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### **Matters relating to finance**

### **Matters relating to the Standing Committee on Finance**

## **Conference of the Parties serving as the meeting of the Parties to the Paris Agreement**

### **Fourth session**

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Item 8(a) of the provisional agenda

### **Matters relating to finance**

### **Matters relating to the Standing Committee on Finance**

## **Report of the Standing Committee on Finance**

### **Addendum**

### **Mapping of available information relevant to Article 2, paragraph 1(c), of the Paris Agreement, including its reference to Article 9 thereof**

#### *Summary*

This document provides a mapping of available information relevant to Article 2, paragraph 1(c), of the Paris Agreement, including its reference to Article 9 thereof, in accordance with decision 4/CP.26, paragraph 13. It builds on work undertaken by the Standing Committee on Finance in the fourth Biennial Assessment and Overview of Climate Finance Flows and provides updated information and insights based on the mapping for consideration by the Conference of the Parties at its twenty-seventh session.



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## Abbreviations and acronyms

AfDB	African Development Bank
AR	Assessment Report of the Intergovernmental Panel on Climate Change
ASEAN	Association of Southeast Asian Nations
AUM	assets under management
BA	biennial assessment and overview of climate finance flows
BCBS	Basel Committee on Banking Supervision
CA100+	Climate Action 100+
CCCA	Collective Commitment to Climate Action
CCRI	Coalition for Climate Resilience Investment
CDP	Carbon Disclosure Project
CFMCA	Coalition of Finance Ministers for Climate Action
CO <sub>2</sub>	carbon dioxide
COP	Conference of the Parties
CRVA	climate risk and vulnerability assessment
DAC	Development Assistance Committee of the Organisation for Economic Co-operation and Development
DFI	development finance institution
E3G	Third Generation Environmentalism
ECB	European Central Bank
EDFI	Association of bilateral European Development Finance Institutions
EU	European Union
FC4S	United Nations Development Programme Financial Centres for Sustainability
G20	Group of 20
GCF	Green Climate Fund
GFANZ	Glasgow Financial Alliance for Net Zero
GHG	greenhouse gas
GIS	Global Investor Statement on Climate Change
HLEG	High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities
ICAI	Independent Commission for Aid Impact
IDFC	International Development Finance Club
IEA	International Energy Agency
IIGCC	Institutional Investors Group on Climate Change
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
ISSB	International Sustainability Standards Board
MDB	multilateral development bank
MRV	measurement, reporting and verification
NDC	nationally determined contribution
NGFS	Network of Central Banks and Supervisors for Greening the Financial System
NZAM	Net Zero Asset Managers initiative
NZAOA	Net Zero Asset Owner Alliance
NZBA	Net-Zero Banking Alliance
NZFSPA	Net Zero Financial Service Providers Alliance
NZIA	Net-Zero Insurance Alliance
NZICI	Net Zero Investment Consultants Initiative

ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
OECM	One Earth Climate Model
PACTA	Paris Agreement Capital Transition Assessment
PAII	Paris Aligned Investment Initiative
PCAF	Partnership for Carbon Accounting Financials
REDD+	reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks (decision 1/CP.16, para. 70)
SBN	Sustainable Banking Network
SBTi	Science Based Targets initiative
SCF	Standing Committee on Finance
SDG	Sustainable Development Goal
SR1.5	Intergovernmental Panel on Climate Change Special Report on Global Warming of 1.5 °C
SSE	United Nations Sustainable Stock Exchanges Initiative
TCFD	Task Force on Climate-related Financial Disclosures
TPI	Transition Pathway Initiative
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP FI	Finance Initiative of the United Nations Environment Programme
USAID	United States Agency for International Development

## **I. Introduction**

### **A. Mandate**

1. COP 26 requested the SCF to undertake further work on mapping the available information relevant to Article 2, paragraph 1(c), of the Paris Agreement, including its reference to Article 9 thereof, with a view to providing input for consideration at COP 27.<sup>1</sup>

2. Article 2, paragraph 1, of the Paris Agreement states that the Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by, as specified in paragraph 1(c), making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development.

### **B. Approach**

3. This mapping of information relevant to Article 2, paragraph 1(c), of the Paris Agreement builds on previous work undertaken by the SCF in this regard. The third (2018) BA considered, for the first time, information relevant to Article 2, paragraph 1(c), including information on methodologies and metrics, and available data sets.

4. At COP 24, Parties requested the SCF to map, every four years, as part of its BA, the available information relevant to Article 2, paragraph 1(c), of the Paris Agreement, including its reference to Article 9 thereof.<sup>2</sup> The fourth (2020) BA,<sup>3</sup> in responding to this mandate, adopted an actor-specific approach to mapping relevant information in a new chapter dedicated to this purpose. The mapping captured information from public finance actors, private finance actors, regulatory authorities and market operators such as stock exchanges and financial centres.

5. In building on the previous mapping conducted, this mapping provides:

- (a) A review of the key findings of the mapping conducted for the fourth BA (chap. II below);
- (b) An overview of updates since the fourth BA (chap. III below);
- (c) A discussion of insights gleaned from the further mapping of information relevant to Article 2, paragraph 1(c) (chap. IV below).

6. As noted in the fourth BA mapping exercise, understanding related to the scope of Article 2, paragraph 1(c), varies among different Party and non-Party stakeholders; therefore, this mapping exercise does not suggest a common view on the scope and implications of the goal set out in Article 2, paragraph 1(c), or on recommendations for implementing ongoing efforts related to Article 2, paragraph 1(c). This position is reflected in the structure of the mapping, which provides an overview of updates and of reported insights from the underlying sources of information.

## **II. Key findings related to Article 2, paragraph 1(c), of the Paris Agreement from the fourth biennial assessment and overview of climate finance flows**

7. In the absence of a common vision among Parties on what information may be relevant to Article 2, paragraph 1(c), the aim of the mapping exercise of the fourth BA was to reflect how different financial actors, in both the public and the private spheres, support the achievement of the goal set out in that paragraph and what is considered to be relevant

<sup>1</sup> Decision 4/CP.26, para. 13.

<sup>2</sup> Decision 4/CP.24, para. 10.

<sup>3</sup> See document FCCC/CP/2021/10/Add.1–FCCC/PA/CMA/2021/7/Add.1.

from their perspective. In this context, the fourth BA noted that some Parties have articulated policies and measures in their long-term strategies or domestic policy frameworks that relate to the goal. Furthermore, some public and private sector institutions in the financial sector have articulated in their strategies efforts to align with the Paris Agreement and the goal in Article 2, paragraph 1(c).

8. The fourth BA found **there has been significant growth in relevant initiatives since the Paris Agreement entered into force**, in particular in coalitions fostering collective commitments on climate action. Activities relevant to Article 2, paragraph 1(c), in many instances, are found in practices, coalitions and initiatives that predate the Paris Agreement. Policy and regulatory measures on green finance have been recorded since 1980, although there has been a marked increase in such measures since the adoption of the Paris Agreement (see updated data in chap. III.B below).

9. Many activities across the stakeholder mapping exercise that explicitly refer to achieving the goals of the Paris Agreement, and Article 2, paragraph 1(c), in particular, are executed through collective initiatives and organizations. This highlights the importance of network effects, knowledge-sharing and common goal setting. In contrast, relatively few relevant actions by national governments are framed in the context of Article 2, paragraph 1(c). In developing countries, the ability to access international climate finance in the context of Article 9 is mentioned, as is directing domestic finance flows towards achieving NDC goals.

10. The fourth BA found that **assessing the real-economy impact of financial sector initiatives and the risk of greenwashing remain a challenge**. Efforts that aim to work towards achieving the goal set out in Article 2, paragraph 1(c), are widespread across all types of actors within the financial sector, including investors, banks and regulators, with actions concentrated on defining their exposure to climate risks and the economic opportunities linked to climate change response measures. However, achieving the goal of making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development depends on real-economy actions that reduce emissions in line with temperature goals and help to build climate resilience.

11. Many actors in the financial sector operate at a number of steps removed from real-economy activities, through stock or bond trading, portfolio allocations or microprudential supervision, which has a less direct effect on real-economy investment decisions relative to banks lending to projects, corporations approving capital expenditure plans or governments announcing support incentives. Therefore, measuring the effectiveness of the role of financial actors, including determining which metrics are most important as indicators of success, in the context of Article 2, paragraph 1(c), is a notable topic of debate among initiatives.

12. Actors are largely adopting approaches in line with their institutional mandates, geographical reach and interpretation of how climate risks and opportunities affect and benefit their operations. The initiatives with the widest coverage and scope among financial actors are voluntary in nature, with often non-prescriptive commitments to principles. More recently, some initiatives have been including mandatory implementation requirements against common timelines (see updated data in chap. III.B below).

13. A number of initiatives relevant to Article 2, paragraph 1(c), include **representation from different regions and both developed and developing countries, but further work was required to deepen inclusivity and participation** (see updated data in chap. IV.B below). For private finance actors, unevenness in representation reveals the different relative starting points, capacity and skills gaps that exist within coalitions that make common commitments. For all public and private finance actors, inclusive and broad geographical representation is critical so that perspectives of different financial systems and country priorities can be reflected in how common goals are articulated and pursued against the backdrop of the Paris Agreement.

14. **Pursuing consistency requires consideration of how finance targeted at GHG-intensive activities can support a pathway towards low GHG emissions, as well as elements towards just transition**. A focus on individual financing or investment decisions that are consistent with a pathway towards low GHG emissions and climate-resilient development is not straightforward, owing to the significant potential range of pathways that

may be followed for achieving the broader goals in Article 2 of the Paris Agreement. The trend towards developing climate, green or sustainable finance taxonomies, as seen across multiple public actor initiatives, can support the identification of activities that are consistent with such pathways, but may risk excluding necessary investment in high-emission sectors or activities that can support the overall transition to such pathways. These may be in areas where activities that are consistent are not yet available at scale owing to slow technological innovation (e.g. steel and cement production), where activities are needed to enable the transition (e.g. financing of mining activities and road building) or where financing is needed to wind down or responsibly manage the retiring of high-emission activities and transition communities away from reliance on them (e.g. coal phase-out policies and subsidies).

15. National and regional transition finance taxonomies and transition bonds are being developed for private actors to finance, for example, transitional activities in the context of financing just transition, which implies projects that meet certain conditions, such as displacing more GHG-intensive options compared with industry norms and enabling wider application or integration of less GHG-intensive options.

16. **Further consideration of climate-resilient development pathways is necessary to complement existing approaches.** The mapped approaches include a strong focus on actions linked to achieving the goal in Article 2, paragraph 1(a), of the Paris Agreement, namely financing investments related to low GHG emissions, and to mitigating the physical and transition-related risks of shifting from high- to low-emission development trajectories. There appears to be limited evidence of the degree to which financial actors are aligning their investment mandates with climate resilience goals linked to Article 2, paragraph 1(b), of the Paris Agreement. There is a view that focusing on proper climate-related risk disclosure should lead to better, more resilient investment and financing decisions as an end in and of itself, while other views have recognized the existing gaps in guidance and understanding of ways to engage in this element.

17. COP 26 and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, at its third session, welcomed the mapping of the information relevant to Article 2, paragraph 1(c), of the Paris Agreement in the fourth BA and took note of the key findings of the report, including that banks representing over USD 37 trillion in assets and institutional investors with USD 6.6 trillion in assets have pledged to align their lending and investments with net zero emissions by 2050. Furthermore, Parties were encouraged to ensure that just transition financing is incorporated into approaches to align climate action with the goals of the Paris Agreement.<sup>4</sup>

### III. Updated mapping of available information

18. This chapter provides an overview of key updates and developments of information relevant to Article 2, paragraph 1(c), of the Paris Agreement since the fourth BA.<sup>5</sup>

#### A. New initiatives

##### 1. Race to Zero and Race to Resilience campaigns

19. **The Race to Zero and Race to Resilience** campaigns led by the UNFCCC high-level champions have been mobilizing actors outside national governments to join the Climate Ambition Alliance since its launch at COP 25. The cities, regions, businesses, investors and education institutions that take part in the campaigns collectively cover 120 countries, 25 per cent of global CO<sub>2</sub> emissions and over 50 per cent of gross domestic product. The United Nations backed alliance GFANZ was launched in April 2021 by Mark Carney and the COP 26 Private Finance Hub in partnership with the high-level champions and the Race to Zero campaign, as well as with the COP 26 Presidency. GFANZ membership is aligned with the Race to Zero campaign; participating organizations are required to apply science-based

<sup>4</sup> Decision 5/CP.26, paras. 9–10, and decision 10/CMA.3, para. 1.

<sup>5</sup> Given the rescheduling of COP 26 from 2020 to 2021, the fourth BA was published in 2021 and contains information up until October 2021.

guidelines to reach net zero emissions across all emission scopes by 2050, set 2030 interim targets and commit to transparent reporting and accounting in line with Race to Zero criteria (more information on GFANZ is provided in para. 22 below).

20. The Race to Zero campaign updated its membership criteria in June 2022 through deliberations of the independent Expert Peer Review Group, which comprises over 200 experts from public and private financial institutions, non-governmental organizations and academia. Key updates to its minimum (“Starting Line”) criteria are requirements to commit to the phasedown and phase-out of all unabated fossil fuels as part of a just transition;<sup>6</sup> publicly disclose a transition plan; align policy engagement with net zero to support climate ambition at the subnational and national level; and cover all emission scopes for net zero target setting, including financed, portfolio or facilitated emissions in the case of financial institutions (Race to Zero, 2022a, 2022b). Under the optional Leadership Practices, updates include enhanced focus on biodiversity protection and deforestation, as well as supporting emission reductions beyond the value chain.

21. Dedicated climate resilience initiatives in the financial sector are less in number and smaller in scope than the financial sector initiatives that have formed in recent years to undertake decarbonization efforts and set net zero targets. However, various alliances and initiatives under the Race to Resilience campaign address resilience-building, with a focus on finance. Race to Resilience aims to catalyse action by non-State actors to build the climate risk resilience of 4 billion people from vulnerable groups and communities by 2030.

**(a) Race To Zero initiatives**

22. GFANZ is a strategic umbrella forum under which the leading net zero initiatives across the financial sector act to broaden, deepen and raise ambition to align with a net zero future. Through these efforts, the Alliance collectively aims to support progress on Article 2, paragraph 1(c), of the Paris Agreement and help unlock the enabling role of the financial sector to transition the global economy to net zero. The workstreams of GFANZ focus on three pillars: (1) net zero planning for financial institutions, (2) mobilization of capital to emerging markets and developing countries and (3) promotion of ambitious public policies for net zero targets. GFANZ represents over 500 financial institutions with over USD 130 trillion AUM through their participation in the following subsectoral initiatives:

(a) **Net Zero Asset Owner Alliance.**<sup>7</sup> NZAOA, convened by UNEP FI, has 72 members with a combined USD 10.4 trillion AUM as at May 2022 and growth of 100 per cent AUM since the end of 2020. These investors have committed to transitioning portfolios to net zero emissions by 2050, consistent with a maximum temperature rise of 1.5 °C, taking into account the best available science, including that of the IPCC, and to publishing interim targets every five years, starting in 2025. The Alliance devised an updated Target Setting Protocol in 2022 that aligns with the SR1.5 no or low overshoot pathways (IPCC, 2018). In addition to sectoral and (subsectoral) portfolio alignment targets, NZAOA promotes a stewardship approach of engagement with real-economy actors to address climate risks and facilitate emission reductions and defines targets for financing the transition to low GHG emissions;

(b) **Net Zero Asset Managers initiative.**<sup>8</sup> NZAM, launched in December 2020, brings together 273 asset managers with a combined USD 61.3 trillion AUM as at May 2022 that have committed to supporting investing that is aligned with net zero emissions by 2050 or sooner. NZAM is convened by six regional and global investor networks: Asia Investor Group on Climate Change, CDP (global), Ceres Investor Network on Climate Risk and Sustainability (North America), IIGCC (Europe), Investor Group on Climate Change (Australia and New Zealand) and Principles for Responsible Investment (global). It is a partner of the Race to Zero campaign. To comply with their commitment, participating organizations have committed to setting interim 2030 targets for the proportion of AUM

<sup>6</sup> This requirement restricts the development, financing and facilitation of new fossil fuel assets, and specifies no new coal projects. Implementation and timelines can vary across regions and sectors.

<sup>7</sup> <https://www.unepfi.org/net-zero-alliance/>.

<sup>8</sup> <https://www.netzeroassetmanagers.org/>.



aligned with net zero emissions by 2050 or sooner and to review these interim targets every five years to increase ambition until they reach complete coverage of AUM;

(c) **Paris Aligned Investment Initiative.**<sup>9</sup> PAII is another investor initiative associated with GFANZ that aligns financial portfolios to the Paris Agreement. PAII was founded in 2019 and comprises 57 asset owners with USD 3.4 trillion AUM as at August 2022. PAII facilitates climate commitments by asset managers through NZAM and by asset owners through the PAII Net Zero Asset Owner Commitment. With the purpose of developing common concepts, methodologies and approaches, it published the Net Zero Investment Framework 1.0 in 2021. This framework includes guidelines for setting net zero alignment targets and developing Paris-aligned investment strategies. A total of 118 investors with USD 34 trillion AUM engaged in the development of the framework. Future updates will expand the framework to the additional asset classes of private equity and infrastructure, and issue recommendations with regard to aligning portfolios with the adaptation and resilience goals of the Paris Agreement. Further implementation guidance will address the issues of identifying and measuring scope 3 emissions, using emission offsetting and setting targets (see chap. IV.C below);

(d) **Net-Zero Insurance Alliance.**<sup>10</sup> NZIA was constituted in July 2021 and comprises more than 20 insurance companies representing over USD 7 trillion AUM and 11 per cent of global premium volume. Members have committed to transitioning insurance and reinsurance underwriting portfolios to net zero emissions by 2050, consistent with a maximum temperature rise of 1.5 °C above pre-industrial levels by 2100, and to publishing intermediate, science-based targets according to the NZIA Target Setting Protocol, which is under development, every five years. In addition, NZIA members are committed to advancing the incorporation of climate-related risk management criteria and frameworks into their operations and engaging with clients on both decarbonization strategies and climate risk disclosures and management. NZIA is convened by the United Nations Principles for Sustainable Insurance;

(e) **Net-Zero Banking Alliance.**<sup>11</sup> NZBA is the banking component of GFANZ and the Race to Zero campaign. NZBA was founded in April 2021 and has grown to 116 member institutions with USD 70 trillion of banking assets as at September 2022. Member institutions are committed to aligning operational and financed emissions with net zero by 2050 or sooner, including by setting 2030 interim targets that are aligned with no or low overshoot 1.5 °C transition pathways, as specified by credible science-based climate scenarios, including but not limited to the latest IPCC and IEA modelling. To foster global decarbonization, the Alliance is committed to reflecting a just transition and to promoting engagement approaches with real-economy clients to increase capital allocation to low-carbon technologies. Further, NZBA supports the integration and harmonization of sustainability-related disclosure standards across the financial system in cooperation with financial services providers, supervisors and standard setting bodies such as ISSB. The Alliance is convened by UNEP FI;

(f) **Net Zero Financial Service Providers Alliance.**<sup>12</sup> NZFSPA, created in September 2021, brings together investment advisers, rating agencies, auditors, and index and other financial services providers that have committed to aligning relevant products and services to achieving net zero GHG emissions by 2050 or sooner. NZFSPA has grown to 23 members since its initiation. It is supported by the Principles for Responsible Investment network and will develop approaches to indirectly support real-economy decarbonization through Paris-aligned service and product offerings;

(g) **Net Zero Investment Consultants Initiative.**<sup>13</sup> NZICI was established in September 2021 and commits investment consultants to integrating advice on net zero alignment in accordance with a 1.5 °C emissions trajectory into their services as soon as

<sup>9</sup> <https://www.parisalignedinvestment.org/>.

<sup>10</sup> <https://www.unepfi.org/net-zero-insurance/>.

<sup>11</sup> <https://www.unepfi.org/net-zero-banking/>.

<sup>12</sup> <https://www.netzeroserviceproviders.com/>.

<sup>13</sup> <https://www.unpri.org/climate-change/leading-investment-consultants-form-global-initiative-to-push-for-net-zero/8549.article>.

possible, and within two years of making this commitment. Currently, 12 members advising on assets of over USD 10 trillion have signed up to the Initiative. NZICI commitments are designed to facilitate alignment of investor practices with NZAOA, NZAM and other signatories to the Race to Zero campaign. The Initiative is supported by the Principles for Responsible Investment.

**(b) Race to Resilience initiatives**

23. Most of the initiatives identified under the Race to Resilience campaign that interlink with ambition under Article 2, paragraph 1(c), of the Paris Agreement are private-sector-led or multi-stakeholder platforms dedicated to insurance and other financial instruments that address climate and disaster risk management and reduction. Some of the initiatives foster financial sector activity or capacity-building for climate resilience in the infrastructure, buildings or agriculture sectors specifically. The identified initiatives are:

(a) **InsuResilience Global Partnership.**<sup>14</sup> This Partnership was initiated by the G20 and the Vulnerable Twenty Group in 2017 and comprises more than 118 partners and stakeholders, with strong representation from large insurance corporations. It develops and disseminates insurance and other financial products dedicated to fostering climate resilience and to limiting climate and disaster risks, for example, sovereign disaster insurance schemes that transfer risks from the public to the private sector to increase fiscal space and improve long-term planning capacities in risk-prone environments;

(b) **Insurance Development Forum.**<sup>15</sup> This Forum is a public–private partnership that was established at COP 22 (2016). With the support of the World Bank and the United Nations, the Forum brings together insurance institutions and public authorities. The aim of its four working groups – addressing risk modelling, regulation and resilience policies, sovereign and humanitarian solutions, and inclusive insurance – is to enhance climate resilience measures and capacities globally. In 2021, the Forum deployed 90 industry experts to country projects and at COP 26, a partnership between the Global Risk Modelling Alliance and the Vulnerable Twenty Group of Ministers of Finance of the Climate Vulnerable Forum, covering 55 climate-vulnerable countries, was announced in order to advance climate risk solutions;

(c) **ARISE Private Sector Alliance for Disaster Resilient Societies.**<sup>16</sup> This Alliance focuses on resilience-building of small and medium-sized enterprises and on integrating climate risk considerations in investment decisions of the financial sector;

(d) **International Coalition for Sustainable Infrastructure.**<sup>17</sup> This Coalition of global engineering companies pursues a finance action track to provide technical support for and scale up the financing of sustainable infrastructure through the City Climate Finance Gap Fund. The Coalition, through its members, has committed to influencing or delivering 3,780 projects in 210 cities to improve the climate resilience of 567 million people by 2030 in the context of the Race to Resilience campaign;

(e) **Scale for Resilience.**<sup>18</sup> This initiative aims to increase the climate resilience of 100,000 smallholder farmers in the next five years through improving the financing infrastructure for adaptation actions. The approach to be applied is based on a software solution that supports financial institutions in decision-making with regard to investments for smallholder farmers and in the selection of appropriate nature-based solutions.

24. Further notable financial sector initiatives not formally associated with the Race to Resilience campaign addressing climate resilience are, among others:

(a) **Coalition for Climate Resilience Investment.**<sup>19</sup> CCRI, founded at the United Nations Climate Action Summit 2019, is a private-sector-led initiative that includes over 120 member organizations, including private financial institutions, rating agencies, governments

<sup>14</sup> <https://www.insuresilience.org/>.

<sup>15</sup> <https://www.insdevforum.org/>.

<sup>16</sup> <https://www.ariseglobalnetwork.org/>.

<sup>17</sup> <https://sustainability-coalition.org/>.

<sup>18</sup> <https://www.scaleforresilience.global/>.

<sup>19</sup> <https://resilientinvestment.org/>.

and international organizations. The main objective of CCRI is to address the adequate management and pricing of physical climate risks in the financial system. It works towards that objective through three workstreams: systemic resilience, asset design and structuring, and financial innovation. CCRI members have USD 20 trillion AUM and are active in over 115 countries;

(b) **Munich Climate Insurance Initiative.**<sup>20</sup> This Initiative is a non-government-led resilience finance initiative that enhances the global availability of insurance and risk financing instruments, in particular in developing countries and the most vulnerable countries, through close collaboration with the Vulnerable Twenty Group of countries. Among other work, it supports economic and physical climate risk modelling with the Economics of Climate Adaptation methodology, which rationalizes and provides recommendations for risk management and adaptation strategies.

## 2. Climate-related financial disclosure initiatives

25. In November 2021, **ISSB**<sup>21</sup> was created by the International Financial Reporting Standards Foundation with the intention of providing global guidelines for sustainability-related disclosure standards, in addition to those of the well-established International Accounting Standards Board focusing on financial disclosures. The development of the International Financial Reporting Standards sustainability disclosure standards responds to the increasing demand by global capital markets of transparent and comparable corporate reporting on climate- and environment-related matters. ISSB will incorporate two existing bodies – the Climate Disclosure Standards Board and Value Reporting Foundation – and synthesize widely adopted frameworks – such as the TCFD and Sustainability Accounting Standards Board Standards – taking into account recommendations and best practices of national jurisdictions and international organizations. Two draft sustainability standards that focus on the disclosure of climate-related and sustainability-related financial information were published in April 2022.

26. Within national and regional jurisdictions, a large number of new climate-related financial disclosure regulations have been issued or are in the process of development. These jurisdictions include, among others, Australia; Brazil; Canada; EU; Hong Kong, China; New Zealand; Switzerland; the United Kingdom of Great Britain and Northern Ireland; and the United States of America. Many of the regulatory frameworks adopt principles similar to the TCFD recommendations (see para. 39 below). In addition, financial supervisory authorities have issued specific guidance and reporting requirements for different asset classes and financial actors, covering investors, banks and insurers. Examples published in 2022 are the United States Security and Exchange Commission's proposed climate-related disclosure rules (United States Security and Exchange Commission, 2022) and the European Banking Authority's publication on implementing technical standards on prudential disclosures on environmental, social and governance risks (European Banking Authority, 2022).

27. In March 2022, the United Nations Secretary-General launched HLEG to support regulatory efforts to identify stringent net zero criteria and standards and to establish common accountability and transparency mechanisms for the decarbonization commitments of non-State entities, in particular in the financial sector. HLEG will issue a final report and recommendations in 2023, summarizing its findings in four areas of work (HLEG, 2022a):

- (a) Standards and definitions for setting net zero targets by non-State actors;
- (b) Credibility criteria for assessing the ambition, measurement and reporting of net zero commitments;
- (c) Governance mechanisms for verifying and improving the transparency of targets;
- (d) A road map to national and international regulation, including standards and criteria in the context of just transition.

<sup>20</sup> <https://climate-insurance.org/>.

<sup>21</sup> <https://www.ifrs.org/groups/international-sustainability-standards-board/>.

### 3. Alignment of development finance

28. At COP 26, **OECD DAC** committed to the Paris alignment of aid, acknowledging that poverty cannot be reduced and the goal of leaving no one behind cannot be realized if climate change is not tackled (OECD DAC, 2021). OECD DAC will implement Paris alignment approaches according to the national context and needs of partner countries to support low GHG emission, climate-resilient development pathways and transition towards net zero economies, while minimizing the risk of creating stranded assets. The OECD DAC declaration entails a commitment to end new ODA for unabated international thermal coal power generation by the end of 2021, building on the prior commitment of Group of Seven energy, climate and environment ministers announced in 2021.<sup>22</sup> A subset of OECD DAC members announced their intention to limit financing to fossil fuel projects to when there are no economically or technically feasible alternatives and when they are consistent with host countries' NDCs and part of a national transition plan.<sup>23</sup> OECD DAC will develop an approach to transitioning ODA expenditures towards net zero that is in line with the 1.5 °C temperature goal and is based on an analysis of energy generation needs. It will assist partner countries in planning processes to identify low-emission and renewable energy pathways and in further strengthening adaptive and resilience-building capacities.

29. Individual **bilateral donors and development aid agencies** have developed various approaches and frameworks for aligning the provision of climate finance with the purpose and goals of the Paris Agreement. The United Kingdom's Foreign, Commonwealth and Development Office has formulated four policy tools for Paris alignment: climate risk assessment, shadow carbon pricing, fossil fuel policy, and alignment of financing with countries' mitigation and adaptation plans (ICAI, 2021). The Japan International Cooperation Agency has in place a detailed operational approach to assessing and managing climate-related risks and to fostering the financing of climate adaptation and 'climate proofing'. Other aid agencies have formulated climate strategies that incorporate alignment or financing targets as well as guidelines for mainstreaming climate risk analysis in financing operations. The French Development Agency, for example, has formulated the goal that its activities be 100 per cent compatible with the Paris Agreement, consistent with long-term low GHG emission and climate-resilient development within implementing countries.<sup>24</sup> The USAID Climate Strategy 2020–2030 seeks to align its development portfolio with the climate change mitigation and adaptation commitments of at least 80 countries by 2024 and to support systemic change towards meeting those commitments in at least 40 partner countries (USAID, 2022).

30. MDBs, international DFIs and individual DFIs have committed to the Paris alignment of their operations since 2017, with the initial focus being on the alignment of direct financing operations.<sup>25</sup> Further efforts to mainstream climate consistency in indirect lending operations, whereby development finance is channelled through financial intermediaries, can enhance the alignment of finance flows and the broader financial system through increasing awareness, increasing local capacities and adjusting operational guidance towards the purpose and goals of the Paris Agreement (Fuchs et al., 2021). The MDBs are in the process of exploring approaches and devising guidelines for the Paris alignment of intermediated lending operations (AfDB et al., 2021). Given the multifaceted and fractured landscape of financial intermediation, and the varying institutional and capacity profiles of counterparty financial institutions, alignment will necessitate substantial efforts and resources over time. Policy-based financing of DFIs has been identified as another area that can promote low-emission, climate-resilient pathways in developing countries through linking finance with

<sup>22</sup> See <http://www.g7.utoronto.ca/environment/2021-environment.html>.

<sup>23</sup> These OECD DAC members are Austria, Belgium, Canada, Czechia, Denmark, EU, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, the Republic of Korea, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States.

<sup>24</sup> See <https://www.afd.fr/en/page-thematique-axe/climate>.

<sup>25</sup> In 2017, IDFC committed, together with MDBs, to aligning financial flows with the Paris Agreement, and 450 public development banks signed a joint declaration in 2020 to shift operational strategies, guidelines and investments towards contributing to the achievement of the SDGs and the purpose and goals of the Paris Agreement.

domestic policies or regulatory reforms that enhance NDCs or decarbonization strategies (McCandless et al., 2021). Paris alignment approaches for policy-based operations are at an early stage of development, with no operational guidelines or policies in place.

## **B. Status of relevant activities and initiatives in the financial sector**

### **1. Consistency of finance flows**

31. The contribution of Working Group III to the AR6 states that “assessing climate consistency or alignment implies looking at all investment and financing activities, whether they target, contribute to, undermine or have no particular impact on climate objectives. This all-encompassing scope notably includes remaining investments and financing for high-GHG emission activities that may be incompatible with remaining carbon budgets, but also activities that may play a transition role in climate mitigation pathways and scenarios” (IPCC, 2022b, p.15-8).

32. According to the fifth BA, global climate finance flows were 12 per cent higher in 2019–2020 than in 2017–2018, reaching an annual average of USD 803 billion.<sup>26</sup> Although climate finance flows are increasing, they remain relatively small in the broader context of other finance flows. Climate finance accounts for a small proportion of overall finance flows, as shown in figure 1.

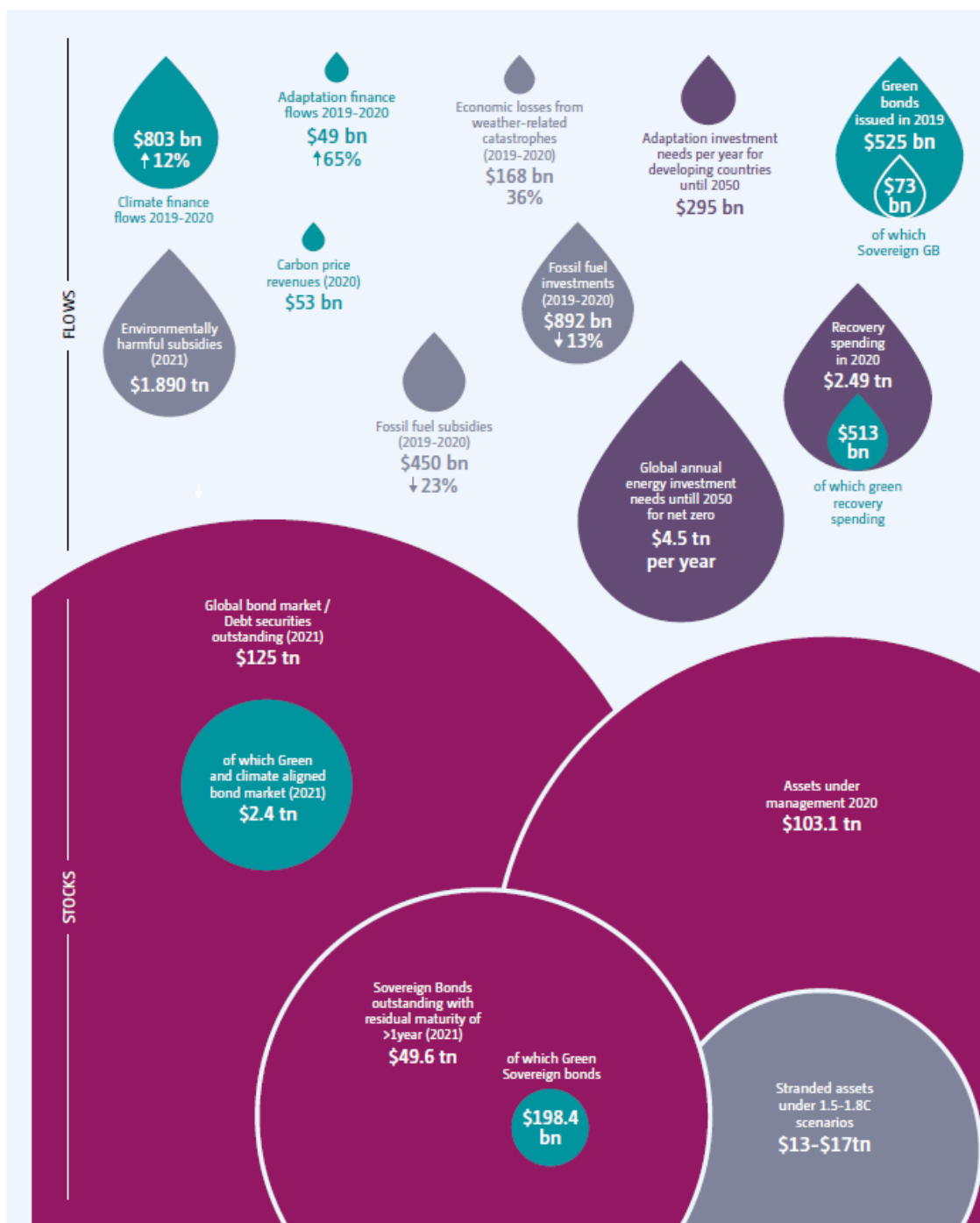
33. Awareness of climate-related financial risks is increasing; this progress is reflected in various mandatory and voluntary disclosure and transparency frameworks that have been or are being developed by public authorities, including governments, financial supervisory authorities and central banks, as well as by financial industry bodies (IPCC, 2022b). Yet there is also evidence of systematic underpricing of climate risks in financial decision-making and investments – both physical climate risks and transition risks emanating from policy, technological and societal changes due to the low-carbon transition (Brunetti et al., 2021). Stock market returns for corporations with significant CO<sub>2</sub> emissions remain high (in some financial markets, these corporations even outperform their less GHG-intensive peers) and the consideration of physical climate risks from climate-related hazards and global warming does not consistently feature in standard financial price and investment models (Bolton and Kacperczyk, 2021; TCFD, 2021a).

34. According to the fourth BA, finance flows and stocks in GHG-intensive activities remain high. The contribution of Working Group III to the AR6 concluded that a significant proportion of overall finance flows and stocks have to be made consistent with the climate goals of the Paris Agreement, and highlighted the key role of capital reallocation in a global financial system, where sufficient liquidity is available to close global investment gaps (IPCC, 2022b). Global fossil fuel investments in the energy sector amounted to USD 782 billion per year on average in 2019–2020, while fossil fuel subsidies amounted to USD 472 billion in 2020. Global coronavirus disease 2019 recovery packages (excluding stimulus spending) are estimated to have totalled USD 3.1 trillion over 2019–2020, of which 31 per cent was green spending. Investments with deforestation risks amounted to USD 38.3 billion per year in 2019–2020. Government spending on support activities potentially harmful to biodiversity was USD 273.9–542.0 billion in 2019, three to five times the total spending on biodiversity.

35. Fixed capital assets in sectors linked to fossil fuel systems amounted to USD 32 trillion, real estate assets at risk in 2070 amounted to USD 35 trillion, and stranded assets worth between USD 13 trillion and USD 18 trillion are at risk out to 2050. In contrast, green bond issuances in 2021 amounted to USD 523 billion while the amount of climate-aligned bonds outstanding in the same year made up 0.5 per cent of the overall bond market (Climate Bonds Initiative, 2022).

<sup>26</sup> See the fifth BA (document FCCC/CP/2022/8/Add.1–FCCC/PA/CMA/2022/7/Add.1) for an overview of the quality and completeness of data on global climate finance estimates.

Figure 1

**Global climate finance in the context of broader finance flows, opportunities and costs**

Source: The fifth BA.

Note: bn = billion, GB = green bonds, tn = trillion.

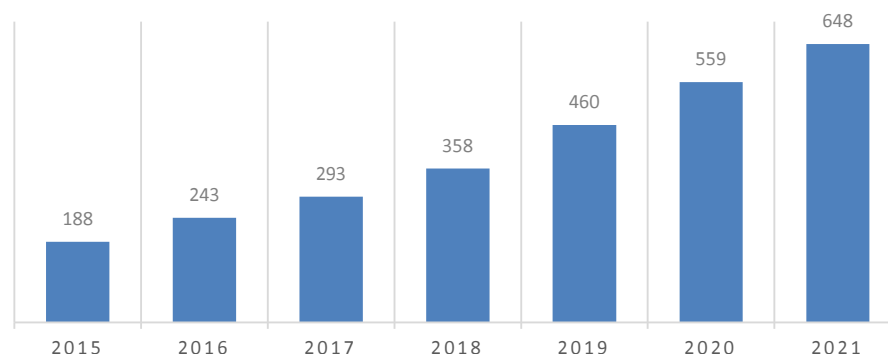
**2. Growth of relevant policies and regulations**

36. In 2021, there was a 16 per cent increase in the number of policy and regulatory measures for green finance, bringing the total to 648 measures registered in over 100 jurisdictions globally according to the Green Finance Measures Database (Green Finance Platform, 2022). Of those, 37 per cent originate from developing and emerging economies and 63 per cent from developed countries. Notable examples include the establishment of the

Regional Center for Sustainable Finance by Egypt’s Financial Regulatory Authority, the initiation of China’s emissions trading scheme, the implementation of the Australian Prudential Regulation Authority’s Climate Vulnerability Assessment of the financial sector and the development of revised EU sustainability reporting standards through the European Financial Reporting Advisory Group.

Figure 2

**Growth in cumulative green finance policy and regulatory measures**



Source: Green Finance Platform, 2022.

37. Governments are increasingly active in devising domestic **fiscal and budgetary practices and frameworks** through which they seek to track and guide the scaling up of public and private finance flows that are considered to be green and in line with both the goals of the Paris Agreement and national policy priorities. For example:

(a) While governments rarely frame the development of innovative green financial instruments and policies as a direct response to Article 2, paragraph 1(c), of the Paris Agreement, many **green or sustainable finance taxonomies** have the stated aims of enhancing climate action towards achieving the temperature goals of the Paris Agreement and increasing the mobilization of finance for environmentally friendly activities.<sup>27</sup> The main aspect of taxonomy design is mainstreaming the allocation of climate-relevant finance in the private sector through the specification of eligibility lists or principles of climate-related economic activities. A total of 32 countries and organizations around the world have put in place or are developing taxonomies;<sup>28</sup>

(b) **Green budget tagging** initiatives that systematically track and evaluate climate-related spending in public budgets have proliferated globally in recent years.<sup>29</sup> Since the fourth BA, a further 23 countries have announced they are developing and implementing country-level green budget tagging practices, bringing the total number of countries with regular tracking systems to 47 (excluding the EU as a regional jurisdiction). Climate budget monitoring, reporting and verification systems serve public administrations as useful tools for assessing green or climate-negative expenditures and exposure in order to report on domestic efforts as well as to align future budget allocations with the goals of the Paris Agreement (Gonguet et al., 2021). They also provide a quantified basis for assessing and communicating climate-related financial needs to the financial sector and thus can help in mobilizing additional climate change mitigation and adaptation and resilience investments;

(c) With regard to consistency of finance flows, some domestic **climate budget tagging systems**, such as that of France, refer to identifying harmful activities and green or environmentally supportive activities in public expenditures. Developing countries frequently emphasize their ability to access international climate finance in the context of Article 9 of the Paris Agreement as well as to direct domestic finance flows to achieving NDC targets or climate-resilient, low GHG emission economies, in documents related to green budgeting, tracking exercises such as the Climate Public Expenditure and Institutional

<sup>27</sup> See the fifth BA technical report, section 1.2.3.

<sup>28</sup> For further information, see the fifth BA technical report, section 1.2.3.

<sup>29</sup> See the fifth BA technical report, section 1.2.3.



Reviews and developing national taxonomies, such as those of Bangladesh, Mongolia and South Africa. The purpose of taxonomies to mobilize additional finance for the realization of domestic or regional climate targets is also visible in developed countries' taxonomies, such as that of the EU (European Commission, 2020);

(d) Taxonomies and green budgeting systems often form components of regional and national jurisdictions' **sustainable finance strategies**, which seek to incentivize the shift of financial systems towards sustainability considerations more broadly. The key objectives of these strategies are the mobilization of additional finance for climate change mitigation and adaptation, including fostering the climate resilience of financial systems and actors therein. While many sustainable finance strategies have not formulated specific financing targets, they can serve as frameworks under which taxonomies, green budget tagging, climate-related financial disclosure regulations and other concrete measures are developed. In particular, fostering financial sector resilience to climate change, covering both transition and physical risks, is explicitly expressed as a key objective of sustainable finance strategies (e.g. those of Bangladesh, EU, Germany and Singapore) through the comprehensive catalogue of envisaged measures, policies and tools to be developed;

(e) Various other green financial instruments, regulations and fiscal policy levers are under discussion or being employed by governments in their efforts and initiatives related to Article 2, paragraph 1(c), including green procurement policies, carbon pricing and taxes, public investment policies, financing institutions and approaches to public price support and subsidies (CFMCA, 2021).

### 3. Growth in private sector initiatives

38. Private sector corporations and financial institutions increasingly adopt climate-related financial disclosures to report on climate risks and opportunities in the financial sector. The **TCFD** under the Financial Stability Board reports that as at February 2022, 3,113 entities with a combined market capitalization of USD 29 trillion, including financial firms responsible for assets of USD 209 trillion, had indicated support for the TCFD set of voluntary disclosure guidelines and metrics. Between October 2021 and June 2022, about 500 additional companies have declared support for them. The recommendations of the TCFD have been developed further over the course of 2021 and 2022, and additional guidance on metrics, targets and transition plans and revised guidance on implementation were published (TCFD, 2021b). Investor expectations for increased climate-related disclosures are notable: The Investor Agenda's 2021 Global Investor Statement to Governments on the Climate Crisis, which called upon governments to commit to mandatory climate-related financial reporting requirements aligned with the TCFD principles, had 773 signatories with AUM of more than USD 52 trillion (Investor Agenda, 2021a). Increasing awareness of climate-related financial risks among regulators is reflected in the adoption, since 2021, of the TCFD recommendations as guiding principles for climate-related disclosures in jurisdictions around the world, including Australia; Brazil; Canada; EU; Hong Kong; China; New Zealand; Switzerland; the United Kingdom; and the United States.

39. As at the end of 2021, 2,253 companies had committed to setting or had approved science-based targets to reduce their emissions through **SBTi** – this was double the number in 2020. Of these, 1,171 companies committed to setting science-based corporate emission reduction targets. Of the 1,082 remaining companies that already have approved targets; 68 per cent were aligned with 1.5 °C scenarios in 2021 compared with 41 per cent in 2020. During the first quarter of the 2022 financial year, a further 500 corporations were reported by SBTi to have set or committed to science-based targets (SBTi, 2022). Under SBTi, non-financial entities set targets according to the Corporate Net-Zero Standard, published in October 2021, which has sector-specific decarbonization criteria and recommendations. Financial institutions have based near-term science-based target setting for investment and lending portfolios on the 2020 criteria and guidance publication. Comprehensive guidance for long-term target setting in the financial sector will be issued through the Net-Zero Standard for financial institutions, to be launched in 2023; this standard will be based on the recently published *Foundations for science-based net-zero target setting in the financial sector* (SBTi, 2022).



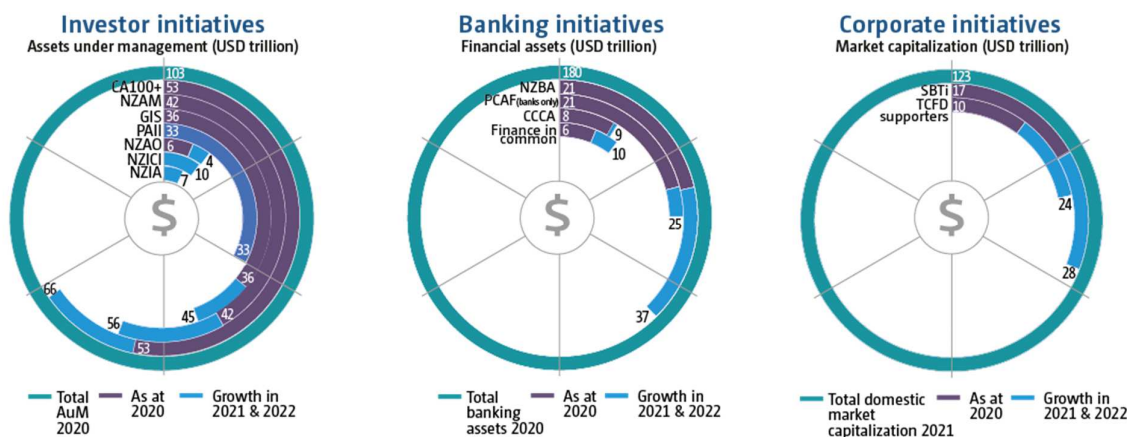
40. The **Climate Action 100+ Net Zero Company Benchmark** is a comprehensive evaluation of corporate performance in addressing climate change risks and the stringency of net zero transition pathways, first implemented in 2021. The assessments published in March 2022 cover 166 major emitting companies. The framework serves to inform decision-making processes for financial sector actors and to enhance, for the public, the transparency of progress of real-economy climate action by assessing company performance on three dimensions: emission reduction, climate change governance and disclosure. The stated ambition of the initiative is to measure progress against the target of achieving net zero emissions by 2050 or sooner. The benchmark indicators are directed towards alignment with the goal to limit global warming to 1.5 °C. In its second assessment iteration in 2022, the net zero company benchmark expanded, among other elements, its methodological scope to include just transition considerations and climate accounting and auditing practices (for further details, see chap. III.C below).

41. **The Investor Agenda** is a financial industry network founded through the Asia Investor Group on Climate Change, CDP, Ceres Investor Network on Climate Risk and Sustainability, IIGCC, Investor Group on Climate Change, the Principles for Responsible Investment and UNEP FI. As a coordinating platform, it advances work among constituent investors and service providers in four areas: corporate engagement in climate action in line with 1.5 °C; development of investment strategies and management of portfolio climate risks; policy advocacy for a just transition to a net zero economy by 2050 or sooner; and investor disclosures. Alongside advocacy and engagement work, The Investor Agenda has produced the Investor Climate Action Plans Expectations Ladder and accompanying guidance to inform expectations and best practices regarding Paris alignment in the financial sector (for further details, see chap. III.C below).

42. Global progress on the **Divest-Invest Global Movement** is tracked through the campaign organization Stand.earth. As at July 2022, 1,527 public and private financial institutions and authorities with combined AUM of approximately USD 40.6 trillion were reported to be pursuing some form of fossil fuel divestment policy (Global Fossil Fuel Divestment Commitments Database, 2022). Fossil fuel divestment policies have seen a large increase since 2014, when 181 institutions and USD 52 billion AUM were recorded (Stand.earth, 2021). By far the largest group of institutions recorded as having fossil fuel divestment policies were faith-based organizations (35 per cent), followed by educational institutions (15 per cent), philanthropic foundations, governments and pension funds (all three on 12 per cent) and for-profit corporations (9 per cent). As part of the C40 divestment campaign, the C40 Divest/Invest Forum serves as a convening platform, representing 18 local governments with divestment policies in place for a total of USD 400 billion AUM (George, 2021).

43. Figure 3 provides a comparative overview of the scale and volume of financial initiatives related to efforts to achieve the goal set out in Article 2, paragraph 1(c), of the Paris Agreement, taking into account relevant new and existing sustainability- and climate-related financial initiatives.

Figure 3

**Financial sector initiatives related to sustainability or climate action**

Source: Boston Consulting Group, 2021; Financial Stability Board, 2021; World Federation of Exchanges, 2021; a review of each organization's website.

#### 4. Growth in public initiatives

44. The CFMCA has grown its membership over time to 72 countries, with 11 countries, including Japan and the United States, joining in the year before COP 26, and an additional 7 countries joining since November 2021. On the basis of the six Helsinki Principles<sup>30</sup> (see table 1), the Coalition recognizes the important role of finance ministries in addressing the challenges arising from climate change and aims to foster collective action through supporting countries to mobilize and align the finance needed to implement their national climate action plans, establish best practices (such as climate budgeting and strategies) for green investment and procurement, and factor climate risks and vulnerabilities into economic planning. Two initiatives of the Coalition are notable:

(a) Joint COP 26 statement of the Chairs of the CFMCA and NGFS. In the joint statement, both organizations reaffirmed the need to take action within their respective fields of responsibility to implement appropriate economic policies and promote finance flows consistent with a pathway towards low GHG emissions and climate-resilient development in line with Article 2, paragraph 1(c), of the Paris Agreement.<sup>31</sup> The priorities and potential areas for collaboration identified focus on incorporating climate considerations into recovery plans, assessing climate-related economic and financial impacts, mobilizing private sector capital, and enhancing considerations related to sustainable agriculture, forestry and land use;

(b) Santiago Action Plan. Mapping progress to achieve the vision underpinning the Helsinki Principles was articulated in the Santiago Action Plan, which represents the collective vision of the CFMCA and participating ministries of finance on progress to achieve the Helsinki Principles and implement the Paris Agreement.

<sup>30</sup> As formulated in the CFMCA Helsinki declaration, available at <https://www.financeministersforclimate.org/helsinki-principles#:~:text=Mobilize%20private%20sources%20of%20climate,submitted%20under%20the%20Paris%20Agreement.>

<sup>31</sup> Available at <https://www.financeministersforclimate.org/sites/cape/files/inline-files/Chairs%20Joint%20COP26%20Statement%20-%2003Nov2021.pdf>.

Table 1

**Progress under the Coalition of Finance Ministers for Climate Action towards mainstreaming climate change in economic and financial decisions**

<i>Helsinki Principles</i>	<i>Current Progress (as at November 2021)</i>
1. Align national public finance policies and practices with the Paris Agreement	<p>Results of a survey on finance ministries' engagement in the preparation of long-term strategies show that:</p> <p>Finance ministries often collaborate with, other agencies – including ministries of the environment – that lead the process of long-term strategy development;</p> <p>More work needs to be done on adaptation, improvement of the public investment management system, and parliamentary oversight;</p> <p>The support of the CFMCA is needed mostly on economic modelling and cost–benefit analysis of decarbonization measures.</p> <p>Involvement in long-term strategy preparations was considered burdensome, with coordination and collaboration between stakeholders being the biggest challenge.</p>
2. Share experience and expertise among each other	The role of training and policy research have been identified as key elements in supporting evidence-based policy and decision-making of finance ministries. Training needs are strongly linked to institutional capacity-building, especially in low- and middle-income countries, with a need to acquire new knowledge and skills on climate economics through education programmes with an emphasis on the science–policy interface.
3. Work towards effective carbon pricing measures	31 countries have implemented carbon pricing initiatives in some form, of which 19 are represented in the CFMCA. 65 per cent have fossil fuel subsidies in place. 60 per cent have some form of carbon taxation in place and are considering reforms on fossil fuel subsidies or taxation.
4. Take climate action into account in developing macroeconomic policy, fiscal planning, budgeting, public investment management and procurement practices	Ongoing progress in identifying methods for detecting, measuring, and managing fiscal risks and impacts arising from the effects of climate change, and to mainstream tools that consider climate change in economic planning, modelling and budgetary process, with much of the underlying work being considered, developed, trialled or put into practice.
5. Mobilize private finance for climate action by facilitating investments and developing a financial system that supports mitigation and adaptation	Recommendations have been issued for climate change mainstreaming in domestic financial systems including for climate-related financial risk management, sustainable finance road maps, encouraging private financial sector Paris alignment commitments, developing green bonds, green banks and financial instruments, and strengthening actions at the climate-nature nexus.
6. Engage in developing and implementing the NDCs	<p>Although environment ministries have typically the responsibility for development and implementation of NDCs, ministries of finance are playing an important role through interministerial coordination.</p> <p>Survey on the engagement of finance ministries in NDC preparation and implementation was completed by 45 members and showed that 76 per cent of finance ministries are working with financial institutions and line ministries to ensure climate policies were coordinated and coherent.</p> <p>Activities include the integration of NDC requirements into climate-informed programmes and budgeting frameworks, assessment of budget execution and climate finance monitoring, and quality evaluation of NDC-related expenditures.</p>

*Source:* Based on CFMCA, 2021.

45. Since adoption of the Paris Agreement, central banks and financial supervisory authorities have recognized climate change as a key source of financial risk in the financial system and have started to adopt climate change adjusted risk management and supervisory practices. Climate change related financial risk assessments are being conducted with regard to individual financial institutions (microprudential supervision) and the wider financial system (macroprudential supervision) in the form of credit risk analysis and climate stress testing based on scenario modelling, and the first evidence of climate change related portfolio adjustment measures are visible (Bank of England, 2022; ECB, 2022) (see chap. III.C below for further details on the application of methodologies). The key convening initiatives of supervisory authorities are listed below in paragraphs 46–47.

46. Global coalitions of central banks have been formed, primarily through the **NGFS**, which was established in December 2017. This Network is a voluntary initiative by central bankers to strengthen the global response to climate change, specifically focused on meeting the goals of the Paris Agreement, and to enrich the role of the financial ecosystem in managing environmental and climate risks. NGFS facilitates the sharing and exchange of best practices and commissions research related to its primary objectives. The membership of NGFS considerably increased between May 2020 and May 2022: from 66 members and 12 observers to 114 members and 18 observers. In 2019, it defined six principal recommendations for central banks, supervisors, policymakers and financial institutions to enhance their role in the greening of the financial system and the management of climate- and environment-related risks. NGFS published a variety of research outputs and methodologies in 2020–2022 based on these principles, including the second set of NGFS climate scenarios (June 2021), a report on supervisory practices and the use of climate scenarios (October 2021), a guide to climate-related disclosures for central banks (December 2021), a report on enhancing market transparency in green and transition finance (April 2022), updates on existing analyses and practices for climate-related risk differentials and credit ratings (May 2022) and a report on bridging data gaps (July 2022). In the NGFS Glasgow Declaration: Committed to Action,<sup>32</sup> the NGFS specified its commitments to:

- (a) Further enhance and enrich its climate scenarios, thus providing on a regular basis an important public good for a broad range of stakeholders, both public and private;
- (b) Deepen its analysis on integrating climate change considerations into monetary policy strategies and frameworks, in the context of the mandates of its members;
- (c) Intensify the work to bridge the data gaps that currently hinder the identification, management and mitigation of climate-related risks;
- (d) Supplement the set of NGFS practical guides with guidelines on TCFD-aligned reporting for central banks;
- (e) Facilitate an uplift in supervisory capabilities and the global consistency of supervisory practices;
- (f) Step up its efforts on capacity-building, with a particular focus on members from emerging and developing economies, to support members' progress in addressing climate-related and environmental risks and in implementing the NGFS recommendations;
- (g) Keep exploring emerging topics such as the impact of the loss of biodiversity or the risks associated with climate-related litigation, and work towards addressing them, in the context of the mandates of its members;
- (h) Continue to cooperate with standard setters and other policymakers, the financial sector, academia and other relevant stakeholders to continue distilling best practices, identifying challenges and solutions, and avoiding the duplication of work.

47. The **BCBS**, comprising 45 central banks and supervisors from 28 jurisdictions, issued in June 2022 principles for the management and supervision of climate-related financial risks. The 18 principles are designed to serve as high-level international guidelines addressing both banks and supervisors, and the recommendations set out by the principles that address banks' risk management practices are similar to the TCFD recommendations. The principles relate

<sup>32</sup> Available at <https://www.ngfs.net/sites/default/files/ngfsglasgowdeclaration.pdf>.

to governance, internal controls, consideration of capital and liquidity adequacy, market and credit risk assessments, monitoring and reporting, and scenario analysis (principles 1–12); and to prudential regulatory and supervisory practices, including climate-related risk scenario analysis (principles 13–18) (BCBS, 2022).

48. The **International Platform on Sustainable Finance** was launched in 2018 and has expanded to 18 member countries or jurisdictions since. Its joint statement in 2019 set out its aims and underlined “the critical role the financial sector needs to play to reorient private investments towards sustainable activities worldwide, as provided by article 2.1 (c) of the Paris Agreement or under Sustainable Development Goal 17, in addition to public funds”.<sup>33</sup> The Platform is committed to fostering the global comparability and interoperability of sustainability approaches, and focused its work in 2021 on a comparison of China and EU taxonomies by publishing the Common Ground Taxonomy, and on sustainability-related environmental, social and governance disclosures. In 2022, the International Platform on Sustainable Finance created a working group to advance the integration of transition considerations into sustainable finance alignment approaches, including labels, portfolio alignment indicators, corporate strategies and disclosures, and taxonomies.

49. The **Mission Innovation initiative** of 22 countries and the European Commission was founded in 2017 and serves as a convening platform of governments to engage in and share best practices and information on strategies and plans for the implementation of innovative projects that, among other objectives, foster the pathway towards low-emission development and/or the transition towards net zero economies. As such, the initiative is particularly informative in enhancing the transparency of transformational projects and technologies, as well as their associated financing, in diverse participating countries.

50. The **Clean Energy Ministerial** is a high-level forum bringing together 29 governments from all world regions to advance clean energy solutions and associated financing. As a platform, it focuses on governmental exchange and advancement across six action pillars, namely clean energy, industry, transport, buildings, clean solutions (including investment and finance initiatives) and the empowerment of society.

## C. Implementation of methodologies, approaches and tools

51. The fifth BA provides a detailed review of the universe of methodologies and approaches in use in the financial sector to implement Article 2, paragraph 1(c), of the Paris Agreement.<sup>34</sup> In line with the mandate of this input, this methodological subchapter provides a focused overview of the latest developments in the implementation of methodologies and approaches with regard to Article 2, paragraph 1(c). It covers methodological developments in five areas: net zero target setting, low GHG emission and climate-resilient development pathways, activity-level taxonomies and classification lists, measuring real-economy impacts, and addressing climate resilience.

### 1. Net zero target setting methodologies in the financial sector

52. The second edition of the **Target Setting Protocol** of NZAOA clarifies the criteria according to which asset owners define and report on net zero and Paris-aligned target setting. In particular, the Protocol extends the time period of guidance covered up until 2030 (the first protocol covered up until 2025) and introduces additional granularity through including infrastructure as a new asset class (based on the PCAF carbon accounting framework for project finance) and through outlining first draft approaches for treating sovereign bond holdings. Requirements for subportfolio emission reductions up until 2025 have been updated to reflect the SR1.5 no or low overshoot pathways, and interim emission targets until 2030 should be in the range of a 49 to 65 per cent reduction compared with the base year (2020). The Target Setting Protocol (second edition) covers portfolio scope 1 and scope 2 emissions, and scope 3 emissions where possible, and recommends the use of absolute or

<sup>33</sup> Available at [https://finance.ec.europa.eu/system/files/2019-10/191018-international-platform-sustainable-finance-joint-statement\\_en.pdf](https://finance.ec.europa.eu/system/files/2019-10/191018-international-platform-sustainable-finance-joint-statement_en.pdf).

<sup>34</sup> See the fifth BA technical report, section 1.5.

intensity-based reduction key performance indicators for portfolio alignment targets and sector-specific intensity-based key performance indicators for sectoral targets (UNEP, 2022).

53. The **Net Zero Investment Framework** initiated by PAII in March 2021 was complemented in February 2022 by a proposal for a private equity component, which brings the asset classes covered under the framework to five, namely listed equity, private equity, corporate fixed income, sovereign bonds and real estate. The Net Zero Investment Framework serves as a guide to developing investment strategies consistent with achieving global net zero emissions by 2050 or sooner, and to increasing low-carbon investments. The framework is structured on three levels: portfolio or fund level, asset class level and external enabling environment. It covers, among other elements, governance and target setting at the portfolio level, strategic asset allocation approaches and asset class alignment measures, as well as client and policy engagement and stewardship. It recommends disclosure practices in line with the TCFD. Specific criteria and underlying metrics have been devised for each asset class under the framework. The private equity guidance recommends the use of the TPI sectoral decarbonization approach or SBTi portfolio coverage methodology for measuring net zero alignment and the disclosure of GHG emissions and climate-related capital expenditures and revenues in accordance with the EU taxonomy (PAII, 2022).

54. The Investor Agenda **Investor Climate Action Plans** Expectations Ladder provides an inclusive guidance and self-assessment framework under which investors can align their operations with a sustainable pathway. The framework is structured around the four focal areas of investment, corporate engagement, policy advocacy and disclosures. The Investor Climate Action Plans formulate possible actions for investors along four tiers of ambition – from those investors only beginning to think about climate (Tier 4) to the net zero standard setters (Tier 1) – by pointing to existing guidelines, methodologies and standards such as TCFD and CDP. Within the investment focus area, guidance on alignment targets includes measuring portfolio carbon emissions (under Tier 4 ambition), aligning emission reduction targets with domestic policies or NDCs (under Tier 3) and aligning targets with 1.5 °C and global net zero emissions by 2050 or sooner, which includes five-year intermediate targets covering all assets (under Tier 1) (Investor Agenda, 2021b).

55. Science-based corporate target setting under the SBTi framework was updated with the release of the **SBTi Corporate Net-Zero Standard** in October 2021 (SBTi, 2021). This standard contains criteria and recommendations for net zero targets consistent with limiting global temperature rise to 1.5 °C. Corporations are required to (1) set near-term (5–10 year) science-based emission reduction targets in line with limiting warming to 1.5 °C, (2) set long-term science-based targets that reduce emissions by at least 90 per cent by no later than 2050 and (3) neutralize residual emissions (e.g. up to 10 per cent not covered by the long-term target) with permanent carbon removals, and further, they are encouraged to (4) mitigate emissions beyond their value chains, for example by purchasing approved REDD+ credits or investing in direct air capture technology. Corporate targets are set according to sector-specific decarbonization pathways in 11 sectors, with criteria for the oil and gas sector currently under development.

56. SBTi is in the process of developing a comprehensive long-term target setting framework for the financial sector that will complement the existing 2020 criteria and guidance for financial institutions for near-term targets and the temperature scoring and portfolio coverage tool based on the CDP–WWF temperature rating methodology. The underlying foundational framework that will serve as the basis of the new Net-Zero Standard for financial institutions provides an initial indication of the approach taken to define consistency with global net zero emission targets on the issue of financed emissions and of the role of carbon credits to offset residual emissions (SBTi, 2022).

57. Launched in 2012, the **PACTA** tool for investors is one of the most long-standing methodologies employed to provide climate analytics for financial portfolio analysis. A tool for use by regulators, banks and investors, it calculates the extent to which corporate capital expenditures and industrial assets behind equity, bond or lending portfolios are aligned with various climate scenarios. The PACTA tool compiles in a bottom-up fashion the industry-specific performance benchmarks required for translating temperature goal scenarios into portfolio allocation decisions for investors. In this way, all corporate bond and listed equity allocations by investors, as well as lending by banks, are within scope. The reference

scenarios used are, among others, various global IEA temperature rise scenarios and SBTi sector-specific scenarios for industries such as steel, cement, shipping and aviation (PACTA, 2020).

58. Under collaborative initiatives with governments and domestic public and private financial sector institutions, the PACTA tool assesses national financial system alignment and transition towards a low carbon emission, climate-resilient pathway. The **PACTA Coordinated Projects** programme has conducted several country case studies – in Austria, Liechtenstein, Luxembourg, the Netherlands, Norway and Switzerland (PACTA, 2022). The PACTA tool is applied to a large number of participating financial institutions to assess their exposure to transition risks and their alignment with varying climate scenarios, in line with the above-mentioned PACTA methodology, which enables a temperature scoring assessment. In this comprehensive domestic exercise, governments are issued overall alignment reports of their financial sector, including subsectoral insights, while more detailed individual outcomes are produced for financial institutions.

59. The **TPI** is an investor-led initiative in collaboration with the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science that assesses companies' alignment with the temperature goals of the Paris Agreement and the risks and opportunities deriving from the low-carbon transition. As at July 2022, it had grown to receiving support from more than 131 large financial institutions and investors (with a combined AUM of over USD 50 trillion), which make use of TPI company assessments to inform their investment decisions. Its methodology assesses counterparties on the qualitative element of climate management and on carbon performance relative to international targets and national pledges under the Paris Agreement. The methodology for assessing decarbonization alignment is based on data from the IEA *Energy Technology Perspectives* publication series and it translates global emission targets into sectoral emission pathways against which companies are assessed through three benchmark climate scenarios: various temperature ambition (NDC-aligned emission reduction), 2 °C scenario and below 2 °C scenario.

60. **TPI and IIGCC** are in the process of developing a pilot framework for assessing banks' alignment with the goals of the Paris Agreement. The framework is based on a set of six alignment indicators, which cover the dimensions of:

- (a) Net zero commitments;
- (b) Short- and medium-term targets;
- (c) Decarbonization strategies;
- (d) Climate governance;
- (e) Climate policy engagement;
- (f) Audit and accounting practices.

61. The indicators relate to, among other factors, the stringency and time frame of decarbonization targets and the level of detail provided in the disclosures of portfolio and sectoral alignment strategies, including details regarding absolute and intensity-based emissions, exclusion policies and climate scenarios in use. A pilot study of 27 major banks revealed that the majority of banks have committed to net zero targets, while substantial information and disclosure on the implementation of decarbonization strategies is lacking across institutions (TPI, 2022). The final framework is set to be launched by end of 2022.

62. The Climate Action 100+ set of constituent assessment tools focuses on the adequacy of disclosure frameworks and the alignment of corporate activities and outputs, including GHG emissions and capital expenditures, with the goals of the Paris Agreement. Data providers are (1) TPI, which assesses disclosure frameworks and GHG target alignment with the temperature goal of limiting warming to 1.5 °C, (2) the Carbon Tracker initiative and the 2° Investing Initiative, which evaluate capital expenditures and output alignment on the basis of asset-level inventory data and (3) InfluenceMap, which measures the alignment of corporate policy engagement with the Paris Agreement goals. The 2022 Climate Action 100+ assessment includes several notable updates to its methodology through its constituent tools:

(a) Company assessments conducted by TPI were updated to the IEA Net Zero by 2050 scenario for all available sectors, which excludes chemicals, coal mining, consumer goods and services, oil and gas distribution, other industries, other transport, and automotive, for which TPI scenarios based on the IEA Beyond 2 °C Scenario were applied;

(b) The Carbon Tracker initiative implemented a provisional climate accounting and auditing assessment of companies' accounting and disclosure practices, including financial statements and audit reports, to determine if they reflect the detail required and material impacts of the global transition towards net zero emission pathways;

(c) A beta version (not publicly available) of a just transition indicator was developed, which sets the expectation for a future indicator covering the four dimensions of acknowledgement, commitment, stakeholder engagement and implementation of just transition principles within decarbonization strategies.

63. The **PCAF** Global GHG Accounting and Reporting Standard, published in 2020, enables many disclosure frameworks and target setting initiatives in the financial sector. As at April 2022, PCAF had increased its membership to over 250 signatories since its launch in 2019, of which 69 financial institutions representing USD 33 trillion in assets had disclosed financed emissions in accordance with the PCAF Global GHG Accounting and Reporting Standard. The Standard is incorporated widely in climate-related disclosure frameworks, such as TCFD, and target setting approaches, such as SBTi and the NZAOA Target Setting Protocol (second edition). The draft proposals for scope 3 emissions disclosure requirements in the financial sector issued by the European Banking Authority, the US Securities and Exchange Commission and ISSB in 2022 refer to the PCAF Global GHG Accounting and Reporting Standard. Several specifications of the GHG accounting methodology – measuring scope 3 emissions for green bonds and sovereign bonds, measuring emission removals and measuring financed emissions from real estate operations – are currently under development or under public consultation.

64. The development of dedicated entity-level **transition plans** is increasingly being requested of financial institutions and real-economy actors to address the transition risks of climate change. Work on transition plan guidance or elements thereof have been issued by, among others, GFANZ, TCFD, CDP and IIGCC. The large majority of current frameworks within the private financial sector and in regulatory efforts from governments, such as the forthcoming EU Corporate Sustainability Reporting Directive proposal and the United Kingdom Transition Plan Taskforce initiated by the United Kingdom Treasury, focus on decarbonization. Current approaches to decarbonization are characterized by common overarching dimensions, including information from financial and non-financial actors on decarbonization targets and objectives (both long and short term); assessment of climate change related opportunities and risks; actions, policies and measurements implemented; and management and accountability processes to ensure transition governance. Transition plan frameworks incorporate key performance indicators for GHG emissions (financed, or produced and procured). In addition transition plan frameworks (and associated expectations) can specify capital and operating expenditure alignments, sector- or industry-specific metrics on production and output plans, and key performance indicators for governance and management processes (including remuneration) (CDP, 2021b; GFANZ, 2022; TCFD, 2021b).

## 2. Low GHG emission and climate-resilient development pathways

65. Further developments in available climate scenario models underlying net zero target setting are visible. Within the 2022 update to the OECM, the OECM 1.5 Reference submodel limits global average temperature to 1.5 °C above early industrial levels (ca. 1850–1900) with a peak in cumulative anthropogenic emissions of approximately 500 Gt CO<sub>2</sub> in 2045 (above the 2020 level). The GHG scenario applies the Model for the Assessment of Greenhouse Gas Induced Climate Change ('MAGICC' model, version 7) to determine radiative forcing and projected global temperature rise, based on IMAGE model quantification of the shared socioeconomic pathways baseline scenario ('SSP1') in the scenario database associated with the SR1.5. The resulting estimations are in line with the carbon budgets documented in the contribution of Working Group I to the AR6 (Teske and



Pregger, 2022). OECM is applied in the NZAOA Target Setting Protocol (second edition), in particular for setting sector-specific targets related to sector decarbonization pathways.

66. NGFS has published an updated version of its climate transition scenarios covering the three conceptual dimensions of orderly transition, disorderly transition and hothouse world (global warming significantly above 2 °C by 2100), which were designed for use by, in particular, central banks and financial supervisors. The six available scenarios cover global and sectoral pathways and can be scaled down to 132 countries. Based on the SRI.5 and relevant physical risk data, the scenarios are designed to reflect the ambition and coordination of international climate policies. They are modelled as coordinated stringent action (net zero 2050 scenario), gradually increasing action (below 2 °C scenario), uncoordinated stringent action (divergent net zero scenario), delayed transition with rapid climate policies to reach below 2 °C by 2050 (delayed transition scenario) and current policy and NDC ambition scenarios that would result in significantly higher global warming estimates by the end of the century (NGFS, 2022b).

67. An investor-led initiative commissioned by the Principles for Responsible Investment, the Inevitable Policy Response Consortium has developed a Forecast Policy Scenario that can be contrasted with an ideal-type 1.5 °C Required Policy Scenario. The objective of the Forecast Policy Scenario is to model the most likely evolution of global climate policies and technological developments in conjunction with macroeconomic, energy and land-use forecasts. The Forecast Policy Scenario is based on the IEA Net Zero Scenario (2021) and assumes an 80 per cent reduction of total CO<sub>2</sub> emissions by 2050, with a 50 per cent likelihood of limiting global warming to below 2 °C (1.8 °C).

### 3. Activity-level taxonomies and classification lists

68. **Bilateral development providers, MDBs, IDFC and EDFI** have been making ongoing efforts with regard to the comprehensive Paris alignment of their financial portfolios, including ODA, over the past years (AfDB et al., 2018; ICAI, 2021). The methodologies used are developing beyond the initial climate finance focus (climate positive) to include further standards and criteria for:

- (a) Activities that reduce GHG emissions while avoiding long-term lock-in;
- (b) Exclusion lists of select GHG-intensive activities deemed not in line with the purpose and goals of the Paris Agreement;
- (c) Further screening considerations, such as the ‘do no significant harm’ principle, developed in taxonomy approaches.

69. Since 2017, when MDBs and IDFC announced their ambition to align financing operations with the purpose and goals of the Paris Agreement using the six building block approach (see also para. 91 below), MDBs have adjusted lending criteria for projects related to fossil fuels with varying stringency.<sup>35</sup> This adjustment refers primarily to ending financing for new coal and oil upstream and downstream activities, which almost all MDBs have adopted, and covers, to some extent, other fossil fuel sources (E3G, 2022; Fuchs et al., 2021). In 2021, a revision of the MDB–IDFC Common Principles for climate change mitigation finance tracking provided a granular breakdown of its eligibility list, as well as clear criteria and guidance for applying the list (AfDB et al., 2021). The updated methodology is based on the categorization of three types of climate change mitigation activities, namely, negative or very low emission activities, transitional activities and enabling activities. The revised eligibility list considers new mitigation activities that contribute to achieving the goals of the Paris Agreement; even when activities reduce GHG emissions in the short term, they should not risk locking in emissive technologies over the long term.

70. EDFI announced in 2022 a Paris alignment approach similar to that of MDBs. Its framework establishes three categories – aligned, misaligned and “conditional financing” – to assess the alignment of direct financing operations, whereby aligned activities concur with the MDB–IDFC Common Principles for climate change mitigation finance tracking 2015 and misaligned activities include at a minimum the EDFI Fossil Fuel Exclusion List.

<sup>35</sup> For more information, see the fourth BA technical report, chap. 4.

Conditional activities are evaluated separately in a process that takes into account criteria for alignment at the system and asset level, is viewed from a transition risk perspective and will consider the ‘do no significant harm’ principle. While progress has been made in aligning direct lending with the goals of the Paris Agreement, ongoing efforts, including pilot approaches, are being made by MDBs and other DFIs to improve alignment in other finance subsegments that are more difficult to address owing to their indirect or decentralized nature, such as intermediated lending and policy-based lending.

71. The methodological development of climate-related activity-level taxonomies and eligibility lists has proliferated globally, as discussed in paragraph 37 above. The emerging landscape of eligibility lists allows first insights to be drawn on the global commonalities and differences of what are considered climate-positive green activities and what type of activities are generally excluded. Commonalities and differences arise from the different starting points of taxonomies, which take into account various global, regional and national considerations, including global temperature goals and the Paris Agreement; NDCs and national climate action plans and policies; and regional and national socioeconomic contexts.<sup>36</sup>

72. In addition to identifying eligible and non-eligible activities, green and sustainable finance taxonomies have fostered the emerging adoption of the ‘do no significant harm’ principle by DFIs and private financial institutions in order to assess investments and project finance for climate impacts.<sup>37</sup> Given the broader scope of taxonomies to cover various environmental objectives, including climate change mitigation and adaptation, the ‘do no significant harm’ principle can be conceived as a form of alignment tool as it stipulates that a given activity can only be considered to significantly contribute to one environmental objective (e.g. climate change adaptation) under the condition that it does not harm any other environmental objectives specified in a given taxonomy (e.g. climate change mitigation, biodiversity, pollution prevention and control, water resources or circular economy). The ‘do no significant harm’ principle has been incorporated into many taxonomy frameworks, for example those of ASEAN, Colombia, the EU, Malaysia, Singapore and South Africa.

73. Since taxonomies are based on, and in turn inform, climate-related disclosure practices, they also serve to improve the identification of climate-related financial risks and exposures in the real economy and in the financial sector, albeit mostly transition risks rather than physical climate risks. An example of this is the operationalization of the EU taxonomy from which the Green Asset Ratio can be derived for financial institutions and measurements of taxonomy-aligned capital and operating expenditures can be derived for real-economy actors.

#### 4. Measuring real-economy impacts

74. Assessing the impact and level of change that financial sector alignment approaches initiate in the real economy is a nascent area of methodological development. In response to the large number of decarbonization and net zero target setting initiatives, efforts are emerging to develop measurement methodologies and increase the transparency of the real-economy impacts of financial sector approaches and to alleviate potential greenwashing concerns. The ambition to ensure real-economy impacts through financial alignment approaches is a consistent feature of net zero commitment and target setting initiatives, as for example in the case of IIGCC and PAII, NZAOA, NZAM, and NZBA.

75. The COP 26 Finance Sector Expert Group for the Race to Zero and Race to Resilience campaigns issued a discussion paper as a means of consulting with participants and stakeholders and with the aim of fostering the integrity of private financial sector commitments and approaches (Caldecott, Thomae and Scott, 2022). In reviewing the relevant literature and industry practices, the paper highlights two principle conceptual challenges of impact measurement:

<sup>36</sup> For an in-depth discussion of taxonomies, including eligibility lists, and their commonalities and differences, see the fifth BA technical report, section 1.5.

<sup>37</sup> See the fifth BA technical report, section 1.5, for further details on activity-level commonalities and differences across a range of taxonomies.

(a) **Impact alignment and generation:** impact alignment is defined as aligning financing operations and investment portfolios with climate-neutral or climate-positive economic activities. Impact generation is defined as actively contributing to decarbonization objectives beyond investing in aligned activities or those on a pathway of being aligned. The distinction highlights the phenomenon that in some instances, financial alignment approaches, such as rebalancing portfolio holdings away from GHG-intensive towards more climate-friendly companies through secondary market transactions, may not automatically generate positive climate impacts. This can be illustrated as a simple change in ownership of bonds or shares on the secondary market for a GHG-intensive company that does not necessarily affect its financial position or ability to refinance current and future business activities;

(b) **Differentiation between alignment outputs and outcomes :** financial sector alignment actions and approaches vis-à-vis real-economy actors can be characterized in outputs (such as cost of capital), outcomes (desired climate-positive change in investee activities) and impacts deriving from the combination of both. At these transmission stages, actions may potentially fail to generate desired outputs (e.g. increased cost of capital) and outcomes (e.g. investee shift away from GHG-intensive activities, for example owing to disproportionate costs of going green) or they may have low climate impacts if outcomes such as green research and development activities do not generate results.

76. In this context, the relative impact of divestment and engagement strategies on fostering climate outcomes is widely debated in the literature, and adequate approaches to balance these investment strategies are also discussed in relevant target setting and net zero initiatives (see, e.g., GFANZ, 2022; PAIL, 2021; UNEP FI, 2022). While some scientific studies have found causal evidence for an impact of divestment strategies on corporate GHG emission reductions, other researchers and market practitioners caution that active engagement, or a mix of active engagement and nuanced divestment policies, may have more targeted effects in avoiding continued carbon-intensive financing from other public or private sources, in particular from non-listed or private equity actors that are subject to fewer oversight and disclosure regulations (Broccardo, Hart and Zingales, 2022; The Economist, 2022; Mormann, 2020; Murray, 2022; Rohleder, Wilkens and Zink, 2022).

77. A limited number of financial sector approaches or methodologies to identify the causality of real-economy impacts are under discussion or in use. These include:

- (a) The re-baselining of emissions and alignment disclosures to distinguish between hypothetical and real-world changes in emissions and alignment;
- (b) The disclosure of primary and secondary market transactions to clearly identify the provision of direct financing;
- (c) Additional reporting on climate actions or policies adopted by financial actors and qualitative case study approaches to inform the evidence base for impact generation and measurement (2° Investing Initiative, 2022a, 2022b).

78. Further conceptual studies propose three main ways for financial sector actors to induce climate-positive impacts on counterparties:

- (a) Reducing/increasing the cost of capital for sustainable/unsustainable activities;
- (b) Increasing/reducing access to capital for sustainable/unsustainable activities;
- (c) Engaging in the promotion of sustainable practices by counterparties, including companies, sovereigns and individuals (Caldecott et al., 2022).

79. Existing financial sector approaches to supporting decarbonization efforts in the real economy, beyond technical portfolio alignment methodologies, have been classified into four overarching categories:

- (a) Financing climate solutions;
- (b) Supporting corporations already aligned with pathways consistent with the goals of the Paris Agreement;
- (c) Supporting corporations in the transition towards Paris-aligned pathways;

(d) Contributing to and incentivizing the phase-out of GHG-intensive activities not in line with the goals of the Paris Agreement (GFANZ, 2022).

80. To increase the standardization and transparency of credible impact approaches and measurement in the financial sector, HLEG which scrutinizes the net zero emissions commitments of non-state entities, launched a public consultation (that lasted until the end of August 2022) in four thematic areas that comprise, among other elements (HLEG, 2022b):

(a) Short-term interim targets, transition plans, measurement and reporting of net zero pledges, and credibility criteria for assessment of stated objectives;

(b) Governance of targets: verification and transparency.

81. In addition, the COP 26 Finance Sector Expert Group for the Race to Zero and Race to Resilience campaigns requested input from relevant stakeholders in four consultation areas (until June 2022) covering the need for further information on how financial firms plan to generate impact to support Paris alignment in the real economy, the relevance of a potential TCFD-based framework for impact generation, the impact generation metrics in use and the status of the emerging literature.

82. Various other impact measurement systems for investors exist that capture the dimension of climate change impacts specifically, next to other sustainability-related impacts. The **UNEP FI suite of impact analysis tools**, introduced in 2020 with the Corporate Impact Analysis Tool, was expanded and updated in 2021 to encompass the banking, investment and real estate sectors. The tools are based on the holistic impact framework developed by the Positive Impact Initiative; this framework focuses on assessing and managing positive and negative impacts across the three pillars of the SDGs (economic, environmental and social). The framework allows financial and corporate actors to input contextual data from their portfolios and business activities to derive impact indicators for asset classes, country- and local-level contexts and industries.

83. The **IRIS+ framework** of the Global Impact Investing Network is an impact measurement framework that provides a set of core climate metrics to be employed in investment decision-making processes. Through its emphasis on global harmonization with disclosure indicators and metrics of various standard setting bodies, it seeks to streamline the reporting efforts of investors. Impact metrics range from general GHG-related measurements to sector-specific indicators on, for example, energy intensity, energy sources procured or water usage. The IRIS+ framework served to inform the recent update of the KfW Development Bank's impact management system (Dangelmaier et al., 2021).<sup>38</sup> A range of other impact management frameworks and initiatives for finance and investment communities are available, including the Impact Management Platform, which has developed into the Impact Frontiers collaboration, the Impact Classification System and the UNDP SDG Impact Standards for impact investors. Common to these approaches is their holistic design, comprising environmental and social dimensions alongside the climate dimension, and their ambition to facilitate change in impact management practices rather than simply to enhance reporting practices. However, poor data availability and the lack of comprehensive organizational and governance change (e.g. with regard to budgeting practices and incentive schemes) prove to be persistent barriers for realizing non-economic impact objectives (Mission Investors Exchange, 2021).

## 5. Addressing climate resilience methods in the financial sector

84. In the context of efforts related to Article 2, paragraph 1(c), of the Paris Agreement, climate resilience is most often addressed through the avenue of enhancing financial sector resilience to climate change, and by introducing risk management approaches for direct investments and whole portfolios of financial institutions and investors. As per TCFD guidance, the scope covers resilience to both physical climate impacts and portfolio risks from the transition to a low GHG emission economy.

<sup>38</sup> For more information see the fifth BA technical report, section 1.4.

85. The climate resilience and stability of the financial system is promoted through various sectoral and regulatory initiatives and by the use of various methodologies and tools with an increasingly high level of development and detail.

86. **Climate-related financial disclosure frameworks** serve as the basis for identifying the climate-related transition and physical risks of economic actors as well as financial institutions' exposure to them. The level of ambition and the methodologies for reporting, including metrics and indicators on climate resilience and climate change related financial impacts, have become increasingly granular, focusing on risks of stranded assets, physical exposure and the climatic context in which operations or investments are located (for a detailed analysis, see chap. IV.C.2 below). Private financial sector actors and supervisory authorities can integrate available firm- and asset-level disclosures with geophysical data and forecasts to derive financial risk metrics and indicators related to climate change. Climate risk related disclosures are mainstreamed through industry initiatives (such as CDP, ISSB and TCFD), regional and national regulations (such as those of Brazil, EU, United Kingdom and United States) and sector-specific mandates of financial supervisory authorities that address banks, investors or insurers.

87. Private financial institutions and financial sector actors also employ various **methodologies and tools to assess and evaluate exposure to climate-related financial risks of portfolios and counterparties** in order to inform investment and lending strategies. These actors include financial services actors, among them credit rating agencies and benchmark providers, that use climate-related risk analysis to inform credit ratings and offer climate risk adjusted financial products, such as Paris-aligned indexes that include physical risk considerations (NGFS, 2022a; TCFD, 2021a). Methods are also based on the assessment of climate-related physical and transition risks and necessitate the availability of granular data at the geospatial and asset level of client or counterparty operations, information which is often difficult to obtain in view of the complex global supply chains (see also chap. IV.D.3 below).

88. **Climate-related financial risk assessment and credit risk differentials as well as microprudential and macroprudential stress testing** are tools and methodologies employed by central banks and supervisory authorities to evaluate and manage climate-related financial risks in the financial system and to foster climate resilience. A number of public institutions and jurisdictions, such as the Bank of England, ECB and the Federal Reserve System of the United States, have applied or are in the process of developing granular tools based on climate scenario modelling, geospatial physical information, and portfolio- and sector-level data (NGFS, 2021a). NGFS is a central convening initiative that facilitates the exchange of best practices and methodological development among the associated supervisory bodies. Various tools are being considered to a different extent by supervisory authorities to address climate-related financial risks, as follows (Baranović et al., 2021; BCBS, 2022; Coelho and Restoy, 2022):

(a) Microprudential framework: introducing present and forward-looking climate considerations in individual credit risk assessments; developing capital and liquidity requirements and risk concentration standards; and considering legal, reputational and strategic risks deriving from climate-related events and impacts;

(b) Macroprudential framework: managing climate-related systemic financial risk via climate scenario stress testing; and implementing systemic capital-based measures or sector-specific measures;

(c) Climate-related disclosure requirements: introducing quantitative and qualitative climate-related financial disclosure requirements, including for GHG emissions of underlying assets invested in or financed; direct or indirect exposure to physical and transition risks related to climate change; and operational governance and oversight mechanisms implemented to steer the transition.

89. Implementation of these methods and tools across supervisory bodies has advanced since the fourth BA. Within the Eurosystem, national central banks are developing a common minimum standard on climate-related risk integration into credit ratings that will be applicable by the end of 2024, and ECB has announced it will apply the EU Corporate Sustainability Reporting Directive from 2026 as the basis for climate-related disclosure

requirements for collaterals (ECB, 2022). In July 2022, ECB also announced – one of the first central banks to do so – that it will incorporate climate change considerations into its monetary policy operations and collateral framework, similar to the Bank of England’s approach. From the end of 2022, it will aim to facilitate a gradual decarbonization of its corporate bond portfolio by introducing a prioritization (“tilting”) towards a better climate performance of corporate bond holdings, measured through GHG emissions, decarbonization targets and the level of detail of issuers’ disclosure frameworks (ECB, 2022). Further, ECB announced it will limit the GHG-intensive share of assets that can be put forward as collateral by a corporate bond issuer. This measure is expected to be introduced in 2024 and will be applicable to debt instruments issued from non-financial corporations.

90. Currently, the development of entity-level adaptation plans to increase the climate resilience of operations considerably lags behind the methodological development of decarbonization-related transition plans (see chap. III.C.1 above). However, the TCFD has voiced the expectation that entity-level adaptation plans should become part of holistic transition plans in order to provide information on how entities aim to adapt and foster resilience to the expected impacts of climate change on their operations. Adaptation plans do not currently feature in TCFD guidance, but the guidance encourages other standard setting bodies or regulators to consider developing further guidance on the components and reporting of adaptation plans (TCFD, 2021b). In some jurisdictions, however, adaptation plan related regulations are already in place for specific sectors, such as the Adaptation Reporting Power under the Climate Change Act 2008 of the United Kingdom. This requires specified bodies that undertake public service functions (within, among others, the water, energy and infrastructure sectors) or financial regulatory authorities to report on their actions to adapt to climate change, including an assessment of current and predicted climate impacts on their operations and of forward-looking policies and plans to adapt to these impacts (Department for Environment, Food and Rural Affairs of the United Kingdom, 2011).

91. The climate adaptation objective, including climate resilience, is a component of green and sustainable finance taxonomies and finance eligibility lists from public and non-State entities. Compared with the detailed sector- and activity-level criteria for mitigation, however, it is apparent that many taxonomies currently use more process-based screening criteria for the climate adaptation objective, owing to the context-specificity of adaptation actions within a local environment and the difficulty of establishing sectoral or even cross-sectoral criteria. National, regional or global resilience and biodiversity standards and codes often form the evaluation baseline, as well as the basis for conducting environmental assessments and CRVAs:

(a) An example of a typical process-based qualitative measurement framework for climate adaptation and resilience is the Paris Agreement alignment methodology of the European Bank for Reconstruction and Development, which is based on three procedural pillars: (1) evaluation of the climate risk and vulnerability context, (2) definition of resilience measures and (3) appraisal of the broader climate resilience context;

(b) Within this process-based framework, other adaptation and resilience alignment approaches assess the third contextual component of systemic impacts through the principle of ‘do no significant harm’ to the resilience of populations and ecosystems, the consistency with national adaptation strategies or plans, or the adherence to established safeguard protocols (Mullan and Ranger, 2022). These approaches are integrated, to various extents, in the World Bank Resilience Rating System; the Joint MDB Assessment Framework for Paris Alignment approach, specifically building block 2 (on climate-resilient operations); and the Climate Resilience Principles of the Climate Bonds Initiative;

(c) Taxonomies with adaptation objectives are in place in, for example, Bangladesh, China, the EU and Mongolia. The Climate Bonds Initiative Climate Resilience Principles also establish eligibility criteria, and taxonomies often integrate the ‘do no significant harm’ principle for assessing alignment. Other jurisdictions, such as ASEAN and Malaysia, focus detailed criteria development initially on the climate change mitigation objective of taxonomies before developing adaptation-specific standards (ASEAN, 2021; Bank Negara Malaysia, 2021).

92. Similar project- or asset-level process-based adaptation methodologies are applied in the form of CRVAs. CRVAs are mainstreamed in many public and private financing operations and form an integral part of the Paris alignment approaches of development finance providers, including the MDBs, DFIs and other bilateral development agencies.

93. CRVA approaches typically work by determining climate parameters and potential future changes, assessing how climate hazards could impact project design and assets, and subsequently suggesting appropriate and economically feasible mitigating measures (Asian Development Bank, 2014). While CRVA systems are advanced and operationalized by development finance providers such as the Asian Development Bank, European Bank for Reconstruction and Development, European Investment Bank, FONPLATA development bank,<sup>39</sup> German Agency for International Cooperation and Japan International Cooperation Agency, as well as more generally under the Joint MDB Assessment Framework for Paris Alignment building block approach (specifically building block 2), governments and public authorities have also mainstreamed these assessments, in particular in the infrastructure sector (German Environment Agency, 2017; International Finance Corporation, 2016).

94. Within the private financial sector, a lack has been identified of analytical tools for adequately assessing and pricing climate-related physical transition risks at the asset or portfolio level, with a corresponding low number of operational risk assessment processes in place (CCRI 2021b). However, methodological developments by financial institutions and insurers are ongoing and include the following two initiatives:

(a) The CCRI Asset Design and Structuring working group is in the process of developing a **Physical Climate Risk Assessment Methodology**.<sup>40</sup> This methodology is designed as a bottom-up approach to quantify climate-related impacts at the asset level by drawing on a range of climate scenarios and projections. The quantification of climate impacts is informed by climate and financial data audits and financial materiality assessments of climate hazards along the operational dimensions of asset performance, life cycle and maintenance. Subsequently, the methodology identifies potential resilience options, including capital expenditure and operating expenses estimations, and conducts a cost-benefit analysis to inform decision-making processes and enable the most appropriate resilience investments to be identified (CCRI, 2021a);

(b) A CCRI pilot project, implemented in collaboration with the Jamaican Government and the University of Oxford, is testing the **Systemic Risk Assessment Tool** for managing physical climate risks in the infrastructure sector. This tool facilitates geospatial analysis for infrastructure risk assessment and resilient investment prioritization. On the basis of granular national and subnational climate, financial and economic data, the Systemic Risk Assessment Tool establishes points of climate vulnerability within socioeconomic systems and quantifies macroeconomic climate-related disruptions, expressed in reduced gross domestic product, according to economy-wide input-output models. Unlike global models, the tool is able to provide granular forecasts and estimations of climate-related impacts on public services such as those in the water or energy sector. In its pilot application in Jamaica, the tool calculated that capital investments in particularly exposed energy infrastructures of USD 2.5 million would lead to future monetized benefits of USD 4.8–5.8 million in reduced flood risks and economic disruptions.<sup>41</sup>

#### IV. Insights from the further mapping of information relevant to Article 2, paragraph 1(c), of the Paris Agreement

95. As noted in the mapping exercise for the fourth BA, understanding related to the scope of Article 2, paragraph 1(c), varies among Party and non-Party stakeholders; therefore, this mapping exercise does not suggest a common view on the scope and implications of the goal

<sup>39</sup> FONPLATA is a development bank formed by Argentina, Bolivia (Plurinational State of), Brazil, Paraguay and Uruguay.

<sup>40</sup> For more information, see CCRI, 2021a.

<sup>41</sup> See <https://resilientinvestment.org/ccri-launches-new-climate-technology-to-transform-how-countries-anticipate-prepare-and-adapt-to-intensifying-climate-conditions/>.

set out in Article 2, paragraph 1(c). However, in terms of relevant actions, this mapping confirms that, since the adoption of the Paris Agreement in 2015 and at an accelerated pace in recent years, a variety of actors and initiatives from the public and private financial sector have engaged in efforts to develop diverse approaches, methodologies and tools they cite as being relevant to Article 2, paragraph 1(c).

96. This chapter synthesizes some of the relevant insights from the further mapping of information relevant to Article 2, paragraph 1(c), drawing from the available information in chapter III above. This chapter captures the dimensions of (1) geographical scope of private and public finance initiatives, (2) relevance to Article 9 of the Paris Agreement, (3) similarities and differences in approaches and (4) efforts, possible challenges and opportunities that Parties and non-Party stakeholders have reported to encounter in their implementation of Article 2, paragraph 1(c).

## **A. Geographical scope of private and public finance initiatives**

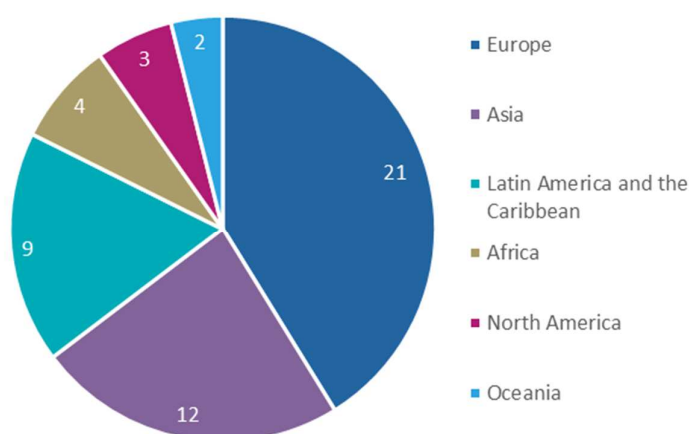
### **1. Private finance initiatives**

97. Figure 4 provides an overview of the breadth and depth of geographical representation for eight private finance initiatives, comprising the seven initiatives under GFANZ (see chap. III.A above) and SBTi (only financial institutions considered), based on the country headquarters of the member or signatory. Owing to limited publicly available information, this analysis considers neither the geographical scope and distribution of underlying investment portfolios nor the relative size of corresponding AUM across regions.

98. Across all initiatives, member institutions based in 51 countries are represented, with NZBA having the most diverse representation at 41 countries. In contrast, the NZICI includes representation from only three countries in North America and Europe. Only one country, the United Kingdom, is represented across all eight initiatives, while most countries with multiple coverage are in Europe and North America. Of the 51 countries represented, 21 countries are in Europe, 12 in Asia, 9 in Latin America and the Caribbean, 3 in North America, 4 in Africa and 2 in Oceania. The mapping demonstrates that the eight initiatives collectively have a footprint in every world region, but that many initiatives include actors whose headquarters are concentrated in Europe and North America. This may reflect stronger network ties between financial institutions operating in similar markets, but it underscores the need to expand the scope of these initiatives and incentivize institutions from a wide variety of contexts to participate. More information is needed to analyse the geographical scope and focus of investment portfolios or assets covered by these initiatives. This would enable a more granular assessment of the geographical representation of efforts related to Article 2, paragraph 1(c), of the Paris Agreement by taking into account the finance flows and stocks beyond the consideration of countries of legal representation.



Figure 4

**Representation of countries, by region, in private finance initiatives, as at July 2022**


*Note:* The initiatives include the seven under GFANZ (see chap. III.A.1 above) and SBTi financial institutions. Based on a review of the membership pages of each initiative's website. The regional classifications have been taken from the United Nations Statistics Division, with additional subregional classification for North America and for Latin America and the Caribbean.

99. The mapping of the depth of country and regional representation analysed the number of members or signatories in all initiatives from different regions and subregions. Figure 5 shows the regional composition of all eight initiatives, and figure 6 shows the share of regional composition. Only NZBA and NZAM have a global presence in all regions. Significant potential exists to include a broader representation of countries in Asia, Africa, and Latin America and the Caribbean, particularly for PAII and NZICI, for which these regions were not represented as at July 2022. Even in initiatives with global coverage, there are differences in the number of members and signatories across regions, with members being concentrated in Asia, Europe and North America. For example, of the 272 signatories of NZAM, 170 are from Europe and only 1 is from Africa. At least 50 per cent of the membership of each of the eight initiatives is from Europe, while Europe and North America together account for at least 65 per cent of membership. NZBA and NZIA have comparatively greater representation across regions than the other initiatives. Across all initiatives, the representation of regions other than Europe and North America is not uniform. For example, Asia has 52 members across six initiatives, while Latin America has 20 members across four initiatives and Africa 8 members across five initiatives.

Figure 5

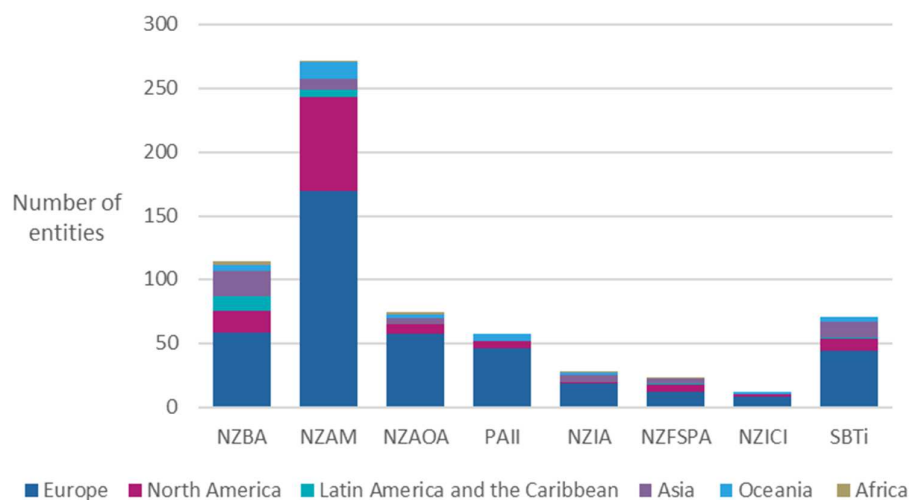
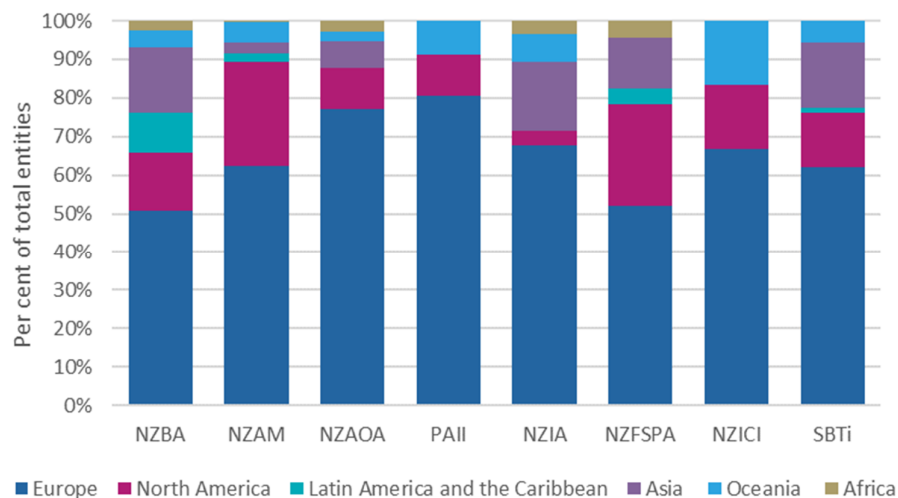
**Regional composition (number) of private finance initiatives, as at July 2022**


Figure 6

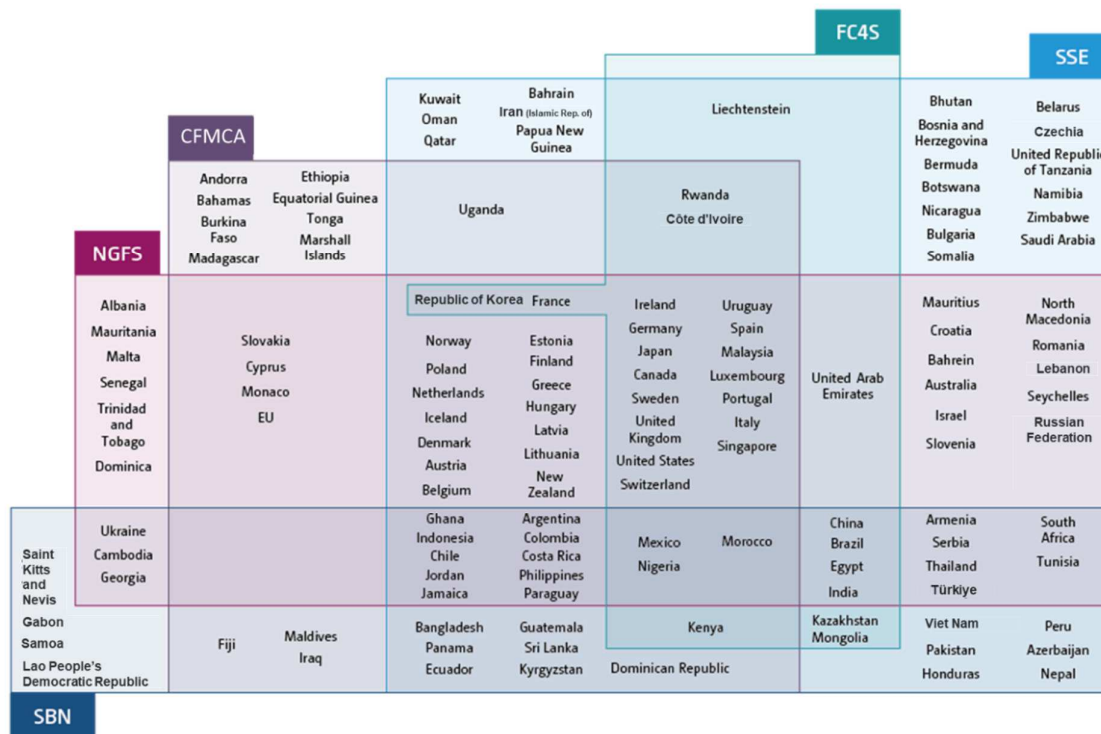
**Regional composition (share) of private finance initiatives, as at July 2022**

*Note:* Based on a review of the membership pages of each initiative's website. The regional classifications have been taken from the United Nations Statistics Division, with additional subregional classification for North America and for Latin America and the Caribbean.

**2. Public finance initiatives**

100. An increasingly broad country representation in initiatives that work towards the goal of Article 2, paragraph 1(c), encompassing public finance actors, regulators and financial centres, can be noted. The country representation of five such initiatives – CFMCA, NGFS, SBN, SSE and FC4S – is shown in figure 7.

Figure 7

**Country representation overlaps of five public sustainable finance initiatives, as at July 2022**

*Note:* Based on a review of the membership pages of each initiative's website.

101. Since the fourth BA, each of the five initiatives has increased its membership. NGFS grew from 95 to 116 members, including new member institutions from 13 countries in Africa (5), Asia (4), Latin America and the Caribbean (3) and Europe (1) for a total representation of 81 host countries. CFMCA increased its membership from 62 to 68 national finance ministries, with the addition of Andorra, the Bahamas, Iraq, Morocco, Singapore and Slovakia. A total of 10 additional institutions joined the SBN (8 of those from new countries), taking total membership to 72 institutions and country coverage to 51. SSEI increased its wide range of partner institutions from 104 to 129, with institutions from 10 new countries joining, for a total of 101 countries represented. The FC4S increased membership by 6 financial centres to 39, including 3 additional host countries (India, Mongolia and Rwanda) for a total of 30 different host countries with participating financial centres.

102. Figure 7 shows that each of the initiatives has global coverage in representation and in total, 136 countries are represented across all initiatives. Kenya, Mexico, Morocco and Nigeria participate in all five initiatives, while 12 European and North American countries participate in all initiatives available to them (the SBN is a dedicated initiative for financial sector actors from emerging markets).

## **B. Relevance to Article 9 of the Paris Agreement**

103. This mapping notes the wide range of views that are expressed by a variety of Parties and non-Party stakeholders on the matter of how Article 2, paragraph 1(c), and Article 9 of the Paris Agreement relate to one another. As this issue is addressed at length in the synthesis of views regarding ways to implement Article 2, paragraph 1(c), of the Paris Agreement<sup>42</sup> and remains under discussion by Parties, this mapping does not take a view on the matter. This mapping also does not take a view on the relationship between Article 2, paragraph 1(c), Article 9, and any other Article of the Paris Agreement, including Articles 3, 4 and 7.

104. Article 9 stipulates that developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention. Other Parties are encouraged to provide or continue to provide such support voluntarily. Furthermore, as part of a global effort, developed country Parties should continue to take the lead in mobilizing climate finance from a wide variety of sources, instruments and channels, noting the significant role of public funds, through a variety of actions, including supporting country-driven strategies, and taking into account the needs and priorities of developing country Parties. Such mobilization of climate finance should represent a progression beyond previous efforts. Further, the provision of scaled-up financial resources should aim to achieve a balance between adaptation and mitigation, taking into account the context of developing country Parties that are particularly vulnerable to the adverse effects of climate change and have significant capacity constraints, such as the least developed countries and small island developing States.

105. A consistent challenge observed in this mapping exercise of activities relevant to Article 2, paragraph 1(c), as they relate to Article 9, is that the identification of approaches, methodologies and policies is limited to a confined actor group or efforts that explicitly indicate relevance to Article 9 or climate finance, or which are, through institutional mandate and their field of operation, linked to the area of providing climate-related financial support to developing countries. The mapping therefore can only provide a non-exhaustive list of examples where relevance to Article 9 is likely to be observed in efforts that explicitly aim to work towards achieving the goal in Article 2, paragraph 1(c).

106. The mapping of activities relevant to Article 2, paragraph 1(c), relates to activities under Article 9 to the extent that actors make financing or investment decisions that support mitigation and adaptation in developing countries through market-based and/or concessional financial instruments. In the public sphere, these include bilateral aid agencies, DFIs and MDBs, where Paris alignment approaches can often include scaled-up mobilization as a key component.

<sup>42</sup> See document FCCC/CP/2022/8/Add.3–FCCC/PA/CMA/2022/7/Add.3.

107. Multilateral climate funds and the operating entities of the Financial Mechanism have taken first steps to encourage accredited entities towards adjusting their financial portfolios in line with Article 2, paragraph 1(c). As part of the updated strategic plan for 2020–2023, the GCF recognizes that contributing to making private financial sector flows consistent with a pathway towards low GHG emission and climate-resilient development is central to supporting developing countries in implementing their domestic climate strategies and plans communicated under the UNFCCC, such as NDCs and national adaptation plans (GCF, 2020). The Direct Access Entities pioneered by the Adaptation Fund and the GCF are considered as an important in-country lever for institutional and human capacity-building as well as for local match-making to foster the mobilization and scaling up of private investments for low-emission and climate-resilient development, in line with national climate priorities, policies and plans. In addition, the GCF, through its updated integrated results measurement framework, seeks to contribute to track progress towards the consistency of finance flows: “by annually collecting project and programme results, GCF will aggregate, track and analyse its portfolio-level results, which will support making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development”.<sup>43</sup> Portfolio-level results of support provided through multilateral climate funds are presented in more detail in the fifth BA.<sup>44</sup>

108. National financial institutions that are accredited Direct Access Entities to multilateral climate funds engage in efforts to finance the transition towards low-carbon and climate-resilient development in developing countries. One example is the Development Bank of Southern Africa. It established its Integrated Just Transition Investment Framework in 2021, which aims to address two key risk elements, transition risks and stranded asset risks, while ensuring social, human rights and environmental safeguards. In particular, it finances elements of decarbonization projects in order to address the socioeconomic risks of fossil fuel dependence and to support countries transitioning from emission-intensive energy and production activities such as coal, oil and gas.<sup>45</sup>

109. The provision of targeted financial support to the poorest and most vulnerable in line with national circumstances is connected to the concept of just transition in the Glasgow Climate Pact in relation to the accelerated deployment of low-emission energy systems and energy efficiency measures, including accelerated efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies.<sup>46</sup> The Glasgow Climate Pact further recognizes that making finance flows consistent with a pathway towards low GHG emission and climate-resilient development, including through deployment and transfer of technology and provision of support to developing country Parties, can support just transitions.<sup>47</sup>

110. Public policy measures and regulatory frameworks that have the aim of mobilizing investments in climate action, such as green budgeting systems and green or sustainable finance strategies or taxonomies, often reference the ability to access international climate finance in the context of Article 9 or to mobilize additional domestic finance for climate purposes, including achievement of NDC targets (see para. 37 above). In this context, developing countries emphasize their ability to access international climate finance, and to direct domestic finance flows to achieving NDC targets, as motives for green budgeting, tracking exercises such as the Climate Public Expenditure and Institutional Reviews and the development of taxonomies.

111. The mapping shows that, at present, while most private financial sector initiatives do not explicitly refer to investments in climate action in developing countries in the context of Article 9, the majority of reviewed (net zero) target setting initiatives and portfolio alignment and investment strategies consistently include a focus on scaling up or mobilizing finance for climate action, including for green solutions and for the transition of emission-intensive activities or sectors. These aspects are not geographically limited and may serve to support

<sup>43</sup> See GCF Board decision GCF/B.29/12, para. 24.

<sup>44</sup> Fifth BA technical report, section 3.3.

<sup>45</sup> See <https://www.dbsa.org/press-releases/dbsa-statement-net-zero>.

<sup>46</sup> Decision 1/CMA.3, para. 36.

<sup>47</sup> Decision 1/CMA.3, para. 85.

developing countries in the implementation of their respective climate strategies and plans. For example, GFANZ incorporated in its 2022 work programme the objective of mobilizing capital, that is, to accelerate capital allocation towards the net zero transition in emerging markets and developing economies (GFANZ, 2021). The Net Zero Investment Framework of the PAII also foresees increased capital allocation towards climate solutions and the maintenance of an appropriate balance of exposure between developed and emerging country markets in portfolio alignment approaches (PAII, 2021).

112. While diverging views exist on the nature, scope and relevance of Article 2, paragraph 1(c), and Article 9, third-party assessments of climate-related financial reporting observe that flows that finance activities aiming to contribute to climate objectives and flows that finance activities with climate-related co-benefits are consistently referred to in finance tracking exercises for Article 9 and Article 2, paragraph 1(c). However, approaches and understandings diverge on flows that finance activities that are not aligned with a pathway towards low-emission and climate-resilient development as well as on flows that finance activities with no particular climate impact (Goritz, Nettersheim and Ryfisch, 2021; Jachnik, Mirabile and Dobrinevski, 2019). In addition, third-party analyses report access to climate finance as one potential policy and investment lever for implementing Article 2, paragraph 1(c), while at the same time recognizing that the scaling up and alignment of finance flows should not counteract the ability of entities to access concessional climate-related finance, given the specific purpose and role that concessional finance can have in addressing climate-related needs and priorities and in attracting much needed private investments (Aragon and Njewa, 2022; Goritz, Nettersheim and Ryfisch, 2021).

113. The insights from further mapping with regard to signs of efforts, possible challenges and possible opportunities reported to be relevant to implementing Article 2, paragraph 1(c), in chapter IV.D below indicate various potential direct and indirect co-benefits for the delivery of climate-related financial support to developed countries through actions related to efforts to achieving the goal of Article 2, paragraph 1(c). Among these reported possible opportunities are the scaled-up mobilization and domestic uptake capacity of climate-related finance flows through sustainable financial markets deepening and strengthening their enabling policy, regulatory and legal environments; the reinforcement of needs determination capacities; and potential co-benefits for transparency in reporting under the UNFCCC owing to in-country institutional capacity-building and knowledge diffusion.

## **C. Similarities and differences in approaches**

### **1. Measures of consistency in low GHG emission development**

114. The mapping finds a large variety of policies, methods and approaches that aim to align with the purpose and goals of the Paris Agreement, in particular with regard to achieving decarbonization and managing climate-related transition risks. Although detailed methodological differences exist, a range of commonalities are identifiable.

115. Private financial sector institutions and alliances have visibly increased activities in recent years that aim to set net zero emission by 2050 targets and cite alignment ambitions in line with limiting the global temperature rise to 1.5 °C by the end of the century:

(a) The identified alignment approaches commonly formulate a number of overarching principles or measures, such as:

- (i) The definition of decarbonization targets;
- (ii) The application of climate scenarios and pathways for consistency with low-emission development and mitigation goals;
- (iii) The adoption of investment and/or lending alignment strategies at the portfolio and subportfolio level;
- (iv) The development of policies and engagement strategies to incentivize climate actions from real-economy and governmental actors;

(v) The development of governance and oversight mechanisms to steer the climate transition at the organizational level;

(b) The rise in decarbonization commitments and pledges has been followed by the decentralized emergence of methodologies and approaches, including the development of measurement indicators (see further details in table 2); however, information on concrete alignment results in terms of Paris-aligned AUM or investment and lending flows aligned with 1.5 °C or 2 °C targets is not yet available in a standardized format across the financial system (Solomon, 2022). An increasing level of granularity and reporting on financial sector alignment progress can be expected as net zero commitments and initiatives mature, with corresponding disclosures becoming available;

(c) Ensuring the robustness, credibility and transparency of financial sector targets and commitments is therefore an emerging field of activity in which private organizations (such as SBTi and TPI) and investor initiatives (such as GFANZ and HLEG, which is concerned with the credibility of net zero commitments of non-State entities) set out to develop common standards, criteria and verification processes.

116. Preceding net zero target setting initiatives were efforts to introduce climate-related financial disclosures that seek to increase the transparency of climate-related financial transition risks within the financial system and in the real economy through a number of widely adopted reporting frameworks, such as those of TCFD and CDP, or the PCAF Global GHG Accounting and Reporting Standard. Regional and national jurisdictions increasingly mainstream climate-related reporting standards through their own regulatory efforts that interlink with and, in some cases, expand on the voluntary industry initiatives.

117. In the first instance, climate-related financial reporting serves as a data input for financial sector actors to conduct climate risk management approaches, assessing exposure to climate-related financial risks within portfolios and implementing measures to adjust investment and lending decisions accordingly to hedge against anticipated climate-related risks. In turn, financial supervisory authorities and central banks have adopted practices that require financial institutions to disclose their climate-related financial risk profile in order to fulfil their microprudential and macroprudential supervisory mandates. Further, climate-related financial disclosures can enable financial alignment approaches that seek to actively support decarbonization efforts by inducing change in the real economy, notably financing climate solutions, promoting GHG reductions in GHG-intensive sectors and, in part, shifting away from financing harmful activities.

118. Across all the alignment approaches to manage climate-related financial risks and achieve decarbonization in line with the temperature goals of the Paris Agreement, a variety of key performance indicators and metrics are in use. Table 2 presents commonly identified metrics across various types of indicators.<sup>48</sup>

Table 2

**Overview of alignment metrics for decarbonization and management of transition risks in use in the financial sector**

<i>Type of indicator</i>	<i>Example metrics</i>
Decarbonization target	Net zero target by 2050 Interim target on a five-year interval, or starting from 2030
GHG emissions (absolute emissions, covering scope 1, 2 or 3 emissions)	Financed emissions by asset class GHG emissions per MWh of electricity produced Gross global scope 1 GHG emissions covered under emission-limiting regulations
Portfolio carbon footprint	Total carbon emissions for a portfolio normalized by the market value of the portfolio, in t CO <sub>2</sub> emissions per million dollars invested

<sup>48</sup> See the fifth BA technical report, section 1.5, for an in-depth discussion of metrics in use.

<i>Type of indicator</i>	<i>Example metrics</i>
Carbon intensity	Weighted average carbon intensity metric: volume of carbon emissions per million dollars of revenue in t CO <sub>2</sub> emissions per million dollars revenue Physical: volume of carbon emissions per unit of output in t CO <sub>2</sub> emissions per unit of output (sector specific)
Exposure to carbon-related assets (transition risks)	Amount or percentage of carbon-related assets in the portfolio, expressed in millions of dollars or percentage of the current portfolio value Volume of real estate collaterals highly exposed to transition risk Concentration of credit exposure to carbon-related assets Percentage of revenue from coal mining
Climate-related opportunities (revenue and assets aligned with climate-related activities)	Revenues from products or services that support the climate transition Green Asset Ratio (ratio of exposures to green taxonomy aligned activities) Net premiums written related to energy efficiency and low-carbon technology opportunities
Capital deployment (capital expenditure, financing or investment deployed towards climate-related risks and opportunities)	Percentage of annual revenue invested in research and development of low-carbon products and services Percentage of capital expenditures that are green taxonomy aligned Percentage of capital expenditure or annual revenue invested in emission-intensive products and services

*Source:* Based on ECB, 2021, NGFS, 2022a, 2022c, and TCFD, 2021a.

119. While general similarities exist across Paris alignment approaches, many differences and nuances do too, resulting from the decentralized and complex development of alignment approaches and measures. Currently, there is a perceived lack of commonly accepted standards and criteria for assessing the robustness and credibility of various targets, commitments and underlying methods (HLEG, 2022a). Yet large methodological disparities and the inability to independently verify targets and alignment practices may risk undermining the serious climate actions taken by stakeholders to align finance flows with the purpose and goals of the Paris Agreement. This mapping, as well as literature reviews of science-based target setting initiatives and methodologies, capture, among others, the following differences in approaches (Bjørn et al., 2022, Noels and Jachnik, 2022):

(a) **Choice of emissions scenarios and pathways.** These range from 1.5 °C or 2 °C aligned scenarios to pathways that reflect NDC and/or current policies' ambition. Further, the specification of global, regional or national pathways, the identification of sector-specific decarbonization scenarios, and the use of absolute contraction, intensity-based or implied temperature rise models are treated differently across alignment methodologies;<sup>49</sup>

(b) **Use of GHG accounting methods, in particular the inclusion of scope 3 emissions.** Alignment approaches and target setting initiatives have different demands on the level of detail of GHG emissions that are being tracked and assessed by financial institutions. GHG accounting methods in the financial sector vary among asset classes, but also in terms of the scope of all invested holdings, whether they are for material sectors and counterparties only, and whether they are for specified GHG-intensive sectors. Current disclosure practices have room for improved transparency, as for example in the eurozone, where 15 per cent of 109 large banks published financed emission data and portfolio emissions were disclosed by 25 per cent of the 332 financial institutions reporting under the CDP framework (CDP, 2021a; ECB, 2022);

(c) **Assessment of progress towards long-term targets.** Some target setting protocols, such as those of NZAOA and NZBA, foresee five-year interim targets for emission reductions starting from 2025 or 2030 respectively, while other alignment approaches focus

<sup>49</sup> See the fifth BA technical report, section 1.5, for further details.

on annual emission reductions at a predefined level, such as the EU regulation on EU Paris-aligned Benchmarks;<sup>50</sup>

(d) **Coverage of alignment targets at the portfolio and subportfolio level.** This varies with regard to initial coverage as well as long- and short-term target setting. In its initial target setting report, NZAM reported that members who have set alignment targets cover an estimated 39 per cent of their assets (NZAM, 2022), while members with interim 2025 targets under NZAOA cover approximately 33 per cent of their portfolio (UNEP FI, 2021a). The Guidelines for Climate Target Setting for Banks foresee interim target setting for a specific subset of material sectors rather than at the portfolio level (UNEP FI, 2021b);

(e) **Ways of ensuring the implementation of decarbonization targets.** Here, the options include transition plans, financing strategies and the use of carbon removal and offsetting, all of which are subject to different governance processes and methodological approaches. The current trend in developing various guidance and standards for detailed transition plans (see chap. III.C above) reveals that beyond target setting, ensuring and assessing the implementation of financial and non-financial alignment activities is receiving increased attention. Further, indirect emissions and carbon offsets or removals are discussed or included to varying extents and with different criteria in most alignment frameworks and net zero commitments, although no international standard exists for carbon offset markets (Bloomberg, 2022);

(f) **Use of climate financing targets and exclusion or phase-out policies.** Financing targets for climate-positive investments or climate solutions, as well as exclusion and/or phase-out policies related to harmful activities (in particular, fossil fuel related activities) feature in financial initiatives and individual financial institutions' approaches to Paris alignment. While, for example, the Collective Commitment to Climate Action reports that 92 per cent of participating banks have in place some exclusion or phase-out policies, the extent of the measures taken can differ widely across financial institutions and alignment approaches with regard to portfolio coverage and sector- or technology-based decision criteria.<sup>51</sup> A similar diversity of current approaches is visible with regard to financing targets for climate solutions.

## 2. Measures of consistency in climate-resilient development

120. Alignment approaches for building climate resilience and managing physical climate risks in the financial sector to date predominantly follow a risk management approach that seeks to mitigate the climate-related financial risks expected from climate impacts. The financial management of physical risks is part of but does not in all cases equate to a contribution to climate resilience outcomes, which is contingent on the approaches and measures employed. Financial physical risk management can, for example, take the form of insurance or finance for improving the resilience of physical infrastructure, or it can be realized through portfolio adjustments away from assets at physical climate risk, resulting in different alignment contributions (Caldecott, 2020).

121. Signals of progress in climate risk management (identified in chap. III.C.5 above) relate to:

- (a) Increasing awareness and disclosure of physical climate risks;
- (b) Implementing financial supervisory activities, including climate stress testing and scenario modelling;
- (c) Increasing investor expectations and engagement in risk management;
- (d) Adopting emerging initiatives dedicated to physical risk management.

122. **Compared with the various target setting and alignment tools developed for achieving net zero and decarbonization ambitions, there are comparatively fewer private financial sector initiatives dedicated to increasing adaptation and resilience investments or to formulating adaptation targets and commitments.** In general,

<sup>50</sup> Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32019R2089>.

<sup>51</sup> See <https://www.unepfi.org/banking/commitments/ccca/>.



approaches, methods and tools for aligning finance with climate resilience goals are at an early stage of development (Mullan and Ranger 2022). Within existing approaches that address climate-related financial risks, there are common indicators and metrics identifiable that relate to fostering climate resilience; these are presented in table 3.

Table 3

**Overview of metrics for climate risk and resilience assessment in use in the financial sector**

<i>Type of indicator</i>	<i>Example metrics</i>
Physical risks (amount and extent of assets or business activities vulnerable to physical risks)	Proportion of property, infrastructure or other alternative asset portfolios in an area subject to flooding or to heat or water stress Proportion of real estate assets exposed to 1:100 or 1:200 climate-related hazards Physical risk indicator at the sector level of financial portfolios, based on geographical and sectoral risk information
Climate-related opportunities (revenue and assets aligned with climate-related activities)	Proportion of portfolio aligned with adaptation and resilience goals Green Asset Ratio (ratio of exposures to adaptation taxonomy aligned activities) Proportion of homes constructed to a certified third-party green building standard
Capital deployment (capital expenditure, financing or investment deployed towards climate-related risks and opportunities)	Investment in climate adaptation measures (e.g. soil health, irrigation, technology) Percentage of capital expenditures that are adaptation taxonomy aligned

*Source:* Based on ECB, 2021, Mullan and Ranger, 2022, NGFS, 2022a, 2022c, and TCFD, 2021a.

123. An investigation of alignment approaches in the financial sector for climate adaptation and resilience reveals convergence on **physical risk management through measures at the portfolio and client or asset level**. While many financial sector approaches currently take into account physical climate risks as a financial risk (e.g. through climate risk modelling as an input to credit ratings or investment decisions), process-based CRVAs and appropriate adaptation measures are increasingly mainstreamed through DFIs. To address the identified lack of private sector methodologies in climate risk considerations, financial sector initiatives such as CCRI have started to develop tailored approaches for private institutions.

124. Beyond financial climate risk management, more comprehensive alignment approaches for achieving the consistency of finance flows with adaptation and climate resilience objectives have been primarily identified among MDBs and DFIs that have incorporated adaptation and resilience into their Paris alignment frameworks, as well as in governmental approaches to developing adaptation-related taxonomies and green budgeting frameworks. Taxonomies and development financing frameworks incorporate safeguarding principles, including the ‘do no significant harm’ principle, into environmental objectives, as well as consistency considerations with a wider adaptation context in order to avoid maladaptation.

125. Active support for creating wide resilience in societies and networks of assets is an additional component that is considered necessary for building climate resilience; this support covers various dimensions of physical, socioeconomic and public service interventions (IPCC, 2022a). Some adaptation approaches in use, such as the World Bank Resilience Rating System, already incorporate broad climate resilience considerations by assessing how individual projects affect income levels, infrastructure and public services or induce institutional and governance change (World Bank Group, 2021). Transformational change is a feature of climate-resilient development pathways that is visible in established channels of climate finance, for example the UNFCCC funds. Private sector approaches

generally have not operationalized concepts such as systemic or transformational change but to some extent have captured such considerations under environmental, social and governance or impact investing (see chap. III.C.4 above).

126. The various components of identified financial sector alignment approaches for climate adaptation and resilience are summarized in table 4.

Table 4

**Components of financial sector alignment approaches for climate adaptation and resilience**

<i>Component</i>	<i>Available measures and tools</i>
Physical risk management	Portfolio level: financial risk assessment and adjustment Project level: CRVA
Safeguarding, such as the ‘do no significant harm’ principle (including mitigation)	Project level: consideration of other environmental objectives
Consistency with adaptation planning	Project level: consideration of national and local climate resilience context
Support of broader climate resilience	Portfolio and project level: investments and financing for societal climate adaptation and resilience

*Source:* Based on the framework of Mullan and Ranger, 2022.

### 3. Pathways

127. A given pathway to low-emission and climate-resilient development can serve as a baseline for measuring the consistency of finance flows with the purpose and goals of the Paris Agreement. Mapped approaches and methodologies use a variety of underlying climate scenarios and climate targets and take into account geographical scope, and differing emission reduction approaches or metrics in use. Beyond decarbonization, pathways may also refer to fostering adaptation measures and climate-resilient development in the financial sector and the real economy.

#### (a) Climate scenarios<sup>52</sup>

128. The low or no overshoot pathways of the SR1.5 and the models in the IEA *Net Zero by 2050* report are the two most frequently used climate scenarios across all approaches. These scenarios serve as the basis for the target setting protocols of, for example, NZAOA, are applied by SBTi and CDP–WWF temperature rating methodology, and are recommended for climate scenario modelling by TCFD. The suite of NGFS climate scenarios (covering several orderly, disorderly and hothouse world scenarios) are recommended for and are in use by central banks and supervisory authorities. The models in the IEA *Energy Technology Perspectives* publication series and OECM are applied in commonly used alignment approaches such as TPI and PACTA. OECM is recommended by NZAOA for establishing sectoral pathways. The Inevitable Policy Response Consortium’s Forecast Policy Scenario has been adopted by many investors and financial institutions to assess climate-related risks and opportunities.

#### (b) Climate targets and level of ambition

129. Recent financial sector initiatives converge on the ambition to align with net zero emission or 1.5 °C temperature pathways, in particular through GFANZ. An investigation of emissions scenarios in investor initiatives and alignment approaches reveals a variety of pathways are in use, including pathways that limit global temperature rise to below 2 °C (especially for sector-specific pathways) or that consider global pathways alongside NDC targets or currently implemented climate policies (see, e.g., the uptake of the Inevitable

<sup>52</sup> For a detailed overview of frequently used climate scenarios in Paris alignment approaches within the financial sector, see the fifth BA technical report, section 1.5.

Policy Response Consortium’s Forecast Policy Scenario by 128 signatories from the Principles for Responsible Investment (as at December 2021) and the application of the IEA well below 2 °C pathways for the sectoral decarbonization approach of SBTi). With regard to climate risk management modelling, financial sector actors – private and financial supervisory authorities and central banks – use a range of temperature pathways to reflect climate-related financial impacts under various climate and policy scenarios, including potentially non-optimal and disorderly pathways of global climate action (Inevitable Policy Response Consortium, 2021; NGFS, 2022a). Furthermore, pathways can refer to the application of taxonomies and activity-level classification lists for identifying climate-aligned economic activities and expenditures. In the landscape of published taxonomies and green budgeting systems, the temperature goals of the Paris Agreement, NDCs, and regional and national economic profiles are considered to various extents (see chaps. III.B.2 and III.C.3 above). DFIs and OECD DAC define Paris alignment as pathways towards net zero, low GHG emission and climate-resilient development in the context of national priorities, policy goals, sustainable development and a just transition.

**(c) Global, regional, national and sectoral pathways**

130. Decarbonization pathways are identified at the global, regional, national and sectoral scale. Global – and increasingly also regional – climate models are the most advanced and available for defining decarbonization or net zero pathways. The need for increased availability of national and sectoral decarbonization pathways has been highlighted by financial sector actors, as these pathways can be used to develop granular portfolio alignment strategies that take into account sectoral opportunities and challenges in climate transition, as well as national circumstances (GFANZ, 2022; Noels and Jachnik, 2022; UNEP FI, 2022; SBTi, 2022). Many alignment approaches include the development of specific sectoral models or the formulation of sectoral and subportfolio decarbonization targets, which are often based on IEA sectoral and technology modelling or on the newly developed OECM. The updated version of the NGFS climate scenarios provides a granular breakdown – to the national level – for 132 countries, which should help to better inform context-based climate-related financial risk analysis.

**(d) Decarbonization metrics of pathways**

131. The use of absolute contraction, output-based and intensity-based pathways or temperature rating models can be identified in the Paris alignment approaches of financial institutions and in assessments of real-economy actors.<sup>53</sup> Target setting protocols, such as those for asset owners or banks, and third-party assessment providers, such as SBTi or TPI, note that intensity-based pathways can help in setting subportfolio and sector-specific decarbonization targets while absolute emission reduction pathways have an important signalling function and increase the perceived transparency of ambition levels (SBTi, 2022).

**(e) Role of carbon offsets, emission removals and negative emissions**

132. As with the consideration of carbon offsets and emission removals in financial sector and real-economy alignment approaches, climate scenarios and pathways can differ in the importance accorded to carbon removals and negative emissions from biophysical and technological processes, including carbon sinks, bioenergy with carbon capture and storage, and direct air carbon capture and storage. Available climate scenarios, pathways and target setting initiatives place a different emphasis on these offsetting or removal technologies and processes, which has implications for the rate of absolute emission reduction required from emission-intensive activities to achieve given temperature scenarios.

**(f) Pathways to climate resilience**

133. Given that climate change adaptation and resilience-building is commonly perceived as process based and context specific, difficulties arise when applying pathways to model and plan for adaptation and resilience measures in both the financial and the non-financial sector. A number of climate impact scenarios, studies and forecasts for required climate

<sup>53</sup> See the fifth BA technical report, section 1.5.

resilience investments exist, although they often focus on particular sub-aspects of climate resilience and adaptation planning or on specific sectors.<sup>54</sup>

## D. Efforts, possible challenges and opportunities

134. As noted in the previous mapping exercise, for the fourth BA, and reiterated throughout this mapping, understanding related to the scope of Article 2, paragraph 1(c), of the Paris Agreement varies among Party and non-Party stakeholders; therefore, this mapping exercise does not suggest common views be espoused on the scope and implications of the goal set out in Article 2, paragraph 1(c), or on recommendations for implementing the various efforts reported as being relevant to Article 2, paragraph 1(c).

135. Chapter III mapped the various approaches, methodologies and policies to implement Article 2, paragraph 1(c), in line with the action areas and interpretations of actors relevant to Article 2, paragraph 1(c). The reported efforts are summarized in this subchapter alongside challenges and opportunities that have been identified from the ongoing work cited as being relevant to implementing Article 2, paragraph 1(c), which seeks to make finance flows consistent with a pathway towards low GHG emission and climate-resilient development. Table 5 provides a non-exhaustive overview of these efforts, possible challenges and opportunities, drawing from the information reviewed in the mapping as well as studies that have analysed Article 2, paragraph 1(c), from diverse perspectives, such as those of regions, countries, and public and private sector actors. The table has three parts:

(a) Part 1, which groups the overarching aspects of assessing and achieving the consistency of climate finance flows;

(b) Part 2, which outlines key efforts, possible challenges and opportunities in aligning financial sector portfolios. This mapping has documented a notable uptake of efforts, in particular decarbonization initiatives and net zero target setting, which the financial sector has identified as relevant to implementing Article 2, paragraph 1(c). Further opportunities to incorporate adaptation and climate resilience considerations have also been identified;

(c) Part 3 presents some of the approaches available to foster physical climate resilience in the financial system and the real economy, where actors have reported difficulties in implementation owing to limitations in data availability and methodological development for physical climate risk assessment and resilience-building.

Table 5

### Reported efforts, possible challenges and opportunities identified in implementing Article 2, paragraph 1(c), of the Paris Agreement

<i>Efforts</i>	<i>Possible challenges</i>	<i>Possible opportunities</i>
<b>Part 1: consistency of financial flows</b>		
Scaling up of sustainable investment markets, including green bonds	Continuing carbon intensity of current global finance flows	Scaled-up mobilization of climate-related finance flows, including to support just transition in developing and developed countries
Integration of climate considerations into the financial sector as a whole		
Scaling up of global renewable energy capacities	Dependency on emission-intensive activities of economies and public budgets	Diversification of economies and national accounts, offering opportunities for building institutional, technological and human capacities for sustainable development
Maturity of financial markets for green technologies		

<sup>54</sup> See, for example, Blackrock (2019), Ceres Investor Network on Climate Risk and Sustainability (2021), Mandel et al. (2021) and UNEP FI (2020).

<i>Efforts</i>	<i>Possible challenges</i>	<i>Possible opportunities</i>
Development of green public financial management frameworks, including domestic green budgeting systems and taxonomies	Lack of climate-related domestic MRV systems for finance flows	Improved domestic public expenditure tracking Identification of climate-related investment needs at the national level Effective implementation and enhancement of transparency reporting under the Convention and the Paris Agreement
Emerging just transition frameworks	Lack of low GHG emission transition pathways that take into account development needs (poverty eradication, energy access and security, food and water security, etc.) while ensuring just transition	Sustainable and climate-resilient development pathways

## **Part 2: alignment of financial sector portfolios**

Paris alignment commitments, net zero targets and portfolio alignment methodologies Public sector and financial supervisory activities, including through CFMCA, NGFS and others	Lack of established standards and approaches, with greenwashing risks and limited methods to assess alignment of flows with national priorities and climate action plans	Global understanding of climate consistency of finance flows Prevention of greenwashing Paris alignment of national climate action plans and sectoral pathways
Real-economy commitments to net zero targets, including through SBTi, TPI, Climate Action 100+ and others	Difficulties in assessing real-economy impacts for decarbonization and climate resilience	Increased attention on climate-resilient and low GHG emission investments
Improved transparency on climate-related financial disclosures Geographical data initiatives	Lack of granular climate-related data for transition risk assessment (at the country, portfolio, entity and asset level)	Increased transparency and improved evaluation of climate-related impacts and risks at the portfolio, entity and asset level Improved micro- and macrolevel financial system stability
Green and sustainability-linked bonds issuance in developing markets	Underdeveloped financial sector, in particular private markets, in many developing countries  Low relative level of resources (, capital, human) and institutional capacity among real-economy private sector entities in developing countries for climate mainstreaming and data provision as compared with developed countries	Financial market development and climate-related capacity-building

## **Part 3: physical climate resilience**

Emerging transparency on climate-related financial disclosures Geographical data initiatives	Lack of granular climate-related data and methodologies for physical risk assessment (at the country, portfolio, entity and asset level)	Increased transparency and improved evaluation of climate-related impacts and risks Improved financial system stability
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<i>Efforts</i>	<i>Possible challenges</i>	<i>Possible opportunities</i>
Recognition of physical climate-related risks and exposure in the financial sector and development of risk management approaches	Limitations in the financial sector's risk management approach to mitigating physical climate risks on the ground	Increased adaptation and resilience investments Formulation of adaptation plans Mainstreaming of CRVA
Race to Resilience campaign with participation of financial institutions		

*Source:* Review of the information on initiatives, methodologies and approaches related to Article 2, para. 1(c), of the Paris Agreement in use, as provided in chap. III.B–C above and in the fifth BA technical report (section 1.5), drawing in particular from the overview publications CCRI, 2022, GFANZ, 2021, NGFS, 2022a, 2022b, Noels and Jachnik, 2022, and IPCC, 2022b, as well as the additional regional and country case studies on climate consistency by Bingler et al., 2021, Guzmán and de la Fuente, 2021, Lopez-Carbajal, Rojas-Squella and Watson, 2021, and Samo et al., 2022.

## 1. Consistency of financial flows

136. **Efforts.** Scientific bodies, international financial institutions and market intelligence providers underline a clear trend towards the scaling -up and maturity of sustainable and green financial markets, which includes the scaling up of green bond markets, investments in renewable energies, transition finance frameworks and integration of climate considerations into governments' public financial management frameworks. Some of the relevant mapping findings in chapter III above that support the assessment of a general upward trend in green financial markets are the 73 per cent year-on-year increase in green bond issuances in 2021 and the large number of private financial institutions and real-economy corporations that participate in voluntary climate-related disclosure frameworks (such as TCFD: with 3,113 institutions with 29 trillion market capitalization and USD 209 trillion AUM) or target setting initiatives (such as SBTi: 2,253 corporations). Further, 48 jurisdictions are developing or have in place green budgeting systems and 32 jurisdictions or organizations have issued sustainable or green finance taxonomies or classification systems to guide investment decisions of financial markets. The fifth BA underlines that global climate finance flows are increasing over time, with a 12 per cent increase in 2019–2020 compared with 2017–2018, in part driven by the increasing market maturity of renewable energy technologies.

137. **Possible challenges.** In global financial markets at present, higher volumes of finance are allocated to emission-intensive activities than to low-carbon or climate-related finance (IEA, 2022; IPCC, 2022b). Regional and country case studies underline that in many countries, across all income levels, significant dependencies on fossil fuel intensive activities exist for public budgets and associated service provision as well as for private investment and lending activities and pension funds (2° Investing Initiative, 2022a, 2022b; Guzmán and de la Fuente, 2021; Lopez-Carbajal, Rojas-Squella and Watson, 2021). Particular challenges are expected to be faced by emerging markets with regard to sovereign credit ratings, where evidence points to the negative effects of increased climate vulnerability and better market ratings are observed for higher climate resilience (Cevik and Jalles, 2020). Climate benchmarking based on risk-focused methodologies will likely significantly favour high income countries over low income countries (NGFS, 2022b). Often, GHG-intensive economic sectors and natural resource exploration form the backbone of economic value chains and provide for the livelihoods of a significant part of the population. Making finance flows consistent with low GHG emission development is therefore associated with the need to continue to ensure improved energy access and food security, in particular in the most vulnerable and least developed contexts, as well with the need for a just transition of the workforce and affected localities, which is called for in the Glasgow Climate Pact (ILO, 2022; Samo et al., 2022). To track the consistency of finance flows, governments develop and apply domestic green finance MRV systems. This mapping has identified ongoing, but nascent, initiatives of countries to develop such systems, which, owing to their administrative scope, often require the provision of external expertise and technical assistance (such as that provided through the Climate Public Expenditure and Institutional Review methodology of UNDP, the World Bank, OECD or the European Commission (for its member States)). The

EU Green Budgeting Reference Framework reflects this complexity in implementation with a three-level structure of recommendations according to ambition and detail of approaches (European Commission, 2022).

**138. Possible opportunities.** The contribution of Working Group III to the AR6 underlines that enough liquidity exists in financial markets to close the investment gap to align with the purpose and goals of the Paris Agreement and the scaling up of climate-related finance flows is visible as a significant component of current private and public sector approaches related to Article 2, paragraph 1(c), covering net zero commitments and national sustainable finance initiatives and policies (IPCC, 2022b). The mobilization of additional finance in emerging and developing countries is an explicit goal of GFANZ, recognizing the current global investment patterns that concentrate in Parties included in Annex I to the Convention and a number of large developing countries (GFANZ, 2021). Using financial system levers to diversify economies towards low GHG emission, climate-resilient activities is considered as a significant opportunity by governments, as expressed in national sustainable finance strategies. Mitigating existing carbon dependencies not only can diversify public budgets and economic profiles but also is expected to provide long-term co-benefits for sustainable development pathways (Samo et al., 2022). Some of these co-benefits of climate-related investments are improved physical climate resilience, energy and food security, and the lowering of in-country transition risks associated with climate change (Iacobuță et al., 2022; Kuehl et al., 2021). The development of national MRV systems for climate-related expenditures and budgeting is expected to enhance countries' capacities to identify investment needs and to align national spending priorities and planning with climate objectives (Gonguet et al., 2021). These systems can further support developing countries to monitor and report on international climate finance and can complement or enhance the level of information reported by Parties under the Convention and the enhanced transparency framework under the Paris Agreement (Alianza Pacifico, 2020; World Bank, 2021).

## 2. Alignment of financial sector portfolios

**139. Efforts.** The mapping in chapter III.A–C above indicates a notable increase in the activities of the private and public financial sector to align finance flows with the temperature goals of the Paris Agreement. These activities include financial sector Paris alignment commitments and targets (including net zero targets), public sector climate alignment policies and supervisory actions, real-economy alignment commitments and alignment assessment methodologies, voluntary and mandatory climate-related financial disclosures, and uptake of climate-relevant bonds issuances in developing country markets.

**140. Possible challenges.** In view of the decentralized development of Paris alignment approaches, the heterogeneity and complexity of alignment approaches is visible in financial markets that exhibit a lack of established international standards and guidelines and entail a risk of greenwashing in the absence of commonly agreed evaluation processes (HLEG, 2022a; Race to Zero, 2022b; Solomon, 2022). Measuring the real-economy impact of financial actors, in the context of Article 2, paragraph 1(c), remains a notable topic of debate among initiatives, including which metrics are most important as indicators of success, given that many financial actors operate at a number of steps removed from real-economy activities (see chap. III.C.4 above). Further, the underdevelopment of financial sectors and the lack of financial depth in many developing countries can act as a barrier to the implementation of Article 2, paragraph 1(c), since climate mainstreaming requires complex methodological approaches, institutional and human capacities, and robust enabling policy and regulatory frameworks (Bingler et al., 2021; Lopez-Carbajal, Rojas-Squella and Watson, 2021). As a cross-cutting issue, the lack of available and context-specific climate-related data for assessing climate transition risks at the country, portfolio and asset or entity level complicates current alignment approaches. Data limitations are most frequently noted with regard to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard and financed emissions, asset-level and sector-specific transition pathways, and corporate disclosures at sufficient detail and with global coverage (GFANZ, 2022; NGFS, 2022a; Noels and Jachnik, 2022).

**141. Possible opportunities.** The methodological development of financial sector approaches for Article 2, paragraph 1(c), has provided opportunities for voluntary and

regulatory initiatives to improve the global understanding of climate consistent finance through financial sector target setting initiatives or green and sustainable financing frameworks and disclosure regulations. The interoperability of approaches at the global level, such as through the International Platform on Sustainable Finance for taxonomies, TCFD and ISSB for disclosures, and HLEG can further enhance market transparency and avoid greenwashing. These opportunities relate also to increased transparency and means of assessing climate-related financial risks for both private financial actors and public supervisory authorities with a view to ensuring financial market stability (Coelho and Restoy, 2022). Improved data availability, in particular for granular sectoral, geographical and asset-level data, can support the scaling up of climate-positive finance and address low-carbon transition needs in countries with low data coverage, which are often developing or the most vulnerable countries (NGFS, 2022a). In the context of alignment efforts, the opportunities for financial sector development in developing countries are further highlighted, in a manner that integrally includes sustainability considerations in decision-making and operational processes (Bingler et al., 2021). Institutional and human capacity-building in the private sector is expected to ease the organic flow of private finance towards low GHG emission, climate-resilient activities, as well as improve interlinkages with official public support measures through optimized delivery channels and co-financing arrangements.

### 3. Physical climate resilience

142. **Efforts.** The awareness and disclosure of climate-related financial risks has progressively increased in the financial system, as reflected in the increase in mandatory and voluntary disclosure initiatives and supervisory risk assessment and stress testing initiatives. Also in the private sector, the incorporation of physical climate risks and vulnerabilities into credit ratings and investment and rating decisions is identifiable, in conjunction with emerging initiatives such as the Race to Resilience campaign to advance risk management processes and methodologies and adaptation-relevant investments (see, in particular, chaps. III.A and III.C.5 above).

143. **Possible challenges.** The mapping finds that financial sector efforts towards climate resilience are less numerous than in the area of decarbonization. Methodologies in use reveal a higher level of detail for climate-related financial risk management processes than in the area of portfolio alignment approaches or concrete financing targets for adaptation and resilience. The most commonly employed private financial risk management approaches focus on limiting portfolio risk exposures and are thereby limited to actively contributing to the mitigation of physical climate risks on the ground (for more details, see chaps. III.C.5 and IV.C above). As in the case of transition risks, apparent data and information gaps, in particular geographically disaggregated biophysical climate data, impede physical climate risk assessments for several use-cases of alignment approaches, including the evaluation of microeconomic and macroeconomic financial exposures and market stability and the identification of appropriate adaptation and resilience measures and investments (ECB, 2021; NGFS, 2022a).

144. **Possible opportunities.** Improving the availability of granular geographical information on physical climate impacts and vulnerabilities supports the early identification of existing climate-related risks in the financial system and serves as a key building block to scaling up finance towards climate adaptation and resilience-building activities (IPCC, 2022b; TCFD, 2021a). Financial sector disclosure initiatives, as well as other initiatives, such as the G20 New Data Gaps Initiative, the Global Resilience Index Initiative, the NGFS climate scenarios and the IMF Climate Change Indicators Dashboard, have identified the potential arising from enhancing transparency on climate risks (IMF, 2021, 2022). Based on increased data availability, the emerging development of methodologies for mainstreaming climate resilience and adaptation measures in investment decisions, such as through CRVA systems, transition plans and comprehensive alignment approaches, offers the potential to raise financial sector awareness of climate resilience and increase the level of financial mobilization through systematically pricing in physical climate risks.<sup>55</sup>

<sup>55</sup> See <https://resilientinvestment.org/ccri-launches-new-climate-technology-to-transform-how-countries-anticipate-prepare-and-adapt-to-intensifying-climate-conditions/>.



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