



ADB Working Paper Series

**AN OVERVIEW ON CLIMATE CHANGE,
ENVIRONMENT, AND INNOVATIVE
FINANCE IN EMERGING AND
DEVELOPING ECONOMIES**

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The Asian Development Bank refers to “China” as the People’s Republic of China.

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Abstract

The global economy has been facing a series of adverse shocks in recent years including the COVID-19 pandemic, climate crisis, the Russian invasion of Ukraine, high inflation, and interest rate shocks driven by global monetary policy normalization. The high cost of fossil fuels since 2021, moreover, has reminded the world that investment for clean energy projects has been severely inadequate due to limited implementation of climate policies and limited capital inflows to financing decarbonization efforts. While overdependence on fossil fuels might be inevitable currently, the world needs to accelerate transition to carbon neutrality and also begin to cope with nature capital stock and biodiversity losses, which are happening at an alarming pace. In particular, more financial support should be provided to emerging and developing economies (EMDEs) to help achieve climate and environmental goals and other sustainable development goals (SDGs). This paper takes an overview of some innovative finance schemes applicable to EMDEs, including blended finance to mobilize more private capital to climate and environmental projects and debt-for-climate swaps (or debt-for-nature swaps), to provide de facto grants to small high-debt economies in exchange for climate projects (or nature protection). The paper also provides some suggestions for further actions through better coordination among donor and recipient nations led by G7 and G20 nations.

Keywords: public–private partnership; blended finance; debt-for-nature swaps; performance-based grants

JEL Classification: F34, F35, F64, G23

Contents

1.	INTRODUCTION AND OVERVIEW OF RECENT TRENDS.....	1
1.1	Two Important Global Common Goals: SDGs and Carbon Neutrality	1
1.2	Growing Focus on Nature Stock and Biodiversity Loss	2
1.3	Financial and Official Development Assistance (ODA) Flows to Emerging and Developing Economies.....	3
1.4	G20 Initiative to Cope with Growing Debt Problems in Developing Economies	8
1.5	ESG Investment and Effective Utilization of Public–Private Partnership	11
2.	BLENDED FINANCE SCHEMES TO MOBILIZE CLIMATE AND ENVIRONMENTAL PROJECTS.....	13
2.1	Developed Economies’ Commitment on Climate Finance.....	13
2.2	Blended Finance to Correct the Two Types of Market Failures	15
2.3	Definition of Blended Finance and Eligible Projects	16
2.4	Blended Finance, Credit Rating, and Quality	17
2.5	Mechanisms and Types of Blended Finance Schemes.....	19
3.	ACTUAL IMPLEMENTATION OF BLENDED FINANCE SCHEMES.....	21
3.1	Promotor of Blended Finance: The EU, MDBs, and Bilateral Development Institutions	21
3.2	Green Climate Fund Established by the UNFCCC	23
3.3	Examples of Blended Finance Schemes Supported by Bilateral Development Institutions and Private Capital	26
3.4	Examples of the Fund of Funds: Global Energy Efficiency and Renewable Fund.....	29
4.	PROMOTING DEBT SWAPS, PERFORMANCE-BASED FINANCE AND SUSTAINABILITY-LINKED BONDS	30
4.1	Nature Conservation and Debt Swap since the 1980s	30
4.2	A New Era of Natural Capital and Debt Swaps.....	34
4.3	Performance-Based Grants for Debt-Stressed Economies	36
4.4	Sustainability-Linked Sovereign Debt Hub.....	38
5.	FINAL REMARKS AND SUGGESTED ACTIONS FOR DONORS TO PROMOTE CLIMATE AND ENVIRONMENTAL FINANCE IN EMERGING AND DEVELOPING ECONOMIES.....	39
	REFERENCES	43

1. INTRODUCTION AND OVERVIEW OF RECENT TRENDS

The global economy has been facing a series of adverse shocks in recent years including the COVID-19 pandemic, cross-border supply chain disruptions, rising climate physical risk, the Russian invasion of Ukraine, and energy and food crises. The interest rate shocks driven by global trends on monetary policy normalization also added to difficulties across the globe. Meanwhile, the high cost of fossil fuels since 2021 has reminded the world that investment for clean or low emission energy projects needed to achieve net-zero greenhouse gas (GHG) emissions in the world in line with a maximum temperature rise of 1.5 degrees by the end of this century (relative to pre-industrial levels) has been inadequate for many years because of a limited scale of climate and energy policies adopted by both developed and emerging and developing economies (EMDEs). As a result, the planet faces the climate risks posed by overdependence on fossil fuels such as coal, which has been exacerbated further by the Russian invasion of Ukraine, reflecting the shortage of renewable energy and severe shortage of (less carbon-intensive) natural gas. While an increase in overdependence on fossil fuels might be inevitable for some time, the world needs to accelerate transition strategies to the net-zero GHG emissions target in the near future to contain anticipated excessive global warming. This section takes an overview of globally agreed common goals (SDGs and carbon neutrality), the growing focus on nature stock and biodiversity loss issues, and recent finance flows. Moreover, G7 and G20 initiatives to support EMDEs will be discussed.

1.1 Two Important Global Common Goals: SDGs and Carbon Neutrality

It is increasingly clear that the two important international common goals pledged by the world in 2015 are becoming difficult to achieve without additional actions. One is the United Nations SDGs—comprising 17 goals including sustainable economic growth, climate change and conservation of the environment/natural resources, poverty reduction and inequality, as well as gender and human rights to be achieved by 2030. The SDGs cover goals associated with energy, climate change, and other environmental issues. The COVID-19 pandemic and the Russian invasion of Ukraine have exacerbated extreme poverty, inequality, and shortages of social and physical infrastructure in these economies. One in five developing economies is projected to remain below its pre-crisis 2019 level by the end of 2023 in per capita income (United Nations 2022). If the current situation continues and no additional actions are adopted, the achievement of the SDGs at the global level is likely to fall significantly behind, and refugees and conflicts are likely to occur frequently in many parts of the world.

Another common global goal was the Paris Agreement agreed at the 21st United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP26) in 2015. COP26 decided on a long-term goal of reducing GHG emissions to “well below 2 degrees” and preferably to “1.5 degrees” by the end of this century (compared to the pre-industrial levels) and this was agreed jointly by member economies. The Paris Agreement was subsequently supplemented with the Special Report on Global Warming of 1.5 degrees published by the Intergovernmental Panel on Climate Change (IPCC) in 2018. The report demonstrated that global GHG emissions

should decline by 45% from 2010 levels by 2030 and reach net zero by around 2050 according to the 1.5 degrees model pathways (IPCC 2018). The global average temperature has already reached 1.1 degrees–1.2 degrees compared to the pre-industrial levels. In 2020, GHG emissions decreased temporarily due to the impact of the COVID-19 crisis and associated lockdown and restrictions of mobility and activities, but since then they have started to increase again. In the face of serious energy shortages globally since 2021 and exacerbated by the Russian invasion of Ukraine, fossil fuel production is expanding beyond expectations, and thus global warming continues at an accelerated pace. Energy demand is expected to rise further as the total global population is expanding and many EMDEs need reliable, affordable, sustainable energy to support their economic growth. In EMDEs, domestic public resources are insufficient to meet the investment gaps required to achieve these goals due to the growing public debt, repeated credit rating downgrades, and fragile economic and social conditions worsened since the COVID-19 pandemic.

1.2 Growing Focus on Nature Stock and Biodiversity Loss

Around the world, including at the G7 summit, there is a rapid increase in recognition that focus should be extended to natural capital stock and biodiversity loss beyond climate change. Natural capital stock refers to the ecosystem including plants, animals, air, water, soil, minerals, biodiversity, etc. The services that natural capital stock provides to human beings are largely unpaid and are taken for granted by companies and individuals. As human demand for nature capital stock continues to grow and outstrip its supply, the stock of natural capital has been declining at an unsustainable pace. In 2010, the United Nations Conference of the Parties of the Convention on Biological Diversity (CBD) held in Aichi, Japan agreed on setting 20 biodiversity targets for 2020 (so-called AICHI biodiversity targets) based on five strategic goals—(A) addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; (B) reducing the direct pressures on biodiversity and promoting sustainable use; (C) improving the status of biodiversity by safeguarding ecosystems, species, and genetic diversity; (D) enhancing the benefits to all from biodiversity and ecosystem services; and (E) enhancing implementation through participatory planning, knowledge management, and capacity building. For example, Strategy C included Target 11, which states that nations should conserve at least 17% of terrestrial and inland water, and 10% of coastal and marine areas by 2020. However, the results were disappointing, and the report called *Global Biodiversity Outlook 5* compiled by the Secretariat of the CBD found that none of the 20 targets were fully achieved at the global level by 2020 (Secretariat of the CBD 2020).

On related issues, the Intergovernmental Platform for Science and Policy on Biodiversity and Ecosystem Services (IPBES), comprising a group of scientists, released a key report in 2019 (IPBES, 2019). The report warned that biodiversity is declining at an unprecedented rate in human history due to human activities, with nearly one million species threatened with extinction, many of which are likely to become extinct within the next few decades. An average of around 20% of species in assessed animal and plant groups are threatened, unless drastic action is taken to reduce the intensity of drivers of biodiversity loss. Without such action, there will be a further acceleration in the global rate of species extinction, which is already at least tens to hundreds of times higher than it has averaged over the past 10 million years. Globally, local varieties and breeds of domesticated plants and animals are disappearing. This loss of diversity, including genetic diversity, poses a serious risk to

global food security by undermining the resilience of many agricultural systems to threats such as pests, pathogens, and climate change.

Climate change and natural capital are interrelated. For example, promoting afforestation and reforestation can lead to the reduction of GHG emissions and at the same time have a synergistic effect of increasing biodiversity. On the other hand, climate change and natural capital may face a trade-off relationship. For example, biomass power generation may reduce GHG emissions but accelerate the loss of biodiversity if biomass power generation leads to deforestation. Therefore, focusing solely on climate change risks may give rise to the risk of overestimating the environmental impact. Various initiatives have been launched to encourage major companies around the world to disclose information on biodiversity and change their behavior. Environmental, social, and governance (ESG) investors and civil society are also extending their focus on a wide range of environmental issues from climate change to biodiversity. At the government level around the world, including the G7 summit, there is a rapid increase in the movement to focus on natural capital including biodiversity beyond climate change. The world now needs to work collectively to tackle the intertwined crisis of pollution, nature loss, and climate change given that both biodiversity loss and GHG emissions continue to rise at an alarming rate.

1.3 Financial and Official Development Assistance (ODA) Flows to Emerging and Developing Economies

The world must work together to achieve the SDGs and cope with climate change and biodiversity loss and shift more focus on financing EMDEs to meet these goals. The International Debt Statistics 2022, compiled by the World Bank Group, cover private and public stock and flow data for 123 EMDEs and show that net debt and equity flow to EMDEs dropped in 2020 for two consecutive years (Table 1). In 2020, the sharp decline in net debt inflows by foreign private creditors (especially in the form of the withdrawal of banks and other flows) was more than offset by net debt inflows led by official creditors, including the World Bank Group (International Bank for Reconstruction and Development [IBRD] and International Development Association [IDA]), and the International Monetary Fund (IMF). The total equity financial flows also dropped due to a sharp decline in net foreign direct investment (FDI) and to a lesser extent to a decline in portfolio equity inflows. Overall, bond and equity flows were relatively more stable than flows of banks and FDI (World Bank Group 2021).

1.3.1 Growing Presence of the PRC both as Largest Recipient and Creditor of Finance

In addition, more than half of net financial flows to EMDEs in 2020 concentrated on the People's Republic of China (the PRC) as the largest recipient. Net financial flows to the PRC rose 33% in 2020 to \$466 billion of which net debt flows rose 62% to \$233 billion and net equity inflows rose 12% to \$233 billion. In sharp contrast, net financial inflows to EMDEs excluding the PRC fell 26% in 2020 to \$443 billion, of which net debt inflows fell 21% to \$202 billion and net equity inflows fell 31% to \$240 billion. Within net equity flows, FDI fell 23% and portfolio equity flows turned negative with an outflow of \$24 billion compared to a small, \$3 billion inflow in 2019.

Table 1: Aggregate Net Financial Flows to Emerging and Development Economies
(Unit: Billions of US Dollars)

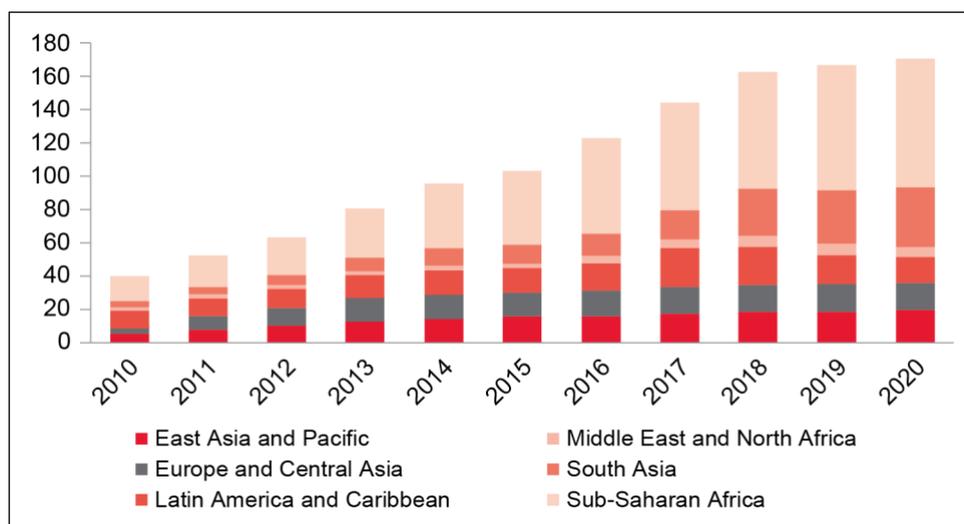
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net financial flows, debt and equity	1,324.9	1,223.8	1,457.7	1,136.3	207.6	721.0	1,289.9	1,108.2	953.8	908.6
Percent of GNI (%)	5.7	5.0	5.6	4.2	0.8	2.8	4.5	3.7	3.1	3.0
Net debt inflows	717.2	587.7	814.8	539.8	-316.1	208.4	755.4	574.5	400.1	435.4
Long-term	405.0	468.5	447.6	394.7	171.6	243.3	433.4	352.4	372.3	419.4
Official creditors	39.1	34.3	30.7	47.8	49.2	62.3	56.2	81.3	64.0	128.6
World Bank (IBRD and IDA)	6.4	12.0	14.1	15.1	17.6	13.5	13.1	14.7	19.1	27.2
IMF	0.5	-8.4	-17.7	-7.2	4.8	5.0	3.6	30.9	21.6	46.5
Private creditors	365.9	434.2	416.8	346.9	122.4	181.0	377.2	271.1	308.3	290.8
Bonds	150.5	225.7	172.7	174.8	74.9	120.1	289.1	203.6	255.2	280.1
Banks and other private	215.4	208.6	244.2	172.1	47.5	60.9	88.1	67.5	53.1	10.7
Short-term	312.2	119.1	367.2	145.1	-487.7	-34.9	322.0	222.2	27.8	16.0
Net equity flows	607.6	636.1	642.9	596.5	523.6	512.6	534.5	533.6	553.7	473.2
Net foreign direct investment inflows	603.8	538.8	572.8	512.7	502.4	467.9	467.7	496.5	505.7	434.5
Net portfolio equity inflows	3.8	97.4	70.1	83.8	21.2	44.7	66.7	37.2	48.0	38.7
Change in reserves (- = increase)	-457.4	-284.1	-523.3	96.9	607.1	274.9	-313.5	84.1	-189.3	-330.4
<i>Memorandum item</i>										
Workers' remittances	337.2	362.8	384.0	414.8	416.9	408.0	444.2	481.9	501.7	499.5

Source: World Bank Group (2021).

The World Bank Group highlighted the PRC's unique position as the largest recipient and the largest creditor (World Bank Group 2021). Over the past decade, almost 60% of net total financial flows to EMDEs from external creditors and investors, namely about close to \$4 trillion, went to the PRC. Of the near \$4 trillion amount, about 40% were allocated to debt inflows and 60% were allocated to FDI and portfolio equity flows. Consequently, the PRC's external debt stock rose 11% in 2020 to \$2.3 trillion, including both domestic and foreign currency-denominated external debt, but this debt size remained moderate in relation to the gross domestic product (GDP) at 16%. Short-term debt, of which about a third was trade-related, accounted for 53% of the external debt stock, but short-term debt declined from 57% in 2019. Instead, long-term debt rose 22% in 2020 to \$1.1 trillion, mainly due to a large increase in renminbi bond issuances by public and private entities in the China Interbank Bond Market (CIBM) purchased by nonresidents. The sharp rise in nonresident investors' demand for renminbi-denominated bonds not only reflected the PRC's early economic recovery from the COVID-19 pandemic in 2020 but also the PRC government's concerted efforts to liberalize their financial accounts since 2016—including a removal of investment quotas or repatriation restrictions for foreign institutional investors under the CIBM Direct Access Program; the Bond Connect program in 2017 enabling investors to register and settle trades onshore in response to investors' concerns over repatriation and capital account risk as a result of holding assets and settling offshore; and the removal of repatriation, holding period, and quota restrictions in 2018–2020. As a result, nonresident participation in the onshore bond market has risen steadily and the PRC's bonds held by nonresidents totaled about \$635 billion and accounted for 58% of its long-term external debt in 2020. Inclusion of renminbi-denominated bonds in the Bloomberg Barclays Global Aggregate Index and China-A shares in the FTSE Russell emerging market index also contributed to growing demand for renminbi-denominated bonds by foreign investors.

At the same time, the PRC became one of the largest bilateral creditors in the world, reflecting its high economic growth averaging over 9% over the past two decades. Low- and middle-income countries' combined debt owned by the PRC has been rising sharply, reaching \$170 billion in 2020 (Figure 1). This total size is rather large when compared with EMDEs' combined debt owned by the IBRD (\$204 billion) and IDA (\$177 billion). Most of the debts owed to the PRC are related to large-scale infrastructure projects and operations in the extractive industries. This debt is defined as financing that has been disbursed by the PRC, minus any principal payments made by the borrower. Thus, the debt data do not include loan commitments and undisbursed amounts and only cover public- and publicly guaranteed debt. The data do not include borrowing by state-owned enterprises and the private sector not guaranteed by the government. The World Bank Group indicated that the data are reported in aggregate and thus creditors cannot be separately identified. Lending to EMDEs include: (i) concessional renminbi-denominated loans provided by the government of the PRC through the International Development Cooperation Agency; (ii) concessional (renminbi- and US dollar-denominated) loans from the Export–Import Bank of China managed by the Preferential Loans Department; (iii) nonconcessional US dollar-denominated loans extended by policy banks including the Export–Import Bank of China, the China Development Bank, and the Agricultural Development Bank of China; and (iv) loans from commercial banks and suppliers insured by the PRC's official export credit agency, SINOSURE.

Figure 1: Emerging and Developing Economies' Debt to the People's Republic of China
(Unit: Billions of US Dollars)



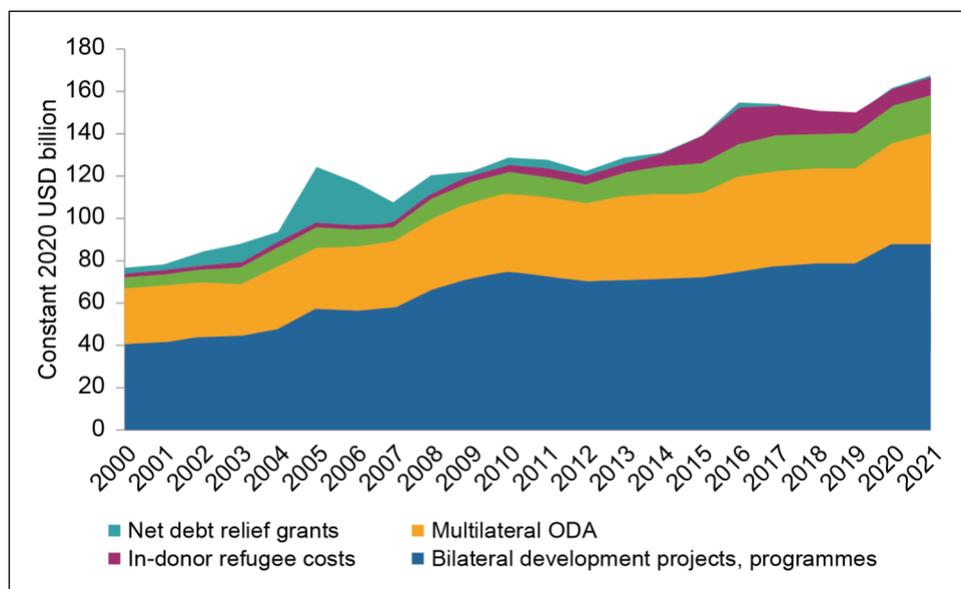
Source: World Bank Group (2021).

1.3.2 Growing ODA from Developed Economies but Failing to Meet the Gross National Income (GNI) Target Ratios

A significant amount of net ODA has been provided from the Organisation for Economic Co-operation and Development's (OECD Development Assistance Committee (DAC) member economics to EMDEs over many years. The net ODA amount has been providing a stable source of development financing and cushioned the adverse impacts of the various economic and financial crises faced by EMDEs in the past. The amount of net ODA has been steadily rising and increased by 118% from

2000 to 2020 in real terms and rose 20% since the SDGs were adopted in 2015 (Figure 2). Despite the fact that DAC members faced economic losses in 2020, the amount of net ODA rose further by 4% to \$162 billion from 2019 while all other major external resource flows, including the private sector, to EMDEs fell. Despite the COVID-19 pandemic in 2020, most donors had already approved their ODA budgets and thus maintained their commitments, with some members mobilizing additional fundings to support severely distressed developing countries.

Figure 2: DAC Member Economies' Net Official Development Assistance in Real Terms
(Unit: Billions of US Dollars)



Note: Data refer to the constant 2020 price.
Source: OECD (2022b).

The amount of net total ODA rose further in 2021 by 4.4% in real terms, reaching its highest level ever recorded at \$179 billion (OECD 2022b). The increase was mostly due to DAC member economies' support for the COVID-19 response, particularly donations aimed at addressing global vaccine inequities. Excluding costs paid for vaccines, net ODA grew only by 0.6% in 2021, mostly arising from increases in multilateral fundings. The amount of net ODA in real terms rose significantly in Italy (34.5%), the Republic of Korea (21%), Slovenia (19%), Ireland (15%), the United States (14%), New Zealand (14%), Spain (12.5%), Japan (12% percent), and Iceland (12%), while the amount dropped in the United Kingdom, Sweden, Norway, and the Netherlands. Although the absolute amount of net ODA rose in aggregate, the ratio to combined GNI was just 0.33%, failing to meet the United Nations 0.7% target. Only five DAC members (Denmark, Germany, Luxembourg, Norway, and Sweden) met the 0.7% target. The 0.7% target was first agreed in 1970 and since then has been repeatedly stressed at high-level international aid and development conferences. DAC member economies increased new and additional assistance for Ukraine and the Ukrainian refugee crisis as well as for mitigating deepening food insecurity, hunger, and extreme poverty in the world.

While DAC member economics, including the EU, the United States, the United Kingdom, and Japan, increased ODA in 2020, their other official development finance flows also increased significantly in 2020, particularly to Asia, and Latin American regions, and especially through the World Bank, the IMF, regional development banks, EU institutions, the United Nations, etc. By contrast, non-DAC economies, including about 19 economies (excluding the PRC), reduced ODA in 2020 for two consecutive years and other official development finance also dropped in 2020. Thus, development finance from non-DAC member economies and private finance should make efforts to increase their contributions to meet the magnitude of financing needs in EMDEs.

1.3.3 G7 Initiatives to Promote Greater Collaboration with Other Donors and Recipient Economies

At the G7 summit meeting in June 2022, the Partnership for Global Infrastructure Investment (PGII) was agreed to help counter the infrastructure gap in EMDEs. Within the next few years, about \$600 billion will be allocated to infrastructure development, including climate change in EMDEs, by mobilizing public and private sector money from the G7 economies, including multilateral finance. Based on the conversations between Chatham House researchers and members of the Biden administration, the Chatham House report explained that this initiative reflected the United States government's intention to rebrand the original Build Back Better World initiative as a PGII in order to promote greater collaboration with other G7 members and recipient economies with value-driven, high-standard, transparent, sustainable partnerships (Liao and Beal 2022). The pledged amount is likely to be disbursed from the existing baseline budgets and thus, additionality or new additional finance obtained from additional sources of financing is unlikely to happen for many economies.

This PGII framework appears to promote alignment with the proposal for a global certification framework for quality infrastructure investment, the so-called "Blue Dot Network," announced by the OECD in March 2022, which will be financed jointly by the United States and its Quad partners Japan and Australia. The OECD stressed that quality infrastructure projects should be developed in alignment with the G20 Principles for Quality Infrastructure Investment and other best-in-class frameworks (such as the SDGs, the Equator Principles, and the OECD Guidelines for Multinational Enterprises) through the establishment of a voluntary private sector-focused and government-supported certification scheme for attracting investment and ensuring their positive outcomes (OECD 2022a). The qualities under the certification framework focus on infrastructure projects throughout the entire life cycle; openness and inclusiveness for all projects; implementation of widely accepted existing standards and instruments; credible and evidence-based assessment while minimizing cost and burden borne by participants; support for mobilizing private sector investment; and recognition of varying levels of capacity of project developers and jurisdictions, thus encouraging progressive realization of requirements for impactful infrastructure projects. Based on these qualities, a project to be certified must demonstrate alignment with a set of essential requirements derived from more than 70 international standards identified by the OECD. Then, a scoring system that translates compliance with individual requirements into an assessment for the entire project will be adopted. The point-based scoring system will also recognize progressively higher levels of quality infrastructure and thus a project that excels in specific areas will be granted additional points. Finally, an efficient and credible review process will take place, consisting of an initial self-assessment conducted by the applicant, followed by an independent verification by a third party. To generate efficiencies, existing due diligence procedures conducted

by Development Finance Institutions (DFIs) and other financing agencies, as well as existing certification schemes that share similar values and criteria, will be recognized and utilized flexibly.

Liao and Beal (2022) stress that it remains unclear whether these new forms of global partnership and collaboration initiatives will emerge from the momentum of announcements and pledges, and whether multilateral cooperation and partnership will truly be reinvigorated by G7 initiatives. While G7 nations have great aspirations to mobilize private capital, it is also important to recognize that the role of donor economies and their leadership is essential to materialize their aspirations, as explained in the following sections below. In addition, it is pointed out that funding pledges in development finance have been traditionally hard to fulfill, resulting in the disparity between commitments and actual disbursements. For example, G7 nations' bilateral ODA disbursements between 2002 and 2019 were 9% lower than the amount initially committed (Liao and Beal 2022). Over the same period, EU institutions disbursed 24% less development finance (a shortfall of more than \$84 billion) than they had initially committed. Meanwhile, it is well known that the global climate or environmental finance landscape among donors and multilateral and regional institutions is highly fragmented, leaving accountability for climate finance flows opaque and hard to measure objectively. The climate finance landscape has so far mirrored the existing political economy of the global development finance architecture and is largely donor-dominated (African Development Bank 2022). Weak coordination and lack of consensus on a methodology for measuring climate or environmental finance flows from different sources have led to a lack of transparency and accountability in tracking new and additional finance flows from different sources. This has led to increased trade-offs among climate finance and other sources of financing for development, including ODA and financing from multilateral development banks (MDBs).

1.4 G20 Initiative to Cope with Growing Debt Problems in Developing Economies

Since the COVID-19 pandemic, public debt in EMDEs has expanded significantly and the G20 has demonstrated several supportive initiatives. First, the G20 adopted the Debt Service Suspension Initiative (DSSI) in April 2020 and established it in the following month to provide a temporary debt service suspension on official bilateral external debt provided by creditor economies for low-income economies facing high debt stress. The DSSI was agreed subsequently by the Paris Club members. The PRC, as a non-Paris club member and the largest bilateral creditor nation, also made a welcome move by participating in the DSSI. In practice, it turned out that about 48 economies out of 73 eligible economies participated in the initiative and suspended \$12.9 billion in debt service payments owed to their creditors. The top low-income economies whose savings through the DSSI as a percentage of GDP were largest included Maldives (4.9%, \$272 million), Djibouti (4.3%, \$143 million), and Mozambique (3.7%, \$143 million).

However, the total amount of debt service payment subject to the DSSI accounted for only a quarter of the target set by the G20 member economies. Some eligible economies did not participate in the DSSI out of concerns about the potential heightened borrowing costs and possible credit rating downgrading, since the participation might be viewed by foreign investors as a signal of weaker macroeconomic fundamentals and creditworthiness. Another challenge was that debt provided by the private sector and the multilateral development banks (MDBs) and institutions to developing economies was not covered under the DSSI. The DSSI

expired in December 2021 so many developing economies had to resume debt service payment in the midst of global energy, food, and climate crises. Many of these economies had to prioritize the allocation of their funds to debt service payment over environmental, social, and infrastructure projects, thus further amplifying the risk of failing to achieve the SDGs and the Paris Agreement.

1.4.1 Participation in Debt Treatments by non-Paris Club Members

Accordingly, the G20 decided to introduce the Common Framework for Debt Treatments beyond the DSSI, which was also agreed by the Paris Club in November 2021. The Common Framework will be initiated at the request of a debtor country. The need for debt treatment and a restructuring envelope will be assessed based on an IMF–World Bank debt sustainability analysis (DSA). The participating official creditors' collective assessment will be consistent with the IMF-supported program and associated conditionality. This Common Framework took into account the cutoff date in the 2020 DSSI term sheet that protects new financing provided after 24 March 2020. The key parameters included at least: (a) the changes in nominal debt service over the IMF program period; (b) where applicable, the debt reduction in net present value terms; and (c) the extension of the duration of the treated claims. In principle, debt treatments in the form of debt write-off or cancellation are not considered in the common framework. In the most difficult cases where debt write-off or cancellation is necessary upon the DSA and the participating official creditors' collective assessment, however, specific consideration might be possible provided that each participating creditor shall fulfill its domestic approval procedures and keep other creditors informed of progress. The Common Framework attempts to ensure fair burden sharing among all official bilateral creditors, and debt treatment by private creditors at least as favorable as that provided by official bilateral creditors.

The government of Zambia formally requested a debt treatment under the Common Framework in June 2022 and, accordingly, the creditor committee including 16 economies was formed. The committee is co-chaired by the PRC and France and vice-chaired by South Africa. The IMF and World Bank Group as observers presented the latest macroeconomic developments regarding Zambia and the current status of their relationship with that country. Consistent with members' national laws and internal procedures, the creditor committee for Zambia is pursuing its work to find an appropriate solution to the country's external debt vulnerabilities, in a coordinated manner. The committee stressed the importance for private creditors and other official bilateral creditors of Zambia to provide debt treatments under the Common Framework on terms at least as favorable, in line with the comparability of treatment principle.

At the request of the government of Chad in application of the Common Framework, the creditor committee for Chad was also formed by the PRC, France, India, and Saudi Arabia and co-chaired by France and Saudi Arabia in May 2021. Chad was the first country to request a debt restructuring of external debt under the Common Framework in January 2021. The committee reached a deal in June 2021 but has since struggled to finalize negotiations with private creditors who hold a third of Chad's total external debt partly because of rising oil prices and possible revenue increase. Almost all the external debt owed to private creditors is associated with debt owed to the Switzerland-based Glencore in the oil industry generated in 2013 and 2014. The committee had a meeting in September 2022 and negotiations are continuing. Moreover, the government of Ethiopia also applied to the Common Framework and thus the committee co-chaired by the PRC and France was also formed. The committee held a meeting in September 2021 but further negotiations have been delayed due to the civil war.

While this donor coordination approach initiated by the G20 is welcome, one major constraint is that it is applicable to only highly indebted low-income economies and thus not applicable to middle-income economies such as debt-distressed Sri Lanka, which defaulted for the first time in May 2022. The IMF expressed the intention to look for ways to expand donor coordination to middle-income countries.

1.4.2 Reallocating SDRs to Increase Sources of Financing to Emerging and Developing Economies

The IMF increased Special Drawing Rights (SDRs) significantly by about SDRs 456 billion (about \$650 billion) in August 2021. This is a welcome step since it helps increase its member economies' official reserves and enables greater access to borrowings from the IMF. Many EMDEs have thus been able to utilize their SDR allocations to support their economies and reduce poverty. Meanwhile, SDRs are distributed in proportion to member economies' IMF quota share and thus developed economies receive a larger portion of the SDRs allocated even though these economies can finance themselves relatively easily from domestic and international markets and therefore do not need to borrow from the IMF and use the SDRs. To cope with these issues and support EMDEs, the G20 and G7 agreed on committing to reallocating or lending \$100 billion of their unused SDRs (about 25% of their allocated SDRs) to low-income economies, small island developing states, and climate-vulnerable middle-income economies in October 2021. Most of these reallocated SDRs are to be allocated through the IMF's traditional concessionary Poverty Reduction and Growth Trust (PRGT) targeting low-income economies, its newly created Resilience and Sustainability Trust (RST) providing loans up to 20 years, which is explained below, as well as MDBs and bilateral arrangements.

Thirteen countries have already pledged about \$59 billion to the SDR reallocation, accounting for 24% of their total allocated SDRs of \$250 billion. The economies that committed large, absolute pledged amounts included the PRC (about \$13 billion, 34% of allocated SDRs), Germany (about \$9.9 billion, 29%), Japan (about \$7.8 billion, 20%), France (about \$7.6, 30%), and the United Kingdom (\$5 billion, 20%). It may take some time for the G20 to achieve the reallocation of \$100 billion equivalent SDRs since some large economies still need to obtain an approval from their congress or parliament. Thus, the pledged amount of \$59 billion does not include the amount from the United States. In October 2022, the United States government asked Congress to approve the proposal to lend \$21 billion-equivalent SDRs to IMF trust funds.

Following the G20's decision, the IMF announced in April 2022 the introduction of the Resilience and Sustainability Trust (RST), its first affordable long-term financing to help to achieve sustainable economic growth in low-income economies, small-island economies, and vulnerable middle-income economies. This facility, which came into effect in October 2022, is expected to support investments and projects that build resilience to structural challenges and maintain long-term economic and financial stability, including climate change. The trust will offer up to 20-year funding packages with a grace period of ten and a half years. This lending accompanies an IMF-monitored program comprising high-quality policy measures in line with the RST's objective. Since September 2021, Barbados and Rwanda have signed preliminary RST agreements with the IMF. Barbados requested a \$183 million RST loan alongside a new traditional package of \$110 million. Rwanda is seeking a three-year, \$310 million package. Costa Rica has requested \$710 million in RST funding. Aside from the RST, the IMF lends money by financing from two main pools. The General Resources Account provides support to all member states, and the PRGT offers loans to poorer countries at below-market rates. Traditionally, the IMF has focused on resolving the

balance of payments, and currency and debt crises, and its funding is usually disbursed over much shorter periods—two or three years, commonly.

1.4.3 Consideration for Debt for Climate or Nature Preservation Swap

Many economies currently face large external debt and climate and environmental crises. Therefore, it is important to consider debt-for-climate swaps or debt-for-nature preservation swaps, as discussed later. In general, however, it may be difficult to work on debt swap conditional on commitment to taking climate actions or nature preservation for a long time with budgetary allocations. At the same time, some small, highly indebted economies might be facing climate change-driven catastrophes and natural disasters every year. While these economies may apply for the RST or other support from bilateral or multilateral climate or environmental funds, they may need greater action.

The IMF staff report pointed out that providing debt relief without mandating climate adaptation action could give rise to a moral hazard problem because the costs of debt distress are shared by debtors and creditors, but only the debtor decides how to use the fiscal space gained through debt relief (Chamon et al. 2022). Debt-climate or debt-nature preservation swaps could become an efficient form of fiscal support if the expenditure commitment is de facto senior to debt service and thus the swap can support a given climate or environmental expenditure at lower cost to the creditors. This is because at least part of the climate or environmental expenditures will be indirectly financed by other creditors who would suffer greater losses in a crisis. In addition, low-income highly indebted economies benefit from such debt swaps since they tend to offer debt relief in excess of what is needed to finance the climate investments and thus lead to a higher net fiscal transfer. The IMF staff report stressed there is an economic case for climate or environmental conditional debt restructuring over general unconditional debt restructuring or debt treatments when climate actions do materially lower sovereign risk. In such a case, the new type of debt swaps involving green or blue bonds could be considered a way to mobilize more private capital from institutional investors, as highlighted later in this paper.

1.5 ESG Investment and Effective Utilization of Public–Private Partnership

This paper has pointed out that the amounts of ODA provided by developed economies have been growing but remain insufficient to make progress on the SDGs and environmental agenda in EMDEs. According to the OECD, the shortage of funds (financing gap) for EMDEs to achieve the SDGs used to be estimated at around \$2.5 trillion annually until 2019, but the amount had increased to \$3.7 trillion annually by 2020, and thereafter since the COVID-19 pandemic and associated economic contractions (OECD 2021). The funding gap has expanded further since 2020 because the COVID-19 pandemic, the global energy and food crises, and the Russian invasion of Ukraine required governments in EMDEs to make additional public spending while facing a decline in foreign capital inflows. Improving their financing situations requires not only the expansion of public funds from MDBs and developed economies as donors, but also long-term financial support from the private sector, including ESG investors. Therefore, it is important to explore innovative ways to attract more private capital

or fundings from institutional investors from developed economies, including the aforementioned new types of debt swaps.

Various innovative finance schemes have been developed and practiced in the past, but these schemes, mainly based on public funds, were not successful enough to mobilize large-scale mainstream funds toward EMDEs. In recent years, momentum has been newly gathering from private capital for three reasons, namely because investment focusing on environment (E), social (S) and corporate governance (G) led by institutional investors has been growing rapidly. Many large financial institutions are increasingly committed to cutting their financed GHG emissions by 2050. ESG investors mainly comprise long-term-oriented asset owners (such as pension funds and insurance companies) and their asset management companies. The amount of global sustainable finance, namely the amount of assets under management, was estimated at around \$35 trillion in 2020 by the Global Sustainable Investment Alliance (GSIA), an international collaboration of membership-based sustainable investment organizations covering Europe, the United States, Canada, Japan, Australia, and New Zealand (GSIA 2020). This amount grew by 15% in 2020 as compared with the previous survey performed in 2018. The United States and Europe remained dominant, accounting for 48% and 34%, respectively. It should be noted that the data did not cover emerging economies, including the PRC, whose green market size, including green bonds and green loans, has been expanding rapidly and is becoming comparable to the size of that of the United States and Europe.

Moreover, at the time of the 26th Conference of Parties (COP26) of the United Nations Framework Convention on Climate Change (UNFCCC) held in 2021 in Glasgow, the United Kingdom, environmentally conscious global financial sector-specific alliances—covering asset owners, asset managers, banks, insurers, financial service providers, and investment consultants—aiming for net-zero GHG emissions from their financed portfolio and activities by 2050, formed the “Glasgow Financial Alliance for Net Zero (GFANZ)” in November 2021. The formation of GFANZ has increased the momentum of ESG investments that seek to encourage corporate behavioral and business model changes through financing and investment activities. More than 450 financial institutions, with their total amount of assets under the management of more than \$130 trillion, became members of GFANZ. In June 2022, GFANZ established a base for Asia and the Pacific in Singapore to decarbonize investments and loans in the Asian region. Global major financial institutions face the risk of losing reputation and business opportunities if they are left behind in these global trends and are forced to implement necessary financial strategies and responses at a much later stage. Their focus is also gradually expanding beyond listed companies in developed economies given that the aforementioned global common goals cannot be achieved without successful performance in EMDEs. In line with the movement of ESG investment, large companies express intentions to reduce their GHG emissions and show more commitment, as demonstrated by participating in the RE100 initiative and setting GHG emission cut targets (and increasingly carbon neutrality targets). Companies are more eager to be conscious of obtaining sustainable materials and inputs to produce sustainable products and services. Digital technology, artificial intelligence (AI), and satellite image technology also contribute to improving the capacity to monitor some environment-related projects and their emission amounts more efficiently, and to enable the traceability of sustainable products and services. Therefore, it may be time to examine how to mobilize ESG investment from new sources in addition to expanding existing finance from commercial banks or impact investors.

Against this background, this paper takes an overview of recent developments and issues related to seeking finance supporting environmentally sustainable development in EMDEs. The G7 economies are also beginning to place greater emphasis on developing sustainable developing finance collectively, as demonstrated by the

German G7 Presidency in June 2022 calling for the establishment of a global climate club that promotes international cooperation. This paper comprises five sections. Sections 2 and 3 focus on the mechanisms of blended finance, a financial scheme to utilize public funds to mobilize greater private capital, as well as actual implementation and practices. Section 4 sheds light on debt-for-climate or debt-for-nature swaps and views them as innovative finance schemes. It also focuses on performance-based climate and environment finance. Section 5 concludes and provides some suggested actions among donor nations.

2. BLENDED FINANCE SCHEMES TO MOBILIZE CLIMATE AND ENVIRONMENTAL PROJECTS

Around the world, expectations are rising that institutional investors will not only promote ESG investment in developed economies, but also contribute more funds to achieving the SDGs and net zero in GHG emissions in EMDEs. Since the global financial crisis in 2008, meanwhile, financial regulations have been tightened, making it difficult for investors to take risks, including investment in EMDEs. If the current situation is left unaddressed, it will delay EMDEs' response to coping with climate change and other environmental problems and achieving SDGs. In recent years, blended finance has been under the spotlight because of the potential to effectively utilize public and private capital jointly and deepen investors' involvement in improving global environmental and social issues. In light of this, the UN-convened Net Zero Asset Owner Alliance (NZAOA) called asset managers to collaborate in its efforts to increase blended finance vehicles to EMDEs (UN-convened NZAOA 2021a, 2021b). NZAOA is an initiative of institutional investors committed to transitioning their investment portfolios to net-zero GHG emissions by 2050 and it is an important member of GFANZ with other sector-specific alliances, including the Net Zero Asset Managers (NZAM) initiative. This section will focus on definitions, features, and structures with regards to blended finance.

2.1 Developed Economies' Commitment on Climate Finance

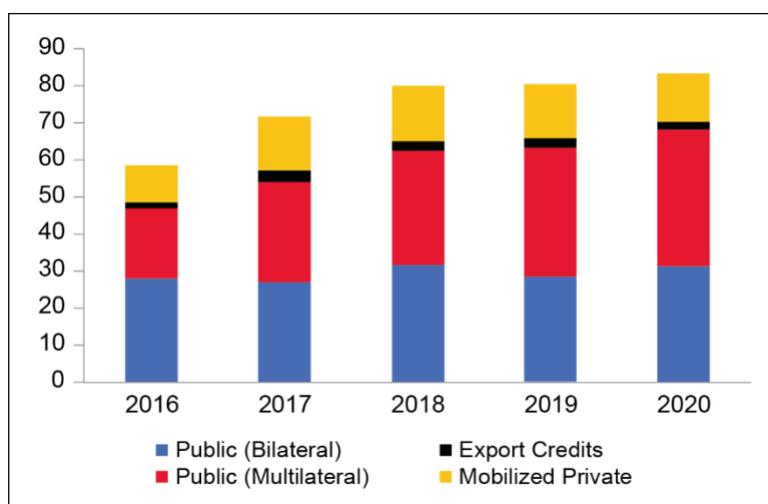
EMDEs lack social and economic infrastructure, such as energy, transport, water supply and sanitation, water management (irrigation, flood control, safe water, etc.), schools, and health care, which constrains economic growth and hampers poverty reduction. At present, energy consumption in EMDEs, excluding the PRC and India, is relatively low, but energy demand is expected to increase in the future in the process of promoting industrialization and economic development. EMDEs are set to account for the bulk of GHG emissions growth in the coming decades unless much stronger action is taken to transform their energy systems. In a scenario reflecting today's announced and existing climate and energy policies, GHG emissions from EMDEs are projected to grow by 5 gigatonnes over the next two decades while they are projected to fall by 2 gigatonnes in advanced economies and to plateau in the PRC (IEA 2021). Therefore, an unprecedented increase in clean energy investment is required to put these countries on a pathway towards net-zero emissions in a cost-effective way. Clean energy investment in EMDEs declined by 8% to less than \$150 billion in 2020, with only a slight rebound in 2021.

Energy investments in EMDEs currently depend heavily on public sources of finance. At the COP15 of the UNFCCC held in 2009 in Copenhagen, Denmark, developed countries committed to a collective goal of mobilizing \$100 billion per year by 2020 for climate action in EMDEs, in the context of meaningful mitigation actions and

transparency on implementation. This financial goal was formalized at the subsequent COP16 held in 2010 in Cancún, Mexico. Subsequently, at COP21, held in 2015 in Paris, France, this goal was reiterated and it was agreed to continue with the same \$100 billion amount annually until 2025. In addition to climate change mitigation, COP 21 also agreed to balance support for adaptation to climate change as the frequency and loss of natural disasters were increasing. At the request of donor economies, the OECD has been tracking progress on the goal of mobilizing \$100 billion annually by combining public and private funds from developed economies and from MDBs allocated to promote climate change mitigation measures in EMDEs.

In 2020, however, the total amount of climate finance for EMDEs rose by a mere 4% to \$83 billion and thus the promised financial support has not yet materialized (Figure 3). Of this \$83 billion, public climate finance (both bilateral and multilateral combined) continued to take a substantial share of the total and accounted for 82% (OECD 2022d). Private finance mobilized by public climate finance decreased slightly to \$13 billion, while climate-related export credits remained small. Mitigation finance continued to represent the majority (58%) despite a decline in the amount by \$2.8 billion. Adaptation finance grew by \$8.3 billion and accounted for 34% as a result of a few large infrastructure projects. Among the amount of public finance provided over the period of 2016–2020, loans accounted for 72%, grants accounted for only 25%, and equity remained limited. The share of loans was greater for multilateral public finance (84%) than bilateral public finance (59%). Within multilateral public finance, multilateral climate funds provided more grants (56%) than loans (39%) compared with MDBs, whose loans accounted for 91%. Despite the small amount, bilateral finance and multilateral climate funds provided more equity finance compared with MDBs. Multilateral climate funds include the Green Climate Fund established in 2010 by the UNFCCC and also discussed in Section 3, the Adaption Fund established in 2001 under the Kyoto Protocol of the UNFCCC, the Climate Investment Fund introduced in 2008 at the request of the G8 and G20, the Global Environment Facility Trust Funds established in 1992 by the IBRD, the Global Environmental Facility Least Developing Countries Fund established in 2001 by the UNFCCC, etc.

Figure 3: Total Climate Finance Provided and Mobilized
(Unit: Billions of US Dollars)



Source: OECD (2022d).

It should be realized that committing \$100 billion a year is rather a small amount for EMDEs. The BlackRock Investment Institute estimated that the amount of investment required to achieve net zero in EMDEs is estimated to be around \$1 trillion annually (Bloomberg 2021). Among EMDEs, the PRC has been actively investing in clean energy over many years. Excluding the PRC, the amount of clean energy investments in EMDEs fell by 8% to below \$150 billion in 2020 and increased only slightly in 2021. For the world to achieve net zero by around 2050, EMDEs, excluding the PRC, will need an additional annual investment of around \$780 billion by 2025 (Climate Policy Initiative 2021). The IEA estimated that more than 70% of clean energy investments need to be financed through private capital, especially in renewable power and efficiency (IEA 2021). Public sources of finance, including state-owned enterprises, will continue to play vital roles, especially in grid infrastructure and in transitions for emission-intensive sectors. Provision of blended finance from development finance institutions is critical to attract private capital to markets and sectors at early stages of readiness.

2.2 Blended Finance to Correct the Two Types of Market Failures

Blended finance is classified as part of impact investment. It is an approach that aims both to have a positive impact (e.g., GHG emission reduction) and to expand the supply of private capital. As the financial resources of EMDEs and the current public development funds are not enough, it is becoming important to examine innovative funding sources to mobilize more private capital. Blended finance is one form of public–private partnership financial arrangements.

The role of blended finance is to address two market failures that make it difficult for EMDEs to access financial markets. One is the externality related to projects. For example, some investments may lead to decarbonization, such as renewable energy, while others may revitalize the economy for the community by constructing an environmentally unfriendly factory complex and polluting and harming the health of citizens. These positive or negative externalities are not reflected in project returns, thus failing to resolve market failures. Therefore, if blended finance can place more focus on implementing projects that have a positive environmental impact, it is possible to enhance the positive externality. In this case, blended finance can realize “project additionality.” In order to realize such a socially desirable project through a public–private partnership, it may be necessary to enable a continuation of the project by supplementing the low financial return with a grant or catalytic fund portion of public funds until the project gets on track and can be operated sustainably and commercially. It is also possible to use part of the grants to pay for the cost of remediation of the negative externalities that the project brings.

Another market failure is the problem arising from project information asymmetry. There is a high degree of uncertainty about the benefits that will be obtained from projects, and the lack of information has led to imperfect capital markets. As a result, private funders tend to view the project as a high-risk investment with a low probability of repayment in terms of income, thus resulting in an insufficient amount of investment. In this circumstance, a blended finance mechanism might enable public funds to mainly invest at the initial phase and private investors to start financing the project with a small amount. Private investors may provide more funding at a later phase after the project becomes more viable. Blended finance is important because blending the public fund portion with private funding can attract additional new private funding for projects that

otherwise would not have been possible. In other words, blended finance can bring about “financing additionality.”

2.3 Definition of Blended Finance and Eligible Projects

“Blended finance” is used in various interpretations and does not have a single definition. The OECD defines it as “the strategic use of development finance to mobilize additional resources for sustainable development in EMDEs.” Public funds here include both concessional and market-rate funds. Under the OECD definition, “additional finance” refers primarily to commercial finance and the focus lies on the mobilization of commercial finance that is not currently being directed towards development-related investments. All relevant, higher-level commitments made by the DAC member economies in relation to development co-operation apply to blended finance in the same way as to other financing approaches. These include, amongst others, commitments on ODA financing targets, the commitment to leave no one behind, commitments related to development effectiveness, as well as those related to untying aid. The Addis Ababa Action Agenda set out at the 3rd Conference on International Development Finance in Addis Ababa, Ethiopia in 2015 defined “blended finance” as the combination of concessional public finance with nonconcessional private finance and expertise from the public and private sector, special-purpose vehicles, nonrecourse project financing, risk mitigation instruments, and pooled funding structures.

The World Bank Group’s International Finance Corporation (IFC), on the other hand, uses a narrower definition, and defined “blended finance” as the use of relatively small amounts of concessional donor funds to mitigate specific investment risks and help rebalance risk/reward profiles of pioneering investments that are unable to proceed on strictly commercial terms. In particular, the IFC focuses on promoting commercially sustainable project implementation and the standards for high-quality projects and expects to provide relatively short-term concessional financing.

Meanwhile, MDBs and bilateral development institutions (together, called DFIs) have adopted the DFI definition of blended concessional finance and focus only on situations where contributions from donors or third parties are provided at concessional rates, to be mixed with commercially based finance from DFIs and/or other investors. They use the term “blended concessional finance” instead of just “blended finance,” reflecting that there remains a need for a special focus on the use of concessional finance in blending, as: 1) concessional funds are a particularly scarce resource, requiring grant-equivalent contributions from governments or other philanthropic institutions; 2) the use of concessional resources in blending therefore requires a special rationale beyond other types of development finance; 3) blended concessional finance has a particularly important role to play in difficult markets and the most challenging and pioneering investments; and 4) the use of concessional resources presents special governance issues related to the potential for conflicts of interest between commercial and noncommercial financiers.

Although there is no uniform definition as described above, blended finance utilizes grants and low-interest concessional loans from international organizations, public funds from developed economies, charity foundations, etc. It is a mechanism that makes it possible to implement projects in EMDEs that could not have been realized without the blend of public and private funds. Blended finance aims to achieve both positive impact project additionality and funding additionality referred to above. Once the project is on track, blended finance is expected to deliver appropriate risk-adjusted returns for private investors while realizing positive impacts (additionality), such as

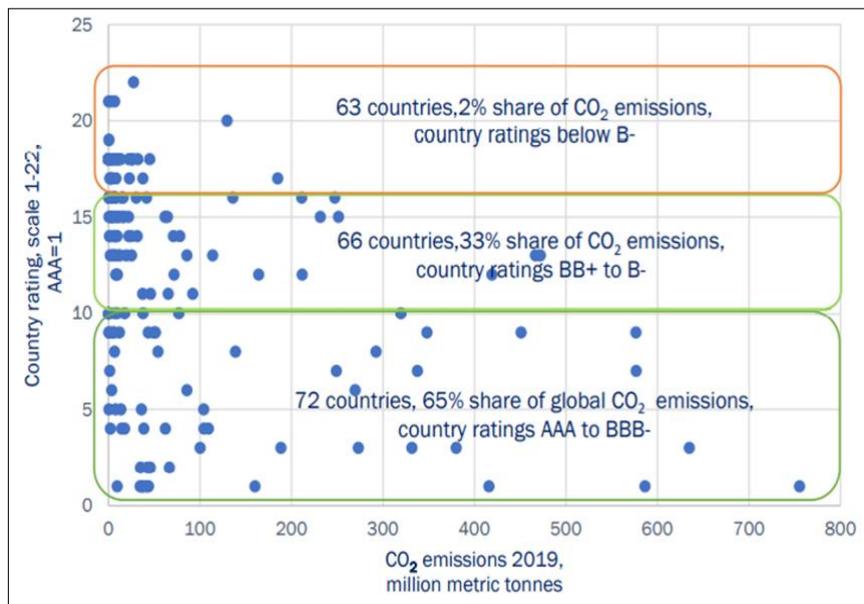
climate change, and co-benefits, such as community development. As far as possible, public funds should be viewed as being of a temporary nature and thus the public funds should be the minimum amount necessary. Ultimately, private investors' involvement should be increased over time through accumulating project achievements and experiences and increase the confidence of private investors. The ultimate aim of blended finance is for projects to be implemented autonomously without public funds. Therefore, projects that permanently require public support or subsidies are not considered suitable for blended finance (Choi and Seige 2020; OECD 2021).

In other words, not all projects are suitable for the blended finance mechanism. For example, projects such as sewerage and public roads, public education, and national parks, or high-risk research and development in new technological areas, are often better funded solely by public funds. Conversely, there are projects that can be implemented using only private investment with little use of public funds; in such a case, it is considered undesirable to use scarce public funds for such projects. It is believed that when there are market failures, blended finance should be used to correct it and attract private funds. For this reason, many of the projects targeted for blended finance include renewable energy and energy efficiency improvements that tend to have the potential to provide commercially viable returns. In recent years, the conservation of natural resources and the prevention of biodiversity loss have also been emphasized under the blended finance mechanism.

2.4 Blended Finance, Credit Rating, and Quality

EMDEs where blended finance is most likely to be effective could be those with sovereign credit ratings of noninvestment grade but not substantially below investment grade. The noninvestment credit ratings make it difficult for them to procure funds substantially from the market on their own, but the creditworthiness is slightly below investment grade. For these economies, debt problems are relatively less worrisome, and their economic growth potential tends to be higher than highly indebted economies. Thus, the possibility of mobilizing private investors is relatively high. One Planet Lab (2021) indicates that about 72 economies whose CO₂ emissions account for 65% of global emissions are subject to credit ratings of investment grade (from AAA to BBB-) on their sovereign bonds. These economies, including developed economies and some emerging economies such as the PRC, are able to finance their climate mitigation and adoption projects and activities relatively more easily from domestic and international markets. Economies whose sovereign bonds are rated below investment grades can be classified into two groups. One is the group of about 66 economies whose CO₂ emissions account for 33% of global emissions and whose sovereign credit positions are rated below investment grades but equal to or above B- (from BB+ to B-). Another is the group of 63 economies whose CO₂ emissions account for only 2% and whose sovereign credit ratings are rated below investment grades and have a highly risk grade of below B-, as shown in Figure 4. Blended finance may be more suitable for the first group since these economies are more likely to be able to attract private investors if some additional financial support from public funds is provided.

Figure 4: Relationship between Credit Ratings and CO₂ Emission



Source: One Plant Lab (2021).

2.4.1 Principles and the Quality of Blended Finance Schemes

The OECD sets five major principles for blended finance. These are: (1) leveraging blended finance activities for socially, economically, and environmentally sustainable development objectives in EMDEs; (2) expanding private sector finance; (3) implementing projects that are tailored to local conditions in EMDEs; (4) focusing on effective partnership; and (5) transparency and performance monitoring. In other words, it is important to prioritize the use of blended finance for projects that contribute to the achievement of the SDGs. The OECD emphasizes that it is desirable to commit to incorporating ESG perspectives when selecting projects for blended finance to ensure quality projects. It also states that it is desirable for MDBs and development finance institutions in developed economies to require responsible business conduct when selecting private investors and companies as project partners. For example, local project partners should be selected based on the OECD Guidelines for Multinational Enterprises and the United Nations Global Compact. In particular, the Guidelines for Multinational Enterprises include principles and standards on a wide range of items, including information disclosure, human rights, employment, environment, corruption and bribery, consumer protection, science and technology, and the tax system.

Furthermore, MDBs approved the DFI Enhanced Principles in 2017, whose contents were strengthened compared with the 2013 DFI Guidance for Using Investment Concessional Finance in Private Sector Operations. Since then, the DFIs have focused on implementing the Enhanced Principles in their operations and sharing best practices with respect to their implementation. Thus, DFIs support the private sector only if it can make a financial contribution beyond what is available, or that is otherwise absent from the market. DFI support should not crowd out the private sector-including new entrants-and should minimize the risk of disrupting or unduly distorting markets. Blended finance should address market failures effectively and efficiently, so that DFI support for the private sector should, to the greatest extent possible, contribute to catalyzing market development and the mobilization of private sector resources and minimize the use of concessional resources. DFI support for the private sector and the

impact achieved by each operation should aim to be sustainable and contribute towards the commercial viability of project developers. The level of concessionality in a sector should be revisited over time. DFI private sector operations should seek to promote adherence to high standards of conduct, including in the areas of corporate governance, environmental impact, social inclusion, transparency, integrity, and disclosure.

2.4.2 Major Participants in Blended Finance Schemes

Blended finance is not a new financing mechanism and has long been practiced for development projects in EMDEs. However, as mentioned above, developed economies have so far failed to provide ODA up to 0.7% of GNI and \$100 billion climate finance to EMDEs. There is growing recognition that more financial support mechanisms, including blended finance, should be mobilized urgently. As project developers, private companies in developed economies often participate in environment-related projects with local companies in host countries and contribute to EMDEs in terms of utilizing their own technologies, products, and services in practice. The main sources of funding for the projects, especially in the early stages, tend to be provided by the MDBs, including the IFC, the World Bank, the Asian Development Bank (ADB), the African Development Bank (AfDB), the European Bank for Reconstruction and Development (EBRD), European Development Finance Institutions (EDFIs), the European Investment Bank (EIB), the Inter-American Development Bank Group (IDBG), etc. as well as donor countries and their development financial institutions (DFIs). In addition, charitable foundations and civil organizations, including NGOs, are often active financial contributors even though their financial amounts are relatively small. The governments of host countries play an important role in implementing projects, improving domestic financial regulations and tax systems to attract foreign public and private capital, and developing the capacity building of domestic operators of projects.

2.5 Mechanisms and Types of Blended Finance Schemes

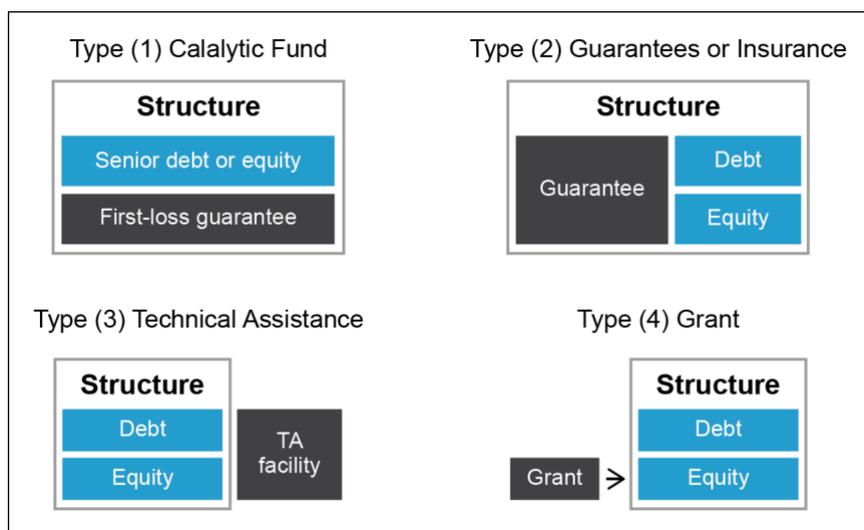
Blended finance often takes the form of fund-like collective investment vehicles (CIVs), which include bond funds, equity funds, and fund-of-funds. It can target a specific investment area (for example, climate change or small businesses) or cover broader areas. In practice, investments are made using equity, debt, technical assistance, guarantees, or insurances. There are open-ended and closed-ended types of CIVs; the period during which new investments can be made in a CIV is limited in the former while new investments and redemptions can be made at any time in the latter. In addition, a CIV may have a structure in which all investors face the same risk and return profile, but it may be more important to have a structure that separates investors according to their risk return appetite. In the case of debt-based funds, the CIV can also be divided into senior bonds and subordinated bonds, where repayment for senior bonds is prioritized over subordinated bonds. In addition to funds, there are other forms of direct involvement, such as investments in impact bonds, direct investments in developers, and investments in projects. Funds account for less than 40% of the total number of transactions, but they can mobilize a larger amount of private capital, so they account for more than 60% in terms of the total amount raised (Convergence 2021).

2.5.1 Four Types of Blended Finance Schemes

Convergence, a nonprofit organization established by the Canadian government that collects and analyzes global blended finance information, publishes a report on trends with the aim of developing the global blended finance market. The members of Convergence comprise more than 200 institutions, including global charity foundations, the European Commission, financial institutions (such as the Dutch private bank Rabobank and the South African financial group Old Mutual), funds, and environmental NGOs (such as the World Wildlife Fund [WWF]).

Convergence classifies blended finance schemes into four types, as shown in Figure 5 (Convergence 2021). In the **Type 1 Scheme (Catalytic Funds)**, public funds and foundations contribute the riskiest portion of equity capital to absorb first losses in the event of t. By doing so, it is possible to reduce the investment risk of private investors, and it is a mechanism that aims to expand private funds by providing senior status that gives priority to returns. Public funds and charity foundations are often involved in providing grants and concessional loans and take the form of Catalytic Funds to attract private capital. Under the **Type 2 Scheme (Guarantees or Insurance)**, public funds or charity foundations provide partial or full guarantees, or provide insurance at below market terms, thereby reducing foreign exchange risks, political risks, etc. faced by private investors. This is a mechanism to give assurance and attract private funds. In the **Type 3 Scheme (Technical Assistance)**, MDBs and development financial institutions in developed economies provide technical assistance to support the formulation of project designs in the initial stage, and to assist project and fund managers after investment. Legal advice is often provided to help project operations to be able to obtain loans from private banks. The **Type 4 Scheme (Grants)** is a method aimed at accelerating the initiation of a project by providing grants at the stage of project design, preparation, and the creation of a financing system.

Figure 5: Four Types of Blended Finance Schemes



Source: Convergence (2021).

2.5.2 Catalytic Funds as Essential Element of Blended Finance

Among the four types described above, Type 1 (Catalytic Funds) is the most frequently utilized scheme, accounting for 85% of blended finance in 2020 (Convergence 2021). The ratio increased from 30% in 2018 and this increase reflects that the risk of investment in EMDEs has increased since the COVID-19 pandemic. As a result, more financial support from public funds and charity foundations is needed to attract private investors. This indicates that it is becoming increasingly difficult to mobilize private capital unless the catalytic effect of the funding is enhanced. Type 2 (Guarantees or Insurance) also has the effect of reducing risk for private investors, but is not yet fully utilized. This is because there are few public finance institutions that provide guarantees. Regular providers of guarantees are the United States Development Finance Corporation (DFC) and the United States Agency for International Development (USAID), as well as the Swedish development finance institution. Convergence has pointed out that the reasons why guarantees are not often used by development financial institutions in developed economies are: financial support to EMDEs through guarantees is not counted in the ODA accounting; the standardization of pricing for guarantees has not been progressed; and negotiations may become more complicated due to the involvement of third parties. Type 3 (Technical Assistance) accounted for nearly 30% in 2020, and this ratio has remained stable over time.

3. ACTUAL IMPLEMENTATION OF BLENDED FINANCE SCHEMES

ESG investment generally requires well-developed capital and financial markets where numerous issuers and investors are present and audited disclosure of the financial statements has been regularly practiced. This situation does not necessarily apply to many EMDEs. While institutional capital has the potential to be utilized significantly to fill the financing gap for sustainable development in EMDEs, it is important to shed light on specific constraints faced by EMDEs, such as a lack of data disclosure and information systems and less developed capital markets in terms of size, depth, diversity, and liquidity. In general, global institutional investors tend to allocate at least \$150 million per debt investment and \$50 million per equity investment. These thresholds on investment sizes are not easily achieved in capital markets of developing countries (OECD 2022b, 2022c). Thus, sustainable finance policies and strategies applied in developed economies are not always relevant to EMDEs due to undeveloped or underdeveloped capital markets. Meanwhile, such institutional investors are still able to invest in investment vehicles, including blended finance programs/projects and impact-centered private equity funds that invest directly in private companies—although those funds do not offer the liquidity benefit of capital markets. This section will shed light on the actual implementation of various blended finance schemes implemented by multilateral development institutions and specific funds as well as those led by the private sector.

3.1 Promotor of Blended Finance: The EU, MDBs, and Bilateral Development Institutions

The blended finance scheme, which utilizes public funds to crowd in private finance, can be an important option to support national development priorities in areas that provide positive financial returns to repay the private partners with the provision of minimum levels of concessionally or subsidies to the scheme. Mobilizing private

finance may be becoming more challenging amid the ongoing global uncertainties related to the Russian invasion of Ukraine, inflation, monetary policy normalization and tightening, and global economic performance.

Among advanced economies, the European Union (EU) has accumulated some experience of blended finance schemes over a period of time. The EU provides a financial support scheme called the Blending Facility, which blends EU grants with other public and private funds (loans and equity) to expand additional funds and support projects in EMDEs with public and private partners. In 2017, the EU launched an initiative called the “External Investment Plan,” which provides blended finance and guarantees to attract more funds from private investors and companies. The target areas are the EU’s neighboring economies and Africa, where the EU plans to set up a new European Fund for Sustainable Development and contribute €4.6 billion of public funds to de-risk private investors, thus mobilizing about €47 billion from them. These funds are allocated to projects such as small businesses, renewable energy, urban infrastructure, access to digital services, and agriculture to help create jobs in EMDEs, improve their living standards, contribute to the achievement of the SDGs, and support conflict areas and politically unstable economies. In addition, the EU is implementing new developments to attract potential private investors through technical assistance, business support for local companies, and support for the governments of EMDEs.

Meanwhile, the DFI Working Group chaired by the IFC compiled a report on blended concessional finance for private sector projects performed by the IFC and MDBs, including the ADB, AfDB, EBRD, EDFI, EIB, IDBG, the Asian Infrastructure Investment Bank (AIIB), the Islamic Corporation for the Development (ICD) of the Private Sector, as well as bilateral development institutions. The report found that financed projects supported by blended concessional finance reached a total volume of more than \$11.2 billion in 2020. Concessional funds committed to these projects via MDBs amounted to approximately \$1.6 billion, while the total volume of private sector finance leveraged was approximately \$3 billion and DFI own-account investments in these projects were about \$5.3 billion. The balance of funds came from other concessional contributions (\$74 million) and contributions from other public sources at commercial rates (\$1.2 billion). The most common concessional instrument committed by MDBs and bilateral development institutions (together called “development financial institutions” [DFIs]) in 2020 was senior debt, comprising 32% of the total committed concessional investment volume, followed by equity (19%), risk-sharing facilities and guarantees (19%), and subordinated debt (12%). The largest sector for DFI concessional commitments was infrastructure (in many cases for climate change-related projects), which was prominent across all country income groups. The banking and finance sector (mostly in support of small and medium enterprises—SMEs) was most prominent in upper and lower middle-income countries, while the other sector, which includes agribusiness, health, manufacturing, and services were largely in low and lower middle-income countries. Concessional funds committed by DFIs were used the most in lower middle-income countries and in sub-Saharan Africa. DFI concessional funds committed in 2020 increased by about 14% from 2019. The total volume of projects financed by blended concessional finance increased by 5%, with private mobilization totaling about \$3 billion (a slight reduction from \$3.2 billion in 2019) and public contributions totaling \$1.2 billion (approximately doubled from \$608 million in 2019; DFI Working Group 2021).

3.2 Green Climate Fund Established by the UNFCCC

The Green Climate Fund (GCF) is becoming an important UN-led player in blended finance schemes to focus on the impact on climate mitigation and adaptation and help achieve the Paris Agreement in EMDEs. The GCF, which was established in 2010 and is based in Incheon, the Republic of Korea, is a financial mechanism of the UNFCCC and the Paris Agreement to help EMDEs to promote climate mitigation and adaptation practices. The GCF constitutes the largest climate fund in the world, promoting blended finance by employing some part of its funds to help mobilize financial flows from the private sector into profitable climate-smart investment opportunities. Since the approval of the first project funding in 2015, the GCF has built a portfolio of more than 100 projects. Its mandate is to support developing countries to achieve their Nationally Determined Contributions (NDC) ambitions towards low-emissions and climate-resilient pathways through investing across four transitions (built environment; energy and industry; human security, livelihoods, and well-being; and land use, forests, and ecosystems).

The GCF employs a four-pronged approach: (1) transformational planning and programming to maximize the co-benefits among climate mitigation, adaptation, and sustainable development; (2) catalyzing climate innovation (investing in new technologies, business models, and practices to establish a proof of concept); (3) de-risking investment to mobilize finance at scale (using scarce public resources to improve the risk/reward profile and crowd-in private finance); and (4) mainstreaming climate risks and opportunities into investment decision-making to align finance with sustainable development (promoting methodologies, standards, and practices that foster new norms and values). The Fund provides a diverse set of financing, including loans, grants, equity, insurance, and technical assistance, thereby enabling a reduction of the investment risk borne by the private sector.

3.2.1 GCF Activities and Types of Programs/Projects Targeted

The GCF aims to support both climate mitigation and climate adaptation efforts by taking a 50:50 approach to these investments over time, although the current allocation to climate mitigation programs has been greater than climate adaptation programs. The focus is on achieving an impact within eight mitigation and adaptation result areas. Among these, the mitigation result areas include: (a) energy generation and access; (b) low-emission transport; (c) buildings, cities, and industries; and (d) forestry and land use; whereas the adaptation result areas cover (e) health, well-being, food, and water security; (f) most vulnerable people and communities; (g) infrastructure and built environment; and (h) ecosystems and ecosystem services (Green Climate Fund 2021). The total GCF portfolio commitment currently amounts to \$10.8 billion, of which the amount of funding for the programs under implementation was \$7.1 billion and the amount already disbursed to the programs/projects was \$2.7 billion. The total portfolio amount including co-financing recorded \$40.2 billion. The GCF is currently under the first replenishment period of 2020–2023 and contributions involving 34 economies pledged so far exceed \$10 billion and almost all have been already confirmed (GCF 2022). The main contributors are Germany and the United Kingdom (\$1.8 billion each), France (\$1.7 billion), and Japan (\$1.5 billion).

The GCF sets the Integrated Results Management Framework (IRMF) to monitor, assess, and report how investments in programs/projects deliver climate results and how those results contribute to the overall objectives of the GCF to promote a paradigm shift towards low-emission and climate-resilient development pathways. The IRMF is designed to be fully aligned with the two key *ex ante* investment

criteria—"paradigm shift" and "impact potential" of the initial investment framework built on the objective expressed in the Updated Strategic Plan for the Green Climate Fund: 2020–2023—which define the project/program eligibility and selection criteria, and assesses *ex ante* results of GCF investments. Programs/projects are submitted to the GCF board for approval using the initial investment framework template form. The IRMF also makes an *ex post* assessment, reporting, and analysis of the actual results of GCF investments.

The initial investment framework of the IRMF has three results measurement levels to track and monitor: (1) **GCF impact level** (paradigm shift potential); (2) **GCF outcome level and impact potential** (reduced emissions in the case of climate mitigation or increased resilience in the case of climate adoption); and (3) **GCF outcome level creating an enabling environment for the paradigm shift** from activity-specific sub-criteria. Among these levels (1) the GCF impact level aims to assess how and to what extent GCF has promoted a paradigm shift towards low-emission and climate-resilient development pathways by: (a) supporting programs/projects in reporting how and to what extent the programs/projects have promoted a paradigm shift potential through interventions that reduce emissions and/or increase resilience (climate impacts); and (b) aggregating the information gathered via programs/projects at the impact results level of the IRMF architecture through considering the dimensions of scale, replicability, and sustainability. The results at this level are typically delivered beyond the lifetime of a program/project and may not be directly attributable to GCF interventions only. Meanwhile, (2) the GCF outcome level income potential aims to measure observable results of GCF-funded programs/projects, namely, quantified reduced GHG emissions and increased resilience outcomes delivered via programs/projects. In addition, (3) the GCF outcome level enabling environment aims to inform how GCF programs/projects have contributed to creating enabling conditions and environments for a paradigm shift in a country-driven manner and in line with the coverage area and activity-specific sub-criteria of a paradigm shift.

Below are a few examples of the programs/projects already approved and currently being implemented by the GCF. The Fund is playing an increasingly important role in formulating diverse blended finance schemes, although the mobilization of private capital remains at a preliminary level.

3.2.1.1 FP156 ASEAN Catalytic Green Finance Facility (ACGF): Green Recovery Program

The ACGF is Asia's first regional green recovery program aimed at promoting Southeast Asian economies' low-emission investments and supporting economic recovery from the COVID-19 pandemic. By catalyzing increased climate finance from both the private and public sectors, the program plans to support at least 20 high-impact, low-emission subprojects in the region, including: energy generation and access; forest and land use; transport; and buildings, cities, and industries. The program was approved in 2021 and has been implemented since August 2022 in Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, and the Philippines, although the least developed economies are prioritized. The total financing provided by the GCF reached \$300 million (grants \$20 million, loans \$280 million). The total financing of the ACGF amounted to \$3.7 billion. Thus, the GCF funding covers 8% of the total financing while the remaining 92% is covered through co-financing comprising loans of \$3.4 billion including contributions from the ADB of about \$3 billion as an accredited entity. The projects cover: health, food, and water security; infrastructure and built environment; ecosystems and ecosystem services; energy generation; buildings, cities, and industries; and forests and land use.

3.2.1.2 FP190 Climate Investor Two (CI2)

The GCF views the water cycle as a part of the global climate crisis because improperly untreated wastewater can be a source of carbon emissions while coastal ecosystems can act as carbon sinks. The World Health Organization estimates that there are 750 million people with no access to clean water, and 2.5 billion people lacking access to proper sanitation. Inadequate water and sanitation infrastructure is estimated to be related to 80% of all illnesses in the developing world. Given this background, the GCF created the CI2 as its first at-scale fund that aims to support the private sector to develop and construct climate-resilient infrastructure projects in developing countries in the water, sanitation, and ocean sectors—the areas that usually do not attract a lot of interest from the private sector. The CI2 aims to unlock equity capital in the construction of water, sanitation, marine ocean, and related infrastructure project companies to enable projects to reach an operational stage to ultimately avoid, reduce, and sequester GHG emissions and help communities to deal with the consequences of climate change. For instance, in the water sector, CI2 will help countries undergoing, or expected to undergo, water stress to adapt to climate change by building infrastructure that sources, transports, and treats the water necessary for both municipal and industrial users.

CI2 will deploy an innovative whole-of-life financing approach utilizing two independent but operationally interlinked funds: the Development Fund and the Construction Equity Fund. The priority is given to the least developed economies, small-island EMDEs, and African economies. Thus, the program covers 19 economies in the African region (Djibouti, Cote d'Ivoire, Kenya, Namibia, Nigeria, Uganda, South Africa, Botswana), the Asia and the Pacific region (Indonesia, the Philippines, Bangladesh, India, Maldives, Madagascar, Morocco, Sierra Leone), and the Latin America and the Caribbean regions (Columbia, Brazil, Ecuador). The total project funding amounted to \$880 million. Of that amount, the GCF provides \$145 million in the form of grants accounting for 16.5%, while the remaining \$735 in the forms of grants or equity was provided from co-financiers including the Dutch Entrepreneurial Development Bank (FMO) as an accredited entity. The CI2 program was approved in July 2022.

3.2.1.3 FP180 Global Fund for Coral Reefs (GFCR) Investment Window

Coral reefs are among the world's ecosystems most threatened by climate change impacts. The main factors degrading the coral reefs are overfishing, agricultural run-off, sewage discharge, plastic disposals, and unsustainable tourism. It is understood that improving the local management could alleviate the impacts of climate change on the coral reefs. Therefore, supporting and providing capital to local businesses for the sustainable use of ocean resources may considerably improve the resilience of reefs and the communities that depend on them. The Global Fund for Coral Reefs (GFCR) initiated the GFCR Investment Window as its first global-scale program in the blue economy. The program supports 17 economies in the Asia and the Pacific region (the Philippines, Sri Lanka, Fiji, Indonesia), the Latin America and Caribbean regions (Bahamas, Belize, Brazil, Colombia, Ecuador, Mexico, Jamaica, Guatemala, Panama), and the Africa and Middle East region (Comoros, Mozambique, Seychelles, Jordan).

The program, which has been implemented by Pegasus Capital Advisors L.P. as an accredited entity located in the United States, is expected to create a private equity fund to encourage investments in the blue economy and protect coral reefs. Targeting 17 countries in Africa, Asia and the Pacific, Latin America, and the Caribbean it aims to address critical financing and private investment barriers centered around the blue economy. The total program funding amounted to \$500 million. The GCF provides \$125 million accounting for 25% of the total funding in the form of equity and the

remaining \$375 million will be covered by co-financiers including Pegasus Capital Advisors L.P. in the form of equity investment. This equity investment is to encourage further public and private sector investment in the following areas—sustainable ocean production, ecotourism, sustainable infrastructure and waste management. Additionally, the program will benefit from synergies with the GFCR Grant Window, which aims to mobilize \$125 million of concessional capital from philanthropies and other agencies in order to foster an enabling environment for seeding a pipeline of investment-ready projects. The program was approved in 2021.

3.2.1.4 FP177 Cooling Facility

The rise in global temperatures has increased demand for cooling, thus giving rise to the GHG and fluorinated gases emissions and thus amplifying global warming. Thus, the GCF believes that low-carbon and sustainable cooling solutions are essential. The Cooling Facility will be one of the world's first cooling-focused facilities with the aim of providing cooling solutions in nine countries—the African region (Malawi, Kenya, Somalia, São Tomé and Príncipe), the Asia and the Pacific region (Sri Lanka, Bangladesh), Eastern Europe (North Macedonia), and Latin America and the Caribbean (Panama, El Salvador) region. It focuses on regulation and policy, technical assistance, and financing to address and help remove barriers to the development of sustainable cooling investments. Planned measures include financing for investments in innovative, climate-friendly cooling technologies and systems, and creating an enabling environment by strengthening institutional, policy, and regulatory frameworks, and building the capacity of key stakeholders in technologies, business models, and cooling project appraisal and implementation.

The total program funding amounted to \$879.8 million. The GCF provides \$147 million in the form of grants and loans, accounting for 17.8% while the remaining \$723 million is supported by co-financiers including the World Bank as an accredited entity in the form of loans, grants, and guarantees. The Facility aims to mainstream and bring to scale sustainable cooling solutions across key sectors (agriculture, health, buildings) and across the cooling value chain. In addition to climate mitigation and adaptation, the Facility will lead to broader development impacts, such as helping lower pressures on already strained energy systems, reducing local air pollution, as well as helping to decrease losses of food and medicine. The program was approved in 2021.

3.3 Examples of Blended Finance Schemes Supported by Bilateral Development Institutions and Private Capital

This subsection highlights four interesting cases of blended finance schemes led by development financing companies, asset management companies, and/or charity foundations mainly established in developed economies.

3.3.1 Example of Blended Finance (1): African Local Currency Fund

The first example is the African Local Currency Bond Fund established in 2012 by KfW, Germany's state-owned financial institution, in line with the G20 Action Plan for the development of a bond market denominated in the country's own currency adopted in 2021 (OECD 2021). To expand financing for economic development, it is important to develop the domestic capital market. When local financial institutions and companies issue local currency-denominated bonds for the first time in the African region, they are generally unable to attract private investors on their own.

Thus, technical support is provided with regards to issuing conditions and pricing, as well as finance. The African Local Currency Fund consists of equity (paid-in capital) and senior debt. Equity constitutes the portion of equity that absorbs first losses. Development finance institutions, impact investors, and institutional investors in developed countries invest in senior loans over four- to ten-year terms. The involvement in the Fund of well-known bilateral development institutions in developed countries, such as KfW, has the positive effect of giving local issuers and investors a sense of security, thus facilitating corporate finance and participation of investors. Private investors take the form of co-investments and are mostly made up of local institutional investors, such as domestic pension funds, insurance companies, and asset managers. As of the end of 2021, the Fund had a \$130 million portfolio and invested in local currency bonds in 19 countries, including South Africa. Currently, the equity and subordinated debt portion is contributed not only by KfW, but also by the British aid agency FSD Africa. The senior debt portion is funded by the IFC, FSD Africa, the AfDB, FMO (a private development bank based in the Netherlands that implements sustainable development assistance), and Calvert Impact Capital (a US-based nonprofit investment firm).

3.3.2 Example of Blended Finance (2): The Africa Agriculture and Trade Investment Fund

The Africa Agriculture and Trade Investment Fund, worth \$170 million, targets sustainable agricultural investment in the African region. The Fund is managed by the Deutsche Bank, a German private bank. The Fund attracts public and private debt investors by classifying bond investors into A-Shares, B-Shares, and C-Shares according to their repayment priority, with C-Shares representing the riskiest junior tranches. The German Ministry for Economic Cooperation and Development has invested in C-Shares with Germany's KfW, which constitutes the loss-absorbing portion in the event of losses on debt. By creating such a risk buffer, private investors are encouraged to invest in A-shares and B-shares, which are senior transaction shares with high priority for repayment, with the aim of expanding the total investment amount. A-Shares are the most senior shares, with maturities between 3 and 15 years. Depending on the Fund's profitability, complementary dividends are possible. B-Shares represent a mezzanine tranche with maturities between 5 and 15 years and rank junior to A-Shares, providing a higher target dividend calculated on a 3-month Euribor + spread basis. The spread is also determined by the Board in accordance with market conditions at the time of an investor's commitment. B-Shares are funded by the Deutsche Bank and KfW. This structure potentially includes a D-Share tranche, which consists of capital gains from the Fund's investments to absorb any losses that occur before C-Shares. Currently, both the EU and the DSW Group, a German asset management firm, are also members of the Fund. The United Nations Environment Program and the International Labor Organization are also participating in this scheme as advisors.

These funds, ranging in size from \$250,000 to \$30 million, are invested in various projects in the agricultural sector. The maturities were initially concentrated on 3 to 5 years and currently extend up to a 10-year repayment term. While borrowers from the Fund tend to be governments in developing economies and regional international organizations, these funds are provided ultimately to borrowers with diverse credit ratings, such as small farmers and local farming companies. Based on this experience, Deutsche Bank is launching a new blended financing scheme called the "Universal Green Energy Access Program" for clean energy projects in sub-Saharan Africa. The

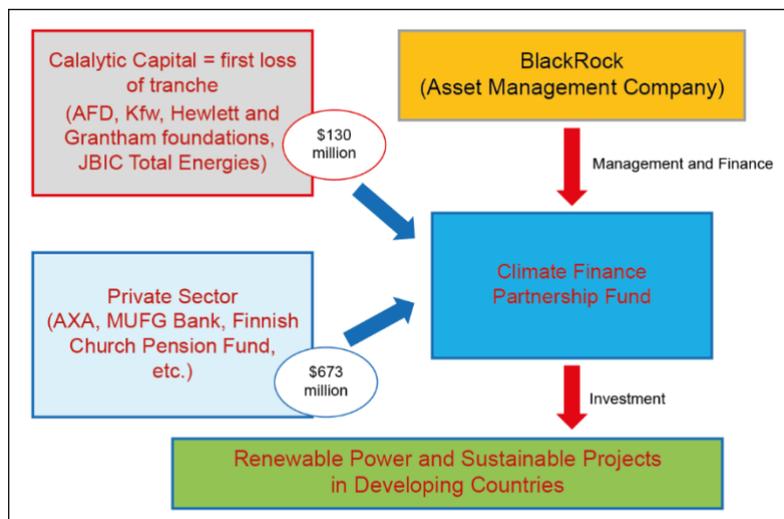
program, which includes the Green Climate Fund referred to the previous subsection as an investor, aims to raise a total of \$500 million.

3.3.3 Example of Blended Finance (3): Climate Finance Partnership Managed by BlackRock

The third example is the blended finance initiative called the “Climate Finance Partnership” (CFP), which was launched by BlackRock, the world’s largest asset management company, in 2020. The French government’s development finance institution (AFD), the German KfW, the Quadrivium Foundation, the Graham Foundation, etc. have invested in catalytic funds of the CFP. Catalytic funds are responsible for the equity tranches and junior equity portion, aimed at reducing investment risks borne by private investors. The Japan Bank for International Cooperation (JBIC) and France’s global oil major TotalEnergies later joined in investing in the catalytic fund. More than \$670 million of funding has been realized by mobilizing nearly \$540 million of private funding against a total of \$130 million of catalytic funds. The CFP was able to raise more than the target of \$500 million from the private sector, reflecting the strong interest from private investors,

The Fund aims to allocate capital to projects related to climate change mitigation to achieve net-zero emissions in developing countries in the Asian, African, and Latin American regions—such as renewable energy; residential, commercial, and industrial energy efficiency; and low-carbon public transportation. The scheme stipulates that a quarter of the investment will be allocated to Africa. On its website, BlackRock acknowledges its long-term experience in renewable energy and sustainable investing, its commitment to incorporating climate and environmental risks in its assets under management, and its ongoing works to develop analytical approaches, such as measuring the physical risk of climate change and the impact on portfolios under various climate stress tests. Private investors participating in the CFP include Axis Capital Holdings; AP2 Fund, which manages public pensions in Sweden; AXA Life Insurance in France; the Church Pension Fund in Finland; Standard Chartered Bank; Mitsubishi UFJ Morgan Stanley Securities; Dai-ichi Life Insurance; Sumitomo Life; Mizuho Bank; Sumitomo Mitsui Banking; and some family offices (Figure 6). Convergence was also involved in the design stage of this mechanism.

Figure 6: Climate Finance Partnership Fund Managed by BlackRock



Source: Prepared by the author based on various information, including BlackRock and JBIC.

3.3.4 Example of Blended Finance (4): Catalytic Capital Consortium

The Catalytic Capital Consortium (C3) was established for the first time by the MacArthur Foundation, based on a belief in supporting companies and funds that have a positive impact on the development of the global community and economic growth by promoting projects that are difficult to raise funds for through the market but that help EMDEs to achieve the SDGs. The Consortium plans to prepare \$150 million as catalyst capital and to attract private funds, such as companies, asset management companies, and investors. The Rockefeller Foundation and Omidyar Network, eBay's philanthropic investment firm, are also participating in the Consortium. The MacArthur Foundation's catalyst fund plans to invest \$30 million to attract at least \$1 billion to the Zero Gap Initiative run by the Rockefeller Foundation. Similarly, the Rockefeller Foundation invests in the catalytic funds managed by the MacArthur Foundation to share knowledge and skills. According to the MacArthur Foundation, the global impact investment asset balance has reached more than \$228 billion and the market is expanding, but the supply of funds to companies with low credit ratings is small and accounts for only about 5% of total impact investment assets. For this reason, the role of catalytic capital and its expansion is essential to reduce risks borne by private investors and thus increase funding for activities aimed at achieving the SDGs, such as poverty reduction, education, housing, and climate change.

3.4 Examples of the Fund of Funds: Global Energy Efficiency and Renewable Fund

A well-known fund-of-funds example is the Global Energy Efficiency and Renewable Energy Fund (GEEREF) created by the EU in 2008 using funding from the EU, Germany, and the Netherlands to promote energy efficiency and renewable energy. The EU, Germany, and the Netherlands provided a total of €110 million in the catalytic funds, which were matched by private investors, thus resulting in a total of about €220 million. By 2015, the target amount of private funds had already been collected successfully. The GEEREF has invested in multiple private equity funds that specialize in renewable energy and energy efficiency projects, and those private equity funds in turn invest in a variety of projects. The focus is on funding infrastructure projects that generate clean electricity with low risk by using already-developed technologies. Equity financing for small-scale projects is almost nonexistent in these developing countries, so the aim is to expand private equity funds and promote decarbonization and low carbonization at low risk.

The GEEREF currently invests in 15 private equity funds in 144 countries across Asia, Africa, Latin America, and the Caribbean. The GEEREF is operated by the Board as an independent body from the EU and is advised by the European Investment Bank (EIB) and the European Investment Fund (EIF). Both the EIB and the EIF are part of the European Investment Group of the EU. While the European Investment Bank is a policy-based financial institution, the European Investment Fund is a financial institution that specializes in risk financing for SMEs. The European Investment Fund also provides guarantees to banks and guarantee funds that provide loans and guarantees to SMEs. Both EU organizations focus on providing support within the EU and to candidate countries for EU membership, but they also conduct activities in other regions in line with the EU's diplomatic policy. These two EU public financial institutions play a role in discovering and proposing projects in developing countries. In order to attract private investors, the GEEREF mitigates risks and considers regulatory constraints for private investors by offering preferential returns. At the initial stage, the GEEREF devises ways to obtain relatively high returns for private investors. At present,

private investors are able to secure sufficient returns from engaging in positive environmental and development impact investments while fulfilling their fiduciary responsibilities. The GEEREF also focuses on attracting fund managers who are investing in such impact funds for the first time. At each stage of the transaction, detailed explanations are provided to private investors to ensure they understand that the scheme follows environmental and social perspectives based on international best practices. The period of investment by the GEEREF ended in 2019, and all the funds have currently been invested. Under the \$222 million operating fund, more than \$10 billion can be raised by attracting many public and private funds both at the private equity fund stage and the project stage.

4. PROMOTING DEBT SWAPS, PERFORMANCE-BASED FINANCE AND SUSTAINABILITY-LINKED BONDS

For developing economies with high debt, it is very challenging to promote projects and activities to cope with climate change and a loss of nature stock and diversity with co-benefits on development. Climate vulnerabilities and fiscal debt problems appear to be closely associated since economies that are more vulnerable to climate change tend to face higher public debt. Chamon et al. (2022) showed that a large majority of countries with climate risks above the median are also at high risk of a fiscal crisis. Causation may take place in both directions. On the one hand, climate change may exacerbate debt vulnerability by damaging infrastructure and productive capacity and the tax base, increasing fiscal costs for reconstruction after severe natural disasters, and raising borrowing costs. On the other hand, serious debt problems may reduce fiscal space for climate mitigation and adaptation investments, thus amplifying vulnerability to the physical and transition risks of climate change. Since the COVID-19 pandemic, the debt of many developing countries has been accumulating, and at the same time global investors are becoming more interested in climate change and other environmental issues. Thus, there is a possibility that environmental swaps might be exercised more frequently. In addition, the development of AI and sensor technology has made it possible to monitor the ecology of wildlife and nature stocks (such as forests and maritime materials), and evaluate changes in the ecosystem, thereby giving investors a sense of security and enabling more evidence-based financing approaches. This section will focus on debt-for-nature swaps or debt-for-climate swaps as an alternative to more conventional debt rescheduling and de facto grants to debt-distressed economies in exchange for climate projects and nature preservation. These swaps have gathered renewed interest from the IMF and World Bank in recent years as innovative financing mechanisms concerning sources of funding. This section also focuses on performance-based grants as an alternative to these swap arrangements. Moreover, sustainability-linked sovereign bonds will be considered as options for debt restructuring for less debt-distressed economies.

4.1 Nature Conservation and Debt Swap since the 1980s

Since the COVID-19 pandemic, EMDEs' debts have expanded significantly and many are now facing debt distress. One way to help improve environmental sustainability in debt-stressed EMDEs is to promote nature conservation and debt swap—debt-for-nature swaps and/or debt-for-climate swaps (hereafter, called “debt-for-nature swaps” for simplicity)—rather than pursuing the simpler debt forgiveness (haircut) or debt restructuring (reprofiling). Debt forgiveness or debt restructuring generally benefits only debtor economies through a reduction in their debt burden, whereas debt swaps can

benefit both debtor and creditor economies through a reduction in debt burden and an allocation of fiscal space by debtor economies for increased investment and actions in environmental and climate mitigation or adoption projects.

The success of debt-for-nature swaps depends on the ability to come up with a mechanism that would meet the diverse interests of participants—including creditors, debtors, nature conservation investors, environmental NGOs, and donors. Creditors, which often include commercial banks, commercial suppliers, export credit agencies, and official development aid agencies, need to be willing to sell debt at discount prices given that reducing debt through debt conversion is better than waiting for uncertain future repayment with the high risk of default. Creditors participate in the swaps mainly because recovering some portion of a debt is better than continuing to face the default risk until the maturity arises and accumulates arrears. Debtors participating in the swaps can be the government or the private sector. Debtors should be able to allocate resources for environmental conservation in exchange for debt cancellation. Donors who provide funding for debt swaps will be interested in leveraging aid dollars for an identified conservation project while promoting economic growth through debt reduction. Normally, donors are involved in approving the financial terms of debt swaps and continue to monitor project performance as they would for any donor-funded project. Donors, which are often creditors, are frequently involved actively in debt swaps through approving the financial terms since the swaps might lead to environmental sustainability and promote economic growth through debt reduction. They also tend to continue monitoring conservation project performance. Being able to have a large difference between the original face value of the external debt and the redemption price is crucial to create fiscal space for nature conservation.

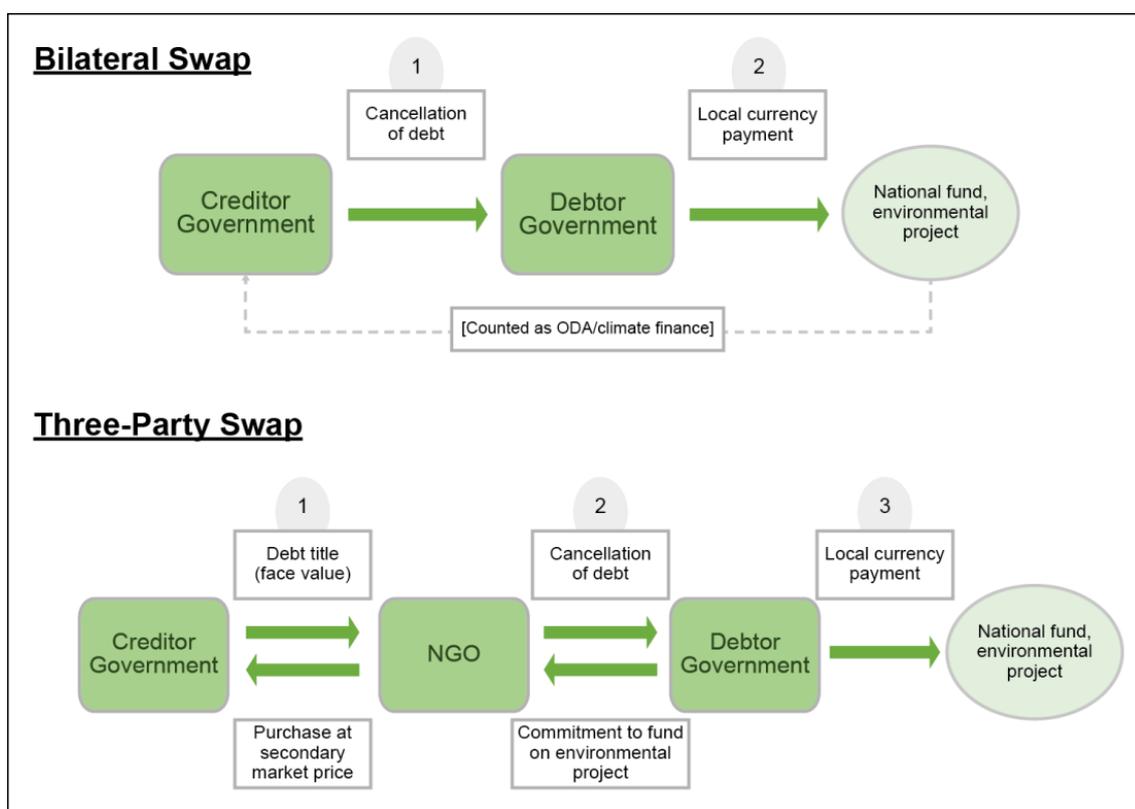
Debt relief linked to environmental goals or debt-for-nature swaps is not a new concept (Novikova et al. 2021). After World War II, the Paris Club, which comprises major creditor economies, began to initiate large-scale debt relief programs in the form of “debt-for-equity swaps.” Debt-for-equity swaps refer to the cancellation of external debt in exchange for local currency, at a discount, invested in shares in local companies or privatized local public enterprises—a scheme that promotes debt and debt service reduction as well as inward foreign investment. From the 1980s onwards, the Paris Club creditors began to allow debtors to convert their public debt into local payments for social or environmental projects. Since then, “debt-for-nature swaps” have raised hundreds of millions of dollars for the environment. Most debt swaps have involved bilateral public external debt raised by EMDEs. Debt swaps are conducted when external debt is held by donor economies, but it is also possible to deal with external debt owned by commercial creditors. In the case of external debt issued to multilateral organizations, such as the World Bank, regional development organizations, and the International Monetary Fund, these organizations are not able to participate in debt swap arrangements due to their legal status.

4.1.1 Bilateral and Three-Party Debt-for-Nature Swap

The first debt-for-nature swap took place in 1987 for the Bolivian government and was intermediated by Conservation International, a US nongovernmental organization (NGO). It was conditional on the commitment that a portion of the government’s external debt was canceled on the condition that 3.7 million hectares of land adjacent to the Amazon basin would be set aside for conservation purposes. The deal allowed the Bolivian government to reduce its external debt by \$650,000. This was a three-party swap involving creditors, debtors, and environmental NGOs that worked as intermediaries.

Three-party debt swaps involve buybacks of privately held debt by the debtor government with finance provided by donors and/or new lenders. The swap can be intermediated by an international NGO, conditional on nature- or climate-related policy actions and/or investments (see Figure 7). Three-party swaps often involve a process in which an NGO purchases external debt from creditors at a significant discount through the secondary market and then renegotiates the debt with the debtor developing economy. The NGO sells the purchased debt to the debtor government at a higher price than the debt purchased from the secondary market, but the debtor country still faces much less external debt than it originally had. More specifically, the NGO passes the savings to the debtor government by refinancing the debt at a lower face value under the condition that the debtor allocates an agreed part of the savings in debt service payments in local currency to pre-agreed conservation investments. During the process of refinancing debt transactions, the NGO can also lower the interest rate on the discounted debt, maturity, and currency denomination (often converting foreign currency into local currency).

Figure 7: Two Types of Debt-for-Nature Swaps



Source: Novikova et al., (2021).

Once the agreement is made, the debtor government usually spends money for nature conservation each year in line with the original debt repayment schedule of the initial external debt. The unused budgetary funds that would otherwise have been utilized to pay creditors must be used for pre-agreed investments in nature conservation and the implementation of environmental policies. In this way, the external debt of developing country governments will be reduced compared to the situation without debt swaps, and the free money can be used for nature conservation. These expenditures can be allocated directly towards environmental projects or placed in a trust fund. In the latter

case, the interest income earned on the managed funds can be used to finance environmental projects or provide grants to local NGOs. Such funds enable earmarking and increase accountability, as they are often managed by a committee comprising the debtor government, local agencies, and domestic and international NGOs. Thus, the NGO, especially international NGOs, not only plays an important role as an intermediary, but also provides expertise and experience to facilitate investments by the developing economy towards conservation measures (UNESCAP 2022). Since the case of Bolivia, there have been several instances of three-party debt swaps, mainly in Central and Latin America. Not only Conservation International, but also other environmental NGOs, including the Nature Conservancy and the WWF, have also played an important role as an intermediary in various debt-for-nature swap schemes.

Compared to the three-party debt swaps, bilateral swaps are more commonly practiced. Bilateral debt swaps generally refer to swaps between bilateral creditor–debtor economies, in which a creditor cancels debt in exchange for a debtor government’s commitment to setting aside local currency funding for agreed environmental purposes. The amount of local currency generated arises from a discount rate on the face value of the original debt. Bilateral debt swaps also require coordination among a debtor government, a creditor government, and local and international NGOs and agencies. Bilateral debt swaps took place mainly by involving bilateral creditors (donors) in the United States, Canada, and a number of European economies, including Germany, Finland, Italy, the Netherlands, Switzerland, etc. One good example of a bilateral nature-for-swap is the one undertaken between Italy and the Philippines in 2012, involving the cancelation of €2.9 million in public debt in exchange for investments in environmental protection and poverty reduction. The projects in the areas of environmental conservation, reforestation, agriculture, and sustainable resource management emphasized the participation of local communities. By 2019, the program was estimated to have 17,000 beneficiaries, including local farmers and fishers from predominantly poor districts (Novikova et al. 2021).

4.1.2 Debt-for-Nature Swap Involving the Secondary Debt Market

In many cases, environmental debt swaps tend to be successful when EMDEs hold large outstanding external debts that are difficult to repay and have a high risk of default. Such a debt situation allows intermediaries, such as NGOs, to buy foreign debt from the secondary debt market at a discounted price, well below face value. The premise is that there is a secondary market in which creditor governments and private financial institutions can buy and trade the distressed external debt of EMDE governments at discount prices. A secondary debt market was developed for the first time in the 1980s in Latin America, which had borrowed heavily from governments and commercial banks in developed economies, out of concerns that these debtor economies would soon be unable to repay their external debts. Through the formation of a secondary market, creditors could choose to sell off their debt at prices well below face value. The secondary market price depends on the probability of default risk (namely, sovereign credit rating), the past debt write-off experiences, economic growth outlook, etc. The secondary market price is usually applied to the third-party debt swaps. In the case of bilateral debt swaps, discount prices can be more flexibly decided on through bilateral agreements.

It is possible for debt-for-nature swaps to take place even when no discounts are applied to debtor economies. In this case, there will be no budgetary savings that can be used for nature conservation. Since most of their debts are denominated in US dollars or other hard currencies, however, a debt conversion from hard currencies to local currencies still generates benefits to developing countries by changing the

structure of debt portfolios and reducing foreign exchange risk. Since many environmental projects are paid for in the local currency, a debtor government can save hard currency and use it for other purposes, including an accumulation of foreign reserves or imports of essential products.

Debt-for-nature swaps may help prevent the destruction of natural resources, such as tropical forests and mangroves and the associated tourism industry, in order to repay external debts. On the other hand, such swaps have often been criticized for negotiating EMDEs' internal affairs and generating limited positive impact on the environment since economic development is more highly prioritized. EMDEs could face difficult trade-offs when the government has to secure land and areas for the conservation of ecosystem services and natural capital, since those areas could have been used for economic development.

4.2 A New Era of Natural Capital and Debt Swaps

The COVID-19 pandemic that started in 2020 has increased debt in many EMDEs. Meanwhile the pace of biodiversity loss and global warming has been accelerating, and thus these concerns have put debt-for-nature swaps under the spotlight again. The development of satellite imaging technology and digital technology supports this move by making it easier to monitor forest conditions and the conservation of natural capital. Moreover, as ESG investment has been increasing globally, new financial instruments (e.g., green and blue bonds) can be issued in the process associated with these swaps, thereby creating opportunities for attracting more investment and financing from private investors.

A successful example of a bilateral debt-for-nature swap was implemented between the Republic of Seychelles and a club of public and private debtors in 2015 (Novikova et al. 2021). After having defaulted on its external debt in 2008, the economy remained vulnerable to external debt problems while its environment and ecosystem continued to deteriorate. Seychelles is located in the Western Indian Ocean with an archipelago of 115 islands, where coral reefs and endangered species live and the economy depends heavily on marine tourism and fishing. Debt-for-nature swaps were initiated by the Nature Conservancy in 2016. This scheme enabled Seychelles to cancel \$21.6 million owed to Paris Club member economies including the United Kingdom, Belgium, and France in exchange for providing domestic investments in the protection of its marine ecosystem. Thus, this is a debt-for-marine swap deal with Paris Club creditors in exchange for the government commitment to allocating additional funds for marine conservation and climate adaptation efforts. The objective of the swap was to support the Seychelles in increasing the marine protected area from 1% to 30% of its territorial waters by 2020.

Under the leadership of the Nature Conservancy, the Seychelles Conservation and Climate Adaptation Trust was established to purchase the public debt from the European creditor economies at a discount price. Meanwhile, the government of Seychelles committed to repaying loans to the Trust at a lower interest rate, thus enabling the government to spend the resultant savings on ecosystem conservation projects, and to protect 30% of its marine area from unregulated economic activities, such as fishing and drilling. By March 2020, Seychelles was able to make debt repayments on time and complete the protection of 32% of its marine area. Since this approach, debt-for-nature swaps have been viewed as a way to free up funds for the environment while reducing the debt burden of the borrowers (Yue and Wang 2021).

4.2.1 Belize's Three-Party Debt-for-Nature Swap Accompanying Blue Bonds

A recent successful example of a new type of swap is the natural capital and debt swap successfully implemented in Belize in November 2021 (Owen 2022). Many of the examples of debt swaps that have been implemented so far are mainly concentrated in the Central American and Latin American regions on the condition that the governments of developing economies will use the repayment funds saved by reducing external debts due to swaps for nature conservation. In the case of Belize, by contrast, the uniqueness lies in the fact that the bonds issued in the past by the government of Belize and held by private creditors are to be ultimately sold to other private investors in the form of environment-related blue bonds while the bond market offers grants in the form of discounted prices. This is a mechanism to finance by investing.

The external debt reduced by this swap will be equivalent to 10% of Belize's GDP, while the prospect for progress in marine conservation, such as coral reefs, is promising due to the agreement between the Belize government and environmental protection groups. Belizean Prime Minister John Briceño emphasized that it will protect the country's marine areas and provide a foothold for long-lasting and robust economic growth (Owen 2022). With the support of the subsidiary of the Nature Conservancy, the government of Belize could buy back a \$553 million "super bond" (\$553 million of the entire Belize government's external debt being equivalent to 30% of GDP) at a discounted price of 55 cents to the US dollar. The subsidiary of the Nature Conservancy arranged a loan to the Belize government to finance a debt buyback practice. While about 85% of creditors (investors) of original bonds accepted the bond-for-cash exchange at 55 cents per US dollar of face value, the remaining investors were applied to the same terms thanks to the collective action clause (Chamon et al. 2022).

Meanwhile, the Belizean government newly issued a \$364 million equivalent blue bonds in the market to fund this repurchase. Credit Suisse, a major Swiss financial institution, participated in coordinating and underwriting the issuance and sales of the blue bonds. Given that the IMF assessed that Belize's debt remained unsustainable in the absence of additional debt treatment measures, the DFC, the United States government's development bank, decided to provide insurance to loans extended by the subsidiary of the Nature Conservancy and thus indirectly provided insurance for the blue bonds. This was able to raise the credit rating from below-investment grade to investment grade (Aa2 according to Moody's Corporation). As a result, it became possible to issue bonds at low interest rates, with a grace period of 10 years and a long redemption period of 19 years for global investors.

In exchange, the Belizean government agreed to use part of the debt relief to pre-fund a \$23.4 million marine conservation endowment, as well as committing to spending \$4.2 million annually on marine conservation until 2041. It was also agreed to double the size of the marine conservation parks that grow coral reefs, mangroves, and seagrass on which fish lay their eggs, from 16% to 30% of the country's seas by 2026. It is planned to fund conservation efforts beyond 2040 from a \$23.4 million endowment. The mangroves and coral reefs are home to about 1,400 species, including endangered hawksbill turtles, manatees, and several endangered species of sharks. Global and ocean warming, overfishing, mangrove deforestation, and unplanned coastal development have all exerted negative impacts on ecosystems, leading to biodiversity loss.

Initially, private investors were rather cautious about investing in Belizean blue bonds because the government had defaulted in the past. There are several reasons why the debt swaps worked well in Belize (Owen 2022). First, the signing of agreements by the US DFC, Credit Suisse, and other large institutional investors has given impetus to the swaps. In particular, the involvement of the US development bank played an important role in increasing the credibility of the transaction. The provision of insurance by the US DFC enabled the blue bonds to obtain an investment grade credit rating, which has stimulated demand from institutional investors such as pension funds. Second, institutional investors are increasingly incorporating ESG considerations into their investment decisions, leading to increased demand for these complex financial products. And third, with the Nature Conservancy continuing its 30-year conservation program experiences in Belize on a 274-kilometer coral reef reserve in the Caribbean Sea, the Belizean government was able to convince investors of its commitment to protecting marine resources. In other words, investors were able to judge that these blue bonds raise few concerns about “bluewashing” (exaggerating the prevention and conservation of marine resources, like greenwashing).

4.2.2 Application to Other Debt-Stressed EMDEs

The realization of these new types of debt swaps suggests possible application for other economically distressed EMDEs facing large external debt. The Nature Conservancy in Belize supported the rescheduling of debt held by Paris Club creditors. However, not all debt swaps could result in high-impact debt relief like the case of Belize. For a small Caribbean country like Belize, external debt is often large relative to GDP, so the impact of swap reductions could also be large. Moreover, the debt had been traded fairly cheaply in the secondary market, so debt swaps could generate a large impact. In any case, a debt swap is one of the financial transactions that secure the cash needed for environmental conservation and climate change projects. Since a large amount of external debt has been accumulated in times of high interest rates, there is room for the G7 and other developed economies to actively consider it as a financial mechanism for achieving both development and environmental improvement in developing economies. Since 2022, meanwhile, the normalization of monetary policy in the world and associated rising trends on long-term yields have reduced risk appetite among global investors and a number of EMDEs are facing debt problems. Thus, the debt market environment for performing debt-for-nature swaps is becoming unfavorable.

4.3 Performance-Based Grants for Debt-Stressed Economies

One challenge of debt-for-nature swaps is the EMDE governments’ need to allocate fiscal resources to make a prepayment to the nature conservation trust fund. The lack of such budgetary resources may become a constraint to promoting debt swap operations. Also, debt swap arrangements are often complicated and time-consuming since they involve many participants with diverse interests. Moreover, there is always a risk that the government will not fulfill the commitment, set under the swap contracts, to spending saved funds for nature conservation projects and activities.

Compared with debt-for-nature swaps, environmental or climate performance-based grants (or grant/loan combinations) could be an alternative to support environmental measures in a developing economy. Environmental performance-based grants can be formulated in a manner that would make it difficult for EMDEs to allocate to other spending purposes. A debt-for-nature swap may cover various environmental projects and activities, and thus there is a risk of diverting some of the funds to activities not

covered in the debt conversion contract by the debtor government. There are always incentives for highly indebted governments to divert some of the funds to make a debt service payment or for other community development and income support measures. In contrast, conditional grants can be more targeted to a specific purpose, such as climate mitigation or adoption investment. Until the specified investment takes place, grants would not be disbursed to EMDEs, thus eliminating incentives for EMDEs to divert funds for other purposes.

Comparing debt swaps and conditional grants, Chamon et al. (2022) concluded that debt swaps could be a more efficient form of fiscal support than conditional grants when the expenditure commitment is de facto senior to debt service payment. In addition, debtors may prefer debt-for-nature swaps over nature protection performance-based grants when the former offer debt relief in excess of what is needed to finance the nature conservation investments. While grants are normally set to cover, at most, the cost of an investment, debt-for-nature swaps could generally produce some net debt relief—namely, debt relief being set to somewhat exceed the cost of the nature conservation investment leading to a higher net fiscal transfer to EMDEs. On the other hand, the same net fiscal transfer could be performed more cost efficiently from the perspective of a creditor or a donor funding the debt-for-nature swaps by combining a nature protection conditional grant, which pays for the conservation investment exactly, with some additional, unconditional debt relief.

In general, highly indebted economies subject to debt rescheduling find it difficult to obtain new loans. In this case, developed economies tend to support these economies with the provision of grants and/or technical assistance. Performance-based grants are under the spotlight as one of the tools to reduce moral hazard and provide the right incentives to EMDEs to invest in projects that have climate and environmental objectives. The contract involves a financier that agrees to make payments to EMDEs conditional on achieving pre-agreed, verifiable results. Such finance improves accountability by linking financing more directly to desired outcomes (such as a cut in GHG emissions or forest restoration) by providing flexibility on a set of measures to be undertaken—rather than specific targeted inputs (such as proceeds from finance designated to environmental projects), which might be ineffectual or ill-suited for local contexts. The performance-based grants might increase funding effectiveness and lower risks for financiers. Performance-based finance may foster autonomy in EMDEs in terms of promoting innovative activities and initiatives by allowing them to choose the inputs and processes needed to achieve the desired results. Performance-based grants can be used to solve the principal-agent problem by aligning the objectives of donors or creditors with those of EMDEs through providing a monetary incentive.

4.3.1 UN-Led Local Climate Adaptive Living Facility with Performance-Based Grants

Most local authorities in the least developed economies are not able to contribute effectively to climate change adaptation and resilience building because of a lack of awareness and incentives to focus on the issue of climate change adaptation, an inability to finance the incremental costs of climate change adaptation, and a lack of appropriate budgetary allocations at the national level. At the same time, local authorities are in an advantageous position to identify the climate change adaptation responses that best meet local needs, and typically have the mandate to undertake the small- to medium-sized adaptation investments required for building climate resilience. However, local authorities not only lack the financial resources to make investments but also make investments aligned with established decision-making processes and public planning and budgeting cycles.

Thus, the Local Climate Adaptive Living Facility (LoCAL) was created by the United Nations Capital Development Fund to provide a mechanism to integrate climate change adaptation into local governments' planning and budgeting systems, increase awareness and response to climate change at local level, and increase the amount of finance available to local governments for climate change adaptation. LoCAL combines performance-based climate resilience grants (PBCRGs), which ensure programming and verification of climate change expenditures at the local level, with technical and capacity-building support. It uses the demonstration effect to trigger further flows for local adaptation, including national fiscal transfers and global climate finance for local authorities, through their central government. The PBCRGs ensure programming and verification of climate change expenditures at the local level and offer strong incentives for general performance improvements, targeting areas of importance for enhanced resilience.

The PBCRGs provide a financial top-up to cover the additional costs of making investments climate-resilient, and are channeled through existing government fiscal transfer systems. To receive grants, climate information and vulnerability and adaptation assessments must be reviewed or undertaken, and needs and capacities must also be assessed. Local governments must develop in a participatory manner local adaptation plans or programs, integrate adaptation in their own local development planning and budgeting processes, and cost and select adaptation measures to be financed through the PBCRGs. Grants are then disbursed to support the implementation of LoCAL investments in the context of local authorities' annual planning and budgeting cycles, and selected measures are implemented. Subsequently, performance is appraised in terms of the degree to which additional resources have been used to build resilience and promote adaptation to climate change, and audits are undertaken as part of the regular national process. Capacity-building activities are undertaken at various stages according to identified needs; they target the policy, institutional, and individual levels.

4.4 Sustainability-Linked Sovereign Debt Hub

There is a new initiative led by the Sustainability-linked Sovereign Debt Hub launched by Nature Finance (previously known as Finance for Biodiversity). The Hub was established in September 2022 to support EMDEs in issuing sovereign bonds and delivering positive nature and climate outcomes through creating standards and tools that incorporate nature and climate considerations into the sovereign bond ecosystem. This initiative reflects that current global sovereign debt markets fail to adequately take into account sustainability risks even though such risks increasingly exert a material impact on economic growth and resilience in the world. Moreover, EMDEs facing unsustainably high debt problems do not have access to international capital and financial markets at an affordable cost. Sustainability-linked sovereign debt, therefore, can help them to have access to finance to make their economics more sustainable by issuing sustainability-linked bonds that directly reward positive nature and climate outcomes through reduced costs of debt repayments. Fostering sustainability-linked bond markets is likely to encourage investments that reduce sustainability risks. The Hub's advisory board includes the World Bank, the European Bank for Reconstruction and Development, the Asian Infrastructure Investment Bank, the Asian Development Bank, the International Capital Market Association, and the Climate Bonds Initiative. To date, Chile is the only country to have issued sustainability-linked sovereign bonds, which it did in March 2022.

5. FINAL REMARKS AND SUGGESTED ACTIONS FOR DONORS TO PROMOTE CLIMATE AND ENVIRONMENTAL FINANCE IN EMERGING AND DEVELOPING ECONOMIES

Challenges remain in promoting innovative finance involving public–private partnership, particularly from global institutional investors. Many institutional investors are subject to stringent financial regulations after the 2008 financial crisis and thus they tend to prioritize investment grade bonds with a credit rating of BBB or higher and invest mainly in developed countries and some large emerging economies. However, because about 80% of emerging and developing countries' government bonds have a speculative rating of BB or lower, with high political and exchange rate risks, private investors often hesitate to invest in these economies. Financial institutions that invest in speculative-grade securities require additional capital to build up a buffer, and these investments often do not provide enough returns to make up for the additional capital costs.

Since the COVID-19 pandemic, a few new macroeconomic and financial developments are taking place, which make it even more challenging for the world to achieve the SDGs by 2030 and carbon neutrality by around 2050. First, inflation has begun to pick up since spring 2021, triggered by higher product prices, semiconductor chip prices, and commodity price hikes, and then accelerated since the Russian invasion of Ukraine. As a result, many central banks, led by the United States Federal Reserve, have launched normalizing and tightening policy rates in a fast pace to deal with persistent inflation. This has resulted in depreciation pressures on their exchange rates against the US dollar, amplifying inflation. Many central banks in EMDEs reacted to inflation and capital flows by raising their policy rates. Second, public debt in EMDEs has expanded to cope with the COVID-19 crisis, making it even more challenging to mobilize new funds from the private sector under the worsening global macroeconomic environment and volatile financial markets. Third, a climate crisis is materializing frequently in many places in the world, hurting low-income economies in particular. Fourth, the recent turbulence in the United Kingdom's gilt market, triggered by the announcement of the minibudget by the newly formed government led by prime minister Liz Truss and her finance minister Kwasi Kwarteng, and the associated losses of pension funds arising from the sharp increase in gilt yields, might have awakened many pension funds to increase cash and liquidity to prepare for stress periods. This might be leading to lower demand for less liquid assets by institutional investors. Pension funds in the United Kingdom and some other European economies have extensively used interest rate swaps and repo transactions to increase leverage and exposure to long-term gilts to improve asset-liability matching. When yields shoot up suddenly, these funds have to sell assets to meet margin calls, resulting in further hikes in the yields. Given these various factors, low-income economies including some middle-income economies are facing severe economic and financing situations and, thus, creditor nations need to be more united in helping to increase support for them and make their financial support more efficient and effective. It is important to identify factors that are constraining the growth of capital inflows into EMDEs and consider countermeasures. Below are a few suggestions obtained from this overview of recent climate, environment, and innovative finance schemes:

- Bilateral ODA and other development finance could benefit from increasing greater coordination in some projects and sectors through sharing skills, knowledge, and funds jointly given that limited financial resources are available among donor economies in the face of difficult domestic economic conditions. Some European donors and their development finance institutions often collaborate on several projects, but collaboration with other donors in different jurisdictions is rarely seen. Lian and Beal (2022) pointed out that the existence of parallel initiatives by G7 members in the same sectors heightens the risk of inefficient channeling of limited funds. In some cases, a clearer division of labor among the G7 nations, based on preferential geographies (for example, the EU with preferences on Africa, United States on Latin America, and Japan on Asia) might prove to be more efficient and impactful through possibly lowering fragmentation problems.
- Among various groupings, the G20 is emerging as the most important group of economies with regard to discussing global issues and has successfully promoted some initiatives—such as the Debt Service Suspension Initiative (DSSI) in 2020–2021 and the Common Framework for Debt Treatments Beyond the DSSI to low-income economies, as well as the reallocation of some of their used SDRs to low-income economies, small-island developing states, and climate-vulnerable middle-income economies since October 2021. It is important for the G20 to extend the Common Framework to some middle-income high-debt economies such as Sri Lanka as well.
- All G20 economies have updated their Nationally Determined Contributions (NDCs) with regards to their GHG emission cut targets set under the Paris Agreement. Since G20 economies account for about 80% of global GHG emissions, they should deepen collaboration on discussing detailed transition strategies and improving their monitoring schemes to track progress towards the NDCs. Issues such as how to raise global carbon pricing from the current extremely low global emission price (\$3) should also be included in policy discussions. The IMF made a proposal in 2021 to introduce a three-tier price floor among major carbon-intensive economies, with prices of \$75 for high-income economies, \$50 for high-income EMDEs, and \$25 for low-income EMDEs (Gasper and Parry 2021). This scheme could reduce global emissions by 23% in line with keeping global warming below 2 degrees. Some discussions about the IMF proposal or similar differentiated carbon pricing proposals could be explored by the G20.
- More public funds that constitute catalytic funds are needed to promote blended finance schemes in EMDEs. Given limited budgetary resources, better coordination among donor economies and their development institutions could be useful. Blended finance has been utilized in EMDEs to attract the private financing of climate and environmental projects, but the size of the funding remains low. Donor economies could allocate more funds toward climate- or environmentally vulnerable economies compared with resilient economies, given that climate- or environmentally resilient or less vulnerable economies tend to receive more climate or environmental finance than vulnerable economies. Traditional public funds tend to include grants, loans, technical assistance, and, to a lesser extent, equity investment. The important role of catalytic funds in blended finance should be discussed by the G7 and G20 to increase collaboration among creditor nations from the perspective of mobilizing private capital.

- In addition, it may be worthwhile placing more priority on increasing the contributions of public and private capital to the specialized multilateral climate or environmental funds that promote blended finance for EMDEs. The funds include the UN-led Green Climate Fund (GCF) and are often intermediated through multilateral development banks or bilateral development institutions, which are able to promote climate and environmental projects in a transparent and efficient manner. Multilateral climate funds provide more grants than loans as compared with multilateral development banks whose loans account for about 90%. Albeit by small amount, such multilateral climate funds provide more equity finance compared with other multilateral development banks.
- More global efforts could be pursued in order to deepen understanding about various global standards and indicators, including the Blue Dot Network being applied to infrastructure projects and making it more operational and more widely adopted at a global level at the G20. Many donor nations in developed economies have been adopting their own environmental and social standards in conducting projects. Priority and preferences over various global standards vary depending on the specific circumstances of donor nations and recipient economies as well as on national interests. While complete standardization may be difficult to pursue, some convergence with regards to those environmental and social standards could help lower the burden borne by low-income developing economies. In the Asian region, many economies need more infrastructure investment, which has been traditionally financed by the public sector, and thus they wish to promote the private sector funding to close the gap. To promote innovative and competitive financing solutions from the private sector, some common framework applicable to projects might help to mobilize more funding into the region. As suggested by Lian and Beal (2022), greater participation from all creditor economies and deeper understanding from EMDEs should be promoted to generate some alignment in development finance and possibly lead to greater positive outcomes.
- Paris Club and non-Paris Club member economies, including the PRC as the largest bilateral creditor, might consider greater collaboration and pay more attention to the possibility of engaging in debt-for-nature swaps or debt-for-climate swaps for small, highly indebted economies when environmental and climate risk is expected to amplify the sovereign credit risks and at the same time undermine their essential agricultural, fishery, and tourism industries. Paris Club member economies have already built up experience of debt-for-marine swaps or debt-for-climate swaps since the 1980s through also working with various NGOs, so they can take the lead by involving non-Paris Club member economies. This might apply to middle-income economies with high debt as well. Moreover, donor economies might consider increasing guarantees or insurance components of their development finance to promote innovative debt swaps that accompany green bonds, blue bonds, and sustainability-linked bonds, as demonstrated in the recent case of Belize's debt-for-nature protection swap and associated issuance of a blue bond backed indirectly by the United States development finance institution.

- For debt-distressed economies, donor nations tend to support them with grants. Depending on economic conditions, donor nations might consider performance-based grants with clear preset performance targets (such as GHG emission cuts or carbon removal) in some projects instead of conventional unilateral grants. Under performance-based grants, the amount of disbursement of grants will depend on the assessment of whether the preset targets are on track. Some ODA nations have been providing concessional loans at even lower lending rates in the case of climate or environmental projects. However, performance-based finance could also be explored due to the possibility of ensuring more positive impacts. In doing so, however, donor nations may need to adjust their traditional development finance approaches to incorporate more flexibility into their financing operations.

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