





Green and Climate Finance Options to Support the Post COVID-19 Pandemic Recovery and Climate Action

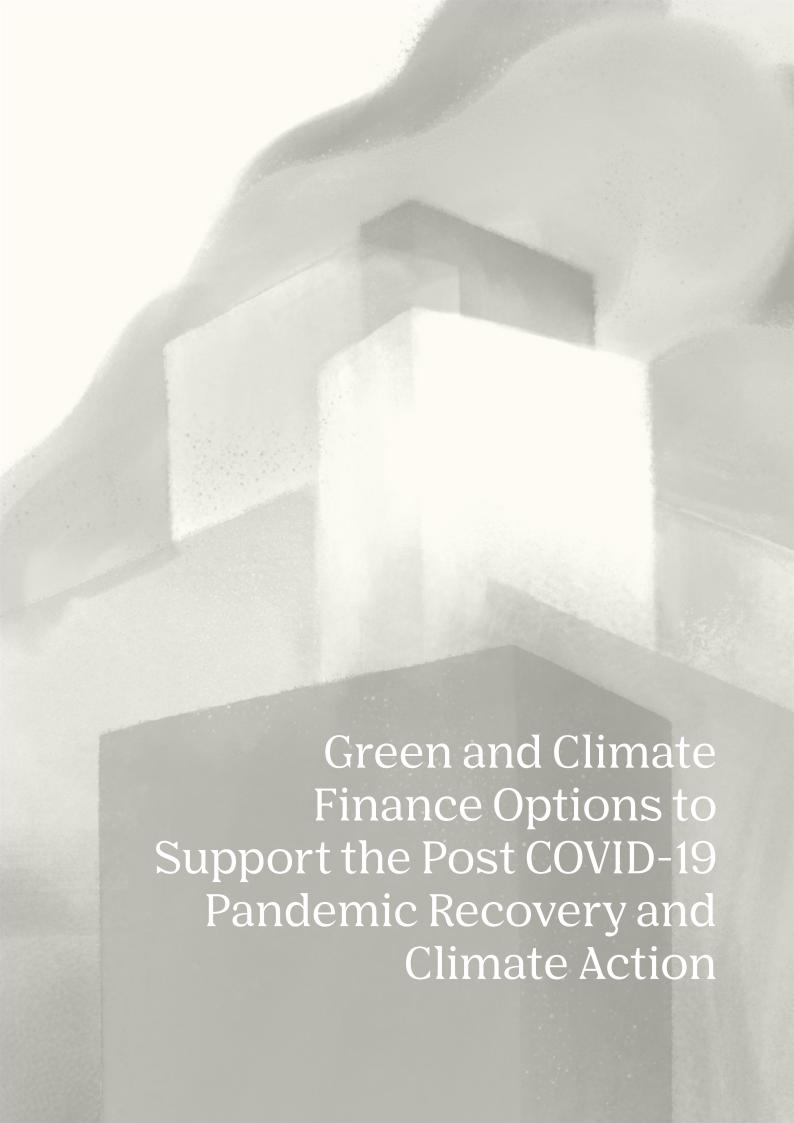
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About this Report

This report is a joint publication by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the Global Green Growth Institute (GGGI). ESCAP and GGGI are working together through research, policy assistance, and support for innovative financing solutions targeted at climate action and the achievement of net-zero emissions by 2050. Together we believe that countries' nationally determined contributions need to be drastically enhanced to achieve carbon neutrality; and pledges need to be accommodated by policy action and financing to support investment in a green future.

ESCAP and GGGI are pleased to launch this joint publication, which examines critical policy gaps and barriers to climate finance. The report presents a range of financial instruments and mechanisms to address these critical constraints, including project finance, funds and facilities, thematic bonds, carbon pricing and debt for climate swaps. Our findings, highlight the utility, scalability, governance, and related monitoring issues to enable these pathways to sustainability to function effectively.

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About ESCAP

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) is the most inclusive intergovernmental platform in the Asia-Pacific region. The Commission promotes cooperation among its 53 member States and 9 associate members in pursuit of solutions to sustainable development challenges. ESCAP is one of the five regional commissions of the United Nations.

The ESCAP secretariat supports inclusive, resilient and sustainable development in the region by generating action-oriented knowledge, and by providing technical assistance and capacity-building services in support of national development objectives, regional agreements and the implementation of the 2030 Agenda for Sustainable Development.

About GGGI

The Global Green Growth Institute (GGGI) was established as an international intergovernmental organization in 2012 at the Rio+20 United Nations Conference on Sustainable Development. Its vision is "a low-carbon, resilient world of strong, inclusive, and sustainable growth" and its mission "to support Members in the transformation of their economies into a green growth economic model". GGGI does this through technical assistance to: reduce greenhouse gas emissions in line with the Paris Agreement; create green jobs; increase access to sustainable services (such as clean affordable energy, sustainable waste management); improve air quality; sustain natural capital for adequate supply of ecosystem services; and enhance adaptation to climate change.

Executive Summary

Most of the policy measures introduced in 2020 and 2021 as a response to the socioeconomic crises induced by the COVID-19 pandemic focused on addressing health concerns and a speedy economic recovery. Considerably less attention has been paid to combating climate change and preventing environmental degradation, for which many governments in the Asia-Pacific region lack the needed financial resources. There are, however, various options to mobilize green and climate finance to address climate change, recover from the COVID-19 pandemic, and achieve a wider range of environmental and sustainable development objectives. Enhancing the availability of green and climate financing and developing clear, coherent, and supportive policies are crucial for all economies in the region to recover swiftly and resume growth in a resilient and sustainable manner.

This report examines critical policy gaps and barriers to climate finance, such as constrained fiscal space, weak institutional capacities to implement Nationally Determined Contributions (NDCs), policy and regulatory gaps, and the lack of investment-ready projects. To enable green growth and sustainable development in the region, these barriers need to be overcome in line with each country's long-term strategic development vision and broad legal framework, as well as international commitments to reduce greenhouse gas emissions through initiatives such as the NDCs.

The report also discusses a range of financial instruments and mechanisms, including project finance, funds and facilities, thematic bonds, carbon pricing, and debt for climate swaps, and highlights their utility, scalability, governance, and related monitoring issues. Implementing these instruments and mechanisms can help overcome existing challenges to climate change finance and unlock the growing private sector demand for green and climate investment opportunities. The report also explains how assessment tools can be developed and used as part of the planning processes to address policy gaps and assess the readiness of investment projects. It underscores the critical role that blended and concessional finance can play in enhancing the effectiveness of climate finance instruments in the region, particularly for the small island developing States (SIDS) and the least developed countries (LDCs) in the region.

The report outlines several case studies that illustrate how different options and instruments are being used to structure actual investments, including a municipal solid waste to energy project in Viet Nam and a sovereign green bond issuance in Fiji. The market for green bonds is expanding rapidly, with considerable interest from global institutional investors. Although this market still represents a small percentage of the total bond market, its fast growth offers a significant financing option for many countries in the region.

The report also highlights emerging post COVID-19 green and climate finance trends, including regulatory frameworks like the European Union's Carbon Border Adjustment Mechanism (CBAM), and carbon financing structures such as securitized Internationally Transferred Mitigation Outcomes (ITMO). The report also briefly examines the impact of new and emerging technologies, including the pivot to green fuels such as green hydrogen and Carbon Capture and Storage (CCS). However, given the lack of a clear policy framework in many countries and competition among investors for new technologies, uncertainty remains as to their potential impact on climate finance post COVID-19.

In this context, the report discusses the status of climate risk disclosure and reporting, as well as the growing number of reporting frameworks that can help investors internalize climate risks when making investment decisions. Effective climate risk disclosure enables all stakeholders to better understand the opportunities and risks of climate change, allowing investments to be more effectively allocated to fund climate solutions and avoid growing threats to the stability of the global financial system posed by the dramatic ecological upheaval.

Finally, the report draws attention to the need to balance competing policy choices and financing options and highlights how successful outcomes are determined by a complex mix of regulatory and financing arrangements in different sectors that support low carbon and sustainable development.

Although the flow of green and climate finance in Asia and the Pacific is growing, many governments in the region still lack the resources and policies needed to undertake the necessary actions to address climate change and recover from the COVID-19 pandemic.

The report argues that the two key enabling factors that need to be addressed are; first, a coherent climate policy framework and; two, support for blended finance.

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This report is a joint publication developed by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the Global Green Growth Institute (GGGI).

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Acronyms & Abbreviations

ACMF ASEAN Capital Markets Forum

ASEAN Association of Southeast Asian Nations
CBAM Carbon Border Adjustment Mechanism

CBI Climate Bond Initiative

CDM Clean Development Mechanism
CRTB COVID-19 Recovery Transition Bond

CCS Carbon Capture and Storage

DFI Development Finance Institutions

DRM Disaster Risk Management

ESCAP Economic and Social Commission for Asia and the Pacific

ESG Environmental, Social, and Corporate Governance

ETS EU Emissions Trading System

GBP Green Bond Principles
GCF Green Climate Fund

GEF Global Environment Facility
GGGI Global Green Growth Institute

GHG Greenhouse Gas

ICMA International Capital Market Association

ITMO Internationally Transferred Mitigation Outcome

KPI Key Performance Indicator LDC Least Developed Countries

MGFC Mongolian Green Finance Corporation

NBS Nature-Based Solutions

NDC Nationally Determined Contributions

NFV National Financing Vehicles

NGDP National Green Development Policy
ODA Official Development Assistance
SIDS Small Island Developing States

SPO Second-Party Opinion

TCFD Task Force on Climate-related Financial Disclosures

TRIS Thai Rating and Information Services

UNFCCC United Nations Framework Convention on Climate Change

WHO World Health Organization

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1.

Introduction

Climate change presents daunting challenges for all countries globally, but its adverse effects are proving particularly severe for countries in Asia and the Pacific. As the United Nations Framework Convention on Climate Change (UNFCCC) recently noted,1 the increasing frequency of natural disasters makes the Asia-Pacific region especially vulnerable to climate change. It is estimated that if carbon emissions continue as business-as-usual, Asia could see severe heat waves, extreme precipitation, hurricanes, drought and changes in water supply. By 2050, between US \$2.8 trillion² and \$4.7 trillion of GDP will be jeopardized annually due to the loss of outdoor working hours in the midst of increased heat and humidity. Meanwhile, an estimated \$1.2 trillion in capital stock is expected to be damaged by riverine flooding.3

Several developing countries in the Asia-Pacific region have experienced rapid and high economic growth over the past few decades, ranging from 5 per cent and 7 per cent, resulting in significant increases in income and living standards. However, such growth has been accompanied by rising greenhouse gas (GHG) emissions and air pollution levels due to rapid urbanization and fossil fuel-based energy consumption. The World Health Organization (WHO) reports that less than eight per cent of Asia's population currently has access to clean air,4 and the demand for electricity is growing by 6 per cent per year among the Association Southeast Asian Nations (ASEAN) countries. This growing energy consumption, accompanied by heavy reliance on coal in the energy mix and seasonal agricultural burning, continues to drive up GHG emissions and diminish air quality. In addition, the region is also increasingly vulnerable to loss of natural capital, particularly forest cover,5 while river pollution continues to pose serious threats to aquatic ecosystems. In fact, eight of the top ten rivers that discharge plastic and other wastes into the oceans are found in Asia Pacific.

At the global level, it is estimated that an investment of \$1.8 trillion in climate adaptation from 2020 to 2030 would have a net benefit of \$7.1 trillion in saved resources for disaster relief and recovery.⁶ The costs of inaction are far greater, with estimates indicating that global financial assets worth as much as \$24.2 trillion could be written down under a business-asusual emissions path.⁷

The COVID-19 pandemic and the measures to contain its spread have resulted in unprecedented economic consequences, with economies contracting and poverty rising in many countries in the Asia Pacific region. Economic recovery measures have adversely impacted the fiscal space of many governments, resulting in rising debt burdens. Such a rapid deterioration of income generation and government revenues poses a substantial risk to the achievement of the 2030 Agenda for Sustainable Development and investments in climate action.8 However, opportunities exist to incorporate sustainable climate action into the COVID-19 recovery efforts and enable them to coexist with the region's climate ambitions.

This report examines various green and climate finance policies that can help to mobilize the financing required to address climate change and to recover from the impacts of the COVID-19 pandemic. The alignment of green, pro-poor, and COVID-19 recovery policies is urgently needed. For the majority of Asia-Pacific countries that have undertaken costing exercises for their climate actions, the financial resources required to address climate change are significantly higher than the funds allocated to the COVID-19 response. Many countries do not have financial means to spend on both the pandemic and climate action. Thus, every effort must be made to build back better through the "sweet spot" of policy actions that constitute an effective response to both COVID-19 and climate action (Figure 1).

¹ UNFCCC (2021). Climate Change Leads to More Extreme Weather, but Early Warnings Save Lives.

² All currency values refer to the US Dollar, unless otherwise noted.

³ McKinsey & Company (2020). Climate risk and response in Asia. The report links climate models with economic projections and geospatial assessments to estimate impacts in 16 countries: Australia, Bangladesh, Cambodia, China, India, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, New Zealand, Pakistan, the Philippines, Republic of Korea, Thailand, and Viet Nam.

⁴ World Health Organization (n.d.) Air Pollution in the Western Pacific.

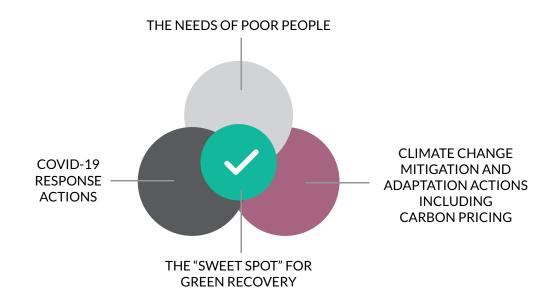
⁵ Mitigating the risk of environmental disaster has been a key consideration of Asia. Disasters such as floods (most common), storms, and earthquakes have caused annual loss of GDP at 0.1 to 0.9% between 1998 and 2018 for South Asia.

 $^{^6}$ Global Commission on Climate Adaptation (2019). Adapt Now: A Global Call for Leadership on Climate Resilience.

⁷ Dietz, S., Bowen, A., Dixon, C. and Gradwell, Philip Gradwell (2016). 'Climate value at risk' of global financial assets. Nature Climate Change.

⁸ United Nations (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. General Assembly Resolution.

Figure 1 – The "sweet spot' for tackling COVID-19, the SDGs, and Climate Change



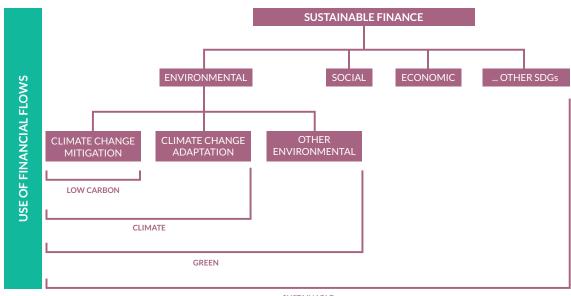
Source: ESCAP (2020). Are countries in the Asia-Pacific region initiating a 'Green Recovery'? What more can be done?" Policy Brief.

Enhancing green and climate finance availability at the regional, national, and local levels will help countries recover more swiftly from the pandemic and grow in a more resilient and sustainable manner. Although green and climate finance is often associated with the financial provisions to support compliance with commitments to the Kyoto Protocol and the Paris Agreement, it is a far broader concept that includes financing sourced and leveraged international, domestic, public, and private channels and utilizes numerous government and market instruments to address environmental and climate challenges. Green finance is an even broader term which encompasses both climate finance for mitigation and adaptation and finance for a wider range of environmental objectives, including industrial

resource efficiency and pollution control, water sanitation, or biodiversity protection. Together, green and climate finance combine a wide range of instruments, mechanisms and policies that fund and support projects that deliver environmental benefits and promote a low carbon economy (Figure 2). As such, enhancing access to green and climate finance can be instrumental in helping the region recover from the pandemic through the "sweet spot" of Figure 1.

⁹ Lindenberg, Annette (2014). Definition of Green Finance. German Development Institute.

Figure 2 – Use of Financial Flows



SUSTAINABLE

Source: Adapted from UN Environment Inquiry (2016).

The following section examines barriers and challenges, as well as some possible opportunities, for green and climate finance to contribute to the post-pandemic recovery. Section 3 provides an overview of the main types of financial instruments, outlines an assessment tool that can be used as part of country planning processes to address policy gaps and assess the readiness of the $investment\ projects, and\ highlights\ the\ vital\ role$ that blended and concessional finance plays in enhancing the effectiveness of climate finance instruments in the region. Section 4 evaluates emerging trends, including (a) emerging regulatory frameworks and taxonomies, (b) cooperative approaches to carbon emissions trading and ITMOs, (c) the pivot to green fuels and carbon capture and storage and (c) evolving disclosure and environmental, social and corporate governance (ESG) reporting. The concluding section of the report includes key recommendations.



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2. Barriers and Challenges to Enhance Access to Green Finance

Many developing countries in Asia and the Pacific are addressing environmental and climate change issues through the development of high-level strategies and long-term policy frameworks, such as national and local green growth strategies, low-emission economic development strategies, renewable energy targets, and Nationally Determined Contributions (NDCs) under the Paris Agreement. However, not all countries have coherent policy frameworks and most need additional financial resources for climate mitigation and adaptation.10 Implementing the right policy mix will be vital in the transition to a low-carbon, climate-resilient future as well as to address climate change and foster a sustainable recovery from the COVID-19 pandemic. The four most significant barriers to the successful implementation of green and climate finance in the region are: (a) constrained fiscal space, (b) weak institutional capacities to implement NDCs, (c) policy and regulatory gaps, and (d) lack of investment-ready projects. To enable green growth and sustainable development in the region, these barriers need to be overcome, keeping in view each country's long-term strategic development vision and broad legal framework, together with international commitments such as NDCs that highlight intended climate action.

2.1 | Constrained Fiscal Space

The COVID-19 pandemic and the measures to contain its spread have put both the health and the economic systems in the region under severe strain and created significant fiscal pressures in many countries in the region, particularly in the least developed countries (LDCs) and small island developing States (SIDs). For example, it is estimated that the developing countries in the region have spent over US \$1.8 trillion, or 7 per cent of their GDP, between March and September 2020 on health responses and relief measures." Despite international assistance, it is estimated that the average fiscal deficit among Asia-Pacific

developing countries will rise to 5.6 per cent of GDP in 2021, compared to 1.5 per cent in 2019. As such, the measures to confront the pandemic are increasingly colliding with ongoing efforts to combat climate change. The challenge of mitigating the adverse impacts of climate change remain daunting, and the need for climate adaptation has never been more urgent, but as a result of the pandemic many governments in developing countries are finding their fiscal space constrained to undertake the actions required to both recover from the COVID-19 pandemic and address climate change.

¹⁰ The World Bank estimates that without significant efforts to mitigate and adapt to impacts of climate change, more than 140 million people in Sub-Saharan Africa, South Asia, and Latin America could be forced to move internally by 2050 due to crop failure, rising sea levels, and water shortages.

¹¹ Jeong-Dae Lee (2020). An assessment of fiscal space for COVID-19 response and recovery in Asia-Pacific developing countries. UNESCAP MPFD Policy Briefs.

¹² Although international assistance from IMF and MDBs contributed more than US \$38 billion dollars to Asia-Pacific developing countries, the support package was concentrated in eight out of 37 recipient countries.

Governments in the region have used a wide range of economic policies and financing tools to strengthen their fiscal positions, including budgetary reforms, sovereign borrowings, and accessing emergency financing facilities.13 For the most part, COVID-19 policy responses have been expansionary, but there is evidence that these policies are not fully supportive the environment and climate change considerations.14 While recent ESCAP research has proposed to "build forward better" through the implementation of a green development policy package, its implementation will lead to increases in the debt levels of several countries, especially LDCs, although policy measures such as carbon taxes can help reduce the public debt ratio over the long term.15 The question, then, is how can the economies of Asia and the Pacific continue servicing their public debts and spending on reviving the economy while at the same time striving to attain the SDGs and take climate action?16

An important part of the answer is to use the available public finances more efficiently catalyze environmentally sustainable investment activities and discourage activities that emit GHGs. However much of the fiscal spending so far has been directed to fossil fuels that are harmful to the environment. For example, according to research by Energy Tracker, since the beginning of the pandemic, approximately US \$108 billion has been approved to support energy production and consumption in various sectors across ten examined Asia-Pacific countries. 17 The majority of these funds were channelled towards fossil fuels without any climate targets or pollution reduction requirements.

Carbon taxes are one of the two main instruments for carbon pricing, along with capand-trade systems such as the EU Emissions Trading System (ETS). The main objective of carbon pricing is not to raise revenues. By discouraging carbon-emitting activities, stimulating clean technology and market innovation, and supporting new, low-carbon drivers of economic growth, carbon pricing is a vital tool for the transition to a low-carbon future. A carbon price provides a powerful economic signal to carbon emitters to either reduce emissions or continue emitting and pay for the carbon produced. In addition, imposing a price on carbon sends a financial message to investors that low-carbon investments have value. Carbon pricing instruments can be a powerful component of post COVID-19 recovery packages.

While the main objective of carbon pricing is to lower carbon emissions, carbon taxes also have the potential to increase government revenues, providing additional fiscal space. If the revenue raised from carbon taxes is collected effectively and then partially channelled back into the economy to compensate low-income groups from the impact on energy and transportation costs, it can potentially increase the level of economic activity and reduce inequality and poverty, while simultaneously progressing towards emissions targets and reducing air pollution. The policy can be fine-tuned to align with government priorities, and, in this way, can achieve both environmental and social goals in the most flexible and cost-effective way.18

Feorienting government spending away from harmful activities and introducing policies, such as carbon taxes, to discourage destructive climate activities is critical for governments to come to grips with climate change and nurture a sustainable recovery in the wake of the COVID-19 pandemic.

¹³ ESCAP (2021). Annual Report. Economic and Social Council Official Records.

¹⁴ Vivid Economics, Greenness of Stimulus Index (2020): An assessment of COVID-19 stimulus by G20 countries and other major economies in relation to climate action and biodiversity goals.

¹⁵ UNESCAP (2021). Economic and Social Survey of Asia and the Pacific 2021.

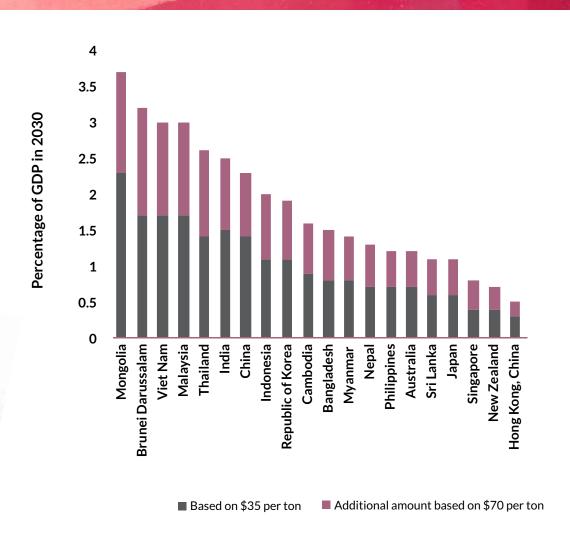
¹⁶ Ibid. The survey discusses various fiscal and financial policies for that purpose, including offshore public bonds and diaspora bond financing, debt for development swaps, and improved public debt management.

 $^{^{\}rm 17}$ Energy Policy Tracker (2021). Track public money for energy in recovery packages.

¹⁸ Preliminary findings of a macroeconomic modelling of impact of carbon pricing in the Asia-Pacific region by ESCAP in 2021.

Some Asia-Pacific countries have implemented budget reforms by removing fuel subsidies, and while carbon taxes are scarcely used in the region, they can be a highly effective mitigation tool, especially when complemented by non-tax mitigation measures. ESCAP's Economic and Social Survey 2020 highlights that phasing out fossil fuels and introducing carbon pricing could open up significant fiscal space as well as address air pollution and climate change. Figure 3 illustrates the potential revenues as percentage of GDP in 2030, based on a carbon price of US \$35 per ton (dark grey) and based on US \$70 per ton (pink).

Figure 3 – Projections of Carbon Tax Revenue in 2030



Source: ESCAP (2020). Economic and Social Survey of Asia and the Pacific.

¹⁹ International Monetary Fund (2021). Fiscal Policies to Address Climate Change in Asia and the Pacific.

2.2 | Weak Institutional Capacities in Implementing NDCs

Under the Paris Agreement, countries agreed to share binding commitments to prepare, communicate and maintain Nationally Determined Contributions for climate action. and to pursue domestic measures to achieve them.20 Countries additionally agreed that successive NDCs, submitted every five years, would represent a progression beyond the previous one and reflect the highest possible ambitions.21 A review of both the initial and the updated NDCs of many countries in the Asia-Pacific region show that they are short of what is necessary to keep the global temperature rise below the 1.5°C commitment in the Paris Agreement.²² There is, thus, an urgent need for the region to accelerate climate action measures to reach net-zero carbon/GHG emissions by 2050, building on the momentum of economic and social recovery from the effects of the COVID-19 pandemic.

A recent ESCAP report on NDC implementation progress in Asia and the Pacific recommends the following enabling factors to support more ambitious climate action as per the Paris Agreement commitments: (1) mainstreaming of climate change into national development policies, (2) effective national coordination, (3) climate finance and investments, and (4) monitoring and review of NDC implementation.²³ The report emphasizes that climate action requires sufficient domestic and international financial resources and appropriate policy frameworks. The assessment shows that less than 25 per cent of the countries have sufficient financial resources in place, while many countries are still in the nascent stages of creating an enabling framework for successful climate action. There are also significant differences across subregions, with South-East Asia being the most advanced in NDC coordination while the Pacific SIDS lag behind.



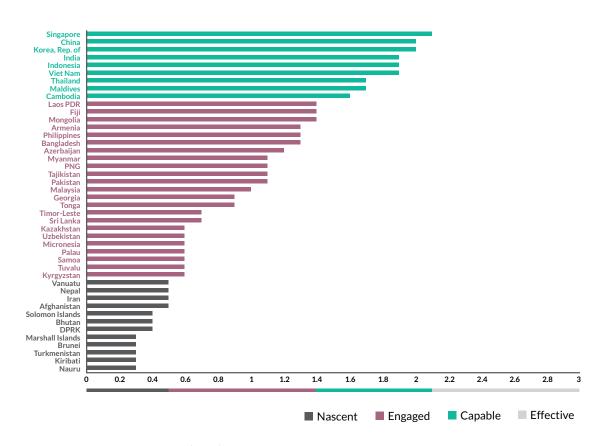
²⁰UNFCCC, Paris Agreement, Article 4.

²¹UNFCCC Paris Agreement.

 $^{^{22}}$ ESCAP, UNEP, Greenwerk (2020). Progress of NDC implementation in Asia-Pacific- Methodological Framework and Preliminary Findings.

²³ Ibid.

Figure 4 – Regional Assessment and Scoring of Level of Readiness of Enabling Factors to Support NDCs



Source: ESCAP, UNEP, Greenwerk (2020). Progress of NDC implementation in Asia-Pacific- Methodological Framework and Preliminary Findings.

Furthermore, according to a recent ESCAP regional study, more than 300 measures have been undertaken by Asia-Pacific governments to support citizens and businesses since the pandemic began, and an additional 111 climate change-related measures covering both adaptation and mitigation across six sectors have been identified. Of these, 58 per cent were set out in prior NDCs. The introduction of new post COVID-19 measures was particularly focused on disaster risk management (DRM). Overall, the analysis suggests that the Asia and Pacific countries fall into four green recovery categories, as described in Figure 5 below.²⁴

categories, as described in Figure 5 below.²⁴

²⁴ UNESCAP (2020). Are countries in the Asia-Pacific region initiating a "Green Recovery"? What more can be done?

Figure 5 – Four categories of Asia Pacific countries' "green recovery" from COVID-19

LACK OF CLIMATE AMBITION

COVID-19 policy, but no NDC policy

ROLE MODEL

COVID-19 and NDC policy aligned

LACK OF CAPACITY

No COVID-19 or NDC policy

LACK OF MAINSTREAMING

NDC policy, but no COVID-19 policy

 $\textbf{Source: ESCAP (2020)}. \ \textit{Are countries in the Asia-Pacific region initiating a ``Green Recovery''? What more can be done?$

For some of the Asia-Pacific countries, the fact that COVID-19 policies were implemented fairly decisively in spite of the glaring absence of NDC-related sectoral policies indicates that governments or citizens may lack an understanding of the urgency for raising the ambition for climate action. For others, NDC policies with the potential to be used as COVID-19 response measures are in place but have not yet been put into action, showing that these policies are not yet mainstreamed or have not been discussed in detail among different ministries. Finally, the category of countries that have neither administered COVID-19 policies nor NDC policies in the sectors suggests a lack of funds or governmental capacity.



2.3 | Policy and Regulatory Gaps

Scaling up green and climate finance involves transforming not only green and climate finance policies but also other areas of business and investment policies. Multiple factors act as a barrier to green and climate finance. The broader legal system and policy environment strongly influence investment decision-making. And if the legal and regulatory system is unclear, contradictory, or creates unintended barriers, a country is less likely to attract the necessary climate finance. The strong policy of the str

Another constraint is the discrepancy between the country's emission targets and the existing legal and regulatory schemes, ²⁷ as in the case of a country with an ambitious emission reduction target but legal and regulatory frameworks that demonstrate preferential treatment for fossil fuels. Governments that aim to encourage green and climate finance need to address the interlinkages between regulatory, institutional, and administrative impediments to doing business. The right policies to improve access to green and climate finance will ultimately depend on each country's context. Hence the policy challenge is not merely one of mobilizing climate finance, although that is an

immense challenge in its own right. Instead, it encompasses balancing numerous competing policy choices, with successful outcomes determined by a complex mix of governance and regulatory arrangements in many different sectors and levels of government.²⁸

One pathway for governments to ameliorate the problem of inconsistencies between policies, laws, and regulations is by setting up a regulatory sandbox. Regulatory sandboxes are provisional environments established by regulators whereby certain policies or laws are temporarily suspended and/or licencing requirements are removed, to allow for innovation and testing before scaling up at the market level. Hence, under a sandbox approach, certain safeguards are established alongside clear entry and exit requirements and a predefined scope to establish the borders of the business sandbox. The policy sandbox works to strengthen identified business models and stakeholders in the ecosystem and find a basis for project replication. This approach can additionally identify necessary reforms in laws and regulations to enhance policy effectiveness.

2.4 | Lack of Investment Ready Projects

A significant barrier to green and climate finance in the region is a lack of identifiable investment-ready projects. Despite an increasing demand for green projects, many countries in the region, particularly among the SIDS and LDCs, do not meet common investment risk management criteria and as a result the necessary funds are not flowing to projects in vulnerable countries. Consequently, different green business models inthe region are not yet proven or mainstreamed. In addition, implementation risks are high, and domestic investors have limited technical capacity to support catalytic climate investments. It is often difficult to raise green

and climate finance in high-risk environments due to heightened implementation risks, untested regulatory environments, and other first-mover challenges. These risks can make projects unbankable without concessional and blended finance to overcome constraints (see detailed discussion in Section 3).

²⁵ GGGI (2016). Mind the Gap, Bridging the Climate Financing Gap with Innovative Financial Mechanisms.

²⁶ Morita, T., Pak, C. (2018). Legal Readiness to Attract Climate Finance: Towards a Low-Carbon Asia and the Pacific. CCLR.

²⁷ Ibid.

²⁸ Anantharajah, K. (2019). Why finance alone will not address the climate change challenges in the Pacific. Development Policy Centre.

3. Climate Finance Instruments and Business Models

This section discusses different green financial instruments that can help overcome some of the barriers and challenges discussed in the previous section. First, it provides an overview of the main types of financial instruments available and highlights their utility scalability, governance, and related monitoring aspects. Second, it outlines an assessment tool that can be used as part of country planning processes to address policy gaps and assess the readiness of investment projects. Third, it highlights the vital role that blended and concessional finance plays in enhancing the effectiveness of climate finance instruments in the region, particularly in the SIDS and LDCs.

3.1 Financial Instruments and Mechanisms for the Green Transformation

A range of financial instruments and mechanisms can be used to address risk sharing and risk mitigation among project stakeholders. The most prominent ones include: (i) project finance, (ii) funds and facilities, (iii) thematic bonds, (iv) carbon offsets, and (v) debt for climate swaps.

3.1.1 Project Finance

Project finance is a common form of financing that is based on the predicted cash flows of the project rather than the strength of the balance sheets of the project developers and investors. Green infrastructure programmes and business models can attract long-term project finance if they meet the risk and return expectations of investors. Effective risk management

strategies, appealing financial structures, low transaction costs, and proper deal size are critical characteristics of bankable and investable projects.²⁹ Bankable projects will attract private funders looking for investment opportunities and can reduce the need for scarce public financial support.

²⁹ Climate business models refer to any climate change mitigation or adaptation project that is investable.

In Viet Nam, GGGI supported a private enterprise to develop a municipal-solid-waste-to-energy project in which it successfully mobilized US \$58 million in blended debt and equity financing (Box 1).

Project development activities typically include analyzing and developing the business and financial models, designing the capital structure, including blending of financial

instruments, recommending risk mitigation options, and de-risking possibilities. Together with securing project finance, other activities include: preparing information memoranda, facilitating the investor longlist and investor meetings, opening data rooms, and conducting site visits and investment roadshows.

Box 1 – First Advanced Municipal Solid Waste to Energy Project, Vietnam

GGGI was primarily tasked with the role of financial advisor to complete project financing for the construction of the modern municipal-solid-waste-to-energy (MSWTE) power plant. This first-ever, 10-MWe plant will process 500 tons of waste daily. Most of the collected solid waste in the secondary city is currently disposed of in open landfills. The landfills pose several significant problems. Methane and carbon dioxide are released into the air from landfills and create serious threats to the surrounding environment, especially to the groundwater system. In addition, energy generated from waste diverted from the landfill will reduce reliance on coal-fired power in Viet Nam.

In 2020, GGGI obtained the initial investment commitments for the project by arranging blended project debt with development finance institutions (DFIs) and a commercial bank in Viet Nam. The financial structure is 37.5 per cent equity and 62.5 per cent debt.

The project activities were conducted in a close partnership with the Energy and Environment Partnership Programme (EEP) Mekong, a development program sponsored by the Ministry of Foreign Affairs of Finland and the Nordic Development Fund (NDF). GGGI teamed up with EEP Mekong to assess and identify a project developer that required technical support for project risk mitigation and finance.

One of the main challenges was engaging a project developer with strong local experience and networks. Blended debt finance was important for providing confidence to the domestic private sector equity investors. It also made high-risk, non-recourse project debt finance more attractive for the local commercial bank partner.

The project is expected to operate during its 20 years lifetime with an Internal Rate of Return (IRR) of 13 per cent unleveraged. In Viet Nam, the potential for the scalability of the project model is up to 20 modern MSWTE plants in the secondary cities with an estimated capital expenditure of US \$1 billion. This model can be scaled up through a climate finance facility or a fund that would provide a systematic risk mitigation and benefits sharing mechanism for interested private sector companies and financial intermediaries. The structure requires a standardized project model that could be replicated by many firms.

Source: GGGI (2021).

3.1.2 Multilateral Development Funds and Facilities

Green and climate equity and debt funds and facilities represent other types of financing instruments. Various types of green and climate funds exist, including multilateral funds such as the Global Environment Facility (GEF) and the Green Climate Fund (GCF), to assist developing countries in meeting financial needs related to the pursuit of low-carbon and climate-resilient development pathways. The UNFCCC COP established the GCF in 2011 to finance climate change programmes that no other funds or investors would invest in due to the risks.³⁰

National Financing Vehicles (NFV) are broadly defined as public or public-private fund entities set up within, or in some cases outside, the government that invest strategically in areas of national green and climate importance. NFVs can play a crucial role in connecting financiers with suitable projects. When combined with the appropriate policies, NFVs can contribute to creating the required institutional and financial framework for channelling investment flows into sustainable green growth. In sum, NFVs are a useful alternative for developing countries, which often lack adequate funds and facilities for strategic investment in green climate projects.





³⁰ As of 1 July 2021, GCF funded 73 projects in Asia and the Pacific for US \$3.32 billion. This amount represents 37.5 per cent of the total funding provided by GCF globally at that point in time. See Global Climate Fund (2021). GCF Spotlight Asia-Pacific.

The Mongolian Green Finance Corporation (MGFC) is the first GGGI-initiated NFV that is fully capitalized. The funding was provided by the GCF, the Government of Mongolia, and private banks in November 2020 (Box 2).

Many national environment funds were established in the 1990s to enable the flow of financial resources to environmental policy priorities.³¹ The experience with such funds is mixed; many of these funds did not manage to recapitalize and became unsustainable after their initial establishment.³² The current generation of national climate funds and related financial vehicles established to finance climate priorities, together with green growth and sustainable development priorities, can learn

from past experiences. A recent GGGI report contends that to overcome past weaknesses, NFVs need to (1) create stronger alignment between green climate funding and national priorities, (2) reduce barriers to access for smaller organizations without the capacity to directly access international climate finance, (3) achieve more rapid deployment of climate funds into projects in sectors of strategic national importance, and (4) expand the capital base for scale-up following the initial phase of the NFV.³³

Box 2 - Mongolia Green Finance Corporation

MGFC is a new joint public-private sector effort to create an NFV to overcome existing challenges in accessing affordable financing needed for low-emitting technologies in Mongolia. The MGFC aims to provide green, affordable, and gender-inclusive financing for households and businesses to enable them to switch to low-carbon technologies, to improve the policy environment, and to build the capacity and awareness of stakeholders. MGFC aims to become a critical instrument for effective and strategic financing of climate change mitigation policies and measures, thus supporting the Government of Mongolia (GoM) to achieve its NDC GHG emissions reduction targets and the National Green Development Policy (NGDP). MGFC reached its initial US \$50 million capitalization target in November 2020, thanks to funding provided by the GoM (\$18 million), domestic private banks (\$5 million), and the Green Climate Fund (GCF) (\$27 million). Significant co-financing was one of the main requirements of the GCF for an acceptable funding proposal and GGGI was tasked by the MGFC Steering Committee to secure co-investors.

MGFC Operational Structure

Reaching agreement on the capital structure required a considerable amount of careful engagement and communication with shareholders, as the design of the MGFC was unfamiliar to both the GCF and in Mongolia. The process took more than five years to advance from concept to establishment.

When placing the public-to-private involvement in NFVs on a spectrum with pure public as the starting point and pure private as the end point, MGFC would lie at the right-hand side because of strong private sector involvement. Nonetheless, the government is adequately represented through the Steering Committee and the capital structure to ensure that national climate goals, rather than commercial returns, are the priority of the fund. MGFC demonstrates that international climate finance can leverage the private sector. It is the first green bank funded by the GCF.

Source: GGGI (2021).

³¹ Examples from Asia and the Pacific include Bhutan Trust Fund for Environmental Conservation, established in 1991, and Thailand: Energy Conservation Promotion Fund, established in 1992. See Irawan S., Heikens A., Petrini K. (2012). National Climate Funds: Learning from the experience of Asia Pacific countries. UNDP.

³² Reasons for the unsustainability of such funds include the demand for conservation support exceeding initial estimates and endowment returns failing to keep pace with inflation. See GGGI (2019). Review of GGGI's Experience to Design and Operationalize National Financing Vehicles to Finance Climate and Green Growth Policy Implementation.

³³ Ibid.

3.1.3 Thematic Bonds

Thematic bonds are innovative financing instruments that use bond proceeds for environmental and social objectives aligned with the achievement of the 2030 Agenda for Sustainable Development. They are akin to common fixed-income bonds offering predictable returns for investors in the form of a fixed coupon in exchange for medium to long-term funding. These types of bonds include green bonds, social bonds, and sustainable bonds. Sub-categories also exist, for example, green bonds include climate bonds linked to climate mitigation (like solar and wind projects

The signing of the Paris Agreement in 2015 triggered the growth of the market for green and climate bonds in response to the need for global institutional investors to help address climate change and invest their capital according to sound environmental principles. Green bonds in Asia and the Pacific have recently become quite popular, although the annual amount of issuance was adversely affected by the pandemic in 2020 (Figure 6). Currently, there is a great potential for further growth as green bonds only represent a small portion of total public debts in most countries (Figure 7).

Box 3 - Fiji Sovereign Green Bond

The Fiji Sovereign Green Bond ("Fiji Green Bond") raised US \$46.5m (the target amount, being FJ \$100m) in 2017 and 2018. The proceeds were used to finance green projects under the Fiji Green Bond Framework in renewable energy and energy efficiency, resilience to climate change for highly vulnerable areas and sectors, clean and resilient transport, reducing pollution and greenhouse gas emissions, water efficiency and wastewater management, sustainable management of natural resources and eco-efficiency.³⁴

The Fiji Green Bond Framework was based on the International Capital Markets Association's (ICMA) Green Bond Principles and addressed their four key components: use of proceeds; project evaluation and selection; management of proceeds; and monitoring and reporting. A second-party opinion by Sustainalytics covering the Green Bond Framework and the framework's environmental credentials supported the bond issuance.

The Fiji Government reports projects' outcomes annually. By 2019, the total proceeds from bond issuance had been utilized. Ultimately, the Fiji Green Bond is projected to have delivered significant benefits for more than 129,000 Fijians, including the generation of 1.39m kilowatt hours of renewable energy, the reduction of CO_2 emissions by nearly 2,000 tonnes annually, the provision of access to 20,000 litres of treated water daily, the planting of some 2,000 trees and rebuilding of nearly 1,300 school buildings while 176 bridges were rehabilitated. Benefits were distributed to 33,000-plus students. The success of the two bond issues provides important guidance not just for future sovereign bond issuance but for any bond in the sustainable development (i.e. green, social, sustainability, blue, etc.) space, whether issued by governments or corporations.

Source: GGGI (2021).

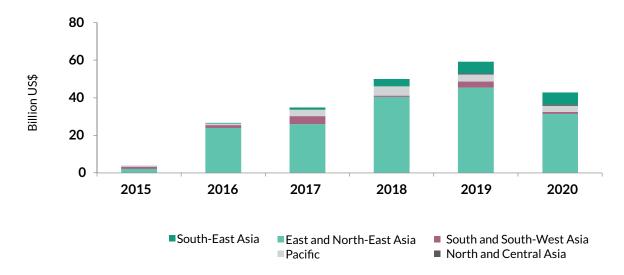
that reduce GHG emissions) and climate adaptation (such as infrastructure projects to protect against flooding). Thematic bonds enable fundraising from private, institutional, and commercial funds for financing green growth in developing countries (Box 3). While still emerging, the roadmap and framework for issuing green bonds and climate bonds in emerging markets is becoming increasingly clear and accepted by investors.



³⁴ Emose, G. (2021). Sustainability Bond for the Pacific Feasibility Study. UNESCAP Macroeconomic Policy and Financing for Development Division.

³⁵ Ibid.

Figure 6 – Green Bonds in Asia-Pacific of Sub-Regions from 2015 to 2020



Source: ESCAP based on data from Climate Bond Initiative (CBI) and International Capital Market Association (ICMA).

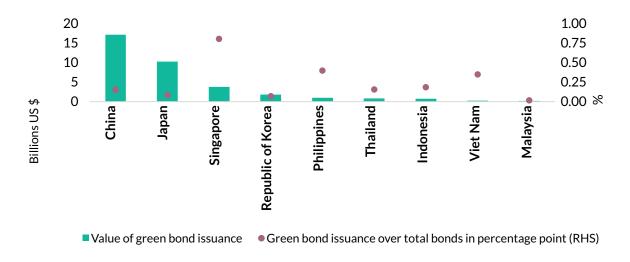
In addition, the development of voluntary standards and frameworks for green bonds continues at the regional and the international level. The Green Bond Principles (GBP), for example, initially established by a collection of investment banks and now administered by the International Capital Markets Association, are voluntary, best-practice guidelines for issuing green bonds that aim to promote greater transparency, disclosure, reporting, and integrity in developing green bond markets. The ASEAN Green Bond Standards created by the ASEAN Capital Markets Forum (ACMF) build on the ICMA GBPs and are useful to green bond issuers with a geographical or economic connection to the ASEAN region. Under the GBP, bond issuers must keep and make information available on their use of the proceeds from the bonds.

Credible independent verification is necessary to provide investors with confidence about the quality of the bonds and the use of proceeds (Box 4). According to a Climate Bond Initiative (CBI) investor survey, the overwhelming majority of respondents stated: "They would not buy a green bond if, at issuance, the proceeds were not clearly allocated to green projects." Also, the majority of respondents (55 per cent) said that they would "definitely sell a green bond if post-issuance reporting was poor".36



³⁶ Climate Bonds Initiative (2019). Green Bond European Investor Survey.

Figure 7 - Green bonds over total bonds in 2020 - Selected countries



Source: ESCAP based on data from Climate Bond Initiative (CBI) and Asian Bonds Online (ABO).

Box 4 - Verification Process

An external, or third-party verifier, is an independent consultant appointed to give a "second-party opinion" (SPO) on the requirements set by the Bond Principles. The role of the third party verifier includes (1) an independent opinion on alignment with Green Bond Principles/ASEAN Green Bond Standards, (2) an evaluation of environmental features of the projects intended for the use of proceeds; and (3) independent verification against a set of criteria, including environmental criteria and management process criteria, that are aligned with Green Bond Principles/ASEAN Green Bond Standards and (4) certification against a recognized green bond standard or label that defines specific criteria aligned with Green Bond Principles and ASEAN Green Bond Standards. In the region, Thai Rating and Information Services (TRIS) was advised by the Asian Development Bank (ADB) and became the first national verifier in ASEAN. It is anticipated that other countries will follow soon. The verifier's work will be based on the framework that the issuer has selected and is an essential building block of the bond issuance.

Verification Process



Source: Pongcharoenyong, S and Chantarklam, M. (2020)

A new kind of thematic bond that emerged during the COVID-19 pandemic is the COVID-19 Recovery Transition Bond (CRTB). CRTBs are bonds tailored and structured to the needs of countries impacted by COVID-19, supported by the government and a multilateral development bank to reduce some of the risk. They carry the same level of diligence as other green bonds to avoid greenwashing,³⁷ but focus on pandemic recovery and building back better.³⁸

3.1.4 Carbon Offsets

Carbon credits or offsets are yet another increasingly important climate finance instrument. With the significant increase in the number of stakeholders committing to net-zero emissions by 2050.

**Carbon offsets are increasingly proposed as a critical tool on the pathway to net zero. **9

They are generated by projects that reduce or remove emissions, such as afforestation. The market for offsets will help companies meet net zero goals by paying for emissions reduction projects elsewhere.³⁹ For the market to function, carbon offsets need to be certified to guarantee that they create actual measurable tonnes of removals or reductions in GHGs from the atmosphere. However, at present, the market for offsets is largely voluntary and

unregulated and many critics view them as providing companies with a license to pollute. 40 Therefore, a thorough verification process of companies generating carbon offsets through mitigation activities, such as avoidance of emissions (for example from methane capture at landfills) and sequestration of CO2 (such as reforestation; see Box 5) is essential to support the development of the offsets market. 41

As discussed below in Section 4, the Paris Agreement provides a robust and ambitious basis for the use of carbon offsets and markets through Article 6, which allows parties to the UNFCCC to use international trading in emission allowances to help achieve their emissions reduction targets. The rules of implementation of the article have not yet been agreed upon and are expected to be a critical issue in the COP 26 negotiations. If an agreement is reached, all countries will be able to buy and sell carbon offsets from each other to meet their obligations under the Paris Agreement. This will boost the role of carbon offsets as globally tradable assets, and entities initiating projects in developing countries that generate carbon units will be able to use them to raise finance.



³⁷ Greenwashing is misrepresenting the extent to which an investment or green project is environmentally friendly or sustainable.

³⁸ ADB (2020). Green Finance Strategies for Post-COVID-19 Economic Recovery in Southeast Asia.

³⁹ Hook L. and Nauman B. (2021). Carney defends plans for carbon offsets market with oversight board. FT.⁴⁰ Hodgson C. and Nauman, B. (2021). Carbon offsets: A license to pollute or a path to net zero emissions? FT.

 ⁴⁰ Ibid.
 41 Standards for verification processes include the UNFCCC Certified Emissions Reductions (CER), the Voluntary Emission Reduction – Gold Standard (GS), VERRA Verified Carbon Unit (VCU). In Australia, there is the Australian Carbon Credit Unit (ACCU), and in the US there is an American Carbon Registry. These standards operate in both regulatory compliance markets such as the EU ETS and voluntary markets.
 In many jurisdictions, such as Australia, companies subject to carbon caps can purchase voluntary units to meet their obligations.

Box 5 - Nature-based Solutions (NBS)

Nature-based Solutions are 'actions to protect, sustainably manage, and restore natural or modified ecosystems to help mitigate climate change', such as maintaining forest ecosystems. Under the Paris Agreement, carbon offsets from some NBS can now be used in regulated carbon markets and it has been suggested that approximately two-thirds of the voluntary carbon market will be sourced from NBS.⁴² One such NBS is the April Salumei Sustainable Forestry Project in Papua New Guinea. Developed as part of the REDD+ mechanism and verified in accordance with the Climate, Community and Biodiversity Standards, it has sold carbon credits and distributed benefits to landowners.⁴³

Forests play a critical role in the climate cycle. Forests absorb carbon dioxide from the atmosphere — thus acting as natural sinks for anthropogenic emissions — but they release carbon dioxide when cleared or degraded. Reducing deforestation and degradation can therefore significantly enhance efforts to mitigate climate change. The basic concept of REDD+ is that it addresses climate change by incentivizing people in developing countries to protect and improve forest management.

Other emerging NBS include blue carbon ecosystems, such as mangrove forests, seagrass meadows, and tidal salt marshes. Coastal blue carbon ecosystems contain more sequestered carbon per square metre than almost any other ecosystem, including tropical forests. The large stock of forest and blue ecosystems within the Asia Pacific region, particularly in LDCs and SIDS, mean that NBS play an increasingly important role in stimulating low carbon and climate resilient financing.

Source: GGGI (2021).

3.1.5 Debt-For-Climate swaps: What is their potential in various Asian countries?

Finally, debt-for-climate swaps are another financial instrument that could offer a feasible option for countries in Asia-Pacific at risk of debt distress. Currently, 11 Asia-Pacific countries are at high risk of debt distress: Afghanistan, Kiribati, Lao PDR, Maldives, Marshall Islands, Micronesia (Federated States of), Papua New Guinea, Samoa, Tajikistan, Tonga, and Tuvalu.⁴⁴

A debt swap entails a scenario in which a creditor forgives debt owed to them in exchange for a commitment by the debtor to use the outstanding debt service payments for a particular purpose. As such, debt-for-climate swaps mobilize resources for climate mitigation while reducing the debt burden of

developing countries. In exchange for debt forgiveness, the debtor government commits to invest the accrued savings in climate-related expenditures. In light of the fiscal constraints discussed earlier, debt-for-climate swaps may be able to assist in the post COVID-19 era. In the wake of the economically devastating pandemic, debt-for-climate swaps hold the potential to increase debt sustainability for countries in the region while simultaneously promoting funding for green and climate projects. Box 6 provides an example of a recent debt-for-climate swap.

⁴² Taskforce on Scaling the Voluntary Carbon Market (TSVCM).

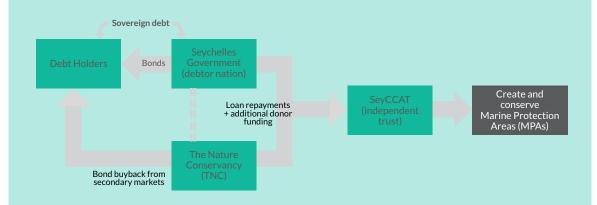
 $^{^{\}rm 43}$ The Climate, Community & Biodiversity Alliance (n.d.). CCB Standards.

⁴⁴ World Bank (2021). COVID 19: Debt Service Suspension Initiative.

Box 6 - Seychelles Debt Swap

In 2018, the Republic of Seychelles agreed to protect one-third of its marine and coastal area in exchange for a reduction of its sovereign debt. This first-ever climate adaptation debt restructuring was brokered between Paris Club creditors and the Seychelles Government and converted \$21 million of Seychelles' debt into investments in coastal protection and adaptation.

Seychelles Swap



Source: The Nature Conservancy (2018) Seychelles Achieves 30 Percent Marine Conservation Commitment.

The Nature Conservancy (TNC) acquired the outstanding Seychelles' bonds from the existing bondholders and raised additional funding from private donors. In return, Seychelles promised to repay the loans to the TNC to a specially created Seychelles Conservation and Climate Adaptation Trust (SeyCCAT). The financing will help implement a Marine Spatial Plan for the Seychelles Exclusive Economic Zone — an area 3,000 times its landmass. Furthermore, the deal will conserve 400,000 km2 of its marine area within the next five years.⁴⁵



⁴⁵ The Nature Conservancy (2018). Seychelles Achieves 30 Percent Marine Conservation Commitment.

While debt swaps can be a win-win arrangement for debt relief and climate action, the time and costs to negotiate such a swap can be high. Furthermore, it is important to note that the concept of debt swaps is not new. The case of Bolivia in 1987 is an example of an early debt-for-nature swap and demonstrates the complexities and considerations needed for such a swap.46 In Bolivia, the indigenous community within the protected areas was never consulted on the swap agreement, which negatively impacted their traditional activities and livelihoods. Lessons learned from past swaps should be considered by countries interested in applying this option, including the following:47



- Conduct consultations with all relevant stakeholders to understand their views and seek to ensure strong political support for a debt swap deal.
- To facilitate the negotiation process among the various stakeholders, a debt-for-climate swap term sheet should be designed to encapsulate the main terms and conditions of the swap deal. Similar to a term sheet for an investment deal, a debt-for-climate swap term sheet would reduce the likelihood of misunderstandings or unnecessary disputes among the stakeholders that could delay agreement on the deal.
- Adopt an effective monitoring, reporting, and verification (MRV) framework. MRV frameworks could be based on Sustainability Performance Targets (SPTs) and Key Performance Indicators (KPIs) similar to those in the ICMA Sustainability-Linked Bond Principles, appropriately adapted to the projects funded by the swap.⁴⁸

Projects selected for funding by the debtfor-climate swap should be selected by debtor countries based on their NDCs. 49 Projects should be in the national interest and should be agreed by all the domestic stakeholders, including indigenous and local communities.

Funding provided by the debt swaps should be in addition to the creditor governments' ODA commitments.

The above-mentioned financial instruments and mechanisms are all part of the toolbox of available green and climate finance options. The challenge is to select the most suitable instrument or set of instruments at the right time and under the right circumstances. The following section reflects on how to assess investment readiness and identify different investment interventions using a matrix approach developed by GGGI.

⁴⁶ In this case, the environmental NGO Conservation International bought US \$650,000 of Bolivian sovereign debt for \$100,000 in exchange for the government providing legal protection to the Beni Biosphere Reserve. An additional \$250,000 was allocated to management support within the reserve. See Shabecoff, P. (1987). Bolivia to Protect Lands in Swap for Lower Debt. New York Times.

⁴⁷ UNESCAP (2021). Debt for climate swaps as a tool to support the implementation of the Paris Agreement. MPFD.

⁴⁸ The use of KPIs to evaluate sustainable strategies has been discussed mostly in the business context. See Hristov, I. and Chirico, A. (2019). The Role of Sustainability Key Performance Indicators (KPIs) in Implementing Sustainable Strategies. MDPI.

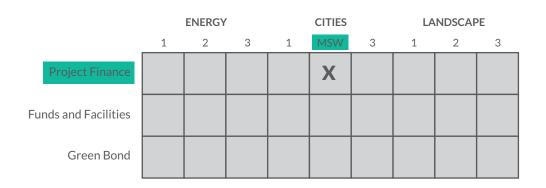
⁴⁹ Volz, U., Akhtar, S. Gallagher, KP., Griffith-Jones, S., Haas, J., and Kraemer, M. (2021). Debt Relief for a Green and Inclusive Recovery: Securing Private-Sector Participation and Creating Policy Space for Sustainable Development. BU Global Development Policy Center.

3.2 Choosing the Right Financing and Investment Instrument

While considering different available financing options, it is important to distinguish between revenue-generating and non-revenuegenerating projects. Clean energy renewables projects are often commercially viable and can attract private capital. Some barriers and challenges remain in the energy space in developing countries, but solar energy is particularly gaining momentum. Water, waste management, and public transportation have traditionally been the responsibility of national and/or local governments which have drawn on public budgets for financing. More recently it has been possible for private companies to engage and create business models that deliver services in this sector. However, a blend of public and private financing is typically needed. Natural capital projects are not generally commercially viable and concessional finance or grants may be required to finance such projects.

GGGI suggests that countries use a Green Solution Matrix as a starting point to identify an investable project pipeline for prioritization. The matrix is a simple diagram that allows the decision makers to identify key sectors, for example, energy and cities, which can then be broken down more specifically as needed, such as to urban transport or urban mass transit. The matrix is also organized by types of financial instruments including project finance, funds, and green bonds, and these categories can be further specified as equity, quasi-equity, debt, etc. The matrix is flexible and can be as specific or as high level as needed for prioritization and decision making (Figure 8). The Green Solutions Matrix can be used as part of countries' planning process to identify priority sectors, projects, budget allocation and/or policies which apply to a specific sector and may need adjustment. The type of financial instrument to be used will depend on the sector. For instance, in maturing green sectors, such as solar or wind energy, the recommended financial mechanism would be based on project-level standardization and systematic portfolio-level risk mitigation.

Figure 8 – Green Solution Matrix



Source: GGGI (2021).

A green solution matrix is a simple countryand sector-specific tool which allows an assessment of the suitability and adequacy of various financial instruments for a specific sector in a specific country. The main outcome of the process is to identify the right financing instruments for different investments, taking into account the country's readiness in terms of enabling policies, technology risk, and pipeline of investable projects. The choice of financial instruments will also depend on the business entity's nature, the phase of project preparation, and the stage of business maturity (i.e. early stage, start-up, etc.). Pre-development project costs also have implications for the choice of financial instruments. Because of comparatively high project preparation costs relative to the project size, small projects are likely not a good fit for project financing but may be a better fit for programmatic funds and facilities, such as grant funding or blended finance. Depending on the maturity of the business segment, various financial instruments can be used to enable and catalyze the investment and bring the sectors to the commercial stage, as shown in Figure 9.

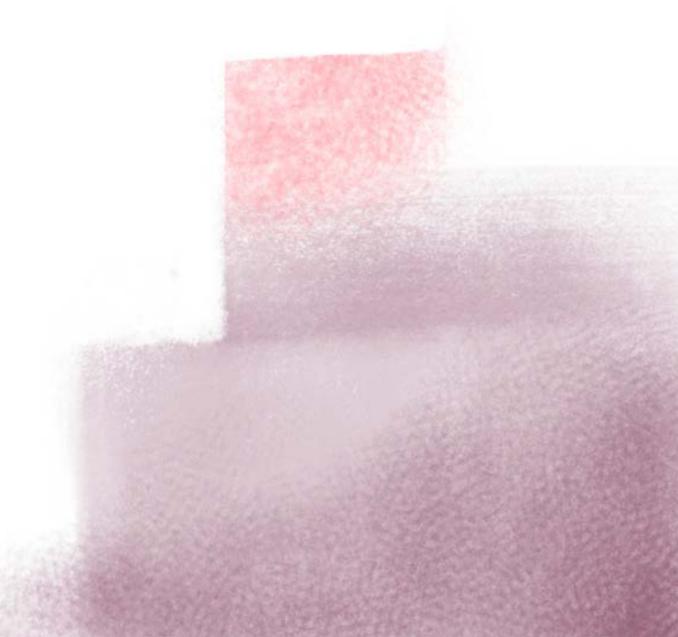
Figure 9 - Stages of Financing



Source: GGGI (2021).

Despite the emergence of these green and climate financial instruments and mechanisms, underinvestment by the private sector in climate projects in the region, particularly among the LDCs and SIDS, remains a challenge. This is a result of the relatively high risks of these projects, both real and perceived, including political, regulatory, technology, and credit risks. Risks can arise from perceptions of an unstable political environment, the lack of enabling policies, uncertainty in investing and testing of new technologies which are not well understood, immature national financial

conventional markets. and investment practices that have been unable to adequately mitigate these risks to the satisfaction of many investors. The use of concessional and blended finance is an important consideration to enable innovation and curb perceived risks. In order to reach low-income countries' green growth objectives, it will be necessary to identify and scale up new approaches to project structuring. In this regard, innovative concessional and blended finance together with advanced risk mitigation mechanisms can be effective for attracting the required funds from commercial and institutional investors.



3.3 | Concessional and Blended Finance

Despite the increasing demand for green projects, many projects in the region, particularly in the SIDS and LDCs, fail to meet established investment risk management criteria, and as a result the required finance is not yet flowing to projects in many vulnerable countries. As different green business models in the region are not yet proven, investors perceive implementation risks to be too high. According to a 2019 GGGI report, the risk appetite of finance institutions in the region remains limited, with only three of 12 development finance institutions surveyed willing to offer any form of credit enhancement and pricing risk in commercial terms. 50 In highrisk situations, such as LDCs and conflictaffected countries, and in pioneering projects or those reliant on new technologies, local institutions lacked the financial capacity and risk tolerance to support green and climate projects, even those with great potential for development impacts. As outlined earlier, the levels of real and perceived risks in the region create a bankability gap between supply and demand for green and climate finance at the project level. In these environments, it becomes extremely challenging to raise capital.

As noted earlier, one pathway to help close this gap is through the use of concessional and blended finance. Concessional and blended finance can reduce investor risk and increase investor returns in early demonstration projects. For example, recently the Australian Government together with the ADB launched the Australian Climate Finance Partnership (ACFP), a concessional finance facility supporting climate action in the Pacific and Southeast Asia. Donor institutions may be willing to offer developing countries and projects concessional finance to accelerate green

investments. Blended finance solutions include combining tailored concessional finance sourced from governments or other public sources with commercial finance from the private sector. This is often done using a multistakeholder partnership in which investment structures include commercial standardization that appeals to the mandates of institutional investors. Blended finance can make projects viable through a variety of methods, for example by reducing risks and increasing commercial returns to investors and improving affordability for low-income consumers. This strategic use of development finance can also include credit guarantees and subordinated debt that can buffer potential losses for senior lenders by lowering the number of senior claims on assets.

Blended finance is critical for unlocking and scaling up private investment in the Asia-Pacific region and accelerating development, particularly in low-income countries. Additionally, it allows for innovation and supports measured risk taking in the development of new solutions which can be brought to market, tested, and scaled once proven. The number and size of blended finance initiatives in Asia have increased steadily in recent years, with US \$161 billion in total capital directed towards sustainable development outcomes, 15 per cent of which is designated for climate action, 15 per cent towards sustainable cities and 31 per cent for affordable and clean energy.⁵² This trend is expected to continue in coming years. The target countries often have both the greatest need for market creation and the most imposing barriers to private sector development. The role of concessional and blended finance can be gradually reduced as domestic markets gain the capacity and maturity to support maturing businesses.

⁵⁰ GGGI (2019). Market Assessment Report.

⁵¹ ADB (n.d.) Australian Climate Finance Partnership.

⁵² Convergence (2021). Blended Finance & Project Finance.

4. Post COVID-19 Trends

4.1 Emerging Regulatory Frameworks and Taxonomies

Although climate finance policies and instruments have become more widespread, this is not uniform across the region and many policymakers have only just started to consider the appropriate regulatory framework needed to deliver their policy objectives and to catalyze green and climate finance. Yet internationally, a number of countries and regions have seized the opportunity offered by the pandemic to launch new green recovery plans. These include the European Green Deal, with the dual ambition of tackling pandemic needs and long-term sustainability goals, including no net

emissions of greenhouse gases by 2050 and economic growth decoupled from resource use. Furthermore, the impact of the EU Green Deal is likely to lead other major emitters to take more ambitious climate action. For example, the proposed inclusion of a carbon border adjustment mechanism for selected sectors to reduce the risk of carbon leakage in the EU (see Box 8) will provide incentives through carbon tariffs. Likewise, in the Asia Pacific region, South Korea has launched a new green recovery framework.⁵³

Box 7 - EU Carbon Border Adjustment Mechanism

At the end of 2019, the European Union proposed the European Green Deal, which includes a statement that "should differences in levels of ambition worldwide persist, as the EU increases its climate ambition, the Commission will propose a carbon border adjustment mechanism (CBAM), for selected sectors, to reduce the risk of carbon leakage." A CBAM is a tariff mechanism intended to reduce carbon leakage and protect domestic industry from foreign competition in countries with weaker or no carbon pricing. A CBAM is only appropriate for countries with a carbon pricing system, either through a domestic carbon tax or an emissions trading scheme. The European Union has the most significant carbon pricing program under its Emissions Trading System (ETS).⁵⁴

On 14 July 2021, the European Commission released its detailed proposal for the CBAM, as part of its wider package, that aims to reduce the EU's GHG emissions by 55 per cent compared to 1990 levels by 2030. The key objectives of the CBAM include limiting emissions leakage; protecting against reduced competitiveness of domestic industries; incentivizing foreign trade partners and foreign producers to adopt measures comparable/equivalent to the EU's; and yielding revenue that can be used to fund investments in clean technology innovation and infrastructure modernization or as international climate finance."

The CBAM proposal covers imported goods from energy-intensive sectors that are considered to be at high risk of carbon leakage, and so will particularly impact the cement, electricity, fertilizer, iron, steel, and aluminium industries. The proposed commencement date for the full CBAM system is 1 January 2026. However, an initial three-year transitional or pilot phase is proposed for the CBAM, starting in 2023 and finishing at the end of 2025.

Source: GGGI (2021).

⁵³ Stangarone, T. (2020). South Korea's New Green Deal. The Diplomat.

⁵⁴ Ireland, R. (2021). The EU Carbon Border Adjustment Mechanism: An Update. Regulating for Globalization.

 $^{^{\}rm 55}$ European Commission (2020). President Ursula von der Leyen, Legislative proposal on the CBAM.

It is essential to recognize that climate finance does not operate in a vacuum and is constantly affected by new technologies and requires a robust legal and regulatory framework to function successfully. New technologies such as advanced enzyme technologies-based biorefineries, molecule-level plastic recycling plants, and next gen bio-packaging technologies and solutions with added circularity will be key in mobilizing industry for a clean and circular economy as outlined in the EU's Green Deal. 56 Yet to support the progression of green and climate financing and the adoption of new green technologies, policymakers must identify regulatory and policy solutions that can simultaneously advance multiple objectives.

In addition, the EU Green Deal also recognizes green taxonomy as an important aspect and includes the development of an EU Green Bond Standard. The EU Taxonomy Regulation sets up a classification system for environmentally sustainable economic activities and under

this regulation, for an economic activity to be considered environmentally sustainable, it has to: (i) substantially contribute to one of the six environmental objectives determined under the EU Taxonomy Regulation, (ii) do no significant harm to any of the other environmental objectives, (iii) be carried out in compliance with minimum safeguards, and (iv) comply with technical screening criteria. 57 With the increasing standardization of global climate business models and practices, and a shrinking appetite for risk amongst investors due to the COVID-19 pandemic, green instruments and business models have undergone a process of rationalization and consolidation. The natural business cycle process is accelerating and in a mature business cycle, only the most feasible green business models will be sustainable in the long-term. As a result, these emerging frameworks and taxonomies are likely to increasingly impact key investors and subsequently access to green and climate finance in the Asia Pacific region.

4.2 Cooperative Approaches to Carbon Emissions Trading and ITMOs

In addition to UNFCCC emissions trading mechanisms such as the Clean Development Mechanism (CDM), under Article 6 of the Paris Agreement, all nations are encouraged to negotiate cooperative approaches to achieve their NDC's through the use of internationally transferred mitigation outcomes (ITMO).58 An ITMO is an agreement to transfer part of a country's NDC to another country and is negotiated by the parties themselves. For example, country A and country B could enter into an ITMO for country A to supply country B with its excess carbon offsets at a price agreed by the parties. Importantly, all ITMO agreements must apply robust carbon accounting standards and adjust each country's NDCs to stop double counting. Although the rules governing ITMOs are not fully agreed and will be debated further at the upcoming COP26 in Glasgow at the end

of October 2021, the advent of ITMOs has the potential to catalyze significant growth within international emissions trading schemes. By facilitating countries to sell their carbon offsets to other countries, ITMOs have the potential to enable both countries to meet their NDCs, create demand for the additional carbon offsets produced over a country's NDC, and provide additional funding from the sale of the offsets. In addition, countries can also agree to allow the private sector to provide the carbon offsets under the ITMO. Hence the establishment of ITMOs will foster the growth of carbon mitigation projects from the private sector to generate carbon offsets and improve the bankability of the offset projects. Moreover, potentially small carbon projects could be also bundled together to help access much-needed capital (see Box 9).

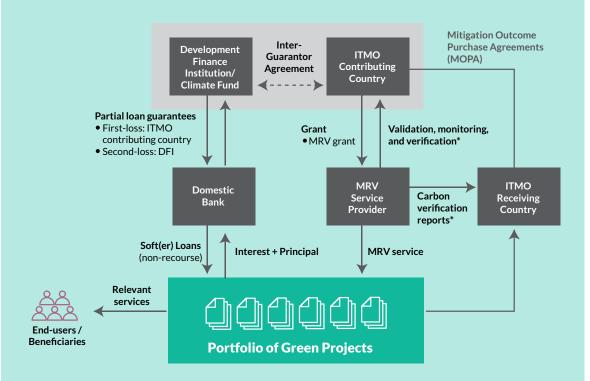
⁵⁶ European Commission (2019). European Green Deal. Communication to the European Parliament, The European Council, The Council, The European Economic and Social Committee, and the Committee of the Regions.

⁵⁷ European Commission (2020). Usability Guide: TEG Proposal for an EU Green Bond Standard.

⁵⁸ UNFCCC, Paris Agreement, Article 6.

Box 8 – Securitized Internationally Transferred Mitigation Outcomes

Past attempts to bundle small carbon projects have been challenging and generally not bankable at the project level. Developments such as the potential emergence of the securitized ITMOs at the portfolio level provide an opportunity to feed much-needed capital into green projects in the portfolio. Securitized ITMOs at the facility or fund level blend international sources of climate finance to unlock domestic capital. The investment structure below mobilizes multi-layered blended financing, unlocks domestic capital for green and climate investments, and enables small and medium-sized projects to access non-recourse project finance by linking the subordinated credit guarantee layer (such as first-loss limits or partial portfolio enhancement) to the securitized carbon offset cash flow. This additional credit guarantee enables the domestic bank to share risks and support projects. Project developers received softer loans on non-recourse terms.



Securitized ITMOs as credit guarantees are particularly useful for optimizing budgets for development while allowing guarantors to leverage their balance sheets more efficiently. In addition, the investment structure integrates project level Monitoring, Reporting and Verification tools to the portfolio management and results-based metrics.

Source: GGGI (2021).

4.3 Pivot to Green Fuels and Carbon Capture and Storage

The impact of new and emerging technologies are also likely to impact climate finance post COVID-19 as they compete for investors. Two such technologies include the pivot to green fuels and the increasing use of Carbon Capture and Storage (CCS). The current global hydrogen market is dominated by fossil fuels while renewable hydrogen captures 0.1 per cent of the market. With 6 per cent of global gas consumption and 4 per cent of global coal consumption used to produce hydrogen, the sector is responsible for around 800 million tons of CO2 emissions per year. While the cost of green hydrogen production is currently three times higher than that of fossil fuel, the International Energy Agency (IEA) expects the cost to fall by 30 per cent by 2030 coupled with declining costs of renewables (50-75 per cent of the total production cost) and the scaling up of hydrogen production (the cost of electrolyzers, which represents 20-40 per cent of production costs, will decline with mass production).

Molecules of green hydrogen are identical to those of grey hydrogen. For this reason, once hydrogen has been produced, a certification system is needed that allows end users and governments to know the origin and quality of the hydrogen. The schemes used to track origin are usually referred to as providing a "guarantee of origin". The Green Gas Certification Scheme is a policy instrument to promote the production and consumption of green gases such as BioCNG, biomethanol, and biohydrogen.

The following figure (Figure 10) presents a set of measures and mechanisms to support green fuels to reach price parity.

Figure 10 - Measures to Support Green Fuels

Enabling BioCNG, biomethanol bio/green hydrogen and other sustainable Green Fuels

Feasibility advancement

Gas grid tariff price adjustments, logistics solutions and/or enhanced Green Fuels offtake arrangements are available tools to enhance project level feasibility.

Access to finance

Support the capacity and access to finance of the selected private sector partnerships. Possible both equity and debt strategies with tech transfer components to be assessed.

Technology risk sharing

Performance guarantees and other contractual mitigation tools to be discussed. Best available technology mapping and business case level risk matrix to be formed.

Industry cluster for scale

Advanced technology transfer sandbox support mechanisms focus on anchor demand for Green Fuels to close the cost gap and ensure offtake.

Offtake risk mitigation

Bankable Green Fuel offtake arrangements to be constructed including possible public procurements. The current offtake-risk in Green Fuels is significant.

Green Gas Certificates

Innovate in Green Gas Certification to increase project level feasibility.

Collaborative Green Fuel SANDBOX

Source: GGGI (2021).

Several market support mechanisms can also be deployed at the Green Fuel Sandbox such as:

Policy instruments: Governments can set out certain supporting schemes on a pilot level to verify the business model.

Financial mechanisms: the framework enables various financial mechanisms, ranging from grants to seed equity capital.

Capacity building/Business model piloting under a cluster model

Enhance demand by developing an anchor purchaser for the new fuel

Technology and/or knowledge transfer and open-door piloting

As of today, the advanced Green Fuel business cases are not yet proven, technology risk is high, business-to-business offtake arrangements are unclear and commercial finance is often not an option. Yet green hydrogen has the potential to reach 10 million tons by 2030, capturing up to 10 per cent of the market.⁵⁹

Another technology growing in importance is Carbon Capture and Storage (CCS). The Intergovernmental Panel on Climate Change (IPCC) Report on Global Warming of 1.5 observed that CCS can play a vital role in climate mitigation and the need for urgent action. CCS involves capturing CO2 from industrial processes and transporting it to suitable sites for safe, long-term deep underground storage within geological reservoirs. As pressure and temperature increase with depth, at roughly 800 meters below the earth's surface, conditions are such that CO2 enters what is known as a 'supercritical state'. It is still a gas but behaves

with a liquid-like density and viscosity, allowing the CO2 to be trapped within suitable geological formations and to be permanently stored. ⁶¹

The technologies that underpin CCS are well developed and commercially available, having been used by the oil and gas industry for decades. CCS is being investigated in a number of countries in the region and implemented around the world because it has the potential to play a critical role in reducing GHG emissions from industry and addressing climate change. The Asia-Pacific region is increasingly seen as one the most active CCS regions in the world, with numerous large-scale facilities either operating or in various stages of development. 62 However, for CCS to operate effectively and access finance, a strong global regulatory framework is necessary. Yet to date, progress in this area continues to be slow and several jurisdictions are yet to examine their legal frameworks, creating uncertainty for potential CCS investors.63

⁵⁹ Fitch Solutions (2021).

⁶⁰ Intergovernmental Panel on Climate Change (IPCC) (2018). Special Report on Global Warming of 1.5.

⁶¹ University of Melbourne (2021). Is Carbon Capture and Storage enough to save the planet?

⁶² Global CCS Institute (2019). The Global Status of CCS: 2019. Australia.

⁶³ Ibid.

4.4 | Evolving Disclosure and ESG Reporting

Financial market efficiency relies on timely and accurate information regarding risk exposures. Increasingly climate risks and environmental, social, and governance (ESG) themes influence the decisions of asset managers, banks, insurance companies, and financial regulators globally. Financial markets, regulators, and civil society are increasingly demanding information about how climate risks are managed and insisting on transparent disclosure of these risks. While climate risk and ESG disclosure is still primarily a voluntary undertaking, this is changing as regulators shift to more prescriptive measures. For example, financial market participants in Europe now have sustainabilityrelated reporting obligations as of March 2021.64 At the UNFCCC climate summit in Glasgow in late 2021, the UK government indicated that it will make climate risk disclosure a focus of its presidency of COP26.65

There is also growing acknowledgment of the need to promote the alignment of disclosure globally, based on the Task Force on Climaterelated Financial Disclosures (TCFD) framework and the collective will to establish concrete pathways to mandatory admissions of climaterelated production impacts. For example, binding TCFD-based disclosure is one of the targets of the private finance agenda for COP26.66 Given these proposals, governments and regulators in the region must prepare to issue guidance on climate-related reporting and implement climate disclosure policies consistent with the TCFD where possible. Business and investors must prepare to provide the information required. There are positive signs that this is already starting to happen, with the emergence of several reporting frameworks and a significant uptake both internationally and in the region by some of the most influential investors (Figure 11).

To implement these measures, earmarked resources and the establishment of a dedicated unit to mainstream TCFD guidelines into regulations is recommended. Additionally, financial regulators can increase capabilities in climate risk modelling and analysis skills to accurately measure and predict risks which can impact financial stability.



⁶⁴ Disclosure Regulation EU 2019/2088 on sustainability-related disclosures in the financial services sector came into force at the end of 2019, and applies from March 2021.

 $^{^{65}}$ Mark Carney, Building A Private Finance System For Net Zero, Priorities for private finance for COP26.

⁶⁶ Rust. S. (2020) Carney lays down investor portfolio alignment metric challenge. IPE.

Figure 11 - Climate Risk Reporting Frameworks

Task Force on Climate-related Financial Disclosures	The Financial Stability Board initially commissioned the TCFD with the principal objective to ensure that investors and lenders have sufficient information about how climate change could affect their actual and proposed investments. TCFD's climate-related financial disclosures are structured around four thematic areas; Governance, Strategy, Risk Management, and Metrics and Targets.
Global Reporting Initiative (GRI)	GRI is an international independent standards organization whose Sustainability Reporting Standards are the most widely used standards for reporting on ESG impacts globally and have been developed through multi-stakeholder contributions. GRI Standards support both comprehensive reports and selected disclosures. GRI provides disclosure standards for companies to communicate their impact on critical sustainability issues, including climate change, human rights, and social and governance matters.
Principles for Responsible Investment (PRI)	The PRI were developed by an international group of institutional investors reflecting the increasing relevance of environmental, social, and corporate governance issues to investment practices and was convened by the United Nations Secretary-General. The six principles include incorporating ESG issues into investment analysis and decision-making processes and the disclosure of ESG issues, including climate risks by the entities in which members invest.
Principles for Responsible Banking (PRB)	The Principles for Responsible Banking are a framework for ensuring that signatory banks' strategy and practice align with the Sustainable Development Goals and the Paris Climate Agreement. The principles result from a partnership between the United Nations Environment Programme Finance Initiative (UNEPFI) and banks across the world. The Principles provide the framework to embed sustainability at the strategic, portfolio, and transactional levels of signatory banks and across all business areas.
Value Reporting Foundation (VRF)	In June 2021, in response to calls for greater simplification, the International Integrated Reporting Council (IIRC) and the Sustainability Accounting Standards Board (SASB) merged into the VRF. Although the VRF now operates with a unified strategy, it maintains established tools including the Integrated Reporting Framework and SASB Standards, in use in more than 70 countries globally.
Climate Disclosure Standards Board (CDSB)	CDSB is an international consortium of business and environmental NGOs that aims to align mainstream corporate reporting models and account for natural capital within financial reporting. The CDSB Framework sets out an approach for reporting environmental and climate change information in mainstream reports, such as annual reports.

5. Conclusions and Recommendations

Policy measures to confront the COVID-19 pandemic are increasingly colliding with ongoing efforts to combat climate change. Furthermore, although the flow of green and climate finance in Asia and the Pacific is growing, many governments in the region still lack the resources and policies needed to undertake the necessary actions to address climate change and recover from the COVID-19 pandemic despite the advent of the green and climate finance instruments and mechanisms outlined in the report. The amount of climate financing used in the Asia-Pacific region is increasing year-on-year. According to the Climate Policy Initiative, 67 countries in North-East Asia, South-East Asia and the Pacific received 41 per cent of global climate finance flows or US \$238 billion in 2017-2018. However, estimates suggest that global investment must further rise in order to meet the goal of limiting global temperature warming to less than 20C. In addition, the required finance is not flowing to projects in many vulnerable countries due to the mismatch in the level of investor risk appetite and bankable projects. The pandemic's devastating economic impacts provide a critical window of opportunity to re-examine current policies and practices to transform green and climate finance in the region and shift away from business as usual towards a greener future.

Mobilizing green and climate finance requires balancing and integrating numerous competing policy choices and financing options, and success is often determined by a complex mix of regulatory and financing arrangements in different sectors. Although there are barriers to operationalizing a strong regulatory framework in many countries in the region due to established economic structures, political factors, and institutional capacity, coherent policies will play a vital role in the transition to a low-carbon, climate-resilient future by incentivizing investors to direct capital flows to

green and climate projects. A robust regulatory framework will be crucial for stimulating low carbon and climate resilient financing and fostering a sustainable recovery in the wake of the COVID-19 pandemic.

The report argues that the two key issues that need to be addressed are; first, a coherent climate policy framework and; two, access to blended finance for early stage and highrisk projects. Mainstreaming climate change into national development policies, including national budgets with the SDGs and NDCs together with better national and regional coordination, is essential to expanding climate finance. Coherent policies are crucial to support the use of the appropriate finance instruments at the point in the investment cycle to catalyze private sector investment.

Different climate finance instruments must be supported with blended finance to better galvanize private sector capital involvement.

All stakeholders with the collective imperative to promote green and climate finance need to work together to first dismantle the interlinked regulatory, institutional, and market impediments to green and climate finance investment in the region.

⁶⁷ Buchner, B., Clark, A., Falconer, A., Macquarie, R., Meattle, C., Tolentino, R., and Wetherbee, C. (2019). Global Landscape of Climate Finance. Climate Policy Initiative.

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