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The role of the IMF in addressing climate change risks

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Contents

Abstract

Climate change poses three specific but interrelated policy challenges: climate change mitigation, climate change adaptation (which includes building up resilience) and managing transition risks. The International Monetary Fund (IMF) is a multilateral institution with global reach and near-universal membership. Therefore, along with other international organisations, it has an important role to play in addressing the policy challenges posed by climate change. This paper discusses the contribution the IMF makes and can make in its three areas of competence: surveillance, lending and technical assistance. The paper concludes that the IMF has significantly increased its engagement in climate change matters in recent years but should further intensify its efforts in ways that are fully consistent with its mandate.

JEL codes: F3, F33, F34, O19, Q5, Q48, Q54.

Keywords: International Monetary Fund, climate change, surveillance, lending, technical assistance.

1 Introduction and key policy messages

Climate change is a clear and present danger for the global economy. According to the United Nations Intergovernmental Panel on Climate Change (IPCC), the increase in the average surface temperature of the planet since the industrial revolution is estimated to have been about 1°C and is believed to be accelerating.[1] Indeed, most of the warming has occurred in the past 40 years, with the seven most recent years being the warmest. Without further action to reduce greenhouse gas (GHG) emissions, the planet is on course to reach temperatures not seen in 100,000 years, with potentially catastrophic implications. However, the impact of climate change on GDP remains difficult to estimate. According to Swiss Re (2021), the effects of unmitigated climate change can be expected (under different scenarios) to shave 11-15% off global economic output by 2050 compared with growth levels without climate change. Recent research suggests that the estimated consequences of climate change could be even more severe, taking into account more detailed projections of climate dynamics and the presence of possible tipping points (Kikstra et al., 2021; Dietz et al., 2021).

Climate change poses three specific but interrelated policy challenges: climate change mitigation, climate change adaptation (which includes building up resilience) and managing transition risks. Broadly speaking, **mitigation** policies are aimed at containing the principal determinants of climate change, i.e. GHG emissions. Climate change adaptation refers to the adjustment of ecological, social and economic systems in response to the physical risks associated with climate change.[2] **Adaptation** policies include (i) strategies to build up financial resilience by safeguarding financial capacity and ensuring the ability to cope with more frequent supply-side shocks and changes in relative prices and (ii) strategies to build up physical resilience. Finally, climate change mitigation policies give rise to **transition risks** stemming from (i) changes in policies, rules and regulations governing the path to low carbon intensities; (ii) potentially disruptive technological innovations; or (iii) changes in consumer and investor behaviour (for a fuller discussion, see, among others, Bolton et al., 2020). These transition risks could, for instance, manifest themselves in stranded assets or valuation losses on financial assets, transitional output losses and adverse distributional and social effects. Transition management concerns the policies adopted to deal with these risks. The greater the effectiveness of mitigation (and adaption) policies, the less severe the physical impacts of climate change will be, but the more demanding transition challenges will be, and vice versa. Finally, it is important to bear in mind that the impact of climate change (and related mitigation, adaptation and transition policies) will also depend on the specific situation of each country. Country-specific considerations will have to be carefully

1 See the IPCC website. For further estimates of the damage inflicted by climate change, see also the NASA website.

2 Physical risks include the effects of rising sea levels, changes in precipitation patterns, the destruction of habitable lands, the acidification of oceans and more frequent outbreaks of vector-borne diseases such as Zika, dengue and malaria, as well as natural disasters such as hurricanes, floods and heatwaves (IMF, 2021a).

factored into the design of appropriate policy measures by both national authorities and relevant international organisations.

Central banks also have a direct stake in climate change, as it can affect the conduct of monetary policy and the stability of the financial system in various ways.[3] First, climate change has a direct impact on inflation and other macroeconomic variables that determine the monetary policy stance. In addition, climate change may affect the transmission of monetary impulses via potentially weaker financial markets and a weaker banking sector. In the short to medium term, direct physical risks and related uncertainties can increase the frequency of shocks hitting the economy, inducing greater output and price volatility. Meanwhile, during the transition to a low or zero-carbon economy, inflation may also increase if the higher energy prices induced by mitigation policies translate into higher price expectations. Both elements can make it more difficult to identify the true nature of the shocks over the relevant policy horizon. In the medium to long term, climate change mitigation affects the business cycle (and hence inflation) through the transition to a carbon-neutral economy. This transition may (or may not) lead new policies to be implemented and act as a catalyst for technological change. In the longer run, structural changes may kick in. Particularly in a scenario of unmitigated climate change, climate risks may generate major shocks to output and productivity, thereby decreasing the natural rate of interest and reducing the scope to use conventional monetary policy instruments. Finally, the physical and transition risks associated with climate change can affect asset valuations and induce significant losses among financial institutions and other market participants. This highlights the importance of enhancing the financial system's capacity to absorb these losses, which could otherwise have an additional impact on the real economy.

Climate change is therefore an important topic for many central banks, including for the ECB and the national central banks of the EU.[4] Dikau and Volz (2021) argue that more than one half of a sample of 135 central banks and other monetary authorities are equipped with a mandate to enhance, directly or indirectly, through the government's policy objective, the sustainability of economic growth or sustainability in general. The monetary authorities of another 16 countries and monetary unions have been given mandates that include the explicit objective of promoting or supporting sustainable economic growth or development.[5]

Central banks also have close institutional ties with the International Monetary Fund (IMF) and a deep interest in its dual role as a global hub for monetary cooperation and as a guardian of the stability of the international monetary and financial system. The IMF is a multilateral institution with global reach and near-universal membership. Therefore, along with other international

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3 See ECB (2021), Chapter 5, which summarises the work on climate change in the context of the ECB's strategy review. See also Boneva et al. (2021) for further details.

4 In July 2021, the ECB published an action plan to include climate-change considerations in its monetary policy strategy, see press release.

5 The central banks' active involvement in climate change is evidenced by the creation of the Network of Central Banks and Supervisors for Greening the Financial System (NGFS). Established in 2017, the NGFS today represents a major hub for the promotion of analytical work and best practices in the field of green finance. As at 3 October 2022, it consisted of 121 members and 19 observers covering institutions including the IMF and the World Bank Group.

organisations, it has an important role to play in addressing the policy challenges posed by climate change. Within its mandate and in line with the tasks assigned to it, which are closely linked to the concepts of macro-criticality, debt sustainability, global financial stability and balance of payments needs, the Fund can offer help by means of its traditional functions (surveillance, lending, and technical assistance). This report discusses in some detail how these functions can contribute towards coping more effectively with the policy challenges raised by climate change.

The report is organised as follows. Sections 2 and 3 contain a discussion of the key elements of the Fund's new strategy for addressing climate change issues as part of its surveillance activities (the "climate change strategy", CCS). In particular, Section 2 presents some general remarks on the CCS and examines how the IMF intends to organise its main flagship reports and Article IV consultations (AIVs)[6] in connection with climate change mitigation, climate change adaptation and transition risk management. Section 3 discusses the Fund's advice on specific policy aspects of the CCS that are especially relevant for central banks.[7] This includes in particular its advice on (i) climate change mitigation and related policies to address transition risks, (ii) the implications of climate change on the conduct of monetary policy and (iii) the implications of climate change for assessing financial stability risks and the policies designed to preserve the stability of the financial sector.

Section 4 discusses the issues raised by climate change for the provision of Fund financial support and capacity development assistance. In particular, it discusses the circumstances under which coverage of climate-related policies under Fund-supported programmes would be warranted in line with its mandate and lending policies. To this end, it examines (i) the existing IMF lending framework, (ii) the establishment of the new Resilience and Sustainability Trust (RST), (iii) the desirable features of programme design, climate-related conditionality and capacity development, and (iv) the need to factor climate change into debt sustainability assessments (DSAs). Finally, Section 5 examines several potential principles and modalities for strengthening the IMF's partnership with other international bodies and financial institutions on climate change matters.

The key findings and recommendations of this report are summarised below.

6 The consultations are known as "Article IV consultations" (abbreviated to "AIVs") because they are required by Article IV of the IMF's Articles of Agreement.

7 Climate-related policies also have profound implications for countries' public finances. However, for the sake of brevity, fiscal policy issues are not discussed in the present report.

	Key findings and recommendations
1	Given its position as a multilateral institution with global reach and near-universal membership, the IMF has an important role to play in addressing the policy challenges posed by climate change. The IMF has significantly increased its engagement on climate change matters in recent years but should further intensify its efforts in ways that are fully consistent with its own mandate.
	I. Surveillance – general considerations
2	The IMF's cross-country coverage provides benefits to the membership across policy areas such as fiscal policy, financial stability and monetary policy. Advice on policies that facilitate an orderly transition to a carbon-neutral economy is also particularly useful, as is advice on the optimal policy mix for tackling climate change. The IMF could substantially step up its work to improve the analytical and modelling tools used to assess the impacts of climate change and, in particular, of transition policies, and launch further capacity-building efforts. The IMF's strategy for integrating climate change more deeply into core areas of its surveillance work is a welcome step. The key challenge ahead is a timely, thorough and consistent implementation of this strategy across all aspects of surveillance.
3	The Fund's plans to have regular discussions on climate-related policy challenges that require policy coordination in its multilateral surveillance reports are welcome, as these publications help promote the global debate on the economic and financial impacts of climate change as well as on the progress towards a net zero emissions economy.
4	Moving towards more systematic coverage of climate change issues in bilateral surveillance is now an urgent priority. In particular, it will be important to provide high-quality, granular, tailored advice on macroeconomic and financial policy issues related to climate change, while taking care to meet the macro-criticality criterion.
5	To this end, it would seem worthwhile to focus initially on developing policies and internal training, and then to shift resources to increase country support afterwards. The Fund needs to build up climate expertise within country teams and across departments. Staff training will be crucial in facilitating the systematic approach envisaged.
6	Carrying out the Fund's CCS will require a significant amount of resources. Looking ahead, it is essential to ensure that newly emerging priorities do not reduce the resources available for properly implementing this strategy, while maintaining the objective of a flat real budget.
	II. Surveillance – coverage of climate change issues in Article IV consultations
7	In-depth coverage of mitigation policies, including their effectiveness in reaching the mitigation targets and a potential comparison with alternative, more efficient policies, should become a mandatory part of AIVs for the 20 largest GHG emitters, given the significance of their externalities in terms of global climate. If top emitters refuse to discuss climate change mitigation in their AIVs, the reason for their refusal should be clearly stated in the document. This "comply or explain" approach would enhance transparency for the membership and further encourage relevant coverage in Article IV reports.
8	Subject to available staff resources, coverage could be gradually broadened beyond the 20 largest emitters to ensure ambitious and even-handed treatment across the membership.
9	The frequency and depth of coverage of transition management risks in AIVs should be prioritised according to the vulnerabilities and the capacity of the respective countries. Countries with systemically important financial systems should be covered at higher frequencies, given their potential to cause cross-border spillovers.
10	Concerning the discussion of climate change adaptation in AIVs, the IMF should confine itself to its core competencies and, where needed, build on the competencies and skills of other international organisations.
	III. Fund advice on global climate change mitigation policies and related transition risks
11	The IMF should continue to advocate carbon pricing and the introduction of an international carbon price floor as the most suitable and effective means of mitigating climate change. The Fund should provide its members with analyses on the economic efficiency of carbon pricing, distributional considerations and fair burden-sharing mechanisms. The Fund should also advise on policies to complement carbon pricing, in particular green public investments, as well as green subsidies for renewables and for research and development, which have the potential to smoothen the transition process.
12	There is scope to strengthen the global dimension of IMF advice on transition risk management. Following up on climate change analysis regarding low-income countries, the IMF might delve into the analytical (longer-term) issues of international climate finance more systematically, including a deeper involvement in the policy dialogue under the umbrella of the United Nations Framework Convention on Climate Change.
	IV. Fund advice on climate change and monetary policy
13	Benefiting from cross-country coverage, IMF advice could help members to choose effective measures in the area of monetary policy that may – in line with the monetary policy mandates of the respective central banks – foster the green transition, in particular by providing advice on the various options for integrating climate change considerations into monetary policy. For this advice to be useful, it will need to be sufficiently context and country-specific and take due account of the individual mandates of central banks. In addition, IMF advice should not entail any weakening of the effectiveness of monetary policy tools. At the same time, it should remain sufficiently ambitious and should be mindful of the respective boundaries and possibilities conferred by the mandate of each central bank.
	V. Policy advice on climate change and financial stability

14	The IMF should continue to help develop a better understanding of the impact of climate change on the financial sector, particularly through its Financial Sector Assessment Programs (FSAPs). FSAPs should help understand the appropriateness of national/supranational supervisory and regulatory frameworks to address climate-related financial risks. The IMF has so far provided an independent contribution to the assessment of climate-related risks for the financial systems of the assessed jurisdictions and has introduced some methodological innovations. The Fund should continue to concentrate on closing gaps that national authorities or the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) have not covered regarding climate scenario analysis. It should continue to avoid replicating work already done at the national (or international) level and instead explore new risks, international spillovers (also in conjunction with the Financial Stability Board (FSB)) and methodologies.
15	To help the analytical efforts of the global community, the IMF should create stress tests on a globally acknowledged standard set of short-term scenarios, building on scenario analyses and stress-testing models already developed in other institutions, but without stifling innovation. Scenario analyses and stress-testing models should take full account of specific country features.
16	Beyond refining FSAPs and climate scenarios/stress tests, the IMF could continue to support other initiatives in the field of climate risk disclosure and classification standards, and help identify relevant risk indicators or data gaps.
	VI. IMF lending and climate change
17	IMF financing targeted to climate change problems raises two important questions. • First, the Fund's lending framework, so far consisting of the General Resources Account (GRA) and the Poverty Reduction and Growth Trust (PRGT), is not designed to address balance of payments (BOP) problems in the very long term and is only partly adequate for dealing with the deep and longer-term structural problems related to climate change adaptation and mitigation and the transition to a low-carbon economy. In fact, under the Articles of Agreement setting out the IMF's mandate, the Fund's general resources may only be used to address temporary BOP problems. At the same time, the Fund's existing concessional facilities (which are only administered by the IMF and are financed by the separate contributions of individual lenders and donors) have longer duration and maturities, but are reserved for a limited subset of the membership only. • Second, the IMF cannot (and should not) be the sole or main provider of funding to meet the enormous global financing needs related to climate change. As a rule, all forms of IMF lending should be aimed at mobilising additional sources of official and private financing.
18	Despite these limitations, the current guidelines for IMF conditionality offer some flexibility to include climate-related objectives in lending programmes. In particular, programme conditionality should take into consideration the macro-critical impacts of climate change and take full account of analytical and policy work in the context of AIVs and FSAP missions. Importantly, Fund conditionality should be aimed at resolving countries' underlying BOP problems, including by sending positive signals (a "seal of approval") to the other official and private creditors. The provision of technical assistance aimed at enhancing the policy and administrative capacities of the borrowers may also play an important role in this regard, especially when private money is indispensable for financing infrastructure projects related to climate adaptation.
19	The new IMF-administered Resilience and Sustainability Trust (RST), established with effect from 1 May 2022, will further support countries' efforts to strengthen their resilience to climate change shocks. The new RST allows IMF members to address long-term challenges posed by climate change. The upper credit tranche (UCT) programmes associated with the RST are intended to cover all aspects of the resolution of short to medium-term BOP needs, including those related to climate change, whereas structural challenges that require a long-term horizon will be covered by the RST. It will be important to ensure that the RST programmes are based on a sound business case and do not become a quasi-automatic way of "topping-up" ordinary IMF loans, and that RST financing, like other Fund financing, is granted on the basis of a favourable Debt Sustainability Analysis (DSA) and adequate capacity to repay.
20	More generally, the IMF needs to adequately consider the effects of climate change in DSAs. In this regard, we welcome the progress made by the 2017 and 2021 reviews of the Debt Sustainability Framework for Low-Income Countries (LIC DSF) and the Sovereign Risk and Debt Sustainability Framework for Market-Access Countries (MAC SRDSF) respectively.
	VII. IMF partnering with other international bodies and organizations
21	The Fund should enhance its interactions with external partners to exploit synergies for better addressing countries' climate change problems. To this end, the IMF should (i) avoid overlaps and potential conflicts, based on the respective competencies and mandates; (ii) aim to optimise advice exploiting each institution's expertise, making particular use of the surveillance and technical assistance provided by the different partners; and (iii) prevent arbitrage and facility shopping in lending activities but at the same time act as a catalyst for additional finance (including private financing).
22	In particular, the IMF should consider strengthening its strategic partnership with the World Bank and developing specific guidelines and modalities to this effect. Specific principles could also be explored for interacting with other relevant bodies and institutions.

2 IMF surveillance on climate change

The IMF's involvement in climate change rests on the key criterion of its "macro-criticality", i.e. on the premise that climate change can affect both domestic and external stability via transmission channels such as trade flows, fiscal positions, asset prices and exchange rates (IMF, 2015). Consequently, it can also have a bearing on global macroeconomic and financial stability. As further clarified in the 2021 Comprehensive Surveillance Review (CSR) (IMF, 2021c), macro-critical policies for climate change mitigation, climate change adaptation and transition risk management fall within the scope of the 2012 Integrated Surveillance Decision and are therefore suitable topics for both bilateral and multilateral surveillance.

In July 2021, the IMF published a strategy for integrating climate change more deeply into core areas of its work (IMF, 2021a). This climate change strategy (CCS) is closely linked to the conclusions of the 2021 CSR. It concerns all layers of IMF surveillance, bilateral and multilateral, and purports to comprehensively address climate-related policy challenges in both of these layers in the next three years (see Table 1). This review was followed in June 2022 by the publication of a Staff Guidance Note on Surveillance[8], which also covers climate change.

The IMF has significantly increased its engagement on climate change in recent years, and has already offered multiple contributions as part of its surveillance activities. Up until last year, however, these efforts were mainly confined to dedicated chapters of flagship reports, to regional surveillance reports and to policy papers. Some discussions of climate-related policy challenges could also be found in bilateral surveillance products (AIVs, Financial Sector Assessment Programs (FSAPs))[9]. However, before the CCS was published, coverage was uneven and often driven by demand from country authorities and individual IMF country teams (Ramos et al., 2021). Overall, climate-related work under the IMF's surveillance had been largely ad hoc, with the institution meeting increasing demand by allocating new resources, often on a provisional, time-limited basis.

8 IMF (2022a).

9 AIVs are conventionally considered, together with FSAPs, to be elements of the IMF's bilateral surveillance. However, the term "bilateral surveillance" is not synonymous with "Article IV consultations", since AIVs are a tool for both bilateral and multilateral surveillance, allowing adaptation, transition and mitigation issues to be addressed on a direct country engagement basis. In this report, we follow the convention and discuss these issues in the context of bilateral surveillance.

Table 1
Climate change strategy: deliverables and resources

Multilateral surveillance	
Multilateral and regional reports	~ 1-2 climate-related chapters per year in flagships; significant expansion of climate issues in regional reports; a new series of staff climate notes
Bilateral surveillance	
Climate change mitigation in AIVs	For the 20 largest emitters, on average every three years
Transition management in AIVs	Coverage prioritised by need (no universal/cyclical coverage)
Adaptation and resilience building in AIVs	For 60 countries that are the most vulnerable to climate change, every four years; about half of consultations supported by Climate Macroeconomic Assessment Program (CMAP)
	Altogether: 45-50 AIVs per year
FSAPs	Exposure to climate risk and associated policy options as integral part of two-thirds of FSAPs (about eight FSAPs per year)
Resources	
Within the IMF's medium-term budget planning, additional annual resources of about USD 26 million are expected to be allocated to the climate change strategy. These resources will be phased in over three financial years (2023- 25).	

Source: based on IMF (2021a).
Notes: The scale of deliverables has been adjusted in the light of subsequent discussions on the Fund's budget (see IMF, 2022b). The IMF aims to produce these deliverables once the budget augmentation is complete in financial year 2026 (starting in May 2026). Until then, there will be a transition period during which the outputs will be gradually phased in.

2.1 General remarks on the IMF's climate change strategy

The key challenge ahead is the timely, thorough and consistent implementation of the CCS. At first, the focus should be on developing policies and on internal training; after that, resources should be shifted so as to increase country support. Many practicalities and details of the strategy will need to be considered in more depth. It will be important to translate the outcome of this work into appropriate guidance for the staff on performing effective and even-handed surveillance of climate change-related issues. It will also be essential to ensure that newly emerging priorities do not reduce the resources available for the proper implementation of the CCS[10], while maintaining the objective of a flat real budget.

At the same time, the Fund needs to build up climate expertise within country teams and across departments.[11] Reflecting budget constraints, the IMF is currently recruiting climate experts over a period of three years. Therefore, training existing Fund staff will also be crucial in facilitating the systematic approach envisaged. The internal training and the mandatory "climate 101" course within the CCS are excellent initiatives in this respect, and it is important to put appropriate effort into thoroughly implementing them. At present, the training of fungible staff is already under way, with three modules of the "climate 101" course rolled out. Once established within the institution, the IMF could also offer those courses more broadly to the membership. It is therefore very much to be welcomed that the Fund has already begun to offer elements of "climate 101" to external participants. Additionally, the Fund should collaborate more closely with other organisations (e.g.

10 IMF (2022b).

11 As the Fund itself notes, this might pose challenges given the limited number of climate economics experts worldwide and given that the Fund is not alone in its quest to employ them.

the United Nations, the World Bank, the Organization for Economic Co-operation and Development, the Financial Stability Board and the Network of Central Banks and Supervisors for Greening the Financial System) to leverage their expertise and to avoid overlaps (see also Section 5).

The Fund's plans to have regular discussions on climate-related policy challenges that require policy coordination in its multilateral surveillance products are to be welcomed (see Table 1). Multilateral surveillance plays a unifying role in addressing climate change issues[12], and its flagship publications have a sufficiently broad outreach that they could help properly inform the wider public and promote the global debate on the economic and financial impacts of climate change and on the progress towards a net zero emissions economy.

The implementation of the CCS in bilateral surveillance should now receive greater attention. In particular, it will be important to provide high-quality, granular, and tailored advice on macroeconomic and financial policy issues related to climate change, while being careful to comply with the macro-criticality criterion.

2.2 AIVs and climate change mitigation

The CSR includes an "expectation" that the top 20 greenhouse gas (GHG) emitters[13] will be covered every three years in AIVs on mitigation measures, while the CCS "strongly encourages" reporting every three years.[14] The AIVs for these largest emitters would include a discussion of the mitigation policies, such as carbon pricing, that these countries pursue to achieve their climate goals.

Going beyond these expectations, in-depth coverage of mitigation policies should become a mandatory part of surveillance for the 20 largest emitters, given the significance of their externalities in terms of the global climate. Acknowledging that the coverage of mitigation policies in AIV reports remains voluntary under the Fund's surveillance mandate, there is merit in the idea of asking the top emitters that refuse to discuss climate change mitigation in their AIVs to state the reason for their refusal in the document. This "comply or explain" approach would enhance transparency for the membership and further encourage relevant coverage

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12 While country-level documents provide partial coverage, flagship reports and policy papers are well placed to address more cross-cutting climate-related issues or issues that require global policy coordination. This includes cross-border aspects of climate mitigation policies, such as an international carbon price floor or carbon border adjustment mechanisms, and climate financing. Regional monitoring reports and papers are able to reflect region-specific circumstances and characteristics in greater depth.

13 At present the list of top 20 emitters is made up of China, the United States, the European Union, India, Russia, Japan, Brazil, Indonesia, Canada, Mexico, Iran, South Korea, Australia, Saudi Arabia, the United Kingdom, South Africa, Turkey, Ukraine, Thailand, and Argentina. Within the European Union, the Article IV reports for Germany, France, Italy and Poland should also cover climate change mitigation as these countries cross the "top 20" threshold when assessed on their own. The list will be updated every three years or so.

14 The global public good character of climate change mitigation means that no country can provide sufficient mitigation on its own, but individual countries can make a contribution that is commensurate to their possibilities and climate footprint. This is particularly the case for countries contributing significantly to climate change, thereby creating spillover effects that are relevant for global stability. Recognising the link between GHGs and global warming, the CSR proposes using the level of GHGs as an indicator of significance.

in Article IV reports. Should this not be possible due to legal constraints, consideration could be given to including a neutrally drafted footnote in the report.[15]

Given that defining climate mitigation targets in individual countries goes beyond the IMF's expertise and mandate, the envisaged approach of taking a country's National Determined Contribution (NDC) as the starting point appears reasonable. At the same time, it is important that staff reports also provide some judgement on the ambitiousness of a country's Paris targets and compare a country's NDCs with those of peer countries that have similar income levels and economic structures to provide a benchmark for the appropriateness of mitigation efforts. In this way, the IMF might help trigger a virtuous "race to the top" process.

Coverage in AIVs should include an in-depth assessment of the authorities' mitigation policies, including their effectiveness in reaching the mitigation targets and a potential comparison with alternative, potentially more efficient policies. Policies aimed at achieving a country's NDC (i.e. mitigation policies) should be considered a direct contribution to the provision of a global public good. As such, they should always be part of discussions on mitigation issues – while at the same time, of course, their links with transition management should be acknowledged.[16] Despite these possible uncertainties in the definitions, the policies pursued by the largest emitters to achieve their NDCs should be covered comprehensively every three years.

Subject to staff resources, coverage could be gradually broadened beyond the 20 largest emitters to ensure ambitious and even-handed treatment across the membership. This would help meet the conceptual challenges related to defining significant spillovers while also underlining the shared responsibility of reducing GHG emissions.

2.3 AIVs and transition management

According to the Fund, coverage of transition management in AIVs will not be universal but instead will be prioritised according to need.[17] While the intention to cover transition management in a prioritised manner is welcome, the criteria underlying the prioritisation remain somewhat vague. The frequency and depth of the coverage of transition management risks should be prioritised according to vulnerabilities and the capacity of the respective countries. Given that in

15 Such a footnote could be worded in the same way as the usual footnote that notifies the IMF Executive Board if the authorities have not consented to the publication of the report at the time of the circulation of the staff report to the Board.

16 As the IMF acknowledges in IMF (2021c), footnote 4, "mitigation and domestic transition management are related and the dividing line between them can be somewhat blurry". In the same footnote, the IMF places "policies to achieve a given domestic target (such as an NDC)" in the "transition management" category. Meanwhile, in paragraph 21 of the same paper, an assessment of policies to achieve mitigation – with NDCs as the starting point – is explicitly envisaged as part of mitigation discussions with authorities. In the same paragraph, the IMF acknowledges that mitigation and transition management would typically be discussed "as a […] package". However, for the top 20 emitters, coverage of mitigation is envisaged every three years, while transition management would be expected to be covered only every five to six years.

17 While the CCS had the ambition of covering all members, the budget allocation ended up providing no universal coverage.

some cases these risks might give rise to short-term macro-critical concerns, higher-frequency coverage might be needed. This would be especially important for:

1. countries with abrupt changes in mitigation strategies resulting in faster transition paths and higher associated transition risks;

2. countries with "globally systemically significant" financial sectors where transition risks, if they were to materialise, could lead to significant spillovers;

3. countries where mitigation policies are expected to lead, or have already led, to significant macroeconomic challenges, e.g. potential energy market disruptions with fiscal implications, or massive shifts in the size and structure of exports.

2.4 AIVs and climate change adaptation

According to the CCS, thorough coverage of adaptation under Article IV should include an assessment of country-specific climate vulnerabilities, adaptation strategies and financing needs to build resilience. In addition, the Climate Macroeconomic Assessment Program (CMAP) will conduct analyses outside the Article IV consultation cycle to provide a detailed assessment. The IMF advocates addressing adaptation and resilience building for the countries most vulnerable to climate change every four years; five countries will be supported by a CMAP.[18]

In the context of analysing the various dimensions of adaptation in AIVs, it seems prudent for the IMF to confine itself to its core competencies and, where needed, build on the competencies and skills of other international organisations. Financial resilience, i.e. ensuring the financial capacity to cope with disasters, as well as fiscal policies and public investments related to resilience building, falls within the IMF's domain. However, building physical resilience often requires a different type of analysis related to public investment projects, such as infrastructure building, etc., and therefore also requires the expertise of other institutions. In addition, given the IMF's limited capacity, it seems advisable to prioritise adaptation activities in AIVs according to countries' vulnerability and existing capacities.

[18] The IMF has identified the 60 countries that are most vulnerable to physical risks in the form of natural disasters such as hurricanes, but also to slower climate-related phenomena such as a rise in sea level due to climate change. Most of them are low-income countries (IMF, 2019).

3 IMF policy advice on climate change

This section discusses three specific aspects of the CCS that are especially important for central banks, namely: the Fund's advice on climate change mitigation and related policies to address transition risks (Section 3.1); the implications of climate change for the conduct of monetary policy (Section 3.2); and the implications of climate change for assessing financial stability risks as well as the policies designed to preserve the stability of the financial sector (Section 3.3).

3.1 Climate change mitigation and related transition risks

Implementing carbon pricing should be among the main priorities of the Fund's multilateral surveillance, as this is the most suitable and effective means of mitigating climate change (IMF, 2008).[19] Gradually rising carbon prices (on top of existing energy taxes) provide the most efficient incentive for replacing high-carbon energy with low-carbon or carbon-free energy; they also dampen energy consumption and foster energy efficiency and green innovation. At the same time, IMF staff are considering various viable options for implementing carbon pricing, with carbon taxes, cap-and-trade systems and hybrid models each having their pros and cons. For many countries, the first step must be to phase out subsidies or tax advantages for the production and consumption of fossil fuels (IMF, 2017a, 2020 and 2022).

The IMF's proposal for an international carbon price floor (ICPF) arrangement is intended as a means of spurring collective action and responding pragmatically to hitherto insufficient progress on urgent matters, and is therefore also welcome (IMF, 2021; Parry et al., 2021).[20]

In addition, when presenting its comprehensive policy approach for mitigation in 2020, the IMF rightly stressed the need for complementary policies alongside carbon pricing, in particular green public investments and green subsidies for renewables, along with research and development. Such measures

19 See also ECB research on carbon pricing: Delgado-Téllez et al. (2022) and Abiry et al. (2022).

20 The proposal would initially focus on a core group of high GHG-emitting countries while still covering a large share of total global emissions. The coordinated approach is aimed at avoiding freeriding, thus raising ambitions. In the interests of climate justice, the ICPF would allow differentiation by countries according to level of development and historical emissions. In addition, countries would be allowed to meet requirements through non-pricing policies, such as regulation and standards, with emissions impacts equivalent to those of the price floor (Parry et al., 2021), as it may often be politically less difficult to achieve certain behavioural responses through such policies, even though they are typically less efficient at lowering fossil fuels use. In many cases, the costs of achieving the emission reductions are offset by domestic environmental co-benefits from reducing fossil fuel use (Black et al., 2021). In the IMF's view, an ICPF agreement would be less divisive and far more effective than border carbon adjustments (IMF, 2021b).

would create room for less aggressive carbon pricing while smoothing the transition process and dampening the related output losses (IMF, 2020).[21]

As rightly advocated by the IMF, policy decisions on the speed and direction of energy transition must be as predictable as possible, because any ambiguity would exacerbate uncertainty surrounding demand scenarios and hinder investment plans. For example, credible and globally coordinated climate policy frameworks would help stabilise expectations about sustained demand increases for certain metals; hence, they could encourage investment to expand metal supply. Together with appropriate environmental standards that promote the design of metal-efficient products as well as recycling and reuse, this would help contain recently soaring metals prices. It could also mitigate the risk of the clean energy transition being delayed by cost increases for low-carbon technologies.[22]

As part of the 2020 comprehensive policy approach for mitigation, the IMF has highlighted the need to secure a just transition, with the intention of building domestic support for the necessary policy adjustments. In particular, this objective would entail compensating low-income households for rising carbon/energy prices and helping businesses and workers to move from high to low-carbon intensity activities. Targeted recycling of carbon pricing revenues can make carbon pricing reforms both equity-enhancing and pro-poor overall (Black et al., 2021; IMF, 2020, 2021b and 2022).

Alongside these important proposals on implementing a just transition at the domestic level, IMF staff addressed aspects of the global dimension of just transition in their 2021 report to the G20 and ensuing papers. They believe that as part of the effort to scale up global mitigation, it is critically important to step up commitments to provide climate finance for low income countries (LICs) and thus achieve both a globally just transition and an efficient transition path.[23] A green fiscal stimulus is considered necessary to make the transition growth-friendly, given that the transition to a low-carbon economy is likely to be more costly for developing countries, with their faster-growing energy needs, than for advanced economies. Without such green investment, mitigation policies could have negative output effects in LICs. In view of these countries' typically more constrained fiscal space, especially in the aftermath of the COVID-19 pandemic, financing emission-reducing investments in LICs would allow for more even burden-sharing and help the global economy reach net zero emissions (IMF, 2021f). Thus,

21 In the medium term, transition costs would decline in as far as technological innovations are spurred in response to carbon pricing and green research and development subsidies. According to the Fund's simulations, the transition costs of carbon pricing consistent with net zero emissions by mid-century would be manageable in the context of projected global growth over the next three decades. In addition, global output losses (compared with the benchmark scenario) would be moderate relative to the expected income gains from preventing climate damage, especially in the second half of the century and beyond. These simulations did not consider the possible inflationary effects of climate mitigation polices, as the theoretical net result of these effects was unclear in principle. Correspondingly, the discussion of appropriate monetary policy responses was not an issue either. The implications of climate change for the conduct of monetary policy are discussed in Section 3.2.

22 Boer et al. (2021a and 2021b) have suggested establishing an international body (similar to the International Energy Agency) for disseminating data and analyses, setting industry standards and fostering global cooperation in the field of metals. This body should address also sensitive issues concerning metal supply, such as environmental, labour and governance standards as well as trade barriers and export restrictions.

23 IMF (2021f), Black et al. (2021), Chateau et al. (2022).

climate finance and technology transfers are considered important policy tools for improving international equity, while at the same time enhancing efficiency. As the per-unit cost of reducing emissions is currently lowest in LICs, climate finance is an opportunity to reduce emissions where these reductions are most efficient and also to make climate mitigation more progressive at the global level (Chateau, 2022). It is therefore in the global interest to ensure that the world's lowest-cost mitigation opportunities are pursued. Climate finance is also justified on the grounds that developing economies are likely to face much higher investment needs in adapting to climate change (IMF, 2021f).[24]

Against this background, IMF staff raised the issue that advanced economies seem to be lagging on their current commitments to global climate finance, consisting in the pledge at the 2009 Copenhagen Summit to mobilise USD 100 billion a year from private and public sources from 2020 onwards for mitigation and adaptation in developing economies (Black et al., 2021, IMF, 2021f).

Climate financing is a globally relevant macro-critical issue, and the IMF would be well advised to delve more systematically into this area, especially from a longer-term perspective. The IMF could strengthen its related policy advice, for instance by designing options for stable, transparent and fair global climate finance arrangements. Such arrangements could help advanced economies to comply with the commitments undertaken while ensuring that upper-income emerging economies also assume appropriate responsibility. Carbon pricing revenues are generally considered a source of financing for just transition measures at the domestic level, and they could also represent a potential source of international climate finance for LICs. This is just one option, which has its pros but also its cons, such as the bureaucratic constraints in fiscal systems the required earmarking of revenues could create. There are other, far-reaching proposals for a thoroughly reformed IMF to play a central role in international climate finance (for example, in Chmielewska and Sławiński, 2021, see also Financial Times, 2022) which however are likely to be too ambitious as they would require an amendment to the IMF's Articles of Agreement. Still, based on its current mandate it is fair to say that the IMF is already well positioned to contribute to the international policy dialogue on the issues of climate finance negotiated under the umbrella of the United Nations Framework Convention on Climate Change (UNFCCC).[25] In particular, the IMF could involve itself in the work programme running from 2022 to 2024 for the

[24] In an earlier study, the IMF stressed that the adverse economic consequences of temperature increases would be concentrated in countries with (already) relatively hot climates, comprising the majority of LICs. Therefore, it invited wealthier economies to provide and coordinate financial and capacity development support to their low-income peers, in consideration of LICs' limited capacity to address global climate threats to which they contributed so little. In other terms, helping LICs cope with the consequences of climate change was both a humanitarian imperative and sound global economic policy, because it could partly offset the failure of advanced and emerging market countries to internalise the costs of their own greenhouse gas emissions (IMF, 2017). The involvement of wealthier countries in supporting LICs would also reflect their enlightened self-interest in addressing growing climate challenges pre-emptively.

[25] The IMF has, in effect, already started to influence these discussions. For example, in the context of the Glasgow Climate Change Conference, Fund analyses were partly used in the report of the Standing Committee on Finance on the needs of developing country parties related to implementing the Paris Agreement (UNFCCC-COP26, 2021). In the Glasgow Climate Pact (which was agreed as a key outcome of the conference), relevant multilateral institutions were encouraged to consider how climate vulnerabilities should be reflected in the provision and mobilisation of concessional financial resources and other forms of support, including special drawing rights (UNFCCC-CMA3, 2021a, §48).

new collective quantified goal on climate finance beyond 2025, thus responding to the broad invitation in the corresponding decision (UNFCCC-CMA3, 2021b, §17). In addition, there are the work programmes for the global (sub-)goal on adaptation as well as for loss and damage associated with climate change impacts. With a greater focus on international finance issues in its multilateral surveillance, the IMF could gain greater international support for action on climate change in general, and for its own promotion of carbon pricing as a key mitigation policy instrument in particular.

3.2 Climate change and monetary policy

Monetary policy has not yet been a focal point of the IMF's work on climate change. IMF staff have touched upon the issue mainly as part of the 2021 CSR and in the CCS to help members address climate change-related policy challenges.[26] They acknowledge the major challenges that climate change is posing for macroeconomic and financial policymaking, including for monetary policy, namely greater output and price volatility, the increased likelihood of larger shocks, higher overall uncertainty, shifts in relative prices and long-term effects on the real interest rate (IMF, 2021a, §12). The IMF has stepped up its modelling work on climate-related issues and enhanced data provision for macroeconomic and financial analysis, in particular through the Climate Change Indicator Dashboard (CCID), which also covers financial indicators such as green bond issuance, but the link to monetary policy is more indirect.[27] Of the several flagship chapters that have addressed climate-related issues over recent years, none has focused on monetary policy issues.

Work by the IMF so far suggests that the IMF does not consider monetary policy to be a relevant active climate mitigation tool, and focuses instead on how it should react to the challenges posed by climate change, which is a welcome approach from a central banking perspective. In particular, monetary policy considerations have been framed as relating in particular to climate change adaptation/resilience building, pointing to focused activities by the IMF that respect central bank mandates.[28]

In its CCS, the IMF envisages stepping up its engagement in climate-related issues on various fronts, including several that relate to the conduct of monetary policy and central banking. On the one hand, regarding direct country engagement, the IMF will cover monetary policy issues as part of addressing the implications of macro-critical climate-related policies in its Article IV missions. In addition, through capacity development (CD) activities, the IMF will assist with (i) monetary policy and central bank operations, (ii) building macro scenarios to assess climate change shocks and mitigation and adaption policies and (iii) climate-related legal and financial integrity issues in the area of central banking. On the other hand,

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26 See IMF (2021a) and IMF (2021c).

27 For more details, see the CCID website.

28 For the other two policy areas – climate mitigation policies and transition policies – no direct reference to monetary policy is included in the IMF's climate strategy (IMF, 2021c). For mitigation, the IMF sees a consensus regarding policy action, i.e. CO_2 pricing and structural policies (IMF, 2021c, §19; see also ECB, 2021, p. 8ff.).

the IMF intends to further develop its models and standardised toolkits so that these can inform both bilateral and multilateral surveillance and policymaking. In addition, more granular and broader-based data to further improve the CCID as a basis for consistent analysis could better inform monetary policymaking and the related policy advice of the Fund, although these channels are more indirect.

These plans are welcome in principle, yet it remains to be seen how they will unfold in practice. So far, climate advice in the context of Article IV reports has focused on non-monetary policy aspects such as regulation, market-based mechanisms involving carbon pricing, fiscal incentives, and green public and private investment. Therefore, following the CSR, it is unclear at this stage which concrete changes to the Article IV exercises are to be expected, how climate advice on monetary policy would be integrated into Article IV reports and how far-reaching this advice would be.

For climate-related advice to individual IMF members on monetary policy matters to be useful, it would need to be sufficiently country-specific. To this end, IMF staff would need to have a good understanding of the impact of climate change on the country (e.g. to focus on adaptation versus mitigation for policy advice). In addition, the IMF should be fully mindful of the existing domestic policy frameworks (including in particular monetary policy mandates) and the prevailing mitigation, adaptation and transition policies of its members. In the same vein, the legal and institutional specificities of monetary unions should be taken into account. For example, the diverse nature of physical climate risks affecting different member countries of the euro area may complicate the provision of targeted advice as well as the formulation of a single monetary policy (ECB, 2021, p. 121).[29] Overall, the planned CMAPs can be useful for building up this understanding and should inform climate-related aspects of the Article IV missions.[30]

In particular, any IMF advice on climate change and monetary policy would need to take account of central banks' specific mandates and policy frameworks. The prime responsibility for climate-related policies lies almost universally with governments and parliaments. Central banks need to adequately factor climate change considerations into their efforts to achieve price stability, in line with their monetary policy mandates, especially in the light of the related financial and macroeconomic risks. In addition, they may act as catalysts for climate-friendly changes in the behaviour of financial market participants.[31] Central banks may choose different strategies regarding climate change and monetary policy and may have different rights, options and obligations, depending on their respective

[29] IMF staff would also need a good understanding of institutional set-ups related to climate change, e.g., in the case of the European Union, the Commission Country Reports and Country Specific Recommendations to Member States, which may include references to macro-critical climate policies, and the milestones and targets on climate change-relevant investment and reforms in Member States' recovery and resilience plans.

[30] CMAPs are aimed at assessing country-specific climate vulnerabilities, adaptation policies and the financing that is needed to build resilience. With these exercises (conducted outside of the Article IV consultation cycle), the IMF intends to pave the way for an in-depth coverage of climate change issues in these consultations.

[31] See also ECB (2021).

mandates.[32] For example, the ECB has the primary objective of price stability, but also the secondary objective of supporting general economic policies in the European Union and the task of contributing to the smooth conduct of policies pursued by the competent authorities relating to the stability of the financial system.[33] The IMF's advice to central banks should take these differences into account and try to be as balanced as possible. The advice should be mindful of the respective boundaries and possibilities conferred by the mandate of the individual central bank.

The IMF could advise its members on the various options for integrating climate change considerations into central banking, including differentiating between members based on the extent to which they can in fact integrate such considerations. Such activities could be undertaken both in bilateral and multilateral surveillance. Drawing on Boneva et al. (2021), the IMF could propose a menu of policy options ranging from:

1. "reactive to climate change" (actions that protect the central bank's balance sheet and enhance its ability to reach its price stability objective in view of climate risks);

2. "awareness-raising" (central bank actions that raise awareness of climate risks); and/or

3. "proactive" (central bank measures that actively mitigate climate risks or foster the transition to a greener economy).

The IMF could also engage with international fora, most notably the G20 and its Sustainable Finance Working Group, to help achieve global definitions for green lending and green collateral as well as green assets. Agreeing on common definitions would assist central banks in driving forward measures in these areas in line with their mandates.

The IMF could substantially step up its work to improve the analytical and modelling tools used to assess the impacts of climate change, and in particular the effect of transition policies, on inflation, and launch further capacity-building efforts. Improving the assessment framework and modelling capabilities is essential for ensuring that central banks are better prepared for understanding and responding to climate and transition-related shocks. If the IMF were to improve its understanding of the economic impacts of climate change and share its knowledge with its members, this would provide significant value added for the international community. Outreach to the central banks of its member countries regarding macroeconomic models that include climate change features would be useful in this context. It is therefore welcome that IMF staff are making progress in

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[32] In other terms, central banks with dual mandates may have different options and obligations compared with central banks that have a price stability mandate only. In addition, as noted in Section 2 of this paper, for some central banks tackling climate change is an explicit part of their mandate (Dikau and Volz, 2021).

[33] For more details, see Ioannidis et al. (2021).

incorporating climate-related aspects, such as energy and transportation sectors, into their main macroeconomic model.

The IMF's cross-country coverage could also provide benefits to the membership. As pointed out by the IMF, this could help in analysing common challenges and identify best practices (IMF, 2021c, §24). Meanwhile, case studies could help individual central banks better understand various options for central bank engagement in climate-related issues. In addition, together with the NGFS, the IMF could facilitate "teach-ins" between central banks with greater expertise on green monetary policy and central banking on the one hand, and those that are just about to embark on such activities on the other.

Beyond monetary policy-specific advice, the IMF could usefully formulate views on (i) policies that facilitate an orderly transition to a carbon-neutral economy – due to their implications for monetary policymaking – and (ii) countries' optimal policy mix to tackle climate change. While an orderly transition would be likely to pose a limited threat to central banks' ability to maintain price stability, a disorderly transition would have a much more significant impact on inflation and growth, which would leave central banks with a difficult trade-off between fostering growth and stabilising inflation.[34] This would apply in particular – but not only – to central banks with a dual mandate. More integrated discussions on the country-specific optimal policy mix (including fiscal, financial and monetary policies) for addressing climate change would also be vital in a world where policymaking, including in areas such as central banking, is evolving towards more integrated approaches.[35]

3.3 Climate change and financial stability

As noted in the introduction, the physical risks associated with climate change and the costs of a policy-induced transition to lower carbon economies may affect the financial sector and its stability in a number of ways. In particular, they may lead to changes in asset valuations that induce significant losses among financial institutions or other market participants. These effects may be amplified if the risks are similar and concentrated, and the degree of interconnectedness is high among participants, or if they trigger a substantial rebalancing of portfolios among investors (Bolton et al., 2020). It is therefore of paramount importance for the financial system to have a high degree of resilience so that it is able to absorb losses which could otherwise also have an impact on the real economy.

Greater awareness of climate-related risks and opportunities for the financial sector would also have an important role to play in addressing climate change and supporting the transition. The financial system can help the transition towards a greener economy by funding green activities and investments that will help reduce carbon emissions. In addition, it must identify and price risks related to climate

[34] See ECB (2021), Chapter 5.

[35] In Chapter 3 of the October 2020 World Economic Outlook, the IMF discusses growth-friendly and distribution-friendly strategies for mitigating climate change. See also Krogstrup and Oman (2019).

change and provide insurance against the financial impact of these risks through hedging or other financial instruments (Bailey, 2021).

Against this backdrop, both market participants, as well as policymakers and regulators have devoted increasing attention to the question of whether the financial sector is sufficiently equipped to handle climate-related challenges. There are a variety of international bodies and organisations working on the impact of climate change on financial stability. These include the Financial Stability Board (FSB), the Basel Committee on Banking Supervision (BSBS), the International Organization of Securities Commissions (IOSCO), the Organisation for Economic Co-operation and Development (OECD), the European Central Bank (ECB), the European Systemic Risk Board (ESRB), the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) and the IMF (see Annex 1 for a brief overview of the division of labour among these bodies and organisations). Among the extensive range of analytical tools developed by these international work streams, the NGFS climate-related scenarios are highly relevant. These scenarios are now a benchmark at global level but still suffer from some limitations that are currently being discussed in international fora.[36]

In the traditional approaches to risk management, the integration of climate-related risks into financial stability monitoring and prudential supervision is hindered by the use of historical data, by the remaining data gaps, by the long-term nature of climate change risks and by the assumption that shocks are normally distributed (Bolton et al., 2020). International cooperation in these areas has already started to bear fruit, especially concerning risk disclosures, the modelling of physical and transition risks and the assessment of climate-related risks for the financial system – although much work remains to be done. In addition, discussions on how to address these risks in micro- and macroprudential regulation and supervision are still going on.

The IMF can provide valuable help in this regard, particularly through its FSAPs. Climate change itself and the related policies may pose both risks to financial stability and opportunities for the financial sector. FSAPs provide a tool for assessing these potential risks in particular and to help Fund members consider related policy options. To date, FSAP risk analyses have been sparse in their coverage of the potential stresses on the financial system from physical climate shocks and the transition to a low-carbon economy. Lately, however, coverage has increased, with recent FSAPs explicitly assessing transition risks (Norway, 2020), physical risks (Philippines, 2021) and both types of risks (Chile, 2021, Colombia, 2022, South Africa, 2022 and United Kingdom, 2022). The CCS proposes covering

[36] On the one hand, using the NGFS scenarios ensures that risk assessments are comparable across countries and based on consistent paths for climate and economic variables. On the other hand, these tools are exposed to several drawbacks. First, "off-the-shelf" scenarios cannot necessarily be applied to existing macroeconomic models. To make the NGFS scenarios pertinent to most countries, modular model approaches will be needed that can adapt the off-the-shelf scenarios at low cost to specific needs – i.e. by translating these scenarios into ones that fit domestic circumstances or obtain sectoral data – enhancing their usability. Second, current macroeconomic models are calibrated in equilibrium states and do not consider disequilibrium states. Further drawbacks include (a) the limited spectrum of available variables, (b) the unavailability of variables at the sectoral level and (c) the challenge of determining the degree of severity of the scenarios for physical risk and the assumptions on fiscal (and monetary) policies. In addition, the incorporation of spillovers with the financial sector remains a challenge. These challenges are currently at the core of the NGFS's work (see also Annex 1).

climate risks in all FSAPs. However, in recent budget discussions the coverage of these risks has been reduced to eight FSAPs per year; the main components in terms of risk assessment will be stress tests to evaluate physical and transition risks. The systematic integration of climate risks will make it easier to monitor the evolution of climate risks over time.[37] In addition, FSAPs provide a helpful vehicle for assessing the ability of national regulatory and supervisory frameworks to deal with climate-related financial risks.

The Fund could usefully concentrate on closing gaps that national authorities, the NGFS or other international bodies have not covered regarding climate scenario analysis and climate data. Notably, the IMF has so far provided an independent contribution to the assessment of climate-related risks for the financial systems of the assessed jurisdictions, without replicating work already done at the national (or international) level, and has introduced some methodological innovations. It could contribute further by exploring new risks and international spillovers (including with the FSB). This approach would be key to increasing our – still limited – understanding of climate risks for the financial system and improving the analytical frameworks. At the same time, it would avoid costly and inefficient duplications of national analysis. In this sense, the use of existing models and NGFS scenarios could be expanded, for instance by adapting them to the needs of members that do not have the capability to perform these analyses or to assess country-specific risks (not already addressed by national authorities). Whenever relevant, e.g. owing due to spillovers, this work should evaluate the global repercussions of climate change and the transition to a low-carbon economy.

The IMF should build a globally acknowledged standard set of scenarios, based on transparent assumptions, and make these scenarios available to national authorities for their inclusion in climate stress tests. Although they represent a convenient starting point, NGFS scenarios are long-term in nature and are therefore not very useful for the purposes of IMF surveillance, which must necessarily consider shorter-term horizons. In the United Kingdom FSAP (2022), the IMF explored an approach ("climate Minsky moment") that links longer-term projections to the nearer term. Looking ahead, the IMF could further develop climate risk scenarios that fit those horizons better. Nevertheless, the Fund should take into account any NGFS plans or related developments to avoid a proliferation of scenarios, and make use of the global scenarios developed by the NGFS without stifling innovation in scenario design. In addition, the Fund should develop scenario analyses and stress test models that take full account of specific country features, particularly those of emerging market economies and LICs for which climate stress tests seem especially useful given their limited domestic resources. These models could cover the implications of policy changes for financial stability, the assessment of acute physical risks or the evolution of transition in previously resource-intensive

[37] The CCS proposes a three-step approach to climate risk assessment in FSAPs. The first step is a climate-related financial risk diagnostic to decide on the scope of the assessment and identify the relevant physical and transition risks. The second is to design climate scenarios. The third step would focus on medium-term risks that could materialise over the three to five-year horizon and apply scrutiny to physical risks. The Fund will also assess climate-relevant financial regulation and the need for adaptation in the financial sector. In addition, the IMF is developing guides for the banking and insurance sectors on how to include climate risks in supervision and regulation.

economies. Stress testing for physical risks should focus on countries where those risks are more relevant, as proposed in the CCS for the first step of the Fund approach to climate risk assessment in FSAPs. Transition risks meanwhile apply to all member countries to some extent and should therefore be stress-tested for a larger set of countries where they could give rise to concerns over financial stability.

Going beyond refining FSAPs and climate scenarios/stress tests, the IMF could consider several additional initiatives. First, from an oversight perspective, the Fund should continue to work with central banks and supervisory and regulatory authorities on ways to improve climate risk disclosure and classification standards.[38] These will (i) help financial institutions and investors to better assess their climate-related exposures, (ii) support green investments and (iii) allow investors to make informed decisions so as to price and manage climate risks effectively. Second, together with the FSB and the NGFS, the IMF could help (i) identify relevant data gaps in its members' statistics, (ii) identify appropriate strategies for closing these gaps and (iii) define a suite of possible risk indicators. The IMF can act as a hub for the sharing of information and tools among the members. It can also put together a database for sharing the experiences of individual members with the whole membership. In addition, it could keep on expanding its collection of climate data in the CCID.

[38] See, for example, Ferreira et al. (2021); and FSB and IMF (2021). The IMF also participates in the FSB roadmap for addressing climate-related financial risks published in July 2021 (FSB, 2021).

4 Climate change, IMF lending and capacity development

The targeting of IMF financing towards climate change raises two important issues. First, the lending framework of the Fund, until 2021 consisting of the General Resources Account (GRA) and the Poverty Reduction and Growth Trust (PRGT), **is not designed to address BOP problems in the very long term**. On the one hand, under Article V, Section 3(a) of the IMF's Articles of Agreement, the Fund's general resources – and hence all forms of non-concessional lending which are financed through the GRA – can only be used to help members solve their temporary BOP problems.[39] On the other hand, the IMF's concessional financing through the PRGT, i.e. by the additional contributions of Fund members, is not subject to the limitations envisaged in Article V, Section 3(a).[40] Financing through the PRGT has longer duration and maturities but is reserved for a limited number of eligible countries only. As a result, the IMF's GRA and PRGT financing toolkit is not well suited to dealing effectively with the deep structural problems related to climate change adaptation or mitigation. Indeed, solving these problems would typically entail a long-lasting relationship with the borrower and, in a variety of cases, would be likely to fall within the area of responsibility of the World Bank and other multilateral development banks. In order to address these longer-term problems and help design consistent and non-redundant conditionality, the Fund should endeavour to enhance its cooperation on conditionality design with other multilateral institutions including the World Bank or, for the financial sector, the FSB and the NGFS.

Second, the IMF cannot (and should not) be the sole or main provider of funding to meet the enormous global financing needs related to climate change.[41] As a general rule, all forms of IMF lending should endeavour to mobilise additional sources of official and private financing;[42] this is especially important for IMF arrangements that contain climate-related conditions, as recognised by the IMF itself.[43] To this end, Fund programmes should feature appropriate forms of conditionality with the objective of sending positive signals to the other official lenders and private investors. The provision of capacity development assistance may also play an important role in this regard, especially when private money is indispensable for financing infrastructure projects related to climate adaptation

39 The exact way in which the concepts of temporary BOP problems and temporary use of Fund resources translate into lending practice has evolved over time. Currently, the duration of non-concessional IMF facilities is between six months and four years, with associated maturities of up to ten years in the case of the Extended Fund Facility.

40 According to Article V Section 2(b), the IMF may also provide financial and technical services to its members through the establishment of administered accounts or trusts, provided that these (i) are consistent with the purposes of the Fund, (ii) do not create any risk of losses for the GRA and (iii) do not impose obligations on members without their consent.

41 These needs are estimated to be in the range of USD 3-4 trillion annually; see, for example, IMF (2022c).

42 For evidence on the IMF's catalytic role (or its lack of such a role) under particular circumstances, see, for example, Erce and Riera-Crichton (2015), Krahnke (2020) and Maurini and Schiavone (2021).

43 See IMF (2022c).

(possible ways of stepping up cooperation/coordination between the IMF and other international bodies and organisations are discussed in Section 5).

Nevertheless, the current guidelines on IMF conditionality offer some flexibility to include climate-related objectives in lending programmes under the GRA and PRGT, provided they are macro-critical. Further steps in this direction have been made with the establishment of the Fund-administered RST, which will play a useful role in supporting countries efforts to carry out reforms in order to strengthen their resilience to climate change shocks (see Section 4.2).

4.1 The IMF's lending toolkit

This section looks at the toolkit available prior to the launch of the RST, which is discussed in Section 4.2. IMF lending can help countries implement their climate mitigation and adaptation strategies, as well as fostering their transition to a low-carbon economy through a combination of financial support and policy adjustment. The financial support would help countries to address their immediate or protracted BOP problems and could be used to (co-)finance the implementation of measures designed to fight climate change. At the same time, policy adjustment in the form of an economic reform programme would help restore financial stability while laying the foundations for strong and sustainable economic growth, taking into account the long-term challenges raised by climate change.

The current guidelines on IMF conditionality provide some scope for it to include climate-related objectives in its programmes when climate-related measures are deemed macro-critical, in accordance with the IMF's mandate. As noted earlier, the GRA and PRGT lending framework focuses on short to medium-term BOP issues. Within this scope, it can support members in implementing their climate adaptation and mitigation policies by structurally integrating climate considerations into the design of the programmes, provided these considerations are macro-critical. This would apply, for instance, to measures aimed at enhancing domestic revenue mobilisation or policy adjustments to build up reserve buffers. These steps would be in line with the objective of Fund support and would increase (financial) resilience to future climate-related shocks (adaptation). In the area of mitigation, the removal of fuel subsidies would be an obvious example of synergies that could be targeted under Fund-supported programmes (see below for more details). However, as the financing facilities under the GRA and PRGT are not intended to address long-term BOP issues, they are not adequately designed to deal with the longer-term risks to macroeconomic stability posed by climate change.

The financing facilities under the GRA and PRGT are generally not a suitable instrument for addressing climate change adaptation, if the term "adaptation" means becoming better prepared to cope with a changing climate via appropriate infrastructures and other structural measures that fall outside the Fund's sphere of competencies and responsibilities. **However, when it comes to risks from more frequent or more severe national disasters, the GRA and PRGT lending toolkit allows the IMF to provide emergency financing to countries hit by natural**

disasters through its Rapid Financing Instrument (RFI) and Rapid Credit Facility (RCF), respectively. The "large natural disaster" windows of the RFI and RCF, introduced in 2017, allow increasing emergency financing for countries experiencing urgent BOP needs arising from natural disasters where the economic damage is equivalent to or exceeds 20% of a country's GDP. In the context of the COVID-19 pandemic, the IMF Executive Board has shown flexibility by approving temporary modifications to the access limits of the large natural disaster windows, with the aim of increasing the emergency financing available for countries needing help to respond to the COVID-19 pandemic.[44]

Non-emergency lending tools can be used to help countries adapt to the impact of climate change, on the condition that the adjustment measures are deemed critical to solving a member's BOP problems (IMF, 2021a). Policies that enhance countries' structural and financial resilience (e.g. through domestic revenue mobilisation or higher reserve buffers) help them to prepare for climate change and build resilience to natural disasters. Such strategies include building climate risk maps and fiscal buffers, integrating risk transfer strategies and incorporating climate risks into the fiscal and macro-financial frameworks.

In addition, GRA and PRGT financing has not been designed as a suitable instrument for climate change mitigation. However, IMF-supported programmes may incorporate climate considerations if these are regarded as macro-critical and in line with the programme's objectives. When designing a programme, countries face a range of policy and reform options for solving their problems. More frequent recourse to policy options that contribute to the dual ambition of resolving short-term BOP issues while simultaneously setting out a path to reduced GHG emissions (e.g. carbon pricing and energy subsidy reform) seems necessary.

Several types of policy can support climate change adaptation and mitigation in programmes (Box 1 provides specific examples of climate-related policies in country programmes).

- Policies related to *fiscal adjustments* can include a range of climate-related measures (e.g. energy subsidy reforms, carbon pricing, new taxation) that help the member to resolve its BOP problems and to move towards long-term objectives related to climate change.
- Policies related to *the transition towards a low-carbon economy* can include a range of measures that help countries move from a high to a low-carbon-intensive economy. For instance, in oil-producing countries, programmes can foster economic diversification and limit the long-term economic repercussions of reduced global oil demand following the expected global transition to a low-carbon economy.

[44] In addition, funds available under the Catastrophe Containment and Relief Trust can provide grants for debt relief for the poorest and most vulnerable countries hit by catastrophic natural disasters (or public health disasters, such as the Ebola and COVID-19 crises).

- Policies supporting *investments* can be oriented towards climate change adaptation in order to develop critical infrastructure, maintain biodiversity and ensure water security.

Box 1
Examples of climate-related policies in country programmes

Recent experience shows that climate policies have already been incorporated successfully into programme design in many countries.

- **Solomon Islands 2012:** The Extended Credit Facility (ECF) programme emphasised the need to rebuild fiscal and external buffers and increase resilience via climate adaptation and mitigation (upgrading infrastructure, participation in the external sovereign insurance mechanism, etc.).
- **Republic of Congo 2022:** Reforms supporting improved governance, economic diversification and resilience were designed to help the country confront challenges from climate change and the global transition to a low-carbon economy (e.g. phasing out tax concessions to oil producers, fostering economic diversification, improving non-oil private sector activity, etc.) – gradually resulting in improved incomes, job creation, lower inequality and an exit from the situation of economic fragility.
- **Ukraine 2015:** The Extended Fund Facility (EFF) programme aimed to strengthen fiscal sustainability through expenditure-led adjustment and frontloaded price increases to reduce energy subsidies. Although these measures were primarily focused on fiscal sustainability, they obviously also affected climate outcomes.
- **Democratic Republic of Congo 2021:** The ECF programme includes the preservation of the Congolese environment in the Memorandum of Economic and Financial Policies. The programme's strategy includes an update of forest management and land use regulations in order to protect the tropical massif which constitutes a vast carbon sink and a potential source of fiscal revenues linked to the global carbon market.
- **Seychelles 2021:** The EFF programme with the Seychelles identifies climate change adaptation investments to be prioritised, such as setting up/completing an early warning system and boosting coastal resilience, in order to reduce disaster risks.

4.2 The Resilience and Sustainability Trust

The IMF is expanding its lending toolkit with the objective of helping members address prospective BOP problems stemming from macro-critical long-term challenges, including climate change. The longer-term focus on prospective BOP issues of the new RST, which was established with effect from 1 May 2022 and became operational in October 2022, marks a clear distinction from previous financing instruments; these sought primarily to address actual/potential short-term BOP needs or more protracted, medium-term BOP problems. The provision of

financing for prospective BOP needs via a trust fund is within the Fund's mandate, as it will complement the existing policy advice provided by the Fund under Article IV on members' policies that influence prospective macroeconomic stability.[45] As with all other Fund financing, RST loans will be provided as liquid and fungible BOP support that is not earmarked for specific projects and is dependent on a favourable debt sustainability assessment and an adequate capacity to repay.

The RST aims to enhance the policy space of member countries by facilitating access to affordable long-term financing. Long-term structural challenges such as climate change can have far-reaching macroeconomic implications, yet many small, poor and vulnerable countries lack the resources, policy space and access to financing to properly address such challenges (IMF, 2021a). In addition, adequate policy action to address structural challenges typically requires frontloading measures, which are generally costly, while benefits often materialise over a longer horizon (IMF, 2019). This mismatch in timing presents vulnerable countries with a difficult trade-off: while policy inaction could lead to adverse macroeconomic effects over the longer term, frontloaded action has an immediate fiscal cost and may thus increase a country's short to medium-term vulnerability through debt build-up. With respect to climate change specifically, the RST has the potential to reduce risks by providing support for:

1. adaptation measures (improving preparedness through contingency plans, making agriculture more resilient to climate-related shocks, promoting economic diversification, adapting physical infrastructure and strengthening the financial architecture);

2. mitigation measures (energy subsidy reform, the introduction of carbon taxes, investments in clean energy production, the conservation of forests and other carbon sinks);

3. addressing distributional effects to increase (political) support for climate change mitigation/adaptation and the transition towards a low-carbon economy.

Since RST financing will be coupled with a new or existing upper credit tranche (UCT) quality programme that supports macroeconomic stability, it is important to make sure that this financing is based on a sound business case, will not become a quasi-automatic way of "topping up" ordinary IMF loans and will not be used to circumvent the Fund's exceptional access policies. Instead, RST support should be assessed on a case-by-case basis to determine whether countries are facing long-term climate vulnerabilities and whether the RST is an appropriate tool. A prerequisite is an assessment of financing and reform needs related to the longer-term prospective BOP vulnerabilities arising from climate change and the ability of an RST-financed programme to address these vulnerabilities. Additionally, in the case of highly indebted borrowers, the risk of overloading a country with super-senior debt needs to be carefully assessed.

[45] See IMF (2022c).

Despite the stated purpose of the RST, its complementarity to the GRA and PRGT toolkit hinges to a large extent on the design and conditionality of its programmes, especially in relation to the concurrent UCT programme. In addition, for the RST to fill a gap in the international lending framework and avoid duplicating the efforts of other international financial institutions (IFIs), efficient cooperation with such institutions is indispensable.

4.3 Programme design, climate-related conditionality and capacity development

The design of IMF adjustment programmes and the associated conditionality[46] **should support the programmes' objective of helping to alleviate the impact of climate change while assisting borrowing countries in resolving their BOP problems. In addition, the interaction between the adjustment programme and the national growth-enhancing strategy needs to be considered carefully. In particular, policy conditions related to climate change should closely adhere to the five principles of the IMF's 2002 Guidelines on Conditionality** (ownership, tailoring, coordination with other multilateral institutions, parsimony and clarity).

Specific considerations regarding these five principles in the context of climate-related lending include the following.[47]

1. National **ownership** is an essential ingredient for all forms of IMF conditionality, not just those related to climate change. However, ownership is especially warranted when the required policy adjustment measures are aimed at addressing BOP problems that may possibly occur over a period extending beyond the expected horizon of ruling governments. In these cases, as a bare minimum it will be important to follow a careful communication strategy, mindful of the distributional consequences of these measures, to garner political support and understanding for the proposed programme (for country ownership problems in RST financing, see Box 2).

2. **Tailoring** is important because climate change may affect countries in distinct ways. Whereas fossil fuel-exporting economies may mainly need to adjust by redesigning their overall economic structure (diversification), small island states are mostly affected through (extreme) weather events that require specific adaptation measures. The implementation of mitigation measures – in particular adequate carbon pricing in concert with a robust border adjustment mechanism – is clearly in the collective interest, whereas the impact is obviously greatest when implemented by the largest emitters of GHGs in a coordinated manner.

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46 IMF conditionality refers to the domestic policy adjustments required to use Fund resources. It encompasses the underlying macroeconomic and structural policies, as well as specific methods used in Fund arrangements to ensure that programme goals are achieved. Conditionality is intended to ensure that Fund resources are provided to members to assist them in resolving their BOP problems in a manner that is consistent with the Fund's purposes and that establishes adequate safeguards for the temporary use of its resources (IMF, 2002).

47 RST financing raises additional specific challenges for programme design and conditionality; these are examined in Box 2.

3. In any case, **coordination with other (multilateral) institutions** will be key to formulating forms of conditionality that, taken together, are best suited to addressing countries' climate change problems. This is reinforced by the fact that IMF staff still lack adequate levels of climate expertise. Cross-conditionality, under which the use of IMF resources would directly depend on the rules or decisions of other organisations, must however be avoided, as it is explicitly prohibited under the Guidelines. To reduce incentives for facility shopping among Fund instruments as well as facilities provided by other IFIs, coordination with these institutions should be stepped up and the modalities and policies relating to programme conditionality and monitoring should be transparent and predictable. Some form of alignment of qualification criteria (policy conditions and facility pricing) could be considered (on this issue, see also Section 5).

4. To maintain a **parsimonious** application of conditionality, it should be clearly demonstrated, as in any programme, that climate-related conditions are either critical to achieving the programme goals or to monitoring implementation of the programme, or necessary for the implementation of specific provisions or policies developed under the Articles of Agreement.

5. Regarding **clarity**, the objectives and conditions of each programme must be well specified and coordinated in order to avoid overlap and conflicting reforms. The reform targets under each programme should be directly linked to the purpose set out for it: the concurrent UCT programme is intended to cover all aspects related to the resolution of short to medium-term BOP needs, including those related to climate change, whereas structural challenges that require a long-term horizon will be covered under the RST. For instance, experience from earlier programmes indicates that fossil fuel subsidy reforms have been successfully included in UCT programme conditionality. Hence, it should be standard practice to consider integrating such reforms into the underlying UCT programme before they are considered for the RST programme.

Box 2

Specific challenges for programme design and conditionality of the RST

In addressing longer-term challenges/objectives, the RST is likely to raise specific challenges for programme design and conditionality. The RST represents the first instance where IMF conditionality would be exclusively focused on achieving such longer-term objectives, which are likely to extend over several governments. Given that frontloaded access to credit may be required in a number of RST programmes, the Fund's leverage to secure reforms in a later stage of the programme or after a review may be limited. A mismatch between frontloaded funds and backloaded reforms should hence be avoided, as this would reduce debtor countries' incentives and increase risks for the IMF significantly, and due attention should be paid to country ownership for multi-government programmes. This risk is partially mitigated as access to RST financing will be portioned into several disbursements in the first years of the programme, which will be tied to the completion of IMF Executive Board reviews assessing the implementation of reform measures.

Another challenge for the design of RST conditionality is its difference in duration compared with the concurrent UCT programme. In this regard, close attention should be paid to post-programme monitoring once the UCT programme has been finalised, with a view to ensuring that the macroeconomic situation in a country remains favourable and does not pose any threats to the realisation of RST-supported policy actions. The final design of the RST addresses this concern and prescribes post-programme monitoring to take place through the Post-Financing Assessment Policy and subsequently AIVs (details on how the structural challenges addressed by the RST will be incorporated still need to be communicated to the IMF Executive Board). In the same vein, the adequate use of the various forms of domestic commitments (prior actions, performance criteria, indicative targets, structural benchmarks) can contribute to the implementation of reforms over the lifetime of the programme, while reform fatigue could increase over time.

Without going into specific ideas for policy reforms, which are likely to be heterogeneous across countries, conditionality under the RST should in particular focus on:

1. regulatory and supervisory frameworks to better assess climate-related financial sector risks;
2. sound adaptation policies that increase resilience against future climate-related shocks (such as extreme weather events);
3. progressive mitigation policies that are in line with international/global emission ambitions and NDCs under the Paris Agreement;
4. reforms that address distributional issues to garner widespread political support;
5. a thorough climate finance strategy.

To enhance effectiveness, it is of paramount importance to closely integrate programme design and conditionality with the Fund's surveillance activities and capacity development. Analytical and policy work in the context of AIVs and FSAPs can provide a good starting point for the formulation of climate-related policy conditions. The actual selection of conditions should be informed by structural gaps identified in the borrowing country's policy framework. In addition, a clear link should be established with technical assistance. This is particularly important in the climate sphere because many countries (still) lack capacity/experience in dealing with these issues. In the Executive Board, this view has been loudly voiced by several chairs. Reinforcing this link is critical to optimising the actual impact of climate-related policy conditions. Hence, there is a clear case for substantially increasing external climate-related training and close coordination and cooperation with regional technical assistance centres, with a view to enhancing countries' capacity. Finally, climate-related conditionality in IMF-supported programmes should avoid negative external spillovers.

4.4 Debt sustainability assessments and climate change

Finally, there is a need to adequately consider the likely effects of climate change in the Fund's DSAs.[48] Countries' exposure to climate risks and policy options for managing such risks have to be integrated better and more systematically into DSAs, even if this means adding a further layer of complexity to an already difficult exercise. Empirical studies indicate that climate change has already increased vulnerable countries' sovereign debt costs, and these effects may increase further.[49] Through adequate stress testing, the inclusion of different climate scenarios on top of the baseline scenarios and the incorporation of long-term risks, DSAs will better reflect the longer-term challenges of member countries and contribute to enhancing IMF lending programmes' chances of success. The forthcoming RST focuses on long-term challenges and further underlines the need to incorporate longer time horizons into the DSA.

The reviews of the Debt Sustainability Framework for Low-Income Countries (LIC DSF, 2017) and the Sovereign Risk and Debt Sustainability Framework for Market-Access Countries (MAC SRDSF, 2021) have already brought improvements that allow climate considerations to be included in the DSA, although actual DSA practice will need to be monitored. For countries that are frequently exposed to natural disasters, the LIC DSF includes a stress scenario that incorporates a large temporary impact on growth.[50] In addition, guidance is provided on how to incorporate the average impact of such disasters into long-term baseline projections. The new MAC SRDSF, to be rolled out in 2022, will include a similar stress scenario. In addition, a long-term module in the MAC SRDSF will account for the fiscal cost of climate change adaptation and mitigation policies (IMF, 2021a). Further reflection is warranted on how climate change may affect debt ratio projections (e.g. through lower potential growth, higher climate change spending needs and/or the materialisation of contingent liabilities). Additional analytical work on modelling the benefits of increased resilience and adaptation policies (or the benefits of frontloaded mitigation actions) in both DSA frameworks could also help to improve the way in which climate change is factored into DSAs and would complement the climate change-related modules.

48 DSAs are an essential part of any IMF lending programme, as they help determine whether sovereign stress can be resolved via a combination of IMF financing and economic reforms, or whether measures such as debt restructuring are needed to deliver medium-term debt sustainability (IMF, 2021e). Such analyses are also useful in developing IMF conditionality.

49 See, for example, Beirne et al. (2021) and Cevik and Tovar Jalles (2020a, 2020b).

50 Such stress scenarios have already been used by the Fund in the DSAs of various countries. These include the DSAs for Madagascar in 2021, for Samoa in 2021, for Tonga in 2020, for Nepal in 2019 and for Grenada in 2019.

5 Partnering with other bodies and institutions

With climate change being widely recognised as a global environmental and economic challenge, the network of multilateral organisations and fora devoted to climate change across different approaches has grown in size and complexity in recent years (see Annex 2 for an overview of the current landscape, which includes different forms of IMF cooperation with and participation in institutions, fora and groups such as the World Bank, the G7/G20, the Organisation for Economic Co-operation and Development, the Bank for International Settlements, the FSB and the NGFS). The IMF is also stepping up its climate work (and financing), and this area presents an opportunity to move the IMF's cooperation and coordination forward. Indeed, the Fund should enhance its interactions with external partners to exploit synergies and other institutions' expertise, to avoid overlaps and gaps and to be able to optimise the catalytic effect of IMF lending on the financing of other international financial institutions and the private sector, especially in developing countries.

The G20 principles for coordination between the IMF and multilateral development banks (MDBs) (see G20, 2017) and for cooperation between the IMF and Regional Financing Arrangements (G20, 2011), together with the Report of the G20 Eminent Persons Group on Financial Governance (G20, 2018), provide valuable recommendations to guide cooperation among different institutions. The following are some of the principles, guidelines and suggestions relevant for the Fund's interactions with other international bodies and organisations on climate change issues. These principles should remain flexible, as one size cannot fit all.

First, inter-agency cooperation and coordination should avoid overlaps and potential conflicts. To this end, it should take place according to the following general guidelines.

- Respect the roles, mandates, independence, expertise and decision-making processes of each institution.
- Avoid mission creep and build on complementarities between institutions (see also Box 3).
- Establish a clear assignment of responsibilities and protocols for joint actions.
- Agree on a framework for ongoing collaboration, regular dialogue and open lines of communication between staff teams.
- Build effective country, regional and global platforms to harness complementarities and synergies between international financial institutions (G20, 2018) on key issues such as climate change. More strategic and structured coordination of country-level work and policy advice can bring large efficiency gains and unlock private investments. Effective platforms require a

high level of transparency and a set of agreed core standards, including environmental ones.

Second, inter-agency cooperation and coordination should be aimed at optimising policy advice by exploiting the expertise of each institution and making use of the respective capabilities in terms of surveillance and technical assistance. In particular, these institutions should consider:

- providing, upon request, a frank and up-to-date assessment of the country's situation and prospects depending on the mandate and expertise of the institution;
- participation of other institutions' staff in surveillance missions, with the consent of the country concerned (IMF, 2017b);
- enhancing coordination in providing technical assistance and capacity building;
- agreeing on regular training courses and joint seminars (IMF, 2017b).

Finally, cooperation on lending activities should prevent arbitrage and facility shopping but at the same time should be a catalyst for additional finance (including from the private sector). Inter-agency cooperation in this field should therefore include the following.

- Early and regular engagement and information sharing, including joint missions where possible and necessary.
- Coordination of lending and grants to provide the borrowing country with the appropriate incentives and financing to implement its reform commitments and achieve the programmes' goals. The "lead agency" approach (as in the case of the collaboration between the IMF and the World Bank Group (WBG)), applied with flexibility and taking into consideration each institution's core areas of responsibility, can be used as a benchmark (ECB, 2018). When co-lending, institutions are likely to consider the balance between the IMF's expertise in programme design and monitoring on the one hand and the "stigma" associated with IMF financial programmes on the other (ESM, 2016).
- Cross-conditionality in lending conditions should be avoided, and programmes should be designed in such a way that they (i) also take into account other institutions' surveillance and technical assistance activities – technical assistance provided by the WBG/MDBs could be based to some extent on private sector expertise, thus enhancing the "catalytic" role of IMF lending – and (ii) preserve each institution's framework for using its resources (IMF, 2002).
- Accurate categorisation of liquidity needs and the type of support required so that the terms of each financing programme/instrument can be structured appropriately.

Box 3
Interaction between the IMF and the WBG

The interaction between the IMF and the WBG[51] is governed by the "1989 Concordat" (IMF, 1989) and its subsequent refinements (IMF, 2007). However, the collaboration between the two has been rather uneven so far, as pointed out in IEO (2020). The Independent Evaluation Office (IEO) points to climate issues as the primary example of an **area in which the IMF should adopt a more strategic approach to collaboration with the WBG** and potentially other relevant partner organisations (see Annex 3 for a comparison of IMF and WBG climate-related work and resulting overlaps). In particular, the IEO suggested agreeing on a concrete framework for collaboration with clearly delineated roles. However, it should be noted that such a collaboration framework should be **transparent and sufficiently flexible** to be effective, as modalities might vary between different products or programmes.

Such a framework could make use of the principles and guidelines mentioned above and include **modalities (i) to respect the roles, independence, expertise and decision-making processes of each institution**; **(ii) to ensure the timely and regular exchange of information for surveillance and capacity development activities** (including providing an assessment of the country's situation upon request) and **(iii) to coordinate lending and grants** so that they complement each other and provide the borrowing country with appropriate incentives to implement its reform commitments (including better aligning programme design and conditionality).

The IMF Management Implementation Plan (IMF, 2021d) takes some IEO recommendations into account, for instance showing **best practice examples** of collaboration between country teams of two institutions, including joint work in **surveillance** (e.g. on the Carbon Pricing Assessment Tool used to evaluate country mitigation strategies or climate scenarios in FSAPs) and **capacity development** (technical assistance, including coordination of WBG Country Climate and Development Reports and IMF CMAPs[52]). A recent Guidance Note by IMF and WBG staff (IMF and World Bank, 2022) also specifies some guidelines for more effective information sharing and collaboration between the institutions. However, it shows that **collaboration and information sharing on climate change** between the IMF and WBG staff currently **takes place largely at the technical level**, based on work streams.[53] The IMF also collaborates with the WBG in international fora.[54]

51 The term "interaction" is used here in a broad sense to cover all forms of engagement between the Fund and the WBG. These include "cooperation" (i.e. mutual support in achieving independent institutional goals through exchanges of knowledge and information), "coordination" (i.e. agreed mechanisms to support common objectives) and "collaboration" (working jointly on common projects based on common objectives); see IMF (2021d).

52 The predecessors of these – the joint six Climate Change Policy Assessment pilots for small states most vulnerable to natural disasters carried out together by the IMF and the WBG – were very much appreciated by the membership, comprising a comprehensive assessment of adaptation policies and investment needs. However, the WBG decided to develop its stand-alone product, causing the IMF to do the same. Unfortunately, this solution is not optimal and will require a lot of operational coordination to limit overlaps and ensure consistent advice to member countries.

53 As also pointed out in IEO (2021), the management plan still lacks a commitment by the IMF to develop a concrete framework for effective collaboration with the WBG on climate issues.

54 For example, co-hosting the Secretariat of the Coalition of Finance Ministers for Climate Change and leading a joint project (also with the Bank for International Settlements and the Organisation for Economic Co-operation and Development) on developing operationalisation guidance on the G20 Sustainable Finance Working Group's high-level principles for sustainable finance alignment approaches.

Coordination should be stepped up and modalities should be developed for better **aligning programme design and conditionality** when incorporating climate-related considerations (as also discussed in Section 4). This seems to have been taken (at least partly) into consideration by staff while developing the RST.[55] However, similar principles and modalities could also be considered for existing programmes. This could have the catalysing effect of attracting other financing (including from the private sector) by giving a positive signal to the market about sound reform commitments.

[55] The principles and modalities for WBG-Fund coordination for the upcoming RST in the area of climate change area include a focus on areas of expertise, early engagement of both institutions, consistency of country diagnostics (including designing the RST programme based on *ad hoc* WBG assessment letters on the authorities' climate policies) and continuous information sharing.

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Annex 1: Climate change and financial stability: division of labour between supranational bodies and organisations

Financial Stability Board – The FSB has set up a roadmap for addressing climate-related financial risks which promotes initiatives undertaken by other IOs and seeks to identify work that still needs to be done, not least in the field of data collection (FSB, 2021). This roadmap has fed into the G20 sustainable finance roadmap, which will help inform the broader G20 agenda on climate and sustainability (G20, 2021).

Basel Committee on Banking Supervision – The BCBS is examining the extent to which banks' climate-related financial risks can be addressed within the Basel Framework. The aim is to identify gaps in the current framework and consider measures to address these gaps. To that end, the BCBS has recently developed a set of high-level "Principles for the effective management and supervision of climate-related financial risks", in an effort to promote a principles-based approach to risk management and supervisory practices for climate-related financial risks (Pillar II). In addition, the BCBS is considering whether there is a need to adapt Pillar I of the Capital Framework. In terms of disclosure, the Committee will cooperate with the international sustainability standards Board, while also looking at non-bank specific pillar III disclosures (BCBS, 2021).

IOSCO – *IOSCO* has mainly focused on the use of environmental, social and governance (ESG) ratings. To improve sustainability-related practices, policies, procedures and disclosures in the asset management industry, it issued "Recommendations on Sustainability-Related Practices, Policies, Procedures and Disclosure in Asset Management" in late 2021 (IOSCO, 2021).

OECD – Besides publishing a host of analytical papers on sustainability and climate change, the OECD publishes the Climate Action Monitor, which is meant to be part of the UNFCCC monitoring framework. The Monitor provides a diagnostic policy framework to assess the progress made in mitigation and adaption policies in individual countries in relation to the Paris Agreement (OECD, 2021).

ECB and ESRB – The ECB and ESRB work closely together, for instance on further developing the analytical basis for assessing climate-related risks for the financial system using climate stress test exercises.[56] Moreover, its works tackles measurement gaps, the pros and cons of short- and long-term scenarios and, building on previous work in this field, modelling choices for scenario analysis.

Network of Central Banks and Supervisors for Greening the Financial System – Together with climate scientists, energy experts and economic modelers, the NGFS has developed a set of climate scenarios that serve as a common underpinning for

[56] See ECB/ESRB Project Team on climate risk monitoring (2021), "Climate-related risk and financial stability", Frankfurt, July. More work is currently ongoing.

the climate analyses and stress tests undertaken by its members.[57,58] These scenarios were chosen to show a range of lower and higher risk outcomes that may arise from an orderly or disorderly transition or if no climate policies are taken to reduce the rise in temperature. The six scenarios[59] aim to construct plausible future paths that could arise from possible changes in climate, economic conditions and policy responses.[60] Given the high uncertainty around climate and policy evolution, the scenarios do not provide forecasts for the future (nor define tail risks), but describe plausible hypothetical paths under certain assumptions.

Climate scenario analysis represents a new field for the economic profession.[61] These exercises differ in scope, aim and methodology. Ultimately, they aim at gauging micro- and macro-prudential risks, as well as risks of a more general economic nature. However, as most members have undertaken this kind of analysis for the first time, the emphasis in many cases has been on properly identifying risks to the financial system, raising awareness of long-term climate challenges within the country or organisation, improving capabilities in modelling climate risks and identifying possible methodological and data gaps. At this stage, no member has planned to use the results of this exercise as the basis for calibrating policy responses.

Despite the rapid evolution, methodological issues remain, and undertaking analyses raises several challenges. These are mainly related to the use of NGFS scenarios, the availability of granular data on climate risks and the assumptions underlying the macro-financial models, especially with long time horizons. Scenario analyses are resource-intensive and require skills and resources that are not always available. They will likely require significant upscaling of knowledge in many institutions, suggesting a role for capacity development initiatives like the Climate Training Alliance.

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57 For each scenario, the NGFS provides a coherent set of pathways for climate and key macroeconomic variables over the long term, produced by a suite of Integrated Assessment Models (IAMs). The NGFS scenarios are themselves built on "Shared Socioeconomic Pathways" (SSPs). These model alternative pathways for areas such as population and human development, economy and lifestyle, policy and institutions, technology, environment and natural resources. The members of the NGFS and the group of climate modellers agreed to confine analysis of the financial system's vulnerabilities to climate-related risks to the "middle of the road" pathway (SSP2) in the first stage. This envisions a continuation of current developments in population, gross domestic product, urbanisation and technological progress.

58 These scenarios were primarily developed for central banks and supervisors, but are fully accessible to the public for further use, e.g. by academics or financial market participants (NGFS, 2020, slide 5).

59 There are two scenarios each for different future pathways. "Current policy" and "Nationally Defined Contributions" describe the "Hot House World" pathway; "Below 2°C" and "Net-Zero 2050" correspond to the pathway termed "Orderly"; "Delayed Transition" and "Divergent Net Zero" make up the "Disorderly" pathway. See NGFS (2020), slide 5-7.

60 In the first iteration in 2020 the NGFS presented eight scenarios, but reduced this to six in 2021.

61 By October 2021, slightly over 30 members of the NGFS had undertaken this exercise. Of those, 22 members used one or more of the NGFS scenarios as the foundational component of their analysis, adapted to the objective (see NGFS, 2021, pp. 6-7, for an overview of the individual projects). Many other authorities are also developing (or planning to develop) scenario analysis using the NGFS scenarios.

Annex 2: International landscape of fora and institutions on climate change. A non-exhaustive list.[62]

Institution/ Forum	Nature and scope	Climate change involvement	Analysis and advice	Financing	Capacity development	Surveillance	Data	Other activities
G20/G7/ MEF (Major Economies Forum on Energy and Climate)	Forum for discussing policy options: non-binding informal groups	Leaders committed to climate change mitigation – reducing GHG emissions, phasing out fossil fuel subsidies						
UN[63]/ COP/ UNFCC[64] (1994) and agencies	Global Forum for global climate change agreements	Building consensus and agreement on universal, legally binding international treaties on climate change Developing policies and guidance to support Parties in the implementation of the Convention, the Kyoto Protocol and the Paris Agreement	Scientific and technological matters related to low-emission and climate-resilient technologies	Funding adaptation in developing countries, coordinating climate change financing, mobilising resources **MDBs**, the **WB** and **UN** agencies are FIFs' implementing agencies	Technical support and guidance to support implementation of adaptation actions Support to developing Parties to prepare their NAPAs and transparency reports	Monitoring and review of adaptation measures announced by the Parties, certifying emissions reductions, assessing compliance with Parties' commitments	Registration of CDM projects, NDCs, NAPAs See also **IMF**	Stimulate technology cooperation Regularly review worldwide information relevant to climate change (IPCC reports)
Climate and Clean Air Coalition (CCAC) (2012)	Forum for dialogue. Voluntary partnership between governments, inter-governmental organisations, businesses, scientific institutions and CSOs	Goal: reduce levels of black carbon, methane and hydrofluoro carbons (HFCs)	Expert assistance in developing laws, regulations, policies and plans,	Co-funding and catalysed funding	Training, strengthening institutional knowledge, resources and tools			Political outreach, awareness-raising campaigns

62 Cooperations and collaborations in blue and bold.

63 Other UN agencies have also addressed the connections between climate change and human development (UNDP (2007); UNDESA (2009)), the CO2 emissions gap (Convention on Biological Diversity (2012)), finance (AGF (2010)) and human rights (the UN Development Programme/UN Environment Programme/UN Global Compact).

64 Including: UNFCC Secretariat; Subsidiary Body for Scientific and Technological Advice (SBSTA); Subsidiary Body for Implementation (SBI); Adaptation Committee (AC); Compliance Committee; **Consultative Group of Experts (CGE)**; EB of the clean development mechanism; Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts; Facilitative WG of the Local Communities and Indigenous People Platform; Joint Implementation Supervisory Committee; Katowice Committee of Experts on the Impacts of the Implementation of Response Measures; Least Developed Countries Expert Group (LEG); Paris Agreement Implementation and Compliance Committee; Paris Committee on Capacity-building; Standing Committee on Finance; Technology Executive Committee; Intergovernmental Panel on Climate Change (IPCC) (1988).

Institution/ Forum	Nature and scope	Climate change involvement	Analysis and advice	Financing	Capacity development	Surveillance	Data	Other activities
IEA (International Energy Agency) **IRENA (International Renewable Energy Agency)**	Global dialogue on energy to enhance cooperation on energy security	(IEA) increasingly strong mandate to support climate change mitigation decisions (IRENA) developing and transferring renewable energy technologies, with a focus on financing renewable energy	Energy efficiency, clean-energy technologies **IEA-OECD** (Climate Change Expert Group): analytical support on technical issues to international negotiations				IEA Policies and Measures Database[65] (GHG emissions reduction, energy efficiency, renewables and clean energy technologies) See also **IMF**	
OECD	Advanced developing countries (35 members) and EM partner countries (Brazil, India, Indonesia, China, South Africa)	Climate policy and impacts, mitigation, resilience, finance, biodiversity, water and other environmental objectives The Centre on Green Finance and Investment supports the scaling-up of green investment and financing flows	Climate policy research, advice, assessment and building knowledge. Supporting countries' enhancement of green finance and investment (see **IEA**)				OECD Green Recovery Database (measures with environmental relevance from 44 countries+EU) See also **IMF**	Forum on Green Finance and Investment – discussions between public and private stakeholders on sustainable finance and investment Collaborates with **EU TEG**[66] on developing taxonomies on sustainable finance; observer to the **IPSF**
IMF	Global	Climate change mitigation, adaptation and transition: green recovery, green finance, fossil fuel subsidies, etc.	Policy advice on mitigation (reducing emissions and tools to achieve NDCs), adaptation (financial and institutional resilience) and transition (financial sector regulation and diversifying away from carbon) Financial stability implications (collaboration with **NGFS**)	Climate considerations in conditionality if macrocritical Upcoming Resilience and Sustainability Trust	CMAP (Climate Macro-economic Assessment Program): overarching assessment of countries' climate strategies (under development, in collaboration with **WB**) Technical assistance	Bilateral and multilateral surveillance (macro-criticality)	Climate Change Dashboard in collaboration with **OECD, WBG, UN, EC, Eurostat, FAO, IEA** and **NOAA** Climate change will be a priority in a new G20 Data Gaps Initiative[67] (in collaboration with **FSB**) Co-chairs the Bridging Data Gaps WS with the **NGFS** Co-leads the **FSB-SCAV** WS on Climate Vulnerabilities and Data for Financial Supervision	Provides input to international policy considerations (G20, G7, COP) in collaboration with **WB** and **FSB** Participates in the G20 Sustainable Finance WG with **WB, BIS, OECD, FSB, IOSCO** and **UN**, among others

65 Also includes data from the IEA/IRENA Renewable Energy Policies and Measures Database, the IEA Energy Efficiency Database, the Addressing Climate Change database and the Building Energy Efficiency Policies (BEEP) database, along with information on CCUS and methane abatement policies.

66 EU Technical Expert Group on Sustainable Finance (EU TEG); International Platform on Sustainable Finance (IPSF).

67 G20 Data Gaps Inititative (DGI-2). Sixth Progress Report. October 2021.

Institution/ Forum	Nature and scope	Climate change involvement	Analysis and advice	Financing	Capacity development	Surveillance	Data	Other activities
WBG	Global	Climate action (mitigation, adaptation and resilience) aiming to green entire economies		Climate trust fund (Climate Support Facility (CSF)): green recovery, implementation of NDCs, financial risks **MDBs**, the **WB** and **UN** agencies are FIFs' implementing agencies	Financial protection strategies (Disaster Risk Financing and Insurance Program (DRFIP)) CDRS (Country Climate and Development Reports) under development in collaboration with **IMF**		See IMF	CAPE (Climate Action Peer Exchange): capacity-building forum for knowledge sharing and advisory support for finance ministries Provides input to international policy considerations (G20, G7, COP) in collaboration with **IMF** and **FSB**
MDBs (EBRD, AfDB, ADB, IDB, AIIB, IsDB, NDB, EIB)	Regional	Channel resources from multi-donor financial intermediary funds (FIFs[68]) and pooled financing[69] (concessional resources from public and private sources)		Financing to improve resilience to climate change and support mitigation efforts **MDBs**, the **WB** and **UN** agencies are FIFs' implementing agencies			Tracking and reporting climate finance in the context of commitments consistent with the Paris Agreement	
BIS	63 central banks (95% of world GDP)	Supports CBs role in promoting the transition towards a sustainable global economy in connection with their core mandates (supervision, asset management and monetary policy)	Works with **FSB**, **NGFS**					Banking services: Green Bond Initiative (2019) BIS Innovation Hub: Project Genesis (green bond tokenisation), G20 Techsprint (solutions to green and sustainable finance)

68 Examples of FIFs: Clean Technology Fund under the Clean Investment Funds (CIFs); Adaptation Fund (financed through a levy on Certified Emission Reductions (CERS) issued under the Clean Development Mechanism); Funding from private foundations... CIF is the largest climate finance mechanism in the world and the only multilateral climate fund to **work exclusively with MDBs** as implementing agencies with WB IBRD serving as CIF's Trustee.

69 Examples of such pooled arrangements include the Global Environment Facility (GEF) and the two Climate Investment Funds (CIFs)

Institution/ Forum	Nature and scope	Climate change involvement	Analysis and advice	Financing	Capacity development	Surveillance	Data	Other activities
BIS committees	BCBS: develops global regulatory standards for banks to strengthen micro- and macro-prudential supervision Irving Fisher Committee: statistical issues relating to economic, monetary and financial stability FSI (Financial Stability Institute): assists supervisors in improving and strengthening their financial systems	BCBS: Management and supervision of climate-related financial risks within the Basel Framework	BCBS: Scope: measurement methodologies, drivers, transmission channels of climate-related financial risks			FSI: climate risk assessment in the insurance sector, stress-testing for banks	BCBS: Promotes common disclosure for climate-related financial risks. Collaborates with **ISSB** Irving Fischer Committee: survey on sustainable finance statistics to identify data needs, availability and gaps	
FSB	Association hosted by the BIS Forum	Goal: financial system resilience to climate risks (physical and transition) in connection with data availability (TCFD), regulatory and supervisory approaches, monitoring of potential implications of climate change for financial stability	Financial stability risks, stress-testing, regulation and supervision				Task Force on Climate related Financial Disclosures (TCFD) (2015): climate-related financial information reported in line with its voluntary disclosure recommend-ations and guidance (metrics, targets and transitions plans) See also **IMF**	Provides input to international policy considerations (G20, G7, COP) in collaboration with **IMF** and **WB**
NGFS (2017)	105 members and 16 observers Network of BIS financial authorities	Goal: enhance the role of the financial system in managing risks and mobilising capital for green and low-carbon investments	Conducts or defines and promotes best practices and commissions analytical work on green finance Collaborates with **IMF, FSB**				Co-chairs the NGFS Bridging Data Gaps WS with the **IMF**	
IAIS (International Association of Insurance Supervisors)	Association hosted by the BIS Global standard-setter for insurance supervision	Supporting supervisors' efforts to integrate climate-related risks into their insurance supervision and to support sustainable development in the insurance sector	Climate risk implications for insurance supervision					

Institution/ Forum	Nature and scope	Climate change involvement	Analysis and advice	Financing	Capacity development	Surveillance	Data	Other activities
IOSCO (International Organization of Securities Commissions)	Policy forum for securities regulators from 130 jurisdictions representing 95% of securities markets Global standard-setter for securities regulation Collaborates with **G20** and **FSB**	Goal: fostering securities market transparency and protecting investors in relation to environmental, social and governance (ESG) issues. Promoting good practices to avoid green-washing						Makes recommend-ations on sustainability-related issues and regulation Collaborates with **IFRS** and **ISSB**
Central Banks' and Supervisors' Climate Training Alliance (CTA)	Launched ahead COP26, the CTA is a collaboration between the **BIS, IAIS, NGFS** and the **Sustainable Insurance Forum (UN SIF)**	Building the resilience of the global financial system to climate risks			Making training resources on climate risks available to authorities Will establish a portal for global training on climate risks for CBs and supervisors			
Coalition of Finance Ministers for Climate Action (CFMCA) (Bali, 2018)	Forum for fiscal and economic policymakers from over 60 countries endorsing the Helsinki Principles The WB and IMF co-host the Secretariat **25 Institutional partners**: WB, IMF, OECD, UNFCCC, UNDP, UNFCC, EC, UNEP FI, NDC Partnership, NGFS, MDBs, GCF, etc.	Promoting national climate action, especially through fiscal policy and the use of public finance along with the Santiago Action Plan (2019) strategy	Foster peer learning, disseminate knowledge and encourage members to test and adopt innovative climate policies and practices					Facilitate exchange of information on climate change-related fiscal and economic policies and practices (taxation, fiscal planning and management, budgeting, financial sector, role of IFIs)

Annex 3: IMF and the World Bank: climate-related strategic areas, products and financing instruments

(Possible overlaps highlighted in black)

IMF	WBG
Strategic areas/goals	
Macroeconomic and financial policy challenges related to climate change: adaptation/resilience building, mitigation, transition management. Integrating climate related considerations into • Bilateral and multilateral surveillance • Existing lending programmes and new instruments (the Resilience and Sustainability Facility) • Capacity development, including external training	**Planning shift from efforts to green projects to green entire economies** • **Climate and development** diagnostics, planning, policies to help countries reach their climate and development objectives • Transformative **public and private investment** **Financing**, including boosting client countries' resources, mobilising and catalysing private capital, concessional finance
Products	

• Specific chapters in the WEO, GFSR etc. as part of multilateral surveillance
• Article IV and FSAP reports to incorporate climate-related macrocritical considerations:
  • **Fuel and energy subsidy reforms**, revenue mobilisation through improving **tax systems** (including **carbon taxation**), resilience-building strategies (including financial resilience in the context of sovereign debt restructuring), green budgeting, offsetting distributional implications of climate-related measures, stress tests for climate impact
• Technical assistance:
  • Fiscal and economic assessments of the **impact of carbon taxes** and advice on green tax reforms, climate risk assessments in the financial sector, data, macro frameworks (**macro scenarios that reflect climate change shocks**, mitigation and adaptation policies), legal and financial integrity issues
  • Climate Macroeconomic Assessment Program (CMAP) - under development
• **Climate change indicators dashboard** (developed with the WBG and other partners)
	• Country Engagement products and new Country Private sector Diagnostic to incorporate climate risk considerations, including
	  • Helping to develop **macro models with a climate lens** to design climate strategies that are **fiscally sustainable** (including politically viable environmental **tax reforms**)
	  • Technical assistance to prepare for and implement **carbon pricing** and markets
	• Country Climate and Development Reports (CDRSs) - under development. To include
	  • Climate and development
	  • **Country climate commitments and programmes**
	  • **Macro policies and climate, in collaboration with the IMF**
	  • Selected sectoral policies.
	• Participating in IMF Article IV and FSAP missions

Financing instruments	
Existing toolkit (preserving **fiscal sustainability**): • Natural disasters: Rapid Financing Instrument and Rapid Credit Facility • Macrocritical climate considerations in IMF-supported programmes (PRGT, GRA resources), see above **New instrument:** Resilience and Sustainability Facility • Climate adaptation (national adaptation plan incl. vulnerabilities and gaps, possible solutions incl. cost estimates **for major projects**, mainstreaming adaptation into national planning and PFM) • Climate mitigation (**tax policies**, phasing out **subsidies**) • Climate finance (disaster risk financing strategy envisaging both risk retention and risk transfer)	Aim of **aligning WBG financial flows** (from the International Finance Corporation and the Multilateral Investment Guarantee Agency) **with the goals of the Paris Agreement:** • **Investment project financing**, guided by the Environmental and Social Framework (ESF)[70] in five key climate-related areas: (i) energy (e.g. **energy subsidy reforms, transition away from coal**); (ii) agriculture, food, water and land; (iii) cities; (iv) transport; (v) manufacturing • **Development policy financing**, determined in the context of country engagement, including systematic country diagnostics • **Programme-for-results**, strengthening institutional capacity and supporting government programmes (leveraging WBG development assistance by fostering partnerships and aligning development partner goals)

[70] The ESF consists of the World Bank's Vision for Sustainable Development, the Bank's Environmental and Social Policy for Investment Project Financing (IPF), ten Environmental and Social Standards (ESSs), the Environmental and Social Directive for IPF and a directive on Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups.

• Public investment management (defining climate related elements of public investment projects, establishing methodology for the ex-ante appraisal of projects, centralised guidance to support government agencies) • Public financial management (climate implications included in budget documents, including ex ante impact assessments and CBAs, a climate budget tagging system and a fiscal risk statement)	• **Climate Support Facility**, e.g. support for the Green Recovery Initiative, NDC and long-term, low-emission development strategies • **Private sector options/guarantees**, e.g. the Disaster Risk Financing and Insurance Program

List of Task Force members

Marco Committeri (Chair) Banca d'Italia	**Lija Strašuna** Latvijas Banka
Axel Brüggemann Deutsche Bundesbank	**Nea Tiililä** Suomen Pankki
Isabel Garrido Banco de España	**Benjamin Vonessen** European Central Bank
Patrick Kosterink De Nederlandsche Bank	**Stephanie Weidner** European Central Bank
Lena Van Meensel Nationale Bank van België/Banque Nationale de Belgique	**Lucia Wilbert** Deutsche Bundesbank
Thomas Reininger Oesterreichische Nationalbank	**Andrea Zaghini** Banca d'Italia
Luc Stevens Nationale Bank van België/Banque Nationale de Belgique	

Postal address 60640 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Website www.ecb.europa.eu

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