



STAFF CLIMATE

NOTES

Strengthening the Climate Information Architecture

Caio Ferreira, David Lukáš Rozumek, Ranjit Singh, and Felix Suntheim

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IMF Staff Climate Note 2021/003

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Authors' email addresses:	DRozumek@imf.org RSingh4@imf.org CFerreira@imf.org FSuntheim@imf.org

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Strengthening the Climate Information Architecture

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Summary

Strengthening the climate information architecture is paramount to promote transparency and global comparability of data and thus improve market confidence, safeguard financial stability, and foster sustainable finance. This note provides a conceptual framework around the provision of climate-related information, discusses the progress made to date, and points toward the way forward. A decisive, globally coordinated effort is needed to move forward on the three buildings blocks of a climate information architecture: (1) high-quality, reliable, and comparable data; (2) a globally harmonized and consistent set of climate disclosure standards; and (3) globally agreed upon principles for climate finance taxonomies and other classification approaches to align investments with climate goals.

Introduction

Strengthening the information architecture—to support the transition to a climate-sustainable economy and to address the need for information on climate-related risks—is a global imperative (Box 1).

Unmitigated climate change poses enormous risks to the global economy and to the financial sector through exposure to corporates, households, and governments. Within this context, there is an increasing need for decision-useful information that allows for the assessment of risks from climate change and encourages urgently needed investments in climate-change adaptation and mitigation efforts. Time is of the essence because unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C above pre-industrial levels will be beyond reach (IPCC 2021).¹

There are major informational challenges for financial markets associated with climate change. Pricing climate-related risks requires detailed information that ranges from climate scenarios based on future policy actions and paths to complex data and models on socioeconomic changes—such as firms' ability to adapt, or households' preferences with respect to consumption and investment. Similarly, investors aiming to support the transition to a low-carbon economy may require detailed information about firms' current and future emissions, their climate transition commitments, and current and future investments in green products or technologies. Especially the availability of forward-looking data and disclosures are an important aspect of the information required for climate risks assessments but pose challenges for companies.

Currently there is a lack of relevant, decision-useful information, and there are limitations in terms of its quality, comparability, and consistency. Assessing physical risks requires granular information such as the location of physical assets, projection of future extreme weather events, and firms' sensitivity to these events. Similarly, assessing transition risks and opportunities requires data such as carbon emissions broken down by

¹ With the intermediate greenhouse gas emissions (scenario SSP2-4.5) and CO₂ emissions remaining around current levels until the middle of the century, global warming will very likely achieve the level of 2.1°C to 3.5°C above pre-industrial levels by the end of this century (IPCC 2021).

jurisdictions or firms' transition plans showing how emissions will be reduced overtime. Such information is often not available and not consistently disclosed. As the Network for Greening the Financial System (NGFS) and the Financial Stability Board (FSB) reports on data gaps have highlighted, there is a need for more forward-looking and granular data, improved consistency and accessibility of data, as well as mechanisms such as verification and audit to improve the quality of data.²

Box 1. Key Takeaways

Strengthening the climate information architecture is paramount to promote transparency and global comparability of data and thus improve market confidence, safeguard financial stability, and foster sustainable finance. There are three building blocks that require strong global coordination and international commitment to achieve progress and convergence:

1. High-quality, reliable, and comparable data.
 - As highlighted in reports by the Network for Greening the Financial System (NGFS) and the Financial Stability Board (FSB), there is a need for more forward-looking and granular data that is accessible, and whose quality and comparability is ensured through verification and audit mechanisms.
 - Supporting the NGFS and FSB efforts to identify data gaps and improve the availability of data is a necessary step to enhance access to information by investors, policymakers, and other stakeholders.
2. A globally harmonized and consistent set of climate disclosure standards.
 - There is an urgent need to address the fragmentation of disclosure frameworks by developing a globally harmonized and consistent set of climate reporting standards. The International Financial Reporting Standards (IFRS) Foundation's effort to develop such standards, building on existing frameworks, is of critical importance and should be supported.
 - The new reporting standards should reflect the interdependency between creation of value to investors, addressing climate risks from a financial stability perspective, and taking into account the interests of the broader society. They should provide a basis for coordination across stakeholders and allow for additional reporting requirements that capture wider sustainability impacts and information needs.
 - A timely and consistent global implementation of these standards should provide a clear pathway toward eventual mandatory adoption, while recognizing individual jurisdictions' institutional and legal specificities. Costs and benefits should be carefully considered, especially for small and medium enterprises (SMEs) and firms from emerging markets and developing economies (EMDEs).
3. Globally agreed upon principles for climate finance taxonomies and other classification approaches to align investments with climate goals.
 - Globally agreed upon principles for Climate finance taxonomies and other classification approaches are required to increase comparability and consistency of terms and metrics, harmonize the development of transition pathways, provide investors with easy to interpret information, and minimize green-washing, thus allowing to scale up sustainable finance and mobilize urgently needed investment in climate change adaptation and mitigation.
 - The principles should encourage and incentivize investments toward a climate-sustainable economic model, while taking into account the economic development and environmental characteristics of a particular country or region.

² See NGFS (2021) and FSB (2021b).

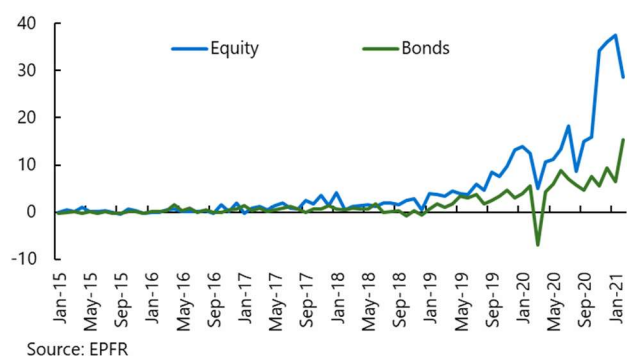
Financing climate change mitigation and adaptation efforts will require a robust information architecture to enable the availability of decision-useful information for effective mobilization of sustainable finance.

Sustainable finance has seen remarkable growth over the past few years, and investments in energy transition have been on the rise (Figure 1). However, the current amount remains substantially below estimates of investment needed to limit global warming to socially acceptable levels.³ Helping sustainable finance markets grow further and scale up financing will require high-quality, comparable, and relevant data and disclosures.

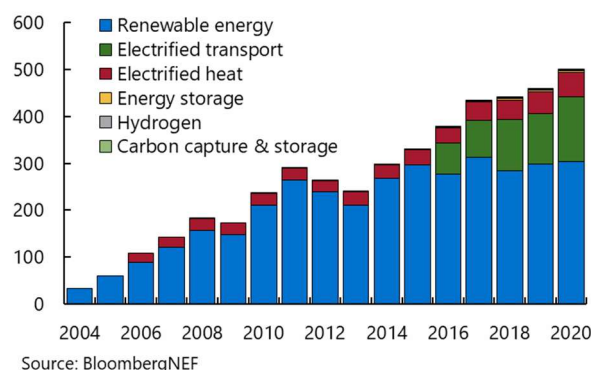
The IMF has emphasized the importance of climate-related disclosures for financial stability assessments, informed market pricing of physical and transition risks, and the growth of sustainable finance. In its *Global Financial Stability Report* (IMF 2019, IMF 2020b) and in Ferreira and others (2021), the IMF has argued for better disclosures and more standardization. IMF (2020a) emphasized the need for more detailed physical risk disclosure, noting that granular, firm-specific information on current and future exposures and vulnerability to physical risk from climate change would help lenders, insurers, and investors better assess these risks.

Figure 1. Flows into Sustainable Funds and Investments into the Energy Transition Have Been Increasing

1. Overall Equity and Bond Flows into ESG/SRI Funds
(Billions of US dollars; latest end-January)



2. Global Investment in Energy Transition by Sector
(Billions of US dollars)



Sources: Bloomberg; EPFR; and IMF *ESG Monitor*.

Note: ESG = environmental, social, and governance; SRI = socially responsible investing.

Policy options with respect to climate-related information should consider three main objectives

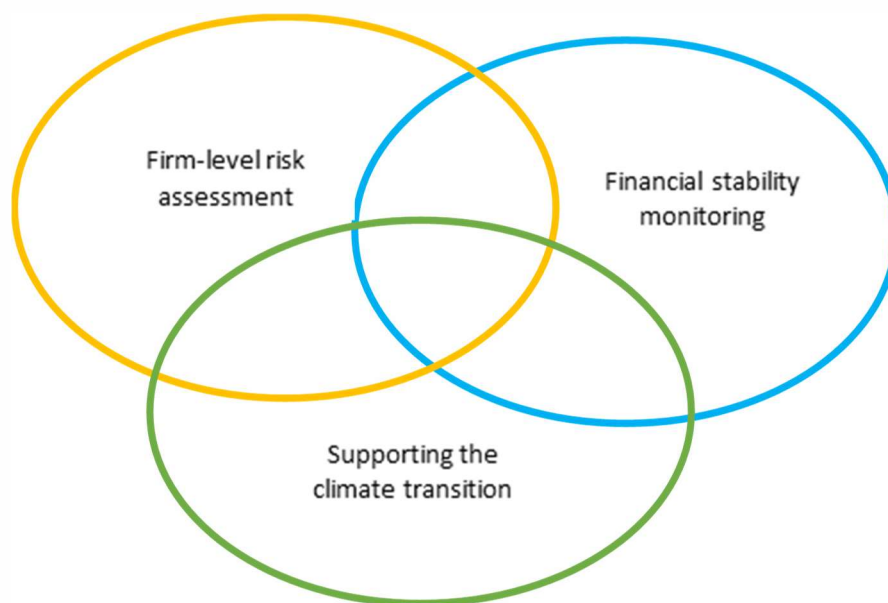
(Figure 2): (1) assessing and pricing of firm-level risk, (2) monitoring and managing financial stability risks, and (3) allowing investors, policymakers, customers, and other stakeholders to understand how firms will transition toward a more climate-sustainable business model.

- **Assessing and pricing of firm-level risk.** The primary objective of financial information is to support accurate assessment and pricing of risk by market participants, such as investors and lenders, and hence facilitate an efficient allocation of capital. To the extent that climate-related information affects the assessment of the riskiness of assets, there is a need for high-quality information, analogue to that for information on other types of risks. However, with respect to climate change, there are important externalities that can arise from the provision of better information and that fall outside of the traditional firm-investor nexus.

³ For example, OECD (2017) estimated that the volume of infrastructure investment consistent with a 2°C warming scenario is \$6.9 trillion annually for the next 15 years, compared to \$6.3 trillion without taking climate change concerns into account. IPCC (2018) estimated that scenarios limiting global warming to 1.5°C require annual average investments in the energy system of about \$2.4 trillion between 2016 and 2035.

- *Monitoring and maintaining financial stability.* Central banks and financial regulators increasingly acknowledge the potentially systemic risks posed by climate change and have called for “integrating climate-related risks into financial stability monitoring and micro supervision” (NGFS 2019). While assessments of the impact of climate change physical and transition risk on the financial system have generally found only moderate effects, there is substantial tail risk and model uncertainty, compounded by a lack of data (FSB 2020; Bolton and others 2020). Improving climate-related information is a necessary condition for advancing models and methodologies to understand and measure climate-related financial losses.
- *Allowing investors, policymakers, customers, and other stakeholders to understand how firms will transition toward a more climate-sustainable business model.* Information can change corporate behavior and foster the transition to a low-carbon economy, supporting climate change mitigation. Sustainable finance gives investors the ability to influence firms’ decisions with respect to environmental factors, and thus to facilitate climate change mitigation and adaptation projects. However, sustainable finance covers a wide range of areas, from broader sustainability in the context of environmental, social, and governance (ESG) concerns, to the more specific focus around climate change. While the sector has grown rapidly in the recent past, in the long term, reliable and comparable data are a prerequisite for further growth, to provide investors with the confidence that their investment decisions contribute to the achievement of climate-related goals (IMF 2019).

Figure 2. The Three Overlapping Key Objectives for Climate-Related Information



Source: IMF staff.

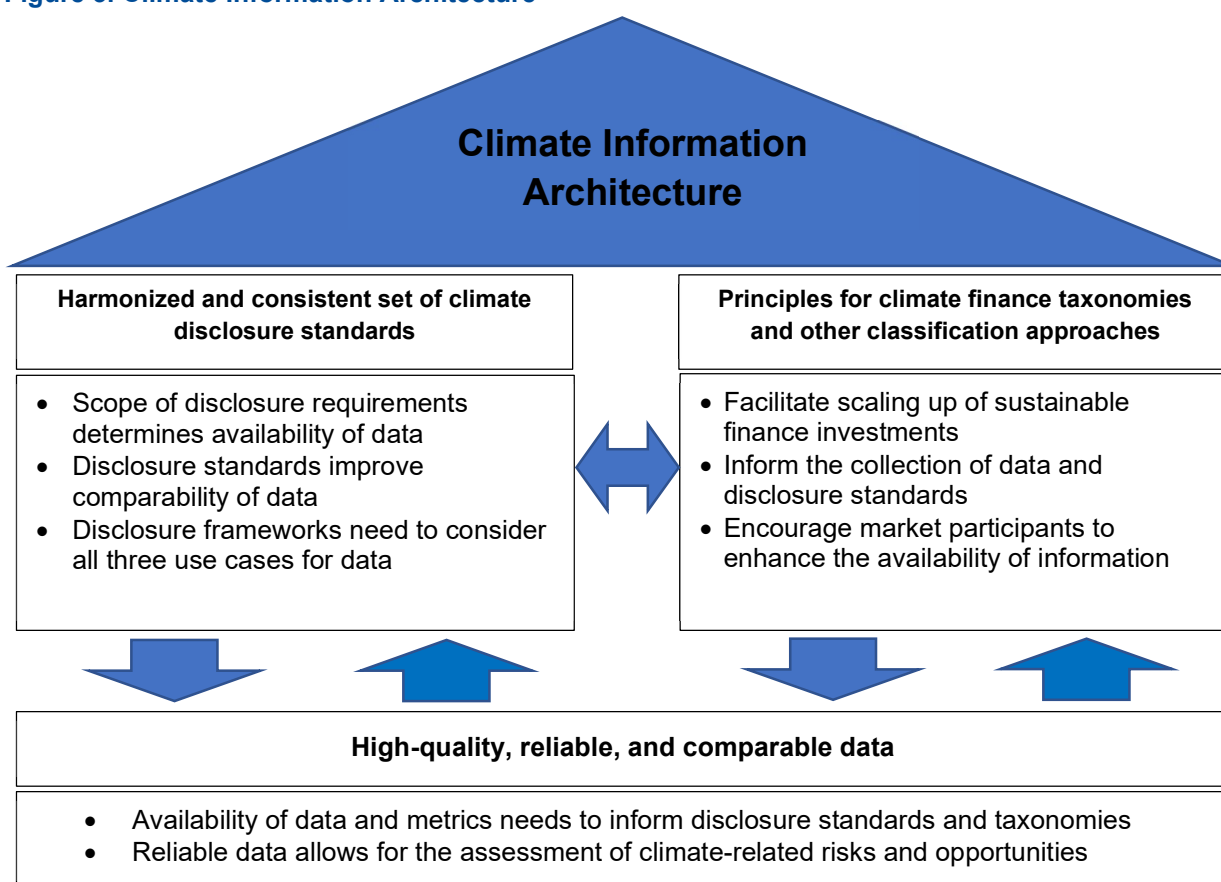
These three objectives overlap. Data and disclosure that allow for the assessment of climate-related risks will serve investors, financial institutions, and financial authorities monitoring financial stability. Information on firms’ pathway toward a more climate-sustainable business model will allow investors with a focus on sustainable investments to make informed portfolio decisions, while also facilitating the assessment of exposures to future policy changes, such as an increase in the price of carbon, by conventional investors. However, it is worth noting that the third objective includes a wider set of policy tools geared toward climate-change mitigation, with stakeholders potentially outside the financial system. For example, disclosures could be

used not just by investors but also by consumers, employees, or other interest groups to encourage firms to transition to a more climate-sustainable business model.

The Climate Information Architecture

The “climate information architecture” needs strengthening to support these three key objectives (Figure 3). There are three interconnected building blocks within this architecture that need to be considered jointly to improve the availability of decision-useful information: (1) high-quality, reliable, and comparable data to assess risks and foster sustainable finance markets, which require (2) a harmonized and consistent set of climate disclosure standards that support the collection of data, and (3) globally agreed upon principles for classification approaches to align investments with climate goals—such as climate finance taxonomies—that increase comparability and consistency of terms and metrics, and provide investors with easy-to-interpret information, thus allowing scaling up sustainable finance.

Figure 3. Climate Information Architecture



Source: IMF staff.

High-Quality, Reliable, and Comparable Data

High-quality, reliable, and comparable data forms the basis of the climate information architecture. They are a precondition for aligning investments with climate goals.

Recent reports by the NGFS and the FSB have highlighted data gaps with respect to climate -related financial information. In its progress report, the NGFS finds persistent gaps with stakeholders calling for more

forward-looking and granular data as well as better verification and audit mechanisms to improve the quality of climate data. There is also a need to improve data accessibility. Similar conclusions are drawn by the FSB's report on the availability of data to monitor/assess climate-related risks to financial stability.

In the case of small and medium enterprises (SMEs), the costs of collecting and reporting information can be substantial. Such firms often lack the systems and processes to collect data, especially when the data need to be collected along complex and long supply chains. Moreover, the multitude of existing reporting frameworks make the provision of consistent and comparable data challenging for firms.

The lack of common definitions and standardized metrics limits the availability of consistent and comparable data. For instance, metrics such as scope 3 and financed emissions or the definition of carbon-related assets are not consistently employed and disclosed. Global sustainability reporting standards can mitigate these problems. Furthermore, it is necessary to establish verification and audit mechanisms to ensure the integrity of reported data.

Several initiatives are underway that aim to bridge existing data gaps. The IMF has created a Climate Change Indicators Dashboard that brings together climate-related data needed for macroeconomic and financial policy analysis. The Task Force on Climate-Related Financial Disclosures (TCFD) has published proposals enhancing and amending the TCFD framework, particularly around metrics related to transition risk, such as scope 3 emissions, risks to value chains, and financed emissions (TCFD 2021).⁴ The NGFS is assessing data availability and plans to issue a report identifying the climate-related data needs and gaps of financial sector stakeholders in early 2022 (NGFS 2021). Technological solutions can also be used for data collection and distribution. Technology can help collect and distribute data and make data analytics available at scale for stakeholders. For example, techniques from machine learning and artificial intelligence can be used to make previously hard-to-access data useable. Open-source approaches to data and methods also presents a promising way to improve data access.⁵

A Harmonized and Consistent Set of Climate Disclosure Standards

Climate disclosure standards determine the availability of high-quality, reliable, and comparable data. The scope, definitions and governance processes that are part of disclosure requirements inform the collection of data and ensure its comparability.

A coordinated international effort to develop a global standardized reporting framework is key to provide decision-useful information to investors, policymakers, and other stakeholders. The large externalities associated with the objectives of maintaining financial stability and transitioning to sustainable practices suggest that market forces may not support the production and dissemination of the needed disclosures. In addition, market forces might be insufficient to allow for the rapid convergence of standards required, given the urgency of addressing climate change. Given the scale of private finance needed to manage climate risks and seize climate opportunities, addressing fragmentation of disclosure frameworks is imperative.

While firms are accustomed to publishing financial statements, “sustainability reporting” of climate change risks and opportunities is still in its infancy, and uptake is low. Firms are said to be hesitant to disclose granular information about climate change in their annual reports given concerns around data

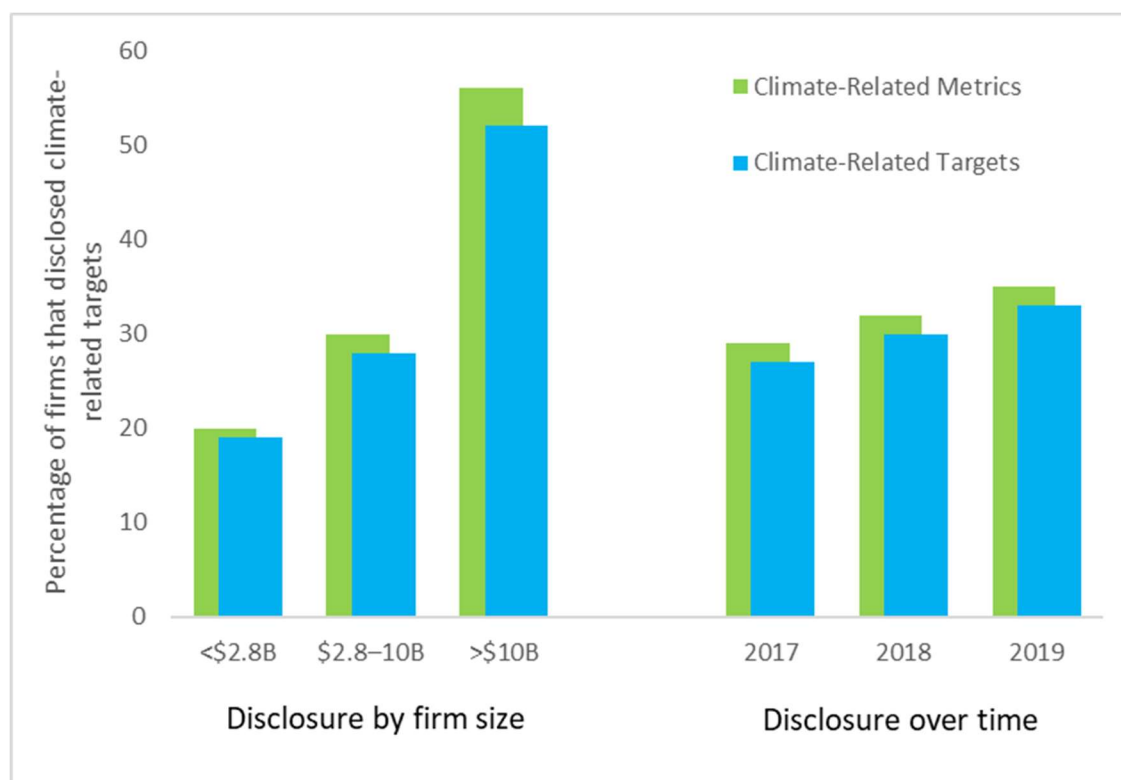
⁴ The recent consultation of the “Proposed Guidance on Climate-related Metrics, Targets, and Transition Plans” by the TCFD builds on a number of developments around climate-related metrics, for instance, the Global Carbon Accounting Standard, developed by the Partnership for Carbon Accounting Financials. Additionally, it explains the relationship between climate-related metrics, climate-related financial impacts, climate-related targets, transition planning, and broader climate-related decision-making associated with the Governance, Strategy, and Risk Management pillars.

⁵ The CLIMADA project is a good example of open-source cat models (<https://wcr.ethz.ch/research/climada.html>).

availability and methodology to measure impact. For example, the share of firms that disclose climate-related metrics in line with the recommendations of the TCFD remains low, especially in emerging market and developing economies (EMDEs), and for certain sectors, regions, and in particular smaller firms (Figure 4).

Figure 4. Disclosure of Climate-Related Metrics and Targets

Data has been improving but remains limited. Larger firms are better at disclosing climate metrics and targets than small ones.



Source: Task Force on Climate-Related Financial Disclosures.

The multitude of existing frameworks used by firms and financial institutions undermines consistency and comparability of data, increasing the cost and reducing the incentive for firms to disclose. While consolidating the multiple existing reporting initiatives is challenging, steps are being taken toward solutions for a globally consistent and widely accepted set of sustainability standards. Recent efforts to develop prototype climate standards based on a combination of relevant components of existing voluntary standards and reporting frameworks, together with the TCFD recommendations, provide a useful starting point for the development of a set of global climate-related financial disclosure standards. This approach not only allows for the opportunity to build on the various efforts that have been taken but also allows for interoperability between climate-related financial disclosures and broader sustainability reporting.

The International Financial Reporting Standards (IFRS) Foundation is well placed to address the currently fragmented disclosure landscape and develop a global set of sustainability reporting standards. Responses to IFRS Foundation's Consultation on Sustainability Reporting in late 2020 indicate a growing consensus on the urgency of improving the global consistency and comparability in sustainability reporting, and on the role the IFRS Foundation can play in this process. By linking sustainability reporting to financial reporting, the IFRS initiative could support comparability with one coherent set of reporting principles. Such a consistent and harmonized approach would also help reduce the cost and implementation burden for

reporting entities, as well as allow assurance by auditors. Finally, connecting sustainability reporting with IFRS financial statements would help to facilitate global adoption, as IFRS is already adopted by over 140 jurisdictions.⁶

To ensure success, global support from public authorities and regulators and an accelerated timeline are critical. Clear support of the IFRS initiative across the major jurisdictions will be important for global alignment of disclosure standards. The steps announced by the IFRS Foundation include a road map and timeline by end-September 2021 and the establishment of an International Sustainability Standards Board (ISSB), which is expected to be launched at the 26th United Nations Climate Change Conference of Parties (COP26) in November 2021. The goal is for the ISSB to publish the final version of the new standard, focusing initially on climate, in the third quarter of 2022. Given the urgency and demands around climate disclosures, it is imperative that these timelines are met and relevant steps toward finalizing the development and implementation of the standards are carried out expediently. The establishment by the International Organization of Securities Commissions of its own Technical Expert Group to evaluate the sustainability disclosure standards is an encouraging step that may facilitate the endorsement of the ISSB standards soon after its publication.⁷

Mandatory adoption of global sustainability reporting standards may be necessary to drive greater levels of disclosure with clear pathways on timing for adoption and scope of applicability. Several countries are already requiring mandatory climate-related disclosures based on the TCFD framework and for selected entities; in other cases, it is largely voluntary. Substantial international commitment to consistent, timely, and uniform implementation of internationally agreed reporting standards is necessary. This will provide a pathway toward mandatory adoption without which progress is likely to be slow. At the same time, it is important to acknowledge individual jurisdictions' institutional and legal specificities. For example, given the uncertainty regarding the level of detail in the standards, it is unclear whether a mandatory disclosure regime would put too much of a burden on certain companies, particularly SMEs and firms in EMDEs, where the reporting burden for disclosing this information is likely to be high. To ease this burden, phased adoption for SMEs could be considered. However, there is a risk that a phased adoption might constrain firms' access to financing, which in turn could delay their ability to transition their business models to a low-carbon economy. The impact on SMEs and firms in EMDEs need to be considered when formulating the standards, including proportionate solutions for verifying the sustainability of activities and timelines for mandatory adoption.⁸

In terms of the appropriate definition of materiality, the reporting standards should reflect the interdependency between creation of value to investors, financial stability monitoring, and the interests of the broader society and the environment. The definition of materiality used will form an important conceptual underpinning on how companies determine what to disclose. Financial materiality (or single materiality), as used in financial reporting, is the most common definition when it comes to market disclosures. However, considering the need to provide information to the broader society, some jurisdictions are advocating for the concept of double materiality, under which firms would report not only information about the impact that environmental risk would have on them, but also information about the impact they have on the environment.⁹ Advocates of double materiality argue that disclosure requirements can affect corporate behavior, and thus that double materiality can facilitate the effective management of, for example, emissions and other environmental impacts within reporting entities. In practice, the dividing lines between single and double materiality are blurred

⁶ Not all jurisdictions with large financial markets have adopted IFRS, and it will be important to ensure that the new sustainability reporting standards are also suitable for implementation in jurisdictions that do not require financial reporting based on IFRS standards.

⁷ See FSB (2021) for detailed timeline.

⁸ Even in the case of delayed mandatory adoption for some firms or regions, it is likely that firms will face pressures to adopt the new standards, for instance, because they are part of international supply chains.

⁹ The European Union, for example, has embedded the double materiality concept in its Nonfinancial Reporting Directive.

and can converge over time as the impact of the reporting entity on the wider environment can generate material exposures to transition risks and affect customers and investment decisions. In this context, the concept of what is material is becoming more fluid and has been referred to as dynamic materiality.

Reporting standards should provide a baseline for coordination with a wide set of stakeholder groups.

Too narrow a focus of disclosure standards on single materiality or “enterprise value”—that is, disclosure of information directly related to the impact on firm value—may not sufficiently cover the interests of society more broadly and run the risk of becoming irrelevant. Considering the multiple objectives of sustainability reporting and their respective stakeholder groups, the governance and institutional arrangements need to provide a platform for coordination of broad interest with respect to disclosure and allow for additional reporting requirements that capture wider information needs.

In the formulation of disclosure standards, one of the key aspects of climate risk assessments that needs to be factored in is the need for forward-looking information. This is important not just for risk assessments but also to determine a company’s transition path. The TCFD recommendations recognize the significance of this aspect by emphasizing the need for scenario analysis. However, there are challenges that need to be addressed. These include gaps in forward-looking data, capacity to conduct scenario analysis, and the ability to provide external assurance on the veracity of the forward information and projections made by companies pertaining to climate emission targets and transition pathways. Considering the inherent uncertainty of forward-looking information and projections, some firms are also concerned about being held accountable for the forward-looking information that they provide.

Given the urgency around mitigating climate change, efforts should prioritize climate disclosures, but broader ESG disclosures should remain high on the agenda. Broad ESG considerations—such as environmental risk, biodiversity, or sustainability—have become increasingly relevant to investors. While addressing the risks associated with climate change should be the first order of concern, a comprehensive disclosure standard embracing all dimensions of ESG is needed to create an integrated framework that minimizes the risk of multiple reporting requirements, which can be less effective and more costly. Considering that implementing such a comprehensive framework might not be feasible in the short term—and is likely to evolve and may require continuous updating—reporting standards should allow for extensions in scope to capture wider sustainability impacts and information needs.

Globally Agreed Upon Principles for Climate Finance Taxonomies and other classification approaches to align investments with climate goals

There are different classification approaches to align investments with climate goals: (i) Taxonomies, which are typically public sector led classification systems that identify environmentally sustainable activities aligned with a specific forward-looking sustainable pathway; (ii) labels and other private sector led classification systems organized and verified by private sector actors; or (iii) ESG-type ratings of companies, sovereigns, or securities more generally. These classification approaches can provide guidelines for investors and inform the collection of data and disclosure standards.

Classification approaches can play an important role in facilitating investments to mitigate climate change, by providing investors with easy-to-interpret information and thus allow for the scaling up of sustainable finance markets. They can also strengthen the fundamental infrastructure of markets by encouraging market participants to enhance the availability of reliable information and can guide the analysis of adaptation and mitigation actions. Taxonomies, for example, by providing a longer-term perspective, can help guide the behavior of firms and facilitate investors’ assessment of firms’ transition pathways. Additionally, they can provide investors with more clarity about jurisdictions’ strategic policy positions.

Fragmentation and complexity of classification approaches can hamper their primary purpose and undermine their relevance for financial institutions, investors, and corporates. Currently, regions, countries, and financial market participants sponsor different, separately developed classification approaches.¹⁰ These approaches serve different purposes and do not use a consistent definition of “green” finance. They also have various levels of sophistication and differ in essential characteristics such as classification keys for products and activities, or even with respect to their main objectives, and the relative rankings of these objectives. This fragmentation of approaches can limit their usefulness for global investors, who need clear common definitions and benchmarks to navigate their cross-border investment decisions (OECD 2020).

The current absence of a clear pathway toward increased comparability and consistency of classification approaches requires a decisive steer by the international community. The International Platform for Sustainable Finance (IPSF) announced work toward a “Common Ground Taxonomy” highlighting the commonalities¹¹ between the existing European and Chinese taxonomies, as a first step.¹² This Common Ground Taxonomy could enhance transparency about what is commonly sustainable in member jurisdictions and significantly contribute to the scaling up of cross-border investments into sustainable economic models. However, the IPFS is not a standard setter and thus has only limited tools to achieve a deeper level of global harmonization.¹³ Likewise, market initiatives¹⁴ can be first important steps, but will face similar constraints. The international community needs to renew its efforts and increase coordination toward reducing fragmentation and inconsistencies among different approaches to align investments with climate goals.

Globally agreed upon principles for classification approaches would help guide convergence in definitions, metrics and the development of transition pathways, enabling effective climate change mitigation on a global scale, while providing sufficient regional flexibility. The principles should balance the need for flexibility to reflect local or regional environmental and economic preconditions, with the objective of reducing fragmentation. They should consider the potential of current technologies for limiting climate impacts, based on a sustainable pathway, and be accommodative of technological progress.¹⁵ They should also aim to avoid simplistic binary classifications and recognize transition investments to encourage countries and firms to gradually transition to a climate-sustainable economic or business model. The focus on transition investments is especially important in EMDEs where investments for transition purposes may be the only available option at the time—before investments to fully sustainable activities can be raised.

Conclusion

The strong interdependency among the building blocks of the climate information architecture requires a decisive globally coordinated effort to move forward on all three fronts. Data, disclosure standards, and classification approaches depend on and reinforce each other. It is necessary to progress on all these fronts in a coordinated manner. In this sense, the large and growing number of international initiatives addressing financial

¹⁰ According to the 2020 Annual Report of the International Platform for Sustainable Finance, three jurisdictions have state-sponsored classification systems for green finance products—China, the European Union, and India. The Green Finance Industry Taskforce, convened by the Monetary Authority of Singapore, proposed a taxonomy in January 2021 that could be suitable for Singapore and the Association of Southeast Asian Nations, using a classification system for activities that is not country- or region-specific.

¹¹ In terms of objectives, sectors, activities, and corresponding assessment criteria.

¹² See IPSF (2020).

¹³ The IPSF primarily serves its members by exchanging and disseminating information to promote best practices among members, and by comparing members’ initiatives and identifying barriers and opportunities of sustainable finance, while respecting national and regional contexts.

¹⁴ For instance, GFMA, BCG (2021).

¹⁵ Further international efforts could be aimed at recommending specific transition pathways and at addressing challenges of comparable activities’ thresholds.

risks from climate change and improving the availability and quality of information is very welcome. There is, however, a need for careful coordination and direction to ensure that all fronts advance and deliver as expected.

Given the current fragmented framework, convergence of standards and their timely implementation by national jurisdictions is key. Climate change is truly the most global of global challenges. Strong coordination and decisive direction from the international community is key to reduce information gaps, and thus mitigate risks to financial stability and unlock sources of capital that can finance much-needed mitigation and adaptation investments. The FSB roadmap for addressing climate-related financial risks (FSB 2021a) is an important step to improve coordination and set a timeline for the main initiatives. Efforts to develop sound international standards needs to be maintained and followed by decisive and prompt action at the national level to implement them.

The IMF plays an active role supporting the development of a climate information architecture necessary to tackle the climate crisis. First, extensive analytical work is being carried out arguing for better disclosures and more standardization (IMF 2019, 2020). Second, the IMF's Climate Change Indicators Dashboard brings together climate-related data needed for macroeconomic and financial policy analysis.¹⁶ Third, the IMF is incorporating climate risk analysis in the Financial Sector Assessment Program, to raise awareness and to support increasing the resilience of the financial sector to climate-related risks. Fourth, the IMF actively supports international efforts, including at the FSB, NGFS, and standard-setting bodies, to bridge data gaps, develop a global set of disclosure standards, and harmonize approaches to align investments with climate goals.

¹⁶ <https://climatedata.imf.org/>.

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