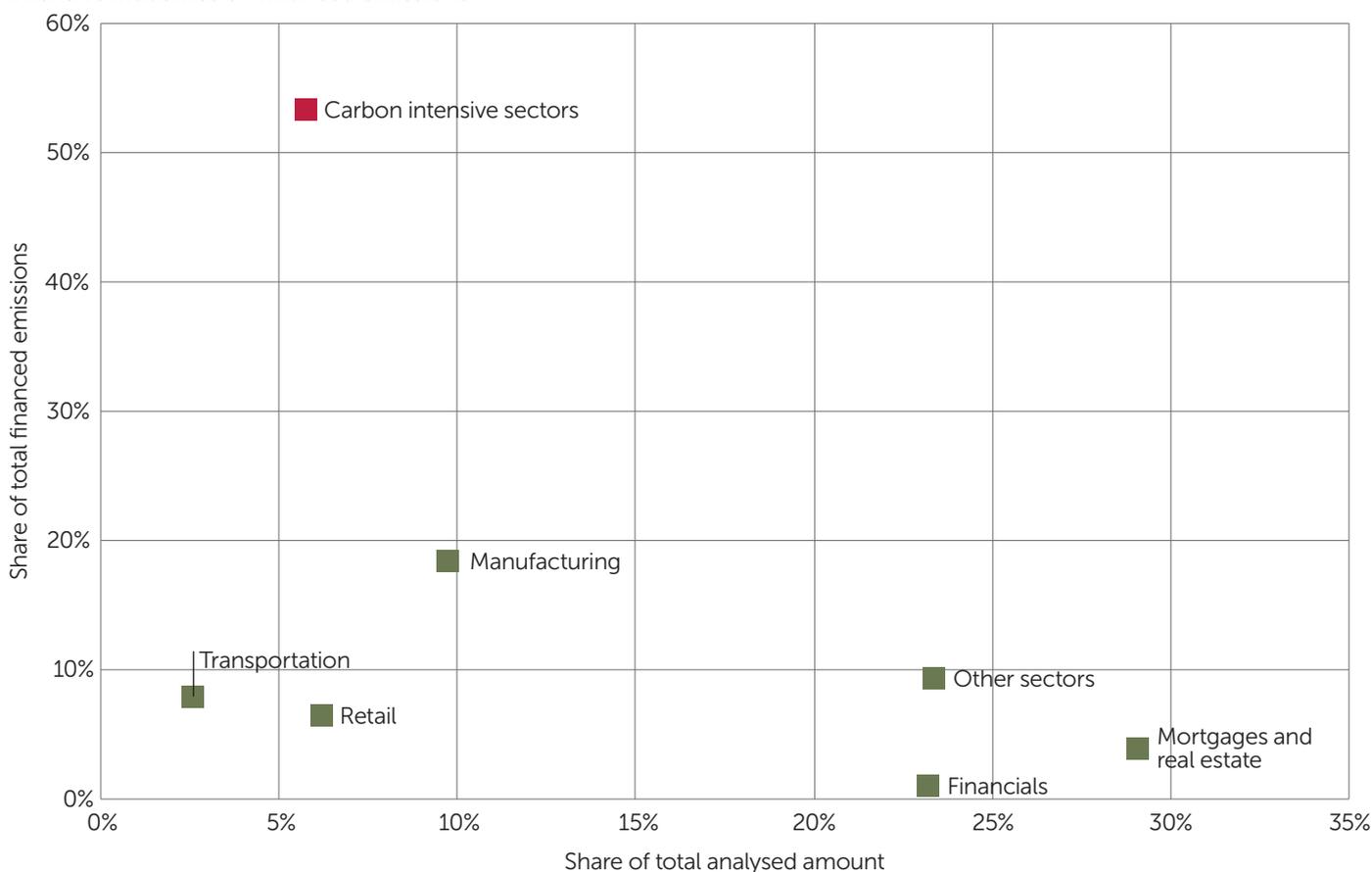
- The assessment does not include the emissions associated with financing, investment and advisory services other than lending. Furthermore, this analysis only covers commercial credit exposure and does not assess the emissions impact of asset classes or forms of credit exposure such as cash-held deposits and consumer credit exposure such as credit cards, personal loans, or other forms of structured deals such as loans for car leasing.
- For much of the lending to carbon-intensive industries, the researchers

had to use emission factors sourced from environmentally extended input–output data (EEIOs) because of a lack of adequate disclosure by banks. These sector-level emission factors are lower in granularity and emissions intensity than the emission factors that could be applied if banks had disclosed borrower-level exposure data or ideally borrower-level GHG emissions. Accordingly, it's likely that the actual level of emissions is several orders of magnitude higher.



The estimated absolute GHG emissions associated with the banks analysed amounted to 2.7 billion tonnes, this is higher than the emissions of Germany, Italy, UK and France combined.

**Figure 4: Share of portfolio by sector and their contribution to total financed emissions, illustrating the impact of carbon-intensive industries on financed emissions**



## 4.2 CARBON-INTENSIVE INDUSTRIES' IMPACT ON FINANCED EMISSIONS

Despite comprising only 6% of the total lending exposure analysed, carbon-intensive sectors such as agriculture, oil and gas, mining and utilities (grouped in figure 4 as carbon-intensive sectors) account for over 50% of the estimated financed emissions. On the other hand, financial services and property (mortgages and commercial real estate), which represent 25% and 30% of lending exposure respectively, account for less than 10% of total GHG emissions calculated.

## 4.3 ABSOLUTE V INTENSITY EMISSIONS

Over 75% of the assessed banks disclosed some form of metric or indicator on their climate action. Banks headquartered in Canada, Europe and the UK had the greatest share of targets and climate action disclosures, while Japan and the US have the greatest proportion of banks without. Most climate disclosures focus on carbon-intensive sectors, in particular oil and gas and power generation. The majority of

these disclosures focus on sector-based physical intensities, in alignment with sectoral pathways outlined by various scenarios and recommended by a number of target-setting initiatives.

However, only 20% of the assessed banks report both absolute and intensity emissions figures for more than five sectors despite recommendations from the Net Zero Banking Alliance (NZBA) in its latest update report.<sup>22</sup>

Relying solely on intensity targets can be detrimental to climate action as the reported intensity indicators of a bank can diminish while absolute emissions increase. Instead, targets should include both absolute and intensity targets.

Furthermore, reporting absolute emissions also enables better monitoring and verification of the validity of the decarbonisation progress. Without the underlying absolute emissions used to calculate intensity indicators, interested stakeholders are unable to understand the context for the reported intensities, having no understanding of the scope and

boundary definition of the underlying GHG accounting work carried out by banks. This is particularly important for industries such as power generation, transportation, cement, metals manufacturing and more.

In the context of this assessment, less than 50% of banks disclosed absolute emissions data for more than one sector. This limited reporting of absolute emissions affected the ability of the research team to make use of the vast majority of the reporting done by banks. In addition, many banks that did report absolute emissions did not disclose the associated credit exposure to the relevant industries (e.g. 10 million tonnes of carbon dioxide equivalent in 2022 resulting from US\$3 billion credit exposure to upstream oil and gas). In cases where those data gaps were present, estimates were made. This meant that only a limited amount of the GHG emissions figures and indicators reported by the banks could be used as "reported emissions" in alignment with PCAF data quality guidelines and instead estimates were carried out for the majority of the credit exposure.

Figure 5: Overview of the scope and coverage of climate disclosures by bank in 2022

Bank	Share of portfolio analysed with reported financed emissions data (2022)	Reports absolute emissions for more than one sector	Reports absolute emissions for ONLY ONE sector (E.g. O&G)	Reports physical intensity targets for other sectors
Bank of America	3%	Yes	No	Yes
Bank of Montreal	16%	Yes	No	Yes
Barclays	0%	No	Yes	Yes
BNP Paribas	0%	No	No	Yes
BNY Mellon	0%	No	No	No
BPCE	1%	No	Yes	Yes
Citigroup	28%	Yes	No	Yes
Credit Agricole	1%	No	Yes	Yes
Deutsche Bank	13%	Yes	No	Yes
DZ Bank	0%	No	No	Yes
Goldman Sachs	0%	No	No	No
HSBC	1%	No	No	Yes
ING	0%	No	No	Yes
Intesa Sanpaolo	5%	Yes	No	Yes
JP Morgan	0%	No	No	Yes
Mizuho	59%	Yes	No	Yes
Morgan Stanley	0%	No	No	No
MUFG Mitsubishi UFJ	2%	No	Yes	No
Nordea	0%	Yes	No	Yes
RBC Royal Bank	25%	Yes	No	Yes
Scotiabank	38%	Yes	No	Yes
SMFG Sumitomo Mitsui	0%	No	No	No
Societe Generale	0%	No	No	Yes
Standard Chartered	35%	Yes	No	Yes
State Street	0%	No	No	No
Toronto Dominion	69%	Yes	No	Yes
UBS	33%	Yes	No	Yes
Unicredit	1%	No	Yes	Yes
Wells Fargo	3%	No	Yes	Yes

## 4.4 LACK OF TRANSPARENCY AND COMPARABLE DATA

Across the 29 banks, the granularity and harmonisation of disclosures for commercial credit exposure to respective industries is of a low quality. Although banks headquartered in Europe have some level of harmonisation in their 2022 reporting, this covers only a small portion of their overall exposure and is disclosed at a sectoral rather than industry-level.

In their 2022 Pillar 3 disclosures, banks reported according to the Nomenclature of Economic Activities (NAE) classification standard for non-financial corporates at the least granular level. This hinders the ability to understand exposure to critical industries and sub-industries. For example, all banks report exposure to the NAE's sector "C-manufacturing". This sector encompasses industries and sub-industries with widely different emissions profiles, from dairy and food products to coke and refined petroleum products. This aggregated level of

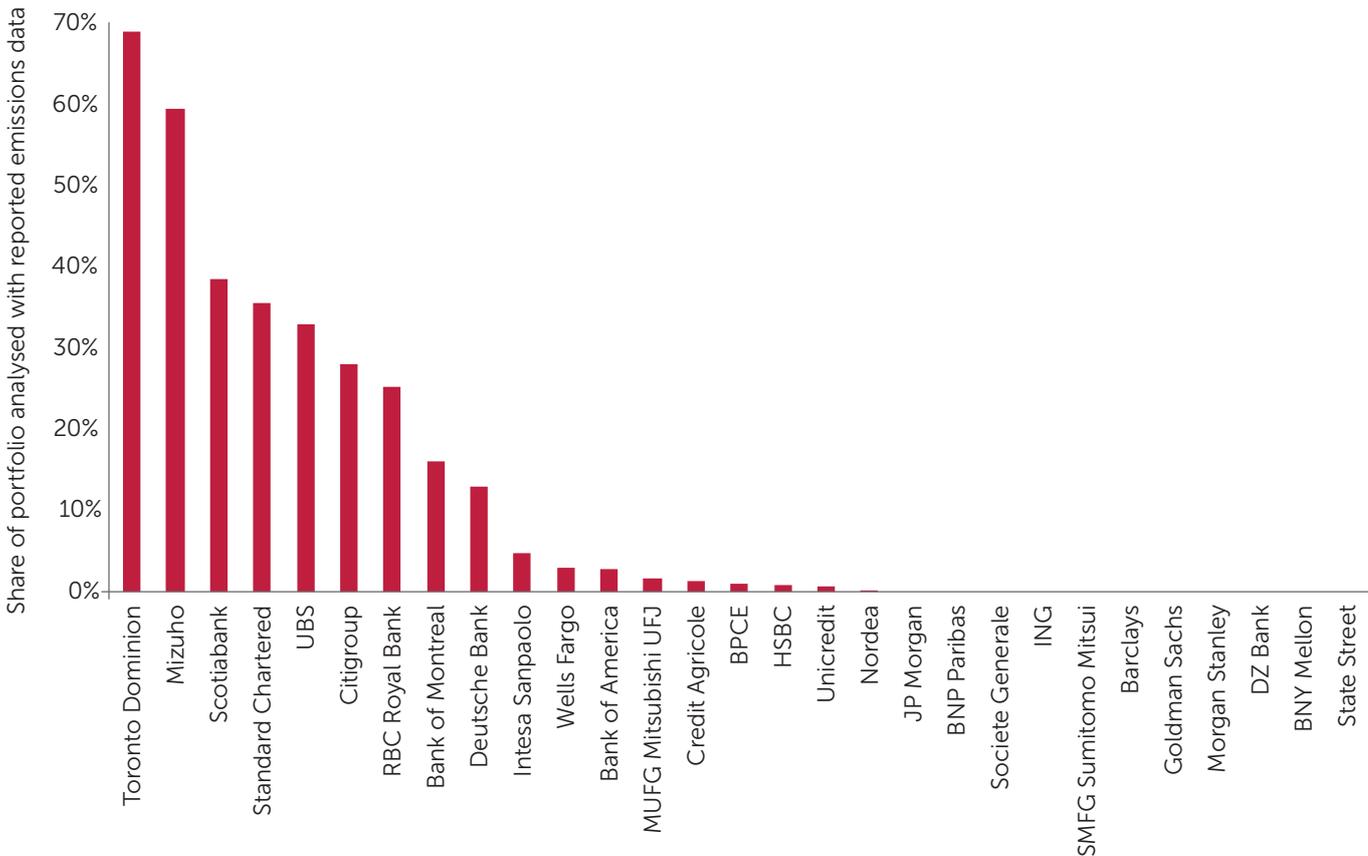
reporting therefore does not enable traceability nor provide transparency regarding the loans extended by banks to carbon-intensive industries. In the context of this exercise, it means that an emissions factor for "manufacturing" is applied to all exposure earmarked for the sector, rather than allocating the correct emission factor to the manufacturing of dairy products and the appropriate emissions factor for the manufacturing of coke and refined petroleum products.

For banks headquartered in Canada, Japan and the US, the manner in which banks disclose industrial exposure varies drastically, with Canada showcasing the most granular reporting and US and Japanese banks having limited harmonisation and substantial aggregation. Banks like State Street, BNY Mellon, Morgan Stanley, MUFG and SMFG aggregate their reporting to between eight and 10 sectors which can group a number of widely different activities. For example, SMFG aggregates the following seven industrial

activities into two sectors: "agriculture, forestry, fisheries and mining" and "transportation, communications, and public enterprises". US banks such as State Street and BNY Mellon aggregate their exposure to industrial activities to an even higher degree, grouping all commercial activity exposure under the "commercial" classification, providing no further disclosure of the activities their credit exposure encompasses.

In the context of this assessment, the outcome of these poor disclosure practices is that the correct emission factors cannot be applied to the relevant activity, nor do researchers have the visibility of the actual exposure to specific industries. Instead, broad sector-level emission factors have to be applied to the credit exposure earmarked for that overarching sector. This can result in a misrepresentation of the correct emissions profile and carbon intensity of the bank and often results in an underestimation of absolute financed emissions.

**Figure 6: Share of portfolio analysed with reported financed emissions data<sup>h</sup>**



<sup>h</sup> Figure 6 illustrates the percentage of the portfolio that was analysed using reported financed emissions data from banks for 2022. This means that, in the case of Mizuho, 60% of all exposure analysed could be assessed with high-quality GHG emissions data reported by the bank and collected from its borrowers. In the case of State Street, for example, no GHG emissions data was reported and hence all exposure assessed for GHG emissions was done by using environmentally extended input-output datasets.

# 5. THE CASE FOR INTERNATIONAL PRUDENTIAL REFORM FOR CLIMATE SAFETY AS A PREREQUISITE FOR FINANCIAL STABILITY

## 5.1. THE GLOBAL PRUDENTIAL FRAMEWORK

The Basel Committee on Banking Supervision (BCBS) is the primary global standard setter for the prudential regulation of banks and provides a forum for cooperation on banking supervisory matters. Its purpose is enhancing financial stability,<sup>23</sup> and is made up of financial supervisors from around the world. It is responsible for developing and promoting the Basel Accords, which set out a range of prudential standards related to capital adequacy, liquidity and risk management. The BCBS does not possess any formal supranational authority, so its decisions do not have legal force. Rather, the BCBS expects that national banking regulators and supervisors will incorporate BCBS standards into their regulatory frameworks. Likewise non-member countries sometimes adopt Basel standards.<sup>24</sup>

The Basel Framework comprises three pillars: minimum capital requirements (Pillar 1), supervisory review (Pillar 2), and promoting market discipline through regulatory disclosure requirements (Pillar 3).

## 5.2 THE CURRENT PRUDENTIAL FRAMEWORK DOES NOT ADDRESS THE CLIMATE CHALLENGE TO FINANCIAL STABILITY

The purpose of prudential regulatory and supervisory frameworks is to support the resilience of the financial system by ensuring its capacity to effectively absorb shocks and limit contagion or negative feedback loop effects across geographies, sectors and social systems, as well as to mitigate the build-up of risks. In the face of significant climate and nature risks and challenges, the global prudential

framework should ensure that financial institutions adequately manage, mitigate and price in these intertwined risks and support, rather than hamper, transition efforts in all sectors of the economy to guarantee financial stability in the short, medium and long-term.

The current design of the global prudential framework does not adequately reflect climate and broader environmental related risks, nor does it address the need for financial institutions to engage in transition planning, as prerequisites to secure financial stability. Some rules exacerbate existing vulnerabilities and contribute to continuing carbon-locked global markets and real economies. A sample of these issues are laid out below.

### Pillar 1 of the Basel Framework

- » Climate and environment-related physical and transition risks may well manifest through traditional financial risk categories (such as credit, market or operational risk), as argued by the BCBS<sup>25</sup> and others, including the US Financial Stability Oversight Council.<sup>26</sup>
- » However, the methodology underpinning the assessment of risks within these categories and the calibration of key measures under Pillar 1 do not capture climate and environmental risks. In particular, standardised and internal modelling approaches to capital requirements are calibrated and validated using historical datasets and metrics, with standardised approaches mostly relying on external corporate credit ratings. This backward-looking data cannot possibly capture climate and environment-related risks which are forward looking by nature. By definition, transition risks are not reflected in the past data, given the unprecedented scale of economic transformations required in the future to achieve the goals of the Paris Agreement, while physical climate events are nearly impossible to predict accurately due to the irreversible and radically uncertain nature of climate developments.
- » Finally, climate and environmental considerations are also currently absent from the macroprudential framework. As climate risks have a clear systemic dimension for all actors of the financial sector, their incorporation into macroprudential measures is also an important gap to fill. This does not require a fundamental overhaul of the current macroprudential framework: several macroprudential instruments already available and implemented by financial supervisors can be adapted to address systemic risks<sup>27</sup> stemming from climate change as well as environmental degradation.<sup>28</sup> Macroprudential tools are designed to prevent build-up of risks, are forward looking and are therefore well equipped to tackle climate-related financial risks.<sup>29</sup>

This leads to a general under-pricing of climate and environmental risk under Pillar 1, which translates into misguided incentives for financial institutions to continue to finance activities that are incompatible with the sustainable transition or activities which are major contributors to the growing climate-related risks, such as fossil fuel-related activities, in turn increasing vulnerabilities in the financial system.

## Pillars 2 and 3 of the Basel Framework

Regulators and supervisors have so far focused on disclosures under Pillar 3 of the prudential rules and qualitative principle-based requirements within Pillar 2. This approach is insufficient<sup>30</sup> to address the gaps of the global prudential framework on climate risk. In particular:

- » The BCBS 2022 principles for the effective management and supervision of climate-related financial risk<sup>31</sup> recommend that banks have sound processes in place to identify, measure, manage and mitigate climate-related financial risks. Yet measurement methodologies for climate risk in the current prudential framework are not actually designed to take the specific features of climate risk into account, so that prudential supervisors have neither technical nor effective enforcement capability to follow up on the expectations. Overall, this casts doubt on the effectiveness of discretionary risk management measures under the current rules.
- » Regulators and supervisors have emphasised the role of climate scenario analyses to understand the implications of climate change for the financial system. The 2022 principles recommend that supervisors determine whether banks have in place scenario analysis to assess their resilience against a range of climate outcomes and determine the impact of climate risk drivers on their overall risk profile. More work in this area by the BCBS is also underway and is expected to be published in the coming months.<sup>32</sup>

Yet currently most scenario analyses use models that are not equipped to deal with climate-related risks and, as a result, have predicted only a benign level of economic losses and benign effects on the financial sector.<sup>33</sup> These models rely on backwards-looking data and

make assumptions about general equilibrium in the economy that may be incompatible with climate-related impacts, which will be disruptive, unpredictable and permanent. Tipping points and feedback mechanisms (e.g. melting permafrost or the slowdown of the Atlantic meridional overturning circulation) could accelerate losses to levels far above those from recent financial crises. Furthermore, the existing models ignore some of the most severe impacts of climate change. The NGFS's recent estimate of climate losses excluded costs arising from extreme weather, sea-level rise, migration and conflict.

All supervisory climate scenario analyses use these models and, as a result, their estimates of the economic losses of climate change are clearly at odds with climate science. Some investors have pointed out that "climate modelling is understating risks, particularly with regard to the impact of physical climate risk but also with respect to transition risks in the face of the accelerating roll out of clean technology".<sup>34</sup> This leads to unrealistic conclusions and incentivising inaction. It also creates a false sense of security amongst regulators, financial institutions and policymakers who assume that these models offer a comprehensive assessment of risk, without realising that many of the most severe climate impacts have not been factored in.<sup>35</sup>

The FSB and NGFS have themselves acknowledged the significant limitations of climate scenario analysis and confirmed their commitment to further improvements in this area.<sup>36</sup> It is imperative to enhance the development of climate risk models and scenarios to more accurately encompass risk drivers, uncertainties and the full spectrum of climate risk impacts. Financial supervisors should subsequently translate the outcomes of these assessments into the framework of capital and liquidity ratio, along with other supervisory requirements. This would enable

financial institutions to have a more resilient capital and liquidity buffer over relevant time horizons that would shape their business models, exposure profiles, business strategies and risk management.<sup>37</sup>

Information on financial institutions' exposures to climate and environmental risks and their corresponding strategies, internal governance and risk management processes is also currently absent from Pillar 3, despite this being critical to enforce market discipline and adequately support overall capital adequacy. A group of investors noting "multiple concerns, including inadequate data and controls, that bank auditors raised with the UK's Prudential Regulatory Authority as part of its thematic review on climate accounting in 2022" have called for "proactive enforcement of existing accounting and audit rules to ensure that material climate risks are properly reflected in banks' financial statements (particularly with relation to banks' expected credit loss assumptions) and auditor reports".<sup>38</sup>

The consultative document published by the Basel Committee in November 2023 is very encouraging in this regard.<sup>39</sup>

## 5.3. POLICYMAKERS HAVE A RESPONSIBILITY TO DESIGN A MANDATORY PRECAUTIONARY REGULATORY RESPONSE TO CLIMATE CHANGE

As was the case with the financial crisis of 2007-2008, the climate challenge – arguably a far larger potential systemic and durable threat to financial stability than the one the financial crisis posed – requires a response across all three pillars of prudential regulation. It is vital that such a response is adopted preventively instead of after a catastrophic financial crisis occurs, in particular due to the irreversibility and radical uncertainty of climate change.

Concrete progress is still needed following the publication of the FSB's comprehensive roadmap to address climate-related financial risks in 2021,

which outlines a plan for coordinated action by standard-setting bodies and other international organisations.<sup>40</sup>

As part of the FSB's roadmap, the BCBS has committed to a holistic review of its entire framework, kicking off work to address climate-related risk in Pillars 2 and 3. The ongoing work on Pillar 3 to produce a revised disclosure framework should be finalised and it must maintain or improve upon the ambition levels of the existing consultative draft. Concrete progress is still needed on the other two pillars. The BCBS has also not yet adjusted the macroprudential framework to the growing systemic risk from climate change.

#### **5.4 THE SCALE AND URGENCY OF THE CLIMATE CHALLENGE REQUIRES AN ACCELERATED RESPONSE FROM THE GLOBAL STANDARD SETTERS**

A lack of data is often cited as a reason for a failure to introduce stronger regulation. Considering the nature of the climate and environmental problem, a policy response founded on a precautionary approach and forward-looking instruments that aim to mitigate climate-related risks by supporting an early and orderly transition are appropriate.

## UNCERTAINTY AND LACK OF DATA IS NOT AN EXCUSE

*Andrew Bailey, Governor of the Bank of England*

Principle 15 of the 1992 Rio Declaration states that "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation". A precautionary financial policy mindset recognises the importance of measuring the risks, but instead of waiting for precise measurements, financial supervisors should prioritise preventative action to address uncertain and potentially catastrophic environmental threats.

The later the transition is undertaken, the higher the transition costs. A delayed transition or a failure to transition will result in increased risks of significant physical disruptions affecting the whole economy and financial system.

#### **5.5 THE VIEW THAT FINANCIAL REGULATORS NEED CLARITY ON POLICY BEFORE ACTING IS MISTAKEN**

While it is critical that the necessary transformations in the real economy

take place (and some of this is underway, both at the national and multilateral level), financial regulators cannot wait. Current rules and regulations of the financial system are not neutral, perpetuate carbon-locked economic structures, and feed financial system vulnerabilities. If financial regulators wait until all other policymakers have acted more decisively on the clean-energy transition, it may be too late to prevent a climate-induced financial crisis. On the other hand, regulatory decisions taken today are likely to reduce financial risk in the future.

Many central bankers and prudential supervisors have recognised this urgency, from the ECB vice-chair Frank Elderson to Bank of England governor Andrew Bailey, who stated that "uncertainty and lack of data is not an excuse".<sup>41</sup>

# 6. RECOMMENDATIONS FOR INTERNATIONAL PRUDENTIAL REFORM: POLICY PRIORITIES

We set out below recommended policy outcomes for prudential regulation in the banking sector for the next two years. The proposals build on the appetite signalled by the current Brazilian G20 presidency to consider financial regulatory reform in order to mitigate climate and environmental risk, including global prudential reform. In this context, positive signalling on this issue from the G7 would be welcome.<sup>i</sup> The proposed policy actions take into account those already defined in the 2021 G20 Sustainable Finance Roadmap and the FSB Roadmap for Addressing Climate-Related Financial Risks.

## 6.1 RECOMMENDATIONS FOR 2024

- **G7 finance ministers should support prudential regulatory reform in key multilateral economic and financial fora** such as the G20 Finance and Sherpa Track and the newly created coordination Task Force for the Global Mobilisation against Climate Change (TF CLIMA), the FSB, the IIMF, the World Bank and the Coalition of Finance Ministers for Climate Action.
  - **G20 finance ministers, or Finance/ Sherpa Tracks coordinated within TF CLIMA should:**
    - **reach consensus** that timely international prudential reform is a critical component of the systemic finance reform agenda for climate safety;
    - **highlight** that an orderly transition best contributes to financial stability and that prudential frameworks should support such a transition;
    - **agree that prudential reform in the banking sector should be completed without further delays** based on the existing Basel III framework and its three pillars, including macroprudential measures;
    - **agree on key principles to drive** such prudential reform:
      - **A precautionary approach**, recognising the limits of modelling and data when it comes to prudential regulation for climate change, and the need to reflect climate and environmental risks in the global prudential framework.
      - This can be achieved by establishing a strong micro and macroprudential supervision through: (a) integrating this precautionary approach into Pillar 1 on minimum capital requirements as well as macroprudential instruments by requiring more capital for environmentally harmful activities;<sup>42</sup> (b) managing concentration risk at micro and macro level; (c) using all regulatory tools to mitigate credit, market and operation risks stemming from climate and nature risks; (d) reviewing the implementation of these supervisory requirements with corrective actions taken in cases of non-compliance.
    - **Forward-looking tools** that work over short, medium and long-term horizons such as transition planning informing internal governance, risk management and supervisory review, and transition plan disclosures. It is particularly important for G7 and G20 finance ministers to acknowledge the critical link between an improved common understanding of the design of transition plans, their uptake across real economy and financial sector firms, and the enhanced effectiveness of the prudential framework that would result from this.
- Governments, financial regulators and supervisors should: (a) require financial institutions to develop and disclose science-based targets and credible climate and nature transition plans on a mandatory basis; (b) require financial institutions to engage clients and portfolio companies to set

<sup>i</sup> Likewise, the IMF should acknowledge and support such reforms in line with the positions expressed by the IMF managing director or in key publications such as the IMF's Global Financial Stability Report.

clear expectations to disclose credible transition plans and act on escalation processes in the event of no or insufficient action.

» **Inclusivity**, acknowledging that differences in countries' emission reduction targets, so-called nationally determined contributions (NDCs), and transition pathways between developed and developing economies call for a balance to be found between fairness in reform implementation and the need to secure harmonisation and prevent arbitrage.

» **The BCBS should focus on the following policy priorities:**

- » undertake wide-ranging stakeholder engagement in connection with its forthcoming publication of a paper<sup>43</sup> on the use of climate scenario analysis by banks and supervisors to help inform future work in this area, as well as with the NGFS;
- » revise the systemic risk buffer to address the systemic dimension of climate change and prevent the build-up of systemic risks;<sup>44</sup>

» Review the large exposures threshold, building on the thinking already done in this space by the ECB;<sup>45</sup>

» revise the credit risk weights for a targeted set of exposures subject to high transition risk, including examining limitations and issues in key Pillar 1 requirements posed by the reliance on corporate external credit ratings that do not adequately reflect climate and environmental risks;<sup>46</sup>

» review the requirements of Pillar 2 on the supervisory review process, including supervisory expectations and guidelines to incorporate transition planning practices;

» finalise modifications currently being considered for Pillar 3 of the Basel framework on market discipline, including transition plan disclosure requirement.

» **The NGFS** should incorporate the insights of climate science into its climate change scenarios to make assessments of the economic consequences of climate change realistic, including accounting for its magnitude and irreversibility.

» **The FSB** should focus on the following policy priorities:

» consider climate and environmental-related risks from a broader financial stability perspective, i.e. beyond the banking and insurance sectors;

» accelerate its work on transition plans and transition planning from the prudential perspective.

## 6.2 RECOMMENDATIONS FOR 2025-2026

» The G7 and G20 finance tracks should continue to provide political support for this work and potential ongoing efforts by the FSB and the BCBS.

» The BCBS should incorporate private sector-wide transition planning, climate and environmental risks and capital considerations into the Basel Framework across key standards (risk-based capital requirements/ risk-weighted asset calculation for credit risk, liquidity coverage ratio, the Core Principles for Effective Banking Supervision).

# 7. METHODOLOGY

This section gives a further explanation of the methodological process undertaken by the research team across the selected banks that featured in the analysis, beyond the steps outlined in section 3.

To estimate emissions from lending activities by the selected banks, the research team followed and applied the methodological principles of the GHG Protocol's Category 15: Investments<sup>47</sup> and the application guidelines provided by PCAF.<sup>48</sup>

## 7.1 FINANCED AND FACILITATED EMISSIONS

In 2023, the Global Standard released additional methodological guidance for the calculation of facilitated emissions under Part B of its framework. As defined in the Global Standard, facilitated emissions are emissions that stem from "capital market transactions which are rarely held on a financial institution's balance sheet. They are facilitated, using various services the facilitating institution provides, rather than financed, because the institution is not providing financing directly to the issuer. This leads to a temporary association with transactions (usually days or weeks) and where usually no financial (credit) risk is taken by the financial institution. As a result, there is a distinction in the concept of emissions ownership."<sup>49</sup> The guidance provides calculation methodologies for facilitated services such as underwriting, services supporting corporate bond issuance, mergers and acquisitions (M&A) and more.

This research did not focus on facilitated services.

Commercial credit exposure is reported in varying forms by banks. A number of banks report this exposure across both on and off-balance sheet exposure. However, given that no bank earmarked or outlined their off-balance sheet exposure as comprising facilitated services or short-term credit exposure, all credit exposure was assessed using the same methodological guidance from Part A of the Global Standard on financed emissions.

Where banks provided a clear distinction between on-balance and off-balance sheet commercial credit exposure, financed emissions estimated from off-balance sheet credit exposure were earmarked separately solely for the purpose of classifying financed emissions across both forms of credit exposure.<sup>j</sup>

## 7.2 BUSINESS LOANS

As defined by the Global Standard, "business loans encompass all on-balance sheet loans and lines of credit to businesses, nonprofits, and any other structure of organisation that are not traded on a market and are for general corporate purposes".<sup>50</sup>

Financed emissions for business loans follow the calculation formula outlined below, where  $c$  equals company. Aware of the varying degrees of data availability

$$\text{Financed emissions} = \sum_c \frac{\text{Outstanding amount}_c}{\text{Total equity} + \text{debt}_c} \times \text{Company emissions}_c$$

for GHG accounting, the Global Standard outlines a number of options and calculation methods to fit various scenarios of data availability, outlined in the calculation options section below.

### 7.2.1 Calculation options and data quality scores: business loans

The Global Standard outlines three options to calculate financed emissions for business loans based on the quality and availability of data from the borrower.

- Option 1 – reported emissions, where verified or unverified GHG emissions data is collected from the borrower and allocated to the bank using an attribution factor.
- Option 2 – physical-activity based emissions, where GHG emissions are estimated using the borrower's physical activity in the reporting period, e.g. tons of cement produced per year. Emissions are then allocated to the bank using an attribution factor.
- Option 3 – where emissions are estimated based on economic activity data and allocated to the bank based using an attribution factor. Emissions data can be estimated using official statistical data or acknowledged EEIO tables providing region or sector-specific average emissions factors per economic activity, e.g. tCO<sub>2</sub>e per million EUR of revenue per asset.

<sup>j</sup> The approach to calculating GHG emissions does not change between financed and facilitated emissions for business loans and mortgages. The methodology therefore focuses on outlining the approach used to calculate financed emissions throughout the document. This was not possible for numerous banks as not all banks provide a breakdown of on and off-balance sheet exposure across sectors and geographies.

Each option is assigned a data quality score and calculation method based on the quality and granularity of the data available. Option 1 has the highest data quality and accuracy, and option 3 is lower. Figure 7 below showcases the method, data requirements and data quality score per option.

The Global Standard outlines that the option using the greatest accuracy should be applied based on data availability. For the purpose of this assessment and due to the inability of the researchers to engage with each financial institution and collect underlying borrower's data, the research team relied on publicly available financial and environmental disclosures of annual performance for each bank.

As a result, the GHG emissions assessment employed option 3c for the majority of credit exposure, using EEIO and sector-specific average emissions factors. For sectors where the bank reported absolute financed emissions or economic emissions intensities as part of their climate action or commitments, such as oil and gas, these figures were used instead of those from EEIOs, increasing the accuracy of the calculations and employing the methods of options 1 or 2 above, as reported by the bank.<sup>k</sup>

Figure 8 outlines the calculation methods for option 3c, as well as the data points and formulas used to carry out the GHG emissions estimates.

## 7.2.2 Estimating sector-level emissions using environmentally extended input-output (EEIO) data

The application of option 3c requires the use of emission factors for the sector per unit of revenue, and therefore recommends the use of EEIO data as a reliable source of sector-level emissions for the purpose of calculating exposure to an industrial activity.

Due to the number of geographies covered and the need to have reliable up-to-date emissions data for 2022, the use of EEIO datasets such as Exiobase was not an option. Exiobase has limited coverage for the geographies needed and the emission factors lack relevance for this assessment, given that the latest update for the dataset was in 2017.

The research team therefore composed EEIO datasets fit for the purpose of the exercise using macroeconomic data from the Organisation for Economic Co-operation and Development and Eurostat, as well as industry-level GHG emissions data across the relevant geographies from the OECD, Eurostat and International Energy Agency (IEA). When structured together, these datasets provide up-to-date sector-level emission factors per unit of revenue for Scopes 1 and 2 for all G7 countries as well as other relevant geographies for 2022.

One of the most important and impactful assumptions made when using EEIOs to estimate loan book emissions is the mapping of industry classification standards. The EEIO used for this accounting exercise uses a NACE industry classification. As a result, the reporting of all banks must be mapped to the classification system used by the EEIO dataset. Some EU-headquartered banks report in a NACE format for 2022, while other banks report in a non-standardised classification system.

**Figure 7: Data quality scores across options for business loans calculations.**

(score 1 – highest data quality; score 5 = lowest data quality)

Data Quality	Options to estimate the financed emissions	When to use each option	
Score 1	Option 1: Reported emissions	1a	Outstanding amount in the company and total company equity plus debt are known. Verified emissions of the company are available.
		1b	Outstanding amount in the company and total company equity plus debt are known. Unverified emissions calculated by the company are available.
Score 2	Option 2: Physical activity-based emission	2a	Outstanding amount in the company and total company equity plus debt are known. Reported company emissions are not known. Emissions are calculated using primary physical activity data for the company's energy consumption and emissions factors specific to that primary data. Relevant process emissions are added.
Score 3		2b	Outstanding amount in the company and total company equity plus debt are known. Reported company emissions are not known. Emissions are calculated using primary physical activity data for the company's production and emission factors specific to that primary data.
Score 4	Option 3: Economic activity-based emissions	3a	Outstanding amount in the company, total company equity plus debt, and the company's revenue are known. Emission factors for the sector per unit of revenue are known (e.g., tCO <sub>2</sub> e per euro or dollar of revenue earned in a sector).
Score 5		3b	Outstanding amount in the company is known. Emission factors for the sector per unit of asset (e.g., tCO <sub>2</sub> e per euro or dollar of asset in a sector) are known.
		3c	Outstanding amount in the company is known. Emission factors for the sector per unit of revenue (e.g., tCO <sub>2</sub> e per euro or dollar of revenue earned in a sector) and asset turnover ratios for the sector are known.

Source: PCAF, 2022

**Figure 8: Calculation options applied to banks analysed.**

Option 3b	N/A	GHG emissions per sector	Assets per sector	$\sum_c \text{Outstanding amount}_c \times \frac{\text{GHG emissions}_c}{\text{Assets}_c}$	Score 5
Option 3c	Asset turnover ratio per sector	GHG emissions per sector	Revenue per sector	$\sum_c \text{Outstanding amount}_c \times \text{Asset turnover ratio}_c \times \frac{\text{GHG emissions}_c}{\text{Revenue}_c}$	

Source: PCAF, 2022

<sup>k</sup> This means that, if the reporting bank discloses absolute emissions data for a sector and reports the data quality score to be 1 or 2, the GHG emissions for the industry are used in the disclosure of the research team as reported by the bank for the outstanding or committed credit exposure to that industry (e.g. oil and gas) for that year.

### 7.2.3 Attribution of emissions

For business loans, an attribution principle that accounts for a portion of annual emissions of a borrower is followed, based on the ratio of the value of the outstanding loan to a borrower (numerator) and the value of the borrowing company (denominator), as outlined in the formula below.

$$\text{Attribution factor}_c = \frac{\text{Outstanding amount}_c}{\text{Total equity+debt}_c}$$

It is worth highlighting that the attribution factor is applicable for transactions where client-specific data is available or provided. In cases where this data is unavailable, attribution factors must be calculated based on “region and sector-specific average financial data and the outstanding amounts” as outlined in the Global Standard.

Due to the limited data on both the transaction and the borrowers available to the research team – in particular, the specific loan to each borrower and the total equity plus debt or their enterprise value including cash of the borrower – the research team used an asset turnover ratio, as mandated by the Global Standard and shown in figure 8 under option 3c. This ratio enables the quantification of how a company in a specific industry or sector translates more financing into higher revenues. When using an asset turnover ratio in the absence of company-level data for attribution, no additional attribution is needed as the emissions estimated are the results of the value of financing provided by the bank and are therefore allocated fully as the bank’s financed emissions.

The research team sourced the relevant asset turnover ratios used in this exercise from CSI Market and Eurostat according to each bank’s geography.

## 7.3 MORTGAGES

Financed emissions for mortgage loans follow the calculation rationale outlined below. Aware of the varying degrees of data availability, the Global Standard outlines a number of options and calculation methods to fit various data availability scenarios for mortgages.

$$\text{Financed emissions} = \sum_{b,e} \frac{\text{Outstanding amount}_b}{\text{Property value at origination}_b} \times \text{Energy consumption}_{b,e} \times \text{Emission factor}_e$$

(with *b* = building and *e* = energy source)

**Figure 9: Data quality scores across options for business loans calculations.** (score 1 – highest data quality; score 5 = lowest data quality)

Data Quality	Options to estimate the financed emissions	When to use each option
Score 1	Option 1: Actual building emissions	1a Primary data on actual building energy consumption (i.e., metered data) is available. Emissions are calculated using actual building energy consumption and supplier-specific emission factors specific to the respective energy source.
Score 2		1b Primary data on actual building energy consumption (i.e., metered data) is available. Emissions are calculated using actual building energy consumption and average emission factors specific to the respective energy source.
Score 3	Option 2: Estimated building emissions based on floor area	2a Estimated building energy consumption per floor area based on official building energy labels AND the floor area are available. Emissions are calculated using estimated building energy consumption and average emission factors specific to the respective energy source.
Score 4		2b Estimated building energy consumption per floor area based on building type and location-specific statistical data AND the floor area are available. Emissions are calculated using estimated building energy consumption and average emission factors specific to the respective energy source.
Score 5	Option 3: Economic activity-based emissions based on number of buildings	3 Estimated building energy consumption per building based on building type and location specific statistical data AND the number of buildings are available. Emissions are calculated using estimated building energy consumption and average emission factors specific to the respective energy source.

Source: PCAF, 2022

**Figure 10: Calculation options and formulas for residential mortgages.**

Option	Outstanding amount and property value at origination	Average emission factors specific to the energy source	Estimated building energy consumption per floor area based on official building energy labels and floor area financed	Estimated building energy consumption per floor area based on building type and location-specific statistical data and floor area financed	Estimated building energy consumption per building based on building type and location-specific statistical data and number of buildings financed	Score
Option 2a			$\sum_{b,e} \frac{\text{Outstanding amount}_b}{\text{Property value at origination}_b} \times \text{Estimated energy consumption from energy labels}_{b,e} \times \text{Floor area}_b \times \text{Average emission factor}_e$			Score 3
Option 2b			$\sum_{b,e} \frac{\text{Outstanding amount}_b}{\text{Property value at origination}_b} \times \text{Estimated energy consumption from statistics}_{b,e} \times \text{Floor area}_b \times \text{Average emission factor}_e$			Score 4
Option 3			$\sum_{b,e} \frac{\text{Outstanding amount}_b}{\text{Property value at origination}_b} \times \text{Estimated energy consumption from statistics}_{b,e} \times \text{Number of buildings}_b \times \text{Average emission factor}_e$			Score 5

Source: PCAF, 2022

### 7.3.1 Calculation options and data quality scores: mortgages

The Global Standard outlines three options to calculate financed emissions depending on the availability of financial and emissions data. Each option is assigned a data quality score and calculation option. Option 1 has the highest data quality and accuracy while option 3 is lower. Figure 9 illustrates the calculation method, data requirements and data quality score associated with each option.

For the purpose of this assessment and due to the inability of the researchers to engage with each financial institution and collect the underlying borrower’s data, the research team relied on publicly available financial and environmental disclosures of annual performance from each bank.

As a result, the GHG emissions assessment carried out employed options 2 or 3 for most of the credit exposure analysed, estimating building emissions based on financed floor area or based on number of buildings and supporting this with statistical averages for energy consumption per country, as well as emission factors specific to the respective location and energy source.

Figure 10 details the calculation formulas and data points required to carry out estimations based on the different options used by the research team. The sources for the data points used are:

- outstanding amount was sourced from the bank's total reported residential mortgage exposure for the year;
- property value at origination was sourced from statistical data on the average value of a residential mortgage for the relevant country and year;
- estimated energy consumption was sourced from national statistics on average consumption for electricity and heating;
- the number of buildings was estimated using the average property value in the respective country and the bank's total outstanding lending for residential mortgages per year;
- the relevant power grid emission factor for the country and year, as well as the emission factor for the relevant heating energy source (e.g. natural gas) were used.

### 7.3.2 Attribution of emissions

For mortgage loans, an attribution principle that accounts for a portion of annual emissions of a borrower is followed, based on the ratio of the value of the outstanding loan to a borrower (numerator) and the property value (denominator), as outlined in the formula below.

$$\text{Attribution factor}_b = \frac{\text{Outstanding amount}_b}{\text{Property value at origination}_b}$$

(with  $b$  = building)

The attribution factor is possible for loans where data at the transaction level is available or provided by the bank for both the value of the outstanding loan and the property value at origination. In cases where this data is unavailable, as in this GHG accounting exercise, the latest property value available should be used as mandated by the Global Standard.

As transaction-level data was not available for this assessment, the total outstanding or committed exposure as

reported by a bank was used to estimate the total number of homes financed using statistical data on average annual mortgage costs in each country. This method has limitations in that it assumes 100% of the average value of homes is financed by the bank and therefore all emissions as estimated are attributed to the bank.

## 7.4 DATA COLLECTION

Data was collected for the financial year 2022.

Financial and reported emissions data collection was broken down by the geographic location of the bank, the type of reporting carried out in that geography and the year. It is worth noting that among EU-based banks, disclosure in 2022 was impacted by Regulation (EU) No. 2021/637. Details are elaborated in the EU banks section.

The data collected was used to understand each bank's exposure to a particular industry. The geographic distribution of commercial credit risk was then used as a proxy to distribute the risk across the various geographies based on the absolute loan exposure to each industry.

### 7.4.1 EU banks

For EU headquartered banks, data was collected primarily from Pillar 3 disclosures. In particular, tables CR1, CQ4 and CQ5 which provide overarching breakdown of total credit exposure for the bank per year.

- Following the implementation of Regulation (EU) No. 2021/637, Pillar 3 disclosure formats in 2022 now provide the industry breakdown for on-balance sheet lending for non-financial corporates, with lending to financials and governments provided separately. The research team therefore focused on non-financial corporate disclosure.
- On-balance and off-balance sheet non-financial corporate and financial industry credit exposure was collected and segmented within the accounting exercise.
- Data on the geographic distribution of non-financial corporate

lending was collected from the corresponding table CQ4. The percentage of distribution per country reported was used as a proxy and applied to lending to financial institutions and off-balance sheet non-financial corporate lending.

- Residential mortgages credit exposure is disclosed separately as part of consumer and retail lending. Figures for residential mortgages were collected and added as part of overall coverage assessed and collected from annual reports.

### 7.4.2 Non-EU banks

For all other regions, data collection focused primarily on reporting through annual reports to shareholders and Basel III disclosures (Canada, Japan) and/or annual reports or Form 10-K for US headquartered banks.

- Information sourced included the commercial credit risk (e.g. loans and acceptances) by industry, type, or borrower or counterparty. These tables provide a high-level sectoral or industry-level breakdown of the distribution of total commercial credit exposure for the year.
- It is worth noting that the degree of breakdown varies by bank, and due to the differences in regulatory guidelines for disclosure, there was limited harmonisation across industry classification and aggregation.
- In the limited cases where such a breakdown was provided, on-balance and off-balance sheet exposure was collected to enable a separation within the accounting exercise.
- Geographic distribution of commercial credit exposure was also collected for 2022. The degree of the breakdown provided varies by banks, from country to regions to meta-regions. The researchers collected the data to the degree that was possible.
  - » For US headquartered banks, international exposure is often disclosed as "top 20 non-US exposure", which account for 80-90% of non-US exposure. The research team attributed all

other exposure to US commercial credit exposure for the purpose of the accounting exercise, due to the lack of available data of the geographic distribution of the remaining credit exposure.

- Residential mortgage data is disclosed separately as part of consumer or retail lending across most non-EU banks. The geographic breakdown varied from state-level segmentation to having no geographic segmentation. Residential mortgage information was therefore collected to the highest level of detail possible.

### 7.4.3 Collection of disclosed absolute financed emissions data

A number of the banks analysed as part of this exercise have made climate commitments in previous years as part of various initiatives such as the NZBA, target setting processes in alignment with Science-Based Targets initiative or as part of annual reporting in alignment with the Task Force on Climate-related Financial Disclosures. Consequently, banks have begun to disclose climate action indicators to varying degrees.

For 2022, a number of banks reported financed emissions metrics as a result of baselining exercises for 2019, 2020 or 2021, with varying degrees of coverage and quality. The majority of banks that reported did so across physical intensity metrics as part of sector-based target setting. A smaller number of banks disclosed their absolute emissions in millions of tCO<sub>2</sub>e. The sectors covered by most climate-related disclosure included the following:

- Oil and gas (Scopes 1, 2 and 3)
- Power and Generation
- Automotive
- Shipping
- Aluminium
- Coal
- Cement
- Residential mortgages

### 7.4.4 Use of disclosed emissions data

In alignment with the guidelines from the Global Standard, the research team used reported absolute GHG emissions or economic intensity as part of the accounting process when this data was disclosed by a bank.

Where banks reported physical intensities (e.g. kilograms of CO<sub>2</sub> per megawatt hour), which was the case for the majority of sectors, this information was not collected or used as part of the assessment, given the inability of the researchers to corroborate this physical intensity with (for example) actual output from power generation companies. See figure 9 for examples of physical intensity targets.

Where absolute emissions data for an industry was reported by the bank, this data was collected by the research team and used instead of emissions estimates or industry proxies from EEIO data.

Please see figure 11 for an example of absolute emissions reporting from Bank of America.

Some banks also reported their economic intensity (e.g. tCO<sub>2</sub>e per million USD loaned), or reported their absolute emissions and outstanding exposure to the specific carbon-intensive sector (figure 12). Where banks made this information available, the research team collected or generated economic emissions intensity (tCO<sub>2</sub>e per million EUR loaned) for the purpose of using reported intensities as proxies instead of EEIO data as more accurate proxies for the calculations for 2022 for the specific bank and relevant sectors.

Figure 11: Net zero targets disclosure.

Sector	Scope	Value Chain	Metric	2021 Baseline	2030 Target	Scenario Benchmark <sup>4</sup>
 OIL & GAS	Scope 3 Category 11	Upstream, Midstream, Downstream	Financed Emissions	21.4 MtCO <sub>2</sub> e	-29% reduction (15.2 MtCO <sub>2</sub> e)	IEA NZ 2050 (World) <sup>5</sup>
 POWER GENERATION	Scope 1	Power Generation	Emission Intensity	208 gCO <sub>2</sub> e/kWh	111 gCO <sub>2</sub> e/kWh	IEA NZ 2050 (Europe)
 AUTOMOTIVE	Scope 3 Category 11 Tank-to-wheel	Automotive manufacturers (Light-duty Vehicles)	Emission Intensity	161 gCO <sub>2</sub> e/vkm	95 gCO <sub>2</sub> e/vkm	IEA NZ 2050 (World)

Source: UniCredit, 2022

Figure 12: Disclosure of absolute emissions and economic intensity.

Sector			Absolute Emissions (thousands tCO <sub>2</sub> e)		Utilized Commercial Credit Loan Exposure (millions \$)	Percent of Total Utilized Commercial Credit Exposure <sup>67</sup>	Economic Intensity (tCO <sub>2</sub> e/million \$)
Sector	Subsector Boundaries Included	Emission Scope(s) Included	2019	2021 <sup>68</sup>	2021	2021	2021
<b>Auto manufacturing</b>	Light-duty passenger car and truck manufacturers	1, 2 & 3.11	1,598*	901	746	0.11%	1,207
<b>Aviation</b>	Commercial aviation	1	--	1,876	3,130	0.48%	692
<b>Cement</b>	Cement manufacturing	1 & 2	--	1,512	546	0.08%	3,106
<b>Coal<sup>69</sup></b>	Pure play thermal coal extraction	1, 2 & 3.11	3,134*	1,398	23	0.004%	60,977
<b>Energy</b>	Upstream producers, refiners and integrated companies in oil and gas industry	1 & 2	2,915*	2,384	5,720	0.88%	3,623
		3.11	23,974*	18,339			
	Midstream and downstream oil and gas companies	1 & 2	2,926*	3,023	4,776	0.73%	633
<b>Power generation<sup>50</sup></b>	Power generation	1	3,894*	3,909	8,715	1.33%	448

Source: Bank of America, 2023.

# 8. LIMITATIONS AND BARRIERS

The assessment can only be interpreted as a best effort to provide an indicative figure of the absolute emissions financed by banks in G7 and other advanced economies across a period of time. The results should not be interpreted as an accurate carbon inventory of the banks' loan book. Instead, the results serve to understand at a high level the volume of absolute emissions financed by these banks and the quality of disclosure adopted by these financial institutions to decarbonise and reallocate their loan books away from carbon-intensive industries. The assessment faced a number of challenges that pose a number of important limitations in the quality and accuracy of the results.

- The most notable limitation that hinders the accuracy of the GHG accounting exercise carried out is the inability of the research team to directly collect data from borrowers, relying solely on sector and country-level aggregations of financial data instead of transaction-level data. This immediately limits the estimation options and forced the assessment to be conducted with sector-level emission factor proxies.
- » It is worth noting that the Global Standard was created for financial institutions to engage with borrowers or investees and collect relevant company-level data.
- » This assessment therefore follows and applies the guidance mandated by the Global Standard to the greatest extent, outlining deviations where necessary to enable an indicative estimation to be carried out with publicly available data.

- The above limitation was augmented by the lack of harmonised financial reporting across banks, even within the same geography and year. When expanding this to disclosure across several countries, this represented a persistent challenge.

- » As mentioned above, one of the most important and impactful areas of assumptions made when using EEIOs to estimate loan book emissions is the mapping of industry classification standards.
- » The lack of harmonised reporting by banks hindered the ability of accurate assessment of emissions. Particular examples include the aggregation of several carbon intensive industries under "Industrials" or "Energy", which diminish the ability for accurate classification of activities and consequently the correct carbon accounting.
- » Additionally, changes to disclosure formats year-on-year affected the granularity of disclosure, the industrial classification standards used, nomenclature and more.

- The lack of harmonisation also affected the ability of the research team to clearly identify and segmented on and off-balance sheet commercial credit exposure. Although some banks provide this segmentation, others report all credit exposure as one, leading the research team to label all emissions as financed emissions in the absence of clarity surrounding off-balance sheet exposure.

- Although a number of banks have begun to report climate metrics, these are often linked to sectoral targets and therefore report the baseline physical intensity and the targeted physical intensity. Banks do not disclose the underlying GHG accounting exercise required to generate these physical intensities, creating a barrier that affected the ability of the research team to make use of this data.
- » A notable challenge is the fact that although emissions data is reported in 2022 and 2023, most of this data focuses on accounting carried out in 2019 or 2020, meaning that although emissions are reported, for some banks they may not be reported for the relevant year.
- » This led to estimations being conducted with the economic intensity proxies generated from reported data and decarbonisation trajectories per sector. This meant that data accuracy increased in comparison to EEIO proxies but remained a limitation on the use of reported data.
- The use of environmentally extended input output data has limitations as these datasets are based on macroeconomic data on the interactions between industries and countries, as well as aggregated emissions data for different industries. Furthermore, the need to create one overarching dataset from numerous sources, such as the OECD, Eurostat and the IEA, meant the research team had to conduct mapping across different classification formats, e.g. NACE to the International Standard of

All Economic Activities. This resulted in assumptions on mapping needing to be made which can affect the granularity of a dataset if it has to be grouped in a larger sector as part of a compilation exercise.

- For residential mortgages, a number of assumptions had to be made per country. It is worth noting that some banks provide greater granularity on the disclosure of their mortgage exposure, such as US banks that

disclose at a state-level and across the various types of residential real estate financed, e.g. single-family home, stand-alone home etc. The majority of banks, however, disclose residential mortgage lending values as an aggregate, often without further segmentation of location, type or size. This resulted in the research team conducting extensive research to estimate average home value, average cost per m<sup>2</sup>, average energy consumption for electricity

and heating for a household, energy source and corresponding emission factor etc.

The above limitations resulted in some variance in the financed emissions figures. However, many of these were corroborated with the intensity figures reported by peers in the same country for residential mortgages to ensure the variance was within an acceptable margin.

# APPENDIX

## ASSESSED BANKS

### G-SIB and systemically important banks<sup>l</sup>

Bank of America (US)  
 Bank of Montreal (CA)  
 Bank of Nova Scotia (CA)  
 Barclays (GB)  
 BNP Paribas (FR)  
 BNY Mellon (US)  
 BPCE (FR)  
 Citigroup (US)  
 Credit Agricole (FR)  
 Deutsche Bank (DE)  
 DZ Bank (DE)  
 Goldman Sachs (US)

HSBC (GB)  
 Intesa Sanpaolo (IT)  
 JP Morgan (US)  
 Morgan Stanley (US)  
 Mizuho (JP)  
 MUFG (JP)  
 RBC (CA)  
 SMFG (JP)  
 Societe Generale (FR)  
 Standard Chartered (GB)  
 State Street (US)<sup>m</sup>  
 Toronto Dominion (CA)  
 Unicredit (IT)  
 Wells Fargo (US)

### Other EU/single market banks<sup>n</sup>

ING Bank (NL)  
 Nordea (FI)  
 UBS (CH)

<sup>l</sup> This list includes banks identified as globally systemically important banks (G-SIBs) within the G7 and EU by the FSB as well as other banks in those countries that have an overall exposure of significance that requires them to disclose the main indicators outlined by the Basel Committee on Banking Supervision (BCBS) methodology on a consolidated basis. This approach enables the inclusion of a broader set of banks within the G7 defined as being of global systemic importance in comparison to the annual selection provided the FSB.

<sup>m</sup> In the case of State Street, as a custody bank the lending figures for which GHG emissions were calculated represent their “wholesale credit risk exposure” by counterparty and by geography, as reported by State Street in its 2022 disclosures. State Street itself has also highlighted that it can only estimate emissions for a very small part of its on-balance sheet exposure (which the researchers focused on), given that much of the debt is short term and methodologies do not exist to estimate financed emissions.

<sup>n</sup> Given that the EU is a non-enumerated member of the G7, these additional non-G7 but EU-based banks were included. UBS was included given Switzerland is part of the single market.

# ENDNOTES

- 1 IPCC. (2023). Sixth Assessment Report. The Synthesis Report. 20 March. <https://www.ipcc.ch/assessment-report/ar6/>
- 2 G7. (2023) G7 Finance Ministers and Central Bank Governors Meeting Communiqué. 13 May. <https://www.consilium.europa.eu/media/64307/g7-communique-20230513.pdf>
- 3 Rainforest Action Network. (2023). Banking on Climate Chaos. <https://www.bankingonclimatechaos.org/>
- 4 Sastry, P. et al. (2024). Business as Usual: Bank Climate Commitments, Lending, and Engagement. ECB Working Paper Series No 2921. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2921~603e225101.de.pdf?f3854e151126bea0371149d197b37353>
- 5 EU Commission. (2023). EDGAR – Emissions Database for Global Atmospheric Research. GHG emissions of all world countries. [https://edgar.jrc.ec.europa.eu/report\\_2023#emissions\\_table](https://edgar.jrc.ec.europa.eu/report_2023#emissions_table)
- 6 For a definition of “always environmentally harmful economic activities, businesses and sectors”, see: WWF. (2022). “Central Banking and Financial Supervision Roadmap: Transitioning to a Net Zero and Nature Positive Economy”, p31. [https://wwfint.awsassets.panda.org/downloads/wwf\\_gfri\\_roadmap\\_2022\\_nov\\_2022.pdf](https://wwfint.awsassets.panda.org/downloads/wwf_gfri_roadmap_2022_nov_2022.pdf)
- 7 BIS. 2024. Basel Committee agrees to revisions to Basel Core Principles, consults on addressing window-dressing in the G-SIB framework and reaffirms expectation about Basel III implementation. 29 February. <https://www.bis.org/press/p240229.htm>
- 8 Hiebert, P. and Monnin, P. 2023. Climate-Related Systemic Risks and Macroprudential Policy. Council on Economic Policies. 9 August. <https://www.cepweb.org/climate-related-systemic-risks-and-macroprudential-policy/>; Philipponnat, T. (2023). Finance in a Hot House World. Finance Watch. 31 October. <https://www.finance-watch.org/wp-content/uploads/2023/10/report-finance-in-a-hot-house-world.pdf>
- 9 Baranović, I. et al. (2024). The challenge of capturing climate risks in the banking regulatory framework: is there a need for a macroprudential response? ECB. [https://www.ecb.europa.eu/press/financial-stability-publications/macroprudential-bulletin/html/ecb.mpbu202110\\_1~5323a5baa8.en.html](https://www.ecb.europa.eu/press/financial-stability-publications/macroprudential-bulletin/html/ecb.mpbu202110_1~5323a5baa8.en.html)
- 10 The European Insurance and Occupational Pensions Authority confirmed in a consultation that fossil fuel-related assets are exposed to higher risk which justifies dedicated prudential treatment. See Consultation on the Prudential Treatment of Sustainability Risks. [https://www.eiopa.europa.eu/consultations/consultation-prudential-treatment-sustainability-risks\\_en](https://www.eiopa.europa.eu/consultations/consultation-prudential-treatment-sustainability-risks_en)
- 11 IPCC. (2023). Sixth Assessment Report. The Synthesis Report. p5, 20 March. <https://www.ipcc.ch/assessment-report/ar6/>
- 12 Azote for Stockholm Resilience Centre, Stockholm University. Based on Richardson et al. (2023), Steffen et al. (2015) and Rockström et al. (2009). <https://www.stockholmresilience.org/research/planetary-boundaries.html>
- 13 BIS. (2023) Where next for the Basel Committee? 28 April 2023. <https://www.bis.org/speeches/sp230428.htm#:~:text=The%20third%20theme%20of%20the,to%20the%20global%20banking%20system.>
- 14 Mehrhoff, J. (2023). Benefits of Accelerating the Climate Transition Outweigh the Costs. IMF. 5 December. <https://www.imf.org/en/Blogs/Articles/2023/12/05/benefits-of-accelerating-the-climate-transition-outweigh-the-costs>
- 15 Sastry, P. et al. (2024). Business as Usual: Bank Climate Commitments, Lending, and Engagement. ECB Working Paper Series No 2921. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2921~603e225101.de.pdf?f3854e151126bea0371149d197b37353>
- 16 Partnership for Carbon Accounting Financials. <https://carbonaccountingfinancials.com/>
- 17 Included because the EU is a non-enumerated member of the G7.
- 18 Included because Switzerland is a member of the EU single market.
- 19 BIS. (2023). Global systemically important banks: assessment methodology and the additional loss absorbency requirement. 27 November. <https://www.bis.org/bcbs/gsiib/>
- 20 PCAF (2022). The Global GHG Accounting and Reporting Standard Part A: Financed emissions. Second edition. <https://carbonaccountingfinancials.com/standard>
- 21 EU Commission. (2023). EDGAR – Emissions Database for Global Atmospheric Research. GHG emissions of all world countries. [https://edgar.jrc.ec.europa.eu/report\\_2023#emissions\\_table](https://edgar.jrc.ec.europa.eu/report_2023#emissions_table)
- 22 UNEP Finance Initiative. The Net Zero Banking Alliance Commitment. <https://www.unepfi.org/net-zero-banking/commitment/>
- 23 BIS. (2018). Basel Committee Charter. 5 June 2018. <https://www.bis.org/bcbs/charter.htm?m=78>
- 24 Moody’s Analytics. (2011). Regulation Guide: An Introduction <https://www.moodyanalytics.com/-/media/whitepaper/2011/11-01-03-Regulation-Guide-Introduction.pdf>
- 25 BIS. Climate-related risk drivers and their transmission channels. 14 April 2021. <https://www.bis.org/bcbs/publ/d517.htm>
- 26 U.S. Financial Stability Oversight Council 2023 Annual Report, p.45 <https://home.treasury.gov/system/files/261/FSOC2023AnnualReport.pdf>
- 27 Monnin, P. (2022). Is the current macroprudential framework fit for climate systemic risk? Council on Economic Policies. 13 November. <https://www.cepweb.org/is-the-current-macroprudential-framework-fit-for-climate-systemic-risk/>
- 28 WWF-Switzerland. (2021). Nature’s Next Stewards: Why Central Bankers Need to Take Action on Biodiversity Risk. [https://www.wwf.ch/sites/default/files/doc-2021-07/wwf\\_report\\_nature\\_s\\_next\\_stewards\\_14\\_july\\_2021.pdf](https://www.wwf.ch/sites/default/files/doc-2021-07/wwf_report_nature_s_next_stewards_14_july_2021.pdf)
- 29 Hiebert, P. and Monnin, P. 2023. Climate-Related Systemic Risks and Macroprudential Policy. Council on Economic Policies. 9 August. <https://www.cepweb.org/climate-related-systemic-risks-and-macroprudential-policy/>; Philipponnat, T. (2023). Finance in a Hot House World. Finance Watch. 31 October. <https://www.finance-watch.org/wp-content/uploads/2023/10/report-finance-in-a-hot-house-world.pdf>
- 30 Symon, J. (2021). A ‘Silver Bullet’ Against Green Swans – Incorporating Climate Risk into Prudential Rules. Finance Watch. 23 November. <https://www.finance-watch.org/policy-portal/sustainable-finance/report-a-silver-bullet-against-green-swans-incorporating-climate-risk-into-prudential-rules/>
- 31 Basel Committee on Banking Supervision. (2022). Principles for the Effective Management and Supervision of Climate-Related Financial Risks. BIS. <https://www.bis.org/bcbs/publ/d532.pdf>
- 32 BIS. (2024). Basel Committee agrees to revisions to Basel Core Principles, consults on addressing window-dressing in the G-SIB framework and reaffirms expectation about Basel III implementation. 29 February. <https://www.bis.org/press/p240229.htm>
- 33 Philipponnat, T. (2023). Finance in a Hot House World. Finance Watch. 31 October. <https://www.finance-watch.org/wp-content/uploads/2023/10/report-finance-in-a-hot-house-world.pdf>
- 34 Landell-Mills, N. (2024). Investors could play a key role in promoting banks’ climate resilience. Sarasin & Partners. 1 February. [https://sarasinandpartners.com/wp-content/uploads/2024/02/Letter-to-the-PRA-on-climate-risks-29\\_01\\_24.pdf](https://sarasinandpartners.com/wp-content/uploads/2024/02/Letter-to-the-PRA-on-climate-risks-29_01_24.pdf) Trust, S. et al. (2023). The Emperor’s New Climate Scenarios. The Institute and Faculty of Actuaries & the University of Exeter. July. <https://actuaries.org.uk/media/qeydewmk/the-emperor-s-new-climate-scenarios.pdf>

- 35 WWF-Switzerland and WWF-Singapore. (2023). 2023 SusReg Annual Report. <https://www.wwf.sg/susreg/wp-content/uploads/sites/6/2023/12/2023-Annual-Report.pdf>
- 36 FSB. (2022). Current climate scenario analysis exercises may understate climate exposures and vulnerabilities, warn FSB and NGFS. 15 November. <https://www.fsb.org/2022/11/current-climate-scenario-analysis-exercises-may-understate-climate-exposures-and-vulnerabilities-warn-fsb-and-ngfs/>
- 37 WWF-Switzerland and WWF-Singapore. (2023). 2023 SusReg Annual Report. <https://www.wwf.sg/susreg/wp-content/uploads/sites/6/2023/12/2023-Annual-Report.pdf>
- 38 Landell-Mills, N. (2024). Investors could play a key role in promoting banks' climate resilience. Sarasin & Partners. 1 February. [https://sarasinandpartners.com/wp-content/uploads/2024/02/Letter-to-the-PRA-on-climate-risks-29\\_01\\_24.pdf](https://sarasinandpartners.com/wp-content/uploads/2024/02/Letter-to-the-PRA-on-climate-risks-29_01_24.pdf)
- 39 BIS. (2023). Basel Committee consults on a disclosure framework for climate-related financial risk. 29 November. <https://www.bis.org/press/p231129.htm#:~:text=Basel%20Committee%20issues%20public%20consultation,proposals%20by%2014%20March%202024.>
- 40 FSB. (2021). FSB Roadmap for Addressing Climate-related Financial Risks. 7 July. <https://www.fsb.org/2021/07/fsb-roadmap-for-addressing-climate-related-financial-risks/>
- 41 Bailey, A. (2020). The time to push ahead on tackling climate change. Bank of England. 9 November. <https://www.bankofengland.co.uk/speech/2020/andrew-bailey-speech-corporation-of-london-green-horizon-summit>
- 42 For a definition of "always environmentally harmful economic activities, businesses and sectors" see: WWF. (2022). Central Banking and Financial Supervision Roadmap: Transitioning to a Net Zero and Nature Positive Economy, p31. [https://www.fint.awsassets.panda.org/downloads/wwf\\_gfri\\_roadmap\\_2022\\_nov\\_2022.pdf](https://www.fint.awsassets.panda.org/downloads/wwf_gfri_roadmap_2022_nov_2022.pdf)
- 43 BIS. (2024). Basel Committee agrees to revisions to Basel Core Principles, consults on addressing window-dressing in the G-SIB framework and reaffirms expectation about Basel III implementation. 29 February. <https://www.bis.org/press/p240229.htm>
- 44 Hiebert, P. and Monnin, P. (2023). Climate-Related Systemic Risks and Macroprudential Policy. Council on Economic Policies. 9 August. <https://www.cepweb.org/climate-related-systemic-risks-and-macroprudential-policy/> Philipponnat, T. (2023). Finance in a Hot House World. Finance Watch. 31 October. <https://www.finance-watch.org/wp-content/uploads/2023/10/report-finance-in-a-hot-house-world.pdf>
- 45 Baranović, I. et al. (2024). The challenge of capturing climate risks in the banking regulatory framework: is there a need for a macroprudential response? ECB. [https://www.ecb.europa.eu/press/financial-stability-publications/macroprudential-bulletin/html/ecb.mpbu202110\\_1~5323a5baa8.en.html](https://www.ecb.europa.eu/press/financial-stability-publications/macroprudential-bulletin/html/ecb.mpbu202110_1~5323a5baa8.en.html)
- 46 The European Insurance and Occupational Pensions Authority confirmed in a consultation that fossil fuel-related assets are exposed to higher risk which justifies dedicated prudential treatment See Consultation on the Prudential Treatment of Sustainability Risks. [https://www.eiopa.europa.eu/consultations/consultation-prudential-treatment-sustainability-risks\\_en](https://www.eiopa.europa.eu/consultations/consultation-prudential-treatment-sustainability-risks_en)
- 47 Greenhouse Gas Protocol. Technical Guidance for Calculating Scope 3 Emissions. Category 15: Investments. <https://ghgprotocol.org/sites/default/files/2022-12/Chapter15.pdf>
- 48 PCAF (2022). The Global GHG Accounting and Reporting Standard Part A: Financed Emissions. Second edition. <https://carbonaccountingfinancials.com/standard>
- 49 PCAF (2023). The Global GHG Accounting and Reporting Standard Part B: Facilitated emissions. First edition. <https://carbonaccountingfinancials.com/standard>
- 50 PCAF. (2022). The Global GHG Accounting and Reporting Standard Part A: Financed Emissions. Second edition. <https://carbonaccountingfinancials.com/standard>



**ReCommon**

Via dei Sardi 28  
00185 – Rome, Italy

[www.recommon.org](http://www.recommon.org)  
email: [info@recommon.org](mailto:info@recommon.org)