



STAFF CLIMATE

NOTES

Climate Change and Select Financial Instruments An Overview of Opportunities and Challenges for Sub-Saharan Africa

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IMF Staff Climate Note 2022/009

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RECOMMENDED CITATION: Belianska, Anna, Nadja Bohme, Kaihao Cai, Yoro Diallo, Saanya Jain, Giovanni Melina, Pritha Mitra, Marcos Poplawski-Ribeiro, and Solo Zerbo, 2022. "Climate Change and Select Financial Instruments: An Overview of Opportunities and Challenges for Sub-Saharan Africa," IMF Staff Climate Note 2022/009, International Monetary Fund, Washington, DC.

ISBN:	979-8-40022-159-0 (Paper) 979-8-40022-166-8 (ePub) 979-8-40022-340-2 (PDF)
JEL Classification Numbers:	F34; F35; G22; H63; Q28; Q54; Q57
Keywords:	Climate finance; sub-Saharan Africa; climate change; mitigation; adaptation; concessional finance; green bonds; blue bonds; sustainability bonds; debt for climate swaps; carbon credits; climate insurance; climate funds; forest conservation; green development
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* The authors would like to thank Catherine Pattillo for general guidance and African Department seminar participants and many other IMF colleagues for helpful comments.

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November 2022

Context and Summary

Sub-Saharan Africa (SSA) is the region in the world most vulnerable to climate change despite its cumulatively emitting the least amount of greenhouse gases. Substantial financing is urgently needed across the economy—for governments, businesses, and households—to support climate change adaptation and mitigation, which are critical for advancing resilient and green economic development as well as meeting commitments under the Paris Agreement. Given the immensity of SSA's other development needs, this financing must be in addition to existing commitments on development finance. There are many potential ways to raise financing to meet adaptation and mitigation needs, spanning from domestic revenue mobilization to various forms of international private financing.

Against this backdrop, SSA policymakers and stakeholders are exploring sources of financing for climate action that countries may not have used substantially in the past. Immediate interest has been expressed in exploring four major areas as sources of financing for governments—where, in some cases, these sources of financing could also be used for private sector adaptation and mitigation efforts: (1) concessional financing, particularly through climate funds; (2) debt instruments that are somewhat linked to climate change; (3) international carbon credit schemes; and (4) climate-related insurance schemes.

This Staff Climate Note presents some basic information on opportunities and challenges associated with these financing instruments. It is not endorsing the use of any of these instruments or their relative ability to scale up financing for adaptation or mitigation. The choice of instruments should ultimately be considered in the context of a country's current macroeconomic situation, policy objectives, and the broader mix of financing options and government policies—including carbon pricing and appropriate risk pricing which can, among other things, shape incentives for spending on adaptation and mitigation. While the focus of this Note is on SSA countries, some of the considerations may apply to other low-income countries (LICs) facing similar circumstances.

Catalyzing greater financing through the instruments discussed in this Note is critically tied to the upgrading of national frameworks and capacity—ranging from climate strategies to statistics, governance, financial systems, debt, and public financial management. The international community has a critical role to play through stepped up technical assistance supporting these upgrades, increased concessional financing (especially grants) and supporting harmonization of rules and regulations.

Introduction

Sub-Saharan Africa (SSA) is facing increasingly adverse climate conditions. Even for scenarios in which the world's 20 largest emitters rein in their greenhouse gas (GHG) emissions, global temperatures will continue to rise—with a probability of more than 50 percent that global warming will reach or exceed 1.5°C between 2021 and 2040 (IPCC 2022). Across the world, temperatures and sea levels are rising as are the intensity of droughts, floods, cyclones, and other severe weather events with devastating geographic, social, and economic consequences, which are anticipated to continue and intensify. Even though SSA has globally emitted the least, it is the region that will suffer the most. This is largely due to a lack of resilience to climate change (IMF 2020, IMF INFORM Risk Index).¹ Consider how a strong reliance on rain-fed agriculture increases humanitarian, social, and economic vulnerabilities to rising temperatures and extreme weather shocks, which most heavily affect the poorest segments of the region's rapidly growing population (IMF 2015, Acevedo and others 2020, IMF 2020).² For example, in 2020 alone, the immediate economic costs of extreme weather events (including natural disasters) are estimated to be at least \$7–\$15 billion (AfDB 2022).³

In this new climate reality, SSA needs substantial financing to support continued economic development. This is key to enabling the region to adapt to and mitigate climate change. Leveraging additional resources would enlarge SSA countries' policy space, allowing them to simultaneously address challenges from climate change, the pandemic, socioeconomic disruptions caused by Russia's invasion of Ukraine, and longstanding structural impediments—ultimately, paving the way for accelerated economic development, including achievement of the SDGs (Benedek and others 2021) while containing the region's emissions. In particular, upfront investment in adaptation would save millions of lives and be substantially less costly than frequent disaster relief—ranging from up to three times less costly for droughts and 12 times for storms (including severe ones such as hurricanes or cyclones, Cantelmo and others 2019, IMF 2020). Estimates of adaptation and mitigation costs vary widely owing to different definitions of adaptation and mitigation needs and assumptions on future development levels, individual country policies, and global mitigation efforts. For example, in the literature, the investment required for adaptation in developing countries can range from \$50 to \$500 billion annually in 2050 (Aligishiev, Bellon, and Massetti, 2022).⁴ For the African continent alone, constituting the majority of developing countries, the GCA (2021) finds that, even if international mitigation efforts were to keep global warming below 2°C, the region would face climate change adaptation costs of \$50 billion per year by 2050. Meanwhile, for mitigation, the clean energy transition in Africa would require investments of about \$190 billion per year over 2026-30 (IEA, 2022). The 2021 UN Climate Change Conference (COP26) negotiators for the African Union (AU) have made their own estimates of adaptation and mitigation spending needs for SSA—calling on development partners to mobilize at least \$1.3–\$1.6 trillion over 2020–30. These figures translate into an average of \$118–\$146 billion per year (AfDB 2022) or about 7 percent of SSA's GDP in 2021. The climate-related spending needs further compound existing challenges brought on by the COVID-19 pandemic, ripple effects of the war in Ukraine, and long-standing barriers to economic development

¹ The climate-driven INFORM Risk is an adaptation of the INFORM Risk Index, adjusted by IMF staff to distill and centralize on climate-driven risks. It has three dimensions: climate-driven hazard & exposure, vulnerability, and lack of coping capacity. <https://climatedata.imf.org/pages/fi-indicators#fr2>

² UNEP (<https://www.unep.org/regions/africa/regional-initiatives/responding-climate-change>) asserts that Africa stands out disproportionately as the most vulnerable region in the world because of the prevailing low levels of socioeconomic growth in the continent. According to Notre Dame Global Adaptation Initiative (<https://gain.nd.edu/our-work/country-index/rankings/>), 23 out of the 30 countries with the highest vulnerability score (which measures a country's exposure, sensitivity and ability to adapt to the negative impact of climate change), are African and the top 10 countries are all located on the African continent. AfDB (<https://www.afdb.org/en/cop25/climate-change-africa>) reaches the same conclusion, noting that SSA comprises 95 percent of global rain-fed agriculture.

³ In 2019, Mozambique and Zimbabwe were the world's most climate disaster-affected countries (Eckstein, Künzel, and Schäfer 2021).

⁴ The range is consistent with Acevedo and others (2019), for example, who estimate a loss in aggregate output per year in a median low-income country of about 2 percent seven years after a 1 degree increase in average annual temperature.

that left the region struggling to achieve the Sustainable Development Goals (SDGs) even before the pandemic (Gaspar and others, 2019).

So far, financial instruments to support climate action have not delivered the necessary scale of financing but have been primarily concessional for SSA. Continuing to leverage concessional financing remains important in the current SSA environment of limitations on domestic revenue mobilization (notwithstanding benefits from carbon pricing), elevated debt levels, tight global financial conditions, high borrowing costs, capital flight, and mounting risks of currency crises. However, given the magnitude of the financing needs, private and nonconcessional financing will need to help close climate financing gaps. For the purposes of this Note, climate finance refers to international public funding from donors, development finance institutions, private insurers focusing on weather shocks, private investors, and public and private climate funds.⁵

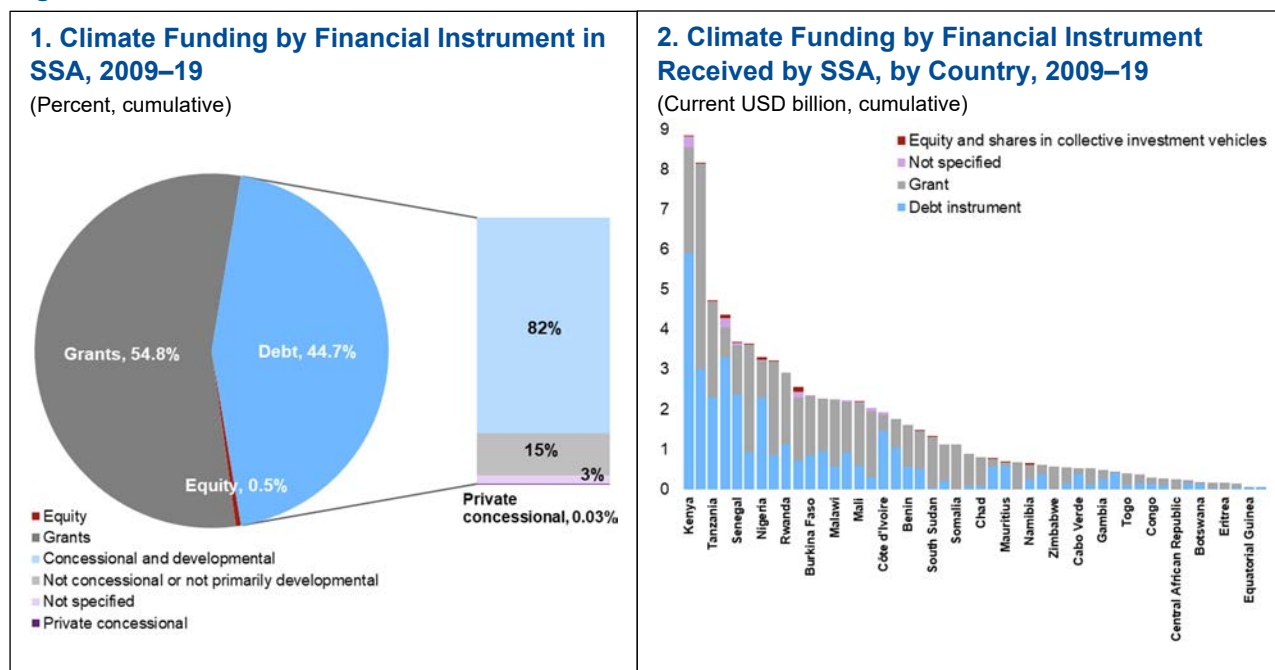
- On a global level, climate finance is estimated to be about \$630 billion annually (or about 0.7 percent of the world's GDP)—largely comprised of green bonds even though they still represent less than three percent of global bond markets (Prasad and others 2022). Meanwhile estimates suggest investments to achieve the 2°C ceiling of the Paris Agreement and its adaptation goals range between \$1–\$6 trillion (or 1 to 7 percent of the world's GDP) per year until 2050.
- For SSA, climate finance flows have been extremely limited. As an example, since the 15th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP15) in 2009, advanced countries committed to raising climate finance to emerging and developing countries, aiming to provide \$100 billion per year by 2020. Meanwhile, SSA received less than \$20 billion per year (totaling \$73 billion or about one-quarter of global flows) of the \$80 billion per year in climate finance actually disbursed by advanced countries during 2016–19. Moreover, significant portions of this replaced other previously committed development financing (Bhattacharya 2022)—where, since 2009, overall development financing to low-income countries has declined (Mitchell, Ritchie, and Tahmasebi 2021, Roberts and others 2021).
- In SSA, concessional climate finance dominates other financing instruments and is primarily comprised of grants and concessional debt (Figure 1). During 2009–19, SSA received \$43 billion in grants and \$29 billion in concessional debt—representing 55 and 36 percent, respectively, of all SSA climate finance. The remainder of the financing was nonconcessional, including debt (\$6 billion), equity (\$0.4 billion, leveraged in only 15 out of 48 SSA recipient countries), and philanthropies (\$0.04 billion).⁶

Against this backdrop, SSA policymakers and stakeholders are exploring sources of financing for climate action that may not have been substantially used in the past. Immediate interest has been expressed in exploring four major areas as sources of financing for the government in the context of climate change—where, in some cases, these sources of financing could also be used for private sector adaptation and mitigation efforts: (1) concessional financing, particularly through climate funds; (2) debt instruments that are somewhat linked to climate change; (3) international carbon credit schemes; and (4) climate-related insurance schemes. This Note presents some basic information on opportunities and challenges associated with these financing instruments.

⁵ Climate funds generally aim at increasing the resilience of human and ecological systems to adverse climate change impacts and reducing emissions and enhancing greenhouse gas sinks (UNFCCC 2022).

⁶ In addition, concessional financing is available in the form of a first-loss guarantee. Guarantees are contingent obligations that require a pay-out only in case a guaranteed event is called, that is, a third-party compensates lenders if the borrower defaults. First-loss is referred to as a tranche of finance that, in the event of a default, takes the first loss before other tranches of finance. Usually, the riskiest first-loss tranche of the guarantee is held by the public sector. Thus, guarantees require less public finance compared to other funded instruments such as grants. Such guarantees aim to promote climate financing in higher-risk sectors. Use of guarantees in SSA has been small and, due to data limitations, guarantees are not quantified in this Note.

Figure 1. Climate Finance in SSA



Source: OECD Climate Change: OECD DAC External Development Finance Statistics, 2022.

Countries in sample (48): Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Tanzania, The Gambia, Togo, Uganda, Zambia, Zimbabwe.

Concessional Finance for Climate Change: With a Focus on Climate Funds

Concessional climate finance, comprising grant and non-grant instruments, is provided at below-market interest rates and targets high-impact projects that overlap across both climate and development. Climate funds are one form of this concessional financing that is perceived across SSA as a source of financing for adaptation and mitigation that could be tapped much more. However, the numerous access requirements and project selection criteria for these funds, and their heterogeneity across funds, present serious hurdles for SSA countries to access the financing.

In SSA, concessional climate financing is primarily grants or concessional loans (Figure 1). It is typically sourced from major bilateral donors or multilateral financial institutions and channeled through international agencies and institutions, multilateral development banks (MDBs), bilateral agencies, and climate funds.⁷ The recipients of this financing range from SSA governments, national development banks, nongovernmental organizations (NGOs), and the private sector (including commercial banks). Climate finance can be complex and involve multiple stakeholders. To illustrate, Figure 2 presents an overview of the concessional climate finance architecture for SSA countries.⁸

⁷ MDBs included the World Bank, International Development Association (WB/IDA) and the International Fund for Agricultural Development (IFAD), among others. Bilateral donors include China, Germany, France, Sweden, and the United States. They are a key source of climate funding. Within the scope of its South-South Cooperation (SSC) with Africa, China provides considerable financial resources and expertise to SSA countries with a focus on adaptation and mitigation to climate change.

⁸ See also Figure 3.7 in AfDB (2022). The set of the SSA countries covers a significant and representative fraction of SSA countries, spread across the region.

- The channeling of this financing can be direct. This includes traditional concessional financing, where, for example, a bilateral donor government allocates funds to that government’s development agency, which then provides project financing directly to a recipient SSA government (both the financing and the project are included in the country’s budget). Similarly, multiple donor governments can provide financing to a major climate fund (for example, the Green Climate Fund (GCF)). The climate fund then provides project financing directly to the recipient country’s national entity (including ministries within the recipient country’s government) or subnational entities, potentially enhancing local ownership and theoretically simplifying the process—this is also called “direct access”. In direct access cases, such as these, the climate fund or bilateral agency (or multilateral institution) evaluates the SSA government’s (or other recipient’s) capacity to implement the project, and then the SSA government (or other recipient) oversees project implementation.⁹
- Alternatively, the financing can be accomplished through a climate fund, involving multiple layers of transactions. For example, bilateral donors provide funds to a climate fund, which then channels the funds to a regional or international institution that has been previously vetted for expertise and capacity to implement projects (for example, the United Nations Environment Programme, UNEP). The regional or international institution then oversees implementation of a project in collaboration with the recipient (for example, an SSA government, where both the financing and the project are included in the SSA country’s budget). Alternatively, the climate fund could allocate the funds to the International Finance Corporation (IFC), another implementing entity, which in turn supports a private sector adaptation project in SSA. This method of channeling climate fund financing through regional or international institutions is often used when a country has a good relationship with the channeling entity and lacks both the time for the accreditation process and the capacity to manage funding. Adding another layer of complexity, climate funds can be standalone similar to the GCF or operate under the umbrella of other climate funds—such as the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF), which are two distinct trust funds within the Global Environment Facility (GEF).¹⁰

Currently, multilateral financing, largely for adaptation (Figure 3), dominates but has not been evenly spread across countries and is far below the adaptation financing needs discussed above. Since 2010, when financing for adaptation began being recorded in the OECD database, it has grown more than sevenfold. Financing for mitigation grew fourfold and for multiple focus projects doubled. Multilateral financing (labeled as climate components in Figure 3; Annex 1 explains the terminology), including climate funds and MDBs, significantly increased financing for both adaptation and mitigation since 2017. Financing from other donors has also risen although usually for projects where climate is a significant part of the project but not the principal objective—across adaptation and mitigation, 60 percent of this financing went to projects with climate as a secondary (“significant”) objective. At the same time, the proportion of climate-related concessional funding varied greatly across SSA countries. One-third of concessional climate funding (32 percent) over 2009–19 was received by Ethiopia, Kenya, South Africa, and Tanzania, collectively accounting for slightly less than \$26 billion (Figure 1). In contrast, Equatorial Guinea and Seychelles received 0.1 percent (\$0.08 and \$0.07 billion, respectively).

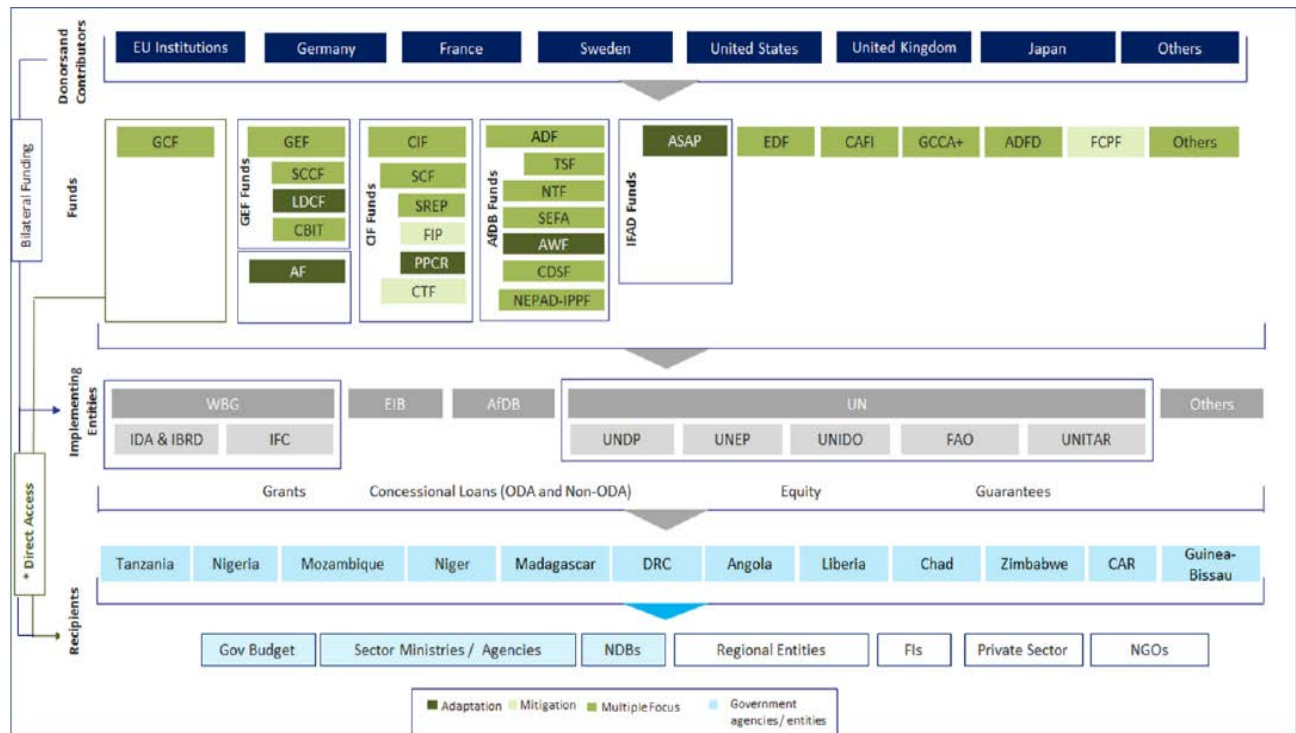
Long horizons for realizing returns on climate-related projects can sometimes impede concessional financing (and other forms of financing for these projects). The benefits today from investing in adaptation projects such as large-scale irrigation infrastructure sometimes accrue over years and can be challenging to calculate in countries that lack adequate climate-related statistics and capacity. On the other hand, other projects can be implemented quickly and yield immediate returns such as investment in weather-resilient road networks. The returns for mitigation projects also vary. While emissions reduction is often immediately realized,

⁹ Challenges from both the donor and recipient sides have so far led to an underutilization of this source of financing. Addressing some of these bottlenecks may be key to benefit more from climate finance (World Bank 2021c).

¹⁰ Other examples include the African Development Fund (ADF) and ClimDev Special Fund (CDSF), each of which is housed under the African Development Bank (AfDB).

climate returns such as the realized impact of reduced emissions on temperature, sea-level rise, and other weather extremes may take decades.

Figure 2. Climate Finance Architecture in SSA



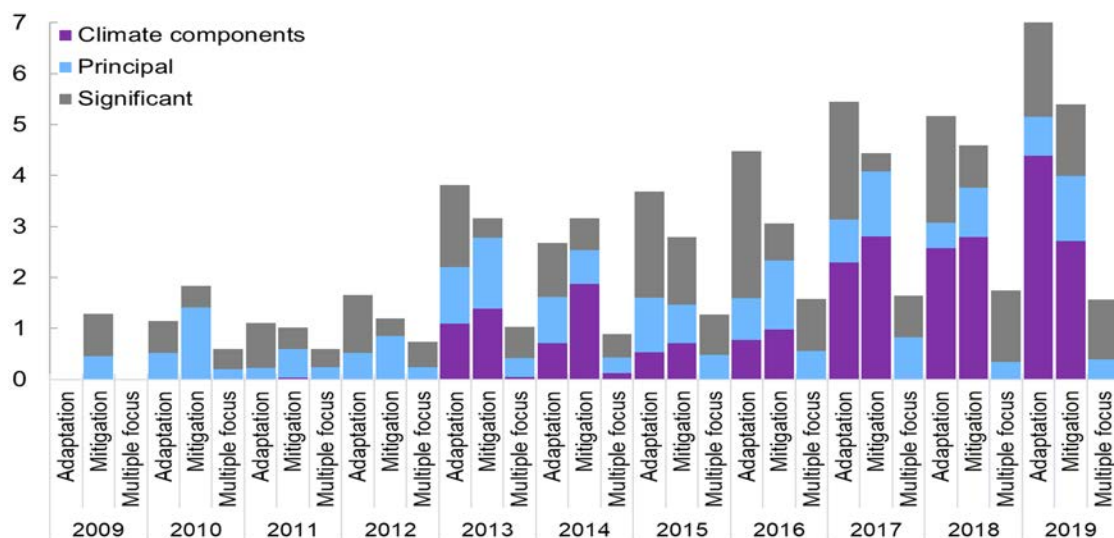
Funds and Initiatives			
ADF	African Development Fund	SEFA	Sustainable Energy Fund for Africa
ADFD	Abu Dhabi Fund for Development	SREP	Scaling Up Renewable Energy Program
AF	Adaptation Fund	TSF	Transition Support Facility
ASAP	Adaptation for Small Agriculture Programme	Implementing Entities	
AWF	African Water Facility	AfDB	African Development Bank
CAFI	Central African Forest Initiative	EIB	European Investment Bank
CBIT	Adaptation for Small Agriculture Programme	IBRD	International Bank for Reconstruction and Development
CDSF	ClimDev Special Fund	IDA	International Development Association
CIF	Climate Investment Funds	IFC	International Finance Corporation
CTF	Clean Technology Fund	UN	United Nations
EDF	European Development Fund	UNDP	United Nations Development Programme
FCPF	Forest Carbon Partnership Facility	UNEP	United Nations Environment Programme
FIP	Forest Investment Program	UNIDO	United Nations Industrial Development Organization
GCCA+	Global Climate Change Alliance	FAO	Food and Agriculture Organization
GCF	Green Climate Fund	UNITAR	United Nations Institute for Training and Research
GEF	Global Environment Facility	WBG	World Bank Group
LDCF	Least Developed Countries Fund	Recipients	
NEPAD-IPPF	NEPAD Infrastructure Project Preparation Facility	NDBs	National Development Banks
NTF	Nigeria Trust Fund	FIs	Financial Institutions
PPCR	Pilot Program for Climate Resilience	NGOs	Non-Governmental Organizations
SCCF	Special Climate Change Fund		
SCF	Strategic Climate Fund		

Source: CFA (2021).

Note: ODA = official development assistance. The contributors listed in the figure are the largest contributors for SSA according to the OECD Climate Change: OECD DAC External Development Finance Statistics, 2022. All SSA countries can receive financing from these and other contributors. The recipient countries listed in the figure are some examples of countries across SSA.

Figure 3. Funding by Theme and Climate Component in SSA, 2009–19

(Current USD billion)



Source: OECD Climate Change: OECD DAC External Development Finance Statistics.

Note: Multiple focus projects are those that have components of both adaptation and mitigation. Other data sources may generate different insights such as adaptation being under-financed relative to mitigation for most of the past decade. This reflects the ambiguous nature of climate finance accounting.

Countries in sample (48): Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Tanzania, The Gambia, Togo, Uganda, Zambia, Zimbabwe.

Looking ahead, there is potential for SSA to tap climate funds (accessed through regional or multilateral institutions). Climate funds have existed since the 1990s, but substantial financing of these funds began in the early 2000s and gained momentum from 2009, when advanced economies committed to providing \$100 billion per year in climate finance to emerging and developing countries by 2020. Since the early 2000s, globally, at least \$43 billion of financing has been pledged to climate funds (80 percent of which has actually been deposited in the funds). However, only \$28 billion of projects have been approved and \$11 billion disbursed (CFU 2022). About \$7 billion (one-quarter) of these approved projects are in SSA with disbursements of less than \$3 billion. In SSA, the bulk of this climate fund financing (about 90 percent) has been provided through regional or international institutions.

Challenges to Accessing Concessional Climate Finance in SSA

Access requirements for climate finance vary greatly across financing providers (international or bilateral agencies, MDBs, and climate funds) but overlap across some critical policy areas. Common areas of focus involve the quality of a SSA country's data, laws and regulations, governance, debt, and public financial management (PFM, including procurement). When evaluating a proposed project, providers of climate finance seek the project's link with the country's climate or development strategy, where high impact projects are often preferred.

SSA authorities and other SSA climate finance recipients are often familiar with the requirements of international agencies and institutions as well as MDBs and bilateral agencies. This is the result of several decades of working with these financing providers on broader economic development projects. Consequently, even when a government may need to adopt new processes or procedures (including in project development

and implementation)—especially as requirements are tailored for climate-specific projects—they are more readily able to do so. At the same time, all these financing providers are familiar with SSA countries’ capacity levels and other country-specific characteristics and challenges. This allows them to better tailor any needed capacity development. Often, financing from these providers is part of longer-term strategic engagement with the country. In this context, the development of coherent long-term climate policies and policy strategies is challenged by the voluntary nature of long-term strategies within the nationally determined contributions (NDCs) framework.

In contrast, direct access to climate funds is relatively new and may have several benefits.

Only 12 SSA countries have direct access to financing from climate funds (Figure 4). Receiving financing directly from climate funds allows better control over a project’s phases (such as climate finance management, project development, and project implementation), improves the country’s ability to engage with stakeholders (such as local communities), and increases benefits from technology transfer on how to prepare projects for climate financing and capacity to implement similar projects (AF 2017).¹¹ However, meeting the requirements to directly access financing from climate funds can be onerous, and the decision should be carefully considered (Figure 5).

- Direct access requires a specific entity within a country—which could range from a Ministry (for example, Ministry of Environment (MoE)) to a private company—to become accredited by the climate fund. This means the entity (1) meets the climate fund’s fiduciary standards to ensure the entity’s managers use the financing responsibly and can achieve the promised impacts;¹² (2) has shown relevant prior experience and proven legal capacity to implement climate projects; and (3) employs environmental and social safeguards (ESS) to ensure the financing is used in a way that does not create unintended, negative environmental or social impacts and that the project fully considers specific impacts and benefits on designated marginalized groups such as women and other minorities (Annex 2). Currently, weak

Figure 4. International and Direct Access Entities Coverage in SSA

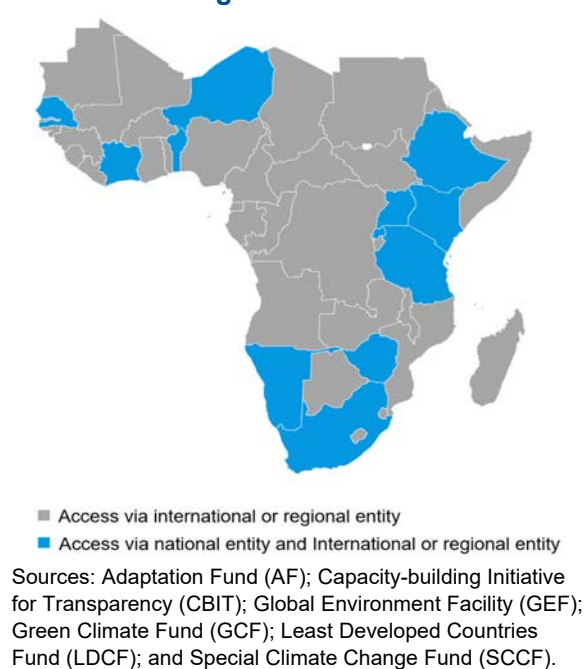
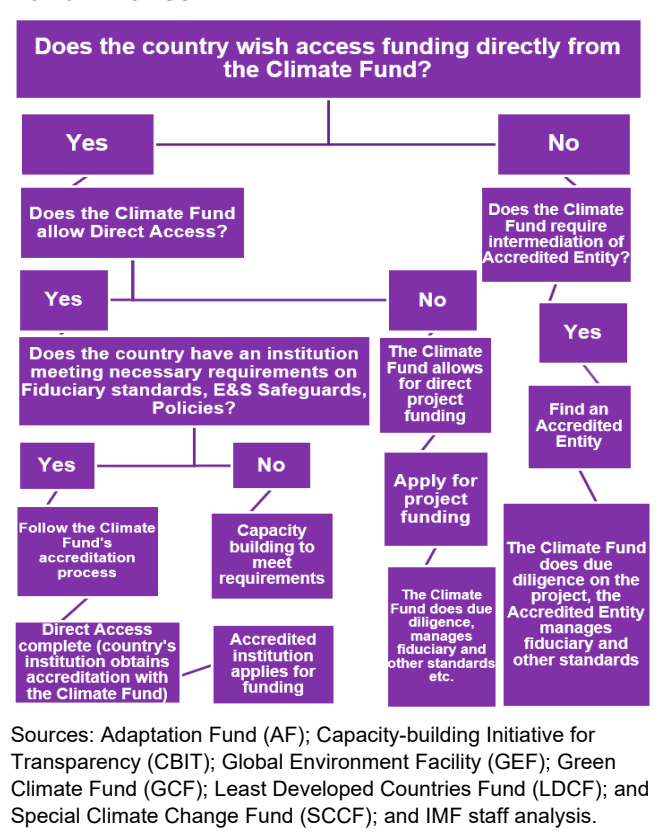


Figure 5. Decision Tree: Accessing Climate Fund Finance



¹¹ An analysis of 63 Adaptation Fund projects has shown that Direct Access Adaptation projects tend to be more community-focused than those that are implemented by International Access Entities (Manuamorn and Biesbroek, 2020).
¹² Each fund has different fiduciary standards that govern their internal and operational procedures and extend to their accredited entities.

governance, risk management, and capacity prevent many SSA countries from meeting these fiduciary and institutional requirements.

- Once accredited by a particular climate fund, the SSA country’s entity has to apply for project financing. The climate fund will then vet the project to ensure that it aligns with the fund’s criteria. For example, a project may be required to align with the national climate strategy and have sufficient adaptation, mitigation, or social impact potential. The climate fund will also consider the general macroeconomic environment—such as high debt levels that may prevent the country from reasonably servicing the debt (though concessional) to the climate fund—or difficulties the country may face in mobilizing private capital for co-financing of the project.
- Limited projects that meet the climate fund’s project selection criteria can impede financing from climate funds. This may reflect challenges in developing bankable projects—such as weaknesses in climate-related data, knowledge, and information needed to inform the country’s climate strategy, develop project financing plans, and climate-risk assessments—and the capacity to implement projects.
- Both the accreditation and project approval processes are lengthy and specific requirements vary significantly across climate funds. The accreditation process typically takes at least two years and project approval can take about a year. The heterogeneity in access requirements and project selection criteria across climate funds can prevent a country from directly interacting with more than one fund at a time.

Inherent characteristics of climate funds and international entities also prevent greater deployment of climate finance to SSA (Table 1). Climate funds, their financiers, and international entities (including implementing entities such as international agencies and institutions, MDBs, bilateral agencies) may focus on funding volume targets. In which case, larger climate investments will be prioritized to meet the targets, crowding out SSA projects that tend to be small on a global scale. In practice, for example, when climate funds channel financing through an international implementing entity, the entity’s risk-taking profile can influence the choice of financing recipient. For example, an entity with insufficient risk-inclination and internal disincentives towards small-sized projects or projects in local currency (involving higher risk and transaction costs) may not prioritize SSA projects.

Table 1. Common Challenges to Access to Climate Finance in SSA

	Accreditation	Project Development	Capacity	Macroeconomic Environment	Climate Data & Knowledge
Countries	Countries' fiduciary and institutional capabilities are not sufficient for fund standards	Low capacity to develop project proposals that meet fund's project approval criteria	Country-specific (for example, limited technical and human capacity to design climate goals, execute projects)	Examples: lack of fiscal space to borrow, difficulty in mobilizing private capital	Insufficient climate-related risk (and opportunity) information, insufficient climate-related data and knowledge
Providers	Challenges from multilateral/donor climate funds requiring accreditation			Challenges from intermediaries	
	High minimum standards for access beyond the existing capacity of certain countries			Insufficient risk-inclination for small projects/countries, projects in local currency	
	Lower funding for ex ante resilience measures than disaster aid, constraining countries' ability to reduce vulnerabilities and increase resilience			Insufficient prioritization of SSA countries associated with smaller projects or smaller countries; high transaction costs; focus of climate finance targets on funding volume	
	Heavily skewed funding toward accredited entities or only international accredited entities				

Sources: Adaptation Fund (AF); Capacity-building Initiative for Transparency (CBIT); Global Environment Facility (GEF); Green Climate Fund (GCF); Least Developed Countries Fund (LDCF); and Special Climate Change Fund (SCCF); and IMF staff analysis.

Working together, country authorities, development partners, and climate funds can expand and accelerate access to SSA climate finance.

- International organizations and bilateral agencies can support SSA countries in their efforts to strengthen key reform areas that would raise their access to all sources of concessional climate finance (for example, international agencies and institutions, MDBs, bilateral agencies, and climate funds).
 - Such areas span governance (including legal frameworks), debt, and PFM (including public investment management and procurement) to broader policies enhancing macroeconomic stability and development of adequate data and climate strategies.¹³ For example, the IMF can help in many of these areas with targeted policy advice and capacity building (for example, Climate Macro Assessment Program (CMAP), Climate Public Investment Management Assessment (C-PIMA), and Green PFM) and, in some cases, through lending that supports policy and institutional reforms (including the Resilience and Sustainability Trust (RST) once it is operational, IMF 2022a).
 - Public-private synergies can play a powerful role in catalyzing climate financing—while private sector investors can provide a large share of financing, the public sector can underwrite risks with instruments such as guarantees or equity tranches. In this context, it will be critical to minimize moral hazard, contingent liability, and long-term fiscal risks faced by the public sector while leaving sufficient project risk and control with the private sector, especially given lack of fiscal space in many SSA countries.¹⁴
- Climate funds could align and streamline requirements for countries to directly access their financing (that is, accreditation requirements). This is important given the high compliance cost for SSA countries (especially for small and fragile states). To this end (1) requirements could be prioritized based on areas where improved capacity will significantly strengthen financial safeguards, and (2) internal targets focused on increasing funding flows to climate-vulnerable emerging and developing economies could be created. The recent GCF pilot for Enhancing Direct Access (EDA) could be a step in the right direction. This initiative promotes a country's project ownership by streamlining funding approval and assigning decision-making and project oversight to local organizations through, for example, establishing a dedicated facility to fund small-scale community projects.
- Recipient countries can upgrade their capacity to access existing climate finance, including by incorporating lessons from other countries' experiences (Table 2, Annex 3). An example is to replicate successful frameworks such as the County Climate Change Funds (CCCFs) in Kenya and the Acuerdo Verde in Chile, which have effectively contributed to each country's national climate goals and helped attract project financing from climate funds. When developing climate projects, the experiences of Madagascar and Tanzania with climate funds could be useful—especially learning from their execution and disbursement challenges.

¹³ By providing political risk and currency risk insurance coverage for climate-related projects, the World Bank Group MIGA (Multilateral Investment Guarantee Fund) could play a supportive role by facilitating the work of other financing facilities.

¹⁴ IMF 2021 and Prasad and others (2022) emphasize the importance of private-public risk sharing for mobilizing climate financing in emerging market and developing economies.

Table 2. Practical Recommendations for Upgrading Capacity and Obtaining Accreditation for SSA National Institutions

Fiduciary standards	Management and administrative capacities	Develop technical and fiduciary capacity to properly administer funding (for example, have processes and procedures to disburse funds, accounting/reporting infrastructure).
		Non-grant instruments (for example, loans, guarantees, equity): establish processes and procedures to monitor reflows, manage risks to returns/reflows, and the functions and capabilities to manage defaults on investments.
		Communication channels between SSA local/national and regional advanced economies (AEs) should be facilitated to share best practices, knowledge and ensure continuous administrative and financial capacities improvement.
	Financial management & accounting	Strengthen public financial management (PFM) functions. National entities seeking accreditation should enhance PFM capacities and be subject to internal and external audits consistent with international standards (that is, the International Financial Reporting Standards (IFRS)).
	Procurement	Establish and abide by control frameworks with objectives and standards, guidelines, and systems to ensure a fair and transparent procurement process.
Transparency & Accountability	Build governance structures, processes, policies, and procedures to undertake project appraisal, due diligence, and other grant and investment procedures to ensure accountability in (1) the provision of funding, and (2) the tracking of use of funds and their impacts.	
	SSA local institutions should seek resources (that is, human and financial) to build and bring on board expertise in integrity, due diligence, transparency mechanisms (for example, ombudsman, ethics office, etc.)	
Environmental and social safeguards (ESS) in place		Climate funds, intermediaries, and international organizations, such as the UN agencies, should help local/national AEs develop and institute environmental and social safeguards (ESS) systems (that is, policies, processes, procedures) that meet international standards (for example, International Finance Corporation's Performance Standards).
Compliance with policies	Gender policy	Develop and implement institutional gender and inclusion policies that minimize gender-related risks from business activities and unintended gender-differentiated impacts.
		Gender issues should be assessed during project development.
		Sustainable gender-appropriate mitigation measures should be in place.
		Women participation in decision-making, their needs and perspectives should be considered in project design, impact assessments, and program management.
	Information Disclosure Policy	The use of platforms and online tools can provide accessible, credible, and transparent information on past and future climate behavior.

Sources: Adaptation Fund (AF); Capacity-building Initiative for Transparency (CBIT); Global Environment Facility (GEF); Green Climate Fund (GCF); Least Developed Countries Fund (LDCF); and Special Climate Change Fund (SCCF); and IMF staff analysis.

Climate-Related Debt Instruments

Climate-related debt instruments can help contain sovereign debt while advancing adaptation or mitigation efforts. Although not yet frequently used, interest in them is growing. Better-quality and lower-cost reporting and monitoring on the use of proceeds; reduced transaction costs; and improved PFM, procurement, and statistics—supporting greater transparency and accountability in debt management—will be key to further unlocking this source of climate finance for SSA.

Climate-related debt instruments require some or all of the proceeds raised support adaptation or mitigation spending. The following three broad categories of instruments have drawn significant attention in SSA¹⁵:

- **Green, blue, and sustainability/social (GBS) bonds** or, more broadly, climate-related bonds. They can be issued by a variety of entities with market access, including sovereigns,¹⁶ local governments, development banks, and corporations. Green bonds aim to finance environmental and climate projects.¹⁷ Blue bonds finance investments in ocean health and other sustainable blue economy projects (World Bank 2018). Sustainability/social bonds can include green, blue, or social and development objectives—such as SDG bonds, which are linked to progress toward the issuer’s SDG goals.¹⁸ Sustainability-linked bonds are, by contrast, outcome-based instruments, which incentivize the issuer’s achievement of environmental, social, or governance targets, for example, through lower coupon payments.
- **Debt swaps.** This instrument restructures debt and applies the resulting savings towards spending exclusively focused on climate (for example, debt-for-climate swaps) or with a development component (for example, debt-for-development swaps). The restructuring can include conversion to local currency (reducing foreign exchange risks), a lower interest rate, an extended maturity, partial debt write-off, bond issuance or some combination of these (Chamon and others 2022, Steele and Patel 2020).
- **Debt relief or cancellation.** In these cases, the debt write-off is tied to specific climate investments or actions.

Green, blue, and sustainability/social (GBS) bonds

For countries with market access, there is a perception that GBS bonds can be an easier lift than other debt instruments. GBS bonds can have longer maturities and lower costs owing to a potential premium, the so-called “greenium.” Lengthened maturities delay principal repayments, allowing projects to generate returns and cover capital costs over the payback period. Issuers are also able to tap into a larger range of investors, including those who value climate commitments and thus aim to buy-and-hold. A greater number and variety of investors distribute the risk and lower risk premiums. Issuing GBS bonds also signals commitment to address the impact of climate change and may unlock other types of financing. While a pipeline of adaptation and mitigation projects that fits into an overall national climate strategy is extremely helpful, extensive climate-specific knowledge is not needed upfront to place those bonds in the market.

¹⁵ Another instrument that could be linked to climate is state-contingent debt, which carries a clause suspending debt service during a natural disaster. This instrument is not covered in this note because it takes effect only when a natural disaster occurs (somewhat like disaster relief) and cannot be actively used to raise financing for investment in adaptation or mitigation (IMF 2017). This being said, it can have an indirect impact—when a disaster strikes, the suspended debt service helps reduce the channeling of government funds away from previously planned investment, such as in adaptation and mitigation, toward post-disaster needs.

¹⁶ Fungibility of fiscal revenues, which is even legally binding for some countries, poses challenges for the issuance of GBS bonds as they need to follow certain principles (Cheng, Ehlers, and Packer 2022).

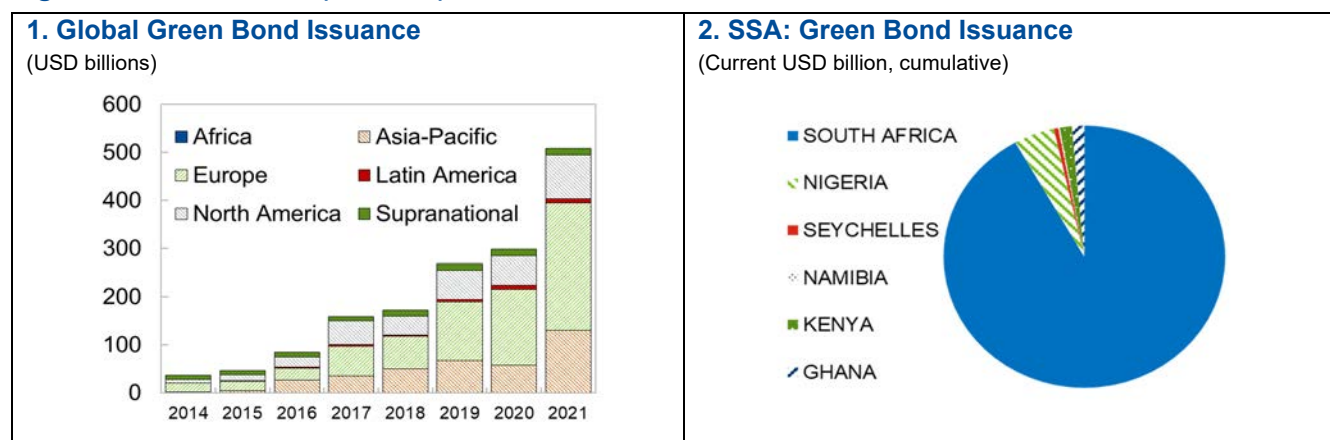
¹⁷ However, green bonds are often used for the purpose of refinancing, which is explicitly allowed by the International Capital Market Association (ICMA) principles. During the pandemic, the EU and several member states financed part of their response by issuing green bonds (Cheng, Ehlers, and Packer 2022).

¹⁸ There are varying definitions of green, blue, and sustainability/social bonds, also referred to as ESG bonds. Often “green bonds” is also applied as an umbrella term, which may be misleading. In this Note the authors provide a precise definition.

The global GBS bond market has grown substantially in recent years, but SSA sovereign issuance remains limited. As an example, the market for green bonds (half of total climate-related issuance) grew more than 1.5 times during 2021, surpassing \$500 billion (Figure 6). The exponential growth of the GBS bond markets demonstrates a clear shift in preferences of issuers as well as investors towards pro-climate and environment objectives (MacAskill and others 2021). However, GBS bond issuance is dominated by financial institutions, which account for 70 percent of all issuances and issuance is still limited in emerging and developing countries, totaling about 4 percent of their bond issuance in 2020 (excluding China, OECD 2021b). In SSA, GBS bond issuance is even smaller (0.3 percent of total SSA bond issuance) and is dominated by South Africa, followed by Mauritius, Nigeria, Ghana, Kenya, Seychelles, and Namibia (Figure 6). Moreover, so far, the greenium has been small relative to countries' debt burdens (Chamon and others 2022).¹⁹ While sustainability/social bond issuance has been even more limited in SSA, it is still present. In 2021, Benin issued SSA's first sovereign sustainability bond, a €500 million SDG bond, where environment is one of its four pillars, including sustainable infrastructure, conservation of biodiversity, and forest restoration.

SSA countries have taken varied approaches to kickstarting green and sustainability bond issuance, including top-down incentives and building national and supranational frameworks. Countries in the West African and Economic Monetary Union, for example, developed a sustainability framework, following which several issuers undertook inaugural issuances, including in Benin, Côte d'Ivoire, and Togo (IFC 2021). Other issuers have partnered with international organizations, such as South Africa's Nedbank, which issued a \$75 million green bond in conjunction with the International Finance Corporation (IFC). Others have followed the certification route, such as Nigeria's Access Bank's green bond, which was certified by the Climate Bonds Initiative. Finally, Ghana, Nigeria, and South Africa have all set up infrastructure to support issuance, such as dedicated segments in their stock exchanges for GBS bonds and dedicated green bond platforms (African Business). Going forward, however, the war in Ukraine and tighter global financial conditions may create challenges to green and sustainability bond issuance.

Figure 6. Green Bonds (2014–21)



Source: Climate Bonds Initiative (CBI).

Note: The CBI reporting is based on self-labeled green bonds, where blue and sustainability/social bonds are sometimes reported as green bonds.

Climate-related debt swaps

Climate-related debt swaps are often perceived to simultaneously improve debt sustainability and boost critical climate spending. As higher levels of debt can be associated with climate vulnerability (limiting the space to absorb climate shocks), these debt swaps can reduce sovereign risk while advancing adaptation or

¹⁹ The greenium can best be measured by comparing two identical bonds that differ solely with respect to their allocation of funds, for example, plain vanilla versus green bonds. Because of the positive effect on the environment, in theory investors are willing to accept a lower return.

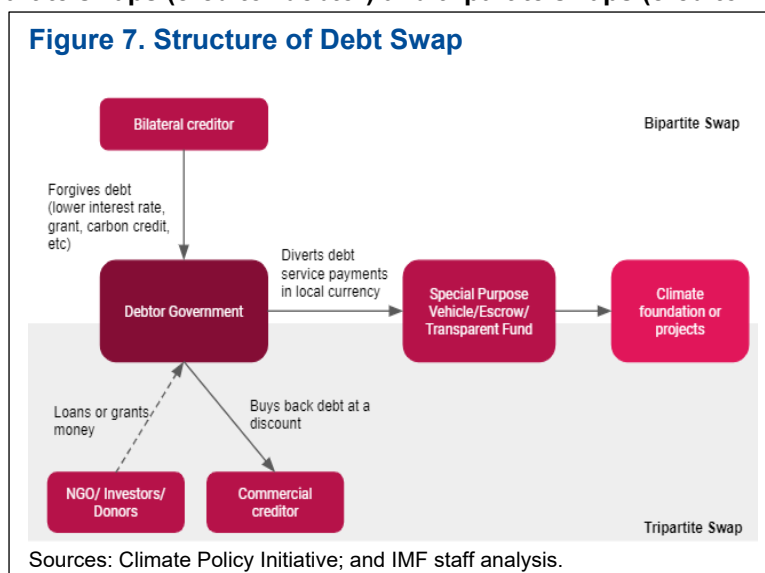
mitigation efforts (Cevik and Jalles 2020, Picolotti and others 2020, Volz and others 2020). Generally, conditional grants, or in the case of unsustainable debt, comprehensive debt restructuring (with climate-related conditionality), are much more beneficial than climate-related debt swaps. However, these swaps make sense in the particular situation when climate adaptation is efficient and fiscal risks are high (but not necessarily unsustainable) with the swap generating fiscal space beyond what is needed to finance the climate investment. For cases where debt is unsustainable, a swap would need to involve sufficiently large amounts, to the point of restoring debt sustainability, to be a viable alternative to debt restructuring, which may help avoid reputational costs or economic dislocations (Chamon and others 2022). When a climate-related debt swap is undertaken, its impact on debt sustainability is crucially influenced by the design and scale of the debt swap—especially since some of the generated debt relief may result in subsidizing non-participating creditors.

These debt swaps can be structured as bipartite swaps (creditor-debtor) and tripartite swaps (creditor-debtor-third party such as an NGO, Figure 7).

A bipartite swap refers to a transaction that is negotiated between two parties, the debtor and creditor government or a group of creditors such as the Paris Club. In a tripartite swap, a third party (for example, NGO) raises funds to buy debt at a discount or loans the money to the government to do so itself. The debt is then retired and, in exchange, the government commits to redirecting payments in local currency into a special trust fund.

While most of SSA’s scarce experience with debt swaps has been with debt-for-development or debt-for-health swaps (dating back to the late 1980s), interest in debt-for-climate swaps is growing.²⁰

More recent regional examples of bilateral debt-for-development swaps with climate components include the debt swap between Cameroon and France (2006) and the Democratic Republic of Congo and France (2019).^{21,22} A well-known tripartite debt-for-climate swap was that for Seychelles in 2015, facilitated by The Nature Conservancy for Seychelles (TNC, a US conservation group). The TNC raised \$28 million (\$23 million from investors and \$5 million from donors) to acquire \$30 million of Seychelles’ debt from its creditors at a discount. The debt was then restructured to \$15 million (implying a 50 percent nominal haircut.) That was achieved by the debt’s maturity being extended (from 8 to 20 years) and by part of the debt service being switched to local currency (resulting in additional savings). Seychelles repaid the loan through a trust that transferred the payments to investors. The savings from this operation were in turn invested into ocean conservation (CBD 2016).²³ Globally, the largest



²⁰ Cameroon, Ghana, Kenya, Madagascar, Nigeria, and Zambia undertook debt-for-nature swaps between the late 1980s and early 2000s (Thapa 1998, WWF 2006, Freeland and Buckley 2010, and CBD 2013).

²¹ Both examples were part of a French government initiative to swap debt for nature preservation contrat de désendettement et de développement (C2D): <https://www.tresor.economie.gouv.fr/Institutionnel/Niveau3/Pages/37a581b0-e1f4-4418-ba77-9cd83f28a675/files/efe8ac02-089e-4578-a1b5-d7577475b187>

²² Countries that have engaged in or are open to engaging in debt-for-climate swaps include Germany, Italy, Spain, the United States, and others (for an overview see also EC 2021, Table 5).

²³ The Seychelles also issued a blue bond after its 2015 swap thanks to improved macroeconomic conditions and a track record with innovative financial instruments (IIED 2021). “Improved economic position and increased experience of innovative financial instruments” which “increase[d] creditor confidence.”

and most recent (tripartite) debt-for-climate swap is Belize, which reduced the country’s external debt by 10 percentage points of GDP.²⁴

Climate-Related Debt Relief

Debt relief that rewards and protects climate action, such as tying forgiveness to emissions absorbed by forests, has gained interest in SSA. Climate-related debt relief works in a similar way to climate-related debt swaps, but with the “swapped” part being written off instead of exchanged for cheaper debt instruments. The relief relies on good faith that beneficiary countries will apply the freed fiscal space to finance climate-related projects. While climate-related debt relief could be conceived under certain circumstances (including where there are serious debt sustainability concerns), the modalities of how it would be undertaken are still unclear. Even if this issue were resolved, this type of debt relief is likely to be exceptional. Overall, climate-related debt relief has yet to be observed in SSA.

Challenges in Issuing Climate-Related Debt Instruments

GBS bonds and climate-related debt relief face reporting and monitoring challenges (Table 3). Ensuring and reporting on the proper use of proceeds from either of these instruments can be time-consuming and costly for bond issuers or recipients of debt relief. From the creditor perspective, reporting on the use of proceeds is critical, especially for bonds (such as green bonds) where the proceeds are fungible and there is no auditing or compulsory verification of how the proceeds are used. A substantial risk of greenwashing is also present due to (1) inconsistencies in classification of projects and commitments across issuers, and (2) difficulty in monitoring how the money is spent especially where there are concerns over issuer commitment levels (Prasad and others 2022).²⁵

Table 3. Overview of Advantages and Challenges of GBS Bonds and Climate-Related Debt Swaps

	Advantages	Challenges
Green Bonds	<ul style="list-style-type: none"> Low upfront investment in specialized knowledge required for countries with market access Green premium or “greenium” through growing demand for climate-focused instruments Signaling commitment to address the impact of climate change Investment in climate/nature 	<ul style="list-style-type: none"> Inconsistent classification and reporting standards across the market Transparency hurdles as money is fungible Costly monitoring and reporting on green efforts
Debt Swaps	<ul style="list-style-type: none"> Increased fiscal space by decreasing debt stock and reducing need for sovereign borrowing Improve debt sustainability Debt management capacity building on green instruments Investment in climate/nature 	<ul style="list-style-type: none"> Negotiations to set up swap agreement can be lengthy Costly monitoring and reporting on green efforts Difficult to reliably measure emission reductions

Sources: Chamon and others 2022; Prasad and others 2022; and IMF staff analysis.

Note: The subsections describing each of the two bonds also provide some examples of SSA countries using some of those advantages and overcoming some of the challenges. GBS = green, blue, and sustainability/social.

²⁴ Owen (2022) elaborates.

²⁵ The issuance of standard international classifications by the ICMA regarding ESG investment is expected to help address the issue. However, those standards are still being developed with no clear issuance and application dates.

Climate-related debt swaps can face high transaction and compliance costs, in addition to challenges associated with other climate-related debt instruments (Table 3). Negotiating debt swaps and coordinating across multiple parties can take years. Accurate and detailed information is needed about the composition of the debt being swapped and its existing creditors. Overall, transaction costs arising from legal fees and the complexity and length of negotiations can be high. Notably, in the case of commercial debt, swaps can range from 1–6 percent of the debt’s face value (CBD 2001). Countries will have to weigh these costs against the savings from the swap, which may make these swaps more worthwhile for countries with high debt levels. Even then, countries will also need to factor in that engaging in debt swaps (including those associated with adaptation or mitigation measures), may reduce creditors’ willingness to participate in broader debt restructuring. After the transaction is completed, there are substantial monitoring costs to ensure the agreed climate or environmental objectives advance. In Seychelles, challenges were linked to the relatively small size of the operation and the high administrative burden and costs (Patel and others 2021).

The impetus for addressing many of these challenges lies with the debtor, supported by development partners, but creditors have a part to play too.

- Monitoring costs and compliance concerns can be reduced when debtor countries demonstrate strong climate policy commitment. Key actions can include publication of national climate strategies accompanied by a pipeline of adaptation and mitigation projects (aligned with the strategies), improved data availability and sharing, and improved PFM and procurement practices—such as green budgeting and integrating climate considerations into public investment management (Chamon and others 2022). For example, the green taxonomy developed by South Africa (South African National Treasury 2021) can help authorities determine appropriate climate-related projects (reducing their reporting and project selection costs) and reduce creditors’ concerns over greenwashing.
- Communication by creditors on preferred climate objectives or types of projects could inform debtor countries’ design of climate-related debt instruments, reducing transaction costs.
- Enhanced debt management institutions, data, and practices, complemented by improved PFM (including public investment management and procurement), can provide creditors confidence that proceeds from climate-related debt instruments will be used transparently and that there is accountability.²⁶ It can also substantially reduce transaction costs and information and coordination costs (for example, for debt swaps).
- International organizations and bilateral agencies can support SSA countries in their pursuit of reforms in the areas discussed above, as detailed in the conclusion.

International Carbon Credit Systems

In many SSA countries, there is a perception that carbon credits have the potential to become a source of financing. For example, the Congo Basin countries could sell units of emissions absorbed by their forests to a private company (located in an advanced economy) that is seeking to offset its emissions. From the perspective of many policymakers, these revenues could be a significant (debt-free) source of financing, especially for much needed climate-related projects and other development spending in SSA.

However, whether such benefits can actually be realized is unclear. Global emissions mitigation objectives, under the Paris Agreement, may not be consistent with international carbon credit systems that only offset emissions produced elsewhere (such as in voluntary markets) as these schemes can risk increasing overall emissions. Moreover, based on SSA countries’ commitments under the Paris Agreement, SSA countries would need to cut their own future emissions by the same amount as the carbon credits sold today. Other challenges span serious issues surrounding the design and functioning of carbon credit markets, which can suppress demand, and high production costs.

²⁶ Challenges for SSA related to debt management are elaborated in the IMF/WB Revised Guidelines for Public Debt Management (2015).

Some basic concepts underlying international carbon credit systems include²⁷:

- To contain global warming within 1.5–2°C, global greenhouse gas (GHG) emissions need to be reduced by 25 to 50 percent by 2030, and about 90 percent of global emissions from governments and companies will be subject to net-zero targets by 2050 or later (Boehm and others 2021).
- A carbon credit is a tradable certificate or permit that represents one ton of CO₂-equivalent emission reduced, avoided, or sequestered through technology and nature-based solutions.²⁸ Carbon registries oversee the verification, validation, and registration of credits and serve as marketplaces for potential buyers such as governments and companies. Carbon credit markets require adequate enforcement and regulatory frameworks.
- International carbon credit transactions can take place in two types of markets: compliance (mandatory) or voluntary markets.²⁹ These two markets are not comparable. Compliance markets are based on allocations of allowed emissions under a cap. In contrast, voluntary markets are centered around theoretically avoided emissions.
- A compliance market (or emissions trading system, ETS), serves regulated entities, such as firms that are legally required to reduce their GHG emissions (for example, under California’s Cap-and-Trade Program or the EU ETS). The allocation of allowed emissions in this regulated market is capped with the aim of reducing a country’s emissions, and as such, these markets are part of explicit carbon pricing mechanisms. Emissions permits are either auctioned out or distributed and then traded within the market. These markets could be linked internationally, allowing permits to be traded across different jurisdictions – such as the linking of the California and Quebec power markets, which share a common carbon price. However, there are concerns about the desirability of these linkages in that they could increase the complexity of global mitigation policies without cutting emissions (Green 2017). ETSs have become increasingly common globally, though coverage of sectors and prices for permits vary (World Bank, “Carbon Pricing Dashboard”). Differences in emissions targets, and subsequently caps, across countries drive the price differences across compliance markets. In 2021, permits were traded at prices ranging between \$10 to \$110 per ton across the EU, the UK, and the US compliance markets. Prospects for links between compliance markets in advanced and developing countries therefore seem unlikely, given that these price differentials are expected to persist. Further, spillovers such as polluting companies moving production to locations with less stringent regulations could undermine emissions reduction efforts.
- Voluntary carbon markets (for example, ART, which is the architecture for forestry-related carbon credits issued under the United Nations framework where REDD+ transactions take place) serve companies (or other entities) which intend to offset some or all of their carbon emissions (for example, for corporate sustainability purposes), but are not legally required to do so. These markets have no cap on emissions, and therefore no real process of price discovery. Consequently, companies may even increase their net overall emissions despite purchasing carbon credits. As a result, carbon credit prices in voluntary markets range from \$2 to \$10 per ton.

ETS schemes cover slightly less than one-fifth of global carbon emissions but have limited presence in SSA (ICAP 2022). At a global level, cumulative carbon emissions trading in ETS markets reached \$161 billion at end-2021, growing by more than 50 percent relative to end-2020. Nevertheless, compliance markets are still relatively small—where the global market value for the oil and gas industry is estimated at \$6.1 trillion in 2021.

²⁷ The literature on carbon pricing usually defines two main types of carbon pricing: (i) the cap-and-trade system or emission trading system (ETS), which caps the total level of greenhouse gas emissions and allows companies and governments with low emissions to sell their extra allowances to larger emitters; and (ii) carbon taxes, which sets a price on carbon by defining a tax rate on greenhouse gas emissions. Carbon taxes are different from the cap-and-trade system in that the emission reduction outcome of a carbon tax is not pre-defined, but the carbon price is. For the sake of simplicity, this Note discusses carbon credit markets and prices in the context of the cap-and-trade system only and not for carbon taxes. For a discussion on the choice between carbon taxes and the cap-and-trade system, see Parry, Black, and Zhunussova (2022).

²⁸ While technology-based carbon removals options include direct air carbon and bioenergy with carbon capture and storage, nature-based solutions depend on ecosystems to capture carbon and typically include afforestation and reforestation.

²⁹ World Bank taxonomy is applied to classify carbon credit markets.

As SSA's economic development and associated emissions progress, SSA governments are collaborating to develop sub-regional emission trading markets in East and West Africa.³⁰

Voluntary carbon markets are growing but remain very small in relation to total global emissions. As of early 2021, voluntary net-zero and climate neutrality commitments tripled since 2019—with more than 1,500 companies worldwide, representing a total of \$42 trillion in annual revenue and making commitments to get to net-zero emissions by 2050 or sooner. Some of these companies intend to or already use voluntary carbon markets to offset some or all of their emissions, though there are environmental concerns about whether doing so with avoided emissions offsets amounts to greenwashing (Allen and others 2021). Cumulative carbon emission trading on voluntary markets was \$7 billion as of August 2021. Over the past five years, the supply of carbon credits grew 230 percent, driven by nature-based carbon credits. However, demand continues to lag supply—for example, in 2021, suppliers issued nearly 300 million tons (Mt) of carbon offsets, but companies only purchased 161 Mt—contributing to low carbon credit prices. These numbers compare with total global greenhouse gas emissions of roughly 50 billion tons (Gt) of CO₂ equivalent per year.

SSA's credit issuance in international voluntary markets is steadily growing (Figure 8). SSA-issued credits in voluntary carbon markets were valued at 21 percent (average 2016–21) of traded credits in the voluntary carbon market. A few countries dominated the SSA issuance. In particular, Kenya issued 39 million credits during 2010–21. In terms of sectors, issuance across SSA was concentrated in forestry (61 percent), almost one-third of which was issued by Kenya. Looking ahead, SSA countries have the potential to further increase issuance of nature-based carbon credits. Home to the Congo Basin, the largest net carbon emissions absorbing forest in the world, SSA countries in the basin are carbon negative and have the potential to issue large amounts of Reduction Emissions from Deforestation and Forest Degradation (REDD+) credits.³¹

As SSA countries advance in adoption of the REDD+ framework, the region's participation in carbon credit markets could expand.

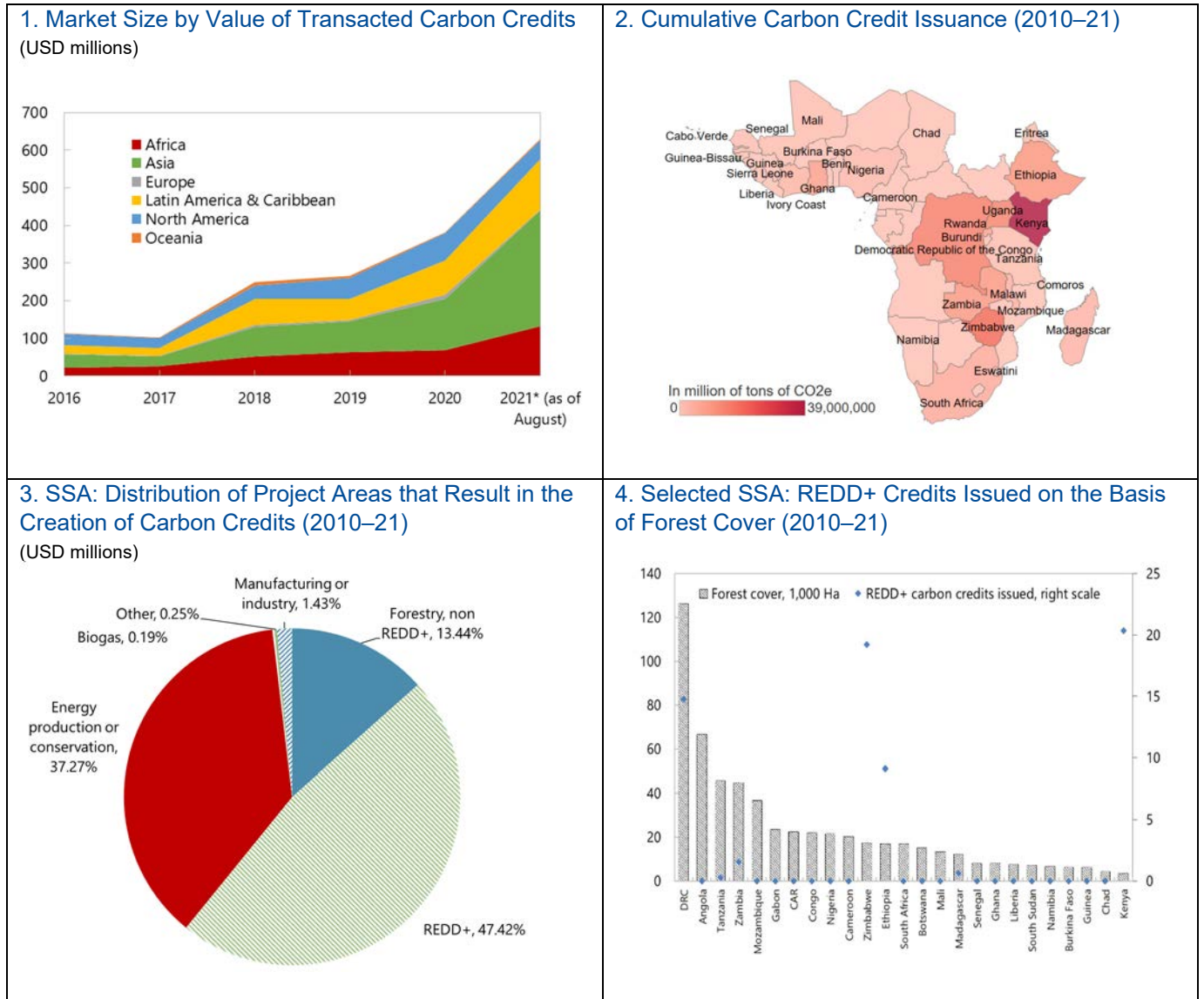
- REDD+ is an emission reduction framework based on forest preservation and nature conservancy. Once this framework is in place, a country can readily trade its carbon credits in carbon registries operating in either compliance or voluntary markets. Implementation of the framework involves three interdependent phases (readiness, implementation, and results; see Annex 4). Their combined completion can take more than 10 years depending on a country's initial capacity levels and willingness to participate in result-based market financing. For instance, for the majority of SSA applicants, the REDD+ readiness phase has been lengthier than expected due to the scale and complexity of issues, such as clarifying land ownership and implementing robust safeguards. A lack of financing to support countries through the readiness phase has added to the delays.³²
- So far, large REDD+ readiness and implementation programs have taken place through multilateral and bilateral agreements, such as the Central African Forest Initiative (CAFI) and the Forest Carbon Partnership Facility. At COP26, the role of forests in capturing and storing carbon was high on the agenda with a new Congo Basin Pledge of \$1.5 billion in financing between 2022–25 to protect and maintain the basin through the REDD+ framework.

³⁰ Nascent interest in carbon pricing at a regional level is emerging. Two new regional groups, the West African Alliance on Carbon Markets and Climate Finance (WAA) and the East African Alliance on Carbon Markets and Climate Finance (EAA), have expressed interest in implementing regional carbon pricing initiatives.

³¹ A carbon-negative country is a country that removes CO₂ from the atmosphere or sequesters more CO₂ than it emits.

³² Beyond the Democratic Republic of Congo and Gabon, discussed in Annex 4, 22 other SSA countries are adopting the REDD+ framework: Benin, Burkina Faso, Chad, Central African Republic, Congo, Equatorial Guinea, Ethiopia, Ghana, Guinea-Bissau, Ivory Coast, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Nigeria, Sudan, Tanzania, Togo, Uganda, Zambia.

Figure 8. Carbon Credit Issuance on Voluntary Carbon Markets



Sources: Ecosystem Marketplace (2022); and IMF staff calculations.

Note: In SSA, REDD+ credits can be issued on a jurisdictional, nested, or project basis. So far REDD+ credits have been issued on a project basis, which are typically linked to nongovernmental organizations and private companies. CAR = Central African Republic; DRC = Democratic Republic of the Congo.

Challenges to Expansion of International Carbon Credit Markets

The future of voluntary carbon credit markets is highly uncertain. By allowing companies (particularly multinational companies headquartered in advanced economies) to claim net-zero emissions without actually reducing emissions, these markets could substantially hinder global decarbonization efforts. For example, companies may delay much-needed decarbonization investments.

Additionally, several operational challenges impede demand for carbon credits.

- Companies lack incentives to invest in activities that improve their Environment Sociability and Governance (ESG), such as purchase of carbon credits. This partly reflects weak corporate environmental reporting requirements across the globe (Krueger and others, 2021). Even when companies do report, divergence in

ESG scores from different rating agencies and lack of strong correlation with environmental outcomes reduces companies' incentives to improve their ESG performance (FT).

- Corporate carbon credit purchasers are also deterred by a lack of clarity on the requirements a purchased credit must fulfill to be counted toward reducing the buyer's net emissions reduction. The relevant rules and regulations are complex and not consistent across countries (or often within a country). In contrast, at a national level, countries that choose to voluntarily use internationally transferred mitigation outcomes (ITMOs) toward their NDCs must apply robust accounting standards. This is also critical to ensuring there is no double counting (IMF 2022b, World Bank 2022b).³³ Legal compliance issues could also arise regarding international trade of carbon credits under World Trade Organization rules.

At the same time, carbon credit suppliers lack incentives to produce credits, especially when prices are low relative to high production costs.

- Attracting financing that supports production of the carbon credits can be especially challenging for SSA countries who lack capacity in data, institutions, and human capital. Investor requirements include stringent transparency and verification prerequisites, a pipeline of viable projects, and sufficient data to evaluate the impact of carbon projects.
- Investors may also have concerns over a country's capacity to deliver long-lasting emissions reductions, as these could be weakened through leakage (for example, emission creating events such as logging, droughts, and wildfires). Moreover, it can be difficult to verify whether REDD+ offset projects are enabling forest protection, making deforestation avoidance credits potentially unreliable and weakly priced (Stapczynski, Rath, and Marawanyika 2021, Song 2019).
- Host countries that transfer a growing number of ITMOs over time have an incentive to average out their corresponding adjustments, which would undercount emissions for single-year NDCs. This reflects the difficulty of translating between multiyear emission budgets (operational basis for emissions trading programs) and annual targets (outcome of most real-world policy processes) (Schneider and Siemons 2021).
- Tracking projects and credit issuance at the national level (and making sure that those benefits reach affected communities) can be expensive for SSA countries, especially in the absence of national registries to oversee carbon credit activities. SSA countries may also be deterred from issuance because credits for a given project are issued based on a change in emissions absorbed relative to a base year, which results in some projects or countries being favored. For example, projects for reforestation are favored over those for forest preservation (the Economist 2021). Poor emissions data can also make it difficult for countries to quantify their GHG emissions (including from all industrial activities) and absorption (especially from forestry), which can raise concerns related to NDC commitments and double counting. For example, data on CO2 emissions at the industry level is not available in many SSA countries.
- SSA countries issuing carbon credits also risk selling their least-cost carbon reduction solutions while being faced with higher costs when having to meet their own future NDC commitments. This challenge arises because it is unclear how international carbon credits sales will be accounted for against a country's NDCs under Article 6 in the Paris Agreement.
- From a global perspective, addressing the low-price-high-cost trade-off faced by SSA carbon credit suppliers could help ensure preservation of the region's carbon sinks which are critical to slowing global warming. In particular, for supplier countries with oil and gas reserves underneath their natural carbon sinks (for example, Congo Basin countries), low carbon credit prices can reduce incentives for forest preservation and climate

³³ The Glasgow Climate Pact (Article 6) established a framework of rules governing the trading of carbon credits and international cooperation. Article 6.2 specifies an accounting framework for ITMOs. Article 6.4 established the Sustainable Development Mechanism (SDM), a mechanism for the creation, regulation, and trading of credits from developing countries. The SDM will be operated under the UNFCCC and administered by a new governing body, which has yet to be established. At COP26, Parties decided on the broad rules (tracking and reporting on country-level emission reduction trades) to implement carbon markets under Article 6. While there was agreement on the rules, much remains to be done. The UNFCCC has mandated the Subsidiary Body for Scientific and Technological Advice (SBSTA) to operationalize the provisions of Article 6. Over the past months, the SBSTA has conducted dialogue and technical work with countries to improve the guidelines under the ITMOs mechanism, which is expected to be discussed further during 2022 United Nations Climate Change Conference (COP27). See also World Bank (2021d).

change mitigation (Austin and others 2020)—at least over the near and medium terms until global oil and gas demand is substantially reduced.

Strengthened regulations and capacity development would also be required for a sustainable carbon credit industry.

- Several demand-side constraints could be addressed with enhanced reporting requirements and regulatory reforms. To this end, international financial reporting boards and agencies including the US Securities and Exchange Commission (SEC) are developing frameworks for more consistent and reliable disclosure of ESG efforts by companies. Looking ahead, greater global coordination on consistency of carbon-credit related rules and regulations across registries and the relevant authorities would help reduce arbitrage and market inefficiencies. Progressive demand-side policy like the regulatory requirements for international airlines could be expanded to other industries, increasing the demand for carbon credits (CORSIA). Creating futures markets for near-term carbon price discovery³⁴ could provide high-quality information critical to carbon market development and transparency.
- Higher carbon credit prices, resulting from increased demand, will help address some of the supply-side concerns. However, overcoming capacity constraints will be paramount to attracting investors for carbon credit production. Data availability can be improved through integration of energy, transport manufacturing, and forestry carbon emissions statistics in national statistical offices. Governments can improve broad transparency and governance conditions as well as prepare a pipeline of robust investment projects and build capacity to steer projects from ideation to issuance.
- Development partners can support SSA countries in their pursuit of the reforms above. Organizations like CAFI and the Forest Carbon Partnership Facility Readiness Fund specialize in building capacity and readiness in SSA countries.³⁵

Climate Insurance

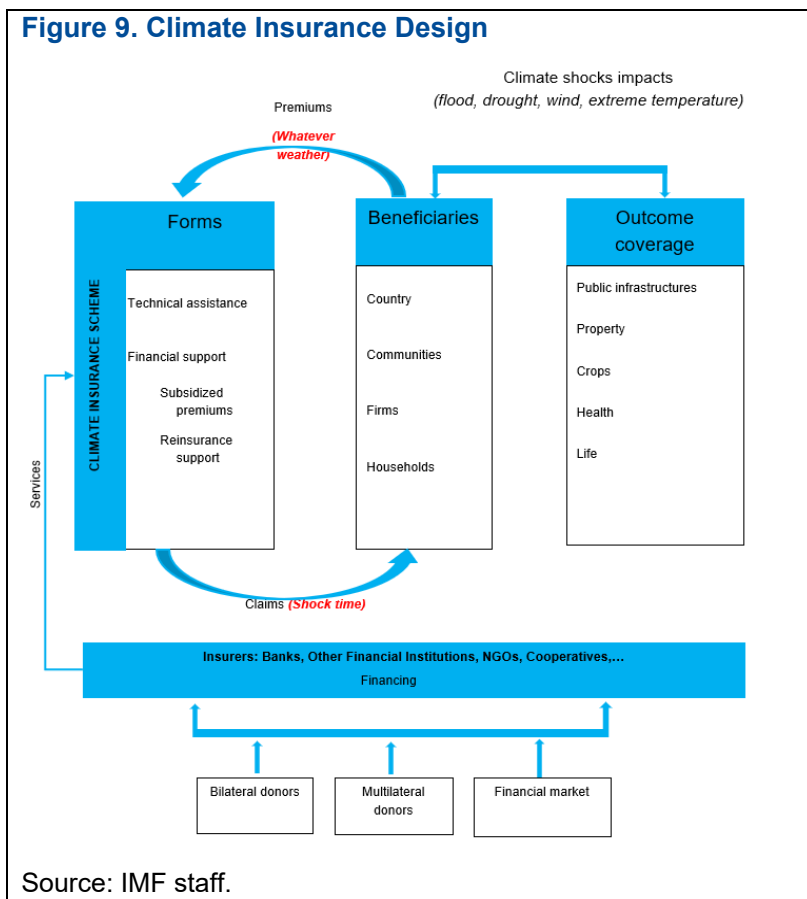
While not a substitute for investing in physical and financial resilience, insurance schemes are an important component of risk management. Article 8 of the Paris Agreement states “risk insurance facilities, climate risk pooling and other insurance solutions” (UNFCCC 2015) help countries, firms, and households cushion the adverse consequences of climate disasters, providing reliable and rapid support in the aftermath of extreme weather events. Nevertheless, use of insurance in SSA has been limited by weakness in data, financial inclusion and literacy, and infrastructure.

Climate insurance has long-term advantages as it strengthens the preparedness of households and businesses against future climate change-induced natural disasters. For example, farmers with climate insurance gain the confidence to invest more in equipment and small-scale infrastructure, which in turn could raise their productivity and output. With the goal of reducing their insurance premiums, beneficiaries may also invest in reducing their exposure to climate risk. Overall, climate insurance positively affects beneficiaries’ investment levels and macroeconomic outcomes and can usefully complement targeted social assistance (Surminski, Bouwer, and Linnerooth-Bayer 2016).

³⁴ Price discovery refers to the process of finding the fundamental value of an asset. The futures price typically reflects fundamental information, such as the fundamental value of the asset.

³⁵ The Readiness Fund | Forest Carbon Partnership Facility. The Readiness Fund supports tropical and sub-tropical developing countries in preparing themselves to participate in a future, large-scale, system of positive incentives for REDD+.

Climate insurance schemes largely operate like standard insurance systems (Figure 9). Providers of climate insurance services can be independent institutions such as commercial banks, NGOs, cooperatives, or operate in partnership with other financial institutions. Financing can come from diverse sources, including bilateral donors, multilateral donors, or the financial market. Beneficiaries or subscribers can also vary, covering a country, community, firm, household, or individual (Annex 5). To subscribe to insurance services, beneficiaries pay a premium against a claim to be paid when a natural disaster occurs. The premium is commensurate with the degree of the beneficiary's exposure to climate risk. Besides claims, beneficiaries receive other services as well, such as financial support (subsidies, reinsurance of losses) and capacity building as part of programs both on preparedness and in response to climate shocks. Most weather insurance contracts cover the damages created by climate change-induced natural disasters on private/public infrastructure, property, crops, health, or loss of life.



Despite the many benefits of climate insurance, its use in SSA has been limited. Globally, insured losses continued to grow at their long-term trend (based on 10-year moving averages) of 5-7 percent per year (Figure 10). Nevertheless, most natural catastrophe losses are still uninsured. According to Swiss Re, in 2021, more than half of global economic losses due to natural disasters were not insured. Looking across the globe, there is strong disparity across regions, where SSA has the least developed insurance market and very low resilience to natural catastrophes.

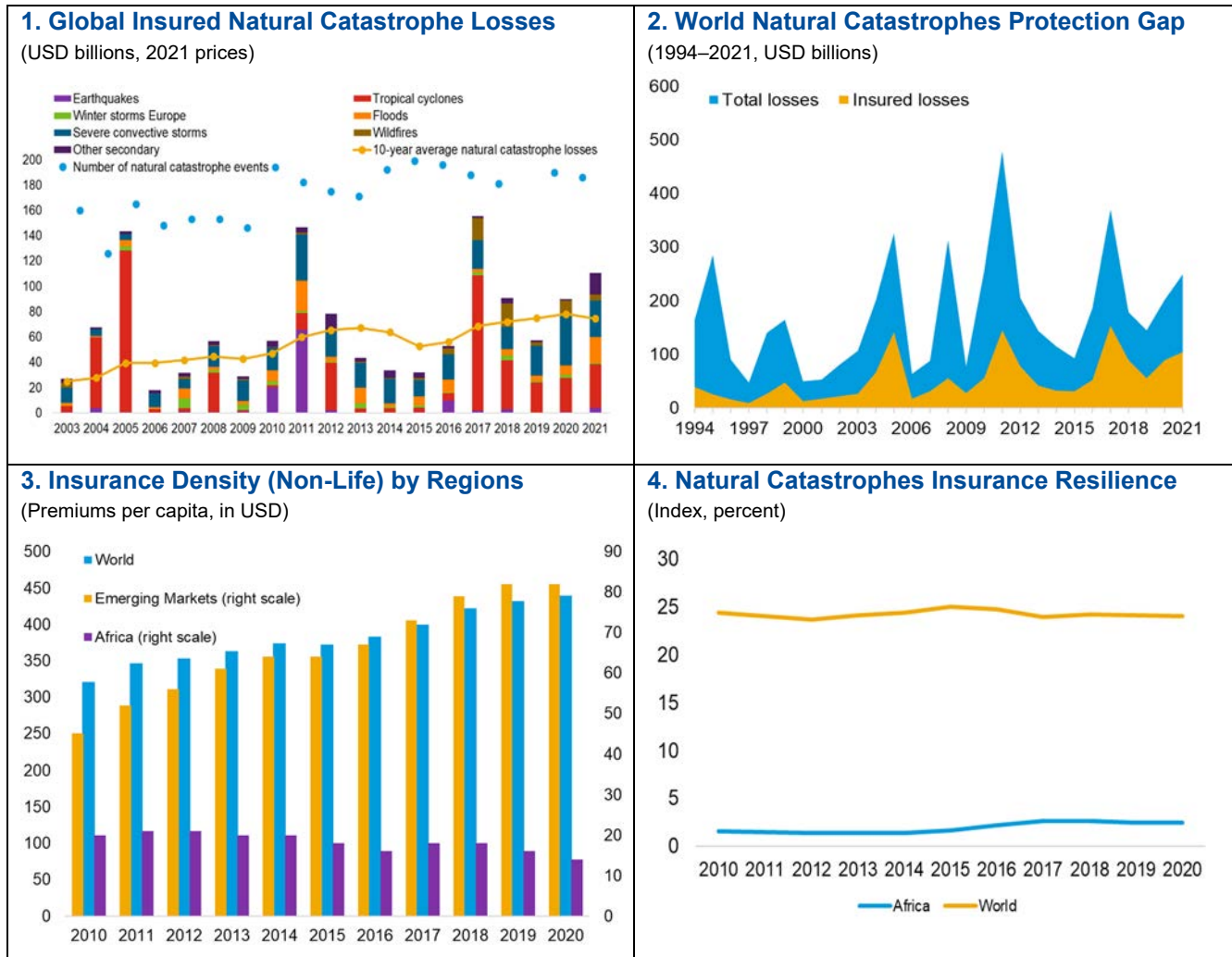
Challenges to Expanding SSA Climate Insurance Markets

The lack of data on weather and meteorological services and capacity to translate them into an assessment of risks are key obstacles to expanding climate insurance in SSA, be it for the government or for the private sector (such as households, farmers, and firms). Establishing a climate insurance system requires accurate and reliable data on weather conditions. In particular, climate data series are necessary to understand the degree of risk, which in turn helps define the premium paid by beneficiaries (Golnaraghi 2018). However, these data are often lacking across the region. Even when the data are obtained, governments' often do not have the capacity to process the data, use it to model weather risks, and make the analysis available to insurance companies in formats that are easy for the companies to use. International technical expertise is available to fill the gap, but these services are expensive, prohibitively so for the most vulnerable populations.

Weak financial inclusion, literacy, and infrastructure are also key challenges for private insurance. SSA is the least banked region in the world, with 80 percent of the population lacking access to formal banking

services (World Bank 2021b). Most people are still unfamiliar with the workings of insurance schemes. The absence of infrastructure also impedes the development of climate insurance. For example, access to telecommunications infrastructure such as Global System for Mobile Communications (GSM) devices and weather stations are often a prerequisite to potential beneficiaries being considered for insurance. This affects much of the SSA population, especially the most vulnerable in rural areas, who would benefit greatly from climate insurance (World Bank 2011). From the perspective of insurance providers, there is a dearth of information on the current and historical financial situation and track record of potential beneficiaries.

Figure 10. Stylized Facts on Climate Insurance



Sources: Swiss Re; and IMF staff calculations.

Note: The Natural Catastrophes Insurance Resilience Index is produced by Swiss Re to measure the relation between needed and available protection.

Demand for insurance products is held back by low incomes of households and businesses. Rural communities, mainly employed in subsistence farming, face pervasive financial constraints and cannot afford to pay climate insurance premia (Linnerooth-Bayer and Mechler 2015). For example, farmers, who are generally engaged in subsistence production, cannot advance cash before the sowing period to purchase insurance that pays only post-harvest. Therefore, insurance may not be scaled up even when, premiums are subsidized. Furthermore, the predominance of the informal sector prevents a large proportion of businesses from accessing insurance products because of the lack of administrative documents for registration, including tax returns, balance sheets and beneficial ownership information.

Beyond advancing economic development, targeted actions to increase the use of insurance can be taken by governments, development partners, and the private sector. Investment in telecommunications infrastructure, which could be through public-private partnerships, would greatly improve the access of vulnerable households to weather information and insurance and other financial products. Country authorities can also work toward expanding capacity and availability of information. For example, expansion of credit registries would reduce informational asymmetries faced by insurers. While working to improve data capacity, governments could subsidize application of international technical expertise to fill the data and analytical gap, especially for risk modelling. In the same vein, development partners could support these efforts with capacity development and concessional financing. Along the same lines, insurance premiums could be made more affordable with subsidies and full premium relief programs for the uninsured. However, the cost-benefit ratios of subsidizing premiums need to be weighed against other options such as targeted cash transfers. Climate insurance for governments could be substantially expanded with increased development partner support for ARC and the World Bank Disaster Risk Finance Program.

Concluding Policy Recommendations

Scaling up financing for adaptation and mitigation hinges on reforms in data, governance, regulation, PFM (including procurement and public investment), and realistic and action-based national climate strategies. To this end, national authorities, development partners, and the IMF all have critical roles to play. Most of the following recommendations apply to all the financing options described in this Note, but some are specific or more relevant to certain types of instruments.

National authorities

- **Climate strategy and climate action.** Developing a well-defined climate strategy allows development partners to assess the scope and quality of climate-related policies and how they are linked with the country's macro-fiscal framework. Creating public awareness on climate action, including by publishing climate strategies and project pipelines, and pursuing partnerships and accreditation of national institutions with international institutions and climate funds can help unlock untapped resources.³⁶ Communication and public education on a host of climate-related issues will be an important part of this process.
- **Data.** High-quality data spanning debt statistics to weather conditions is a prerequisite for all climate finance instruments. For example, climate-related debt swaps require detailed debt data. Climate insurance contracts cannot be properly designed or enforced absent accurate weather data. For carbon credits, the data challenge expands to emissions data as well. In particular, carbon credits cannot be issued without data on emission absorption. More generally, realistic climate strategies cannot be designed without climate and project-related statistics.
- **Governance.** Upgrading and implementing governance frameworks to enhance control, monitoring, and transparency on climate-related policies reduces the perceived risks for financing providers. As a result, access to climate funds, debt swaps, carbon credit markets, and climate insurance (both for governments and private insurees) is increased and the cost of using them is reduced. Most financing providers also appreciate benefit-sharing frameworks that ensure equitable distribution to local communities.
- **Laws and regulations.** A strengthened legal and regulatory system will protect both financing providers and recipients (public and private). For example, a lack of clarity over property rights can impede implementation of adaptation projects—an important consideration for concessional climate finance or creditors engaging in climate-related debt instruments—and prevent provision of climate insurance.

³⁶ In Gabon, emphasizing climate issues in the UNDP Integrated National Financial Frameworks (INFF) allowed the country to show its commitment to climate change-related policies. The INFF is developed by country authorities with the support of the United Nations institutions creating long-term strategies for financing national sustainable development priorities and the SDGs.

- *Financial systems.* Strengthened financial sector frameworks can both encourage and lower the costs of climate-related debt instruments. Combined with deeper domestic and regional capital markets, they facilitate private sector participation in co-financing projects with climate funds.
- *PFM.* Developing a pipeline of adaptation and mitigation projects that are aligned with national climate strategies is paramount to improving access to all climate finance instruments. Concessional climate finance, climate-related debt instruments, and carbon credits are all directly tied to projects and their outcomes. In terms of insurance, better PFM that accelerates the creation of high-quality climate-resilient infrastructure reduces insurance premiums. Incorporating and labeling climate issues throughout the budgeting process, transparent procurement, and pertinent risk management will be critical to planning, implementing, monitoring, and reporting on climate-related projects.
- *Capacity building.* Progressing in all of the areas above hinges on improving capacity. This includes improving the quality and amount of relevant information, infrastructure, and labor force skills and knowledge.

Development Partners

- *Financial support.* The financing needed to cope with the devastating effects of climate change—a situation which was not created by SSA countries—are well beyond the scope of what SSA countries can afford. Development partner financing will be critical to filling the gap, ultimately saving lives and livelihoods in SSA. Against the backdrop of growing SSA debt levels as countries cope with the pandemic and the ripple effects of the war in Ukraine, grant financing should be prioritized. Importantly, this financing must be in addition to existing commitments on development finance. Stepped up development partner support, combined with the reforms discussed above, could also catalyze private sector financing.
- *Tailoring to SSA.* Development partners can promote actions to raise the flow of concessional climate finance to SSA. For example, international institutions and climate funds could have targets on the volumes of financing disbursed to SSA, the number of small-sized or local currency projects financed, or the proportion of adaptation projects financed (including projects with long horizons). In addition, incentives could be modified, for example to increase efforts on forest preservation, which currently receive significantly less financing than reforestation.
- *Enhancing international coordination and harmonization of rules and regulations.* Development partners could spearhead efforts to adopt a common taxonomy for identifying climate adaptation and mitigation projects. This would help country authorities plan projects and reduce creditors concerns about greenwashing. Similarly, development of carbon credit markets, would be supported by internationally agreed climate disclosure and reporting standards as well as carbon-credit related rules and regulations across registries and the relevant authorities. Aligning and streamlining climate fund requirements and project selection criteria—based on areas most important for safeguarding resources—would greatly facilitate SSA access to these funds. Better coordination between SSA national institutions and international organizations should also be pursued (AfDB 2022).
- *Capacity building.* Technical assistance could be further stepped up and tailored toward climate in a range of areas: project design, accreditation processes, financial structure (including on the development of capital markets), governance, debt management, PFM, and climate-related statistics

IMF

- *Analysis.* The IMF's SSA-focused analysis of macroeconomic and policy implications related to climate change, supported by in-house data sets such as the IMF Climate Change Dashboard,³⁷ can help SSA country authorities develop and implement climate strategies. It can also inform providers of climate finance and capacity development—potentially catalyzing more resources for the region—and shape reforms adopted under IMF lending arrangements.

³⁷ <https://climatedata.imf.org>

- *Financing.* Several lending arrangements are available to support SSA countries in their pursuit of building resilient economies, including by advancing many of the reforms outlined above. The RST, once operational, will add to existing arrangements such as the Extended Credit Facility (ECF).³⁸
- *Capacity development.* The IMF can support SSA countries through capacity development in governance, debt, PFM, statistics (including identification of data gaps), banking, monetary, and financial sector issues. This support also integrates climate considerations and climate-specific capacity development—the CMAP, C-PIMA, and green PFM are examples.

This Note is not endorsing the use of any of the instruments discussed or their relative ability to scale up financing for adaptation or mitigation. Nevertheless, given the magnitude of SSA financing needs for adaptation and mitigation, a variety of financial instruments will be needed. The choice of instruments should ultimately be considered in the broader mix of financing options and government policies—including carbon pricing and appropriate risk pricing which can, among other things, shape incentives for spending on adaptation and mitigation. Future work will comprehensively examine various forms of financing for climate action, especially nonconcessional and private financing, including instruments such as ESG equity funds, commercial bank financing, and public-private partnerships.

³⁸ <https://www.imf.org/en/About/Factsheets/IMF-Lending> for a comprehensive list of IMF lending arrangements.

Annex 1. Key Terms of Climate Objective Classification³⁹

Bilateral donors use Rio Markers to indicate either the “principal” or “significant” intent of the funding, such as mitigation, adaptation, or biodiversity.⁴⁰ “Principal” is applied when the activity was funded specifically to meet that objective. “Significant” is applied when the objective is explicitly stated but it is not the fundamental driver or motivation for undertaking it. Instead, the activity has other prime objectives, but it has been formulated or adjusted to help meet relevant climate concerns.

Multilateral flows with a climate-related intent are tagged with a marker called “climate components.” This tracking methodology is based on an agreement on the Common Principles for Climate Finance Tracking, which was developed jointly by MDBs and the International Development Finance Club (IDFC) in 2015. Historical data for 2011 onward have been reclassified applying this marker.⁴¹

³⁹ This information is sourced from Handbook on the OECD-DAC Climate Markers. Methodological note on the OECD-DAC climate-related development finance databases.

⁴⁰ Since 1998, the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD) has set up the Rio Markers system, consisting of policymakers to monitor and statistically report on the development finance flows targeting the themes of the Rio Conventions. There are four markers: biodiversity, desertification, climate change mitigation (that is, reductions in or absorption of greenhouse gas emissions), and climate change adaptation (including climate risk mitigation and vulnerability reduction).

⁴¹ The following climate funds and MDBs apply both Rio Markers and climate components: Adaptation Fund, Climate Investment Fund (CIF), Food and Agriculture Organization of the United Nations (FAO), GCF, GEF, Global Green Growth Institute (GGGI), IFAD, and Nordic Development Fund (NDF).

Annex 2. Accreditation Requirements

Annex Table 2.1. Accreditation Requirements

Prior experience	To have experience implementing projects related to climate change mitigation and/or adaptation in developing countries	
Legal status	Full legal capacity within the relevant jurisdiction to undertake the intended activities to be funded by the Fund; compliance with national legislation; have the necessary registrations, permits and/or licenses	
Fiduciary standards	Management and administrative capacities	Entities should have a clear and formal definition of their corporate governance actors and their respective duties. Competency to undertake monitoring and evaluation, including monitoring of measures for environmental and social risks management
	Financial management and accounting	Abide by international financial management and accounting standards; accurate recording of transactions, disbursing funds on a timely basis; periodic internal and external audits
	Procurement	Control frameworks of objectives and standards, guidelines, and systems to ensure a fair and transparent procurement process
	Transparency and accountability	Disclosure of conflict of interest; prevent fraud and misconduct
Code of ethics		
Capacity to prevent/deal with financial mismanagement and malpractices; anti-money laundering and anti-terrorist financing controls and procedures		
Environmental and social safeguards (ESS)	Environmental and Social Policy of how the entity integrates environmental and social considerations into its decision-making and operations to effectively manage environmental and social risks and impacts and improve outcomes	
Compliance with Policies	Gender policy	Commitments to gender equality
	Information Disclosure Policy	Maximize simple and broad access to information with limited exceptions, explanations of decisions, and right to review
Sources: Adaptation Fund (AF); Capacity-building Initiative for Transparency (CBIT); Global Environment Facility (GEF); Green Climate Fund (GCF); Least Developed Countries Fund (LDCF); and Special Climate Change Fund (SCCF); and IMF staff analysis.		

Annex 3. Concessional Financing for Climate: Country Cases⁴²

Chile: Acuerdo Verde

In 2019, Chile instituted the Acuerdo Verde: an agreement between financial industry players, financial regulators, and the government “which defines general principles regarding the management of the risks and opportunities associated with climate change in making decisions by the signatory entities and commit concrete actions in this area” (UNEPFI). The Acuerdo Verde was created and signed by the members of the Public-Private Green Finance Working Group, which is led by the Ministry of Finance in collaboration with IADB, United Nations Environment Programme Finance Initiative, and the British Embassy in Santiago, and composed of the Central Bank of Chile, the major financial regulatory bodies, the Santiago Stock Exchange, and various financial industry associations. The Acuerdo Verde covers principles related to governance, strategies, and opportunities; risk management; and objectives and metrics. It also defines the obligations of various financial sector actors (Treasury, Central Bank, other financial authorities, public and private banks, securities intermediaries). The principles and obligations defined in the Acuerdo Verde are to be implemented through a Roadmap 2020+ (Hoja de Ruta 2020+).

Kenya: County Climate Change Funds (CCFs)

Five Kenyan county governments (Garissa, Isiolo, Kitui, Makueni, Wajir) established CCFs. These CCFs, covering particularly vulnerable arid and semi-arid landscapes (29 percent of Kenya’s land area), are community-led, bottom-up climate funds designed to mainstream climate adaptation and resilience into county planning and budgets, and source and invest in projects with a climate benefit. CCFs blend funds from international climate funds, MDBs, the private sector, and local and national budgets. Originally, the CCFs focused on adaptation only. Eventually, based on stakeholder demand, their scope was expanded to mitigation as well. The CCFs are aligned with Kenya’s National Adaptation Plan and support the 19 sectors prioritized for climate adaptation and resilience. A key factor behind their CCFs is that 15 percent of the national budget is allocated to Kenyan counties, allowing the counties to independently support investments such as those made by the CCFs. By 2020, the CCFs have led to over 100 investments, ranging from water infrastructure to a livestock disease laboratory. Since 2011, following a proof-of-concept, the national government endorsed the CCF mechanism as part of the 2018–22 National Climate Change Action Plan.

Madagascar: Sustainable Landscapes

In 2016, the GCF approved grant financing for a project in Eastern Madagascar covering both adaptation and mitigation. The financing was channeled through Conservation International Foundation, which is implementing the project during 2018–23. The project seeks to implement sustainable landscape measures to enhance the resiliency of smallholders, reduce greenhouse gas emissions, and channel private finance into climate-smart investments in agriculture and renewable energy (mobilizing both public and private sectors). The project has already delivered on several adaptation and mitigation targets by providing sustainable agriculture and climate change training and has reduced an estimated 1.9 million tons of CO_{2e} emissions. In addition to environmental, social, and gender benefits, the implementation of climate-resilient sustainable production has increased the yields of staple and cash crops, contributing to economic benefits for project participants. Nevertheless, several challenges arose due to procurement delays and political risks. First, some chosen vendors could not meet the required quality and quantity of seeds and seedlings, which was addressed through collaboration with local authorities and NGOs, quality control measures, and selection of multiple vendors. Second, as most target

⁴² The information in this annex is sourced from Mesa Publico-Privada de Finanzas Verdes; Ministerio de Hacienda de Chile (2019); GCF (2020); AF (2019); and GCF (2020a).

beneficiaries lacked ID cards required to receive agricultural inputs under the grant, project-specific ID cards were issued.

Tanzania: Reducing Vulnerability of Livelihood and Economy of Coastal Communities

The Adaptation Fund (AF) provided grant financing for an adaptation project supporting coastal infrastructure and natural defenses to improve resilience of Tanzania's largest city, Dar es Salaam, which is also a coastal metropolis prone to flooding. The financing was channeled through the UN Environment Programme, which was also implemented the project during 2012–17 in conjunction with the Division of Environment in the Vice President's Office. The project faced construction delays that were resolved by making contractor payments contingent on deliverables. Overall, all project objectives were reached or exceeded except planting vegetation to improve natural defenses to flooding—which was obstructed by delays in gaining legal access to coastal erosion sites. The post-project evaluation concluded that, prior to project implementation, land disputes should be identified and action plans developed to settle them.

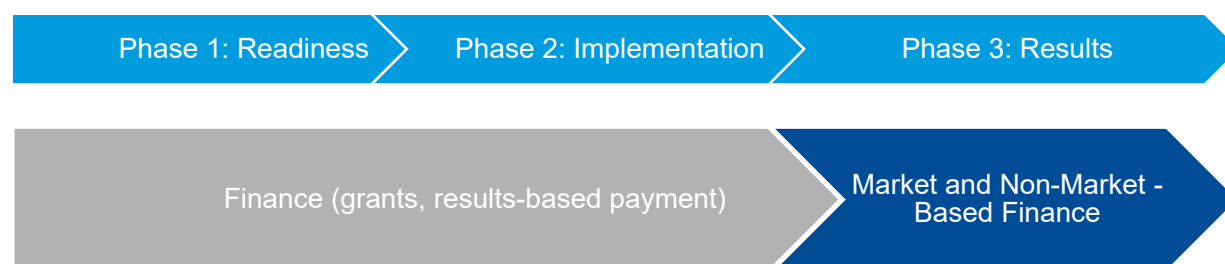
Annex 4. Reduction Emission from Deforestation and Forest Degradation (REDD+): Eligibility, Financing Flows, Standards, and Country Cases

Overview

REDD+ is a framework developed under the United Nations Framework Convention on Climate Change (UNFCCC) that incentivizes protection, conservation, and restoration of forest ecosystems in developing economies by valuing their carbon sequestration, storage, and other social and environmental services. It supports national governments' efforts to reduce human pressure on forests resulting in greenhouse gas emissions, including subnational implementation as an interim measure. The implementation of REDD+ activities is voluntary and depends on national circumstances, capacities, and capabilities of each country and the level of financial support received.

Eligibility

Being in a position to meet REDD+ standards requires completion of three closely linked phases: Readiness, Implementation, and Results.



- Readiness phase: Targets capacity-building in accounting, developing national and/or subnational strategies, designing safeguards systems and other pre-requisites to track and verify emissions reductions. REDD+ readiness takes time in SSA due to the scale and complexity of issues such as clarifying land ownership, implementing robust safeguards and a lack of funding.
- Implementation phase: Enacts REDD+ actions and national strategies or plans that could involve further capacity building, technology development and transfer, and results-based demonstration activities. This phase is designed to serve as a bridge to international carbon markets.
- Results phase: Provides a variety of non-market-based funding and market incentives for REDD+ through different REDD+ standards that cover rules and criteria to ensure environmental and social integrity. Historically, payments for REDD+ results have come from put-option agreements between countries, especially bilateral deals with Norway. New market-based mechanisms such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and the Lowering Emissions by Accelerating Forest (LEAF Coalition) finance initiative have been created to increase companies participation in REDD+ credit offsets.

REDD+ results can occur at three different scales:

Jurisdictional: REDD+ financial support aimed at improving governance of an administrative area where country authorities make decisions. This can be at the national, federal, or subnational levels.

Nested: REDD+ financial support aimed at the coordinated and harmonized implementation of REDD+ programs and activities across multiple accounting scales and governance levels within a country.

Projects: REDD+ financial support aimed at site-specific REDD+ activities. If this is a voluntary transaction, most sales currently occur outside of government knowledge or approval.

Applying REDD+ Standards: After completing the three eligibility phases, a country is ready to apply REDD+ standards. These are rules and criteria that ensure environmental and social integrity. In some cases, applying one standard might allow access to multiple funding opportunities. In other cases, standards may have been developed to access a specific type of funding. REDD+ implementers currently face a broad array of standards and financing options, some of which may be more appropriate to national or local circumstance than others and the type of financing seeking.

Annex Table 4.1. REDD+ Standards

Standard	Credit Recipient	Type of Financing
World Bank Forest Carbon Partnership Facility	National or subnational governments	Market and non-market
Green Climate Fund	National or subnational governments	Non-market
Verra, American Carbon Registry (ACR), Climate Action Reserve (CAR), Gold Standard (GS), California Tropical Forest Standard (TFS)	National or subnational governments and project developers	Market
Architecture for REDD+ Transactions (ART)	National or subnational (in the interim) governments	Market

Source: IMF Staff.

Country Cases

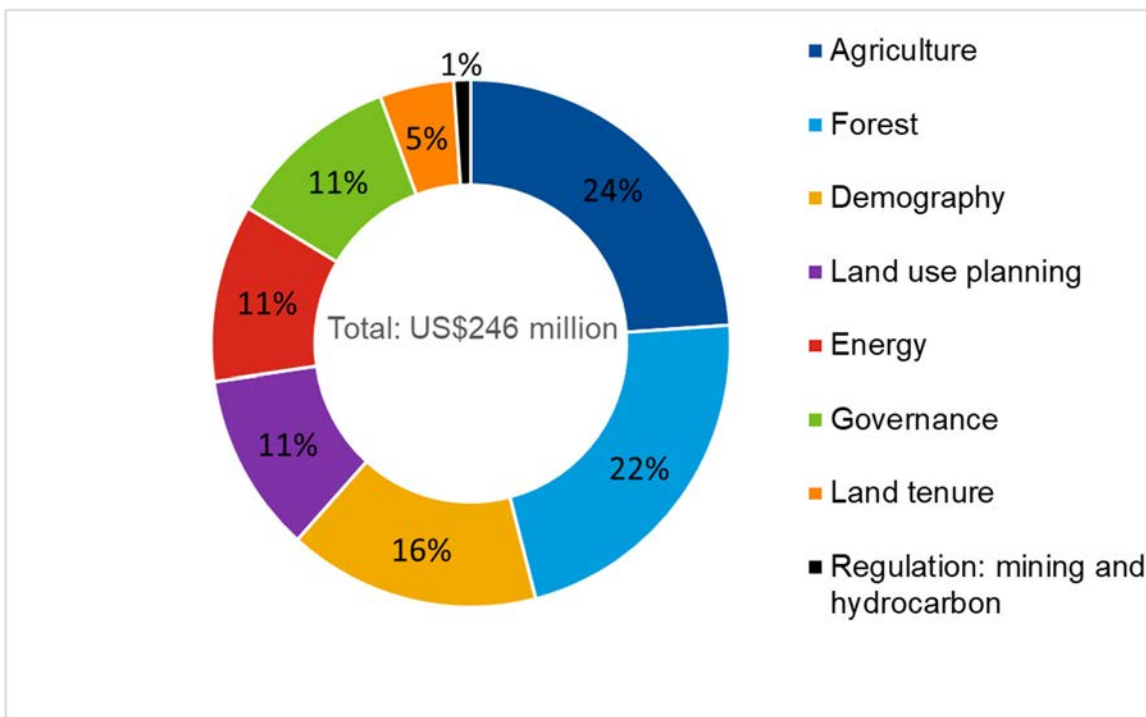
Globally, 54 countries are adopting the REDD+ framework. Of these 24 are in SSA but the Democratic Republic of Congo (DRC) and Gabon are among the few SSA countries that have embarked on a REDD+ program through bilateral agreements with the United Kingdom and Norway, respectively. These agreements are put option deals targeting result-based financing for forest management and conservation activities to unlock jurisdictional REDD+ credits. New market-based mechanisms such as LEAF (described above under “results phase”) are anticipated to increase demand for carbon credits and thus raise future payments for REDD+ credits in international markets. The financing is channeled through the Central African Forest Initiative (CAFI), which works with the countries in developing their REDD+ programs. Once the countries are ready to apply REDD+ standards, the REDD+ credits are verified and certified in the Architecture for REDD+ Transactions (ART, a voluntary carbon registry) and sold in international carbon credit markets.

Democratic Republic of Congo (DRC): REDD+ Readiness

The DRC's forest ecosystem, covering 60 percent of the Congo Basin, stores carbon equivalent to 10 years of global emissions. In addition to the forest (10 percent of the world's tropical forests), the DRC's peatlands (covering 100,000 km²) are the largest in the world. In 2015, the DRC presented its REDD+ Readiness-Package (that is, plan for the readiness phase) and pledged, by 2030, to reduce GHG emissions by 17 percent and increase forest coverage by 60 percent. The country's REDD+ investment plan aims to (1) reform the allocation and use of land (including territorial development); (2) design policies integrating the sustainability of the use of space and resources (energy, agriculture, and forest), energy efficiency and investments in agriculture, savannas, and degraded forest areas; and (3) develop a subnational or provincial climate mitigation strategy with development partners. As of 2021, through CAFI, \$246 million has been spent for REDD+ readiness; and a \$500 million new

readiness program for 2022–30 has been agreed. The program aims to regenerate 8 million hectares of degraded land and forests, and place 30 percent of national territory under protection.

Annex Figure 4.1. Sectoral Allocation of REDD+ Readiness Financing



Source: Authorities of the Democratic Republic of Congo.

Gabon: REDD+ Readiness, Implementation, and Results

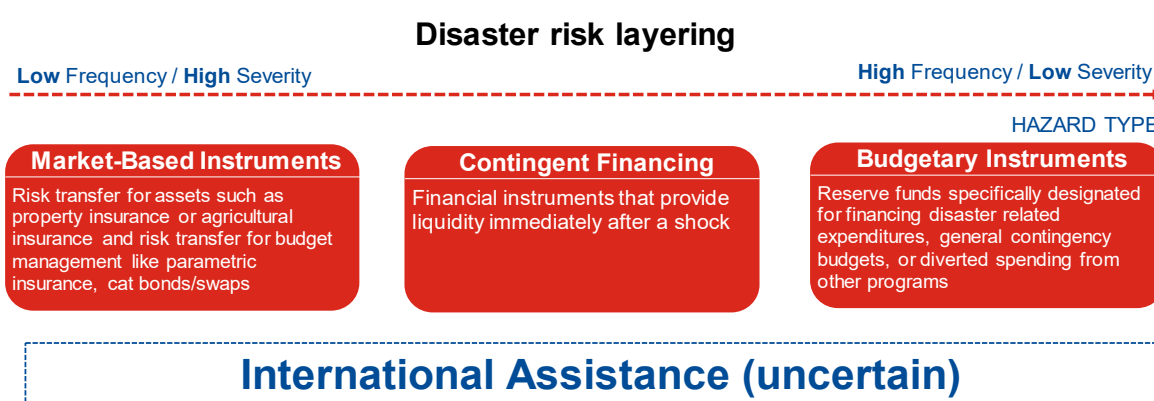
Gabon, with a forest ecosystem representing 10 percent of the Congo Basin, is close to issuing credits in the ART registry. The country plans to issue 187 million jurisdictional REDD+ carbon credits of which 50 percent will be sold on the offsets market. After completing the readiness (supported with \$13 million) and implementation (supported with \$17 million for results-based demonstration) phases, Gabon was able to step up forest preservation, avoid deforestation/degradation, and reduce logging activities by banning the export of unfinished wood. As a result, Gabon’s net emissions have been substantially reduced (90 million tons per year relative to 2000–09). Having completed the REDD+ Environmental Excellence Standard (TREES, needed to issue carbon credits in the ART registry), Gabon is in the last phase of the REDD+ eligibility program (supported by market-based financing).

Annex 5. Developing Country Examples of Climate Insurance

Climate Insurance for Governments

- The Disaster Risk Finance Program, a World Bank program, provides governments financing to tackle natural disasters. As part of this program, the World Bank helps countries access climate insurance services from international reinsurance companies. For instance, in 2017, the Philippines transferred \$200 million in risks to reinsurers, where payouts went to the Treasury when predefined weather thresholds were crossed. The program has multiple instruments to protect against events of different frequency and severity (Annex Figure 5.1). This risk layering ensures that cheaper sources of money are used first and the most expensive instruments are used in only in exceptional circumstances.

Annex Figure 5.1. Disaster Risk Layering



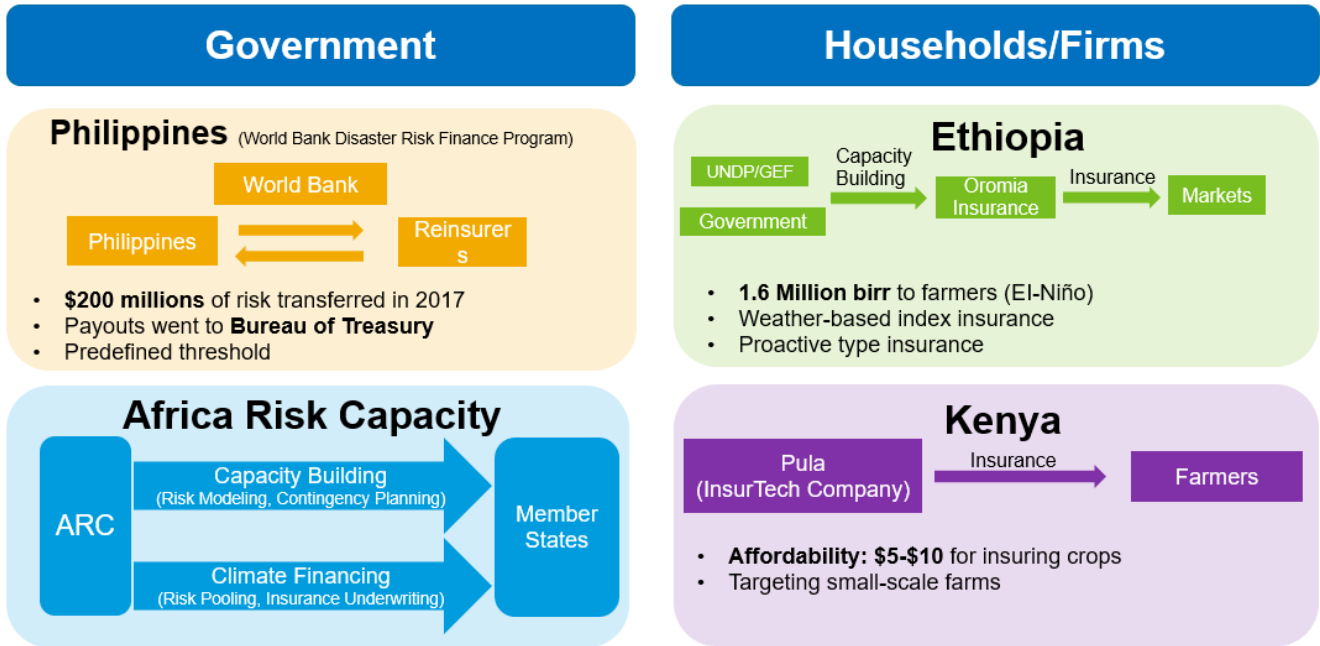
Source: World Bank risk disaster financing and insurance program.

- Similar to the Caribbean Catastrophe Risk Insurance Facility (CCRIF) and the Pacific Catastrophe Risk Insurance Company (PCRIC), the Africa Risk Capacity (ARC) is an African regional initiative that helps African governments deal with climate-change. The agency offers two types of services to member countries: (1) capacity-building programs, in which they provide facilities such as risk modeling and contingency planning to improve countries' ability to receive climate finance and (2) financial services including risk pooling and insurance underwriting. In 2022, Malawi and Madagascar received drought insurance payouts of \$14.2 million and \$0.8 million, respectively, following delayed rains during the 2021–22 agricultural season, where donors supported obtaining the insurance premium.

Climate Insurance for Private Agents

- Cooperation schemes in which governments cooperate with international financial institutions and local insurance companies to develop climate-related insurance services for firms and households. In Ethiopia, the government, the United Nations Development Programme (UNDP) and GEF collaborated to help Oromia Insurance (a local insurance company) develop climate insurance services.
- InsurTech companies provide affordable insurance to small-scale farms. For example, in Kenya, Pula (an insurer) offers premiums ranging \$5 to \$10 to cover crop damage from climate shocks.

Annex Figure 5.2. Examples of Climate Insurance



Sources: African Risk Capacity; Pula Advisors; UNDP; World Bank; and IMF staff.

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Climate Change and Select Financial Instruments: An Overview
of Opportunities and Challenges for Sub-Saharan Africa

IMF STAFF CLIMATE NOTE 2022/009

ISBN 979-8-4002-2159-0



9 798400 221590