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Prudential Pathways: Industry Perspectives on Supervisory and Regulatory Approaches to Climate-related and Environmental Risks

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Executive Summary

It is now widely accepted that climate-related and environmental risks pose significant challenges for the global economy, which may in turn impact financial stability. The financial services industry could be significantly impacted under different climate scenarios and by environmental risks; at the same time, it has the capacity to manage its exposure to, and help mitigate, these risks as they continue to manifest in coming years. The financial industry is ready and willing to engage further with the relevant global standard-setting bodies, prudential authorities, and others to help shape effective prudential approaches for climate-related and environmental risks.

Financial authorities, including prudential authorities, supervisors and central banks, are currently re-examining their mandates, frameworks, and policy toolkits to tackle these risks. Recent surveys and reports by the Financial Stability Board (FSB), the Basel Committee on Banking Supervision (BCBS), and the International Association of Insurance Supervisors (IAIS) indicate that many authorities are already adopting policies and regulations and adjusting supervisory practices. While this determination is encouraging, an uncoordinated and rapid proliferation of new policies – given significant uncertainties and knowledge gaps – can create a fragmented, and potentially less effective, policy landscape.

The objective of this paper is to communicate global industry views on the rapidly evolving set of supervisory and regulatory approaches to climate-related and environmental risks facing the banking and insurance sectors, identifying industry

perspectives on what an appropriate and efficient approach could look like¹. Drawing on a review of supervisory and industry practices, this paper reflects current thinking among IIF members, which is likely to evolve naturally over time based on experience and engagement with prudential authorities.

In this paper we have explored three theoretical objectives that prudential authorities could pursue with respect to climate-related and environmental risks, listed below in ascending level of intervention². In a climate context, these can be described as:

- **“Resilience”** - *Ensure safety and soundness of individual financial institutions in light of transition and physical climate-related financial risks; a microprudential lens.*
- **“System-wide Alignment”** - *Examine the alignment of the financial system with various possible future climate pathways to assess transmission channels between the economy, climate and financial system, with a view to reducing or mitigating potential vulnerabilities for financial stability; a macroprudential lens.*
- **“Active Transition”** - *Use prudential tools to regulate and incentivize the financial system to actively steer the low-carbon transition of key sectors in the real economy, via the provision and pricing of financial products and services.*

We propose that prudential authorities consider both the microprudential objective of resilience and the macroprudential objective of examining the alignment of the financial system with future climate pathways, with a view to reducing the potential for financial instability stemming from climate-related or environmental risks. Acting from their core mandates rather than broader policy goals such as fostering the transition to a lower carbon economy, prudential authorities and supervisors should take a resilience approach focused on safety and soundness of financial institutions. The financial system’s alignment with future climate pathways is also relevant, considering that decisions made by financial institutions can influence the nature and degree of transition and physical risks facing the real economy, and ultimately, risks facing the financial system itself. Considering the potential for negative feedback loops, and the irreversible nature of certain climate-related and environmental risks, some stakeholders have suggested that a new approach to defining and assessing material financial risks may be necessary to appropriately account for the potentially systemic implications.

Going beyond resilience and system-wide alignment to pursue an “active transition” objective would imply using prudential tools for extraordinary purposes to directly incentivize capital allocation to achieve climate policy goals, which most financial firms would consider inadvisable in the absence of data that justifies risk differentials. Indeed,

¹ Throughout the paper we will refer to “prudential authorities” or “supervisors” as shorthand reference to the authorities with these responsibilities. In many jurisdictions, the national central bank has mandates and operational functions to develop prudential regulation and conduct supervision as well as other central bank duties, such as monetary analysis and policymaking. If we refer to “central banks” in the paper it is to explicitly refer to those functions of a central bank that are not concerned with prudential regulation or supervision.

² We are conscious that some national central banks and supervisors do have explicit mandates in relation to green market development; we are not commenting on that in this paper, and broader market issues and regulation are out of scope.

pursuing an active transition objective could potentially undermine the credibility and efficiency of prudential tools, hindering the ability of prudential authorities to meet their primary objectives of ensuring safety, soundness and financial stability. This does not preclude the use of macroprudential tools where there may be an observed build-up of risks that could be effectively addressed via such tools. Examples of this exist historically and more recently, where macroprudential tools have been applied on a targeted basis to address concerns such as overheating in national real estate markets.

We believe the focus of governments should be on creating the right incentives for a transition to a lower carbon and more sustainable economy, without relying unduly on the financial sector to achieve broader policy goals. As countries scale up their climate commitments, this should be matched with a coordinated set of incentives, directives, regulations and other policies that provide clarity on transition paths for key sectors of the economy. Nevertheless, to achieve these important climate and environmental objectives, strong support and participation from the financial sector is needed. Towards this end, we propose a **set of ten high-level considerations** that prudential authorities and global standard-setting bodies may wish to consider in their efforts to develop responses to climate-related and environmental risks (see green-shaded sidebar).

High-level considerations to guide the prudential response to climate-related and environmental risks *(further discussed in Section 2.4)*

1. Consider the nature of the financial sector’s important role in the transition, without being unduly reliant on the financial sector
2. Support and leverage market-based solutions
3. Coordinate approaches to reduce market fragmentation
- 4a. Prioritize bank safety, soundness and financial stability
- 4b. Prioritize fair, safe and stable insurance markets
5. Strive for an integrated and symbiotic approach between relevant authorities, nationally and globally
6. Avoid unintended effects that hamper the transition
7. Seek to apply common principles to different ESG risks
8. Take a data-driven and rigorous analytical approach
9. Be practical, proportionate and sequential
10. Maintain a dynamic and adaptive approach

Given our proposal that prudential authorities should focus on objectives of resilience and system-wide alignment with future climate pathways, we suggest that **supervisory engagement, disclosure standards, risk management standards and supervisory scenario analysis exercises are the core tools that supervisors can use to approach climate-related and environmental risks.** Taken in aggregate, and with a firm foundation in data, these could provide a strong toolkit for both the industry and prudential authorities to measure, manage and help mitigate climate-related and environmental risks. There is thus an important role for key standard-setting bodies, such as the BCBS and IAIS, to coordinate and harmonize global efforts to achieve progress. An incremental approach would be valuable in

terms of the scope of expectations, starting with climate-related risks and then progressing to other environmental risks as a later step.

- **Supervisory engagement and monitoring of climate-related risks should be a key focus.** Prudential authorities should engage actively with supervised financial institutions to discuss the nature of climate-related risks to their balance sheets and business strategies; later adding greater consideration for other environmental risks. Similar to the current work by the IAIS, the BCBS could develop “sound practices” for the supervision of climate-related risks in order to promote an internationally harmonized approach to supervisory engagement.
- **Prudential authorities should leverage market-led efforts on disclosure to encourage comparability and ensure that disclosure requirements for corporates and financial institutions are appropriately harmonized.** With respect to climate-related risks, prudential authorities should reference and integrate the Recommendations of the FSB Taskforce on Climate-related Financial Disclosures (TCFD) framework. Aspects of the disclosure regime should remain market-led; the efforts of voluntary frameworks such as those provided by the Sustainability Accounting Standards Board (SASB), the Global Reporting Initiative (GRI) and others towards a common approach to corporate reporting are helpful. However, prudential authorities could consider how to encourage widespread acceptance of leading practices and improve comparability of disclosures. Over time, it may be useful for the global standard-setting bodies to develop guidance on the relevance of climate-related risks for existing templates of disclosure (e.g., for Pillar 3 disclosures for banks), and to refer to any future formal sustainability accounting standard as appropriate. It is important that disclosure expectations for financial institutions reflect the availability and quality of broader climate and sustainability-related disclosures by their corporate counterparties.
- **Global standard-setting bodies should work closely with the banking and insurance industries to develop meaningful global principles and/or sound practices for the management of climate-related risks.** Priorities for further public/private collaborative work include the identification and aggregation of the appropriate data, and maturing methodologies for climate risk management. With respect to risk management expectations, a principles-based, proportionate and phased approach is valuable recognizing the developing nature of this area and challenges to certain aspects of risk management, as well as differences in the nature of certain risks (particularly physical risks) across jurisdictions and individual institutions.
- **Supervisory scenario analysis exercises are an important tool to assess financial system-wide risks and macro-financial feedback effects from climate-related risks; however, they should not be used to inform prudential capital requirements.** Given the current status and quality of applicable data and methodologies, authorities should be cautious in any formal use of the results to inform prudential interventions or with respect to public disclosures. In this context, it would be helpful for prudential authorities to clarify

the core objectives of climate-related supervisory scenario analysis exercises, and develop new mechanisms for international collaboration and harmonization on these exercises.

- **At present, the majority of global bank and insurance members of the IIF do not think it would be appropriate for prudential authorities to use regulatory capital requirements in relation to climate-related or environmental risks.** Rather, tools other than capital requirements (such as supervisory engagement on risk management) are better suited as a prudential response to climate-related and environmental risks. Prudential approaches, including with regard to capital, should always be risk-based and data-driven; challenges such as the lack of necessary data, consistent methodologies, and impact assessment (including possible unintended consequences) would need to be thoroughly addressed before any action on regulatory capital might be warranted on a risk performance basis. In the future, should prudential authorities start to see a build-up of systemic risks driven by climate-related or environmental factors, they could consider whether to use the supervisory review process (referred to as “Pillar 2” of the BCBS framework for banks) and/or the macroprudential toolkit to address risks in a targeted way. In the near term, the global standard-setting bodies could take stock of how the relevant global frameworks currently capture and treat climate-related and environmental risks³.

For the financial system to effectively deliver on climate and environmental priorities, financial institutions need clarity on the prudential framework - in terms of objectives, boundaries, etc. - to guide strategies for supporting the transition. Current and planned efforts - for example, within the Network for Greening the Financial System (NGFS) - to advance from the recent period of independent experimentation by prudential authorities, and draw lessons for the development of common approaches, are welcome and necessary. However, a clear roadmap towards international frameworks is needed in the near term, recognizing that such frameworks will inevitably mature over time. Formal supervisory coordination and collaboration on climate-related and environmental risks should be complemented where appropriate by engagement with industry through open and transparent consultative processes.

We would propose that policymakers consider undertaking some important near-term action items which could catalyze and enable enhanced industry responses to climate-related and environmental risks. Key priorities for action by prudential authorities, standard setters and the industry next year, leading up to the rescheduled United Nations Climate Change Conference, COP26, in November 2021, include:

- **International standard-setting bodies (including the BCBS, IAIS, and the FSB)** should consider clarifying the building blocks of common approaches, defining

³ We recognize that the global bank and insurance capital standards are significantly different in design, maturity, scope and jurisdictional application. This paper is not a detailed discussion of specific issues as they relate to the banking or insurance business models or prudential regimes respectively, but we do draw on examples from IIF member banking and insurance institutions and discuss the banking and insurance prudential frameworks at a high level. There will be further discussion of insurance-specific considerations in the forthcoming IIF response to IAIS 2020, [“Public Consultation: Draft Application Paper on the Supervision of Climate-related Risks in the Insurance Sector.”](#) (13 October).

expectations for future work and coordination, and agreeing on a common roadmap of work on climate-related and environmental risks with a defined role for the FSB to address inter-sectoral effects and broader systemic issues. This process could integrate insights from the planned work of the NGFS.

- **Prudential authorities** could consider developing platforms for joint climate and environmental scenario analysis exercises across jurisdictions (including through supervisory colleges or with centrally-coordinated exercises), and could explore options to develop centralized analytical utilities including for data pooling and model development.
- **Prudential authorities** could also engage with other relevant government institutions and policymakers to explore the establishment of national-level regulatory and ministerial climate coordination bodies, as a means to structure engagement with other authorities on climate risk and system-wide alignment topics.
- **Supervisors** could helpfully engage in ongoing and structured dialogue with financial firms on climate risk and system-wide alignment at jurisdictional and global levels; this could be achieved through the formalization of specific industry/supervisory collaboration platforms. The IIF would be pleased to help organize such platforms and convene industry participation.

Looking further ahead, we would encourage prudential authorities to conduct a 'scenario analysis' of their own roles under different potential climate futures. An important component of this will be a regular re-evaluation of prudential authorities' own policy responses, based on continued transition monitoring and forecasting of risks as we progress through a decade of dynamic action.

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1. Introduction

1.1 Context

Growing concerns about climate change and environmental degradation are driving societies and institutions to expect and demand a clear framework for the transition to a sustainable and climate-resilient economy. This demand is coming from many angles including investors, customers, employees, policymakers, and the public. The global financial services industry will be integral in the transition to a vibrant, sustainable low-carbon economy. Equally, many institutions are conscious of the risks that climate and environmental change may pose to their business models. In response, financial institutions across the world are implementing proactive strategies to support the ‘whole economy’ transition necessary to reach climate and environmental goals, including setting ‘net-zero’ targets, scaling up financing, producing voluntary disclosures, and developing new products.

It is now widely accepted that climate-related and environmental risks have the potential to pose significant challenges for global financial stability, and that policymakers, prudential regulators and supervisors can and should consider these risks within their mandates⁴. For example, the FSB has recently investigated the channels through which climate-related risks might impact the financial system, including through price adjustments, concentration risks, and potential amplifying effects on other economic vulnerabilities⁵. There is also increasing attention on the role the financial services industry can play in the transition to a sustainable economy.

Clearly, there is precedent: the financial services industry and regulators regularly assess and respond to significant, cross-border and complex risks under uncertain conditions. Existing international institutions will thus be highly relevant for the development of coherent frameworks for prudential approaches to climate/environment-related risks. The FSB, for example, was created after the 2007/08 global financial crisis to monitor and assess vulnerabilities affecting the global financial system, including looking across the banking, insurance, and investment industries. The BCBS was established in 1974 after serious disturbances in international currency and banking markets⁶. Over time, a consensus has emerged within the BCBS on the importance of a multinational accord to ‘*strengthen the stability of the international banking system and to remove a source of competitive inequality*

⁴ The risks and challenges for regulators, supervisors and central banks posed by climate change are discussed extensively in NGFS 2019. “[A call for action Climate change as a source of financial risk](#)” (April). Hereafter referred to as “NGFS 2019 (April)”. Also in BIS 2020. “[The green swan: Central banking and financial stability in the age of climate change](#)” (January). Hereafter referred to as “BIS 2020 (January)”. The majority of Basel Committee members view it as appropriate to act within their existing mandate to mitigate climate-related financial risks. One respondent had a specifically designated mandate with regards to environmental, social and governance (ESG) risks, which include climate-related financial risks. See BCBS 2020. “[Climate-related financial risks: a survey on current initiatives](#)” (April). Hereafter referred to as “BCBS 2020 (April)”. With respect to insurance, 18 insurance supervisory authorities that participated in a BIS Financial Stability Institute survey published in 2019 remarked that they see climate risks as being “reasonably foreseeable and relevant material risks”: see BIS Financial Stability Institute 2019. “[Turning up the heat – climate risk assessment in the insurance sector](#)” (November).

⁵ FSB 2020. “[The Implications of Climate Change for Financial Stability](#)” (November 23). Hereafter referred to as “FSB 2020 (November)”.

⁶ <https://www.bis.org/bcbs/history.htm>.

arising from differences in national capital requirements.⁷ The so-called “pillars” of the global bank prudential framework differentiate between principles and minimum standards that should be applied across countries, and additional local supervisory review and adjustments for firm-specific conditions; this construct should continue to be useful as authorities consider climate/environment-related risks⁸. A similar approach has been taken by the International Association of Insurance Supervisors (IAIS), which has been developing and implementing the insurance core principles (ICPs) and a common framework for the supervision of internationally active insurance groups (IAIGs). Supervisory review and disclosure components are reflected in the ICPs and in the Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame)⁹.

At the same time, climate-related and environmental risks have unique characteristics, which pose specific challenges for supervisory oversight and financial stability assessments; they also make cross-country coordination and collaboration absolutely fundamental to addressing the challenges. Key considerations include:

- The externalities that generate climate-related risks in particular and some broader environmental risks are inherently global, and there are channels that could generate spillovers of certain financial risks between jurisdictions;
- However, specific risks (such as localized physical risks from climate change) will materialize differently across countries, industries and firms, and the ability to respond to such risks and the robustness and timing of that response can vary widely;
- While some risks will evolve over a long timeframe, other risks are imminent and are already crystallizing in parts of the world, particularly in emerging economies;
- While climate risks are starting to be priced into financial markets, and certain broader environmental risks are also being factored into investment decision-making, approaches are inconsistent across markets and asset classes due to a lack of data and divergent risk assessment methodologies;
- There remains a high degree of uncertainty about the scale of climate-related and environmental risks, the ways that society, technology and the economy may adapt and factors that may accelerate or constrain rapid transition and adaptation, and the ways that climate-related and environmental risks may be transmitted through the economy including to/from the financial sector and via supply chains;
- Supervisors will need to analyze how potential climate and environmental risk “feedback loops” may emerge between the financial system and the real economy. The financial services industry could itself be significantly impacted under different climate scenarios, and activities of the financial industry will directly or indirectly influence outcomes via the real economy. The financial industry has the capacity to manage its exposure to, and help mitigate, climate-related and environmental risks during the transition. Ultimately,

⁷ Ibid.

⁸ Reference to the three pillars of the BCBS framework for banking supervision, as depicted [here](#). The IAIS implicitly captures the same pillars in its Insurance Core Principles and Common Framework for the Supervision of Internationally Active Insurance Groups.

⁹ <https://www.iaisweb.org/page/supervisory-material/insurance-core-principles>.

interactions between the financial system and real economy will have an impact on the likelihood of irreversible and globally significant changes, or ‘tipping points’, in the climate system.

Financial authorities including prudential authorities and central banks are re-examining their mandates, objectives, supervisory practices and policy toolkits to tackle these risks; recent surveys and reports by the FSB¹⁰, BCBS¹¹, and IAIS¹² show that many authorities are already adopting policies and regulations. While this determination is encouraging, an uncoordinated and rapid proliferation of new policies – given significant uncertainties and knowledge gaps – can create a fragmented and potentially less effective policy landscape¹³. Certain jurisdictions are advancing much further and at a greater speed than others with guidelines, risk management requirements and consideration of the use of additional tools. Despite the efforts of voluntary international coalitions like the NGFS, there is still substantial variation in national approaches – including with respect to technical exercises to assess climate-related risks, including exposure assessment, scenario analysis, and stress testing. Some of this divergence stems from differences in national circumstances and political climates. Nonetheless, significant fragmentation of policy approaches raises the risk that the real scale and scope of potential climate-related and environmental risks within financial markets will not be effectively captured, considering the unique challenges highlighted above.

There are open questions about the design of an appropriate prudential response to climate-related and environmental risks within the financial system, and the broader role of prudential authorities and central banks in supporting the low-carbon transition to mitigate potential systemic risks to the financial system and macroeconomy. At the 2020 International Conference of Banking Supervisors, BCBS Chairman Pablo Hernandez de Cos posed the following challenging questions¹⁴:

*“... what more can supervisors do to anticipate longer-term systemic risks stemming from outside the financial system? Traditionally, our focus on safeguarding the safety and soundness of banks has centred primarily around the dynamics of the financial cycle. But Covid-19 is a reminder that exogenous low-probability, high-impact shocks can inevitably find their way to the banking system as well. And slow-moving but longer-term structural trends in our societies can also have financial stability implications. ... **To what extent should, and can, central banks and supervisors anticipate and mitigate the***

¹⁰ FSB 2020. [“Stocktake of Financial Authorities’ Experience in Including Physical and Transition Climate Risks as Part of Their Financial Stability Monitoring”](#) (22 July). Hereafter referred to as “FSB 2020 (July)”. And FSB 2020 (November).

¹¹ BCBS 2020 (April).

¹² IAIS 2020 [“Issues Paper on the Implementation of the Recommendations of the Task Force on Climate-related Financial Disclosures”](#) (February) Hereafter referred to as IAIS 2020 (February). And IAIS 2020. [“Public Consultation: Draft Application Paper on the Supervision of Climate-related Risks in the Insurance Sector.”](#) (13 October). Hereafter referred to as IAIS 2020 (October).

¹³ IIF 2020. [“Sustainable Finance Policy & Regulation: The Case for Greater International Alignment”](#) (2 March). Hereafter referred to as IIF 2020 (March). IIF 2020. [“Building a Global ESG Disclosure Framework: A Path Forward”](#) (10 June). Hereafter referred to as IIF 2020 (June).

¹⁴ De Cos 2020. [“Covid-19 and banking supervision: where do we go from here?”](#) (19 October).

impact of these different shocks and longer-term trends on the banking system? How can we delineate the relative roles of different possible responses, be they fiscal, monetary, structural or regulatory in nature? [Emphasis added]

The NGFS has started to consider these questions, producing guides for supervisors on the integration of climate-related and environmental risks into supervision¹⁵ and on climate scenario analysis¹⁶. Given the voluntary nature of the NGFS coalition, these guides are instructive but non-binding on authorities. The global standard-setting bodies are also starting to consider the implications of climate-related risks for their standards. The BCBS has created a Task Force on Climate-related Financial Risks which aims to develop a global view on effective supervisory practices to mitigate climate-related financial risks¹⁷. While the work of the BCBS in this field is still at an early stage, there is already significant momentum and appetite to address these questions at a national level¹⁸. The IAIS has also turned its attention to climate risk, in coordination with the Sustainable Insurance Forum (SIF), a voluntary leadership group of insurance supervisors. The IAIS and the SIF have released for consultation a draft Application Paper on the supervision of climate-related risks that will help to inform its work plan in 2021, and will assist supervisors in implementing the sections of the ICPs and ComFrame that cover prudential risks potentially impacted by climate-related and environmental risks¹⁹.

Prudential supervision of financial institutions has specific objectives and does not happen in a vacuum; a key question is about the role of prudential supervision in the context of other policy and market developments related to achieving specific climate and environmental outcomes. Market-led responses to climate-related risks, in particular, are developing rapidly and market discipline alone is having a significant impact on financial institutions. For instance, the TCFD has garnered support from over 1,500 companies, of which over 700 are financial institutions, responsible for assets of \$150 trillion²⁰. As part of the Science Based Targets Initiative (SBTi), 60 financial institutions across the world have committed to pursuing science-based climate action since 2015²¹. New initiatives are forming to develop frameworks for the identification, assessment and disclosure of broader nature-related risks²². Government policy responses are also evolving differently across countries and regions, with many countries producing sustainable finance roadmaps, transition policies and public sector investment and spending programs including a sustainable response to the COVID-19

¹⁵ NGFS 2020. "[Guide for Supervisors: integrating climate-related and environmental risks into prudential supervision](#)" (27 May). Hereafter referred to as "NGFS 2020 (May)".

¹⁶ NGFS 2020. "[Guide to climate scenario analysis for central banks and supervisors](#)" (24 June). Hereafter referred to as "NGFS 2020 (June)".

¹⁷ <https://www.bis.org/press/p200430.htm>.

¹⁸ BCBS 2020 (April). 24 of the 27 central banks that responded to the BCBS survey have conducted research on climate-related financial risks.

¹⁹ IAIS 2020 (October).

²⁰ TCFD 2020. "[Task Force on Climate-related Financial Disclosures 2020 Status Report](#)" (October). Page 68.

²¹ <https://sciencebasedtargets.org/companies-taking-action/>.

²² <https://tnfd.info/who-we-are/>.

pandemic²³. Clearly, many elements of addressing climate and environmental risk are beyond the remit of financial regulators and require other public policy responses. However, in many countries the prudential authority is the central bank, which also has price stability and other macroeconomic objectives and a different toolkit. Central banks too have been reassessing their objectives and policies in light of environment, social and governance (ESG) considerations²⁴.

Prudential supervision of climate-related and environmental risks should be targeted to where it is most effective, with careful consideration of the context of other prudential or central bank policies, tools, and interventions. Before anything is hard-wired into global principles and national regulations, we believe it is important to step back and evaluate the objectives and guiding considerations of prudential regulation in the context of climate-related and environmental risks, given the global nature of the issues and the importance of globally aligned supervision. As we move into a “decade of action,”²⁵ financial institutions will need clarity on the prudential framework – in terms of objectives, boundaries, etc. – to guide their individual strategies for supporting the transition.

The financial industry and supervisors cannot deliver the transition to a low-carbon, climate-resilient economy alone. Broader efforts, investment and policy change will be needed for countries, and notably their real economies, to meet climate and environmental objectives. As noted above, many of these responses will be beyond the remit of financial regulators – for example, government and/or market development of carbon pricing instruments and other policies that can help channel capital flows towards sustainable activities and net-zero emissions technologies²⁶.

1.2 Objectives and approach

The core objective of this paper is to analyze and communicate global financial industry views on what an appropriate and efficient prudential regime for climate-related and environmental risks could look like, considering the new strategies that financial institutions, regulators, and authorities are implementing to manage climate-related

²³ Many experts have identified COVID-19 as having analogous learnings for climate change, and there has been a lot of analysis during the pandemic about how much this pandemic could influence the pace of climate change. For example, short-term impacts of reduced emissions due to lockdowns and travel restrictions but rising use of single-use plastics, versus the longer-term impact which could be positive (incentives for climate action, reduced transport emissions due to digital alternatives, appreciation for the need for global cooperation) or negative (government focus shifting away from sustainability, delayed capital allocation to lower-carbon solutions). See for example, Ipsos (June 2020), IIF 2020 (June) [Green Weekly Insight: Will COVID-19 reinvigorate the ESG agenda?](#)

²⁴ The ECB is currently considering environmental sustainability as part of a [monetary policy strategy review](#) and has recently broadened the set of green assets it accepts as collateral. [Isabel Schnabel \(July 2020\)](#) noted that “[a]s climate change poses severe risks to price stability, central banks are required, within their traditional mandates, to strengthen their efforts to support a faster transition towards a more sustainable economy.” The Bank of England has also recently [announced](#) that it will be “...considering how to incorporate climate factors into decisions on the mix of financial assets, whilst still achieving our policy aims” as part of the Monetary Policy Committee’s asset purchase facility, subject to discussion with the UK government.

²⁵ As described by the United Nations. For example see: <https://www.un.org/sustainabledevelopment/decade-of-action/>.

²⁶ IMF 2020. “[World Economic Outlook, October 2020: A Long and Difficult Ascent](#)” (October). Chapter 3. See for example CFTC 2020. “[Managing Climate Risk in the U.S. Financial System](#)” (9 September). Hereafter referred to as “CFTC 2020 (September)”. G30 2020. “[Mainstreaming the transition to a net-zero economy](#)” (October). Hereafter referred to as G30 2020 (October).

risks and promote alignment with climate objectives for the economy. To achieve this, we assess how prudential authorities and supervisors are currently applying prudential frameworks and supervisory tools to account for climate-related and environmental risks, and aim to explore how such frameworks may need to evolve to ensure a sound and predictable global approach.

Through this assessment, we aim to provide **an overview of how different evolving elements of the prudential regime - including disclosure, risk management, scenario analysis, and capital treatment - can best 'fit together'**, in a way that ensures that prudential approaches are effective, and appropriately integrated in the context of broader strategic responses to climate and environmental priorities. We consider how prudential authorities can be proactive to risks in ways that leverage market innovation and respond to the broader context for financial policymaking, including links to broader climate and environmental goals. Considering the speed at which climate change is advancing, we will attempt to distinguish between what is appropriate, necessary and/or feasible in the short term vs. the longer term.

To bring together our perspective on different approaches, tools, and responses, we propose an initial set of **considerations for the prudential treatment of climate-related and environmental risks**, for the attention of global standard-setting bodies and national authorities. We hope these considerations will prove helpful to prudential authorities as they begin the significant task of developing globally aligned approaches on this critical yet inherently complex topic. The paper reflects current thinking among IIF members, which is likely to evolve naturally over time based on experience and engagement with prudential authorities.

1.3 Scope

This paper concentrates on prudential regulatory and supervisory approaches to climate-related and environmental risks facing banks and insurers. We recognize that financial regulatory action is not confined to prudential supervision; indeed, as observed by the International Organization of Securities Commissions, regulators in several jurisdictions are introducing policies and frameworks addressing climate and environmental issues affecting institutional investors and asset managers, including disclosure requirements²⁷. We do not consider these approaches directly here as they are not inherently prudential in nature - they do not pertain to oversight of the financial institution to ensure that risks are managed appropriately and that adequate resources (capital, liquidity) are maintained. However, we do address asset management activities that are undertaken by insurers to the extent that those activities are regulated and supervised in the insurance prudential framework.

This paper seeks to take a cross-sectoral approach to answering the fundamental questions outlined in Section 1.1. Prudential approaches to climate-related and

²⁷ IOSCO 2020. "[Sustainable Finance and the Role of Securities Regulators and IOSCO: Final Report](#)" (April).

environmental risks have evolved differently in banking and insurance sectors in recent years, stemming from differences in supervisory architecture at jurisdictional levels, the development of international leadership coalitions (e.g., the NGFS and the SIF), and the appetite and capacity of standard-setting bodies to tackle climate-related and environmental risks in the context of research, supervisory assessment and engagement. The paper is not designed to serve as a detailed discussion of specific climate-related and environmental risks as they relate to the banking or insurance business models or prudential regimes, respectively. However, we do draw on examples from IIF member banking and insurance institutions and discuss the banking and insurance prudential frameworks at a high level. We recognize that climate-related and environmental risks will affect banks and insurers in different ways, and therefore have provided specific recommendations for bank and insurance prudential authorities and standard-setting bodies, where appropriate.

The focus of this paper is on supervision, prudential regulation and associated global policymaking for banks and insurers (including reinsurers). Supervision relates to examining the financial condition of individual firms and evaluating their compliance with laws, regulations and guidelines. Prudential regulation is the process of setting rules and guidelines for banks and insurers and is divided into microprudential regulation, which relates to individual firm safety and soundness, and insurance policyholder protection, and macroprudential regulation which relates to the stability of the entire financial system. The associated global policymaking is the agreement of principles, frameworks and guidelines at an international level which national authorities agree to implement via regulation and supervisory expectations. Throughout the paper we will refer to “prudential authorities” or “supervisors” as shorthand reference to the authorities with these responsibilities. In many jurisdictions, the national central bank has mandates and operational functions to develop prudential regulation and conduct supervision as well as other central bank duties, such as monetary analysis and policymaking. If we refer to “central banks” in the paper it is to explicitly refer to those functions of a central bank that are not concerned with prudential policymaking, regulation or supervision.

The types of climate-related and environmental risks currently considered in the context of prudential regulation and supervision vary by jurisdiction; this paper reflects the relative urgency and current focus by financial institutions and prudential authorities by concentrating on climate-related risks, but does address environmental risks where relevant. Most prudential authorities and supervisors that are active on this topic have so far concentrated on physical and transition-related risks stemming from climate change. There is a strong science-based understanding of the urgency of the physical risks of unmitigated climate impacts on the economy and the financial system, and the potential economic and financial impacts of the transition to a low-carbon economy under different potential scenarios. However, there are a range of uncertainties inherent in this evidence base, and a variety of critical knowledge gaps, including the transmission channels from climate-related risks between the economy and financial system, and the potential contagion effects emerging from

significant climate impacts across sectors (for instance, interactions between the cost and availability of insurance for extreme weather events and potential mortgage delinquency or default if a homeowner fails to purchase adequate coverage).

Environmental risks, including nature-related risks such as biodiversity loss, water scarcity, or significant disruptions to unpriced ecosystem services, are now recognized to be significant and potentially systemic for the economy and the financial system²⁸. However, current understanding of the dynamics of these risks is less mature than for climate risks. Multiple factors complicate efforts to assess the financial impacts of environmental risk, including the lack of a common standard for evaluating materiality, geographical considerations (e.g., localized impacts with unclear transboundary implications), inconsistent market valuation, and complex sets of risk indicators. To date, only a few prudential authorities have examined the implications of environmental risks in a prudential context²⁹. Despite these challenges, there are indications that prudential approaches to environmental risks may evolve rapidly in coming years, considering stated intentions of coalitions like the NGFS, the growing interest in nature-related investment risks and opportunities (including the establishment of an informal working group to support a new Taskforce on Nature-related Financial Disclosures, to be launched in 2021), and the link between ‘net-zero’ commitments by financial institutions and natural climate solutions, including carbon offsets. So, for this reason, we consider environmental risks where appropriate.

²⁸ See, for instance, World Bank Group 2020 (September) [Mobilizing Private Finance For Nature](#), World Economic Forum (2020) [New Nature Economy](#), Report Series.

²⁹ Key examples include the Dutch Central Bank (see [June 2020 report exploring biodiversity risks for the Dutch financial sector](#)), and the ECB (“[Guide on climate-related and environmental risks: Supervisory expectations relating to risk management and disclosure](#)”, November 2020. Hereafter referred to as “ECB 2020 (November)”).

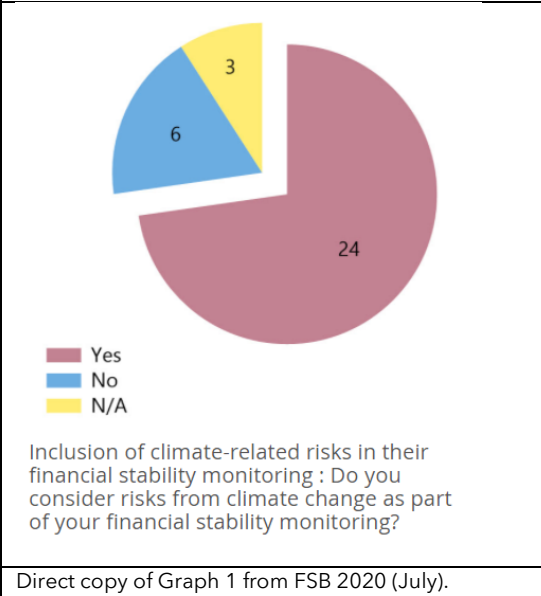
2. Relevance of Climate-related and Environmental Risks for Prudential Objectives

2.1 Acting from core mandates

In recent years, there has been a notable shift in how many major central banks, prudential authorities and supervisors have been considering their role in addressing the impacts of climate-related and environmental risks. As of November 2020, the NGFS included 75 members and 13 observers, having tripled in size since December 2018³⁰. Through independent efforts and voluntary international collaboration, central banks and supervisors have taken a range of different approaches to integrate climate-related and environmental risks into mainstream practices. A key first step has been for central banks and supervisors to consider the degree to which these new and emerging risks are relevant to their core mandates and objectives³¹.

As noted above, surveys conducted by the NGFS and the BCBS have confirmed that the majority of prudential authorities and supervisors now consider that it is within their mandates to address climate-related and environmental risks. A recent FSB survey shows that around 75% of 32 public sector survey respondents consider, or are planning to consider, climate-related risks as part of their financial stability monitoring, but work to integrate climate-related risks into microprudential supervision of banks and insurers is generally at a less advanced stage across countries (**Figure 1**)³². Prudential authorities and supervisors are increasingly seeking to deepen their understanding of climate-related risks and enhance transparency through the provision of guidelines and, in some cases, introduction of mandatory disclosure requirements. Some integrated central bank supervisors have broadened their work beyond the prudential level to consider the implications of climate-related risks for the broader macroeconomy and ultimately monetary policy and central bank operations. While more prudential authorities and central banks are acknowledging the relevance of these issues to their mandates, their responses can vary significantly in terms of nature and timing.

Figure 1: Climate-related risks are increasingly captured as part of authorities' financial stability monitoring



³⁰ In December 2018, there were 24 NGFS members and 5 observers. See <https://www.ngfs.net/en/about-us/membership> and NGFS 2020. "Annual Report 2019" (March).

³¹ NGFS 2019 (April), SIF 2018. "Issues Paper on Climate Change Risks to the Insurance Sector" (July). IAIS 2020 (October).

³² FSB 2020 (July).

An increasing number of central banks and prudential authorities are now considering broader objectives in the context of strategic responses to climate change. For instance, the climate implications of central bank asset purchase programs – including in the context of broader efforts to support a green recovery in the wake of COVID-19 – have emerged as a priority³³. Some central banks and supervisors (for instance the European Central Bank) are engaging in internal processes to further explore how the different elements of a climate response may interrelate, while staying within the boundaries of primary mandates which are determined by legislatures.

2.2 Clarifying objectives in the context of climate-related and environmental risks

A key emerging question is whether and to what extent prudential authorities may choose to pursue objectives beyond financial stability in a climate and environmental context, and if so, what frameworks and tools are available and most appropriate³⁴. It has long been accepted that the consideration of broader policy objectives in the context of prudential supervision would weaken the credibility of prudential authorities' broader focus on safety, soundness and financial stability. Traditionally, prudential supervisory objectives are not "topic-specific", but are instead higher-level and applicable to a variety of potential risks. Given the potentially wide-reaching and systemic nature across both the financial system and the economy of climate-related and environmental risks – and the potentially catastrophic downside risks stemming from inaction – it is important to consider how they can interact with prudential authorities' objectives.

For analytical purposes in this paper we have explored three theoretical objectives that prudential authorities could pursue with respect to climate-related and environmental risks, listed below in ascending level of intervention. In a climate context, these could be described as³⁵:

- **"Resilience"** – Ensure safety and soundness of individual financial institutions in light of transition and physical climate-related financial risks; a microprudential lens.
- **"System-wide Alignment"** – Examine the alignment of the financial system with various possible future climate pathways in order to assess transmission channels between the economy, climate and financial system, with a view to reducing or mitigating potential vulnerabilities for financial stability; a macroprudential lens.
- **"Active Transition"** – Use prudential tools to regulate and incentivize the financial system to actively steer the low-carbon transition of key sectors in the real economy, via the provision and pricing of financial products and services.

³³ IIF 2020. "[Sustainable Finance Monitor](#)" (August). Bank of England: Hauser ([October 2020](#)). And ECB: Schnabel ([July 2020](#)); Schnabel ([September 2020](#)); Lagarde ([October 2020](#)).

³⁴ We are conscious that some national central banks and supervisors have explicit mandates in relation to green market development; we are not commenting on that in this paper, and broader market issues and regulation are out of scope.

³⁵ We recognize that most prudential authorities have so far only been exploring climate-related risks, and therefore, this section focuses specifically on physical and transition risks stemming from climate change. However, we believe that this conceptual framing could in future be relevant for evaluating financial system and real economy interactions in other environmental risk contexts, such as biodiversity loss.

Figure 2 breaks down the components and differentiating factors between three theoretical objectives for prudential authorities.

Figure 2: Comparing Objectives			
Objective label	Scope	Materiality lens	Mandate foundation
“Resilience”	Financial institutions	‘Outside In’: impact of climate/environmental risks on financial institutions	Microprudential
“System-wide Alignment”	Financial system, real economy	Dual materiality: Impact of climate/environmental risks on the financial system and impact of the financial system on climate/environmental outcomes because of feedback loops to the financial system	Macroprudential
“Active Transition”	Financial system, real economy, broader societal goals	Responsibility for climate/environmental outcomes, through a dual materiality perspective, due to feedback loops to the financial system and to achieve broader societal goals	No existing foundation in prudential authority mandates; would require a new mandate

Resilience and system-wide alignment objectives can be viewed as the micro- and macroprudential sides of the climate-related financial risk coin. There is now a depth of understanding that the microprudential and macroprudential policy domains are equally important in promoting financial stability³⁶. Macroprudential policy takes account of interactions among financial institutions and the feedback loops between the financial sector and the real economy that can give rise to systemic risks³⁷.

Resilience and system-wide alignment objectives can be mutually reinforcing. For instance, a smooth transition towards a ‘net-zero’ aligned financial system could materially support management and reduction of transition risks, while investments in decarbonization and resilience could reduce the potential build-up of physical risks to the real economy, thereby reducing the potential for risks to feedback to financial institutions over the long term.

However, there is growing recognition that tradeoffs may arise between resilience and system-wide alignment objectives, and that progress on only one objective may not necessarily lead to progress on the other. Significant and widespread action by financial

³⁶ See: BIS Papers 2011. [“Marrying the macro- and microprudential dimensions of financial stability”](#) (March); Special Feature C in ECB 2014. [“Financial Stability Review”](#) (May); IMF 2013. [“Macroprudential and Microprudential Policies”](#) (June); Brookings 2020. [“What are macroprudential tools?”](#) (11 February).

³⁷ As Bank of England Governor, Mark Carney described systemic risks as “those large enough to materially impact growth” in a March 2020 [speech](#).

institutions to reduce physical and transition-related climate risks through portfolio reallocation could result in enhanced resilience of individual financial institutions yet fail to deliver on climate goals or enhance overall financial stability³⁸. For instance, if financial institutions quickly withdrew significant financing or insurance underwriting in case of any anticipated climate-related financial risks (e.g., mortgage loans on houses in flood zones, corporate loans to, investments in or underwriting of carbon intensive sectors) this would have a significant impact on many sectors of the real economy, and could result in poorer macroeconomic outcomes and effects that could create potentially negative feedback to the financial system. Likewise, if financial institutions' transition strategies are highly selective and exclusionary in an effort to support alignment efforts then new risks could emerge, such as a lack of financing to enable key economic sectors that are carbon intensive (e.g., transport, chemicals, etc.) to transition or the growth of a 'green bubble' that is not backed by fundamental performance. These risks and feedback loops may be particularly acute for emerging economies that may be heavily dependent on natural resources or commodities that may raise climate concerns (e.g., the deforestation and climate impacts of mineral mining or palm oil production). Exclusionary practices by financial institutions could have detrimental impacts on the economies and populations of these countries, which often are not well positioned to absorb these impacts.

In this context, an argument can be made that resilience and system-wide alignment should be considered in an integrated manner, given the potentially systemic nature of climate risks and feedback loops between the economy and financial institutions - it is hard to divorce the two in practical terms. The key emerging challenge for prudential authorities is how to interpret and manage the potential complementarities and frictions between micro- and macroprudential objectives and instruments in the context of climate-related and environmental risks over the short and long term.

Therefore, we propose that prudential authorities and supervisors should consider the macroprudential objective of examining the financial system-wide alignment with future climate pathways, with a view to reducing the potential for financial instability stemming from climate-related or environmental risks. Acting from their core mandates, microprudential authorities and supervisors should take a resilience approach focused on safety and soundness, but the degree of financial system alignment to the future climate pathways will be relevant as it will affect the nature and degree of transition and physical risks facing the real economy - which could ultimately feedback to affect individual financial institutions. Andy Haldane (Chief Economist at the Bank of England) has recently described this as a having a "*wide-angle lens on the economy and financial system when performing their tasks*" because structural factors can indirectly affect a central banks' core remits, but that this should not "*detract or distract from the core mandates of central banks - keeping inflation low and banks stable*"³⁹.

³⁸ Caldecott 2020 (September) [Achieving Alignment in Finance](#).

³⁹ Haldane 2020. "[What Has Central Bank Independence Ever Done for Us?](#)" (28 November).

Understanding of the financial system dynamics of resilience and system-wide alignment interactions is at an initial stage. FSB research shows that, at present, only a small number of prudential authorities are considering how climate-related risks to the financial system could reverberate through the real economy and back to the financial system, or lead to spillovers across borders⁴⁰. As physical and transition risks potentially present systemic risks, there is value in explicitly accounting for system-wide alignment objectives so that macroprudential authorities develop the necessary knowledge and techniques for monitoring and responding to this type of macroprudential risk over time.

Pursuing an “active transition” objective would imply using prudential tools for extraordinary purposes to directly incentivize capital allocation to achieve climate policy goals; this could potentially undermine the credibility and efficiency of prudential tools, and hinder their ability of prudential authorities to meet their primary objectives of ensuring safety, soundness and financial stability. As discussed in Section 3 below, these considerations are particularly important in relation to instruments like regulatory capital which serve an important resilience function. In some jurisdictions, it is part of the prudential authority’s remit to consider or support broader government policies, which may include (now or later) sustainability goals⁴¹. In these cases, it may be less clear cut for prudential authorities to delineate objectives, but is particularly important that a clear boundary is maintained between the core prudential mandate and objectives versus broader government policies.

2.3 Responding to external factors and conditions

Going forward, a range of external factors are likely to influence the nature and impact of prudential authorities’ actions on climate-related risk and alignment: market practices/innovation and government policies will be particularly important.

Market practices and strategies on climate and environmental risk and alignment priorities are evolving rapidly. **Targets** set by financial institutions, often in the context of TCFD disclosures, are shifting from goals on additional green financing to active commitments on the decarbonization of portfolios and alignment with net-zero goals. **Innovation** around the identification and assessment of climate-related and environmental risks will accelerate, yielding better information that can enable climate risks to be more accurately reflected and considered within financial decision-making and should enable change in the direction of broader societal/governmental alignment objectives. **Demand** from investors, clients and other market participants for transparency on climate-related risks, financing for low-carbon innovation, and new types of ESG and climate-focused investment products is growing exponentially⁴². While the agenda to date has largely focused on climate-related risks and

⁴⁰ FSB 2020 (July).

⁴¹ For example, the UK Financial Policy Committee, which is responsible for financial system oversight and macroprudential policy, has a ‘secondary objective’ to support the economic policies of the government.

⁴² See ‘Market Snapshot’ in IIF 2020. [‘Sustainable Finance Monitor’](#) (October).

opportunities, broader environmental considerations are already coming into scope, such as biodiversity⁴³.

New, more ambitious government policies could influence rapid changes on supply and demand dynamics in the economy, affecting the speed and nature of low-carbon transition and approaches to building climate resilience. Some countries are already taking action, and in the future, policy and regulatory frameworks could become increasingly stringent depending on experience and new scientific evidence. Examples include prohibitions on high-carbon economic activities (e.g., closure of fossil fuel power generation, bans on internal combustion engine vehicles), legislation affecting the implementation of green technology⁴⁴, or implementation of economy-wide carbon pricing⁴⁵.

Voluntary, market-led solutions have been an important part of the development of sustainable finance and can continue to play a role in some areas which could be self-regulated. Many financial institutions have for years been undertaking significant work to measure, monitor, disclose and adjust their business strategies in response to potential climate/environment-related risks and opportunities. Notable recent examples include voluntary frameworks for disclosure of climate and ESG information, product standards (e.g., for green use-of-proceeds bonds and sustainability-linked financial products), and structures to enable scaling of new markets, such as Voluntary Carbon Markets⁴⁶.

However, given the complex nature of climate-related and environmental risks, some types of prudential supervisory interventions may be inevitable to help institutions consider and respond to some of the inherent challenges in a consistent way. For example, due to the long-term and highly uncertain nature of climate and environment-related phenomena, imperfect information makes it difficult to price resulting financial risks into markets, and to reflect system-wide externalities and feedback loops in risk pricing. It is accepted that there are issues around taxonomy, data and fragmented standards that currently inhibit the ability of market participants to monitor and manage climate-related and environmental risks in a consistent and comprehensive manner⁴⁷.

Addressing these common and complex challenges should be part of a public/private collaborative agenda, and we would urge prudential authorities to leverage market-based solutions where appropriate. Given the nature of climate/environmental risks and the amount of research and analysis required for all institutions to fully understand and respond to their implications, it is important to leave space for market solutions in the context of the

⁴³ Looking beyond climate change, other environmental risks (such as biodiversity loss) are multidimensional, interlink, and may be even harder to measure and price at the current time.

⁴⁴ Vivid Economics 2019 (October) [The Inevitable Policy Response: Preparing Financial Markets for Climate-related Policy/Regulatory risks](#).

⁴⁵ An economy-wide carbon price has been recommended by many as a priority step to transitioning to a lower carbon economy and driving the allocation of capital. Two recent examples include CFTC 2020 (September) and G30 2020 (October).

⁴⁶ See [Task Force on Scaling Voluntary Carbon Markets](#).

⁴⁷ For example, see CFTC 2020 (September): *“The lack of common definitions and standards for climate-related data and financial products is hindering the ability of market participants and regulators to monitor and manage climate risk.”*

supervisory regime. Prudential authorities should support market self-regulation and innovation in the development of frameworks that catalyze action to align the financial system with climate and environmental goals. Prudential authorities and supervisors can use their tools to promote leading practices as they emerge. There is also ample precedent in the current framework for areas that are best left to market-led initiatives. Notable examples include the International Swaps and Derivatives Association (ISDA) protocols for derivatives, the International Capital Markets Association (ICMA) green bond principles, and other frameworks.

2.4 Considerations to guide the prudential response

The banking and insurance industries take climate-related risks very seriously and are working hard to account for them, as well as contributing to the transition to a lower carbon economy. This will inevitably be a journey, but the overriding goals are aligned between regulators and industries. From this point of view, the IIF would like to propose a set of **ten high-level considerations** to guide the prudential supervisory response to climate-related and environmental risks. Although beyond the scope of this paper, some of these principles could also potentially be applied to broader ESG factors.

These high-level considerations resonate with lessons on effective policymaking and public/private collaboration from the history of financial sector regulation. Box 1 summarizes some of these case studies.

1 - FINANCIAL SECTOR'S ROLE: In order for governments and the broader civil society to achieve their climate and environmental objectives and transition to a sustainable economy, strong support and participation from the financial sector is needed. The focus of non-prudential policymakers should be on creating the right incentives for a transition to a lower carbon and more sustainable economy in an efficient and effective way, without unduly relying on the financial system to achieve outcomes.

2 - LEVERAGING MARKET-BASED SOLUTIONS: Prudential authorities should support market self-regulation and innovation in the development of frameworks that catalyze action to align the financial system with broader climate and environmental goals. Leveraging market-based solutions and market norms requires a public/private collaboration approach in many areas. There should be space for a range of market solutions and diversity of industry approaches in the context of supervisory regimes.

3 - COORDINATION: Prudential authorities should take a global perspective on climate-related and environmental risks and reap the benefits of collaboration with authorities across borders. Where appropriate, prudential authorities should aim to coordinate their approaches in responding to these risks to reduce market fragmentation, which affects financial institutions that operate multi-nationally, inhibits the flow of sustainable finance and reduces opportunities for risk mitigation.

4a - BANKING PRUDENTIAL OBJECTIVES: The primary objective of banking prudential authorities should continue to be ensuring firm safety and soundness and financial stability. By having regard to transition risks and physical risks and understanding the links to firm-

specific and financial stability risks, banking prudential authorities should be able to continue meeting their primary objectives without hampering broader government or societal objectives.

4b - INSURANCE PRUDENTIAL OBJECTIVES: The primary objective of insurance prudential authorities and supervisors should continue to be ensuring fair, safe and stable insurance markets as the impact of climate and environmental change affects market dynamics, for the benefit and protection of policyholders and to contribute to financial stability. Insurance prudential authorities should be able to continue meeting their primary objectives without hampering broader government or societal objectives.

5 - CONNECTIONS BETWEEN AUTHORITIES: While acting within their individual mandates, there is value in striving for an integrated and symbiotic approach at national and global levels between microprudential, macroprudential authorities, supervisors and central banks on approaches to climate-related and environmental risks.

6 - AVOIDING UNINTENDED EFFECTS: Prudential authorities should assess and ensure that current and future prudential frameworks and approaches do not generate unintended effects that could negatively influence how financial institutions engage in the transition to a sustainable economy.

7 - COMMON PRINCIPLES, ALTHOUGH DIFFERENT RISKS: Prudential authorities should seek to apply common principles in their approach to the various risks related to climate and environmental matters. While acknowledging differences between the various risks including materiality for the financial system and relative urgency, there is value in striving for an integrated approach for coherence, consistency and efficiency, including with the treatment of other ESG risks as appropriate.

8 - DATA-DRIVEN APPROACH: The prudential supervisory approach should be rigorous and data-driven and informed by relevant expert advice and judgement. Authorities, industry and relevant experts (scientists, academics, modelers) should collaborate to gather data and build knowledge and modelling capabilities. It should be acknowledged that different types of data, analytical techniques, levels of precision and time horizons may be appropriate, considering the unique characteristics of climate-related and environmental risks.

9 - PRACTICAL, PROPORTIONATE AND SEQUENTIAL APPROACHES: Prudential authorities should be alert and responsive but should take a pragmatic, proportionate and sequential approach when using their toolkit to respond to climate-related and environmental risks. Market discipline (aided by disclosure), supervision, and monitoring should be the first stage of the prudential response.

10 - ADAPTIVE AND FUTURE-ORIENTED FRAMEWORKS: The prudential approach should be dynamic and adaptive in light of changes in the risk landscape, technology and state of knowledge; the framework should allow financial institutions the flexibility to innovate and experiment to develop cutting-edge sound practices and approaches.

Box 1: A look back on the history of financial sector regulation - lessons for the response to climate-related and environmental risks

Key examples of international collaboration on financial sector regulation, such as the development of the Basel prudential regime, OTC Derivative reforms, Recovery and Resolution Planning, and broader Macroprudential policy, illustrate how consistent approaches to emerging financial regulatory challenges can be advanced. Key lessons from these efforts - including the need for close interaction and engagement between industry stakeholders, national authorities and global standard-setting bodies - may be helpful to guide the response to new and emerging climate-related and environmental risks.

Development of the Basel prudential regime: The current Basel regime has evolved over 30 years, with progress from standardized approaches to models. Of course, the world does not have 30 years to develop robust solutions to climate challenges - by 2050, the world must achieve a net-zero emissions goal, which implies a certain degree of 'learning by doing.' It is likely futile to expect the same level of precision on climate-related and environmental risks as we currently have within the broader prudential regime in the first instance, considering the ongoing evolution of methodologies and rapid improvements in data. Therefore, with topics of such complexity, incomplete information, and rapidly evolving technical approaches - as is the case with climate change - **an iterative, 'building-block' approach** can ensure common approaches are taken, while enabling the development of further detail and granularity.

OTC Derivative reform: In the wake of the crisis, steps were taken to regulate the mature OTC derivatives market in multiple ways. In the climate context, markets are rapidly evolving but are at different levels of maturity, and in certain instances at nascent levels of development. There is a lack of agreement on core definitions for what exactly climate-aligned or broader sustainable finance practically is, leading the uncoordinated evolution of taxonomies in different jurisdictions. Considering the expansion of the market and urgency of climate objectives, public authorities are trying to regulate parts of the market as it is still evolving. One useful lesson from the OTC Derivatives reform process is the **benefit of agreeing on a core set of key objectives** (exchange trading, margining, clearing, and trade reporting), between the G20, regulators, and industry, which guided a series of phases of public/private engagement. The result - a much safer and better regulated derivatives market - attests to the importance of a coherent shared vision for the desired outcomes of reforms.

Recovery and Resolution Planning (RRP): In 2010, RRP was a 'greenfield' topic for industry and regulators. Efforts started off on divergent paths, which prompted the FSB to step in to guide action on several topics. Regulators took different approaches over time, and industry had to balance out multiple challenges, including centralized pooling of resources and transboundary issues. These challenges inspired useful **innovations** such as the development of RRP supervisory colleges. Furthermore, the RRP process highlights the importance of **evaluating trade-offs** between different objectives (in relation to the balance between centralized/fungible resources vs. local requirements) - which is especially relevant in the context of different actions to support the low-carbon transition.

Macroprudential policy: After the global financial crisis, macroprudential policy gained prominence as a mainstream discipline aimed at mitigating risks with ‘systemic’ implications for the financial system. This perspective, endorsed by the G20⁴⁸, was a driving force behind the creation of the FSB and other regional agencies like the European Systemic Risk Board, as well as the designation of national macroprudential authorities in many jurisdictions. The concept of macroprudential regulation actually has a much longer history, starting in the U.S. in the early 20th century where tools were used to control credit growth. Macroprudential regulation tools have been used in many advanced and emerging economies in recent decades in relation to credit, capital flows and other macroeconomic issues. The economic premise of macroprudential policy is as a “*tool to correct externalities that create systemic risk or financial instability,*” where negative externalities can arise due to limited liability, limited enforcement, asymmetric information and interconnectedness⁴⁹. It is a potentially broad-reaching type of policy that considers many aspects and drivers of systemic risk. A substantial amount of work has been done over the past decade to improve knowledge and the evidence base around macroprudential policymaking: indicators of systemic risk are being developed, institutional changes made and research undertaken into the effectiveness of macroprudential tools. This has been fundamental to the success of **embedding macroprudential perspectives into and alongside other policy considerations, including microprudential and monetary policy**. Finally, the **designation of macroprudential oversight and policymaking to a distinct authority** (i.e., separate from microprudential or monetary policy) can be important where there are tensions between objectives and tools⁵⁰.

⁴⁸ For example, see [G20 Seoul Summit Leaders’ Declaration](#) (11-12 November, 2010).

⁴⁹ See Kenç 2016. “[Macroprudential regulation: history, theory and policy](#)” (September).

⁵⁰ This is institutional arrangement was an ESRB Recommendation to EU member states ([ESRB/2011/3](#)).

3. Exploring Prudential Approaches to Climate-related and Environmental Risks

Following from the discussion of objectives and guiding considerations above, in this section we review current supervisory and industry practices and provide some recommendations to prudential authorities and global standard-setting bodies on ways to develop appropriate approaches to climate-related and environmental risks.

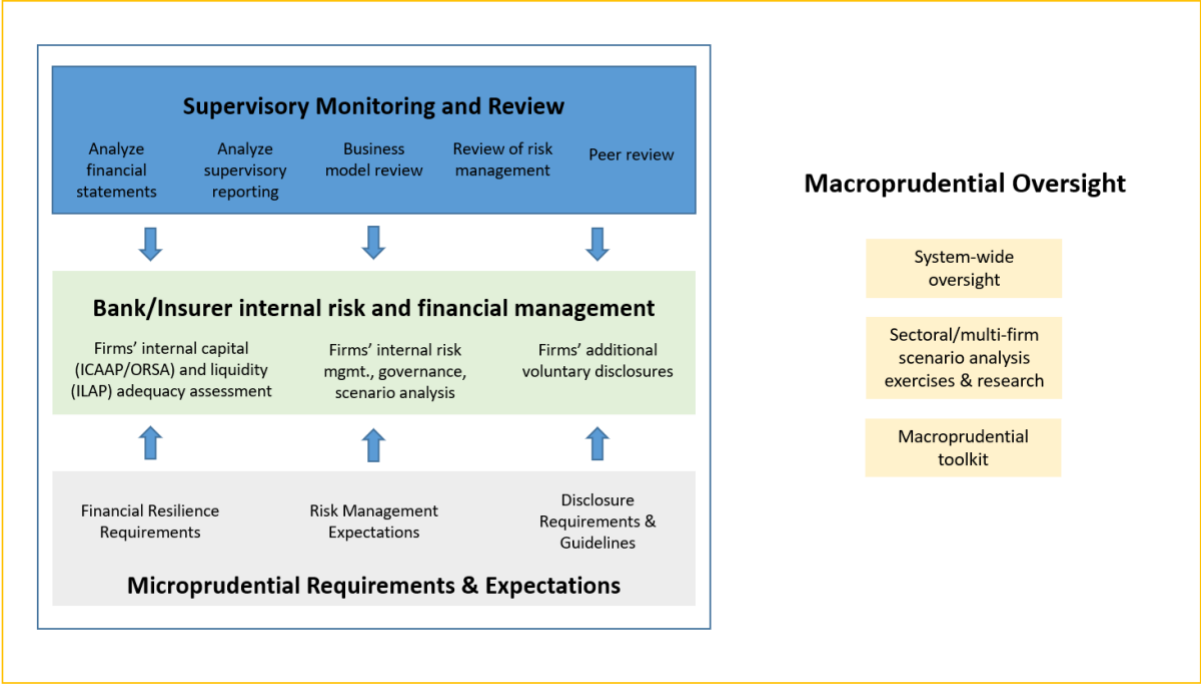
Based on the principles of good public policy, authorities generally aim to start at the top of the ladder of interventions with the least invasive tools required to achieve their objectives. Prudential authorities have tools and authority to make a ‘ladder’ of interventions of increasing intensity, starting with supervisory engagement, setting expectations, monitoring and reviewing firms’ internal analysis, through to setting financial resource requirements and potentially applying constraints or restrictions on a supervised institution’s activities. **Figure 3** is a simplified representation of the general prudential framework within which individual banks and insurers operate. It shows how individual firms conduct their own risk and financial management within boundaries set by supervisory oversight, microprudential requirements and macroprudential oversight.

Given the argument in this paper that prudential authorities’ objectives should maintain a resilience focus and have regard to a system-wide alignment objective, this suggests that **supervisory engagement** with the banking and insurance industries is a foundational and priority step on this topic. **Disclosure standards, risk management expectations and supervisory scenario analysis exercises** are tools supervisors should develop in the near term, while allowing sufficient time for firms to comply given the widely understood challenges in relation to data and methodologies. Taken together, and with a firm foundation in data⁵¹, this could provide a strong toolkit for the industry and prudential authorities to measure, manage and mitigate climate-related and environmental risks. However, **we believe that regulatory capital does not have a significant role to play as better-suited tools are available**, and there is insufficient data and evidence to inform adjustments to regulatory capital requirements with the necessary degree of technical certainty and robustness that such a decision would require. In the subsequent sections, we discuss each of these tools respectively, and make recommendations from an industry perspective as to their most efficient, effective, and appropriate use.

In general, we think there is value in first focusing on climate-related risks, and then progressing to other environmental risks in a later step as frameworks develop and financial institutions develop analytical capacities. As discussed in Section 1.3, this paper reflects the relative urgency, evidence base and level of understanding with respect to climate-related risks versus other environmental risks. However, in sections 3.1 to 3.5 we do specifically discuss broader environmental risks where appropriate.

⁵¹ The sustainable finance toolkit starts with data—the bottom layer of the pyramid. Data is fundamental to building methodologies for climate risk assessment, to alignment on taxonomy, to disclosure and ultimately for evaluating sustainable finance opportunities. As discussed in IIF 2020. [“Sustainable Finance in Focus - Back to Basics Part 1: The Pyramid”](#) (February 18).

Figure 3: Basic representation of the components of the microprudential, macroprudential and supervisory regimes in relation to bank/insurer internal risk and financial management



The various supervisory tools are clearly inter-linked and interconnected with firms' own prudent internal processes - for example, disclosure and capital allocation are parts of a firm's risk management. However, we separate them into categories for clarity of exposition and to focus on the choices faced by policymakers when employing them. Supervisory tools vary in relevance to the overarching potential supervisory objectives discussed above - resilience, system-wide alignment and active transition - and their use should be informed by authorities' objectives. This is depicted in a graphic format in **Figure 4**, and further discussed throughout Section 3.

Figure 4: Potential applications of tools and instruments to support achievement of conceptual prudential objectives pertaining to climate-related and environmental risks

Supervisory tools/instruments	Conceptual Prudential Objectives		
	“Resilience”	“System-wide Alignment”	“Active transition”
• <i>Supervisory engagement and monitoring</i>	Engaging with firms to assess strategies for responding to risks & opportunities. Serves as a foundation for other microprudential tools/instruments.	Gathering perspectives from across the industry; providing feedback based on peer review. Informs judgements regarding performance of individual firms vs. system-wide trends.	Encouraging firms to consider ‘greener’ activities through supervisory engagement
• <i>Disclosure guidelines for financial institutions</i>	Promoting risk monitoring and market discipline. Generates data that informs other microprudential tools/instruments.	Possibility of enabling economic decisions that reduce systemic risks through greater transparency and better information.	Introducing disclosure requirements on the real economy climate outcomes of financing activities
• <i>Risk management Expectations</i>	Promoting sound risk management within individual institutions.	Possibility of contributing to mitigation or management of system-wide financial risks	Introducing differential risk standards/tolerances based on climate impact and exposure
• <i>Supervisory scenario analysis exercises</i>	Complementing firms’ own scenario analysis and stress testing activities (e.g., under ICAAP) with sectoral views on exposures and alignment.	Assessing potential system-wide vulnerabilities and transmission channels for risks between the financial system and real economy.	Linking scenario exercise results to prudential requirements
• <i>Regulatory capital</i>	[Hypothetical] Implementing risk-based adjustments to capital requirements only if sufficient evidence exists to effectively measure and calibrate balance sheet risks	[Hypothetical] Implementing risk-based capital requirements to effectively mitigate systemic risks not addressed by microprudential measures	Implementing a green supporting or brown penalizing factor to actively incentivize (or disincentivize) lending to certain sectors to steer the low-carbon transition

Right-hand column:
Examples of potential differentiations if similar instruments were used with an active transition objective [not recommended in this paper]

Table notes: “Resilience”, “System-wide Alignment” and “Active Transition” objectives are as defined in Section 2 of this paper. Cells contain brief descriptions of how each type of instrument (in the rows) could meet the objectives (in the columns).

Shading legend:

- **Green:** tool is highly relevant to meeting the objective.
- **Amber:** tool may be relevant to, or indirectly contribute to, meeting the objective.
- **White:** tool may be relevant to meeting the objective only if certain conditions are met.
- **Grey shading & red text:** “Active transition” objective not currently considered by a majority of prudential authorities and not recommended in this paper.

3.1 Supervisory engagement and monitoring

In general, supervisory engagement is the most appropriate and responsive tool for prudential authorities to understand and react to new and emerging risks facing regulated entities. As shown in **Figure 3** above, supervisory engagement, monitoring, and review processes sit above all bank and insurance firms’ internal risk assessment, capital adequacy and solvency activities; as such, supervisors can quickly engage with individual institutions on their approaches to climate-related and environmental risks as part of the

ongoing supervisory relationship. Supervisory engagement can therefore help achieve the ‘resilience’ and ‘system-wide alignment’ objectives described in Section 2, by providing the mechanisms to assess the impacts of climate-related and environmental risks on mainstream risk categories affecting the safety and soundness of individual financial institutions, as well as enabling supervisors to gather perspectives on strategies across the industry for responding to climate risks and opportunities⁵².

Many authorities interested in tackling climate-related and environmental risk issues have started with supervisory engagement. The NGFS has reported that the majority of supervisors have conducted engagement with firms to gather perspectives on the impact of climate-related risks, including through the use of surveys. Based on these initial assessments, some supervisors are moving forward with setting expectations and assessing firms’ climate risk management practices through monitoring and review. 40% of BCBS member authorities have already, or are in the process of, issuing supervisory guidance on climate-related financial risks (including the Bank of England, ECB, Monetary Authority of Singapore and Hong Kong Monetary Authority). The recently issued IAIS *Draft Application Paper on the Supervision of Climate-related Risks in the Insurance Sector* notes that several SIF member authorities have incorporated climate-related risk in their expectations with respect to insurers’ own risk and solvency assessments and stress testing⁵³.

Given the high level of attention the banking and insurance industries are already paying to climate-related risks and opportunities, and the rapid rate of innovation, targeted supervisory engagement is key to ensuring that prudential responses to climate-related and environmental risks are fit for purpose and coherent. This would fall under ‘Pillar 2’ of the BCBS framework, or supervisory review and reporting under the relevant IAIS ICPs and ComFrame⁵⁴. The supervisory review process is a very flexible tool that is specifically designed to be forward-looking and account for emerging risks; it has many elements intended to provide incentives for firms to manage risks and returns over the long term and to ensure sound risk management and governance practices.

Voluntary leadership coalitions have attempted to drive some convergence in approaches by setting out summaries of emerging practices, tools, and informal voluntary guidelines. In its May 2020 *Guide for Supervisors on Integrating Climate-related and environmental Risks into Prudential Supervision*⁵⁵, the NGFS recommended that microprudential authorities clarify to financial institutions their supervisory expectations with regard to climate-related and environmental risks. In the insurance sector, the SIF has developed a *Question Bank on climate-related risks to the insurance sector*⁵⁶, intended to help supervisors develop engagement tools to better understand exposures and strategic responses of regulated entities.

⁵² Summarized in Figure 4.

⁵³ IAIS 2020 (October).

⁵⁴ Including but not exclusively ICP 9 on Supervisory Review and Reporting.

⁵⁵ NGFS 2020 (May).

⁵⁶ SIF (2020). [“Question Bank on Climate Change Risks to the Insurance Sector”](#) (March).

The BCBS and the IAIS have started discussing how climate-related risks could be formally integrated into supervisory processes, with the IAIS currently consulting on an Application Paper⁵⁷. The NGFS, BCBS⁵⁸, IAIS and many other observers also recognize that methods to quantify risks are still under development and there are data gaps for firms and supervisors. It is therefore important to prioritize activities that build knowledge and fix technical gaps within industry and the public sector.

It would be beneficial for the global standard-setting bodies to take forward the work done to date by the NGFS and the SIF to further the development of an “international approach that is as harmonised as possible” (NGFS 2020 [May])⁵⁹. The supervisory engagement and review process is firm-specific and managed at the level of national supervisory authorities, but there are international principles (that continue to be developed and evolved) at the level of the BCBS and IAIS designed to bring consistency of approaches. Similar to the IAIS, the BCBS could develop a set of Sound Practices for the supervision of climate-related risks, similar to the February 2018 Sound Practices paper in relation to fintech developments⁶⁰.

In parallel, it is important that individual prudential authorities review and build their own capacity for conducting supervisory oversight in this emerging and technical area. This was the subject of the NGFS Guide for Supervisors⁶¹ and is clearly on many prudential authorities’ radars; nonetheless, continued and expanded efforts are likely to be needed in coming years. It is particularly important that line supervisors are fully aware of the rationale and objectives of any emerging principles-based standards developed by global standard-setting bodies, such that they can provide supervised institutions with the intended degree of scope and flexibility to adapt and implement principles within their business models.

Recommendations on Supervisory Engagement and Monitoring:

- At present, prudential authorities could focus their efforts on engagement with banks and insurers to discuss the nature of the risks to their balance sheets and business strategies due to the impacts of climate change.
- In the near term, prudential authorities could also engage with banks and insurers on other environmental risks that could affect financial institutions.
- Similar to the IAIS, the BCBS could develop Sound Practices for the supervision of climate-related risks in order to promote an internationally harmonized approach to supervisory engagement over time.
- Prudential authorities could usefully explore their own needs for building internal capacity and expertise when conducting supervisory oversight.

⁵⁷ See Case Study 7 in the June 2019 BCBS [Overview of Pillar 2 Supervisory Review Practices and Approaches](#).

⁵⁸ Data availability and methodological challenges were the top two challenges identified by jurisdictions in a 2020 BCBS survey. See Chart 2, BCBS 2020 (April).

⁵⁹ “The recommendations of the NGFS are non-binding but aim to contribute to developing an international approach that is as harmonised as possible. The NGFS also works together with international standard-setting bodies, some of them NGFS observers, to further strengthen a collective response to climate-related and environmental risks.”

⁶⁰ BCBS 2018. “[Sound Practices: implications of fintech developments for banks and bank supervisors](#)” (19 February).

⁶¹ NGFS 2020 (May).

3.2 Disclosure guidelines for financial institutions

Disclosure of climate-related risks and opportunities is widely recognized as a foundational element of climate risk management within the real economy and the financial system. By enabling transparency regarding the risks faced by an individual financial institution as well as the strategies employed to respond to and manage such risks, disclosures fulfill an important risk management function relevant for prudential authorities and can promote market discipline. However, disclosures by financial institutions are contingent on the quality and comprehensiveness of disclosures by corporate counterparties; it is therefore important that disclosure guidelines for financial institutions reflect the availability and quality of broader climate and sustainability-related disclosures by their corporate counterparties, and the broader availability and quality of data and information from third parties such as sustainability ratings agencies. Enhanced disclosure can therefore help to achieve the ‘resilience’ objective described in Section 2 and can support achievement of a ‘system-wide alignment’ objective, in the instance that greater transparency enables decisions by financial institutions and their clients that support the transition to a lower carbon economy, thereby reducing the potential for systemic risks⁶².

From a prudential perspective, disclosures by financial institutions can play an important role in a climate-related and environmental risk context. Since their release in June 2017, the Recommendations of the TCFD⁶³ have emerged as the *de facto* global industry standard for voluntary disclosure of climate risks and opportunities by corporates and financial institutions. Disclosure frameworks for other environmental topics – such as biodiversity – are now under development, in parallel with efforts to set international standards for disclosures of ESG information (for instance, efforts currently being advanced by the International Financial Reporting Standards (IFRS) Foundation⁶⁴).

The evolution of the climate risk disclosure agenda and the central role of the TCFD Recommendations provide insights into how prudential authorities can usefully integrate and engage with market frameworks to structure guidelines for climate-related and environmental disclosures. The structuring of the TCFD as a private-sector led initiative, with an intention to develop a voluntary framework drawing on elements of fragmented approaches, provided flexibility for broad uptake by the private sector across jurisdictions. A mandate and guidance from the G20/FSB provided a clear link to the international standard-setting bodies, securing global relevance and applicability. The TCFD also catalyzed a significant shift in thinking by highlighting the importance of forward-looking approaches to climate risk assessment through the use of scenario analysis.

While uptake of the TCFD Recommendations by financial institutions continues to increase, several considerations may affect the relevance of TCFD-aligned disclosures for different prudential objectives. A recent assessment of TCFD disclosures undertaken by the IIF and United Nations Environment Programme Finance Initiative (UNEP-FI) has concluded that further industry consensus on quantitative aspects of disclosures will be necessary to

⁶² Summarized in Figure 4.

⁶³ FSB TCFD 2017. "[Recommendations of the Taskforce on Climate-related Financial Disclosures.](#)"

⁶⁴ IFRS Foundation 2020. "[Consultation Paper on Sustainability Reporting](#)" (September).

enhance consistency and comparability⁶⁵. This finding was echoed in the TCFD's own 2020 status report⁶⁶. A further issue relates to the rapid expansion of metrics that may be used by firms to quantify climate risk and alignment.

Prudential authorities are pursuing a range of approaches to enhancing disclosure of climate-related, environmental, and broader ESG risks, from providing voluntary guidelines and encouraging adoption of leading practices through to the implementation of mandatory requirements. Several authorities, including the EU, the UK and Singapore, have referenced elements of the TCFD framework (e.g., with respect to governance and risk management) in the context of supervisory expectations⁶⁷. Some disclosure guidelines and expectations, including sector-specific technical standards, are being introduced in the context of risk management guidelines⁶⁸. In certain jurisdictions, including the EU, supervisors are considering how voluntary TCFD disclosures correspond to formal disclosure requirements on financial institutions, such as 'Pillar 3' disclosures for banks. For example, in the EU, the CRR 2⁶⁹ provides a mandate for the EBA to develop a technical standard implementing requirements under the EU Non-Financial Reporting Directive, which will specify disclosures of ESG risks in the context of a comprehensive technical standard on Pillar 3 requirements⁷⁰. Other public authorities, including government ministries, have initiated public-private collaboration platforms and other fora to encourage innovation in disclosure practices. In September 2020, New Zealand became the first jurisdiction to propose legislation making TCFD disclosures mandatory for financial market participants, with the UK being the first G20 country to announce a pathway towards mandatory requirements in November 2020.

Despite the fact that some jurisdictions are moving forward with mandatory requirements, there are many outstanding issues and questions pertaining to how disclosure regimes for climate-related and environmental risks can be appropriately designed and implemented. These include how to reconcile the lack of consistent climate-related and broader ESG data disclosed by corporate counterparties (which financial institutions require to make sound risk assessments) and the wide variance in relevant methodologies (e.g. for forward-looking risk analysis) that creates comparability issues.

A further question concerns the relationship between sector-specific prudential disclosure requirements and broader disclosure requirements affecting financial institutions and other corporate sectors, such as listing requirements. To avoid the risk of duplicative and overlapping disclosure requirements, policy institutions, regulators, and supervisors may benefit from close engagement and from undertaking efforts to map and harmonize different elements of disclosure regimes that affect financial institutions and their

⁶⁵ IIF/UNEP-FI 2020. "[TCFD Report Playbook](#)" (28 September).

⁶⁶ FSB 2020. "[Task Force on Climate-related Financial Disclosures 2020 Status Report](#)" (October).

⁶⁷ As discussed in the EU [International Platform on Sustainable Finance \(IPSF\) 2020 Annual Report](#) (October). Hereafter referred to as IPSF 2020 (October). In the EU, the European Commission legislative proposal on the revised Non-Financial Reporting Directives (expected to be published in Q1 2021) will be aligned with the TCFD.

⁶⁸ Further discussed in Section 3.3 See, for example, ECB 2020 (November).

⁶⁹ EU CRR 2 Article 434a.

⁷⁰ Under Article 449a of the CRR 2, large institutions with publicly listed issuances are required to disclose information on ESG risks, physical risks and transition risks. For further information, please see ECB 2020 (November) [ECB Report on institutions' climate-related and environmental risk disclosures](#).

counterparties in other sectors. In the EU, different policy entities and prudential authorities have indicated the need to explore options to harmonize the range of overlapping instruments and requirements affecting financial institutions implemented under the remit of the EU Action Plan on Sustainable Finance (including the sustainable finance disclosures regulation, the taxonomy regulation, and the Non-Financial Reporting Directive)⁷¹. Wherever possible, disclosure requirements should be harmonized across sectors; however, differences in the manifestation of climate-related risks across sectors and firms call attention to the potential necessity of sector-specific guidelines, respecting the principle of proportionality. Delineation of the responsibilities prudential and other authorities in advancing concurrent sectoral disclosure instruments - for instance, as has been set out by authorities in the UK with respect to TCFD disclosure⁷² - can be a helpful way to ensure clarity for market participants.

Industry consensus on disclosure practices will be key to enhancing consistency and comparability as a complement to supervisory efforts; coordinated supervisory efforts can help to encourage further consensus on emerging practices. Considering that market practice on TCFD disclosure is still evolving, it is fair to consider the degree to which additional guidance from prudential authorities is necessary to strengthen consistency in disclosures and the degree to which market-led practices will converge over time. Indeed, we anticipate that a degree of industry practice convergence will occur naturally over time as data improves and experience informs modelling. The TCFD framework itself is set to evolve going forward; in October 2020, the TCFD Secretariat released a consultation to gather views on forward-looking metrics used by financial market participants to evaluate climate risks and alignment. This is likely to inform a future revision of the TCFD supplemental guidance for financial institutions⁷³. Industry consensus on this next 'layer' of TCFD guidance - for instance, the development of additional guidance on new disclosure metrics, and the use of standardized templates - will be critical to ensure both accuracy and consistency.

In the interest of a globally consistent approach, we would encourage prudential authorities to draw upon the TCFD framework in the context of any prudential approaches for climate-related risks and engage with firms to support further resolution of 'open questions' where industry consensus needs to develop over time. It would be beneficial for any jurisdiction considering steps towards mandatory TCFD to pursue a phased approach, recognizing the need for flexibility, to avoid disclosure becoming a 'check-box' compliance exercise that may result in lower quality disclosures of limited relevance for decision-makers.

Recognizing that disclosure regimes are evolving rapidly at the jurisdictional level, a clear international framework for the consideration of climate-related and environmental

⁷¹ According to the ECB, the existing framework "presents a challenging landscape to navigate and comply with" and that "[d]uplication of obligations, inconsistency in the definitions, scope and objectives of the requirements represents a factor of unnecessary complication and ambiguity" for regulated entities. For further information, please see the [Eurosystem reply to the European Commission's public consultations on the Renewed Sustainable Finance Strategy and the revision of the Non-Financial Reporting Directive](#).

⁷² UK Government-Regulator Taskforce 2020 (November) [A Roadmap towards mandatory climate-related disclosures](#).

⁷³ TCFD 2020. "[Task Force on Climate-related Financial Disclosures Forward-Looking Financial Sector Metrics Consultation](#)" (October).

risks in the context of supervisory standards could be beneficial. Within the insurance supervisory sphere, the IAIS has released an Issues Paper on TCFD Implementation in the insurance sector⁷⁴ and a recent draft Application Paper on the Supervision of Climate-related Risks in the insurance Sector urges consideration of a range of approaches, recognizing the iterative approach to climate-related disclosures and the early stages of certain aspects of climate risk assessment methodologies⁷⁵. At the time of writing, standard-setting bodies have not yet developed specific guidance on the relevance of existing templates⁷⁶ for climate-related disclosures. Over time, standards will be key to avoiding fragmentation emerging; even where guiding international frameworks – such as the TCFD – exist, ‘last mile’ jurisdictional efforts to support or require implementation may vary significantly, and could potentially result in unintended consequences.

Going forward, prudential authorities could consider ways to support further industry innovation, knowledge, and consensus building on the evolving suite of frameworks for assessing and disclosing the degree of climate alignment of financing and investment portfolios. This would include, for instance, the emerging suite of voluntary standards for ‘net-zero’ target setting by financial institutions (e.g., such as the Science-Based Targets Initiative⁷⁷) which are curated by third-party entities outside of the financial sector. Over time, these new frameworks may have the potential to result in new channels of market influencing for ambitious climate action by financial institutions.

Building on the success of the TCFD, prudential authorities may wish to reflect on how best to engage with industry and other key stakeholders in the development of industry standards for disclosure of other environmental risks. In recent months, there has been a building consensus on the need for voluntary frameworks for broader ESG disclosures to be harmonized, and to be elevated in the form of global standards⁷⁸. In October 2020, Trustees of the IFRS Foundation published a Consultation Paper to gather feedback on options to formulate global sustainability disclosure standards, including a proposal to establish a new Sustainability Standards Board, which would operate alongside the International Accounting Standards Board (IASB)⁷⁹ and apply to financial institutions and other corporates. The development of such standards can promote common approaches and reduce risks of regulatory fragmentation, and we would therefore encourage the global standard-setting bodies, individual prudential authorities and the IFRS Foundation to engage in ongoing dialogue. We would also encourage standard setters and prudential authorities to account for and refer to any future global reporting standards in the context of prudential expectations or requirements.

⁷⁴ IAIS 2020 (February).

⁷⁵ IAIS 2020 (October).

⁷⁶ Such as BCBS disclosure table ‘[OVA: Bank Risk Management Approach](#)’.

⁷⁷ See, for instance, the [SBTI Financial sector science-based targets guidance – Pilot Version](#), released in October 2020.

⁷⁸ IIF 2020 (June). CDP, CDSB, GRI, IIRC and SASB 2020. “[Statement of Intent to Work Together Towards Comprehensive Corporate Reporting](#)” (September).

⁷⁹ IFRS 2020. “[IFRS Foundation Trustees consult on global approach to sustainability reporting and on possible Foundation role](#)” (30 September).

Recommendations on Disclosure:

- With respect to climate-related risks, prudential authorities should reference and integrate the TCFD framework into disclosure guidelines, recognizing that the TCFD Recommendations are currently evolving.
- Prudential authorities should engage with other relevant policymaking entities and regulators to ensure that prudential disclosure expectations are aligned with broader disclosure requirements, to reduce potentially duplicative and/or overlapping elements.
- It may be useful for the BCBS and the IAIS to develop guidance on the relevance of climate-related risks for existing templates of disclosure (e.g., for Pillar 3 disclosures), and engage with ongoing international efforts to set consistent economy-wide disclosure standards (e.g., as proposed by the IFRS foundation). Standard-setting bodies should work with member jurisdictions to ensure that any international frameworks do not create duplication of jurisdictional-level requirements already in place.
- Aspects of the disclosure regime (e.g., evolving frameworks and methodologies for quantification of climate alignment) should remain market-led; but prudential authorities could consider how best to encourage universalization of leading practices and, over time, how to reflect such frameworks in any future supervisory expectations.
- If a formal sustainability accounting standard emerges (e.g., from the IASB or Financial Accounting Standards Board [FASB]) which encapsulates climate-related and environmental risks, this should be recognized and referred to in supervisory expectations and any potential regulatory requirements.

3.3 Risk management expectations

This section assesses the merits of different prudential approaches to considering climate-related risk management, and the role of supervisory oversight in shaping firms' practices through the provision of risk management expectations and guidelines.

Prudential authorities in some regions began developing guidelines pertaining to climate-related and environmental risk management several years ago⁸⁰. This trend has become more globally widespread over the past year, with prudential authorities in several major jurisdictions – including the EU⁸¹, UK⁸², Singapore⁸³ and Germany⁸⁴ – developing new targeted guidelines, as a basis for more advanced supervisory expectations on risk management practices. These guidelines vary significantly in scope, granularity, and expected implementation timelines.

The majority of emerging supervisory approaches to climate-related risks have aimed at setting 'guardrails' for market practice; however, some approaches are relatively more prescriptive. For example, the recently finalized ECB guide⁸⁵ includes explicit expectations in relation to several aspects of risk management (including, to give one example, an institution's

⁸⁰ For example, see Central Bank of Brazil Resolution No.4,327 (2014)

⁸¹ ECB 2020 (November).

⁸² UK PRA [Supervisory Statement \(SS3/19\)](#) and subsequent July 2020 [Dear CEO letter](#) from Deputy Governor Sam Woods.

⁸³ Monetary Authority of Singapore 2020. "[Guidelines on Environmental Risk Management \(banks; insurers\)](#)" (December).

⁸⁴ BaFin 2020. "[Guidance Note on Dealing with Sustainability Risks](#)" (January).

⁸⁵ ECB 2020 (November).

loan pricing framework) and disclosure (including, for example, that impact of an institutions' financing on climate outcomes as measured by Scope 3 greenhouse gas (GHG) emissions).

A drive for increasingly more granular risk management guidelines may not necessarily be in the ultimate interests of supervisors. Approaches to climate risk management remain nascent in certain respects⁸⁶. Highly prescriptive approaches could drive compliance to become a tick-box exercise and could also lead to unintended consequences such as herding due to similar risk analysis practices and reduced innovation in approaches across the financial industry.

Supervisory guidelines and expectations are extremely important in shaping how financial institutions develop and structure their risk management approaches. Supervisors' standards and guidelines should create enabling conditions and encourage practices that ensure firms are forward-looking in their approaches to climate risk management where robust data and tools are available. Adapting risk management frameworks to systematically account for climate/environment-related risks requires significant resources, expertise, training, and in some cases, business restructuring. Clarity of expectations is important to ensure that firms direct resources in the most efficient way, and that they are not required to later adapt their approaches to comply with supervisory expectations. It is also essential that supervisors from different jurisdictions take an aligned approach to supervisory expectations when it comes to cross-border groups, for example during discussions in supervisory colleges.

Firms' existing internal risk management frameworks can be leveraged as a baseline for assessing climate-related risks, as they have for other emerging risks over the years. Banks and insurers' financial risk management frameworks are mature and flexible enough to capture a diverse range of risk from their counterparties and activities. Using current risk management and governance frameworks, including firms' internal solvency assessments⁸⁷, as a starting point for assessing climate-related risks could also create efficiencies in any future efforts to consider broader environmental or sustainability-related risks.

Nevertheless, firms should be able to explore other methodological approaches for assessing and evaluating climate-related risks. Different approaches could be appropriate complements or alternatives to existing risk management tools given the specific nature and challenges inherent in climate-related risks. In particular, a forward-looking approach and data and metrics will be relevant, and more work and time are needed to develop robust data and tools.

From a supervisory perspective, setting out principles or examples of sound practices can be beneficial for topics on which a singular, rules-based approach is too constraining and a variety of practices can be appropriate; it also embodies an element of dynamism

⁸⁶ GARP 2020 (May) [Second Annual Survey of Climate Risk Management at Financial Firms](#).

⁸⁷ Sometimes referred to as Internal Capital Adequacy Assessment Process (ICAAP) with respect to banks and Own Risk and Solvency Assessment (ORSA) with respect to insurers.

as practices evolve over time. It is also a means to enable and encourage firms to take ownership of approaches that are core to their business, which can, by extension, avoid the creation of regulatory compliance exercises.

In general, the global standard-setting bodies have taken a principles-based approach to setting common expectations across countries on topics related to risk management.

For example, refer to the BCBS *Principles for the Sound Management of Operational Risk* (June 2011)⁸⁸, FSB *Principles for an effective risk appetite framework* (November 2013)⁸⁹, BCBS *Corporate Governance Principles for banks* (July 2015)⁹⁰, IAIS *Application Paper on Proactive Supervision of Corporate Governance* (February 2019)⁹¹, and FSB *Effective Practices for Cyber Incident Response and Recovery* (October 2020)⁹². As with these other examples, taking a principles-based approach to climate-related risk management could serve to catalyze firms' internal development of specific regimes and functions for climate risk assessment. This approach would foster dialogue between supervisors and firms about strategic risks and opportunities due to climate/environment-related risks. Similarly, it is important that any principles developed by the global standard-setting bodies are implemented as principles-based expectations by individual jurisdictions and, ultimately, applied as such by individual supervisors.

The principles of proportionality and flexibility will be important as supervisors consider the approaches in different financial institutions.

As part of the supervisory approach there is a need to account for different starting positions and materiality of risks. Some firms will be more affected by certain risks than others depending on their current exposures to climate-related financial risks, e.g., due to the geographical location of their business and assets, availability of insurance and their degree of adaptation and the success of risk mitigation measures. When it comes to client knowledge, assessment of clients' ESG profiles and credit risks, flexibility should be maintained to build expertise and allow financial institutions to perform idiosyncratic risk analysis. Financial institutions and supervisors also need to remain agile to respond as the risk landscape evolves. The ECB has recognized this in its recently finalized Supervisory Guide in which it asks EU banks in scope to assess divergences between their practices and the supervisory expectations and set out a plan to their supervisor on how they will progressively address the expectations⁹³.

⁸⁸ <https://www.bis.org/publ/bcbs195.pdf>.

⁸⁹ https://www.fsb.org/2013/11/r_131118/

⁹⁰ <https://www.bis.org/bcbs/publ/d328.pdf>.

⁹¹ <https://www.iaisweb.org/page/supervisory-material/application-papers>.

⁹² <https://www.fsb.org/2020/10/effective-practices-for-cyber-incident-response-and-recovery-final-report/>.

⁹³ ECB 2020 (November). Section 2.2 'Date of Application'.

A globally coordinated and incremental approach is also important in terms of the scope of expectations - for example, starting with climate risks and then progressing to other environment-related risks as a later step. The BCBS and IAIS could start by developing an initial set of global principles or sound practices for the management of climate-related risks in the banking and insurance sectors, respectively. This would align approaches across jurisdictions around common principles and would significantly help the discussion in supervisory colleges in relation to individual cross-border institutions. The IAIS draft Application Paper on the Supervision of Climate-related Risks in the Insurance Sector is an important step in this direction, with aims to promote a globally consistent approach through an iterative and dynamic process that reflects the evolving understanding of the opportunities and challenges of climate risk⁹⁶.

3.3.1. Evolution of climate-related and environmental risk management practices

In response to an increasing focus on these risks and the evolving suite of standards,

Current challenges in risk management

The banking and insurance sectors are facing some common challenges in relation to the measurement and analysis of climate-related risks. At a high-level, these can be categorized into challenges due to data, methodologies, and integration into risk management frameworks and systems.

Data: There are still significant gaps in the various datasets that are important for the measurement and analysis of climate-related risks. Firms are currently using a combination of public data, client data/discussion, and proprietary data from external providers. A range of data is required, including static and forward-looking information about clients' corporate strategies in response to physical and transition risks. Increasing high quality, consistent, decision-useful, quantitative disclosure by corporate clients will be important to address data-related challenges over time, particularly as the granularity of modelling expectations increase e.g., for scenario analysis. It can be costly to process data and collapse it into key variables, so over time it will be important to identify the key metrics that banks and insurers should continue investing in.

Methodologies/Models: There is a growing number of models for some parts of the analysis process, but there is a paucity of good models for other aspects⁹⁴. There have been initial steps to develop modelling approaches that are practically relevant for mainstream risk management metrics (e.g., UNEP-FI work to formulate of climate-adjusted PD/LGD⁹⁵) but this is still at an early stage of maturity and is reliant on sufficient high-quality data. One challenge is how to account for the appropriate time horizon for climate-related risks, which requires a longer view than current standard risk assessment. Firms have found it beneficial to experiment and use multiple methodologies, but some have noted a risk of a proliferation of divergent methodologies and opportunity for some consolidation to ensure a degree of consistency going forward.

Integration and Mainstreaming: Systems need to be set up appropriately to manage new data and to implement into decision making. Some institutions, including smaller firms, may be reluctant to invest in significant system or process changes if there is regulatory uncertainty - supervisors can help by providing a clear roadmap for their expectations.

⁹⁴ IIF 2020 (August) [Green Weekly Insight: Mapping Transition Risk Tools](#).

⁹⁵ See UNEP-FI 2020 (September) [Charting a New Climate](#).

⁹⁶ IAIS 2020 (October).

guidelines and supervisory expectations, many financial institutions' climate and environmental risk management practices are evolving rapidly. While assessment of climate-related and environmental risks has been undertaken in relation to aspects of financial services for some decades – notably insurance underwriting and project finance – these activities have largely been confined to specific elements of transactions or, when conducted at group level, performed under the auspices of corporate social responsibility.

A key transition that has accelerated in recent years has been a shift towards a systematic understanding of, and response to, climate risks. While a consensus approach for assessing climate change risk has not yet emerged⁹⁷, financial institutions are increasingly finding ways to incorporate these considerations into their core risk management frameworks, established risk management processes and procedures, and risk governance structures. Effective, comprehensive, and decision-useful risk management is necessary to shape the strategic responses of firms to ensure that they are well positioned to manage the impacts of climate change on markets, changing client demands, and the transition to a low-carbon economy. The assessment of environmental risks is at a very early stage compared to that of climate risk; this reflects the focus of the market and regulatory research agenda in recent years, the multi-dimensionality and complexity of environmental risks such as biodiversity and a relative lack of data and scientific consensus.

Banking trends

Analysis is still underway and maturing in the banking industry, but many banks are increasingly viewing climate-related risks as a 'transversal risk factor' or 'risk driver' that drives other classical risks banks manage, including credit, market, operational and legal risks. For this reason, some firms are seeking to integrate climate risks into their existing broader risk management frameworks as appropriate. In a 2019 IIF/EY survey of 94 banks globally, 79% of participating banks responded that they are already incorporating climate change into their risk management to some degree⁹⁸. Many banks perceive that climate risks could potentially have a first-order link to credit risk through impacts on clients' revenues, asset value and changes to operating costs, and some have therefore prioritized their internal analysis on the credit risk transmission mechanism.

Banks are developing and using various climate impact tools to help in risk assessment and investment decisions, including: scenario analysis; scorecard approaches; and bottom-up credit analysis, which are often piloted with certain sectors/clients to make initial progress and inform the initial risk appetite. A variety of tools and methodologies can be beneficial to form a holistic view of climate-related financial risks, for example, using a bottom-up lens focused on specific clients and a top-down lens to account for broader trends. Different tools are useful so that banks can account for the business model viability of their

⁹⁷ As discussed in the November 2020 [Chicago Fed Letter No. 448](#).

⁹⁸ IIF/EY 2019. "[Tenth annual EY/IIF global bank risk management survey: An endurance course: surviving and thriving through 10 major risks over the next decade](#)" (November).

(prospective) clients during the transition, as well as their individual carbon intensity. Some firms are also using tools developed by third parties and non-governmental organizations as inputs to their internal analysis. For example, frameworks for measuring financed emissions⁹⁹ or tools for assessing alignment of financing and investment portfolios with climate goals¹⁰⁰; these tools, which industry stakeholders engage with on a voluntary basis, are still evolving. With respect to banks, the EBA has categorized the range of tools and approaches available into three categories, with some banks combining elements of different methodologies¹⁰¹:

- Exposure methods, which can be applied directly to the assessment of individual clients/exposures potentially in isolation.
- Risk framework methods, including scenario and sensitivity analysis, to assess how climate/sustainability issues affect the bank's portfolio.
- Portfolio alignment methods to assess how aligned a firm's portfolio is relative to global climate/sustainability targets.

Some banks are aiming to eventually arrive at 'climate-adjusted' probability of default (PD) and loss-given-default (LGD) estimates for credit risk models and for a form of 'ESG screening' of clients¹⁰². Firms' approaches employ a range of quantitative and qualitative data, as there is not yet a broadly agreed quantitative approach or sufficient data for mapping to credit risk model parameters. Indeed, insufficient data and few metrics are available to build or back-test statistical models, and what is available is usually limited to specific exposures (e.g., mortgages in a specific geography). At best, firms can derive directional estimates of impact on PD and LGD; however, a directional view can still prove useful for strategic decision making.

Insurance trends

Insurance firms view climate-related risks as relevant to both sides of the insurance balance sheet. On the asset side, climate risks are factored into investment decisions, with some insurers taking the decision to employ exclusionary (and inclusionary) criteria. Some insurers are considering the potential for certain investments or classes of investments to be transmission channels of climate risk to the broader economy and society at large. Climate value-at-risk and carbon intensity measures are being adopted by some insurers to provide a forward-looking valuation measurement that reflects climate risks and opportunities and to assess how climate risks could affect portfolio valuations. Some insurers have set specific climate-related commitments for investment portfolios, including net-zero targets. Insurers are well represented in the United Nations-convened 'Net-Zero Asset Owners Alliance', the

⁹⁹ See, for instance, the Partnership for Carbon Accounting Financials [Global GHG Accounting and Reporting Standard for the Financial Industry](#), released in November 2020.

¹⁰⁰ See, for instance, the [Paris Capital Transition Assessment \(PACTA\)](#) tool, an open-source resource developed by Two Degrees Investing Initiative.

¹⁰¹ <https://eba.europa.eu/eba-launches-consultation-incorporate-esg-risks-governance-risk-management-and-supervision-credit>.

¹⁰² Verbal interventions at the BCBS TFCR industry workshop on climate-related financial risks, October 12-13 2020. BCBS summary available [here](#).

members of which commit to transitioning their investment portfolios to net-zero GHG emissions by 2050¹⁰³.

On the liability side, climate risks are increasingly being factored into underwriting and pricing decisions. The approaches insurers are taking to manage climate-risk run the gamut. Some insurers are declining to insure certain industries that are heavy contributors to or are heavily exposed to climate risks (e.g., coal or other mining industries). Other insurers are focusing on engaging with carbon-intensive clients in order to support them in a transition to low or net-zero carbon emissions, while others straddle both approaches with a combination of engagement and exclusion. A significant proportion of the property and casualty insurance contracts that are most exposed to climate risk are short duration which allows for the risk to be regularly re-underwritten. Pricing or terms and conditions can therefore be adjusted based on a customer's commitment to climate goals and to reflect the customer's climate risk profile. Metrics are being adopted (often based on catastrophe models) to reflect climate risks in the liability portfolio.

Insurers are incorporating climate risks into their business strategies, Own Risk and Solvency Assessments (ORSA) and enterprise risk management frameworks and are assessing the materiality of these risks across business lines and activities. Firms are also reflecting climate concerns in their decisions regarding the building or leasing of office properties and in travel policies.

Recommendations on Risk Management Expectations:

- It would be valuable for the BCBS and IAIS to work closely with the banking and insurance industries, respectively, and leverage existing research and practices to develop meaningful global principles and/or sound practices on management of climate-related risks.
- Priorities for further public/private work include the identification and aggregation of the appropriate data, and maturing modelling for climate risk management.
- In developing its *Application Paper on the Supervision of Climate-related Risks in the Insurance Sector*, the IAIS should focus on sound practices for supervisors as is the stated purpose of an Application Paper. Separately, the IAIS should collaborate closely with industry leaders on climate change risk management issues and initiatives in order to allow industry sound practices to continue to evolve and mature.
- With respect to risk management expectations, a principles-based, proportionate and phased approach is valuable recognizing that as of yet there is no widely agreed methodology for metrics or measurement and there is a lack of robust consistent data, the challenges with certain aspects of risk management in this area, and differences in the nature of certain risks (particularly physical risks) across jurisdictions and individual institutions.

¹⁰³ <https://www.unepfi.org/net-zero-alliance/>.

3.4 Supervisory scenario analysis exercises

In the prudential framework, in addition to a firm’s own internal scenario analysis exercises as part of risk management and business strategy¹⁰⁴, many prudential authorities across the world now regularly run cross-firm stress testing exercises based on common scenarios for banks or insurers in their jurisdiction. After the global financial crisis, there was an increased appreciation for the use of forward-looking analysis to account for extreme but plausible scenarios, and the value of using common scenarios to aid comparability of the results across institutions.

Since approximately 2018, some leading supervisors, including the Dutch National Bank, began conducting forward-looking assessments of potential future climate risk exposures; such exercises are unlike mainstream stress testing in many ways¹⁰⁵. There are important differentiations between these supervisory-led climate scenario analysis exercises and existing ‘mainstream’ stress testing frameworks for financial institutions (such as U.S. CCAR or UK annual cyclical scenario tests for banks and Insurance Stress Tests):

- Climate scenario analysis exercises are designed to take a long-term view of a range of potential pathways for climate-related physical and/or transition risks and understand how they would affect financial institutions and how financial institutions would respond to them.
- Existing mainstream stress tests, on the other hand, are near-term assessments of whether the financial system has sufficient resources to weather macro-financial risks that could crystallize as shocks during over a period when firms have limited time and options to adjust.

So, while the principles of taking a forward-looking view and applying common scenarios across institutions are alike, the two types of exercise are otherwise very different.

An increasing number of supervisors across the world have taken steps to develop and pilot different types of exploratory scenario analysis exercises assessing the impact on the financial system of physical and/or transition risks stemming from climate change. As of December 2020, prudential authorities in at least twelve different jurisdictions have taken action, or announced an intention, to conduct one or more climate-related scenario analysis exercises (a summary of these scenario analysis exercises is included in Annex Table 1). As the table shows, supervisory-led scenario analysis exercises to date have varied significantly in terms of objectives, approaches, firm and risk scope, and time horizons. Over half of the exercises have included a role for in-scope financial institutions to apply (a) common scenario(s) to their own balance sheet and business, as opposed to being run by prudential authorities themselves with reference to public data and other regulatory reporting. Given the novelty of such exercises, they come with certain challenges which need to be taken into account.

¹⁰⁴ And, specifically in the case of climate-related risks and opportunities, also TCFD disclosures.

¹⁰⁵ To avoid confusion, we do not refer to ‘climate stress testing’ in this paper.

3.4.1 Objectives of supervisory climate scenario analyses

The objectives of supervisory climate scenario analysis exercises should be clearly defined and communicated upfront and be used to guide the design and technical specification of the exercises. It is important to reflect on the desired outcomes of an exercise, and the limitations and constraints that may affect capacity to conduct analysis at the firm level, or by the prudential authority itself. At present, there is often little information available to the industry, which often run supervisory-led exercises on their own balance sheets, on the intended use or application of the results of the exercise.

In its June 2020 'Guide to climate scenario analysis for central banks and supervisors,'¹⁰⁶ the NGFS lists four different possible objectives for climate scenario analysis approaches: (1) assessing financial firm-specific risks, (2) assessing financial system-wide risks, (3) assessing macroeconomic impacts, and (4) assessing risks to a central bank's own balance sheet, as appropriate. In practice, many scenario analysis exercises consider a range of objectives, considering that they are not mutually exclusive and can be, in certain cases, reinforcing.

There is value in prudential authorities using coordinated scenario analysis exercises across firms to explore risks to the financial system under different scenarios, identify and assess risks and transmission mechanisms between the financial system and the real economy, and identify and address data gaps that could be hindering data-driven analysis. While supervisory-led climate scenario analysis exercises should have a primarily macro-financial lens, if they involve institutions actively partaking in the exercise they can also complement individual firm's own internal scenario analysis and strategic planning¹⁰⁷.

3.4.2 Design choices and variables

As illustrated in Annex Table 1, there are several design choices around such exercises, which are potential sources of fragmentation between different jurisdictions. The most obvious ones are the **scenarios** themselves. We appreciate the effort of the NGFS to propose a first set of common scenarios in June 2020¹⁰⁸; however, we also acknowledge that national authorities have chosen a variety of scenarios for their specific exercises. While the impact of certain scenarios on different jurisdictions will vary, clear scenarios that are aligned across jurisdictions are crucial to developing a shared understanding of the resilience of business models to the physical and transition risks from climate change. They also enable stakeholders to compare the results of various scenario analyses more easily and identify risks and transmission channels from the macro-environment to the micro business model; this is particularly important if the results of supervisory scenario analysis exercises are externally communicated in any way.

Beyond scenarios, a key variable is the set of time horizons being applied. Climate risks could potentially occur over a much longer timeframe than the normal horizon for financial stress testing given the nature of climate change and, importantly, financial institutions have

¹⁰⁶ NGFS 2020 (June).

¹⁰⁷ In this way, supervisory climate scenario analysis may be directly relevant to prudential authorities' 'alignment' objective and indirectly relevant to their 'resilience' objective, as depicted in Figure 4.

¹⁰⁸ <https://www.ngfs.net/en/communique-de-presse/ngfs-publishes-first-set-climate-scenarios-forward-looking-climate-risks-assessment-alongside-user>.

many options for responding to the risks and opportunities posed by climate change. However, given the current level of maturity of climate scenario analysis it is currently very challenging for financial institutions to quantify impacts over extended time horizons. Discretion and expert judgement will be required, which directly influences the reliability and comparability of the results. This should be factored in when deciding on the communication of the outputs of scenario analysis exercises, in order not to avoid conveying a false sense of precision.

Another important variable is the risk scope of such exercises. Scenario analyses should aim to test the most material risks: eight of the fifteen exercises shown in Annex Table 1 aimed or aim to capture physical and transition risks and the NGFS scenarios include both categories of risks in an integrated framework. Given the uncertainty and novelty of climate-related scenario analysis, **materiality** might well be the key requirement for feasible firm-based exercises.

In order to run these new types of exercises, financial institutions must rely on data which is often currently not available, especially from some of their counterparties. This highlights the importance of using supervisory scenario analysis exercises to identify data gaps that can be filled going forward. Advance consultation with prospective financial sector participants on the parameters and expectations of such exercises is beneficial to avoid formulating unrealistic expectations. Given the uncertainty and novelty of climate-related scenario analysis, taking a proportionate approach that emphasizes material exposures could be a key requirement for feasible firm-based exercises.

3.4.3 Applications and use of results

Given the significant uncertainty associated with climate-related scenario design and the related business analysis when projecting far into the future, it is important not to convey a false sense of precision. This, in turn, should be taken into account when setting objectives for supervisory exercises, and considering the use or application of the results in the context of prudential approaches.

Considering the early stage of development of technical methodologies, authorities should not use the results of climate-related scenario analysis to inform prudential capital requirements. We do not think they should be used to test capital adequacy or inform prudential capital requirements; instead, they should be used to explore system-wide risks and macro-financial links and inform supervisory dialogue and prioritization with individual institutions on their strategic response to any identified financial stability or strategic risks. At this stage, there is also a lack of consideration in these exercises for any mitigating actions banks and insurers can take to minimize potential exposures.

Careful consideration needs to be given to whether and how the outputs from supervisory climate scenario analysis exercises are disclosed to the public. Given the uncertainty and level of judgement involved in these exercises, and potential sensitivity of market participants and other observers to the results, it would be premature to release

institution-specific results on potential risk exposures. This issue has been recognized by some prudential authorities, including the Bank of England¹⁰⁹.

3.4.4 Coordination and learning from exercises to date

Going forward, it is extremely important to take stock of lessons learned from exercises as a baseline for future efforts; the indication by the NGFS to undertake such an exercise in 2021 is welcome in this regard¹¹⁰. As discussed, several prudential authorities have already undertaken or are planning their first supervisory climate scenario analysis exercises. For those exercises that have involved banks or insurers, they required a significant amount of resources to prepare and partake in the exercises, with cross-border institutions taking part in several concurrent exercises.

While reference scenarios and best practices for the execution of scenario analysis released by the NGFS are a very helpful contribution, these materials alone may not provide the necessary framework to strengthen consistency across jurisdictions. This presents challenges to firms, in terms of appropriately responding to a complex and diverse suite of exercises and considering how to adapt their business models in line with different supervisory expectations. It also presents challenges to supervisors' efforts to strengthen comparability, engage with peers in other jurisdictions, and communicate results. It would be valuable for prudential authorities and the industry to collaborate and come to a common understanding on key design parameters, including objectives, scope, methodology, and application.

Recommendations on Supervisory Scenario Analysis Exercises:

- Prudential authorities could clarify the core objectives of climate-related supervisory scenario analysis exercises, recognizing implications for differences in design and application; these could include assessing financial system-wide risks, macroeconomic impacts and macro-financial feedback effects.
- Prudential authorities could endeavor to further clarify the intended uses for the results of supervisory scenario analysis exercises. Given the current status of applicable data and methodologies, authorities should be cautious in any formal use of the results to inform prudential interventions. They should not be used to test capital adequacy or inform prudential capital requirements.
- Prudential authorities could develop new mechanisms for international collaboration and harmonization (see Section 4).

3.5 Regulatory capital

As discussed earlier in Sections 2 and 3, in general significant caution is required before any adjustments are considered for bank or insurance capital requirements given their

¹⁰⁹ "The Bank does not intend to disclose the results of individual firms. This reflects the exploratory nature of the exercise." <https://www.bankofengland.co.uk/-/media/boe/files/paper/2019/the-2021-biennial-exploratory-scenario-on-the-financial-risks-from-climate-change.pdf>

¹¹⁰ Mandates for the five NGFS work-streams to 2022 are available on the [NGFS website](#).

importance as a cornerstone of the global prudential regime¹¹¹. This section discusses different positions in the debate on the potential use of regulatory capital requirements in light of climate-related and environmental risks and objectives.

Some authorities and commentators have started to consider whether and how climate-related risks should be reflected in regulatory capital requirements. For example, Anna Sweeney, Executive Director for Insurance at the UK Prudential Regulation Authority (PRA), recently commented in a speech that *“it is therefore possible that the incentives to address climate change risk for both firms and supervisors could be enhanced if it were incorporated explicitly into firms’ capital requirements. Whether and how this should be achieved is not an easy question to answer.”* The European Commission and the European Parliament have discussed the introduction of a “green-supporting factor” (GSF) to reduce capital requirements for financial firms with lower exposure to climate-related risks¹¹². Similarly, there have been proposals for a “brown-penalizing factor” (BPF) to increase capital requirements for carbon-intensive sectors¹¹³. In fact, there is a variety of ways similar tools could be designed and implemented, as discussed in a March 2020 Institute for Climate Economics report, such as combining a GSF and BPF, measuring ‘environment-risk weighted assets’ or using a ‘green weighting factor’¹¹⁴ that is related to a sustainability score¹¹⁵. Unless referring to a specific construct, the discussion that follows in this paper refers to “Climate/Environment Capital Adjustments” (CECAs) as shorthand for any mechanism that seeks to adjust capital requirements at the exposure level for the degree of environmental or, as is discussed more commonly at present, climate-related risks or opportunities.

Currently, the majority of global bank and insurance members of the IIF do not think it would be appropriate for prudential authorities to use regulatory capital requirements in relation to climate-related or environmental risks; other tools are better suited for responding to those risks. Firms’ internal risk management processes are a strong tool for managing an evolving risk such as that emerging from climate change and supervisors have a number of ways (discussed in previous sections) to intervene to encourage sound and consistent practices across the banking and insurance industries, respectively. There are important conceptual and practical challenges associated with using prudential capital to respond to climate-related and environmental risks, which are further discussed below.

¹¹¹ We recognize that the bank and insurance capital standards are significantly different in design, maturity, scope and jurisdictional application. This paper is not a detailed discussion of specific issues as they relate to the banking or insurance business models or prudential regimes respectively, but we do draw on examples from IIF member banking and insurance institutions and discuss the banking and insurance prudential frameworks at a high level.

¹¹² For more on the “green-supporting factor,” see [the Action Plan on Sustainable Finance](#) adopted by the European Commission in March 2018.

¹¹³ For example, Finance Watch (2018). [“A green supporting factor would weaken banks and do little for the environment.”](#) (February)

¹¹⁴ Already used by Natixis.

¹¹⁵ Institute for Climate Economics 2020. [“Integrating Climate-related Risks into Banks’ Capital Requirements”](#) (March). Hereafter referred to as “Institute for Climate Economics 2020 (March)”. In 2019, the European Banking Federation (EBF) proposed that the EBA consider a [‘Sustainable Finance Supporting Factor’](#) which was intended to be deployable for specific activities or projects that are demonstrably lower in credit risk.

Although beyond the scope of this paper, there is also an emerging discussion about 'green' bank capital instruments such as AT1 hybrid or Tier 2 debt instruments. There is growing investor demand for sustainable debt instruments, and some financial institutions are exploring this avenue as a way to raise funds towards targets and commitments related to climate or sustainable development goals while still meeting prudential requirements for bank capital instruments¹¹⁶. This is a new and emerging idea, which could be an area for future collaborative research between the public and private sectors.

3.5.1 Pillar 1 and Pillar 2

It is important to distinguish between minimum capital requirements - known as the Pillar 1 standard within the BCBS framework for banks - and supplemental, firm-specific additional capital requirements - known as Pillar 2 within the BCBS framework¹¹⁷. In those jurisdictions that are already applying or have proposed climate-related supervisory guidelines and standards (such as the UK¹¹⁸ and ECB¹¹⁹), any discussion of capital adequacy relates to the supervisory assessment of a bank or insurer's own solvency assessment (sometimes referred to as the ICAAP for banks and the ORSA for insurers).

As discussed in section 3.2, in the near term it is important for prudential authorities to continue engaging with banks and insurers to discuss the nature of the risks to their balance sheets and business strategies due to climate changes as part of the supervisory review process. Firms' internal risk management processes are a strong tool for managing an evolving risk such as that emerging from climate change. Supervisors can engage with firms on risk assessment and management under the supervisory review process.

According to a BCBS stock take in 2019, banking supervisors in at least one jurisdiction have already started to integrate climate-related risks into the Pillar 2 supervisory review process, but not with the intention of setting additional capital requirements at this time¹²⁰. Importantly, supervisors or supervisory colleges could in the future use firm-specific capital requirements as a more holistic tool if they are concerned about any firm-wide risks to an institution. This could prove effective should prudential authorities become concerned that a financial institution is not appropriately accounting for climate-related financial risks.

That said, for banks, perhaps the higher profile discussion of capital requirements to date has been in relation to Pillar 1: standardized approach risk weights or banks' internal ratings-based regulatory capital models, the parameters of which are determined by the BCBS for banks. Risk-weighted Pillar 1 capital requirements are, by design, much more exposure-specific; they are designed to reflect the quantum of capital resources that may be depleted if

¹¹⁶ See for example: <https://www.globalcapital.com/article/b1jcz5qrs7d4zm/green-capital-a-new-frontier-for-banks> and <https://www.ifre.com/story/2466034/debate-continues-on-green-bank-sub-debt-l5n2ev3xx>.

¹¹⁷ We recognize that Pillar 2 is a term used in the banking capital framework only. The term is used to refer to firm-specific measures applied as part of the supervisory review process.

¹¹⁸ See UK PRA [Supervisory Statement \(SS3/19\)](#) and subsequent July 2020 [Dear CEO letter](#) from Deputy Governor Sam Woods.

¹¹⁹ ECB 2020 (November).

¹²⁰ BCBS 2019. "[Overview of Pillar 2 supervisory review practices and approaches](#)" (June). See Case study: *Integrating climate-related risks in the supervisory review process*.

tail risks materialize and there are so-called ‘unexpected losses’ on an exposure¹²¹. The EBA has a mandate from the European Commission to provide a report by June 2025 to “assess whether a dedicated prudential treatment of exposures related to assets or activities associated substantially with environmental and/or social objectives would be justified (as a component of Pillar 1 capital requirements).”¹²² There are some emerging examples of national authorities introducing ‘green preferential’ capital requirements, such as the Hungarian Central Bank (MNB) which, in December 2020, introduced preferential capital requirements for green corporate and municipal financing via a reduction in Pillar 2 capital¹²³, which follows an earlier MNB measure in 2019 in the form of a time-limited reduction in the capital requirement for loans serving energy efficient homes¹²⁴.

3.5.2 A risk-based approach to evaluating Pillar 1 capital requirements

While the search for evidence is underway, many prudential authorities do not consider there to be sufficient evidence to differentiate capital requirements on the basis that ‘greener’ (less carbon intensive or otherwise more sustainable) exposures are significantly more or less likely to incur losses than other types of exposures. Andrea Enria, Chair of the Supervisory Board of the ECB, has advocated for a firmly risk-based approach: “any capital relief for green assets must be based on clear evidence that they are less risky than non-green assets.”¹²⁵ Similarly, in its Opinion on Sustainability Within Solvency II, the European Insurance and Occupational Pensions Authority (EIOPA) opined that, “within a risk-based framework like Solvency II any change to capital requirements must be based on a proven risk differential compared to the status quo. Assessment of the underlying risk is therefore also the starting point and guiding principle for the analysis and opinion on capital requirements related to sustainability.”¹²⁶ In May 2020, the NGFS concluded based on a survey of global financial institutions that “the survey does not allow us to conclude on a risk differential between green and brown assets. Overall, it appears that in all but a few jurisdictions the prerequisites for tracking the risk profile of green or brown assets are not yet in place.”¹²⁷ Academic analysis of this question is also underway, but the results can be hard to generalize across exposures or countries¹²⁸.

Some have suggested that a new approach to defining ‘risk-based’ could be important given the nature of climate-related risks. They suggest that applying a different time horizon and approach to measuring these risks is important given their increasingly extreme

¹²¹ As opposed to ‘expected losses’ which must be provisioned for.

¹²² A European Commission legislative proposal may follow, if appropriate. Article 501c of EU CRR 2.

¹²³ See press release [here](#).

¹²⁴ Introduced in December 2019. For more information see this English translation from the MNB: <https://www.mnb.hu/letoltes/notice-preferential-green-capital-requirement.pdf>.

¹²⁵ Enria 2019. “*Regulation, proportionality and the sustainability of banking*” (21 November).

¹²⁶ EIOPA 2019. “*Opinion on Sustainability within Solvency II*” (30 September).

¹²⁷ NGFS 2020. “*A Status Report on Financial Institutions’ Experiences from working with green, non green and brown financial assets and a potential risk differential*” (May). Page 5. Report hereafter referred to as “NGFS 2020 (May-ii)”.

¹²⁸ For example, see this [Bank of England Working Paper](#) from January 2020, which finds that energy efficiency is a relevant predictor of mortgage defaults for mortgages extended in England and Wales since 2008.

anticipated effects over the medium to long-term, which are influenced by actions taken today¹²⁹.

Regardless of how ‘risk-based’ is defined in the context of climate-related risks, there are some fundamental prerequisites for considering climate/environmental capital adjustments within Pillar 1, or any similar insurance standard, which are not yet in place.

First, exposures would need to be classified in a way that supports the identification of climate-related and environmental risks based on relevant qualitative and quantitative indicators and accounting for different geographies, sectors and counterparty-specific factors. In addition, a significant quantity of meaningful performance data is another fundamental prerequisite, for which there is an added challenge that alternative types of data may be needed to reflect the dynamic nature of assessing physical and transition risks. While efforts are underway to establish these foundations, time is required for these elements to develop, mature and become established. For example, increased TCFD disclosure by corporate clients would increase the available data on climate-related risks, and opportunities, that banks and insurers have ready access to.

Other conceptual challenges with climate/environmental regulatory capital adjustments (CECAs) would also need to be addressed.

For example, climate/environmental capital adjustments are often discussed at the level of specific assets (e.g., coal-fired utility plant, or wind farm) or activities. However, much bank and insurance lending, underwriting and investment is made to companies rather than to specific assets or projects and there are few companies that are currently ‘pure green’ or ‘pure brown’¹³⁰. In addition, it will be important to avoid building unintended bias into the prudential framework that discourages investment in emerging markets, some of which are particularly vulnerable to physical risks¹³¹ and which will need to play an inclusive role in the global economic transition to a lower carbon economy¹³².

Should the criteria for implementing CECAs be met in the future, there is uncertainty around how the adjustments could be calibrated in a data-driven manner and about the precise impact of a policy change.

These topics are further discussed in Box 2 below: as discussed there, the impact on lending to, underwriting or investing in, certain sectors is hard to anticipate *ex ante* and depends on a number of other factors including the financial institution’s own business strategy and capital adequacy. Potential unintended consequences also need to be considered, including whether introducing CECAs for banks and insurers would simply push the financing or underwriting of less environmentally sustainable activities to entities outside of the prudentially regulated system. While this could narrowly address the objectives of microprudential authorities, it would have unknown effects on wider financial

¹²⁹ As one example, this argument has been in strong terms by some academics (e.g. [Chenet, Ryan-Collins, van Lerven](#) (2019)).

¹³⁰ Some methods are being proposed to overcome this issue, for example defining the proportion of a company’s activities that are more sustainable.

¹³¹ FSB 2020 (November). See Box 1.

¹³² For example, IIF 2020. ‘[Taskforce on Scaling Voluntary Carbon Markets: Consultation Document](#)’ (November); IIF 2020.

‘[Financing a Sustainable Future for Emerging Markets](#)’ (October 12); IIF 2020. ‘[Green Weekly Insight: China’s Energy Transition - Enter the Dragon](#)’ (October 8).

stability and would not support broader policy objectives of aligning the financial system with decarbonization objectives.

It is extremely important to holistically account for the implicit incentive effects of changes in regulatory capital requirements. Capital risk weight adjustments would implicitly contribute to incentivizing or disincentivizing lending to, or investing in, certain sectors. It is therefore important to consider the “fifty shades of green”¹³³ and ensure that currently carbon-intensive sectors that will remain critical in future (e.g., transport, chemicals) receive financing to help them adapt their business models over time. Similarly, how capital requirements will apply to emerging technologies and markets that will be important to the transition will also influence financial institutions’ incentives to channel financing towards them and to underwrite their risks. Although it is not straightforward to anticipate the general equilibrium effect of adjustments to capital requirements, it is important to factor in incentive effects that may be implicit as well as explicit.

Before considering any adjustments to regulatory capital requirements, it is important to examine whether and how the current framework already does, or has the capacity to, capture and capitalize for some climate/environmental risks¹³⁴. For example, but not an exhaustive list:

- Via the impact of credit ratings on capital requirements, which can be an input to standardized approach capital calculations and firms’ internal models. If credit rating agencies start to systemically account for climate-/environmental- aspects in their credit assessments, which seems to be the direction of travel¹³⁵, there would be a direct impact on some bank and insurance capital requirements.
- Given the leverage ratio backstop, which capitalizes in a non-risk-based way for so-called “known unknown” risks of banking organizations.
- Accounting for the impact of firm-specific capital requirements/add-ons, including as a result of national stress testing exercises, which result in many large banks and insurers in particular having significantly higher capital requirements than implied by Pillar 1 minimum requirements.
- In the future, following the implementation of the Basel III output floor and model input floors, which further constrain the impact of IRB models on regulatory capital outcomes.

It is equally important to assess the current framework to determine whether it creates any unintended effects at present. For example, if financial institutions start to increasingly take a longer-term, forward-looking view to account for climate-related risks in their internal

¹³³ Phrase coined by Mark Carney. For example, see <https://www.imf.org/external/pubs/ft/fandd/2019/12/a-new-sustainable-financial-system-to-stop-climate-change-carney.htm>.

¹³⁴ The NGFS referred to this at a high-level in their May 2020 [Guide for Supervisors](#): “Furthermore, more analysis is needed in relation to what extent the current framework already captures the new risk drivers.”

¹³⁵ For example [Moody’s recently updated its methodology for assessing environmental, social and governance risks](#) (December 2020). Also see: Fitch Ratings (2020), “[Climate Change Impacts on Sovereign Ratings: A Primer](#)” (June); Moody’s Investment Services (2020). “[Heat map: 13 sectors with \\$3.4 trillion debt face heightened environmental credit risk](#)” (December); S&P Global Ratings 2017. “[How Environmental and Climate Risks and Opportunities Factor Into Global Corporate Ratings - An Update](#)” (November).

risk management and solvency assessment, a gap may emerge with current regulatory capital standards which could constrain appropriate and dynamic risk management.

We recommend that microprudential authorities, through the global standard-setting bodies, take stock of how current regulatory capital frameworks capture and treat climate/environment-related risks as a baseline. This will help to avoid double-counting and ensure that any future adjustments to the framework are coherent and aligned with policymaker's overarching objectives.

3.5.3 Concerns with going beyond risk

There is another argument that regulatory capital requirements should be used to encourage greener lending, underwriting and investing, even in the absence of clear evidence of a risk differential on certain measures¹³⁶. The above-mentioned Institute for Climate Economics report distinguishes two potential rationales for using capital requirements in this way: the risk approach discussed above, recognizing the complex nature of the risks posed by the climate and environment, and an 'economic policy approach' which aims to orientate the market's financial flows towards a low-carbon economy. This debate speaks directly to the objectives of the prudential/supervisory framework as discussed in Section 2, and this line of reasoning would be a significant departure from the approach to setting global capital requirements for banks and insurers, which have been built on a foundation of being risk-based and aspiring to be sector neutral.

Although there are precedents for this sort of approach (i.e., using the regulatory capital framework for the purposes of social objectives) in some jurisdictions¹³⁷, there are many challenges and drawbacks associated with changing the fundamental objectives and approach to capital requirements to account for climate- and environment-related risks.

In particular, using regulatory capital as a tool to incentivize particular economic activities *and* at the same time a tool to ensure firm resilience could compromise its ability to achieve either objective¹³⁸. It is an indirect and non-transparent way of trying to influence real economic activity from the supply side in the financial sector rather than directly on the demand side, for example with a carbon tax on environmentally harmful activities. It may also have unintended consequences, such as restricting the flow of finance to industries that need to transition their activities. It is also very important to safeguard the reliability of bank and insurance capital requirements as indicators of risk for market participants¹³⁹. These challenges may explain why a recent OMFIF-Mazars survey indicated negative views among prudential authorities on the use of microprudential tools (such as adjustments to capital risk weights) to try to channel private funding to address climate change issues¹⁴⁰.

¹³⁶ Finance Watch 2020. "[Report - Breaking the climate-finance doom loop](#)" (8 June). Institute for Climate Economics 2020 (March).

¹³⁷ For example, the existing SME supporting factor and forthcoming infrastructure supporting factor in the European Union.

¹³⁸ This is known as the Tinbergen Rule economics, referring to Tinbergen (1952). "*On the theory of economic policy*".

¹³⁹ For example, consider the credibility challenges with bank capital ratios during the 2007-08 global financial crisis, which required significant changes to capital requirements thereafter.

¹⁴⁰ OMFIF-Mazars 2020. "[Tackling Climate Change: The role of banking regulation and supervision](#)".

3.5.4 Macroprudential considerations

Given the feedback loops to the financial system due to the impact of climate-related and environmental risks on the real economy, prudential authorities could also consider climate-related and environmental risks within their macroprudential mandates. As discussed in sections 2.2-2.3, there is a strong case that climate-related and environmental risks are equally relevant to macroprudential policymaking as to microprudential supervision. It will be important for macroprudential authorities to develop tools and indicators to monitor systemic risks originating from the climate or environment, for example the use of system-wide climate scenario analysis exercises. System-wide monitoring also has an important interplay with microprudential supervision: it provides the context within which supervisors can monitor and assess individual institutions' strategic and risk profiles, and can provide a top-down view of the most material risks to financial stability which can support prioritization at the microprudential level.

The macroprudential toolkit is specifically designed to be country-specific - allowing national authorities to respond to risks in their local market - and to co-exist with the microprudential toolkit. In this way, it could be considered by prudential authorities in the future as a way to remain true to their risk-based objectives, while still accounting for the complexities and potential systemic nature of climate-related and environmental risks to the financial system. Tools such as sectoral capital requirements, which exist under the EU CRDIV, could be used on a time-limited basis and targeted at financial institutions' exposures to certain sectors or exposures if systemic risks are emerging. These could be any risks that may emerge associated with the transition, including stranded assets or potential 'green bubbles', or physical risks.

Recommendations on Capital:

- Other tools than changes to capital requirements - such as risk management guidelines - are better suited for use as the principal supervisory response to climate-related and environmental risks.
- However, if in the future prudential authorities start to see a build-up of systemic risks driven by climate-related or environmental factors, they could consider whether to use enhanced supervisory mechanisms (e.g., under BCBS Pillar 2 for banks) and/or the macroprudential toolkit to address risks in a targeted way with due consideration for the data and methodological limitations.
- The BCBS could take stock of how the current BCBS framework captures and treats climate-related and environmental risks.
- The IAIS could take stock of how the ICPs and ComFrame capture and treat climate-related and environmental risks.

Box 2: Qualitative discussion of considerations and challenges associated with adjusting regulatory capital risk weights for climate-related risks

Can capital risk weights (RWs) be re-evaluated in a data-driven way in light of climate-related risks?

There are clear limits to using historical time series data for this since it requires modelling for a structural break in macro-financial conditions and potentially new asset classes. However, historical data could be used as inputs to simulations, for example to model the impact of a retroactive carbon price.

The NGFS has generally suggested that, "given the current limitation of historical data, forward-looking methodologies are good alternatives for exploring the impact of climate change."¹⁴¹ In the case of risk weight calibration, scenario analysis could be used to generate hypothetical loss distributions for exposures under different states of the world to which a probability could be assigned. This approach could be used to estimate risk weights for new types of assets (such a so-called 'green' bonds and loans) or assets that may see a structural break in their loss profile due to transition or physical risks.

Path dependency can have important implications: the likelihood of different states of the world will change over time depending on how the environment, economy, technology and policy environment changes. For capital requirements to remain appropriately risk-based and data-driven, it would be necessary to review and adjust them dynamically over time to account for the changing underlying loss distribution of certain sectors and counterparties.

Qualitative considerations for assessing the impact of risk weight changes

The impact on lending to, underwriting or investing in, certain sectors and the 'general equilibrium'¹⁴² effect across the economy is hard to anticipate *ex ante*. Previous experience may not be a good guide to future behavior¹⁴³. Ultimate impacts will depend on a number of factors, including:

- Calibration. In general, a large adjustment would have a greater effect but there is potential for unintended distortions of financial institutions' decisions if the calibration goes too far, for example if it is 'unduly' favorable/penal for certain sectors.
- Substitution potential. Financial institutions' capacity to conduct portfolio adjustments will depend on the number of industries and companies affected by the change in capital requirements.
- Competition from other regulated and non-regulated providers. The economic impact of an adjustment may be muted if non-regulated entities step in to fill gaps in service provision. Generally, a more competitive marketplace means financial institutions are less likely to pass on the cost of the higher capital requirement but may reduce their activities. Larger companies in the real economy that can access capital markets may be less affected than smaller companies who are more dependent on bank credit¹⁴⁴. Non-banks may continue to finance higher carbon sectors with more attractive terms than banks.
- Interaction with financial institutions' own strategies. Financial institutions' voluntary climate-related strategies and initiatives (e.g., setting net-zero portfolio targets, etc.) could amplify the effect of any regulatory risk weight adjustments.

¹⁴¹ NGFS 2020 (May-ii). Page 19.

¹⁴² General equilibrium used to mean referring to the economy as a whole, rather than analyzing single markets on their own.

¹⁴³ FRB of Philadelphia 2020. "[Banking Trends: Do Stress Tests Reduce Credit Growth?](#)" Examines the academic evidence and finds that most rigorous empirical analyses reviewed show that banks more affected by the supervisory stress tests reduced their credit supply, and none of the papers found evidence that these banks increased risk-taking.

¹⁴⁴ In some markets, particularly for residential mortgages, nonbank lenders have taken a significant market share in the post-GFC years. (For example, [Buchak et al. \(2017\)](#) find that the nonbank share of the U.S. mortgage market nearly doubled from 2007 to 2015.)

- Incentive effects. Capital risk weight adjustments would implicitly contribute to incentivizing or disincentivizing lending to, underwriting or investing in certain sectors. It is therefore important to consider the “fifty shades of green” and ensure that currently carbon-intensive sectors that will remain critical in future (e.g., transport, chemicals) receive financing to help them adapt their business models over time.
- Potential for unintended consequences. There are many potential unintended consequences that ought to be analyzed *ex ante*. One example is if some banks or insurers may continue to lend to, underwrite or invest in certain carbon-intensive clients despite higher capital requirements because of existing relationships, and reduce lending elsewhere to compensate¹⁴⁵.
- In general, the impact at the level of individual institutions is likely to be influenced by how binding capital requirements are.

Importantly, from a cost-benefit analysis perspective, introducing a ‘green/brown’ differential is unlikely to have the same type of impact as a generalized change in capital requirements (e.g., due to Basel III) or an isolated adjustment to a single exposure type (e.g., SME supporting factor in the EU). It may be more akin to the impact of stress testing on financial institutions’ lending decisions, which is not clear-cut and still the subject of research¹⁴⁶.

4. Priority Actions for a Coordinated Prudential Response

4.1 The importance of international coordination

In order for the financial system to be able to effectively deliver on climate and environmental priorities, financial institutions need clarity on the prudential framework - in terms of objectives, boundaries, etc. - to guide their strategies for supporting the transition. Many banks and insurers are making significant investments to reorient their businesses to analyze and reflect the impacts of climate-related risks and opportunities, including developing new methodologies, datasets and processes. Current and planned efforts - for example, within the NGFS - to advance from the recent period of independent experimentation by prudential authorities, and draw lessons for the development of common approaches, are welcome and necessary. However, a clear roadmap towards international frameworks is needed in the near term, recognizing that such frameworks will inevitably mature over time. There is also a need to share experience between the industry and supervisors given that practices are rapidly evolving.

Addressing risks of fragmentation in prudential approaches to climate-related and environmental risks is critical from both a comprehensiveness perspective (e.g., ensuring that the global nature of climate risk is appropriately accounted for) and an effectiveness perspective (e.g., consistency of expectations applicable to cross-border banking and insurance groups). The FSB and others recognize the potential for cross-border transmission of climate-related risks or an ‘accelerating cluster’¹⁴⁷ of events with global implications. In its

¹⁴⁵ This would be akin to a ‘Giffen good’ effect. In microeconomics, a Giffen good is a product that people consume more as the price rises and vice versa, violating the law of demand. In a capital requirements context, this phenomenon is discussed by [Corrias and Neumann \(2015\)](#).

¹⁴⁶ US Federal Reserve Board 2020 (Finance and Economics Discussion Series 2018-087). [“The Impact of Post Stress Tests Capital on Bank Lending”](#).

¹⁴⁷ Phrase used in Chicago Fed Letter, No. 448, 2020. [“A New Framework for Assessing Climate Change Risk in Financial Markets”](#) (November).

November 2020 report¹⁴⁸, the FSB discusses ways that global contagion could amplify the consequences of shocks due to climate change including via the co-movement of risk premia on assets and via the cross-border provision of finance by banks, insurers and asset managers. The FSB also notes the potential risk mitigation effects of financial institutions' cross-border exposures if they unlock the benefits of greater diversification across local climate risks and efficient risk-sharing mechanisms. These potential dynamics show that financial stability in the face of transition and physical risks must be considered from a global perspective, extending to the supervisory and policy response.

Regulatory uncertainty, complexity and fragmentation will impede the ability of the financial sector to mobilize effectively to provide the types and volume of credit, investment and insurance underwriting necessary to unlock transition opportunities¹⁴⁹.

A disaggregated and competing approach to policy development in this complex area could affect the quality of the resulting policy frameworks. There is also a risk that activity will migrate to parts of the global financial system that are less stringently regulated or not subject to the same standards. A global policy response should acknowledge different perspectives on sustainability topics, including regional differences, and accommodate these where possible. However, there are some areas (e.g., disclosure) where more harmonized approaches may be helpful both from an efficiency and effectiveness perspective.

Formal supervisory coordination and collaboration, alongside engagement in voluntary international dialogue, will be key to agreeing on common objectives and a shared roadmap. At the jurisdictional level, several major prudential authorities have indicated their intentions to continue to advance work on climate-related and environmental risks on multiple levels in 2021. However, coordination and collaboration through global standard-setting bodies and, with respect to individual institutions, in supervisory colleges would help accelerate knowledge sharing, achieve greater consistency in the emerging prudential supervisory framework and, overall, improve the effectiveness of the prudential policy response given the global nature of the challenge. As well as the existing fora, new mechanisms for coordination and collaboration could be developed as discussed in section 4.1, below.

More broadly, supervisory coordination on climate-related and environmental risks should be complemented where appropriate by engagement with industry through open and transparent consultative processes, especially on items where industry stakeholders are advancing voluntarily. We believe that climate risk assessment should be a collaborative effort between the international standard-setting bodies and the private sector. There are clear shared interests in the sustainable finance agenda and both sectors bring helpful perspectives and resources, with neither having a clear advantage in terms of information or experience. Moreover, both public and private sectors will be held to account

¹⁴⁸ FSB 2020 (November).

¹⁴⁹ Discussed in greater detail in IIF 2020 (March).

by the broader public for progress towards a more sustainable economy. Collaborative efforts would therefore be an efficient and effective way forward. The financial industry is ready and willing to engage further with the relevant standard setters, leadership coalitions, and others to help shape an effective prudential approach for climate-related and environmental risks.

There are multiple international efforts underway and planned which can support progress on these priorities. In the voluntary coalition space, the NGFS has set out a work program of actions until the end of 2022, indicating its intention to further develop reference scenarios, conduct additional research on green/brown risk differentials, and explore data challenges through a new dedicated workstream¹⁵⁰. Speaking at the IIF Annual Membership Meeting in October 2020, BCBS TFCR Co-Chair Kevin Stiroh indicated that the TFCR aims to complete its research work on understanding climate risk transmission channels and measurement methodologies by mid-2021, after which the *“TFCR will consider the extent to which climate-related financial risks are incorporated in the existing Basel Framework, and identify effective supervisory practices to mitigate such risks.”*¹⁵¹ In the consultation draft of the Application Paper on climate-related risks, the IAIS is already proposing additional guidance to support supervisors in their efforts to integrate climate-related risks into supervisory frameworks.

Beyond these planned activities, we believe that there are several important near-term action items that policymakers could consider undertaking, which could catalyze and enable enhanced industry responses to climate risk. Below, we suggest some key priorities for action by prudential authorities, standard setters and the industry in 2021 leading up to the rescheduled COP26 in November 2021, and further considerations to guide action over the course of this decade. A step-by-step approach will be required to develop sound international frameworks that foster harmonization between countries and prioritization will be a necessary part of a sequential, pragmatic and proportionate approach.

4.2 2021 Roadmap: Priorities for Action

1. International standard-setting bodies should consider clarifying the building blocks of common approaches - with an initial core focus on climate-related risks - and defining expectations for future work and coordination.

By end-2021, the global standard-setting bodies should agree on a common roadmap of work on climate and environmental risk, with a defined role for the FSB to address inter-sectoral effects and broader systemic issues. This should consider and integrate insights from the planned work of the NGFS with an aim of moving from independent experimentation by prudential authorities towards common priorities and approaches and, ultimately, international frameworks. We would encourage the NGFS to continue to play a key role as a

¹⁵⁰ Mandates for the five NGFS work-streams to 2022 are available on the [NGFS website](#).

¹⁵¹ Stiroh 2020. [“The Basel Committee’s initiatives on climate-related financial risks”](#) (14 October).

platform and forum for authorities to exchange views and leading practices with regards to climate-related risks for the financial sector and the development of sustainable finance. This could complement any work that is undertaken by the FSB and global standard setters to contribute to considered and balanced policy development over time.

2: Prudential Authorities should enhance mechanisms for cooperation and collaborative advancement.

Individual prudential authorities could consider developing platforms for jointly conducting climate and environmental scenario analysis exercises across jurisdictions.

Cross-jurisdictional exercises could be helpful to accelerate learning and assess spillover and feedback effects. Two models could be pursued, for example:

- **Supervisory colleges** are a natural platform through which cross-jurisdictional analysis and comparisons of individual firms' risk exposures and alignment strategies could be compared.
- **Centrally-coordinated exercises**, similar in some respects to BCBS Quantitative Impact Studies¹⁵², and development of a common playbook for the evaluation of industry data.

Prudential authorities could explore options for creating centralized 'analytical utilities' and projects for the assessment of climate-related and environmental risks, including for data pooling and model development across jurisdictions. Once developed, these could be made available to firms globally which could also level the playing field in terms of technical capabilities and increase the rate at which climate-related and environmental risk management matures across the global industry.

Prudential authorities could also engage with other relevant government institutions and policymakers to explore the establishment of **national-level regulatory and ministerial climate coordination bodies**, as a means to structure engagement with other authorities on climate risk and alignment topics. These could involve finance ministries, environmental ministries, and other regulators to help link the prudential approach and supervisory intelligence on climate risk and resilience to other policy development processes relevant to broader macroeconomic climate alignment. This approach would be in line with recent recommendations from the G30 for governments to delegate key decisions on climate action, including the calibration of tools to reach climate goals, to independent "Carbon Councils," citing the success of central bank independence as a precedent for boosting policy credibility on technical topics¹⁵³.

3: Industry and supervisors should engage in ongoing and structured dialogue on climate risk and system-wide alignment at jurisdictional and global levels.

International industry/supervisory collaboration platforms, such as 'regulatory sandboxes,' should be developed to share experiences and emerging sound practices. Such platforms could be used to accelerate the development of modelling approaches and

¹⁵² See <https://www.bis.org/bcbs/qis/>.

¹⁵³ See Recommendation 2d in G30 2020 (October).

overcome some of the present challenges to risk management and scenario analysis and potentially develop common tools/utilities to support prudential authorities and individual institutions in the future.

The financial industry would value greater opportunity to provide input via consultations and other formal engagement processes that are well established at the level of the global standard-setting bodies. Another advantage of elevating policy discussions on climate-related and environmental risks to the global standard-setting bodies is that they would benefit from this important and established process for transparent consultation, review, feedback and ‘open source’ development of approaches on highly technical and challenging topics. This would bring the combined benefits of public and private sector expertise in a structured way. The IIF would be pleased to help organize such platforms and convene industry participation.

Afterword: Looking forward to 2030

The world of 2030 will be significantly different than our world of today. Developments in recent years – and over the course of 2020, in response to the COVID-19 pandemic – illustrate the potential for non-linear, rapid, and durable changes in consumer behavior, economic organization, and social sentiment. Technological innovation and market dynamics, which have been a core driver of the low-carbon transition in recent years, are likely to be accelerated as more governments set ambitious climate and environmental goals. An increasing prevalence of net-zero commitments may lead to differentiation of the ‘aligned’ vs. ‘non-aligned’ economy. Increasing physical climate damages over the coming decade may influence the capacity for extension of financial services; risk premia may rise beyond manageable levels or raise consumer prices beyond willingness to pay, resulting in assets being rendered un-bankable or un-insurable. Also, while the global response to climate change may yield a renewed multilateralism, climate-related disruptions may result in protectionism, barriers to cross-border investment, and potentially conflict.

All of these potential future trends raise important questions about the role of supervisors and prudential authorities in the years ahead. Considering the potential dynamic intensification of climate impacts, rapid industry innovation, and potential for a significant acceleration of government ambition, we would encourage prudential authorities to conduct a scenario analysis of their own roles under different potential climate futures. There are several potential pathways on which the prudential response to climate-related and environmental risks could evolve. An important component of this will be a regular re-evaluation of prudential authorities’ own policy responses, based on continued transition monitoring and forecasting of risks as we progress through a decade of dynamic action.

Glossary of acronyms

AT1	Additional Tier 1 Capital	ICP	Insurance Core Principles
BCBS	Basel Committee on Banking Supervision	IFRS	International Financial Reporting Standards
BIS	Bank for International Settlements	ISDA	International Swaps and Derivatives Association
BPF	Brown-Penalizing Factor	IRB	Internal Ratings-Based
CB	Central Bank	LGD	Loss Given Default
CCAR	Comprehensive Capital Analysis and Review		
CECA	Climate/Environment Capital Adjustments	NDC	Nationally Determined Contributions
CFTC	Commodity Futures Trading Commission	NGFS	Network of Central Banks and Supervisors for Greening the Financial System
COP26	2021 United Nations Climate Change Conference	ORSA	Own Risk and Solvency Assessment
CRDIV	EU Capital Requirements Directives IV	OTC	Over-the-Counter
CRR (II)	Capital Requirements Regulation (II)	PACTA	Paris Agreement Capital Transition Assessment
EBA	European Banking Authority	PCAF	Partnership for Carbon Accounting Financials
ECB	European Central Bank	PD	Probability of Default
EIOPA	European Insurance and Occupational Pensions Authority	QIS	Quantitative Impact Study
ESG	Environmental, Social, and Governance	RRP	Recovery and Resolution Planning
EU	European Union	RW	Risk Weight
FASB	Financial Accounting Standards Board	SASB	Sustainability Accounting Standards Board
FI	Financial Institution	SBTi	Science Based Targets Initiative
FSB	Financial Stability Board	SME	Small and Medium Enterprise
G20	Group of Twenty	SIF	Sustainable Insurance Forum
G30	Group of Thirty	TCFD	Taskforce on Climate-related Financial Disclosures
GHG	Greenhouse Gas	TFCR	Task Force on Climate-related Financial Risks
GRI	Global Reporting Initiative	UNEP-FI	United Nations Environment Programme Finance Initiative
GSF	Green-Supporting Factor		
HKMA	Hong Kong Monetary Authority		
IAIG	Internationally Active Insurance Group		
IAIS	International Association of Insurance Supervisors		
IASB	International Accounting Standards Board		
ICAAP	Internal Capital Adequacy Assessment Process		
ICMA	International Capital Market Association		

Annex: Summary of supervisory-led scenario analyses undertaken or announced (2018-2022)

	Authority	Year of Exercise	Recurrence	Financial institutions in Scope	Executing organization ¹⁵⁴	Objective(s)	Risk type(s)		Scenarios	Time horizon / intervals / balance sheets	Regulatory Use(s)
							Physical	Transition			
1	Australian Prudential Regulation Authority	2021	Pilot exercise	Largest authorized deposit-taking institutions	FIs	Assess vulnerabilities	x	x	-	-	-
2	Bank of Canada	2020	One-time	No application to individual organizations	CB	Assess economic impact to provide insights into potential financial system risks	x	x	4 in total: Business as usual / Nationally determined contributions (NDCs) / 2°C (consistent) / 2°C (delayed action)	2050	-
3	Bank of Canada / Office of the Superintendent of Financial Institutions	2021	Pilot exercise	Small group of institutions from the banking and insurance sectors (voluntary)	FIs	Build climate scenario analysis capability / Increase understanding of potential climate risk exposure and FI's governance and risk-management practices	x	x	To be specified, but will build on the following 4: Business as usual / Nationally determined contributions (NDCs) / 2°C (consistent) / 2°C (delayed action)	-	-

¹⁵⁴ The exercise is either run by the central bank (CB) or the prudential authority asks financial institutions (FIs) to run it.

	Authority	Year of Exercise	Recurrence	Financial institutions in Scope	Executing organization ¹⁵⁴	Objective(s)	Risk type(s)		Scenarios	Time horizon / intervals / balance sheets	Regulatory Use(s)
							Physical	Transition			
4	Bank of England / Prudential Regulation Authority	2019	One-time	Category 1 and 2 general Insurers	FIs	Inform view of sector risks / Assist in supervision of individual firms	x	x	3 in total: Sudden transition / Long-term orderly transition / No improvements + temperature increase > 4°C	Time horizon scenario dependent: 2022 / 2050 / 2100 Static current balance sheet	Inform and advance supervisory work / Explicitly no use for capital treatment
5	Bank of England / Prudential Regulation Authority	2021	One-time	Largest Banks and Insurers	FIs	Test resilience of institutions and financial system / Size risks / Identify data gaps	x	x	3 in total: Early policy action / Late policy action / No additional policy action	2020 to 2050 5-year intervals Static current balance sheet	Explicitly no use for regulatory capital
6	ACPR	2020	Pilot exercise	Banks, Insurers	FIs	Raise awareness / Assess vulnerabilities of institutions and costs induced by non-compliance with Paris Agreement	x	x	3 in total: Reference scenario of 2° warning under the Paris Accord / Late reaction scenario / Scenario of a swift and abrupt transition	2020 to 2050 5-year intervals Dynamic balance sheet (starting in 2025)	Explicitly no use for regulatory capital (for first exercise), but described as a prudential supervision tool to assess sufficiency of current regulatory framework)
7	Danmarks Nationalbank	Mid-2020		Credit Institutions	FIs	Increase understanding of climate risks	-	x	-	-	-

	Authority	Year of Exercise	Recurrence	Financial institutions in Scope	Executing organization ¹⁵⁴	Objective(s)	Risk type(s)		Scenarios	Time horizon / intervals / balance sheets	Regulatory Use(s)
							Physical	Transition			
8	De Nederlandsche Bank	2018	Pilot exercise	Banks, Insurers, Pension Funds	CB (using data of slightly more than half of the total exposures of the FIs)	Gauge potential financial stability impact of a disruptive energy transition	-	x	4 in total: Policy shock / Technology shock / Double shock / Confidence shock	5-year horizon	-
9	European Central Bank	2019	One-time	Financial Institutions	CB (using sectoral and exposure-level data)	Raise awareness and understanding to help financial institutions build resilience	x	x	4 in total: Orderly / Disorderly / Hot house world / Too little, too late	-	Consideration of climate risk in banks' capital requirements framework would require evidence of the potential risk differential between green and brown assets.
10	European Central Bank	2022	-	-	FIs (as part of stress test)	Assess impact of potential regulatory and policy measures / Identify sectors that are most vulnerable to climate change risks / Reveal data gaps	-	-	-	-	Inform future policy discussions
11	Hong Kong Monetary Authority	2021	Pilot exercise	Banks	FIs	Assess resilience of banking sector / Identify methodological gaps / Inform FIs' strategic planning	x	x	3 in total: Physical risks for Hong Kong / Disorderly Transition / Orderly Transition	Short- and Long-term	-

	Authority	Year of Exercise	Recurrence	Financial institutions in Scope	Executing organization ¹⁵⁴	Objective(s)	Risk type(s)		Scenarios	Time horizon / intervals / balance sheets	Regulatory Use(s)
							Physical	Transition			
12	Monetary Authority of Singapore	2018	One-time	Insurers	FIs (as part of stress test)	Explore institution's resilience / Raise awareness	x	-	Scenario featuring extreme flooding (average depth of 600 millimeters)	-	-
13	Norges Bank	2018	One-time	Banks (but no application to individual organizations)	CB	Explore institution's resilience and financial stability	-	x	Several loosely defined scenarios (e.g. advances in solar panels, advances in vehicle batteries, changes in oil demand)	-	-
14	Swiss Federal Office for the Environment	2020	Periodic (last in 2017)	Banks, Asset Managers, Insurers, Pension Funds	External partners	Alignment of portfolios to climate change policy objectives	-	x	IEA scenarios (CPS, NPS, 2DS, B2DS)	5 years	No direct uses – transparency for participants on individual portfolios and on aggregate basis for public stakeholders
15	Japanese Financial Services Agency	2021	Pilot exercise	Five biggest banks	CB (based on bank's loan book data)	-	-	-	2DII Paris Agreement Capital Transition Assessment (PACTA) Climate Scenario	-	-

Table notes:

- The table was completed on a best-efforts basis from publicly available information. Any errors are the fault of the authors.
- " - " in a cell indicates that the information was not available from public sources.
- The EBA has also announced a long-term intention to "develop a dedicated climate change stress test with the main objective of identifying banks' vulnerabilities to climate-related risk and quantifying the relevance of the exposures that could be potentially hit by physical risk and transition risk". See [EBA 2019](#) and [EBA 2020](#).