ESCAP FINANCING FOR DEVELOPMENT SERIES NO.6

A Call to Action:

Developing Sustainable Capital Markets, Financing Energy Transitions, and Building Project Pipelines

ESCAP Economic and Social Commission for Asia and the Pacific

IGES RCC Asia and the Pacific Collaboration for Climate Action

ADB

Climate Bonds Initiative

IRENA International Renewable Energy Agency

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United Nations publication
Sales No.: E.25.II.F.7
© United Nations 2025
PRINT ISBN: 9789211543117
PDF ISBN: 9789211587807
Print ISSN: 2522-798X
Online ISSN: 2522-7998

Cover design: Dilucidar

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This publication was led by ESCAP and jointly prepared with the Asian Development Bank (ADB), Climate Bonds Initiative (hereafter Climate Bonds), the International Renewable Energy Agency (IRENA) and the United Nations Framework Convention on Climate Change Regional Collaboration Centre for Asia and the Pacific (UNFCCC RCC Asia-Pacific).

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This publication should be cited as: ESCAP, UNFCCC RCC Asia-Pacific, ADB, Climate Bonds and IRENA (2025). *A Call to Action: Developing Sustainable Capital Markets, Financing Energy Transitions, and Building Project Pipelines*. ESCAP Financing for Development Series, No. 6. Bangkok: ESCAP.

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FOREWORD

The Asia-Pacific region stands at a critical juncture. Faced with a highly uncertain global economic environment, rising trade protectionism, and weakening multilateral cooperation, financing challenges have deepened the already significant financing gap required to meet the Sustainable Development Goals (SDGs). The capacity to mobilize adequate and long-term finance on affordable and appropriate terms has not kept pace with the scale or urgency of the region's development needs. Even before the recent wave of global disruptions – including the COVID-19 pandemic, rising geopolitical tensions and accelerating climate change impacts– Asia and the Pacific was already off track to achieve the SDGs. The widening SDG financing gap, now estimated at between $2.5 trillion and 4.0 trillion annually for developing countries globally, underscores the urgency of action. To address these challenges, the region needs to transform its financing approaches.

Ten years after the Addis Ababa Action Agenda, the road to 2030 and beyond remains difficult but navigable, provided that we act collectively and with ambition, urgency and resolve. The Fourth International Conference on Financing for Development (FFD4) in Seville in July 2025 aims to reaffirm the global commitment to mobilizing and aligning all sources of finance for sustainable development. The conference calls for systemic reform of the international financial architecture and the creation of new development pathways.

This sixth edition of ESCAP's biennial Financing for Development series supports the conference's call to action, and offers a regional lens from the perspective of Asia and the Pacific, with practical, forward-looking recommendations. This report provides critical insights into systemic barriers, highlighting innovative solutions and actionable pathways to strengthen financing strategies and ensure they are responsive, resilient and fit to meet the challenges of a rapidly evolving global context.

Part I of the report presents the policy recommendations shared at a high-level regional consultation convened by ESCAP in December 2024 in the lead-up to FFD4. It explores four critical areas for the region: strengthening domestic resource mobilization, accelerating the flow of private finance, addressing public debt sustainability, and tackling new and emerging challenges, including fragmentation in the financing-for-development ecosystem and limited voice for developing countries in global financial governance. Through this analysis, the report identifies policy reforms to unlock domestic resources, build sustainable financial markets, and ensure that public and private finance is deployed effectively to finance sustainable development.

Part II deepens this inquiry through three chapters that investigate particular challenges specific to Asia-Pacific. These chapters have been co-authored with esteemed, long-standing partners of ESCAP. The first chapter, co-authored with the Climate Bonds Initiative explores how to scale sustainable debt capital markets, a foundational step in financing SDG- and climate-aligned investments. The second chapter co-authored with the International Renewable Energy Agency examines the complex challenge of financing the energy transition in a region still heavily reliant on coal, proposing a strategic mix of subsidy reform, concessional finance, and institutional innovation. The third chapter co-authored with the Asian Development Bank and the United Nations Framework Convention on Climate Change Regional Collaboration Centre for Asia and the Pacific offers a blueprint for strengthening green project pipelines aligned with Nationally Determined Contributions (NDCs), highlighting the need for ecosystem-wide reforms that link planning, budgeting, and investment processes.

The findings of this report reinforce a central message: closing the financing gap in sustainable development is a question of mobilizing more capital and of ensuring that it is well-aligned and accessible, and is deployed in ways that respond to national priorities and structural constraints. The report calls on governments, development finance institutions, regulators and private sector actors to engage in concerted and specific ways to rethink and retool financing strategies.

As the regional arm of the United Nations Secretariat in Asia and the Pacific, ESCAP can play an important role in strengthening the follow-up process and full implementation of commitments made at the Fourth International Conference on Financing for Development. It can leverage its existing expertise and platforms to organize dialogues between member states and other stakeholders to chart out regional priorities and needs, deliver demand-driven technical assistance, and track initiatives undertaken as part of the follow-up process. ESCAP is proud to be a part of this vital effort and we look forward to engaging with member states, partners and other key stakeholders to forge credible pathways to deliver on the ambitions of the 2030 Agenda and implementation of the follow up to the Fourth International Conference on Financing for Development.

Hamza Ali Malik
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EXECUTIVE SUMMARY

Financing challenges lie at the heart of the sustainable development crisis. Over the past several years, the world has contended with rising geopolitical tensions and conflict, inequalities between and within countries, climate change, biodiversity loss and pollution, the persistent consequences of the Covid-19 pandemic, and increasingly restrictive financing conditions. More recently, trade tensions and associated economic and policy uncertainty have increased considerably. All of these represent direct challenges to achieving the Sustainable Development Goals (SDGs). Even before this recent confluence of crises, achieving the SDGs was already compromised, with financing either not mobilized at scale or not allocated under the terms necessary to achieve deep, economic, societal and environmental transformation. The estimated financing gap for SDGs in developing countries has increased significantly to between $2.5 trillion and $4 trillion annually, underscoring the urgency of affordable, predictable, sustainable and sufficient development finance from all sources.

The Fourth International Conference on Financing for Development in Seville from 30 June to 3 July 2025 is expected to reiterate the importance of reducing finance and investment gaps and mobilizing and aligning all sources of finance. The conference is also expected to focus on promoting a stronger international financial architecture and on the need to formulate and finance new development pathways.

To provide the conference with perspectives from Asia and the Pacific, the Economic and Social Commission for Asia and the Pacific (ESCAP) organized a high-level regional consultation on financing for development in the region, which took place in Bangkok on 17 and 18 December 2024. Part I of this report centres around an issues paper prepared by ESCAP for this regional consultation.[1]

The previous edition of ESCAP's biennial Financing for Development report – number five in the series, published in October 2023 – focused on issues relating to sustainable finance. It proposed ten principles of action for policymakers, regulators and private finance that could help bridge the sustainable finance gap in Asia and the Pacific.[2] Part II of the present report – number six in the series – builds further on that analysis and takes a deep dive into three areas: sustainable debt capital markets, financing the energy transition, and green project pipelines.

Reflecting a spirit of collaboration and partnership, each of the three chapters in part II was co-authored with partners with whom ESCAP works closely in many developing Asia-Pacific countries. Chapter 1 on sustainable debt capital markets was written in collaboration with Climate Bonds Initiative (CBI); Chapter 2 on financing the energy transition was written with the International Renewable Energy Agency (IRENA); and Chapter 3 on financing NDCs through robust green project pipelines was written with Asian Development Bank (ADB) and the Regional Collaboration Centre (RCC) for Asia and the Pacific of the United Nations Framework Convention on Climate Change (UNFCCC).

Part I: Financing for development – key issues and policy suggestions: Perspectives from Asia and the Pacific

The high-level regional consultation on financing for development in Asia and the Pacific, organized by ESCAP in December 2024 in preparation for the Fourth International Conference on Financing for Development, focused on four areas: strengthening domestic public resources; accelerating the mobilization of domestic and international private finance towards the SDGs; tackling public debt sustainability concerns; and addressing new and emerging issues.

Strengthening domestic public resources, particularly through tax revenue, remains an essential source of financing for sustainable development. The Asia-Pacific experience suggests that to improve tax revenue rates swiftly, it is essential to rationalize tax structures, strengthen tax administration and reduce wasteful tax exemptions. To sustain increases in tax revenue in the longer term, broader socioeconomic progress, accountability of public expenditure and improvements in public governance are also important. Policy priorities to strengthen domestic public resources include:

(i) strengthening tax administration with support from digitalized tax systems;

(ii) adopting a holistic approach to tax revenue mobilization, focusing not only on how taxes can be raised but also on how the additional resources are spent;

(iii) exploring the potential of income and wealth taxes;

(iv) tapping into the region's booming property markets through land value capture; and

(v) enhancing regional tax dialogue and cooperation.

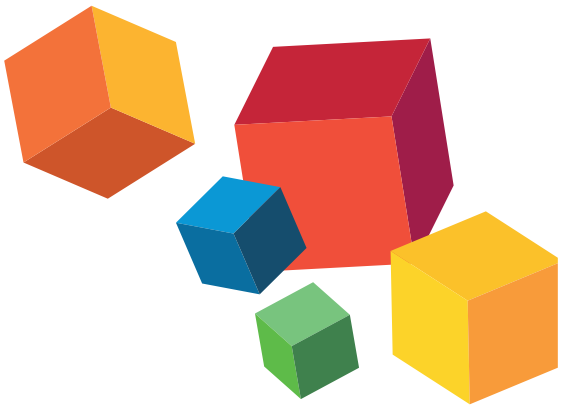
Accelerating the mobilization of domestic and international private finance and investment is essential for closing financing gaps that prevent SDGs being addressed. This requires well-developed and deep banking and capital markets supported by financial regulations that help embed sustainability considerations. However, the stage of development of these markets and regulatory approaches remains a work in progress in many Asia-Pacific economies. Moreover, private finance and concessional finance provided by multilateral development banks and development finance institutions does not flow towards the least developed countries (LDC) or challenging sectors and projects. Policy priorities in this area include:

(i) strengthening financial regulations that accelerate private financing for SDGs;

(ii) undertaking actions to develop and deepen domestic banking and capital markets and ensure that sustainability considerations are further embedded;

(iii) ensuring that more concessional and private finance flows towards the LDCs and to challenging sectors and projects.

Tackling concerns around the sustainability of public debt is critical because of the threat that rising public debt poses to economic stability and the effective financing of sustainable development. For this it is important to keep in view both the causes of debt distress (which include economic and fiscal mismanagement, temporary liquidity shocks, and/or development deficits and climate financing gaps) as well as the challenges to debt restructuring posed by the emergence of non-traditional and bilateral creditors. Policy priorities in this area include:



(i) pursue a differentiated treatment of public debt sustainability concerns according to their underlying causes;

(ii) significantly scale up ex-ante development transfers as an alternative to ex-post debt relief;

(iii) prioritize productive use of borrowed funds and effective public debt management; and

(iv) take pragmatic approaches regarding sovereign debt restructuring.

In terms of new and emerging issues, two deserve attention. First, current approaches to finance for sustainable development and climate ambitions are fragmented, with underlying issues being debated and addressed separately. Given the limited financing available, this needs to change. At the national level, there is a need to better integrate international commitments with national investment planning and financing processes. A similar integrated approach is required at the global level. Second, the issue of fair representation of developing countries in major international financial institutions and the resulting imbalance in voting rights persists. With better representation and greater voting rights in these institutions, Asia and the Pacific would benefit from proportionally greater influence on key policy decisions, including improved access to development financing. Policy priorities in this area include:

(i) striving for coherence, consistency and clarity in the international development system in relation to sustainable finance; and

(ii) ensuring a fair representation of Asia and the Pacific in global financial policymaking.

Part II: A Call to Action

Chapter 1: Expanding Sustainable Debt Capital Markets in Asia and the Pacific

A prerequisite for an active market for financial products such as green, social, sustainability, sustainability-linked or transition bonds, often referred to as GSS+ bonds, is a well-functioning debt capital market. This, in turn, requires a robust legal framework, a sizeable and diverse investor base, a well-regulated banking system with competent financial intermediaries, a diverse range of debt instruments, adequate market liquidity, and an enabling market infrastructure. Strong macroeconomic fundamentals and sustained macroeconomic stability are also fundamentally important factors.

These requirements, however, are not sufficiently present in most countries in Asia and the Pacific. Of the 39 economies listed in the IMF's Financial Markets Index, which gives ratings between 0 and 1, only nine – Australia; Japan; Republic of Korea; Malaysia; Thailand; Hong Kong, China; Singapore; India; and Türkiye – have an index value of 0.5 or more. Relevant challenges faced by most countries in the region include small and illiquid debt capital markets, a predominance of bank-based financing, short maturities, an inadequate market infrastructure, limited engagement of institutional investors, and low sovereign credit ratings.

An important reason to further the development of debt capital markets is their role in facilitating the issuance of GSS+ bonds. Such issuances can provide developing economies with a valuable source of capital while offering investors opportunities to align their portfolios with sustainability goals.

Issuances of GSS+ bonds by Asia-Pacific governments and corporations have increased significantly in recent years, from $189 billion in 2020 to $348 billion in 2023. Among developing countries, China accounted for 34 per cent of the issuances, followed by India and Thailand (4 per cent each). Countries with smaller and less developed capital markets, such as Cambodia, Mongolia and Tajikistan, also issued their first GSS+ bonds between 2023 and 2024.

Further development of the GSS+ market in the region faces two broad impediments: low levels of development of debt capital markets in most developing countries; and the specific challenges posed by additional requirements to facilitate the issuance of GSS+ bonds. To address both kinds of challenge, Chapter 1 offers several recommendations aimed at governments, regulators and development partners including multilateral development banks and development financial institutions.

Governments and regulators could

(i) establish adequate legislation to strengthen traditional debt markets;

(ii) enhance the underlying capital market infrastructure;

(iii) develop and implement effective regulatory frameworks to enhance transparency and investor confidence in GSS+ debt markets;

(iv) encourage the use of sustainable debt instruments through subsidies and incentives to reduce the cost of green and sustainable investments and ensure attractive returns;

(v) facilitate and prioritize the development of robust and recurrent pipelines of green and other sustainability projects;

(vi) encourage institutional investors to consider allocating a fixed portion of their portfolios to sustainable investments;

(vii) review capital reserve requirements for institutional investors, particularly banks and insurance companies, to enhance the appeal of GSS+ bonds over traditional instruments;

(viii) establish and develop local talent to support the growth of the sustainable finance ecosystem; and

(ix) consider issuing sovereign GSS+ bonds as a catalyst to drive local currency market growth.

Development partners including multilateral development banks and development financial institutions could

(i) support the development of common green and sustainable finance taxonomies and disclosure requirements;

(ii) provide technical assistance programmes that help reinforce countries' traditional and sustainable capital market ecosystems, including through capacity-building for securities exchanges and bond issuers; and

(iii) offer advisory support to entities wishing to issue GSS+ bonds.

Multilateral development banks and development financial institutions in particular could also

(i) act as anchor investors to mobilize private capital;

(ii) provide guarantees and other risk-sharing mechanisms, particularly in less mature markets; and

(iii) support the setting up of investment funds like the Amundi green bond fund, for example, which pooled green bonds issued by banks in various developing economies globally, leveraging multilateral development bank resources effectively to attract private finance.

Chapter 2: Financing the energy transition

As the most populous and rapidly growing region in the world, Asia and the Pacific faces considerable challenges in meeting its exponentially growing energy demands while transitioning from fossil fuels to renewable energy sources. While investment linked to energy transition in the region has grown substantially, it still falls far short of the levels needed and is extremely unevenly distributed: the ten least developed countries in Asia-Pacific received just 1.4 per cent of total energy transition investment between 2020 and 2023. A major challenge to increasing financing for energy transition in the region is the continued provision of fossil-fuel price subsidies. These subsidies mean that coal-fired power plants continue to be the cheaper option for utilities and investors, despite the fact that in over 80 per cent of cases the levelized cost of electricity powered by renewable energy is now lower than for fossil fuels. Similarly, in some cases it is also necessary to reform contracts such as power purchase agreements and feed-in tariffs relating to renewable energy in order to secure the appropriate revenue streams and cashflow and to boost investor confidence.

Another challenge is that the renewable energy industry and its supporting infrastructure are still in early stages of development in most developing countries in the region. These countries lack sufficient domestic supply chains of renewable energy-related infrastructure and assets, as well as experienced technicians such as photovoltaic systems installers. Importantly, they also lack modernized domestic grids that have been upgraded sufficiently to accommodate renewable energy connections. The considerable upfront system costs required mean that the initial cost of renewables compared to well-established coal-based power generation is a deterrent to sufficient investment. Such upfront system costs, especially in terms of grid upgrades, are usually financed by government, but many developing countries in the region still suffer from limited fiscal space, high public debt distress and high borrowing costs, making it a challenge to undertake the fiscal investments required.

The issue of stranded assets is a particularly pronounced challenge in Asia and the Pacific. Much of the region relies on coal for a large share of its power generation, and unlike in advanced economies where coal plants are aging out, many of the region's coal-fired power plants are relatively young, with an average age of less than 15 years. A rapid transition away from coal would require the financing of prematurely retired assets that investors had expected to run for decades, as well as simultaneous investment in new renewable capacity to replace them. This dual burden – decommissioning costs plus new infrastructure investment – represents a major financial challenge for governments and the private sector.

Chapter 2 proposes five overarching recommendations to address these challenges, along with specific sub recommendations:

(i) reform fossil fuel pricing, energy subsidies and contracts;

(ii) improve policy coherence to accelerate the energy transition, especially in areas supporting the deployment of renewable energy. This would include enacting clear guidelines for investment to ensure a structured and predictable pathway towards sustainable energy goals, streamlining the permitting process for renewable energy projects, removing conflicting policies, and ensuring transparency and predictability;

(iii) finance the modernization and expansion of transmission and grid infrastructure, including by upgrading regional transmission and distribution networks, and integrating digitalization and artificial intelligence into grid management. (The ASEAN power grid and its collective financing efforts are a promising example of the sub-regional financing of transboundary power grids);

(iv) further innovate and strengthen the partnership approach between governments and private investors and concessional finance providers. This should also include the creation of innovative carbon finance structures, strengthening the response to the socioeconomic transitions involved, and supporting stronger regional cooperation across the Asia-Pacific region; and

(v) implement innovative and blended financing mechanisms, including innovation in green finance products and green finance data.

Chapter 3: Financing Nationally Determined Contributions through robust green project pipelines

Nationally Determined Contributions (NDCs) are a central commitment through which countries share their climate action and emission reduction plans to meet the ambitions of the Paris Agreement. NDCs typically include mitigation measures to reduce greenhouse gas emissions, adaptation actions to strengthen resilience to climate change, and what each country needs to implement climate action effectively. These needs typically include finance, technology, capacity-building, policy and regulatory support, and data and information systems. However, not all countries have taken the next step of costing the needs identified in their NDCs. In Asia and the Pacific only 632 out of 1,560 needs reported have been costed, amounting to between $3.3 trillion and $4.9 trillion. Of this, $2.4 trillion represents the cost of conditional needs; that is, needs that can be implemented only if the country receives international finance or support from developed countries. Such costing is necessary to identify where financing is required, and also what sources of financing are then feasible.

Scaling up finance to meet these needs is a major challenge, but it is not the only challenge. It is also necessary to ensure that the finance mobilized is more effectively aligned with national climate strategies, and is directed towards implementable, NDC-aligned projects. To achieve this, countries must develop clear financing plans and bankable project pipelines that translate national priorities into actionable investment opportunities capable of attracting diverse sources of capital. Such clarity on pipelines is essential for developing countries in the region to finance their climate goals from diverse sources so that they do not depend solely on the limited fiscal space they currently face.

To generate these green project pipelines, however, developing countries in the region face several barriers, including ecosystem and public- and private-sector barriers. Ecosystem barriers include inadequate policy frameworks, a lack of data consistency and measurement capabilities, insufficient stakeholder engagement, and systems that fail to incentivize private investment in NDC-aligned initiatives. Public-sector barriers include top-down national planning constraints, data gaps, and parallel or siloed planning processes that result in a lack of coherence between NDCs, national development plans and national financial plans, including national budgets and medium-term fiscal frameworks. In addition, governments often lack comprehensive valuations of assets such as forests, coastal ecosystems and mangroves, which can result in suboptimal financial decisions. Finally, private-sector barriers include regulatory uncertainties, insufficient access to information about viable projects, and a lack of alignment between private-sector incentives and public climate goals.

Addressing these challenges requires a comprehensive and strategic approach by governments to mobilize all stakeholders, leverage innovative financing mechanisms and foster an enabling environment for sustainable investments. Key actions to facilitate the development of robust, NDC-aligned project pipelines and financing solutions include:

(i) enshrine NDCs into law to provide a stronger foundation for their implementation, ensure policy continuity across political cycles and send a clear signal to investors and the private sector about a country's commitment to climate action;

(ii) develop and regularly update sustainable finance roadmaps that align finance with national climate and development priorities;

(iii) conduct comprehensive assessments of natural capital, including through the use of advanced tools such as geographic information systems and remote sensing to support the development of climate resilience and mitigation projects;

(iv) develop NDC investment plans based on the full costing of a list of feasible projects that align with national climate goals;

(v) establish green and/or SDG taxonomies to provide increased clarity for investors, banks and project owners;

(vi) enhance clarity on climate-related disclosure and reporting requirements;

(vii) align methodologies to enhance transparency, facilitate investor confidence and ensure comparability across countries through regional cooperation;

(viii) address public sector fiscal constraints through innovative and concessional finance; and

(ix) establish comprehensive policies and mechanisms that effectively mobilize private capital for climate finance.

It is worth noting that there are clear, intrinsic linkages between the issues covered in the three chapters of Part II, as well as with the issues covered in Part I. For example, accelerating financing for the energy transition requires the preparation of suitable clean and renewable energy projects, as well as a liquid and deep sustainable capital market that can help raise affordable debt. It also requires sufficient fiscal space and the ability to raise affordable sovereign debt, given the significant public investment needed for critical grid modernization, for example.

The analysis and policy recommendations in this report are aimed at ministries of finance, energy and environment, central banks, concessional finance providers and private finance stakeholders in the sustainable finance ecosystem. A summary of all the recommendations for each chapter is provided in the table below. ESCAP looks forward to working with all stakeholders in the Asia-Pacific region to help transform financing for development in the innovative, creative and systemic ways that are now urgently needed.

SUMMARY OF RECOMMENDATIONS

PART ONE — Suggested policy priorities for financing for development in Asia and the Pacific

Strengthening domestic public resources

1. Strengthen tax administration with support from digitalized tax systems.
2. Adopt a holistic approach to enhance tax revenue mobilization.
3. Explore the potential of income and wealth taxes.
4. Tap into the region's booming property markets through land value capture.
5. Enhance regional tax dialogue and cooperation.

Accelerating the mobilization of domestic and international private finance towards the SDGs

6. Strengthen financial regulations to facilitate and accelerate private financing towards the Sustainable Development Goals.
7. Undertake actions to develop and deepen domestic banking and capital markets and ensure that sustainability considerations are fully embedded.
8. Increase the flow of concessional and private finance towards the least developed countries, as well as towards more challenging sectors and projects.

Tackling public debt sustainability concerns

9. Pursue a differentiated treatment of public debt sustainability concerns according to the underlying causes.
10. Significantly scale up ex-ante development transfers as an alternative to ex-post debt relief.
11. Prioritize productive use of borrowed funds and effective public debt management.
12. Take pragmatic approaches regarding sovereign debt restructuring.

Addressing new and emerging issues

13. Ensure fair representation of Asia and the Pacific in global financial policymaking.
14. Strive for coherence, consistency and clarity in the international development system regarding sustainable finance.

PART TWO — Developing Sustainable Capital Markets, Financing Energy Transitions and Building Project Pipelines

CHAPTER 01 — Expanding sustainable debt capital markets in Asia and the Pacific

RECOMMENDATIONS FOR GOVERNMENTS AND REGULATORS:

1. Establish clear and transparent legislation to strengthen traditional debt markets and fortify market integrity.
2. Strengthen the underlying capital market infrastructure to enhance market efficiency and transparency.
3. Develop and implement effective regulatory frameworks to enhance transparency and investor confidence.
4. Encourage the uptake of sustainable debt instruments through subsidies and incentives to reduce the initial cost of green and sustainable investments and ensure attractive returns.
5. Facilitate and prioritize development of robust and recurrent pipelines of green and other sustainability projects.
6. Promote practices among institutional investors, central banks and other institutions to allocate a fixed portion of their portfolio to sustainable investments.
7. Review capital reserve requirements for institutional investors, particularly banks and insurance companies, to enhance appeal of GSS+ bonds over traditional instruments.
8. Establish and develop local talent to support the growth of the sustainable finance ecosystem.
9. Consider issuing sovereign GSS+ bonds as a catalyst to drive growth in local-currency denominated debt instruments.

RECOMMENDATIONS FOR MULTILATERAL DEVELOPMENT BANKS AND DEVELOPMENT FINANCIAL INSTITUTIONS:

10. Act as anchor investors to mobilize private capital, particularly in domestic currencies.
11. Provide guarantees and other risk-sharing mechanisms, particularly in less mature markets.
12. Adopt a pooled-fund approach.

RECOMMENDATIONS FOR DEVELOPMENT PARTNERS, INCLUDING MULTILATERAL DEVELOPMENT BANKS:

13. Support development of common green and sustainable finance taxonomies and disclosure requirements.
14. Provide technical assistance programmes that help reinforce domestic traditional and sustainable capital market ecosystems, including through capacity-building for securities exchanges and bond issuers.
15. Provide technical assistance to entities wishing to issue GSS+ bonds.

CHAPTER 02 Financing the energy transition in Asia and the Pacific

Recognising that the path to financing decarbonization and energy transition processes must be tailored to each local market, regulatory environment and resource landscape, while considering scalability, the chapter offers the following recommendations. This path should also be country-led and owned, ensuring alignment with national priorities, institutional capacities, and long-term development goals.

01 Reform fossil fuel pricing, energy subsidies and contracts

a. Gradually implement fossil fuel pricing reforms that reflect the true cost of carbon emissions to ensure fossil fuels are no longer artificially cheaper than renewables, whilst ensuring energy affordability for the low-income.

b. Gradually reduce fossil fuel subsidies to curb carbon emissions, increase fiscal space and allow renewables to compete, while ensuring justness and economic stability.

c. Adopt a mix of approaches as needed to finance the early retirement of young coal-fired power plants.

02 Improve policy coherence, especially in areas supporting deployment of renewable energy

a. To accelerate the energy transition, governments must enact clear guidelines for financing and investment to ensure a structured, predictable pathway towards sustainable energy goals, including binding energy transition targets.

b. Establish regulatory and enabling frameworks and supportive policies to unlock private sector finance at the scale required in renewable energy financing.

c. Streamline and accelerate the permitting process for renewable energy projects, reducing delays, transaction costs, execution risks and faster financing.

d. Eradicate conflicting policies and ensure transparency and predictability.

e. Strengthen cross-border financing and investment regulation to unlock capital flows, mitigate risks and advance an integrated regional and global energy market.

03 Modernize and expand transmission and grid infrastructure

a. Strengthen the planning and financing of grid expansion and upgrades and support the financing of the ASEAN power grid in the region.

b. Integrate digitalisation and artificial intelligence into grid management and system integration, further bringing down costs, through virtual power plants (VPPs).

04 Governments should further innovate and strengthen their partnership approach with private investors and concessional finance providers

a. Governments in Emerging Markets and Developing Economies (EMDEs) and the Least Developed Countries (LDCs) must show leadership in boosting investor confidence and securing further international finance from multilateral and bilateral sources.

b. Governments should create effective carbon markets and trading structures with high integrity and robust carbon prices for their economies.

c. In accelerating financing for energy transitions, governments should continue to strengthen responses to the justness of the socio-economic transitions involved, ensuring that financing does not exacerbate gaps in sustainable development for all.

d. Support stronger regional cooperation across the Asia-Pacific region in financing the energy transition.

05 Implement innovative and blended financing mechanisms

a. Advanced economies, multilateral development banks and international financial institutions should continue to better partner with EMDE and LDC governments and private finance to scale up energy transition financing.

b. Green finance innovation continues to be essential in accelerating the financing of the energy transition.

c. Crowdfunding and diaspora funds continue to offer potential for decentralized small-scale energy transition finance.

d. Blockchain may offer better solutions for fulfilling data requirements around green finance, such as for transparent environmental, social and governance reporting.

CHAPTER 03 Investing in sustainability: Financing nationally determined contributions through robust green project pipelines

1. Institutionalize Nationally Determined Contributions (NDCs) into national legislation and policies in order to provide a stronger foundation for their implementation.
2. Develop and regularly update sustainable finance roadmaps with clear priorities and targets.
3. Conduct comprehensive asset and natural capital assessments to better support project pipeline development.
4. Develop NDC investment plans linked to more ambitious and better costed NDCs.
5. Establish green and/or SDG taxonomies to give investors, banks and project owners greater clarity.
6. Strengthen climate-related disclosure and reporting requirements in order to enhance market transparency and effective risk management.
7. Enhance harmonization of regional methodologies related to sustainable finance, through regional cooperation.
8. Strengthen fiscal positions through considering innovative and concessional finance options.
9. Create an enabling policy and regulatory environment to stimulate the supply and demand of green projects.

ACKNOWLEDGMENTS

Since its inception in 2015, the ESCAP biennial series on *Financing for Development* has published research on a range of critical issues on financing for development from the regional perspective of Asia and the Pacific. The objective of this research is to support policymakers, regulators and financial stakeholders in strengthening the implementation of selected aspects of financing for development as advanced by the Addis Ababa Action Agenda and the forthcoming outcome of the Fourth International Conference for Development in 2025.

This 6th edition of the series was led by ESCAP and jointly prepared with the Asian Development Bank (ADB), Climate Bonds Initiative (CBI), the International Renewable Energy Agency (IRENA) and the United Nations Framework Convention on Climate Change Regional Collaboration Centre Asia and the Pacific (UNFCCC RCC Asia-Pacific). From ESCAP, this edition was prepared by a core team led by Suba Sivakumaran (Chief, Financing for Development Section, Macroeconomic Policy and Financing for Development Division, ESCAP), including Alberto Isgut, Deanna Morris, Pierre Horna, Chiara Amato, Veerawin Su, Latipat Mikled, Patchara Arunsuwannakorn, Pranee Samchaiwattana and Isaac Cebon (intern), from the Financing for Development Section at ESCAP. Hamza Ali Malik, Director of Macroeconomic Policy and Financing for Development Division of ESCAP provided overall leadership and shared valuable comments and suggestions at various stages in the preparation of this publication.

The chapter on "Expanding sustainable debt capital markets in Asia and the Pacific" was prepared by ESCAP and CBI. The main authors include Chiara Amato (ESCAP), Veerawin Su (ESCAP), Zalina Shamsudin (CBI), and Caroline Harrison (CBI). Significant research support was provided by the following ESCAP staff and interns: Latipat Mikled, Mariia Vakulic and Yuxin Li.

The chapter on "Financing the energy transition in Asia and the Pacific" was prepared by ESCAP and IRENA. The main authors include Pierre Horna (ESCAP), Faran Rana (IRENA), Hannah Guinto (IRENA) and Diala Hawila (IRENA). ESCAP staff who provided valuable inputs and feedback into this particular chapter include Suba Sivakumaran, Matthew Wittenstein (Chief, Energy Connectivity Section, Energy Division) and Michael Williamson (Chief, Sustainable Energy Development and Utilization Section, Energy Division). Substantial research assistance was provided by Stephen Tan, Latipat Mikled and Jiahui Han (Financing for Development section, ESCAP). Research assistance was provided by interns Lara Kerner, Siqin Sun, Xiaoyin Kang and You Zhang, also from the Financing for Development Section at ESCAP.

The chapter on "Investing in sustainability: Financing Nationally Determined Contributions through robust green project pipelines" was prepared by ESCAP, ADB and UNFCCC RCC Asia-Pacific. The main authors include Deanna Morris (ESCAP), Karan Chouksey (ADB), Samet Sevket Bulut (ADB) and Juhi Bansal (UNFCCC RCC Asia-Pacific), with support from the Climate Finance Subdivision, Means of Implementation Division, UNFCCC secretariat. Substantive contributions on the data and case studies were provided by ESCAP colleagues Aneta Nikolova, Omar Siddique and Anant Jha. Significant research assistance was provided by ESCAP staff and interns Patchara Arunsuwannakorn, Latipat Mikled, Shiwei Zhang, Hongxi Hu and Guanhua Xu.

The report benefited from extensive debates among and suggestions from a group of policymakers, scholars, private sector participants and development practitioners who provided inputs at the Workshop on "Financing and Implementing the Green Transition: National and Regional Policy Essentials", held in Bangkok and online on 16 December 2024, which was organized jointly by ESCAP and the United Nations Trade and Development (UNCTAD). The preparation of the report chapters benefitted from additional discussions and consultations with a broad range of stakeholders, as described below.

For the chapter on "Expanding sustainable debt capital markets in Asia and the Pacific", two review discussions were held during the ESCAP Expert Group Meeting on Expanding sustainable debt capital markets in Asia and the Pacific at the Singapore FinTech Festival on 4 November 2024 and during the ESCAP Expert Group Meeting that took place on 27 November 2024 in Hong Kong, China and online.

For the chapter on "Financing the energy transition in Asia and the Pacific", an Expert Group Meeting on "Financing the Energy Transition" was held on 3 December 2024 in Bangkok, Thailand.

For the chapter on "Investing in sustainability: Financing Nationally Determined Contributions through robust green project pipelines" an Expert Group Meeting on "Building Effective Project Pipelines for the Asia-Pacific Region" took place on 14 November 2024 during COP29 in Baku, Azerbaijan. The chapter has also benefitted from the insights and contributions of members of the ESCAP Consultation Group on Financing Strategies for the Sustainable Development Goals, which brings together representatives from Asia-Pacific member states, particularly from ministries of finance and other relevant government agencies.

Additional feedback was provided through a series of consultations with experts and practitioners, including representatives of government agencies, regulators, investors, banks, private organizations, think-tanks, and academia listed below. We would also like to thank a number of stakeholders for their inputs who wished to remain anonymous.

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Patchara Arunsuwannakorn and Pranee Samchaiwattana of the Financing for Development Section in the Macroeconomic Policy and Financing for Development division of ESCAP provided valuable administrative and logistical assistance throughout the project. Communication strategies, typesetting and layout for this report was led by Chiara Amato from ESCAP.

The manuscript was edited by Jonathan Bennett.

Graphic design and typesetting services were provided by Dilucidar.

This report is available online here: https://hdl.handle.net/20.500.12870/8137

EXPLANATORY NOTES

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

The ESCAP secretariat supports inclusive, resilient, and sustainable development in the region by generating action-oriented knowledge, 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, and in supporting and facilitating member states in inter-governmental coordination, resolutions, and commitments.

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Groupings of countries and territories/areas referred to are listed alphabetically as follows:

ESCAP region: Afghanistan; American Samoa; Armenia; Australia; Azerbaijan; Bangladesh; Bhutan; Brunei Darussalam; Cambodia; China; Cook Islands; Democratic People's Republic of Korea; Fiji; French Polynesia; Georgia; Guam; Hong Kong, China; India; Indonesia; Iran (Islamic Republic of); Japan; Kazakhstan; Kiribati; Kyrgyzstan; Lao People's Democratic Republic; Macao, China; Malaysia; Maldives; Marshall Islands; Micronesia (Federated States of); Mongolia; Myanmar; Nauru; Nepal; New Caledonia; New Zealand; Niue; Northern Mariana Islands; Pakistan; Palau; Papua New Guinea; Philippines; Republic of Korea; Russian Federation; Samoa; Singapore; Solomon Islands; Sri Lanka; Tajikistan; Thailand; Timor-Leste; Tonga; Türkiye; Turkmenistan; Tuvalu; Uzbekistan; Vanuatu; and Viet Nam.

Least developed countries: Afghanistan, Bangladesh, Cambodia, Kiribati, Lao People's Democratic Republic, Myanmar, Nepal, Solomon Islands, Timor-Leste, Tuvalu. Note: Bhutan, Maldives, Samoa and Vanuatu were part of the least developed countries prior to their graduation in 2023, 2011, 2014 and 2020, respectively.

Landlocked developing countries: Afghanistan, Armenia, Azerbaijan, Bhutan, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Mongolia, Nepal, Tajikistan, Turkmenistan, and Uzbekistan.

Small island developing States: American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Maldives, Marshall Islands, Micronesia (Federated States of), Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Singapore, Solomon Islands, Timor Leste, Tonga, Tuvalu, and Vanuatu.

East and North-East Asia: China; Democratic People's Republic of Korea; Hong Kong, China; Japan; Macao, China; Mongolia; and the Republic of Korea.

North and Central Asia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan, and Uzbekistan.

Pacific: American Samoa, Australia, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

Pacific island developing economies: All those listed above under "Pacific" except for Australia and New Zealand.

South and South-West Asia: Afghanistan, Bangladesh, Bhutan, India, Iran (Islamic Republic of), Maldives, Nepal, Pakistan, Sri Lanka, and Türkiye.

South-East Asia: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam.

Developing ESCAP region: ESCAP region, excluding Australia, Japan and New Zealand.

Developed ESCAP region: Australia, Japan and New Zealand.

ADB recognizes "China" as the People's Republic of China

Owing to the limited availability of data, selected small island developing States are excluded from the analysis.

References to dollars ($) are to United States dollars, unless otherwise stated.

The term "billion" signifies a thousand million. The term "trillion" signifies a million million.

ABBREVIATIONS AND ACRONYMS

ACCEPT	ASEAN Climate Change and Energy Project	**ETP**	Energy Transition Partnership
ACGF	ASEAN Catalytic Green Finance Facility	**ETS**	Emissions Trading Systems
ADB	Asian Development Bank	**EU**	European Union
AIF	ASEAN Infrastructure Fund	**EV**	Electric Vehicle
AIIB	ASIAN Infrastructure Investment Bank	**EVN**	Viet Nam Electricity
APAC	Asia-Pacific Region	**EVOSS**	Energy Virtual One-Stop Shop
APEC	Asia-Pacific Economic Cooperation	**FAST-P**	Financing Asia's Transition Partnership
ASEAN	Association of Southeast Asian Nations	**FDI**	Foreign Direct Investment
BAPPENAS	Indonesia's Ministry of National Development Planning	**FET**	Financing the Energy Transition
BCG	Boston Consulting Group	**FIT**	Feed-In Tariff
BDT	Bangladeshi Taka	**FRC**	Financial Regulatory Commission
BNEF	Bloomberg New Energy Finance	**GDP**	Gross Domestic Product
BRSR	Business Responsibility and Sustainability Reporting	**GEF**	Global Environment Facility
CBI	Climate Bonds Initiative	**GHG**	Greenhouse Gas
CCS	Carbon Capture and Storage	**GIS**	Geographic Information Systems
CDM	Clean Development Mechanism	**GIZ**	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
CEF	Connecting Europe Facility	**GPIF**	Government Pension Investment Fund of Japan
CFPP	Coal-Fired Power Plant	**GSS+**	Green, Social, Sustainability and Other Labeled
CGEP	Center on Global Energy Policy	**GST**	Goods and Services Tax
CNY	Chinese Yuan	**GVA**	Gross Value Added
COP	Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC)	**GW**	Gigawatt
CSRD	Corporate Sustainability Reporting Directive	**GWP**	Global Warming Potential
DeFi	Decentralized Finance	**GX**	Green Transformation
DFC	The United States International Development Finance Corporation	**HICT**	High-Income Country and Territory
DFI	Development Financial Institution	**HKD**	Hong Kong Dollar
DLT	Distributed Ledger Technologies	**HSBC**	The Hong kong and Shanghai Banking Corporation Limited
DMO	Domestic Market Obligation	**ICMA**	International Capital Market Association
DPPA	Direct Power Purchase Agreement	**IDR**	Indonesian Rupiah
ECOSOC	Economic and Social Council	**IEA**	International Energy Agency
EIA	U.S. Energy Information Administration	**IEEFA**	Institute for Energy Economics and Financial Analysis
EMDE	Emerging and Developing Economies	**IFC**	The World Bank Group's International Finance Corporation
EPF	Employees Provident Fund	**IFI**	International Financial Institution
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific	**IPP**	Independent Power Producer
ESG	Environmental, Social, and Governance	**IFRS**	International Financial Reporting Standards
ETM	Energy Transition Mechanism	**IIASA**	International Institute for Applied Systems Analysis

IMF	International Monetary Fund	**OECD**	Organization for Economic Co-operation and Development
INA	Indonesia Investment Authority's sovereign wealth fund	**OJK**	Otoritas Jasa Keuangan (Financial Services Authority of Indonesia)
INDC	Intended Nationally Determined Contributions	**PBOC**	People's Bank of China
IPG	International Partners Group	**PDP8**	Roadmap for Vietnam's Power Development Plan 8
IPSF	International Platform on Sustainable Finance	**PIP**	Public Investment Programme
IREDA	Indian Renewable Energy Development Agency	**PIT**	Personal Income Tax
IRENA	International Renewable Energy Agency	**PLN**	Perusahaan Listrik Negara, Indonesia's state-owned utility
ISEAS	Institute of Southeast Asian Studies	**PPA**	Power Purchase Agreement
ISO	International Organization for Standardization	**PPP**	Public-Private Partnership
ISS	Institutional Shareholder Services	**PT**	Perseroan Terbatas, legal entity describing a business in Indonesia
ISSB	International Sustainability Standards Board	**PV**	Photovoltaic
JCM	Japan - Indonesia Joint Crediting Mechanism	**PWT**	Property and Wealth Tax
JETP	Just Energy Transition Partnership	**REC**	Renewable Energy Certificate
JFSA	Japan Financial Services Agency	**REDD+**	Reducing Emissions from Deforestation and Forest Degradation
JPY	Japanese Yen	**RMP**	Resource Mobilization Plan
KPMG	Klynveld Peat Marwick Goerdeler	**SASB**	Sustainability Accounting Standards Board
KRW	Korean Won	**SDG**	Sustainable Development Goal
LCOE	Levelized Cost of Electricity	**SGX**	Singapore Exchange
LDC	Least Developed Country	**SME**	Small and Medium Enterprise
LVC	Land value capture	**SOE**	State-Owned Enterprise
MAS	Monetary Authority of Singapore	**SPO**	Second Party Opinion
MCCG	Malaysia Code on Corporate Governance	**SPT**	Sustainability Performance Target
MCF	Multilateral Climate Fund	**TCFD**	Task Force on Climate-Related Financial Disclosures
MDB	Multilateral Development Bank	**tCO_2**	Tons of Carbon Dioxide
MIGA	Multilateral Investment Guarantee Agency	**T&D**	Transmission and Distribution
MSCI	Morgan Stanley Capital International	**TRACTION**	The Transition Credits Coalition of Singapore
MSE	Mongolian Stock Exchange	**TW**	Terawatt
MSME	Micro, Small and Medium Enterprise	**UNCTAD**	United Nations Conference on Trade and Development
Mt	Million tons	**UNEP FI**	United Nations Environment Programme – Finance Initiative
NAP	National Adaptation Plan	**UNFCCC RCC**	United Nations Framework Convention on Climate Change Regional Collaboration Centre
NCCP	National Climate Change Policy	**UNGA**	United Nations General Assembly
NCQG	New Collective Quantified Goal on Climate Finance	**UNOPS**	United Nations Office for Project Services
NDC	Nationally Determined Contribution	**USD**	United States Dollar
NDRC	National Development and Reform Commission	**VND**	Vietnamese Dong
NEA	National Energy Administration	**WACC**	Weighted Average Cost of Capital
NGFS	Network for Greening the Financial System	**WIR**	World Investment Report
ODA	Official Development Assistance	**XV BRICS**	The 15th BRICS Summit

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INTRODUCTORY NOTE

The Sixth Edition of the Financing for Development Series

In the area of financing for development in Asia and the Pacific, much has improved since 2023, when the last edition of this *Financing for Development* series was published. Worryingly, however, much has also stayed the same or in some cases worsened. In a challenging and highly uncertain global economic landscape, the prospects for increasing public and private financing flows for Sustainable Development Goals (SDGs) are under threat. The Fourth International Conference on Financing for Development (FFD4) in Seville from 30 June to 3 July 2025 represents a prime opportunity for countries in the region and across the globe to commit to an outcome that will reform financing at all levels to accelerate progress towards the SDGs.

This sixth edition of ESCAP's *Financing for Development* series covers a notably complex and interlinked range of issues that are unfolding against a dynamic and fast-changing economic outlook for the Asia-Pacific region. Part I of this report highlights key issues in financing policy and suggests 14 policy actions across four areas to help close the financing gap: strengthening domestic public resources; accelerating the mobilization of domestic and international private finance towards the SDGs; tackling public debt sustainability concerns; and addressing new and emerging issues.

Part II takes a closer look at three specific and interlinked aspects of financing that remain critical bottlenecks for achieving sustainable development in Asia and the Pacific.

Reflecting a spirit of collaboration and partnership, each of the three chapters in Part II has been co-authored with partners with which ESCAP works closely on the ground in many developing Asia-Pacific countries. Chapter 1, co-authored with the Climate Bonds Initiative (CBI), analyses how sustainable debt capital markets in the region can be strengthened further to enhance financing for development. Chapter 2, co-authored with the International Renewable Energy Agency (IRENA), analyses how financing the energy transition in Asia and the Pacific can be accelerated. Chapter 3, co-authored with the Asian Development Bank (ADB) and the UNFCCC Regional Collaboration Centre Asia and the Pacific (UNFCCC RCC Asia-Pacific), analyses how green project pipelines can be better prepared and anchored within countries' planning frameworks for Nationally Determined Contributions (NDCs).

There are clear, intrinsic links between the issues covered in the three chapters in Part II, as well as with the areas considered in Part I. For example, accelerating financing for the energy transition requires the preparation of suitable clean and renewable energy projects, as well as a liquid and deep sustainable capital market that can help raise affordable debt. It also requires sufficient fiscal space so that sovereign debt can be affordably raised to finance critical grid modernization for increased storage and efficient transmission of renewable energy. Similarly, to ensure liquid and deep sustainable debt capital markets, a robust pool of potential issuers is required. They in turn need strong, underlying sustainable projects capable of fulfilling sustainable use-of-proceeds requirements as well as financial returns. But this is a chicken-and-egg situation. Expending the costs, time and effort required to prepare robust green project pipelines (usually a long process spanning years) and raise sustainable finance in local capital markets requires issuers to have faith and confidence in local capital markets; i.e. that they are liquid and deep enough, with a track record of successful issuances, and with fair and predictable rules and enforcement on the part of the regulator. Moreover, deepening sustainable capital markets, accelerating financing of the energy transition and strengthening sustainable project pipelines all require favourable sovereign credit environments, which are all influenced by the strength of the fiscal and debt position of a country, as highlighted in Part I.

The analysis and policy recommendations in this report are aimed at ministries of finance, energy and environment, central banks, concessional finance providers and private finance stakeholders in the sustainable finance ecosystem. As the world gathers in Spain for FFD4, and looking beyond FFD4 to the following two years, when the next edition in this series will be published, we look forward to working with all stakeholders to accelerate financing for development in Asia and the Pacific.

On estimates of the financing gap

Estimating the financing gap – the gap between financing needs and current spending in support of SDGs – is an essential step that countries need to undertake in order to develop a genuine financing strategy that effectively pursues the 2030 Agenda for Sustainable Development and to identify diverse financing sources and non-finance means of implementation. Over the years, several institutions have produced estimates of the SDG financing gap, including ESCAP (table A.1). These estimates differ in their methodology, geographic coverage and specific SDG areas considered. They also differ in whether they analyse spending needs themselves, or the financing gap between spending needs and actual spending.

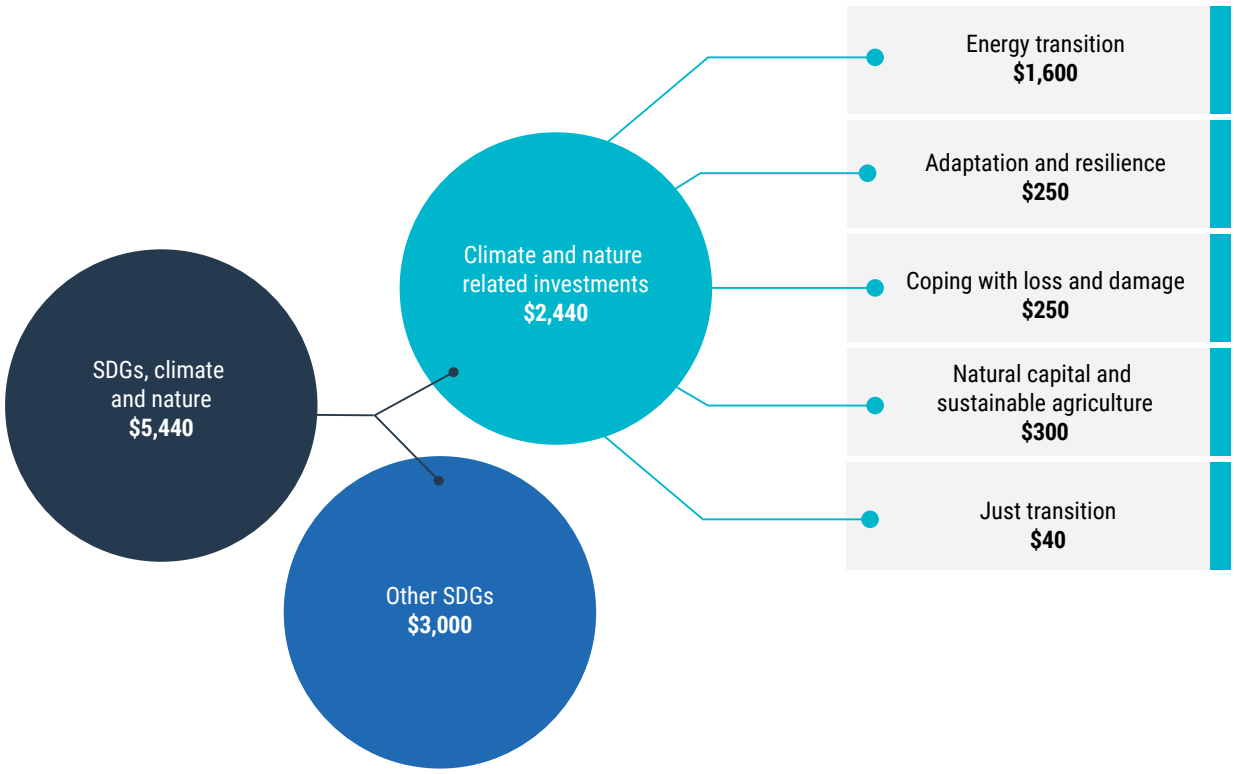
The latest estimates of the financing gap from the United Nations Conference on Trade and Development (UNCTAD) and the Organization for Economic Co-operation and Development (OECD) for all developing countries worldwide is around $4 trillion per year to 2030. For developing Asia-Pacific countries, ESCAP estimated in 2019 an average financing gap of $1.5 trillion per year between 2016 and 2030, or 4 per cent of the region's estimated gross domestic product (GDP). Since then, due to lack of sufficient investment in SDGs and the multifaceted impacts of the COVID-19 pandemic, the war in Ukraine and the latest escalation in trade tensions and subsequent uncertainty, it would be no exaggeration to state that this annual financing gap will have increased considerably for most developing countries in the region.

Table A.1: Estimates of the SDG financing gap

Institution	Time period of estimate	Geographic coverage	Annual amount and scope of spending
UNCTAD, 2023	2024-2030	Developing countries	$3.8 trillion to 4.3 trillion annual investment gap in key SDG sectors needed until 2030.
Independent High-Level Expert Group on Climate Finance, 2024	2019-2030	Emerging markets and developing economies, excluding China	$5.4 trillion annual spending needs until 2030 to meet the SDGs and climate and nature goals, representing a $3 trillion increase from current spending levels.
OECD, 2022	2020-2030	Developing countries	$3.9 trillion annual SDG financing gap.
Sustainable Development Solutions Network (A Global Initiative for the United Nations), 2019	2019-2030	Low-income countries	$400.6 billion annual SDG financing gap.
ESCAP, 2019	2016-2030	Developing countries in Asia and the Pacific	$1.5 trillion per year in additional investment, or 4 per cent of the estimated annual GDP over 2016-2030.
World Bank, 2019	2015-2030	Low- and middle-income countries	Average annual infrastructure spending of $640 billion to $2.7 trillion (minimum to maximum spending scenarios).
IMF, 2019	2016-2030	Global	$2.6 trillion increase in annual spending to meet key SDGs by 2030. This estimate focuses on 5 SDG sectors – health, education, roads, electricity, and water and sanitation.

Source: UNCTAD, "SDG investment is growing but too slowly: the investment gap is now $4 trillion, up from $2.5 trillion in 2015", SDG Investment Trends Monitor, No. 4 (September, 2023); Bhattacharya and others, "Raising ambition and accelerating delivery of climate finance", (London, Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science, 2024); OECD, *Global Outlook on Financing for Sustainable Development 2023: No Sustainability Without Equity* (Paris, OECD Publishing, 2022); Jeffrey Sachs and others, "SDG costing and financing for low-income developing countries", September 2019; *Economic and Social Survey of Asia and the Pacific: Ambitions Beyond Growth* (United Nations publication, 2019); Julie Rozenberg and Marianne Fay, eds., *Beyond the Gap: How Countries Can Afford the Infrastructure They Need While Protecting the Planet* (Washington, D.C., World Bank, 2019)*; and Vitor Gaspar and others, Fiscal Policy and Development: Human, Social, and Physical Investments for the SDGs*, IMF Staff Discussion Note, No. 2019/003 (Washington, D.C., International Monetary Fund, 2019).

Figure A.1: Investment/spending requirements for climate and sustainable development in emerging markets and developing economies other than China (billions of United States dollars per year by 2030)

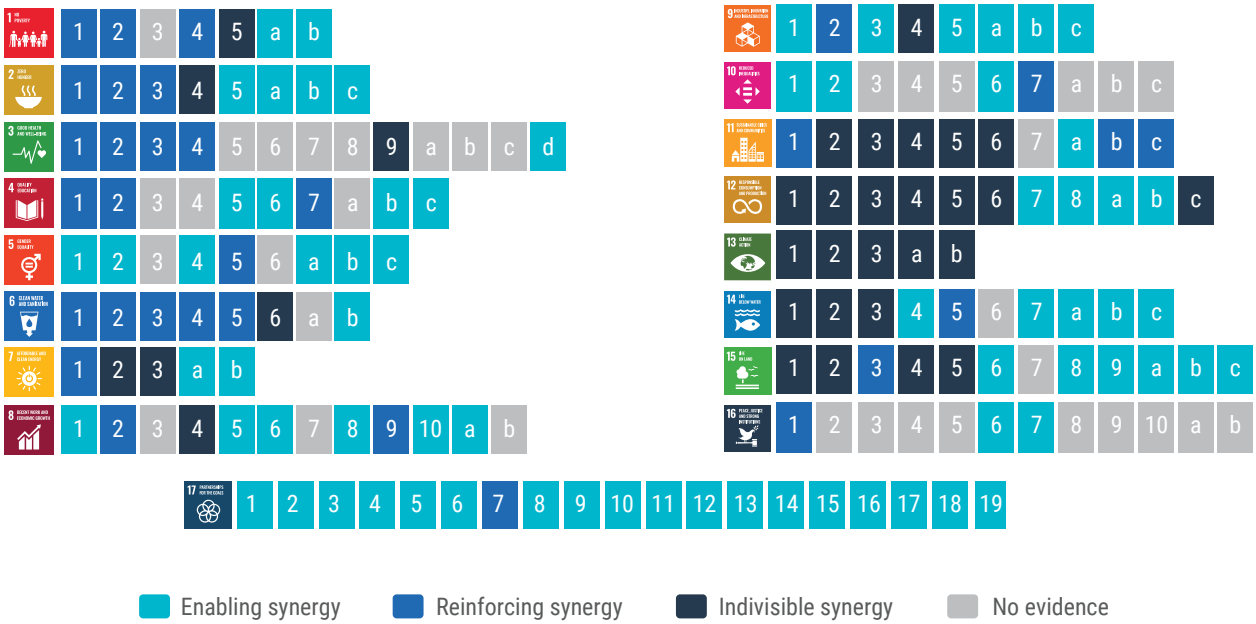


Source: ESCAP, based on Bhattacharya and others, "Raising ambition and accelerating delivery of climate finance" (London, Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science, 2024).

One sectoral analysis of this financing gap has been provided by the International High Level Expert Group on Climate Finance (figure A.1). Of the $5.4 trillion per year required to meet all goals by emerging markets and developing economies, excluding China, $2.4 trillion is required for investments relating to climate and nature, while $1.6 trillion, or 30 per cent, is required in the energy transition alone.

It should be noted that for the Asia-Pacific region, financing climate action and the positive effects it will have on the Sustainable Development Goals continue to be of paramount importance for countries and is prioritized by many policymakers. The complex climate-related socioeconomic impacts that directly and indirectly influence macroeconomic outcomes are not fully understood, though the region continues to contribute around 60 per cent to global GDP growth.[3] Moreover, the direct links between Goal 13 on climate action and the rest of the SDGs need to be further explored (figure A.2). In short, financing climate action can ensure that progress towards almost all of the SDGs can be accelerated, and this can generate a large "development dividend".[4]

Figure A.2: Synergies between climate action and the SDGs



Source: ESCAP based on Fuso Nerini and others, "Connecting climate action with other Sustainable Development Goals", *Nature Sustainability*, vol. 2, No. 8 (August 2019), pp. 674 – 680.

Conclusion

As Asia and the Pacific continues its remarkable economic trajectory – contributing around 40 per cent to total global output[5] and accounting for more than half of global production by 2050[6] – the region faces a pivotal moment in its progression towards sustainable development. The widening annual financing gap of $4 trillion for developing countries globally presents both an urgent challenge and a transformative opportunity. The Fourth International Conference on Financing for Development in Seville offers a critical platform to reshape the financial architecture at all levels to support the SDGs. Success will depend on implementing the many recommendations identified in this report: expanding domestic resources, strengthening debt sustainability, reinforcing regulatory frameworks to deploy private capital towards the SDGs, strengthening sustainable debt capital markets, accelerating financing for the energy transition, improving project pipeline development, reforming international financial institutions, and creating greater coherence between climate and development financing.

The Financing for Development series, published every two years, will continue to take stock of where we are in the region's financing journey, and to analyse critical constraints, innovative solutions and partnerships and remaining challenges. As the regional arm of the United Nations secretariat in Asia and the Pacific, ESCAP can play an important role in strengthening the follow-up process and ensuring accountability to and full implementation of commitments (to be) made at the Fourth International Conference on Financing for Development. As part of the follow-up process, ESCAP can leverage its existing expertise and platforms to organize dialogues between member states and other stakeholders in order to map regional priorities and needs, deliver demand-driven technical assistance and provide a stocktake of initiatives undertaken. The next edition of this Financing for Development report will examine and report on the region's implementation of the outcome of the conference.

With coordinated action between governments, financial regulators, multilateral development banks and private sector stakeholders, the Asia-Pacific region can pioneer innovative financing solutions that will not only close the SDG financing gap but will ensure an inclusive, resilient and sustainable future for all. The time for ambitious financial reform and for renewed commitment to sustainable development is now.

ENDNOTES

1 United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), "Strengthening financing for sustainable development in Asia and the Pacific: a discussion of selected policy areas", Issues Paper (Bangkok, 2024).

2 *Sustainable Finance: Bridging the Gap in Asia and the Pacific*, ESCAP Financing for Development Series, No. 5 (United Nations publication, 2023).

3 *Economic and Social Survey of Asia and the Pacific: Understanding the Macroeconomic Implications of Climate Change* (United Nations publication, 2025).

4 Fuso Nerini and others, "Connecting climate action with other Sustainable Development Goals", *Nature Sustainability*, vol. 2, No. 8 (August 2019), pp. 674 – 680.

5 Randa Elnagar, "Regional economic outlook for Asia and the Pacific: resilient growth but higher risk", transcript, Tokyo, 1 November 2024. Available at www.imf.org/en/News/Articles/2024/11/11/tr-103124-press-briefing-apd-reo-launch-tokyo.

6 Harinder S. Kohli, Ashok Sharma and Anil Sood, "Executive Summary", *Asia 2050: Realizing the Asian Century* (London, Sage Publications, 2011)

PART I

FINANCING FOR DEVELOPMENT -

KEY ISSUES AND POLICY SUGGESTIONS: PERSPECTIVES FROM ASIA AND THE PACIFIC

Financing challenges are at the heart of the sustainable development crisis. Over the past several years, the world has contended with persistent pandemic-related consequences, ramped up geopolitical tensions and conflict, inequalities between and within countries, climate change, biodiversity loss and pollution, and increasingly restrictive financing conditions – all of which represent direct challenges to the achievement of the Sustainable Development Goals (SDGs).

But the Goals were off track even before this recent confluence of crises, with financing neither mobilized at scale nor allocated at the terms necessary to achieve deep, economic, societal and environmental transformation. The marked increase of the estimated SDG financing gap to between $2.5 and $4.0 trillion annually for developing countries underscores the urgency of affordable, predictable, sustainable and sufficient development finance from all sources.

The Fourth International Conference on Financing for Development, to be held in Seville from 30 June to 3 July 2025, is expected to reiterate the importance of closing finance and investment gaps and mobilizing and aligning all sources of finance. It is also expected to focus on promoting a stronger international financial architecture, and on the importance of formulating and financing new development pathways.

This chapter presents key issues and policy suggestions for financing for development from the perspective of Asia and the Pacific. Specifically, it discusses four areas: (a) strengthening domestic public resources; (b) accelerating the mobilization of domestic and international private finance towards the SDGs; (c) tackling public debt sustainability concerns; and (d) addressing new and emerging issues.[1]

Mobilizing domestic resources, particularly through tax revenues, remains an essential source of financing for sustainable development. The Asia-Pacific experience suggests that to improve tax revenue rates swiftly, it is essential to rationalize tax structures, strengthen tax administration and reduce wasteful tax exemptions. Nevertheless, to achieve greater and sustained results in the longer term, broader socioeconomic progress, accountability of public expenditures and improvements in public governance are also important. Exploring the potential of direct income and wealth taxes and of the region's booming real estate markets will be key for further improving public revenues.

The role of **private finance** in closing financing gaps for SDGs is key. To accelerate private financing, well-developed and deep banking and capital markets are essential, supported by financial regulations that help embed sustainability considerations. Although there are many positive examples in Asia and the Pacific, in most economies in the region the state of development of these markets and regulatory approaches remains a work in progress. Moreover, private finance and concessional finance provided by multilateral development banks and development finance institutions is not flowing towards the least developed countries or towards challenging sectors and projects. This needs to be addressed through new approaches and partnerships. The potential of foreign direct investment to support SDGs has also not been fully explored.

Rising **public debt distress** in the region poses a significant threat to economic stability and effective financing of sustainable development. Public debt distress has three distinct underlying causes: economic and fiscal mismanagement, temporary liquidity shocks, and development and climate financing deficits. Similarly, traditional bilateral, non-traditional bilateral and commercial creditors have shared but different responsibilities in restructuring sovereign debt. Proper resolution of sovereign debt distress should ideally be guided by these two principles and realities --- identifying underlying reasons for debt distress and understanding the role of different types of creditors --- while continuing with pragmatic second-best approaches. Debtor countries should also hold their side of the bargain by ensuring accountable and productive use of borrowed funds and effective public debt management.

With regard to **new and emerging issues**, current approaches to financing international commitments to sustainable development and climate ambitions are fragmented, with underlying issues being debated

and addressed separately. Given the limited financing available, this needs to change. At the national level, international commitments need to be better integrated with national investment planning and financing processes. A similarly integrated approach is also needed at the global level.

As the regional arm of the United Nations system in Asia and the Pacific, ESCAP can play an important role in strengthening the follow-up process and ensuring accountability to and full implementation of commitments made at the Fourth International Conference on Financing for Development. It can leverage its existing expertise and platforms to organize dialogues between member states and other stakeholders to chart regional priorities and needs, deliver demand-driven technical assistance and provide a stocktake of initiatives undertaken as part of the follow-up process.

Specifically, ESCAP's intergovernmental Committee on Macroeconomic Policy, Poverty Reduction and Financing for Development, which meets every two years, already has a mandate to support "regional cooperation on macroeconomic and financing for development issues and developing common regional positions as inputs to global processes while ensuring regional follow-up to their outcomes." The discussion regarding the outcome of the conference and follow-up at the regional level can be a recurring agenda item at this committee.

I. STRENGTHENING DOMESTIC PUBLIC RESOURCES

Lessons from recent successes in tax revenue enhancement

Several Asia-Pacific countries have achieved remarkable progress in mobilising tax revenues since 2000, with an increase in the average tax-to-GDP ratio in the region from 13 per cent in 2001 to 18.4 per cent in 2022. Three main factors contributed to this positive development: i) rationalized tax structures and tax rates to streamline taxation processes and unlock the revenue potential of broad-based tax handles; ii) strengthened tax administration to ensure compliance and efficient collection; and iii) reduction in wasteful tax exemptions to broaden the tax base. In many instances, these factors mutually reinforced each other.

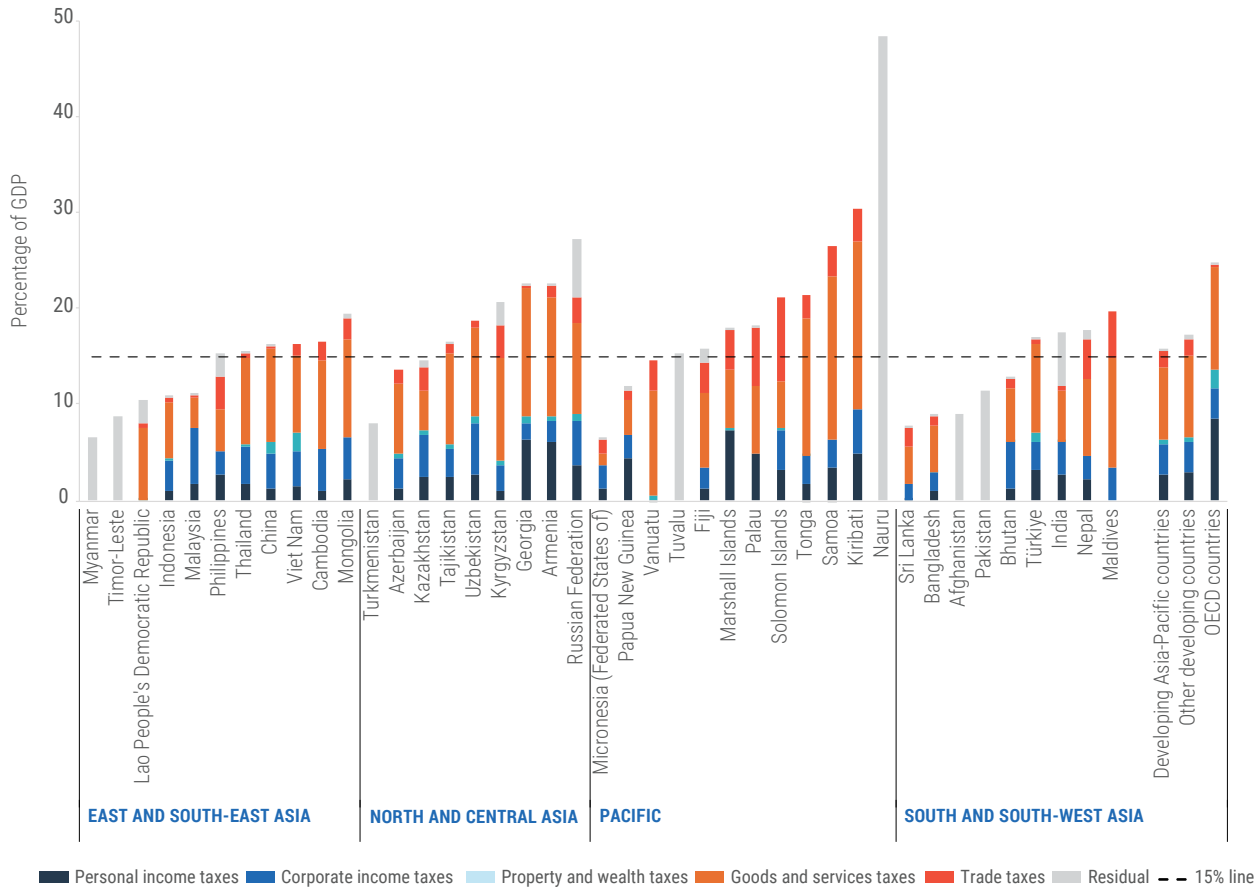
Effective tax administration, in particular, played a central role in this success. Enhanced tax auditing, better taxpayer registration and services, and adoption of digital solutions in tax administration were the most common measures taken. Streamlined operations and strengthened internal governance of tax authorities, the creation of dedicated large taxpayer units, and collaboration and information exchange between tax authorities and other pertinent ministries were also key ingredients to the success.

Gaps in personal income taxes (PIT) and property and wealth taxes (PWT)

Despite this progress, mobilization of tax revenues remains low in some developing Asia-Pacific countries compared to members of Organization for Economic Co-operation and Development (OECD) countries (figure 1). If economies in the region were to match their revenue performance on PIT and PWT with that of goods and services taxes (GST) relative to OECD countries, they would be able to mobilize an additional 4.4 per cent of GDP annually and reduce the total tax revenue gap by about half.

In particular, the fertile tax base of the region's booming property markets remains under-tapped. Assuming a recurrent property tax rate of 0.5 per cent without exemptions, on average about 3.5 per cent of GDP could potentially be added to the public coffers every year. Yet in 2022, government revenue from various property taxes exceeded 0.5 per cent of GDP in only five countries (China, Georgia, Russian Federation, Uzbekistan and Viet Nam) and was close to zero in half of the countries where data is available (figure 2).

Figure 1: Tax revenue by source, 2021 or the latest year available (percentage of GDP)



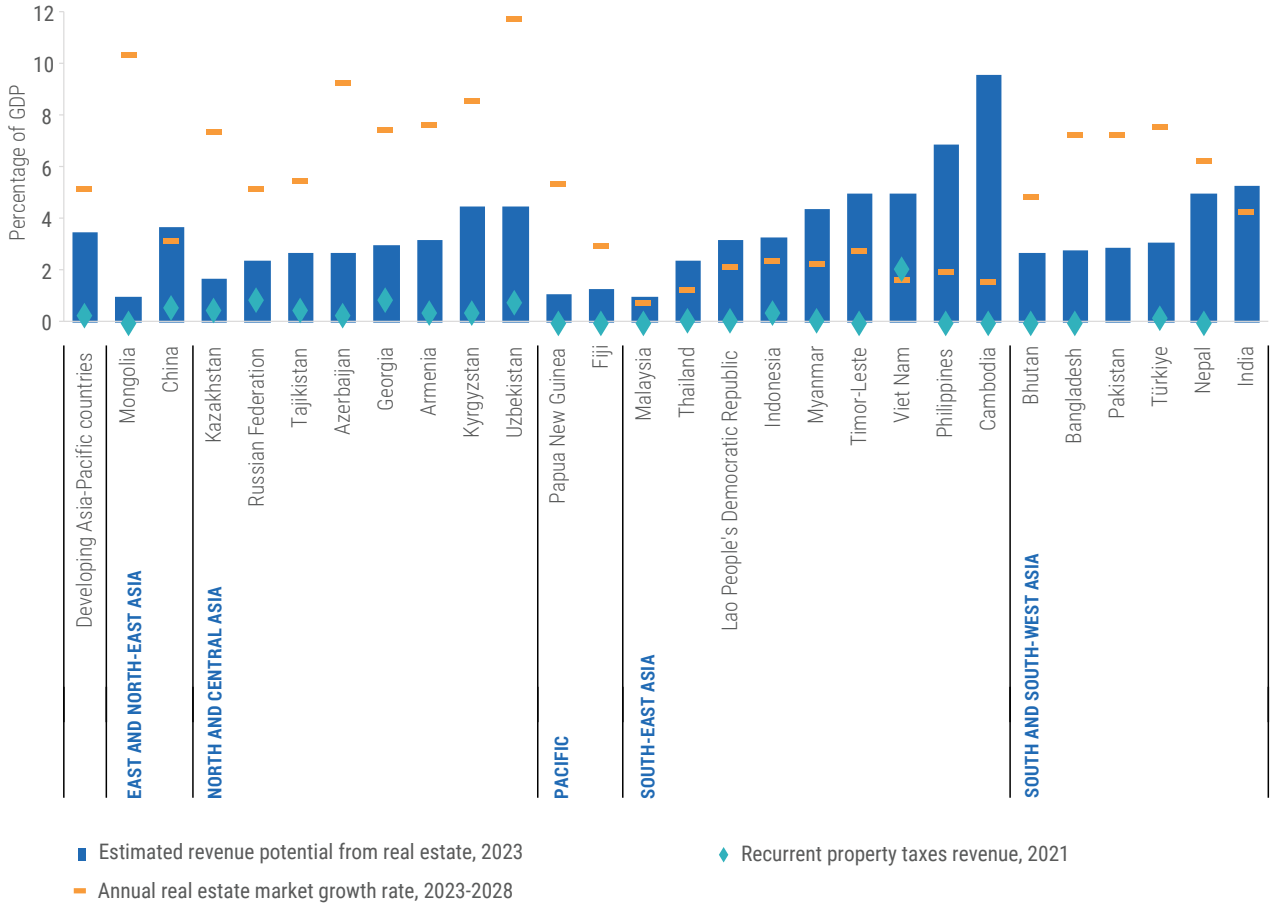
Source: ESCAP, based on the International Monetary Fund (IMF) World Revenue Longitudinal Data set.

Tax potential and the underlying forces that affect it

Based on a stochastic frontier analysis, ESCAP estimates show significant variations in tax potentials[2] across the Asia-Pacific region. They show that for the period 2017-2019 actual tax collection as a share of maximum tax capacity (i.e. the tax effort) ranges from 56 to 94 per cent , while the estimated tax potential (i.e. the gap between actual tax collection and estimated maximum tax capacity) ranges from 1.1 to 6.1 per cent of GDP (figure 3).

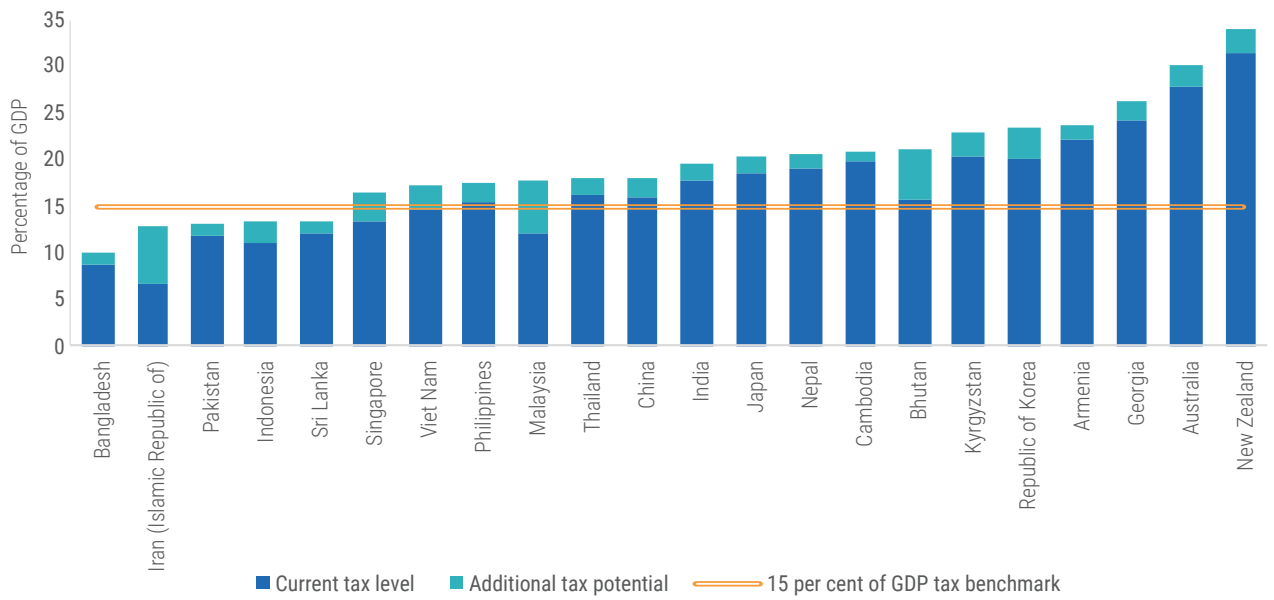
The analysis also reveals that low tax-to-GDP ratios do not automatically imply high tax potentials. For instance, the estimated tax potential in Bangladesh, Pakistan and Sri Lanka is capped at modest levels by socioeconomic and governance constraints, even though current revenue collection levels are low. In these cases, improved tax policies and tax administration alone may have limited impact on revenue if broader improvements in socioeconomic fundamentals and governance quality are absent. Sustained economic development, social progress (such as better education and greater economic equality) and improved public governance may make a greater contribution to improving tax revenue in the long term than just additional tax collection efforts in the short term.[3]

Figure 2: Selected indicators on property market and property-related public revenue potential



Source: ESCAP, based on the IMF Government Financial Statistics database and Statista estimates on real estate market values.

Figure 3: Estimated tax gap and additional tax potential, 2017–2019 average (percentage of GDP)



Source: ESCAP analysis based on the IMF World Revenue Longitudinal Data set.

International tax cooperation in response to economic digitalization

New business models ranging from web-based services to remote employment and manufacturing practices have enabled multinational enterprises to operate in developing countries while avoiding paying taxes locally. Challenges in locating and pricing digital assets and intellectual property also provide multinationals with additional opportunities for profit shifting. While international cooperation to establish new standard procedures in the digital era has achieved some initial progress towards a reduction in tax evasion and avoidance and fairer allocation of taxing rights across countries, the erosion of tax revenues in developing countries is still far from being fully resolved.

On a global level, the OECD and G20's Base Erosion and Profit Shifting (BEPS) Inclusive Framework is a pioneering effort to pursue a multilateral solution to economic digitalization and tax base erosion through its "Two-Pillar" programme. Yet despite the merits of a multilateral solution and the promised breakthroughs, the success of the programme remains clouded by uncertainties in country coverage, legal and administrative complexity, and the protection of the interests and rights of developing countries in the process. In parallel, Article 12B of the latest United Nations Model Tax Convention also offers premises for taxing automated digital services. Bilateral negotiations based on Article 12B are ongoing, but implementation is yet to materialise.

Truly equal representation and effective participation of developing countries in the ongoing reforms of international taxation will be key for a successful transition towards an effective and fair international tax regime suitable for digitalized economies. The United Nations provides an ideal platform for inclusive deliberations for all. The United Nations General Assembly resolutions 77/244 and 78/230 affirm the international community's commitment to inclusive and effective tax cooperation and to an intergovernmental process that is expected to lead to a *United Nations Framework Convention on International Tax Cooperation*.

Suggested policy priorities

1) **Strengthen tax administration with support from digitalized tax systems.** Digital solutions are an increasingly important ingredient of effective and efficient tax administration for swift and robust tax revenue enhancement. Well-designed electronic tax filing and payment, as well as digitalized collection, storage, analysis and sharing of tax data, can lead to substantial time and cost savings for both taxpayers and tax authorities, far more effective tax auditing and enforcement, and greater transparency and accountability of the whole tax system.

2) **Adopt a holistic approach to enhance tax revenue mobilization.** Strengthened tax effort is only one channel for revenue enhancement and may suffer from diminishing returns when countries approach the maximum tax levels their socioeconomic fundamentals and public governance quality can support. New holistic thinking on tax revenue mobilization is required. Governments should not only ask how taxes can be raised but also focus on how these resources are spent, as part of a coherent medium-to-long-term revenue strategy.

3) **Explore the potential of income and wealth taxes.** Growing public pressure to share economic prosperity more equitably, and swift progress in digitalization, are creating new opportunities for overcoming traditional political and practical obstacles to the broader adoption and better enforcement of income and wealth taxes. Comprehensive and accountable financial documentation, government access and the accountable use of such data, and improved capacity of tax authorities to analyse tax data will be key enablers in this process.

4) **Tap into the region's booming property markets through land value capture.** The underperformance of property taxes is a major missed opportunity. Land value capture[4] may serve as a viable temporary alternative to recurrent property taxes, given its advantages of being more front-loaded in revenue streams and less visible, as it is the land developers that are taxed, rather than homeowners.

5) **Enhance regional tax dialogue and cooperation.** The next few years are expected to see several milestones in international tax cooperation, following the release of the "zero draft" of the terms of reference of the new *United Nations Framework Convention on International Tax Cooperation* in June 2024. In this context, it would be useful to strengthen dialogue, coordination and capacity support for Asia-Pacific developing countries at the regional level. ESCAP can facilitate these discussions. Expanded collaboration between subregional tax bodies, key partner organizations such as multilateral development banks, and the United Nations system will also be desirable.

II. ACCELERATING THE MOBILIZATION OF DOMESTIC AND INTERNATIONAL PRIVATE FINANCE TOWARDS THE SDGS

Effectively mobilizing sufficient private finance in support of the Sustainable Development Goals will require a transformation of the national, regional and international financial architecture. In addition to actions that regulators and policymakers need to take at the national level, such a transformation would also require a change of approach by multilateral concessional finance providers such as the multilateral development banks, which need to work closely with private finance entities to de-risk investments, especially in least developed countries and in more challenging sectors and projects. For their part, private businesses need to do more to implement their voluntary sustainability-related commitments. Many have already made their supply chains more sustainable, divested assets, ceased some activities that do harm, and are designing future business plans such as transition plans to chart a progressively more sustainable path. However, much more needs to be done.

Key challenges hampering mobilization of domestic and international private finance

The first main challenge is the underdeveloped and highly disparate state of capital markets in most Asia-Pacific economies. Key features of this include: the weak state of market infrastructure, as reflected in underdeveloped exchanges for stocks, securities, derivatives and other financial instruments; weak clearing systems for settling financial trades; the absence of guiding frameworks to issue different financial instruments; the absence of bondholder rights and insolvency regulations; a lack of secondary markets, particularly for corporate bonds; and regulations that hinder foreign ownership or create taxation issues.[5]

Second, the institutional investor base, such as pension funds or insurance companies that can provide stability and liquidity, is small compared to in OECD countries. For the majority of countries in the region domestic savings are still primarily channelled through banks rather than capital markets.

Third, corporate governance remains a binding constraint in many capital markets due to the poor quality of financial reporting by domestic businesses, and to weaknesses in the legal system that make it difficult for investors to seek redress in the courts, if needed.

Fourth, the enterprise landscape in Asia and the Pacific is dominated by micro, small and medium-size enterprises (MSMEs), which account for an average of 96.6 per cent of all enterprises, 55.8 per cent of the workforce and 28.0 per cent of gross domestic product (GDP) or gross value added (GVA) in several developing countries in Asia and the Pacific.[6] Such enterprises are predominantly funded by internal funding (equity) or sometimes by borrowing from formal channels such as banks. However, they primarily do not raise capital through securities in the capital markets.

Fifth, an issue in several economies is the continuing lack of adequate policy coherence and coordination between different ministries, departments and agencies in terms of national priorities and planning relating to the Sustainable Development Goals. This creates uncertainty, imposes significant transaction costs on private finance, and reduces the financial efficiency of sustainable finance, bringing down returns and making private investments in support of Sustainable Development Goals less desirable.

Need for integrated actions by regulators and policymakers

Addressing these challenges and ensuring that private finance flows at scale towards the Sustainable Development Goals would require a suite of integrated actions by policymakers and regulators to develop and deepen financial markets and strengthen sustainable finance in tandem as seen in figure 4. Examples of key actions include implementation of sustainability-focused financial risk management approaches, promotion of sustainable financial product development (such as sustainable bonds), and adoption of sustainable taxonomies and disclosure frameworks underpinned by a sustainable finance roadmap. Clear, coherent and integrated actions by banking and capital market regulators along these lines can signal stability and predictability to investors, enabling long-term investments.

Suggested policy priorities

6) **Strengthen financial regulations to facilitate and accelerate private financing towards the Sustainable Development Goals.** Changes in financial regulations that prioritize sustainability considerations will influence the behaviour of businesses operating in different sectors of the economy. For this, regulators will need to invest in data and capacities of their staff and systems to design, monitor and enforce effective sustainable financing regulations. Moreover, regulators should also strive for greater consistency with regional and global sustainable finance taxonomies and roadmaps. This would ensure that international investors can benefit from interoperability and provide incentives for foreign capital to flow towards the sustainable development goals.

7) **Undertake actions to develop and deepen domestic banking and capital markets and ensure that sustainability considerations are fully embedded.** Examples of potential actions include: increase the institutional investor base; strengthen corporate governance; develop more efficient banking and capital market infrastructure; provide sufficient technical capacity and knowledge to market intermediaries; implement robust regulatory and supervisory frameworks with strengthened investor protection policies; ensure adequate and independent credit risk assessment for companies of all sizes; and improve secondary market liquidity. In addition, strengthening sustainable finance roadmaps, taxonomies, disclosure standards and reporting requirements for banking and capital markets participants can further ensure that private finance is deployed towards the SDGs.

8) **Increase the flow of concessional and private finance towards the least developed countries, as well as towards more challenging sectors and projects.** For the LDCs, as well as for countries with low sovereign credit ratings, concessional finance by multilateral development banks and development finance institutions can act as an effective de-risking mechanism for private finance, if undertaken in partnership with the government and the private sector. Setting up a modality in which the private sector (project developers) and financial institutions regularly meet and co-create sustainable projects in a progressive and iterative manner can accelerate the preparation of effective pipelines of sustainable projects at scale. Doing so would require a change in mindset of both the concessional and private finance providers operating in LDCs.

III. TACKLING PUBLIC DEBT SUSTAINABILITY CONCERNS

General trends and challenges

Since 2000 gross public debt levels have followed a U-shaped path in developing countries in Asia and the Pacific, with average public-debt-to-GDP ratios approaching the high levels observed in the immediate aftermath of the Asian Financial Crisis of 1997 (figure 5). Primary fiscal deficits have been the main source of the public debt level increase during this period, followed by exchange rate depreciation of local currencies, which have had a much greater impact on small and vulnerable economies. The growing share of commercial and private lending, which on average demands 2.5 times the interest rate compared to official creditors and concessional finance, have further compounded the challenge, resulting in growing debt service burdens and a steady decrease in maturities of external public debt.

Figure 4: Financial sector development and sustainable finance actions

Sustainable finance actions

PHASE 1	PHASE 2	PHASE 3
Early sustainability	**Emerging sustainability**	**Deep sustainability**
• Preparatory activities such as determining the enabling framework conditions, laying groundwork for capacity-building measures, raising awareness on sustainability issue with policymakers	• Formal adoption of sustainability policies take place by financial institutions • Sector-wide implementation of measures (environmental and social risk management techniques, sustainable product development) • Sector-wide capacity-building	• Sustainable finance attributes become embedded in mainstream finance • Standards in ESG reporting and sophisticated external disclosure and verification are mainstreamed

***The level of sustainable finance may parallel broader levels of maturity in financial sectors – though these processes are often not linear or uniform**

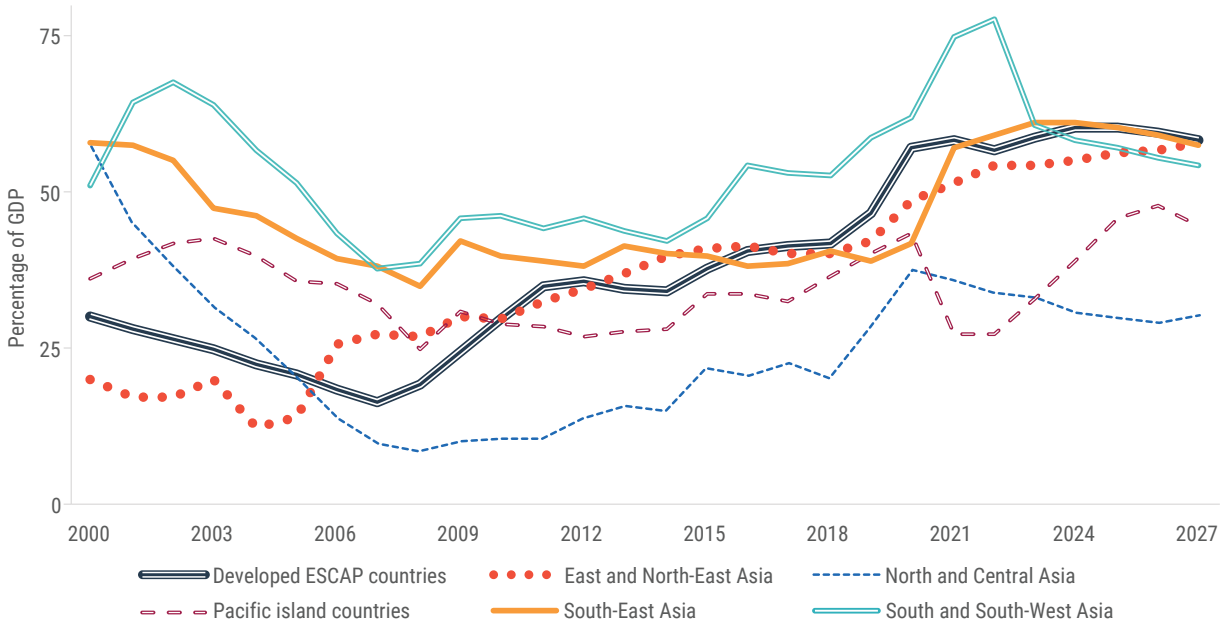
• Largely bank credit driven financial sector • Debt capital markets dominated by public sector • Little or no risk transfer solution for climate-related risks • Restrictive regulatory environment • Lack of competition/market actors • Inefficient operating processes • Generic/undifferentiated financial products	• Private sector can raise debt or equity capital • Existence of local stock exchange • Entry of rating agencies and data processors • Increasing commercial banking appetite for private sector debt • Emerging market for climate-related risks • Deepening of financial inclusion	• Deepening of capital and debt markets • Diversity of risk transfer solutions for climate-related risks • Market driven innovation • Increasing sophisticated customer base • Advanced business and operating models • High level of disclosure and financial information flow • Integrated internationally
Early-stage	**Middle-stage**	**Advanced-stage**

FINANCIAL SYSTEM

Financial sector development

Source: ESCAP and Global Green Growth Institute, "ASEAN Green Map", paper prepared for the Association of Southeast Asian Nations, Jakarta, forthcoming.

Figure 5: Median general government gross debt, by subregion, 2000–2027



Source: IMF, World Economic Outlook database.

Three main sources of public debt distress and their distinct nature

First, economic and fiscal mismanagement. This is due to policy missteps by governments, and can theoretically be avoided through greater prudence and accountability in fiscal decision-making.

Second, temporary liquidity shocks. Risks of economic and financial crises or natural disasters push reasonably managed economies into liquidity and temporary debt distress, despite their long-term fiscal solvency remaining intact. These risks are beyond the control of debtor countries and are likely to be contained if liquidity support can be provided by the international development community.

Third, significant development deficits and gaps in climate financing. For example, additional financing requirements for Sustainable Development Goals amount, on average, to 16 per cent of GDP in Asia-Pacific LDCs, far exceeding their fiscal capacity. Moreover, a large part of the basic spending needs, such as social expenses or climate adaptation expenditure, is related to consumption or insurance, and thus does not generate adequate cash returns for debt servicing and repayment. If financed with debt rather than development transfers, such spending will almost inevitably result in debt distress.

Central role of efficiency in public expenditure and the productive use of public funds

Efficient public spending and the productive use of public funds is arguably the most important principle to ensure public debt sustainability. A relentless emphasis on the productive use of borrowed funds, centralized approval of external borrowing, and close alignment of fund usage with national development priorities helped several developing Asia-Pacific economies navigate the perils of fast public debt accumulation when they had to leverage debt financing to support their economic take-off.[7]

In comparison, ESCAP's recent research finds weak or generally negative correlation between public debt levels and either gross fixed capital formation or social spending on education and health in most developing Asia-Pacific countries.[8] This indicates suboptimal allocation of funds. Even for existing social and infrastructure spending, fiscal savings of up to 30 per cent could potentially be achieved when developing Asia-Pacific countries are benchmarked against their best-performing peers.[9]

Sovereign debt management and monitoring as a fiscal safeguard

Effective sovereign debt management and monitoring can reduce both debt distress risk and sovereign borrowing costs. Data transparency on outstanding and potential debt claims on governments is particularly important for early detection of debt sustainability challenges, along with early action to contain the risks and mitigate potential damage. Yet systematic evaluation of public debt management in many developing Asia-Pacific countries remains sparse. Debt policy ratings in the World Bank's Country Policy and Institutional Assessment, as a proxy for debt management quality, underscore a lack of improvements in many developing Asia-Pacific countries in the period 2014 to 2023.

Data transparency on outstanding and potential debt claims on the government is particularly important for early detection of debt sustainability challenges and early action to contain the risks and mitigate potential damage. When such risk-reduction effects of high-quality and accountable sovereign debt management and monitoring are factored in by the financial market, risk premiums and borrowing costs on the sovereign debt also come down.

Challenges of timely debt restructuring and debt relief

Arguably, for countries under sustained public debt distress, debt restructuring is the only viable and desirable option, rather than permanent default on debt payments. However, sovereign debt restructuring is complicated due to two fundamental challenges. First, a government's ability to honour its debt (that is, its fiscal solvency) is subject to considerable debate. Unlike a private debtor whose debt repayment capacity and boundaries are clearly defined under bankruptcy law, a government can expand the resources available for honouring its debt obligation thanks to its powers of taxation and money printing, which in theory are constrained only by economic and political impracticalities. This lack of a clear boundary of solvency renders both public debt sustainability assessments and restructuring difficult to navigate.

Second, treatment of public debt distress arising from different causes should be differentiated, which is currently not the case. For instance, debt distress due to economic and fiscal mismanagement should entail a cost to that particular government. Otherwise, it risks moral hazard and misuse of debt relief by irresponsible governments. On the other hand, developing debtor countries should be provided with generous debt relief for damages caused by climate change. They should also get adequate financing support for addressing their basic development needs, and liquidity support for breathing space during economic shocks that are beyond their control. However, the prevailing discussion on "fair" and optimal sovereign debt treatment remains muddled, leading to disagreements among stakeholders and failures of debt relief schemes to achieve their declared objectives.

As a result, public debt restructuring to date is characterized by protracted and costly negotiations and is often "too little, too late". Meanwhile, the G20 Common Framework for Debt Treatments continues to face challenges with regards to reaching swift agreements among the main creditors, increasing the scale and country coverage of debt reliefs, and compelling private creditors to join the negotiations and provide comparable levels of debt write-downs.

Suggested policy priorities

9) **Pursue a differentiated treatment of public debt sustainability concerns according to the underlying causes.** Recognizing the three underlying sources of public debt distress and the need for differentiated treatment for each is the first step towards a systematic and coherent response to the challenge of contemporary public debt and development financing. Timely and adequate liquidity support for developing countries affected by unanticipated economic and natural disaster shocks beyond their control is necessary to help them bounce back economically and financially and maintain long-term fiscal solvency. Meanwhile, for public debt distresses caused by sustained economic or fiscal mismanagement, debtor countries rather than creditors should be held primarily accountable for the consequences and measures needed.

10) **Significantly scale up ex-ante development transfers as an alternative to ex-post debt relief.** Scaling up ex-ante development transfers

voluntarily would be a much more desirable option for the international development community than being forced to provide complicated and painful ex-post debt reliefs. Generous ex-ante development transfers to reduce future necessity for debt relief is not without precedent, as in the example of the NextGenerationEU programme in 2021.

11) **Prioritize productive use of borrowed funds and effective public debt management.** To effectively leverage debt as a tool for expanding development finance without compromising on fiscal sustainability, it is paramount that developing Asia-Pacific countries put the borrowed funds to productive use, rather than wasting them on ill-conceived or poorly-implemented projects, or on financing wasteful consumption. Effective public debt management through clearly articulated policy objectives and legal frameworks, procedural and institutional transparency and accountability, and strengthened debt statistics can further expand the safety margin for debt financing for development. A sovereign debt portfolio that comprises more long-term debt, local-currency denominated debt and concessional loans would also help.

12) **Take pragmatic approaches regarding sovereign debt restructuring.** Further progress in collective action clauses and "anti-vulture" legislation together with exploring innovative solutions such as state-contingent clauses in sovereign borrowing are arguably better second-best choices compared to introducing "hard laws" and centralized arbitration mechanisms for sovereign debt restructuring. Meanwhile, for the G20 Common Framework for Debt Treatments to fulfil its objective, understanding the necessity of differentiated treatment of debt distress according to its underlying cause and recognizing the shared but differentiated responsibilities of traditional, non-traditional and commercial creditors in sovereign debt restructuring would be helpful steps to move forward.

IV. ADDRESSING NEW AND EMERGING ISSUES

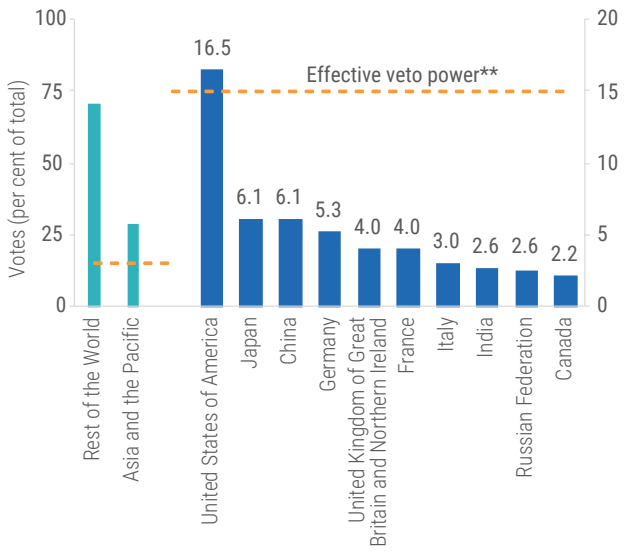
Representation of developing countries and voting power in international financial institutions

The question of representation of Asia and the Pacific in international financial institutions such as the IMF is a fair one given that the region is home to almost two-thirds of the world's population, one-third of the voting rights, and only around one-fifteenth of the total credit flows towards the region.

The issue of representation and voting power of developing countries in major international financial institutions has been under discussion for decades. Recently, in August 2023, Resolution 10 of the XV BRICS Johannesburg II Summit called for changes in IMF quotas to ensure higher representation of developing economies.[10] In April 2024, the Intergovernmental Group of Twenty Four (G24) noted the need to increase representation of emerging markets and developing economies, including from the Asia-Pacific region, in the IMF governance structure.[11] More recently, in September 2024, Action 48 of the recently adopted *Pact of the Future* noted "*the need to enhance the representation and voice of developing countries in global economic decision-making, norm-setting and global economic governance at international economic and financial institutions*".[12]

Significant decisions at the IMF require an 85 per cent approval rate of all voting rights, ensuring that decisions represent the vast majority of members and facilitate their implementation. However, with 16.5 per cent of the votes, the United States of America has effective power of veto at the IMF (figure 6). Similar imbalances persist within the Asian Infrastructure Investment Bank (AIIB), in which China, the largest shareholder with 27 per cent of the votes, also holds an effective power of veto.[13] The distribution of voting power at the Asian Development Bank (ADB) is less concentrated than at the IMF or AIIB – no ADB member has effective power of veto of 25 per cent of the votes.[14]

Figure 6: Voting power on the IMF Executive Board,* June 2024



Source: IMF, "IMF members' quotas and voting power, and IMF Board of Governors", 10 October 2024. Available at www.imf.org/en/About/executive-board/members-quotas.

Notes: * The Executive Board (the Board) is responsible for conducting the day-to-day business of the IMF (IMF, "IMF Board of Governors approves quota increase under 16th General Review Quotas", 18 December 2023.)
** Effective veto power – the IMF Executive Board agrees on decisions with 85 per cent majority, therefore it is enough to have 15 per cent of the votes to block decisions.

Besides quota allocation, other factors also play a role in the availability of financing

By May 2024, around 60 per cent of the total credit outstanding at the IMF had been given to only five borrowers (Argentina, Egypt, Ukraine, Pakistan and Ecuador). Together they account for around just 2.1 per cent of the total voting power. This highlights a skewed distribution against the majority of developing and least-developed countries, including from Asia and the Pacific.[15] Therefore, concerns about the distribution of votes remain overshadowed by the proportional access to financing by other developing and least-developed countries within already existing rules.

Synergies among global commitments and alignment of financial flows needs to be enhanced

There are several differences between global commitments and frameworks such as the 2030 Agenda for Sustainable Development or the Paris Agreement on climate change with respect to finance-related commitments, language and strategies. Nonetheless, the issue of financing remains at the centre of both climate negotiations and the sustainable development agenda, with the underlying details being debated and developed separately. At the same time, the current international financial architecture is fragmented and lacks the ability to enable efficient and effective funding or to provide an environment for investment for synergistic action to fulfil commitments across these global frameworks and commitments.[16]

Without aligning financing targets, flows and goals, there will be fragmentation in progress across climate and sustainable development ambitions. With over 80 per cent of Sustainable Development Goal targets directly linked to climate, either through positive co-benefits or negative trade-offs, there is an urgent need for a synergistic approach to harness these benefits and minimise trade-offs.[17]

At the national level, an approach is needed that integrates each country's international commitments – on sustainable development, on climate change and on other issues – with their national investment planning and financing processes. To this end, governments, financial regulators and private finance entities would need to work together on a common set of actions and strategies to ensure that sufficient finance is mobilized for these global commitments.

A similar integrated approach also needs to be pursued at the global level with regards to international financial flows. Such an integrated international development system, supported by aligned financing strategies, represents the essence of reforms of the international financial architecture required.

Suggested policy priority

13) **Ensure fair representation of Asia-Pacific in global financial policymaking.** With better representation of Asia and the Pacific, the region would benefit from proportionally greater influence on policy decisions. Consequently, policies that affect the global economy could align better towards regional needs and priorities. The move would also partly translate into improved access to resources for development financing as, for example, the IMF quotas are linked to the availability of loans for IMF members.[18]

14) **Strive for coherence, consistency and clarity in the international development system regarding sustainable finance.** The process of financing for development, both at the national and international level, should strive to align financing flows and targets with all key international frameworks and agreements already committed to by countries. These agreements incorporate specific financing-related provisions which have been incorporated by some financial regulators to drive the progress of sustainable finance regulations in the region. This aspect can be further strengthened. Furthermore, integration of sustainable development agendas and climate ambitions within national financing frameworks, coupled with enhanced collaboration between government agencies and regulators, is essential for coherent and effective action.

V. CONCLUDING REMARKS

There are three broad sources of finance that can help close financing gaps for Sustainable Development Goals. The most important is the mobilization of domestic resources, which includes government fiscal and debt positions and the ability of local financial markets to mobilize financial resources from both public and private sources. For most developing countries, a rule-of-thumb is that between 60 to 65 per cent of the needed financial resources will need to come from such domestic sources, with the remainder to come from external sources. With regards to external sources, there are two broad categories – private external finance and bilateral and multilateral public finance.

The landscape for financing for development in Asia-Pacific presents both encouraging progress and persistent challenges that require coordinated action. The region has demonstrated a remarkable capacity for mobilizing domestic resources through improved tax administration, digitalization of tax systems and structural reforms, yet significant gaps remain in personal income and property taxation that could generate substantial additional revenue. Addressing these gaps requires not only technical improvements but also broader socioeconomic development and governance reforms to expand the underlying tax potential.

Mobilizing private finance faces structural barriers including underdeveloped capital markets, weak institutional investor bases, and corporate governance issues that inhibit sustainable investment flows. A transformation of financial systems is needed in which sustainability considerations are fully embedded in regulatory frameworks and market development strategies while in parallel voluntary approaches by the private sector are strengthened. Particular attention must be paid to least developed countries and challenging sectors, for which concessional finance from multilateral development banks can play a crucial de-risking role.

Rising public debt levels across the region demand careful management, with emphasis on the productive use of borrowed funds and differentiated approaches based on the underlying causes of debt distress. The international financial architecture requires reform to ensure fair representation of Asia-Pacific countries in decision-making processes and proportional access to financing. Equally important is the need for coherence between climate financing and sustainable development goals, recognizing their interdependence and efficiency gains from aligned strategies.

As the region prepares for the Outcomes of the Fourth International Conference on Financing for Development, ESCAP is well-positioned to facilitate regional dialogue, provide technical assistance, and ensure accountability to strengthen the follow-up through its existing intergovernmental mechanisms. The fourteen policy priorities identified in this chapter offer a comprehensive roadmap for member states to strengthen financing for sustainable development. Implementation of these recommendations will require sustained political commitment, innovative approaches to mobilizing resources, and enhanced regional cooperation to overcome the complex financing challenges facing Asia-Pacific countries in their pursuit of the 2030 Agenda for Sustainable Development.

ENDNOTES

1 This chapter is based on a longer version of an Issues Paper that was prepared for the Regional Consultation on Financing for Development in Asia and the Pacific, held in Bangkok on 17 and 18 December 2024. See United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), "Strengthening financing for sustainable development in Asia and the Pacific: a discussion of selected policy areas", Issues Paper (Bangkok, 2024), for the full report.

2 Tax potential is defined as the gap between actual tax collection and estimated maximum tax capacity.

3 *Economic and Social Survey of Asia and the Pacific 2024: Boosting Affordable and Longer-term Financing for Governments* (United Nations publication, 2024).

4 Land value capture refers to policies and mechanisms that enable governments to recover for reinvestment part of the increase in land value generated by public investments in infrastructure and services.

5 OECD, Corporate Bond Markets in Asia: Challenges and Opportunities for Growth Companies (Paris, OECD Publishing, 2024).

6 Asian Development Bank (ADB), *Asia Small and Medium-sized Enterprise Monitor 2023: How Small Firms Can Contribute to Resilient Growth in the Pacific Post COVID-19 Pandemic* (Manila, 2023).

7 Such as the Republic of Korea.

8 *Economic and Social Survey of Asia and the Pacific 2023: Rethinking Public Debt for the Sustainable Development Goals* (United Nations publication, 2023).

9 *Economic and Social Survey of Asia and the Pacific 2019: Ambitions Beyond Growth* (United Nations publication, 2019).

10 BRICS, "XV BRICS Summit Johannesburg II Declaration", Gauteng, South Africa, 23 August 2023. Available at http://brics2023.gov.za/wp-content/uploads/2023/08/Jhb-II-Declaration-24-August-2023-1.pdf.

11 Group of Twenty-Four, "Communiqué", 16 April 2024. Available at https://g24.org/wp-content/uploads/2024/07/ENG-G-24-2024-Spring-Meetings-Final-Communique-1.pdf.

12 United Nations, *Summit of the Future Outcome Documents: Pact for the Future, Global Digital Compact, and Declaration on Future Generations* (September 2024). Available at www.un.org/sites/un2.un.org/files/sotf-pact_for_the_future_adopted.pdf.

13 Asian Infrastructure Investment Bank, "Members and prospective members of the Bank", 24 September 2024. Available at www.aiib.org/en/about-aiib/governance/members-of-bank/.

14 ADB, *Information on Subscription for the Fifth General Capital Increase* (Manila, 2009); and ADB, "Agreement Establishing the Asian Development Bank", December 1965.

15 IMF, "Total IMF credit outstanding movement". Available at www.imf.org/en/About/Factsheets/Sheets/2022/IMF-Quotas (accessed on 28 May 2024).

16 *Synergy Solutions for Climate and SDG Action: Bridging the Ambition Gap for the Future We Want*, second edition (United Nations publication, 2024).

17 Ibid.

18 IMF, "IMF quotas", December 2023. Available at www.imf.org/en/About/Factsheets/Sheets/2022/IMF-Quotas.

PART II

CHAPTER 1:
EXPANDING SUSTAINABLE DEBT CAPITAL MARKETS IN ASIA AND THE PACIFIC

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Climate Bonds Initiative

1.1 INTRODUCTION

Achieving* sustainable development in Asia-Pacific entails large scale investments, which in turn, requires substantial financial resources. Public sector financing alone is not sufficient and will need to be complemented with private financing. Encouragingly, the flow of private capital to finance sustainable development has increased globally over the last five years, as a growing number of institutional investors incorporate sustainability elements into their investment strategies[1] and retail investors scrutinise issuers' sustainable practices more closely.[2] Asia and the Pacific has access to vast pools of capital, which shows strong potential for steering capital towards investments and activities with sustainable impacts that also create financial value.

Debt capital markets include fixed-income securities issued by governments, municipalities or corporates to raise capital for various projects or operational purposes. These are traded either publicly on exchanges or privately.

Sustainable debt capital markets are a specialized subset of debt capital markets that explicitly finance projects that have a positive environmental or social impact. They include bonds classified as green, social, sustainable, sustainability-linked and/or transition bonds, with proceeds going towards green and other sustainability uses, or towards related key performance indicators such as reducing carbon emissions, improving social welfare or expanding renewable energy.

Well-developed debt capital markets[3] play a critical role in harnessing private capital and complementing bank lending in financing sustainable development and climate ambitions.[4] However, most Asia-Pacific economies still lack depth and liquidity in their traditional debt capital markets, in part reflecting the lack of adequate market infrastructure and limited investor base,[5] among other factors. While some markets are quite deep and liquid and trade cutting-edge innovative financial products, the predominant financial instrument for investment purposes in the region is still the standard loan product from commercial banks to corporates. Even in countries with relatively well-developed capital markets, such as China, the Republic of Korea and Malaysia, the outstanding values of public and corporate bonds denominated in the local currency are still much smaller than that of bank credits extended to the private sector.[6]

A functioning, conventional debt capital market is essential to enable a thriving, deep and liquid sustainable (GSS+) debt market. Some countries in the region have made considerable strides in developing their GSS+ debt markets, supported by enabling policy and regulatory frameworks. As a result, the total volume of GSS+-aligned deals in Asia-Pacific reached $1 trillion by June 2024 according to Climate Bonds Initiative data. However, such developments are only concentrated in a few countries. As a whole, facilitative debt capital market policy and regulatory frameworks have either not been effectively implemented or lack coherence.

Consequently, GSS+ debt markets in the region remain a small fraction of total debt capital markets. While estimates depend on the methodology used, it is widely recognized that GSS+ debt markets globally are a tiny share of total fixed-income markets – around 5 per cent in 2023.[7] Even in more advanced markets such as the European Union, the volume of GSS+ debt markets was only 7 to 8 per cent in 2024.[8] This share is even smaller for Asia-Pacific economies. For instance, it is only 2 to 3 per cent for ASEAN+3 debt markets.[9] The latest World Investment Report by UNCTAD finds that globally this share has not increased from its 2022 value.[10]

This suggests that the potential of GSS+ debt markets in Asia-Pacific remains unrealized, and greater attention needs to be paid to develop enabling policies and regulatory frameworks to help align debt capital markets with sustainable development. Needless to say, traditional debt markets will need to be deepened as a prerequisite for accelerating financing of SDGs and climate ambitions.

*This chapter is jointly authored by Chiara Amato (ESCAP), Veerawin Su (ESCAP), Zalina Shamsudin (CBI) and Caroline Harrison (CBI). The authors are grateful to Latipat Mikled, Mariia Vakulic and Yuxin Li for their significant research assistance.

Recognizing the catalytic role of capital markets and the complex challenges of bringing together investors, policy makers and the private sector to scale up sustainable investments, this chapter contributes to the policy debate by identifying opportunities to expand and deepen GSS+ debt markets in the Asia-Pacific region, including through the participation of local currency financing. Specifically, it aims to answer the following questions:

- What are the main barriers hindering further growth of GSS+ debt markets in Asia and the Pacific?
- What policies and mechanisms have been deployed that have deepened capital markets in the region? How can these be replicated and scaled?
- What would it take to unlock the untapped potential for further capital market development in the region to achieve the SDGs and interlinked climate objectives?
- How have some countries successfully deepened their sustainable debt capital markets while others still struggle? What lessons can we draw from this?

The research approach used includes a combination of quantitative research, case studies, market insights and stakeholder consultations to capture the perspectives of multiple actors and draw out country-specific experiences and lessons.

1.2 KEY PRECONDITIONS AND DRIVERS OF SUSTAINABLE DEBT CAPITAL MARKET DEVELOPMENT

A well-functioning, conventional debt capital market is an essential prerequisite for an active GSS+ debt capital market. Well-functioning debt capital markets in developing countries can connect investors seeking investment opportunities with sustainable projects and entities, while offering returns to providers of capital.[11] A well-functioning debt capital market relies on different interrelated elements that shape its structure, intermediaries and architecture. A combination of legal, structural and institutional elements contribute to the overall efficiency, stability and capacity to meet the needs of issuers and investors (table 1.1). Differences in the presence, quality and coordination of these elements across countries help explain the diversity and varying levels of development in capital markets across Asia and the Pacific.

The GSS+ debt market ecosystem

The rapidly growing sustainable debt market includes five thematic areas. Collectively, these are described as GSS+ instruments and make up the GSS+ debt market. The five thematic areas are:

1. **Green:** Use of proceeds for pre-defined environmental project categories.
2. **Social:** Use of proceeds for pre-defined social project categories.
3. **Sustainability:** Use of proceeds for a combination of pre-defined environmental and social project categories.
4. **Sustainability-linked:** Use of proceeds can either be sustainable or general purpose, with financial rewards or penalties linked to the achievement of pre-defined sustainability performance targets (SPTs).
5. **Transition:** Use of proceeds can fund an entity's transition towards a reduced environmental impact or to reduce their carbon emissions. The proceeds can be used to finance new and/or existing eligible transition projects.

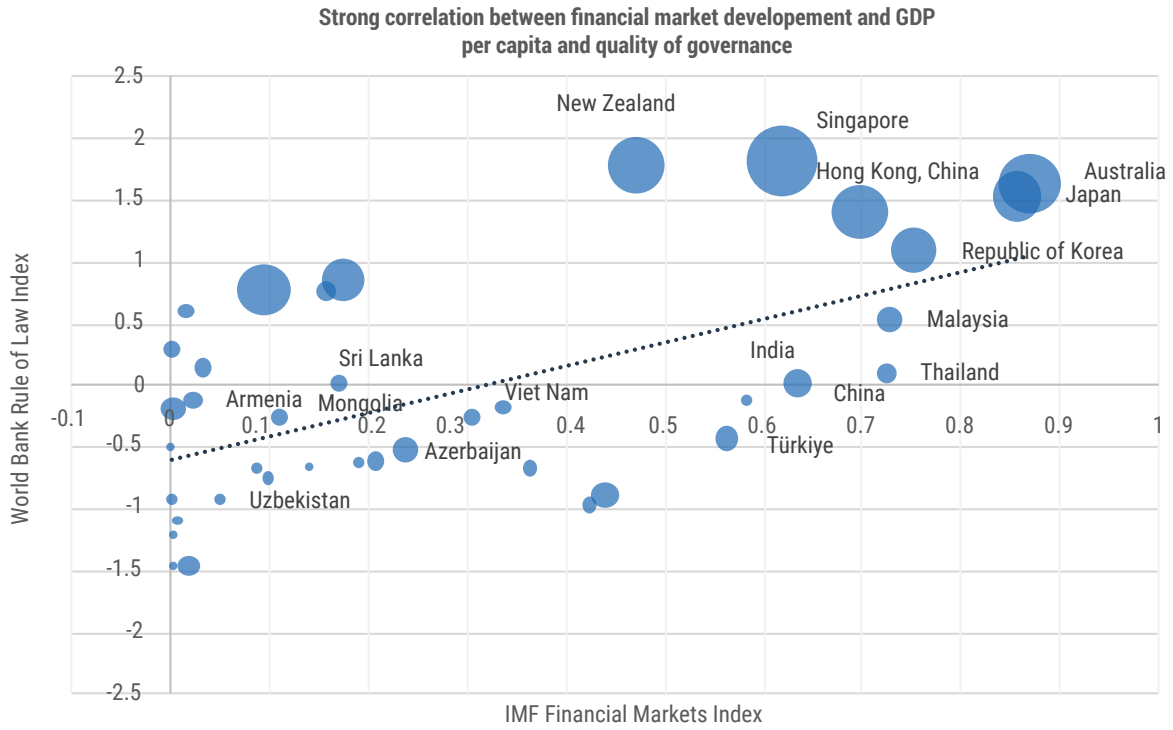
Table 1.1: Main preconditions and drivers of well-functioning debt capital markets

Capital market pillars	
Robust legal framework	A robust legal framework is essential to guide the issuance process, ensuring transparency, fairness and legal protection for both issuers and investors. This framework governs how bonds are issued, the rights and obligations of issuers, and the mechanisms in place for investors to seek recourse in the event of default or other legal challenges.
Sizeable and diverse investor base	A broad investor base ensures that there is sufficient demand for debt instruments, which in turn promotes liquidity and price stability in the market. Different types of investors, including institutional investors, retail investors and international participants, contribute to a dynamic and resilient market by providing varying risk appetites, investment horizons and strategies.
Active and well-regulated banking system	Banks play a key role as the main providers of credit, sending signals to other market agents about the potential creditworthiness of companies. In many emerging markets, banks also act as an important issuer and investor, especially in the early stages of capital market development (e.g. as main investors in government and corporate bond markets).
Diverse range of debt instruments	The availability of a wide range of debt products caters to the varying needs of issuers and investors. A diverse set of bond products, such as government bonds, corporate bonds, municipal bonds or green bonds, allows issuers to access capital tailored to their specific financial needs while offering investors a variety of risk and return profiles.
Adequate market liquidity	Market liquidity ensures that bonds can be bought and sold with ease without significantly affecting their prices. Adequate liquidity is supported by active trading, a high level of market participation and the presence of market makers and intermediaries who facilitate transactions.
Competent financial intermediaries	Financial intermediaries play a pivotal role in the debt market, acting as facilitators between issuers and investors. They include investment banks, brokers and dealers, and bring expertise, market knowledge and the ability to structure and distribute debt instruments effectively. They also help maintain market integrity by providing advisory services, underwriting new issues and ensuring that transactions are executed smoothly and transparently.
Enabling market infrastructure	Market infrastructure includes institutions such as credit rating agencies and bond pricing agencies, which provide critical information and analysis to help investors assess risk and make informed investment decisions. Credit rating agencies evaluate the creditworthiness of issuers and assign ratings that reflect their ability to meet debt obligations. Bond pricing agencies, on the other hand, provide accurate and timely pricing information, which is essential for maintaining market transparency and fairness.

Source: ESCAP based on Dimitri G. Demekas and Anica Nerlich, "Creating domestic capital markets in developing countries: perspectives from market participants", EMCompass Note, No. 77 (Washington D.C., International Financial Corporation, 2020); Ana Fiorella Carvajal, and others, "Capital markets development: a primer for policymakers" (Washington D.C., World Bank Group, 2020); and *Infrastructure Financing for Sustainable Development in Asia and the Pacific*, ESCAP Financing for Development Series, No. 3 (United Nations publication, 2019).

In addition to the key preconditions of a well-functioning capital market described above, strong macroeconomic fundamentals are also essential, especially at an early stage of market development, to give investors the confidence to invest long-term. Empirical evidence has long demonstrated that there is a positive correlation between capital market development and some key macroeconomic and governance indicators, including low and stable inflation rates, steady GDP growth, regulatory quality and strong current account position.[12] For example, several developing economies in Asia and the Pacific have experienced high levels of inflation over the past two years,[13] which does not bode well for investors to invest in longer term instruments. Similarly, the cost of government debt in many Asia-Pacific economies has risen recently, both in terms of higher borrowing costs and shorter lending maturity. Recent ESCAP research finds that government borrowing costs have been higher in Asia-Pacific economies with higher inflation, perceived fiscal risks and less financial market liquidity.[14]

Figure 1.1: Positive correlation between financial market development, rule of law and GDP per capita



Source: IMF Financial Market Index, World Bank Worldwide governance indicators, World Bank Word Development Indicators.

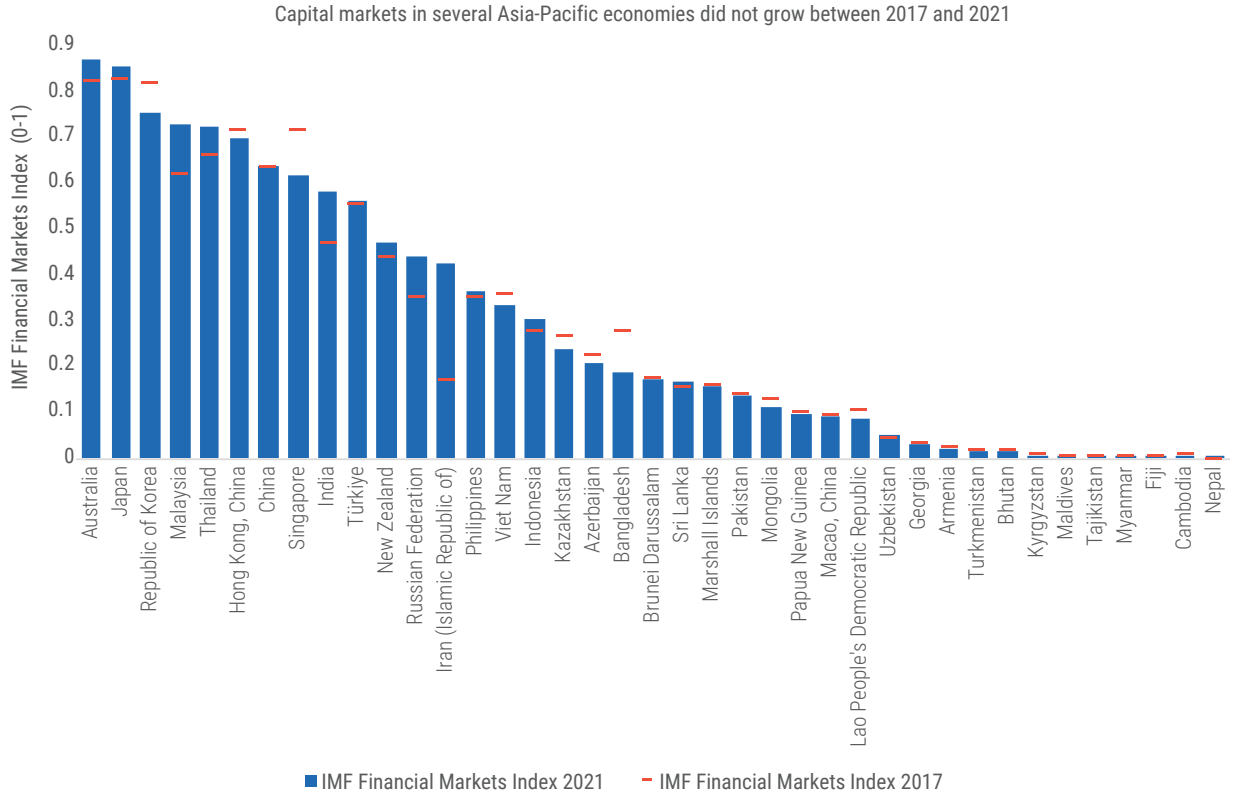
Notes: Bubble sizes are proportional to GDP per capita. There is significant correlation between the Financial Market Index and Rule of Law Index (corr = 0.59, p <0.001) and between the Financial Market Index and GDP per capita (corr = 0.58, p <0.001). Economies lacking sufficient information on Financial Market Index and Rule of Law Index were excluded from the analysis due to missing data. The Rule of Law indicator captures perceptions of the extent to which agents have confidence in and abide by the rules of society, including the quality of contract enforcement and property rights. Values range from -2.5 to 2.5 and provide the economy's score on the aggregate indicator.

An active and liquid government bond market is also needed to stimulate the growth of domestic debt capital markets. Government bonds generally offer the lowest coupon rates, thus serving as a reference point and providing yield curve benchmarks and price discovery for other bond issuers. Several Asia-Pacific economies still lack a well-developed government bond market, and even where such markets exist, there are significant differences in size, depth and liquidity, as the next section will discuss. However, the experience of countries such as Indonesia and Viet Nam, which have successfully developed an active government bond market, can serve as promising examples, combining both sovereign and investor demand. In Viet Nam, development of the local bond market has been bolstered by regulatory reforms aimed at attracting greater participation from institutional investors. Meanwhile Indonesia focused on deepening its bond market by introducing a variety of instruments such as *sukuk*[15] and green bonds to appeal to a more diverse investor base.

1.3 MAIN FEATURES OF DEBT CAPITAL MARKETS IN ASIA AND THE PACIFIC

Most emerging and developing economies in Asia and the Pacific exhibit a limited level of financial market development. According to the IMF's Financial Market Development Index (which measures size and liquidity of financial markets, ease of market access, and cost of financial services), financial market development is still at an early stage in several economies (figure 1.2). Moreover, capital market development has stagnated in many developing countries, and is not (yet) large enough to provide sufficient financing for sustainable development. However, there are countries such as Malaysia, Thailand and India where financial markets have grown.

Figure 1.2: Status of IMF financial market index components, 2017 and 2021



Source: ESCAP, based on IMF Financial Development Index Database, accessed 17 September 2024.

Note: The IMF Financial Market Index measures how developed financial markets are in terms of depth, access and efficiency. Where there is insufficient information on depth, access or efficiency, the figure shows available information on the other components only.

Due to continuing challenges, which will be discussed further in this section, capital markets are only partially playing the role of channelling resources to the corporate sector and providing investment opportunities to investors, whereas their contribution to climate and sustainability objectives remains minimal. Given the different levels of maturity of each market, there is no "one-size-fits-all" approach, but rather country-specific approaches to develop or deepen their existing debt capital markets, including their sustainable segments.

1.3.1 Low liquidity and depth in debt capital markets

Domestic capital markets in many Asia-Pacific economies remain small and, especially for non-sovereign issuances, lack liquidity. The market liquidity of bonds issued remains limited in Asia and the Pacific. Available data on trading volumes for corporate bonds in the ASEAN region show that the corporate bond market in Indonesia had the highest turnover ratio in 2022 (92 per cent), while Thailand and Malaysia had comparatively low levels of liquidity, at 27 per cent and 11.4 per cent respectively.[16] A recent analysis by ESCAP found similar results for these countries.[17] According to a survey conducted by the OECD, investors perceived the low liquidity of the Asian bond market to be one of the main impediments to corporate bond market development.[18] Low liquidity limits investors' ability to buy and sell bonds efficiently, discouraging them from buying bonds in the first place, as preterm exits are difficult.[19]

1.3.2 Bank-domination of Asia-Pacific financial systems

In most developing Asia-Pacific economies commercial banks tend to dominate financial markets, with both the public and private sectors generally relying on them for their financing needs through various types of banks loans. Bank-based financing in Asia on average represents 143 per cent of the region's GDP, which is much higher than the global figure of 96 per cent.[20] Capital market-based financing, on the other hand, was below 100 per cent in several Asian

economies.[21] Notably, capital market-based financing was lower than 50 per cent in countries such as Sri Lanka, Mongolia, Bangladesh, Pakistan and Viet Nam.[22] In countries with smaller financial markets, such as Cambodia, bank credit to GDP ratio was even higher at 173 per cent, while capital market-based financing was only 8 per cent.[23] Most corporations strongly rely on bank-based financing in the majority of ASEAN economies (e.g. Malaysia, Singapore, Thailand and Viet Nam).[24] There are exceptions, however. Data from countries such as Indonesia and the Philippines show that market-based financing was slightly higher than bank-based financing, although both continue to remain low, partly owing to the small size of overall financing in these two economies. [25]

Despite the growth in corporate bond markets in several Asia-Pacific countries, companies still access these markets on a limited scale. The use and development of corporate bond markets varies greatly across countries. In 2022, the outstanding corporate bonds of non-financial companies in Asia reached around $4 trillion, equal to 11 per cent of the region's GDP (figure 1.3). While some jurisdictions have developed their corporate bond markets for growing companies, some markets are at a very early stage of development, with only large, highly-rated companies having access to financing. For example, Thailand ranks high in terms of both market capitalisation and the outstanding amount of corporate bonds, even surpassing global figures as share of GDP. This is a result of a combination of factors, including the development of a local credit rating agency, the broad institutional investor base for domestic financing, which includes the social security fund and insurance companies, and policy support from regulators. On the other hand, countries such as Sri Lanka, Pakistan and Bangladesh show low volumes of non-financial corporate bonds, and the market capitalisation of listed non-financial companies also remains small.

Figure 1.3: Status of non-financial companies' access to capital market-based financing and bank-credit in selected economies in Asia and the Pacific, 2022

	Outstanding corporate bonds		Listed companies		Bank credit	
	Amount (billions of United States dollars)	Per cent of GDP	Market capitalization (billions of United States dollars)	Per cent of GDP	Amount (billions of United States dollars)	Per cent of GDP
By region						
Global	15,400	15%	83,809	84%	86,790	96%
Asia	4,123	11%	26,170	75%	49,744	143%
By jurisdiction						
Hong Kong, China	93	26%	2,891	801%	952	264%
Thailand	110	21%	484	90%	649	121%
Republic of Korea	312	19%	1,502	90%	2,914	175%
Japan	652	15%	4 811	114%	5,158	122%
China	2,430	13%	10,106	56%	33,551	185%
Singapore	47	10%	271	58%	603	129%
Australia	161	9%	1,218	72%	2,278	134%
Philippines	32	8%	192	48%	197	49%
Indonesia	62	5%	394	30%	403	31%
India	135	4%	2,588	76%	1,788	53%
Mongolia	0.4	3%	1	6%	7	41%
Malaysia	9	2%	287	70%	462	113%
Viet Nam	2	0.6%	112	28%	514	126%
Sri Lanka	0.2	0.3%	8	11%	35	47%
Pakistan	1	0.1%	23	6%	56	15%
Bangladesh	0.1	0.01%	32	7%	179	39%

Source: ESCAP adapted from OECD, *Corporate Bond Markets in Asia: Challenges and Opportunities, OECD Capital Market Series* (Paris, OECD Publishing, 2024).

Notes: Bank credit refers to bank credit to non-financial corporations, except for the Lao People's Democratic Republic, where credit to non-financial corporations was not available and credit to the private sector was used instead. The GDP values used to compute the size of the corporate bond and equity markets corresponds to 2023 forecast values. Non-financial corporate bond data excludes convertible bonds, deals that were registered but not consummated, preferred shares, *sukuk* bonds, bonds with an original maturity less than or equal to one year or an issue size less than $1 million. Non-financial listed companies' data excludes units, trusts, secondary listings, firms trading on over-the-counter markets and those listed on SME/growth markets, special purpose acquisition companies, investment funds and real estate investment trusts.

1.3.3 Short maturities and limited access to long-term finance

Domestic efforts to extend maturities towards longer-term finance have been hampered by a number of factors including market inefficiencies, absence of local currency financing and regulatory constraints, as well as macroeconomic volatility.[26] Long-term finance in the region, including through domestic debt capital markets, continues to be scarce for both sovereigns and corporates. The recent tightening of global financial conditions has also made long-term finance scarcer in the region.

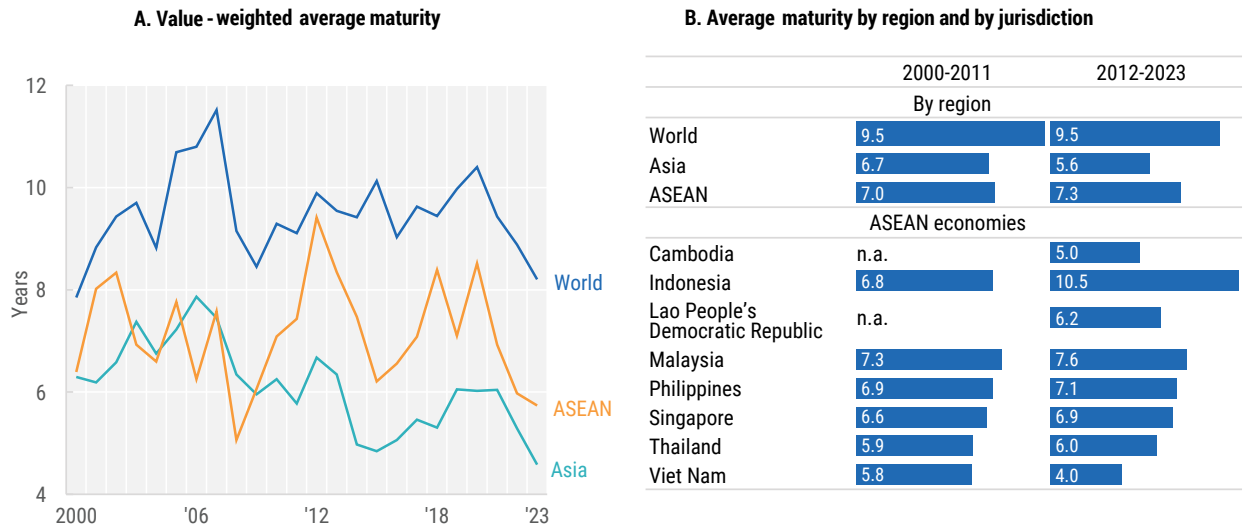
Short-term maturities of corporate bonds and limited access to long-term finance limits opportunities to channel private capital towards long-term investments, including sustainability and development objectives. Since the COVID-19 pandemic in 2020, there has been a substantial decline in the maturity of corporate bonds globally, including in Asia. While the global average has fluctuated, and overall has remained at around the same level as in 2000, the maturity of corporate bonds in Asia has shown an overall downward trend since 2000. It was down to less than five years in 2023, compared to the global average of eight years (figure 1.4).[27] Tighter financing conditions as well as the high volume of short-term Chinese corporate bonds partly explain the decline in maturities on average.[28]

However, large differences within the region reveal that some countries such as Indonesia have been more successful at mobilizing longer-term capital, partly owing to regulatory reforms to streamline bond issuance processes and the development of a well-functioning sovereign bond market with longer maturities.

1.3.4 Large differences in the depth and creditworthiness of government bond markets

The varying levels of development in Asia-Pacific debt capital markets is also reflected in disparities in the size of government bond markets. The size of government bond markets (as measured by the general government bond debt-to-GDP ratio) varies greatly across countries in the region. Excluding larger markets such as Japan, China and India, the government bond markets of several countries are still at an early stage of development, particularly in the Pacific and in some South and South-East Asian economies. For instance, in 2022, general government bond debt represented less than 50 per cent of GDP in Bangladesh (39 per cent), Cambodia (37 per cent) and Viet Nam (37 per cent) against 250 per cent, 85 per cent and 80 per cent for Japan, China and India respectively. Most Asia-Pacific countries have issued sovereign bonds in the last 28 years, although seven countries issued only domestic bonds and nine countries have not issued a sovereign bond yet.

Figure 1.4: Average maturity of non-financial corporate bonds in Asia and globally, 2000–2023



Source: OECD, *Mobilizing ASEAN Capital Markets for Sustainable Growth* (Paris, OECD Publishing, 2024).

Several Asia-Pacific countries also lack investment-grade ratings, which affects the ability and cost of borrowing for sovereigns but also for corporate entities. Sovereign bonds with an investment-grade rating naturally enjoy cheaper financing costs, including for green and other sustainability projects, and can be issued in larger volumes given the lower debt servicing costs.[29] The same applies to the sustainable segment of debt capital markets, as it has been shown that investment-grade sovereign ratings correlate with being able to issue much larger volumes of GSS+ bonds.[30] In less developed markets, the lack of investment-grade sovereign ratings often also affects corporate credit ratings, even when the basic market infrastructure is in place. Government and regulators must therefore continue efforts to enhance credit ratings alongside improving market infrastructure, in order to ensure that domestic capital markets, including in the sustainability space, can grow.

1.3.5 Lack of adequate market infrastructure

Local debt markets in several Asia-Pacific developing countries lack supportive regulatory building blocks, market supervision or infrastructure. Complex operating environments, such as the withholding of taxes, local regulatory restrictions and currency repatriation restrictions act as a deterrent for international investors. Investors also face hurdles due to unresolved issues surrounding investor rights. The lack of strong governance and investor protections deters domestic and foreign investment, while poor transparency and market infrastructure limit confidence in local capital markets, which is particularly critical at the early stages of development.[31]

1.3.6 Unrealised potential of Asia-Pacific institutional investors and low diversification of the domestic investor base

The role of institutional investors such as pension funds, mutual funds and insurance companies in channelling capital through debt markets remains limited in several markets. Commercial banks are the largest investors of government bonds in many economies in the region. By September 2023, banks in China held about 70 per cent of government bonds, and in Viet Nam about 40 per cent.[32] In addition to the lack of investors, a lack of interest among those investors that there are also constitutes a barrier to the development of some Asia-Pacific bond markets. According to a survey by the OECD, limited interest from investors was one of five leading impediments to the expansion of corporate bonds in Asia, along with the assessment of creditworthiness.[33] This indicates a missed opportunity, as institutional investors in Asia and the Pacific are relatively large – in 2022 they represented 33.7 per cent, or $7.9 trillion, of the total assets of the top 100 asset owners globally, on a par with North America.[34] At the end of 2022, the region accounted for 26.4 per cent of assets of the world's 300 largest pension funds, slightly above the value for Europe (24.1 per cent).[35] This suggests that Asia-Pacific institutional investors can play a much more significant role in expanding capital markets.

1.3.7 Credit ratings

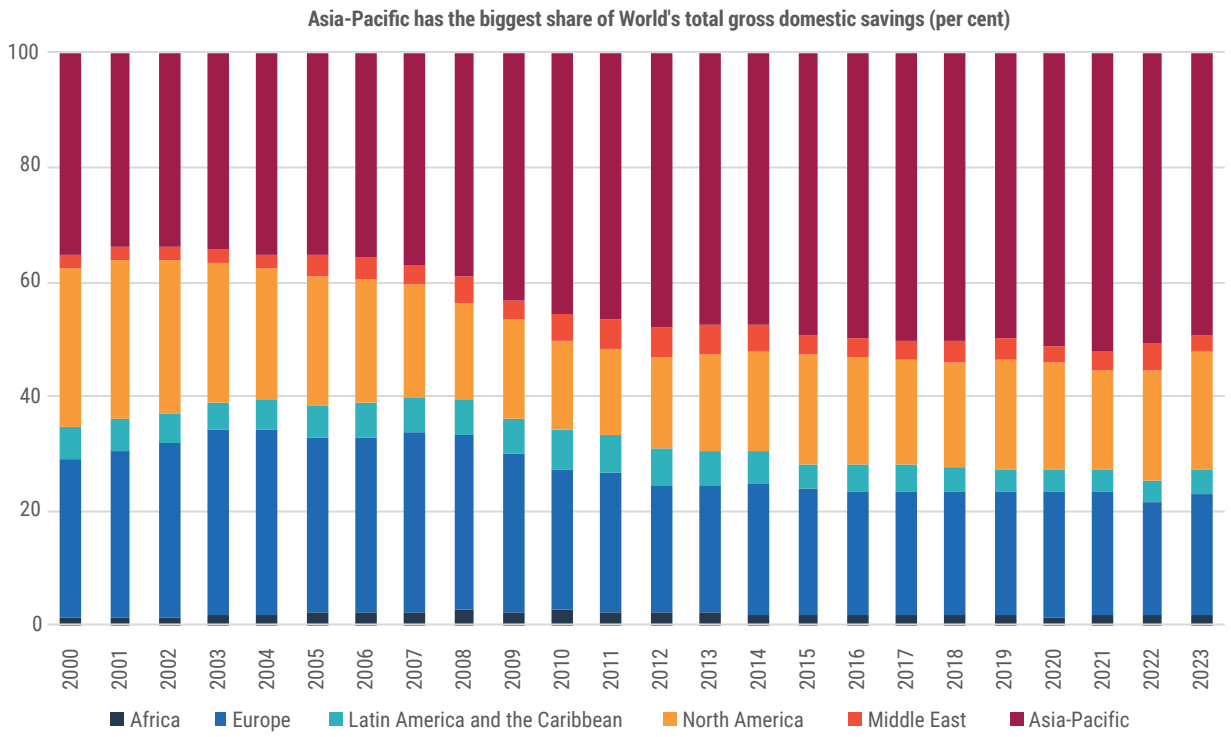
Obtaining a credit rating can be expensive, and if an issuer receives a non-investment-grade rating, it may face higher borrowing costs in traditional debt capital markets. The process to obtain a credit rating by a corporate requires detailed historical financial statements as well as additional supporting documents such as business plans, ownership structure, market analysis and other operational data. It also requires an analysis of the issuer's various risks, which include financial, market, regulatory and environmental, social and governance (ESG) risks, among others. This process requires time and resources that can be costly for smaller issuers. Corporate issuers are also analysed with reference to the credit rating of their country as a baseline, which can have adverse effects even on the most financially sound companies located in countries with sovereign credit ratings below investment-grade.

1.3.8 Unrealised potential of channelling domestic savings towards sustainable investments

Developing domestic capital markets can help capture the abundant savings available in the region and prevent those savings from being diverted to more mature economies. Less developed traditional debt markets make it harder to match long-term savings with long-term investment needs, despite the abundance of domestic savings. In 2023, domestic

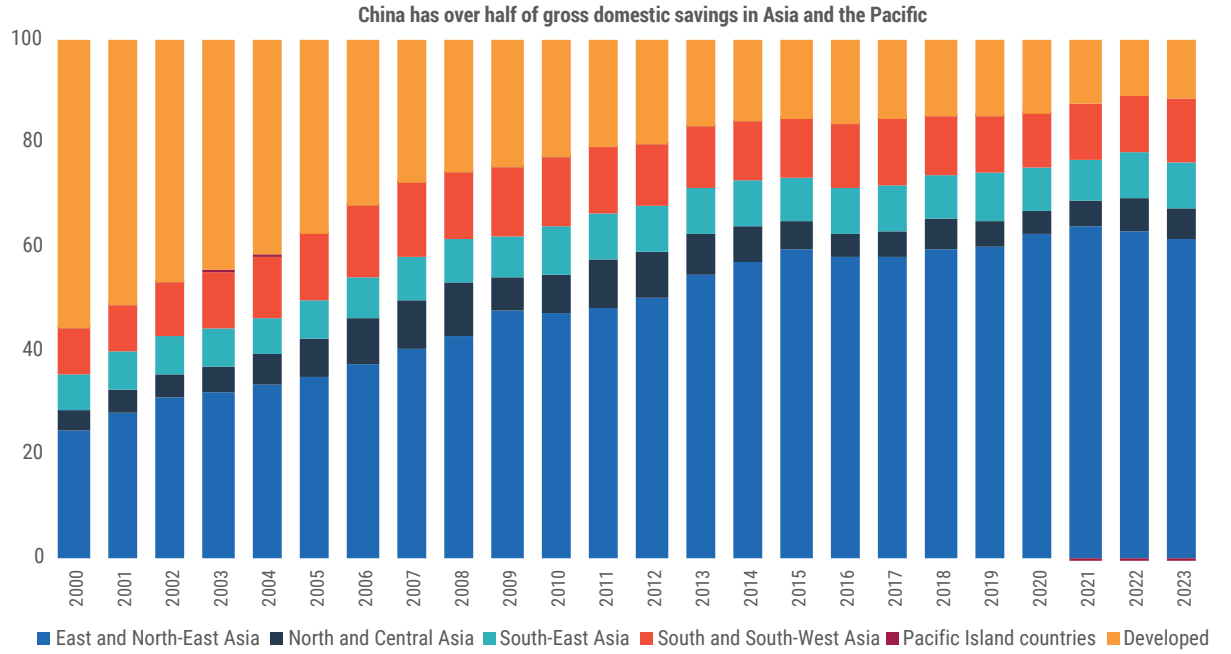
savings in Asia and the Pacific (as measured by GDP less total consumption by households, corporates and governments) were on average 24 per cent of GDP, up from 21 per cent from 2019, exhibiting the biggest share of total gross domestic savings globally and almost half of the global total (figure 1.5). Within the region, large differences exist between countries, with the highest savings rates in East and North-East Asia (62 per cent in 2023), with the majority originating from China alone (57 per cent of the region's total).

Figure 1.5: Domestic savings across regions, 2000–2023



Source: ESCAP, based on the World Development Indicators database.

Figure 1.6: Domestic savings across Asia-Pacific sub-regions, 2000–2023



Source: ESCAP, based on the World Development Indicators database.

At the country level, domestic institutional investors in some markets have been quite successful in mobilizing and channelling these savings into productive investment, including towards sustainability objectives. For example, Malaysia's Employee Provident Fund is a major source of capital for the local economy. In 2023, 62 per cent of its investments (about $149 billion) were channelled into the domestic economy. In December 2023, it held 28 per cent of Malaysia's government securities and 12 per cent of the market cap of the Bursa Malaysia Top 100 Index. Meanwhile, the world's largest asset owner, Japan's Government Pension Investment Fund (GPIF), which manages $1.4 trillion,[36] is a frontrunner in the region, integrating sustainability and climate aspects across its holdings. In 2022, GPIF had invested JPY 12 trillion ($83 billion) tracking ESG indices and JPY 1.6 trillion ($11 billion) in GSS+ bonds.[37]

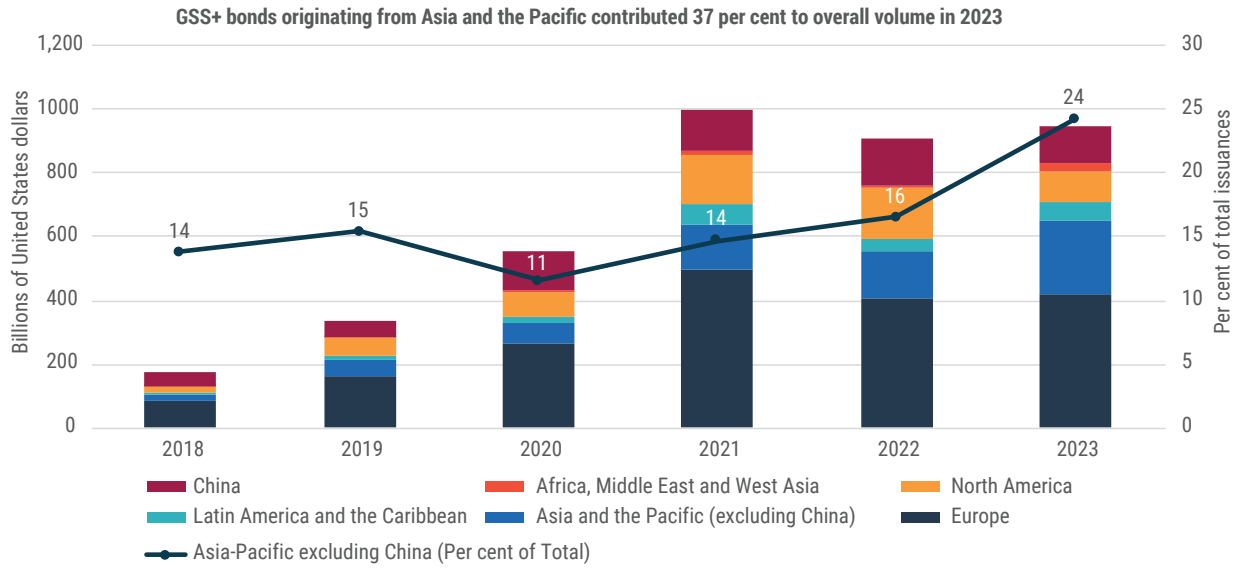
In summary, more efforts are needed on multiple fronts to build robust and liquid capital markets in Asia-Pacific countries to attract and channel private capital at scale from domestic and international sources towards sustainable investments. As debt capital markets in the region are at different stages of development, they require different sets of policies tailored to the maturity and depth of each market. Building the foundations for effective capital markets is a key prerequisite to develop the sustainable segment, establish a robust base for credibility and trust in the market, and foster a culture that encourages subsequent growth and financial deepening.

1.4 MAIN TRENDS IN GSS+ DEBT MARKETS IN ASIA AND THE PACIFIC

GSS+ bonds can provide a valuable source of capital for issuers and investors looking to finance their climate and sustainable development ambitions. By providing investors with clear and transparent information on the impact of their investments, GSS+ bonds can attract a broader range of investors, including those seeking to align their portfolios with sustainability goals.[38] For sovereign issuers, GSS+ bonds provide a strong signal regarding government commitment to climate and sustainability objectives. While this does not imply that GSS+ debt markets alone can bridge the current financing gap to achieve sustainability and climate objectives, they do provide a useful vehicle for channelling demand from investors towards SDGs and climate action.

Asia-Pacific sovereign and corporate GSS+ debt issuance has seen remarkable growth in recent years, from $189 billion of aligned[39] issuances in 2020 to $348 billion in 2023. The term "aligned" refers to GSS+ issuances that meet Climate Bonds Initiative standards for such issuances, generally regarded as a gold-standard set of criteria around use-of-proceeds. Non-aligned issuances refer to GSS+ debt that is issued under non-CBI standards. Despite the challenging macroeconomic environment, including relatively higher interest rates, the sustainable segment of the fixed-income markets in Asia and the Pacific have shown resilience to challenges in the global bond markets and to the decline in sustainable issuances in other regions, notably North America. Asia-Pacific was the second most prolific source of aligned GSS+ debt at the end of 2023 ($348 billion), trailing after Europe ($422 billions), up from $292 billion in 2022. In 2023, aligned GSS+ volume originating from the region accounted for 37 per cent of the global total, although this share drops to 24 per cent without China, which contributed 34 per cent ($119 billions) of the total aligned volume of Asia-Pacific. This points to a very diverse landscape in the market, as discussed further below.

Figure 1.7: GSS+ aligned bond issuance value in Asia and the Pacific, 2018–2023 (billions of United States dollars)



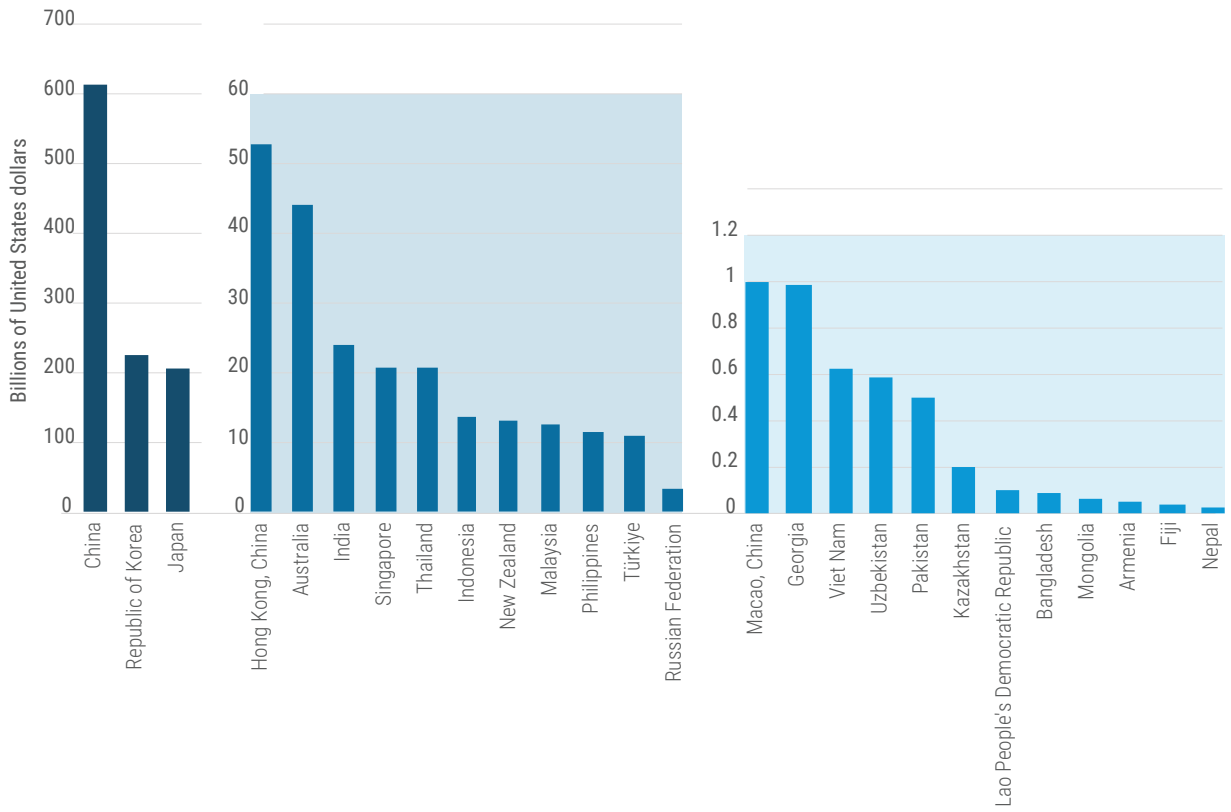
Source: ESCAP, based on Climate Bonds Initiative data, accessed on 12 June 2024.

Note: The figure shows annual values of aligned GSS+ bond issuances across regions for the period 2018-2023. It includes sovereign, corporate and other public sector issuances. Total amounts are calculated as the sum of the following instruments: bonds, debentures and *sukuk*. It excludes the following instruments: loans, asset-backed securities, asset-backed notes, revolving credit facility.

There is marked variation in the volume of GSS+ issuances across Asia-Pacific countries, with a limited number of countries dominating over 80 per cent of the market. Strong policy support has proved to be critical to the growth of some markets such as China, where the combination of regulatory measures and government backing have fostered rapid market expansion. Over the period 2018-2023, GSS+ issuances originating from China, Japan and the Republic of Korea accounted for 80 per cent of the region's total. Among developing countries, India and Thailand together contributed approximately 4 per cent of the region's GSS+ market, thanks to supportive policies, government-led initiatives and taxonomies, which have allowed GSS+ bonds to develop. However, the situation is different for many other Asia-Pacific developing economies, where the issuance of sustainable debt instruments has been consistently low, less than 1 per cent of Asia-Pacific's sustainable debt issuance. This reflects in part challenges facing countries with weak access to international and local capital markets, and different maturity levels of local capital markets, as discussed in the previous section.

Although green bonds continue to dominate the market, the growth of social and other thematic bonds have increased the investible opportunity set. Green bonds represented 53 per cent of aligned GSS+ volume originating from Asia-Pacific at the end of 2023, especially in more developed economies, although social and sustainability debt issuances increased in a select number of countries after the COVID-19 pandemic.

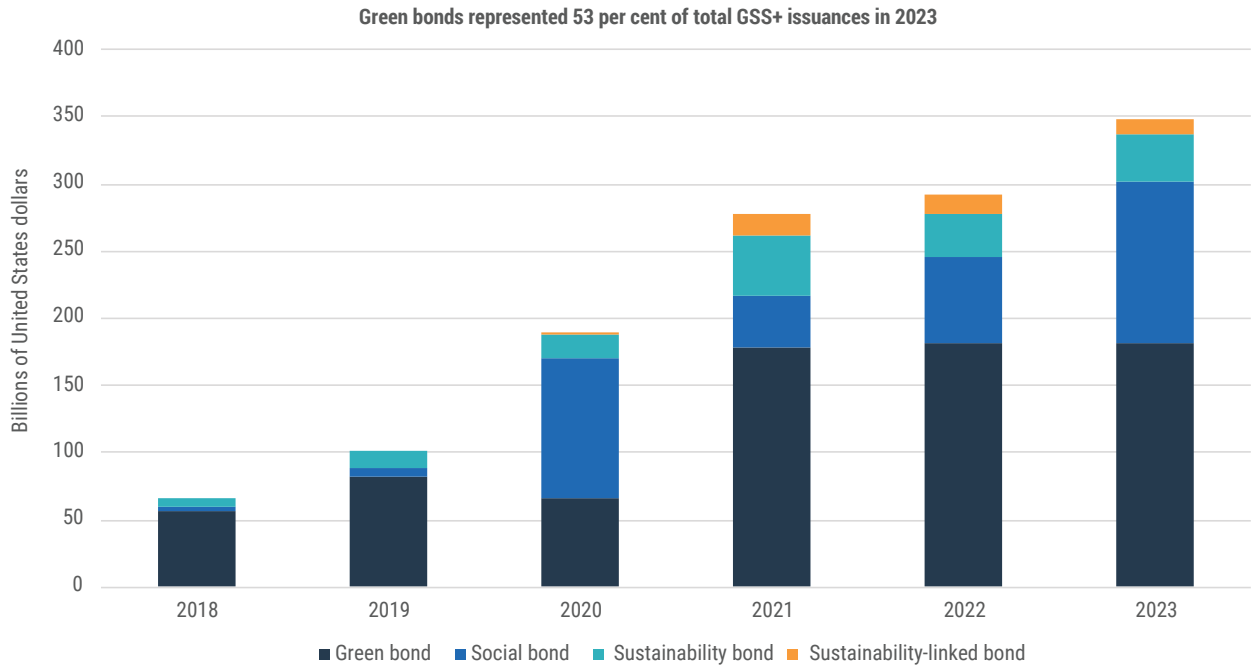
Figure 1.8: Cumulative GSS+ sovereign, corporate and public sector bond issuance in Asia and the Pacific by economy, 2018–2023 (billions of United States dollars)



Source: ESCAP based on Climate Bonds Initiative data, accessed on 12 June 2024.

Note: Figure shows cumulative values of aligned GSS+ bond issuances across economies for the period 2018-2023. It includes sovereign, corporate and other public sector issuances.

Figure 1.9: Annual GSS+ issuances in Asia and the Pacific by theme, 2018–2023 (billions of United States dollars)



Source: ESCAP based on Climate Bonds Initiative data, accessed on 12 June 2024.

An increasing number of countries, issuers and issuer types are being added each year, contributing to diversification of the market. Maiden GSS+ bonds originated from entities operating in at least three countries for the first time between 2023 and 2024, including Cambodia, Mongolia and Tajikistan. All of them were corporate issuances. Moreover, recent issuances in Cambodia and Tajikistan suggest that countries can leapfrog traditional stages of capital market development and maturation. In Cambodia, the Cambodia Sustainable Bond Accelerator, a joint programme between ESCAP, the Global Green Growth Institute and the Asian Development Bank, has supported private sector issuers, including the Royal Group Phnom Penh Special Economic Zone's recent $20 million issuance of sustainable bonds. In Tajikistan, Eskhata Bank issued its debut green bond with support from the International Financial Corporation (IFC), for a total amount equivalent to $10 million.

Although they cover fewer than one third of Asia-Pacific economies, there has been an increase in sovereign issuances. International evidence shows that sovereign issuers, including in Asia and the Pacific, have come late to – or are absent from – the issuance of sustainable debt, and in several cases issued their first sustainable debt instrument after the private sector had done so.[40] By 2024, at least ten countries in Asia-Pacific had issued at least one aligned sovereign GSS+ bond[41]. However, sovereign issuances can provide important impetus for the development of private GSS+ markets. The act of issuing a sovereign green bond has manifold benefits, including reinforcement of policy commitments, market infrastructure development and crowding-in from the private sector.[42]

Despite recent market developments, the share of GSS+ bonds remains small compared to the size of the total Asia-Pacific bond market. The situation is not too different globally. By the end of 2023, GSS+ bonds that are aligned with the definitions of Climate Bonds Initiative accounted for around 5 per cent of the total global bond market.[43] UNCTAD figures indicate that the already-modest global share of GSS+ bonds did not grow from its 2022 value.[44] In the ASEAN region, the volume of GSS+ bonds accounted for less than 2.5 per cent of the total market in 2022.[45] This is in contrast to more advanced markets such as Europe, where the volume of the GSS+ market, while still small, accounted for 8 per cent of the total market in 2024, reflecting a stronger integration of sustainable finance principles, in line with the more rigorous sustainable finance regulations present in the European Union.

The disparity between Asia-Pacific markets and other advanced markets points to more than just market maturity and could be partly linked to a lag in adopting sustainable finance regulations and policies that drive the market. The weak momentum in GSS+ bond issuance in Asia and the Pacific, despite the availability of trillions of dollars in capital, reflects more than just underdeveloped capital markets. Rather, it could be partly explained by the absence of strong and harmonized regulatory frameworks or cohesive policy strategies needed to channel more robust financing towards climate goals and SDGs, as discussed in detail in the next section. The experience of European Union countries shows that the presence of coordinated policy interventions, stringent environmental regulations, robust policy commitments and dedicated financial incentives has contributed substantially to the expansion of GSS+ markets in Europe.[46]

Local currency GSS+ bonds accounted for 71 per cent of regional sustainable issuances in 2023. Several of the GSS+ issuances in local currencies in Asia-Pacific countries do not necessarily have an investment-grade rating, showing that investors have an appetite for what may be perceived as more risky local currency financing in the GSS+ asset class. However the total volume of GSS+ local currency issuances, excluding CNY, JPY and KRW, remains small, equal to 10 per cent of total GSS+ issuances in the region between 2018 and 2023.

Further growth of bonds bearing the transition label can be expected in Asia and the Pacific, building on Japan's efforts to develop transition bonds both by the sovereign and the corporate sectors. Transition bonds are a new asset class on the GSS+ bond market, and represent 0.4 per cent of the outstanding global GSS+ debt bond market.[47] Japan's first climate transition sovereign bond launched in early 2024 for a total amount of ¥1.6 trillion ($11 billion), capturing opportunities to leverage this new asset class in alignment with national transition plans.[48] It was anchored in Japan's Green Transformation Plan, which articulates how sovereigns can build their transition plans coherently to inform subsequent transition bond frameworks, thereby strengthening the credibility of the issuances. By the end of 2024, Japanese corporates had issued the equivalent of approximately $3 billion of climate transition bonds.[49] It is expected that transition bonds may see further development in Asia, as greater clarity emerges around eligible use-of-proceeds from standard setters, national standards and taxonomies.

1.5 KEY BARRIERS TO DEEPENING SUSTAINABLE DEBT CAPITAL MARKETS

Where traditional debt markets are sufficiently well developed, strong policy and regulatory initiatives have driven GSS+ bond market growth in Asia-Pacific countries. By the end of 2024, at least 19 Asia-Pacific countries had introduced green and/or sustainable taxonomies, while a growing number had initiated steps to develop one. Similarly, green/sustainable finance roadmaps have been adopted in China, Mongolia, Georgia, Indonesia, Philippines, Sri Lanka and Singapore, among others. Climate disclosure requirements have also been incorporated into laws or regulations for private firms in several Asia-Pacific markets (including Hong Kong, China; India; Indonesia; Malaysia and Thailand), although the current coverage of disclosure requirements varies significantly across countries and sectors. Other policy initiatives, such as sustainable finance principles, exist in countries such as Thailand, Philippines, Cambodia and Mongolia.

Transition bonds

Different organisations have different definitions for transition bonds. Nevertheless, they all share five features: a) Paris-aligned targets to reduce emissions are present; b) robust corporate plans in place to transition to increased sustainability across operations and the supply chain; c) a credible implementation plan; d) internal monitoring; and e) external reporting.

Table 1.2: Transition bond definitions

Organization	Definition
OECD	Transition finance is understood as finance raised or deployed by corporates to implement their net-zero transition, in line with the temperature goal of the Paris Agreement and based on a credible corporate climate transition plan. It is currently extended mainly through fixed-income instruments and, notably, sustainability-linked bonds and loans.
CBI	Transition finance is any form of financial support to high-carbon companies intended to finance the implementation of their short-, medium- and long-term plans to achieve net zero.
GFANZ	Transition finance is defined as investment, financing, insurance and related products and services that are necessary to support an orderly real-economy transition to net zero, as described by the four key financing strategies that finance or enable: 1) entities and activities that develop and scale climate solutions; 2) entities that are already aligned to a 1.5 degrees C pathway; 3) entities committed to transitioning in line with 1.5 degrees C-aligned pathways; or 4) the accelerated managed phaseout of high-emitting physical assets.
Japan's Ministry of Economy, Trade and Industry	Transition Finance refers to financing that promotes long-term, strategic GHG emissions reduction initiatives taken by a company towards tackling climate change challenges to achieve a decarbonized society. In particular, with the aim of achieving carbon neutrality by 2050, Japan defines transition finance as finance for supporting fundraisers that have set their target consistent with the Paris Agreement and satisfied the elements in these guidelines. Transition finance is determined not only by Use of Proceeds of the funds raised, but also by the credibility of the strategies and practices of the fundraiser.

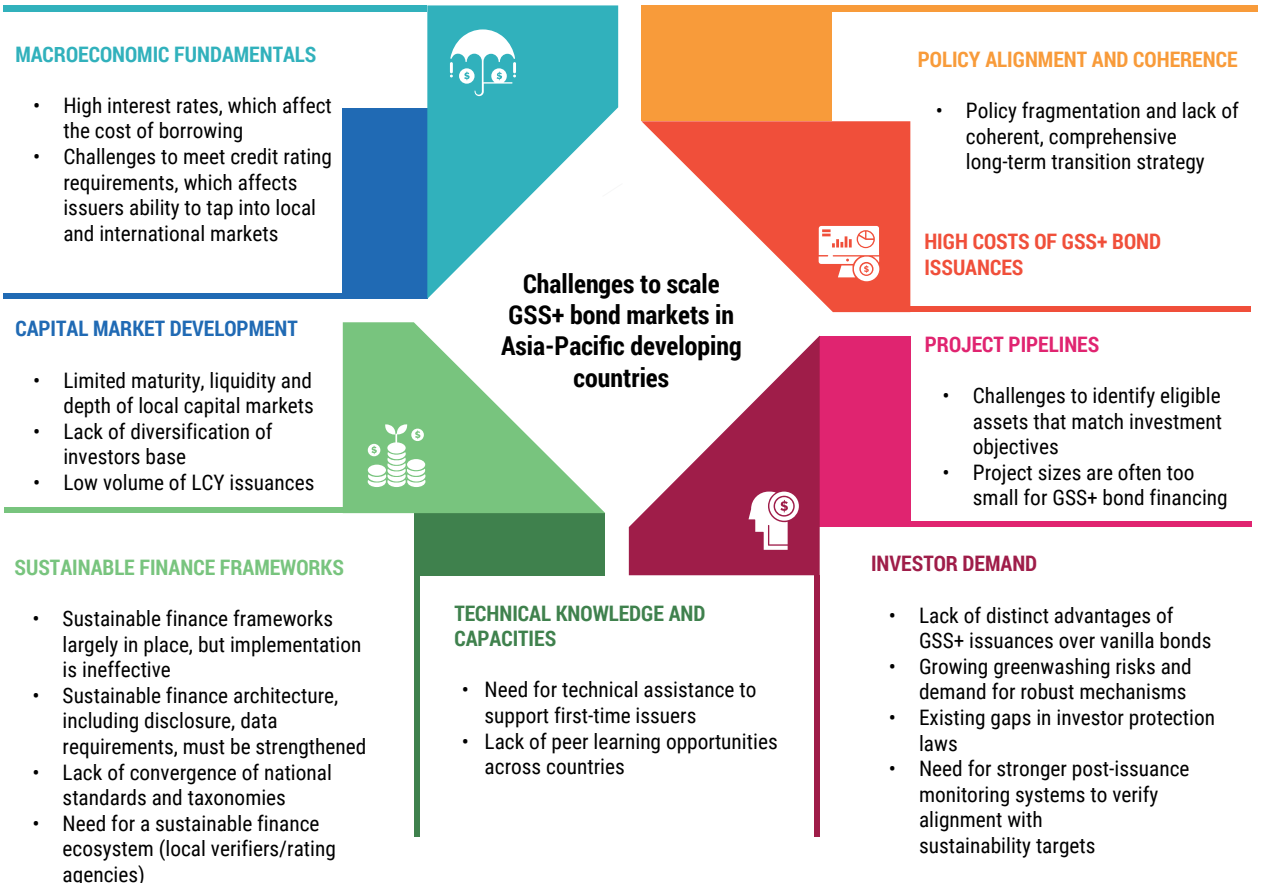
Key Concepts in Sustainable Finance

- **Taxonomy:** A classification system that defines which economic activities are environmentally sustainable, providing a common language for policymakers and market actors.
- **Roadmap:** A comprehensive plan outlining strategic steps and timelines for implementing sustainable finance frameworks and regulations.
- **Disclosure:** The process of reporting sustainability-related risks, impacts, and financial exposures to ensure transparency for investors and stakeholders.
- **Principles:** High-level and voluntary guidelines providing broad standards to encourage responsible financial practices.

Together, these elements form the foundation of the sustainable finance ecosystem, fostering clarity, direction, transparency and accountability.

However, challenges remain for both issuers and investors to scale up GSS+ debt markets in the region. Chief among these is the lack of development of debt capital markets, as discussed in detail above. Other challenges include the complexities of matching supply and demand of financing needs, a lack of effective policy implementation, and persistent fossil fuel investments in some markets. Various institutional constraints compound these issues, including regulatory fragmentation, lack of standardized frameworks, local intellectual capital, and informational constraints such as inconsistent reporting standards and limited access to reliable sustainable and environmental metrics. In addition, the perceived lack of bankable projects – arguably a private sector challenge – further compound these issues.

Figure 1.10: Key challenges to scaling sustainable debt markets in Asia-Pacific



Source: ESCAP.

1.5.1 Lack of coherent and aligned government and financial market objectives/strategies on climate ambitions

The absence of a coherent, comprehensive, long-term transition strategy from governments continues to remain a key obstacle for investors and issuers alike. Ongoing subsidies for fossil fuels dilute the impact of green projects and impede the transition to green and low-carbon development pathways. In much of the region, policies such as administered prices and direct subsidies lower the cost of fossil fuels below international prices.[50] Steps towards deepening GSS+ debt markets may achieve little if incentives for investors and economic actors are not aligned and government policies are not consistent. It is even more important that government policies are designed to be in place for the long term, which gives investors assurance that governments will not change their commitment regarding their climate ambitions.

1.5.2 Lack of identifiable or eligible assets that match investment objectives

The persistent scarcity of robust bankable projects with clear sustainability targets and/or impact remains an obstacle to expanding growth of GSS+ debt markets. For issuers, an essential challenge remains the shortage of robust sustainable project pipelines and the technical capacity to issue GSS+ bonds, particularly for first-time issuers. On the demand side, insufficient green bond supply remains a major obstacle for investors to deepen sustainable financing in markets such as Malaysia, Singapore and Thailand.[51] Technical assistance and capacity-building by international development partners can help countries address this challenge by supporting issuers to identify eligible projects in their existing portfolios or to prioritise projects with the appropriate credentials.

For investors, particularly international investors, there is a shortage of sufficiently large and bankable investment opportunities in countries that lack well-regulated and mature debt capital markets. Where investment opportunities exist, they are often small and lack liquidity, with limited trading activity and volume. Additionally, individual investment opportunities are frequently too small to attract large institutional investors, especially given the one-time research costs per project.[52] Even when projects are of sufficient size, such as public-sector-led infrastructure initiatives, they often lack visibility or are deemed not bankable by the private sector. Similarly, private investment transactions tend to be non-standardized, with limited available information and high uncertainty surrounding exit strategies.

1.5.3 Gaps in the sustainable finance architecture (data, regulations, disclosure requirements, and taxonomies)

Gaps and inconsistencies in the policy and regulatory environment pose a separate set of challenges. The extent and depth of individual initiatives vary widely within and across jurisdictions, distorting incentives and resulting in a patchy and uneven playing field. For countries at the very early stages of GSS+ bond market development, financial firms that would like to adopt more ambitious climate or sustainability goals often face a "first mover disadvantage" because of the fear of losing market share to firms that continue business-as-usual. Without regulatory intervention to enforce a common strategy and a uniform set of standards and disclosure requirements for green and sustainable finance, this may hold back wider investor demand for sustainable debt issuances. This problem is compounded by data and capacity gaps that hamper the effective application of green and sustainable finance taxonomies and disclosure requirements.

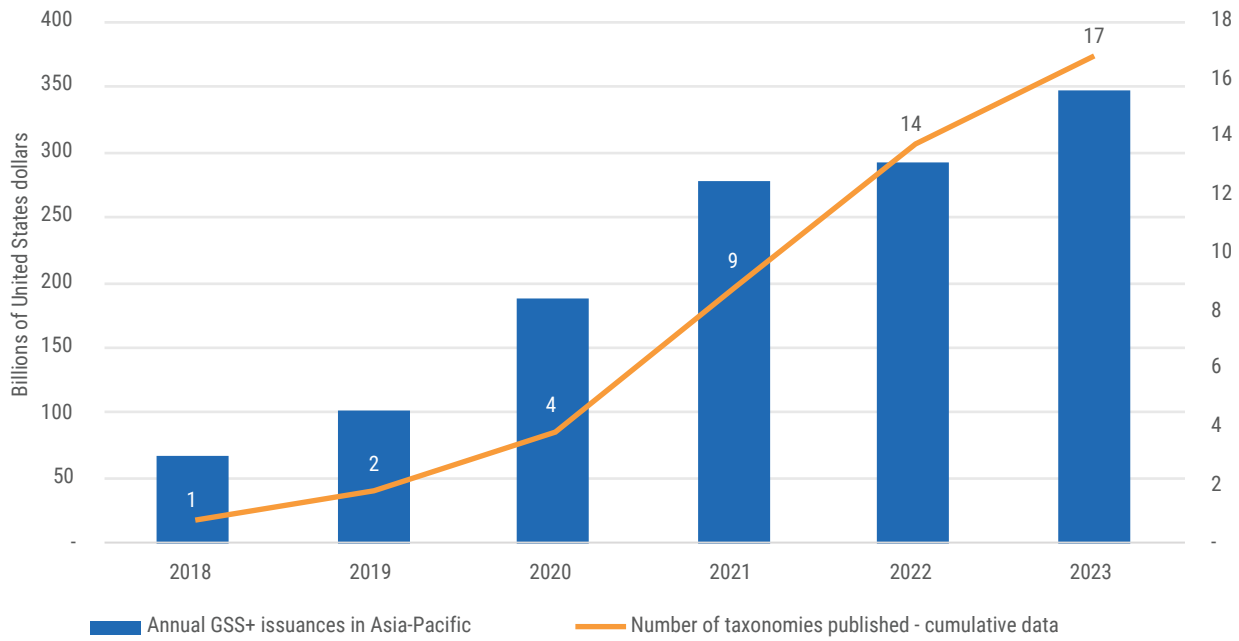
Lack of common definitions and criteria of what qualifies as credible assets and activities is another main deterrent to growth of the market. When this is combined with inconsistent reporting and disclosures among players within the same industry due to the lack of a level playing field, it becomes considerably more difficult for investors to benchmark and assess ambition. What is needed is a regulatory ecosystem that enables effective information flows for sustainable investment decisions, establishes consistent regulations that follow a clear roadmap, and sets the appropriate signals.

The lack of an enabling regulatory environment is significant, especially in markets at early stages of debt market development. Market infrastructure elements, such as the introduction of a green taxonomy or the development of local verifiers, are expected

to make a difference in nascent markets such as Cambodia, Viet Nam and Tajikistan. The absence of a clear taxonomy or definition for green assets hinders investor confidence, as investors need assurance that they are investing in assets that adhere to robust definitions aligned with international standards and supported by domestic regulators. According to a survey conducted by ADB in the ASEAN region,[53] lack of regulatory guidance and resources were cited as major obstacles by a large proportion of investors in Viet Nam and the Lao People's Democratic Republic.

In more developed markets, sustainable finance policy and regulatory frameworks are mostly in place but do not necessarily lead to recurring GSS+ deals. The lack of depth of sustainable debt markets in countries that have recently issued taxonomies and/or guidelines for sustainable investments is particularly relevant. For example, Mongolia published its taxonomy in 2019, but by mid-2023, only one aligned deal had originated there, Khan Bank's $60 million green bond. Bangladesh released a sustainable finance taxonomy in 2020, but by the end of 2023 Climate Bonds had recorded only one BDT 30 billion ($325 million) green asset-backed security, from Beximco Green Sukuk Trust. These examples underscore the importance of traditional debt markets being sufficiently developed to support a GSS+ debt market, and the need for guidance and support to design policies that encourage implementation, such as green tagging.

Figure 1.11: Annual GSS+ bond issuances and development of national or regional taxonomies in Asia and the Pacific



Source: ESCAP.

Even where they exist, taxonomies alone may not be enough to deepen the GSS+ market. They need to be supplemented by disclosure and assurance mechanisms to facilitate comparability for investors. A taxonomy provides a signal to investors (and other stakeholders) that can aid decision-making. In practice, without a solid regulatory framework and coordinated verification and disclosure standards, the taxonomy alone may not provide the necessary confidence for investors. Thus, it should be paired with robust regulatory structures and roadmaps to drive growth, based on iterative updates and market-aligned signalling. China has been at the forefront of such efforts, establishing a thriving GSS+ bond market through a top-down, policy-driven approach and strong political leadership (box 1.1). Similarly, Indonesia developed a comprehensive regulatory infrastructure, fostering investor confidence while promoting diversification of GSS+ financing instruments. The second phase of Indonesia's Sustainable Finance

Roadmap (2021-2025) was developed in 2021 by the Financial Services Authority. A key component was the Green Taxonomy 1.0, introduced in 2022, along with a disclosure regulation, which requires financial institutions, issuers and publicly listed companies to disclose their sustainability strategies and performance.

Box 1.1: Lessons from China's top-down policy approach to develop a local GSS+ bond market

Since its launch in 2016, China's GSS+ debt market has grown to a significant size and is currently the second largest in the world. The development of China's thriving local GSS+ bond market is strongly rooted in the country's top-down approach, in which the government has played an instrumental but also evolving role to develop and scale its domestic market. At the emerging stage of the market, the government designed a conducive regulatory environment through law and policy, and provided the necessary financial infrastructure and appropriate incentives for investors and green bond issuers. This was accompanied by broad-based inter-governmental engagement with a focus on inter-ministerial, central-local and international collaboration, centralized policy-making, and alignment of green goals at institutional, organizational and international level.

On the regulatory side, regulatory bodies including the People's Bank of China (PBOC) and the National Development and Reform Commission (NDRC) have established oversight mechanisms to ensure transparency and compliance with green finance principles, thereby fostering investor confidence. *Guidelines for Establishing the Green Financial System* were introduced in 2016, setting out detailed criteria for eligible green projects and reporting standards. In terms of products and instruments, China introduced a diversified range of green financial instruments, including green asset-backed securities, carbon-neutral bonds and sustainability-linked bonds. In 2022, it launched a pilot programme for companies to issue transition bonds, aligning with the country's broader carbon neutrality targets by 2060.

This comprehensive set of measures jointly contributed to rapid maturation of the GSS+ bond market, enhancing market depth, broadening the investor base and ensuring alignment with global best practices. Although the Chinese experience may not be easily transferred to other jurisdictions, there are important lessons to draw for other emerging markets in the process of establishing local GSS+ markets.

National taxonomies across Asia and the Pacific should ensure interoperability and comparability if they are to achieve regional scalability of GSS+ bond markets. As more countries take steps to develop sustainable taxonomies and frameworks, the risk of fragmentation increases, unless more efforts are made to ensure increased regional alignment with international best practices and greater convergence and inter-operability. China's pioneering efforts to align its taxonomy with the European Union (the EU-China Common Ground Taxonomy), including through platforms such as the International Platform on Sustainable Finance, demonstrate a proactive approach to fostering global interoperability and comparability. Similarly, ASEAN's approach to regional harmonization, particularly through the development of its regional taxonomy version 2.0, is another promising example. Additionally, countries such as Türkiye are in the process of developing a green taxonomy in line with European Union taxonomy.

In several markets, disclosure requirements have yet to be fully developed or are not supervised effectively, critically constraining growth of sustainable capital markets. Mandatory and consistent disclosure requirements would allow investors to compare issuers' performance on sustainable development indicators directly and would push issuers to consider how they could make their activities more green. In practice, however, the magnitude and speed of this capital shift will depend on several factors. These include, among others, the availability of robust data to enable effective disclosures as well as sufficient understanding and technical knowledge among all economic players, especially SMEs and private companies, which make up a significant portion of bond issuers.[54,55]

Nevertheless, disclosure requirements have a powerful role to play in encouraging more sustainable practices among prospective issuers. The introduction of disclosure requirements can encourage listed companies, which are more likely to issue sustainable debt securities, to adopt greener practices at the entity level, thereby ensuring that their issuances align with sustainability goals. In Mongolia, listed companies are encouraged to report on their sustainability practices in line with environmental, social and governance (ESG)

and sustainability reporting guidance published in 2022 by the Financial Regulatory Commission and the Mongolian Stock Exchange. This provides a framework to help Mongolian listed companies, prospective issuers and other interested entities report on their sustainability efforts. By 2024, fewer than 10 per cent of listed companies had reported in accordance with the guidance. However, sustainability reports had been published on the Mongolian Stock Exchange website by both Khan Bank and Golomt Bank, the country's only GSS+ debt issuers at the time of writing. And under the exchange's revised regulations, from 2025, Tier-1 companies listed on the Mongolian Stock Exchange will be required to submit ESG reports.

Demand for developing green taxonomies and disclosure frameworks, including mandatory disclosures, is growing, especially in more developed markets. China's three main stock exchanges – Beijing, Shanghai and Shenzhen – recently announced new sustainability reporting guidelines to take effect from 2026. These will require hundreds of large-cap and dual-listed issuers to disclose ESG-related information, including energy use, supply chain security and climate change, ecosystem and biodiversity protection. Similarly, Hong Kong Exchanges and Clearing introduced new requirements in April 2024 aligned with IFRS S2 Climate-related Disclosures, with a phased approach that will require listed issuers to report climate disclosures.[56] In Malaysia, from December 2025 public-listed companies will have to comply with Bursa Malaysia's sustainability reporting guidelines, which will mandate climate change-related disclosures aligned with the Task Force on Climate-related Financial Disclosures.[57]

The availability of consistent and reliable data to evaluate investments on a comparable basis remains a challenge, hindering progress towards more widespread adoption of green and sustainable finance practices in both developed and emerging markets. Investors often face difficulties due to a lack of standardized metrics and frameworks to assess ESG factors. Moreover, data on sustainability impacts is frequently fragmented, with variations across sectors and markets. Benchmarking, which allows organizations to compare their performance against industry peers, is equally limited. Stakeholder interviews noted the importance of data to determine issuers' sustainability performance, probability of default and recovery rates, and to bolster investor confidence in this asset class. Even when available, international research on environmental performance globally shows that Asia-based companies are further behind in their sustainability journey than other regions. For instance, an analysis by MSCI that rates how companies manage financially relevant ESG risks and opportunities across the three pillars (environmental, social and governance) found that only 6 per cent of Asian companies had a rating as "ESG leaders", compared to nearly a third in Western Europe and 10 per cent in North America. More importantly, in December 2021, 38 per cent (over 1,500) of Asian companies analysed in the study were considered "ESG laggards" , compared to 6 per cent in Western Europe and 17 per cent in North America.[58]

To improve sustainability data, regulators, international organizations and industry players need to improve the data landscape in line with international best practices. Although the share of Asia-Pacific firms making climate disclosures has grown (as shown by the number of firms reporting carbon emissions between 2010 and 2022),[59] there is significant room for progress. Data portals can be a cost-effective solution to enhance sustainability disclosure, providing more harmonized, standardized and accessible climate/ESG data. The Hong Kong Monetary Authority reports that it is developing a common platform for banks to assess the impact of physical risks on real estate.[60] Similarly, Singapore's Project Greenprint acts as a one-stop-shop for reliable information, bringing together various data providers including government agencies, financial institutions and research organizations to centralize climate and ESG-related data.

At international level, the International Sustainability Standards Board (ISSB) has played a pivotal role in advancing sustainability reporting and disclosure. In June 2023 it published the IFRS Sustainability Disclosure Standards, *IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information* and *IFRS S2 Climate-related Disclosures*. The new disclosure standards aim to streamline reporting requirements, making it easier for organizations to disclose their climate and ESG-related information. These standards will provide a common framework to facilitate the collection and dissemination of relevant data, enabling

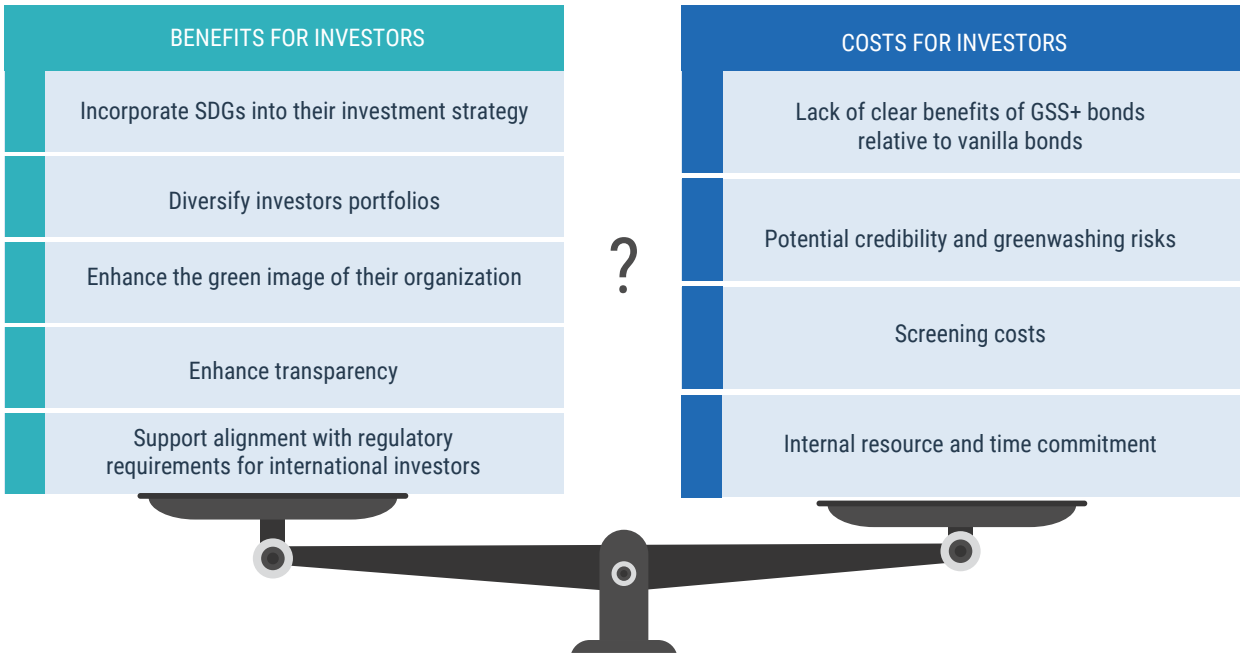
companies to better disseminate information about their sustainability-related risks and opportunities. As countries begin incorporating IFRS S1 and S2 disclosures into their accounting processes, the ISSB expects greater interoperability, streamlining of reporting processes and transparency.[61] However only a few jurisdictions in Asia and the Pacific such as New Zealand have made IFRS S1 and S2 mandatory, while others have opted for a phased or voluntary approach to allow regulators and companies – especially in smaller markets – time to build capacities and address concerns over technical readiness, regulatory hurdles and disclosure of sensitive data.

1.5.4 Mismatches between investors' demands and needs

On the demand side, the (perceived) lack of distinct advantages of GSS+ bond issuances over conventional bonds hinders market growth. Investors generally consider the valuation and pricing of green bonds and credit ratings to be important factors when making investments. International evidence, however, shows that there is no consensus on whether there is a significant yield premium or discount on green bonds – the so-called *greenium* – compared to conventional bonds.[62] A global analysis by the IMF found that sovereign issuances by some emerging and advanced markets appear to have benefited from a significant *greenium*, although this did not apply to Asia-Pacific issuances.[63] This supports the view that investor demand for green bonds may not be strong enough to drive a premium price and that investor priorities may lie elsewhere.

In general, when investors make investment decisions, they prioritize financial returns over impact on green, sustainable and social objectives. The context in which domestic and foreign investors operate has a major influence on their strategic priorities and investment decisions, including the ways they approach green and sustainable finance, the speed with which they are able to move and the limitations they face. Full integration of sustainability and climate considerations into investment processes and decisions is still relatively rare across most Asia-Pacific markets. For the majority of investors in the region, investments that have positive impacts on the environment and on society are only selected as long as doing so does not involve sacrificing financial returns.[64]

Figure 1.12: Monetary and non-monetary benefits and costs for investors to invest in GSS+ versus conventional bonds



Source: ESCAP

In less developed markets, information asymmetry remains a persistent challenge for investors, particularly around robust climate data and disclosures from issuers. Information asymmetries include, but are not limited to, country and regulatory risks, and the credit risk of available projects. Even if investors are comfortable with a higher level of credit risk, information asymmetries mean they are unable to ascertain the potential climate and sustainability benefits of their investments with sufficient precision.

This has led to growing concerns over reputational risks and the fear of potential accusations of greenwashing over either the use of proceeds or the environmental and/or sustainable impact of underlying projects financed by GSS+ bonds. This is true even in more developed economies such as Europe and the United Kingdom. A study by Responsible Investor in 2022 found that green bond fund managers in these markets rejected a fifth of green bonds due to concerns about sustainability quality.[65] Risks of greenwashing are likely to be aggravated in less developed markets due to the wide range of challenges highlighted above. As a result, the risks associated with investing in less developed markets are often deemed too high, deterring otherwise strong investor interest. It is therefore imperative for policymakers to step in by providing the market with clear rules and definitions to make investment possible.

1.5.5 Increased risks of greenwashing

There is growing awareness of the risks associated with greenwashing, which is driving demand for robust mechanisms to ensure the credibility of GSS+ bond issuances. Globally, investors with dedicated green or sustainability mandates want robust evidence of the environmental and social credentials of GSS+ bonds, indicating a heightened awareness of greenwashing risks.[66] This heightened scrutiny is shaping market dynamics for GSS+ bonds, with transparency and accountability in reporting becoming essential elements of market trust, in addition to growth. From the supply side, issuers are also eager to avoid liabilities resulting from potential errors. This is highly critical in Asia and the Pacific, where the pool of investors with dedicated green or sustainability mandates is small, so it is essential to build investor confidence to prevent these investments flowing to more mature economies.

In addition to the use of the proceeds of bonds, there is a growing focus on the credibility of issuers' commitment to sustainability. Investors are placing increasing emphasis on entity-level sustainability strategies, even when they are reviewing a bond and its project-level activities or second party opinion.[67] This is especially challenging in less developed markets, due to high costs and lack of available information, particularly when sustainability strategies are still in their early stages. Nevertheless, enhancing issuers' overall sustainability strategy and credibility can play an important role in creating greater transparency and trust in the market, to help attract more investors and ultimately expand the market.

Stronger post-issuance monitoring could help ensure that bonds meet their sustainability targets, while also addressing concerns about greenwashing and ultimately enhancing performance of the secondary market. Expert interviews revealed that while most activities are conducted during the bond pre-issuance phase (e.g. pre-issuance second party opinion (SPO) and review), more attention should be paid to effective monitoring of the allocation of proceeds and to robust impact review mechanisms. This was echoed in the expert group meetings, which highlighted that investors often do not have the ability to track key performance indicators in a standardized way across the portfolio. Issuers' criteria or classifications of what constitutes eligible projects can vary by region and might not match with investors' own investment guidelines on what are considered to be eligible projects. The selection and design of key performance indicators and interim targets, particularly for sustainability-linked bonds, should therefore aim to ensure these are standardized, streamlined and impact-oriented. This should be accompanied by efforts to educate market participants on the importance of post-issuance monitoring and review, to foster trust among investors and improve the credibility of issuers.[68]

1.5.6 Existing gaps in investor protection laws

The absence of standardized contractual protections for investors in GSS+ instruments poses another challenge. Legal solutions for GSS+ bonds vary greatly across jurisdictions and are heavily reliant on the terms and conditions specified in the bond contracts,

Table 1.3: Costs of issuing GSS+ bonds (in United States dollars)

Administrative costs	Pre-Issuance	Year 1	Ongoing
Internal costs (e.g., treasury, corporate affairs and sustainable development)			
Green bond framework (including consulting fees)	0-30,000	n.a.	n.a.
Management of proceeds	n.a.	1,000-2,000	n.a.
Post-issuance reporting	**n.a.**	**2,000-8,000**	**2,000-8,000**
External costs			
Legal /Auditing	**2,000-5,000**	**n.a.**	**n.a.**
External review and verification (including certification and SPO)	15,000-50,000	0-10,000	0-10,000
Rating fees	30,000–100,000	n.a.	n.a.
Listing fees	1,000-20,000	n.a.	n.a.
Total	**48,000-205,000**	**3,000-20,000**	**2,000-18,000**

Source: ESCAP

Note: The costs presented in the table above are indicative. Actual costs may vary significantly depending on the context, including the type of issuer, use of proceeds categories, and the country of issuance.

as well as on the legal frameworks governing their issuance. When these terms fail to mandate strict compliance with the declared use of proceeds or with ongoing project maintenance or retention of external reviews and annual reporting, investors are left in a vulnerable position in the event of misuse of funds. This gap in legal protection has been highlighted in cases such as the Mexico City Airport green bond[69] and the Innogy energy firm,[70] in which the absence of enforceable obligations exposed investors to risks without adequate recourse. Without protections, investors exiting prematurely are often forced to sell at steep discounts on the secondary market, exacerbating reinvestment risk and undermining market confidence.

1.5.7 High issuance costs of GSS+ bonds

From the supply side, the perceived issuance costs of green and other thematic bonds can deter issuers from taking the leap in more developed markets as well as nascent ones. These costs include high legal costs, costs of second party opinions or external verifications involving specialized agencies or consultants to review and validate the impact of bonds, and the costs of periodic reviews and monitoring after issuance. In many cases, obtaining a second party opinion can cost between $20,000 and $30,000.[71] Moreover, the various steps involved in the issuance process typically generate additional costs associated with changes of one sort or another in the organization's business operations. Nonetheless, evidence from Climate Bonds Initiative shows that these costs do not necessarily deter issuers from entering the market, serving as a promising signal for developing countries in Asia-Pacific at the beginning of building their GSS+ markets.[72]

1.5.8 Weak macroeconomic environment

Weaknesses in prudent economic management remain a critical barrier to attracting private capital to less developed markets. Sovereign and foreign exchange risks are among the most important factors for investment decisions in several countries in the region. Fiscal policies that rely on borrowing for short-term boosts to economic growth while neglecting long-term investments can raise public debt levels and lead to external vulnerabilities. This, in turn, increases domestic interest rates and sovereign and foreign exchange-related risk premiums. The cost of financing increases as a result, making it difficult to attract private capital for sustainable development. Government policies aimed at ensuring fiscal discipline, backed by the principle of "spend smart, tax fairly", and ensuring long-term public debt sustainability, should be a fundamental part of the policy mix. Evidence from Asia and the Pacific shows that macroeconomic conditions, fiscal risks and financial market liquidity critically influence government borrowing costs.[73] According to a recent ESCAP analysis, on average, a 1 per cent increase in the policy rate leads to an increase of approximately 0.62 per cent in the 10-year sovereign bond yield. Conversely, a one-notch upgrade in the sovereign credit rating generates a decrease in government bond yields of about 0.42 per cent.[74]

1.5.9 Gap between available technical support and capacity needs

While several regulators are encouraging the growth of GSS+ bond markets by introducing various incentives, there is still a shortfall between demand and availability of advisory support to help potential issuers enter the market. In burgeoning markets, new issuers can greatly benefit from access to advisory services and technical assistance throughout the lifecycle of their green bond process, from project pipeline development to ongoing monitoring and reporting of environmental impacts. Evidence suggests that when existing programmes are short-term or offer technical support mainly for the initial bond issuances, this can be insufficient to maintain momentum and foster the long-term growth of a self-sustaining green bond ecosystem. For capacity-building to have meaningful long-term impacts, it is critical to re-design existing programmes with a long-term horizon, equipping local stakeholders with the skills to independently manage subsequent issuances and nurture the local green bond market. This sustained engagement helps ensure that issuers can maintain high standards of transparency and credibility in the market, fostering investor confidence and creating a robust, autonomous sustainable finance ecosystem.

1.6 OPPORTUNITIES AND MEASURES TO OVERCOME THE BARRIERS

Despite existing barriers, there are opportunities to grow sustainable debt capital markets, including in less developed countries. GSS+ bonds can help investors fulfil green or socially responsible investment mandates. In a global survey by Climate Bonds Initiative, 98 per cent of issuers reported that their green bond allowed them to attract a more diverse pool of investors, as the green label appeared to match the interests of socially responsible or green investors regardless of domicile.[75] The same survey found that 91 per cent of issuers built a stronger engagement with investors, as investors became more familiar with the entity during the pre-issuance phase, as part of the discussions on use of proceeds, framework and post-issuance reporting. Additional benefits include the opportunity to audit an entity's exposure to climate and social risks, and internal collaboration. Interestingly, pricing was generally not cited as the principal benefit. While some of these benefits may be less applicable to Asia and the Pacific (e.g. development of new green business lines), these findings nonetheless offer valuable insights on the merits of scaling GSS+ bond markets.

1.6.1 Using incentives to increase GSS+ bond attractiveness

Tax incentives or subsidies are a proven way to encourage investment in GSS+ bonds. This holds true even in countries with more developed markets that already have an active GSS+ debt market.[76] Subsidies, credit guarantees, tax offsets or other financial incentives can finance innovations to help launch new markets and reduce first-mover disadvantages,

Table 1.4: Summary of policy incentives and subsidies for GSS+ bonds

	Target	How it works?	Examples of countries/ jurisdictions
Tax incentives			
Tax credits	Investors	Bond investors receive tax credits instead of interest payments, so issuers do not have to pay interest on their green bond issuances	United States China
Direct subsidy	Issuers	Bond issuers receive cash rebates from government to subsidize their net interest payments	United States Brazil (financing of wind projects)
Tax offsets (e.g. tax-exempt bonds)	Investors	Tax offsets reduce the tax liabilities of green bond investors. Governments may offer reductions in income tax, capital gains tax or withholding tax on interest earned from green bonds. This makes green bonds more attractive to investors, as the after-tax returns are higher compared to other investment options. It also allows issuers to access funding more easily and at better rates	China India Malaysia
Subsidies and other incentives			
Credit guarantees	Issuers	Credit guarantees involve a third party (typically a government or development bank) which promises to cover the debt obligations of a green bond issuer if they default. This reduces the risk for investors, making green bonds more attractive and allowing issuers with lower credit ratings to raise funds at lower costs.	India[78]
Subsidies	Issuers	Subsidies are direct financial incentives such as grants or interest rate reductions provided by governments to reduce the costs associated with issuing green bonds. These can help cover certification fees or issuance costs or can offer lower borrowing rates for green projects.	China (including local governments) Kazakhstan Singapore[79] Hong Kong, China[80] Indonesia Thailand
Other types of incentives	Issuers	These include measures to reduce issuance costs, such as registration fee waivers for GSS+ bond listings	Mongolia Singapore Viet Nam

Source: ESCAP, based on CBI, "Tax incentives for issuers and investors". Available at www.climatebonds.net/policy/policy-areas/tax-incentives and other sources.

and have been used by many countries in the region. According to a survey of financial institutions by the IFC, many respondents favoured using public subsidies or guarantees rather than regulatory tools to encourage green and sustainable finance.[77] To ensure the success of these measures, incentive initiatives should be used for the short term only, should minimize distortion and crowding-out effects, and should employ strict and transparent eligibility criteria. The type, duration and size of incentives should also be tailored to the country's context, market readiness and fiscal capacities (table 1.4).

1.6.2 Regulatory support to drive the market

Financial regulation can help change issuer and investor behaviour and steer capital towards sustainability goals. In Asia and the Pacific, this requires a decisive approach from policy makers to reaffirm their commitment to sustainability for financial market participants, and to encourage both investors and firms to enter the green bond market. For instance, prudential regulations can help align institutional investment strategies with sustainability goals more effectively. Regulations can be introduced that prescribe pension funds or other institutional investors to allocate a portion of their portfolios to

green bonds or other sustainable investments. Another effective measure can be for central banks to dedicate a percentage of their investment portfolios to green or sustainable-labelled debt, following the example of advanced markets such as the European Central Bank.

Regulators can also introduce specific incentives for institutional investors to shift towards green investments. For example, risk weightings could be adjusted in prudential frameworks, allowing green bonds to have preferential treatment under capital adequacy rules. This would make these instruments more attractive for banks and other financial institutions and would encourage broader participation in the market. In Asia-Pacific, the People's Bank of China (PBOC) has introduced a macroprudential assessment framework that incorporates green finance performance, to incentivize banks to increase their green lending.

On the supply side, it is important to further standardize and develop well-defined requirements for the external review process of GSS+ bonds. Currently, the market is characterized by a proliferation of different standards from multiple standard-setters, jurisdictions and regions, making it difficult for issuers to align their bonds with universally recognized benchmarks or for investors to assess the credibility of these instruments. Additionally, significant disparities exist in the quality and rigour of second party opinion providers, which may undermine the effectiveness and trustworthiness of external reviews. The establishment of a consistent set of criteria and expectations would not only streamline the evaluation process but also provide a level playing field for issuers and investors, ultimately bolstering the reliability and comparability of these opinions within the GSS+ debt market.

Engaging non-financial regulators is equally essential for bridging the gap between financial institutions and the real economy, especially in countries where national sustainability agendas are progressing slowly. Stakeholder interviews revealed that many companies in Asia-Pacific are hesitant to transition towards sustainable practices due to the lack of clear regulatory incentives and support. Non-financial regulators such as those overseeing industry, energy and environmental policies play a pivotal role in driving corporate behaviour by introducing mechanisms that directly impact the cost structures of unsustainable business models. For instance, the introduction of plastic taxes in countries such as Thailand is critical to encourage businesses to reduce their reliance on single-use plastics and invest in more sustainable alternatives. Similarly, carbon pricing mechanisms such as carbon taxes or emissions trading systems can compel companies to reduce their carbon footprint to remain competitive.

1.6.3 Boosting demand from local investors to vitalize local GSS+ debt markets

In Asia and the Pacific, the market needs scale to encourage investors to commit capital to dedicated green and sustainability investment mandates. According to an ADB survey in the ASEAN region, demand from domestic investors has played an essential role in markets with an established sustainable finance segment, such as Malaysia and Thailand.[81] Similarly, lessons from Viet Nam show that the first local green bond issuance paid particular attention to engaging international insurers with a local presence as cornerstone investors.[82] This contributed to raising awareness of green bonds among local financial institutions, which can in turn help foster growth and diversification of domestic investors in these markets. In China, more than 80 per cent of Chinese green bonds are issued to domestic investors and are denominated in Chinese yuan.[83]

Local and regional institutional investors including long-term public investors such as public pension funds can play an essential role in bolstering sustainable debt markets. Institutional investors and asset managers in the region have strong financial incentives to be proactive on climate change and other sustainability issues, as their long-term exposure across sectors makes them vulnerable to systemic risks that individual companies might dismiss as externalities. Additionally, international insurers and asset managers with ESG mandates operating in the region can help enhance the expertise of local staff and motivate investees to adopt more responsible practices. Malaysia's Employees Provident Fund is a positive example, having introduced a sustainable investment policy outlining its strategy for incorporating ESG factors into its investment decisions.[84] Within this framework, the fund announced its plans to offer a sustainable savings

option, allowing members to align their investments with personal values.[85] This solution aimed not only to boost demand for ESG investments but also to encourage other domestic investors to strengthen their capacity to provide greater investment opportunities for local retail investors.

Innovations such as digital bond issuance will play an increasingly critical role in driving demand for GSS+ bonds in more advanced markets across Asia and the Pacific. Tokenization,[86] in particular, has emerged as a transformative approach for the financial industry, with the potential to revolutionize the issuance, trading and settlement of green bonds. By leveraging technologies such as blockchain, tokenized green bonds enable real-time impact verification and reporting, offering enhanced transparency, liquidity and accessibility to a broader range of investors. These advances can in turn encourage regulatory frameworks to evolve alongside market practices, ensuring that tokenized green bonds mature with robust legal backing and investor protections. Kenya has announced plans to develop a tokenized debt platform, signalling the potential for tokenized instruments to increase investor participation through greater efficiency and traceability.[87] In February 2023 Hong Kong, China issued the world's first tokenised government green bond, denominated in Hong Kong dollars and valued at around US$100 million.[88]

1.6.4 Strengthening local financial market development

To encourage local GSS+ deals, the establishment of domestic green bond verifiers with in-depth knowledge of local contexts, regulations and market practices should be encouraged. Local reviewers who operate in the same country as issuers, or who work in the same time zone or speak the same language often charge lower fees than international counterparts, which can help reduce issuance costs. This makes it more accessible and affordable for smaller issuers as they tap into the GSS+ bond market. Nevertheless, intellectual capital and technical expertise are still required to build trust and mitigate risks of greenwashing. Local credit rating agencies that are familiar with existing bond issuers in their local markets may be well-positioned to offer these services.

In less mature markets, the inclusion of robust contractual clauses that define penalties or remedies for non-compliance or deviations in the use of proceeds could be a solution to drive investor confidence. Stakeholder discussions revealed that standardizing such provisions would provide investors with greater assurance that their investments would remain aligned with the stated climate and sustainability objectives, as well as incentivizing issuers to maintain rigorous adherence to their commitments. Consultations with market participants confirmed that this enhanced credibility can positively influence the pricing and attractiveness of subsequent GSS+ bond issuances, benefiting both issuers and the broader GSS+ debt market. These clauses could include triggers for specific events, such as failure to maintain the GSS+ status of projects, misallocation of funds or non-fulfilment of reporting requirements. Standardization could also pave the way for increased participation from local investors, including institutional investors, which often require a higher level of assurance and liquidity before committing capital to GSS+ bonds in less developed markets.

1.6.5 Knock-on role of sovereign issuances on private markets

Governments can demonstrate their commitment by regularly issuing GSS+ bonds in local currencies to encourage development and growth of the domestic bond market. Globally, sovereign issuance has had a positive impact on private issuance, demonstrating the impetus that a sovereign can provide to market development, especially in less developed markets.[89] Although several Asia-Pacific countries have non-investment grade sovereign ratings, which generally corresponds to a higher cost of financing and lower volumes, successful issuances in local currency by countries such as Uzbekistan and Fiji can serve as positive examples.[90] Volumes are still low, but they signal that there is appetite for such instruments. Regular issuance helps shape the yield curve and enables corporate issuers to price and calculate risk premiums on their GSS+ issuances more precisely. Not only would the issuance of GSS+ bonds increase government transparency regarding public spending,

but would also provide clear guidance to the private sector on eligible green projects and social categories. In addition, sovereigns can help set sustainability reporting standards.

1.6.6 Fostering harmonization of national standards and frameworks through regional cooperation

Stronger regional cooperation can support Asia-Pacific governments and regulators to implement policy and regulatory frameworks in line with international best practices. Regional cooperation on data, cross-border challenges and aligning investment norms through common taxonomies or common regulatory approaches can help level the playing field between countries and reduce opportunities for arbitrage. In the traditional debt capital markets, the Asian Bond Market Forum plays an important role in supporting the standardization of market practices and the harmonization of regulations relating to cross-border bond transactions. Another example is the International Capital Market Association (ICMA) and its work on Green Bond Principles and Social Bond Principles. This has been key in helping countries in the Asia-Pacific region to integrate sustainable financing principles into their regulatory frameworks. By providing a common language for sustainable investments, ICMA's frameworks assist governments in shaping national regulations that align with international expectations while addressing regional sustainability challenges.

1.7 CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

Debt capital markets play a critical role in harnessing private-sector capital to advance sustainability and climate objectives. Although GSS+ debt markets in Asia-Pacific are growing rapidly, there is still enormous untapped potential, requiring an increase in both supply and demand in most countries. However, a GSS+ market cannot be built where a traditional debt market does not exist. Developing and deepening debt capital markets by enhancing market infrastructure and strengthening investor protection laws and governance through transparent regulatory frameworks and robust governance measures are equally important. These targeted actions can help improve credit ratings, lower the cost of capital and expand domestic financial resources available within a country.

By building transparency and accountability mechanisms into traditional debt issuances, these markets can gradually incorporate sustainability aspects. This includes developing clear guidelines for sustainability disclosures, mandating reporting of carbon footprints and ensuring that issuers have well-articulated transition strategies towards net-zero or other sustainability targets. In less mature markets, particular emphasis should be put on the development of robust regulatory frameworks, to send a clear direction to the market and build investor confidence.

Where active markets do exist, the focus should be on enhancing the comparability and standardisation of GSS+ instruments to avoid risks of greenwashing. This requires decisive action from each country to focus on strengthening either its traditional market or making it easier for issuers to bring GSS+ deals. National regulatory authorities should work towards enhancing transparency in sustainability disclosures, particularly in debt markets.

Countries should also make it easier for issuers to bring GSS+ deals to the market by reducing regulatory barriers and offering incentives for GSS+ issuances. Such measures will not only spur the growth of GSS+ instruments but also integrate sustainability into the broader financial system. On the demand side, investors require compelling benefits in order to incorporate more sustainability aspects into their investment decisions.

Looking ahead, concerted efforts from both policymakers and market actors will be necessary to establish a financial ecosystem in which sustainability is not an optional add-on but an intrinsic part of financial operations. Regulators should be encouraged to design and embed a long-term sustainability strategy/roadmap within the market to give a clear direction to all market players, including issuers, investors, auditing and accounting firms, verifiers and financial intermediaries. These efforts should be accompanied by dedicated initiatives to build the technical capacities of market actors at all levels.

Recognizing that there is no one-size-fits-all solution for governments in Asia and the Pacific, this chapter identifies fifteen recommendations to drive action towards strengthening Asia-Pacific traditional and GSS+ debt capital markets to support more robust financing towards sustainability and climate objectives. These recommendations are grouped into measures targeting three main stakeholder groups: (i) governments and regulators; (ii) multilateral development banks (MDBs) and development financial institutions (DFIs); and (iii) development partners (including MDBs).

What governments and regulators can do:

1. **Establish clear and transparent legislation to strengthen traditional debt markets.** This includes adopting insolvency laws, implementing prudential rules to mitigate systemic risks and enhancing market transparency through stringent disclosure requirements. Particular attention should be paid to fortifying market integrity safeguards in order to build investor confidence, and enacting legislation that provides sufficient protection to investors and ensures the seamless operation of local market infrastructures, including stock exchanges and credit rating agencies.

2. **Strengthen the underlying capital market infrastructure.** Developing the necessary market infrastructure, including platforms for trading green bonds, can facilitate market entry for new issuers and investors, as well as offering a centralized marketplace that promotes liquidity and price discovery. In less mature markets, the introduction of standardized rating systems to assess quality and impact is equally important, providing essential benchmarks for market participants and enhancing comparability across issuances. Policymakers should support the establishment of such infrastructure, while at the same time working to integrate technological innovations to enhance market efficiency and transparency.

3. **Develop and implement effective regulatory frameworks to enhance transparency and investor confidence in GSS+ debt markets.** This chapter has reviewed a wide range of regulatory measures to encourage the growth of GSS+ markets in Asia-Pacific countries, including taxonomies, sustainable finance roadmaps and disclosure requirements. The development of an enabling regulatory environment is especially critical in markets at the early stages of capital market development. As these markets evolve, regulatory frameworks must also advance in ambition and scope, to ensure they are regularly updated, incorporate lessons from market practice and align with international best practices and standards. Regional harmonization and consistency is equally important, especially for fostering cross-border investments and scalability.

4. **Encourage the uptake of sustainable debt instruments through subsidies and incentives to reduce the initial cost of green and sustainable investments and ensure attractive returns.** Lessons from several Asia-Pacific countries including Thailand, Malaysia and China have amply demonstrated the importance of incentives in both early-stage and more mature markets. Tax incentives can help tilt investment to green and sustainable activities especially in the early stages. The resulting increase in investor interest and demand will encourage issuers to issue green bonds. On the supply side, the use of subsidies such as GSS+ issuance grant schemes provides critical support for getting initial GSS+ deals off the ground. Issuers can then use the knowledge and frameworks acquired during this process for subsequent issuances.

5. **Facilitate and prioritize development of robust and recurrent pipelines of green and other sustainability projects.** Streamlined approval processes would signal clear government commitment to sustainability, providing assurance that green initiatives will be met

with institutional support and regulatory efficiency. Green public procurement can be another tool to stimulate demand for green projects, creating a signal for private sector participants to develop projects that align with these requirements. This increased flow of green projects would, in turn, generate greater investor interest and demand, further encouraging issuers to bring GSS+ debt products to the market.

6. **Institutional investors, central banks and other institutions can consider allocating a fixed portion of their portfolio to sustainable investments.** Following the examples of other advanced markets (e.g. the European Union), local investors including insurance companies, pension funds and other government entities such as state investment funds and sovereign wealth funds can begin to commit a portion of their own funds to green and socially responsible investment mandates. Such allocations can demonstrate the viability and profitability of sustainable investments while providing critical support to green finance markets in their early stages of development. Central banks, in particular, can play a pioneering role by prioritizing the purchase of sustainable bonds as part of their market operations and foreign reserve management strategies.

7. **Review capital reserve requirements for institutional investors, particularly banks and insurance companies, to enhance appeal of GSS+ bonds over traditional instruments.** Building on the experience of advanced markets (e.g. European Central Bank), risk weightings could be adjusted in prudential frameworks, allowing green bonds to have preferential treatment under capital adequacy rules to reflect their lower risk profile and positive externalities. This would make these instruments more attractive for banks and other financial institutions, encouraging a broader participation in the market.

8. **Establish and develop local talent to support the growth of the sustainable finance ecosystem.** By implementing appropriate policies and fostering a robust domestic sustainable finance ecosystem supported by various technical assistance initiatives, the process of issuing GSS+ bonds could be streamlined. A key component of this process involves the establishment and operationalization of local reviewers, rating agencies, verifiers and audit firms. This would not only reduce overall issuance costs and time to market, but also enhance pricing certainty, making the market more accessible and efficient for issuers and investors alike

9. **Consider issuing sovereign GSS+ bonds as a catalyst to drive local currency market growth.** Depending on the national context and debt profile, governments can consider GSS+ issuances as a tool to spur growth of their local GSS+ debt markets. This would set a high standard in terms of ambition and would ensure additionality in their issuances. Lessons from countries such as Indonesia have shown that GSS+ sovereign issuances not only demonstrate a government's commitment to sustainability but also establish a foundation for market growth. This in turn encourages private issuers to follow suit and helps attract international investors, thereby enhancing market visibility and liquidity.

What multilateral development banks (MDBs) and development financial institutions (DFIs) can do:

10. **Act as anchor investors to catalyse private capital.** MDBs and DFIs can act as anchor investors for GSS+ bond transactions, demonstrating best practices around green/sustainable investment to local investors. These experiences can allow local investors to gradually build their capacities and independently assess climate and sustainability aspects of the underlying securities.

11. **Provide guarantees and other risk-sharing mechanisms, particularly in less mature markets.** MDBs and DFIs can play a critical role in de-risking green investments by offering guarantees, including first-loss capital, and promoting local currency GSS+ bond issuances to mitigate foreign exchange risks. As Asia-Pacific countries such as Indonesia and Cambodia have shown, the use of guarantees for specific issuers can help reduce risk perceptions and encourage participation from both domestic and international investors, in addition to reducing the cost of capital for GSS+ issuers.

12. **Adopt a pooled-fund approach.** In countries with more developed bond markets, investment funds provide a good reference on how to crowd-in institutional investors. One example is the Amundi green bond fund set up with support from the IFC, which pooled green bonds issued by banks in various developing economies globally, leveraging multilateral development bank resources effectively to attract private finance. Such funds can be replicated and scaled up to incentivize issuers in less developed markets to generate a sufficient supply of green assets to finance green projects.

What development partners, including multilateral development banks, can do:

13. **Support development of common green and sustainable finance taxonomies and disclosure requirements.** Regional bodies and development partners can play an important role in bringing together countries with various development backgrounds, to reduce fragmentation and forge a common approach. Regional cooperation on data, cross-border challenges and aligning investment norms through common taxonomies or common regulatory approaches is of the utmost importance to ensure interoperability between regulatory frameworks, convergence towards widely accepted norms on investments in climate and sustainability, and a level playing field for all.

14. **Provide technical assistance programmes that help reinforce the partner country's traditional and sustainable capital market ecosystem, including through capacity-building for securities exchanges and bond issuers.** This should also explore avenues to offer coupon subsidisation for affordable debt servicing costs where appropriate, and to cover the extra costs associated with the issuance of green bonds versus vanilla bonds (such as costs for monitoring, reporting and third party verification).

15. **Offer advisory support to entities wishing to issue GSS+ bonds.** Development partners, including multilateral development banks, are well-placed to offer guidance to prospective GSS+ bond issuers, including applying for eligible grants and incentives, identifying eligible assets, projects and expenditures, developing GSS+ financing frameworks, setting up reporting systems, and facilitating interactions with external reviewers. Local underwriters should also participate in this process to gain practical experience.

ENDNOTES

1 Bioy Hortense and others, "Global sustainable fund flows: Q2 2024 in review", Morningstar Sustainalytics, 22 July 2024.

2 European Customer Organization (BEUC), "Greenwashing in retail financial services: findings and conclusions from BEUC member feedback to a consultation by the three European supervisory authorities" (Brussels, 2023).

3 For the remainder of this chapter, debt capital markets refer to public and privately traded debt securities.

4 Well-developed capital markets are broadly understood to be those markets that have been established over a long period and exhibit characteristics of stability, transparency and resilience. Such markets benefit from established regulatory frameworks, a high level of market participation and well-developed infrastructure. On the other hand, early stage markets designate smaller and less liquid markets compared to more established emerging market peers.

5 United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), "Strengthening financing for sustainable development in Asia and the Pacific: a discussion of selected policy areas", Issues Paper (Bangkok, 2024).

6 *Economic and Social Survey of Asia and the Pacific 2024: Boosting Affordable and Longer-Term Financing for Governments* (United Nations publication, 2024).

7 *2024 World Investment Report, Investment Facilitation and Digital Government* (United Nations publication, 2024).

8 ESCAP, "Strengthening financing for sustainable development in Asia and the Pacific: a discussion of selected policy areas", Issues Paper (Bangkok, 2024).

9 Ibid.

10 *2024 World Investment Report, Investment Facilitation and Digital Government* (United Nations publication, 2024).

11 Ana Fiorella Carvajal and others, "Capital markets development: a primer for policymakers", (Washington D.C., World Bank Group, 2020).

12 Felicia O. Olokoyo, Oyakhilome W. Ibhagui, and Abiola Babajide, "Macroeconomic indicators and capital market performance: are the links sustainable?", *Cogent Business and Management*, vol. 7, No. 1, David McMillan, ed. (Abingdon, Taylor and Francis Group, 2020).

13 *Economic and Social Survey of Asia and the Pacific 2024: Boosting Affordable and Longer-Term Financing for Governments* (United Nations publication, 2024).

14 Ibid.

15 A *sukuk* is an Islamic financial certificate that complies with Shariah principles and concepts.

16 Organization for Economic Co-operation and Development (OECD), *Corporate Bond Markets in Asia: Challenges and Opportunities*, OECD Capital Market Series (Paris, OECD Publishing, 2024).

17 *Economic and Social Survey of Asia and the Pacific 2024: Boosting Affordable and Longer-Term Financing for Governments* (United Nations publication, 2024).

18 OECD, *Mobilizing ASEAN Capital Markets for Sustainable Growth* (Paris, OECD Publishing, 2024).

19 When investors face difficulties in exiting their investments early, they may demand higher yields or avoid the market altogether, which raises borrowing costs for issuers. As a result, limited investor participation can hinder the growth and development of the domestic bond market, restricting access to much-needed capital for businesses and infrastructure projects.

20 OECD, *Corporate Bond Markets in Asia: Challenges and Opportunities*, OECD Capital Market Series (Paris, OECD Publishing, 2024).

21 OECD, *Mobilizing ASEAN Capital Markets for Sustainable Growth* (Paris, OECD Publishing, 2024).

22 Ibid

23 Ibid

24 Ibid

25 Ibid

26 *Financing for Sustainable Development Report 2024: Financing for Development at a Crossroads* (United Nations publication, 2024).

27 OECD, *Mobilizing ASEAN Capital Markets for Sustainable Growth* (Paris, OECD Publishing, 2024).

28 Ibid.

29 Several factors affect sovereign and corporate ratings. Sovereign ratings are primarily influenced by macroeconomic fundamentals, including a country's debt levels, fiscal and monetary stability, its ability to service debt reliably as well as the strength of country institutions and governance. Corporate ratings are based on firm-specific factors such as financial performance and operational risks, however, in many developing markets, corporate ratings are often capped by the sovereign rating. This means that even financially sound companies may struggle to obtain high credit ratings if their country is rated below investment grade. As a result, sovereign creditworthiness becomes a key determinant of corporate ratings, especially in markets where domestic financial systems are less developed.

30 *Sustainable Finance: Bridging the Gap in Asia and the Pacific,* ESCAP Financing for Development Series, No.5 (United Nations publication, 2023)

31 Shuvojit Banerjee, "Developing local currency bond markets in South-East Asia: role of local currency bond market", MPFD Policy Briefs, No. 74 (Bangkok, ESCAP, 2018).

32 *Economic and social survey of Asia and the Pacific 2024: Boosting affordable and longer-term financing for governments* (United Nations publication, 2024).

33 OECD, *Mobilizing ASEAN Capital Markets for Sustainable Growth* (Paris, OECD Publishing, 2024).

34 Thinking Ahead Institute, "The asset owner 100: the most influential capital market", November 2023.

35 Thinking Ahead Institute and Pensions and Investments, "Global top 300 pension funds", September 2023.

36 Ibid.

37 Government Pension Investment Fund (GPIF), "GPIF ESG report 2021" (Tokyo, 2022).

38 OECD, *Global Debt Report 2024: Bond Markets in a High-Debt Environment* (Paris, OECD Publishing, 2024).

39 The term "aligned" indicates that the issuances meet the CBI's standards for sustainable debt, ensuring that the bonds are structured to support long-term sustainability goals and capital projects such as climate action and resilient infrastructure development.

40 Torsten Ehlers and others, "Scaling up private climate finance in emerging market and developing economies: challenges and opportunities", in *Global Financial Stability Report: Navigating the High-Inflation Environment* (Washington D.C., International Monetary Fund, 2022).

41 Australia, New Zealand, China, Fiji, India, Singapore, Malaysia, Indonesia, Thailand, Uzbekistan

42 Gong Cheng and others, "Sovereign green bonds: a catalyst for sustainable debt market development?", BIS Working Paper, No. 1198 (Basel, Bank for International Settlements, 2024).

43 *2024 World Investment Report, Investment Facilitation and Digital Government* (United Nations publication, 2024).

44 Ibid.

45 Asian Development Bank (ADB) and Global Green Growth Institute (GGGI), *Survey on Green Bonds and Sustainable Finance in ASEAN: Insights on the Perspectives of Institutional Investors and Underwriters*, Global Bond Market Survey (Manila, Seoul, 2022).

46 European Commission, document COM(2021) 390 final.

47 Neeraj Chouhan, Caroline Harrison and Deepak Sharma, "Sustainable debt: global state of the market 2023" (London, Climate Bonds Initiative, 2024).

48 CBI, "Japan's khan : a groundbreaking milestone in sustainable finance", February 2024.

49 Nicholas Pfaff, Özgür Altun and Stanislav Egorov, "Transition finance in the debt capital market" (Zurich, International Capital Market Association, 2024).

50 Cheng Hoon Lim and others, "Unlocking climate finance in Asia-Pacific: transitioning to a sustainable future", IMF Departmental Paper Series, No. 2024/001 (Washington D.C., International Monetary Fund, 2024).

51 ADB and GGGI, *Survey on Green Bonds and Sustainable Finance in ASEAN: Insights on the Perspectives of Institutional Investors and Underwriters*, Global Bond Market Survey (Manila, Seoul, 2022).

52 High-Level Expert Group on Scaling up Sustainable Finance in Low- and Middle-Income Countries, "Final recommendations" (Brussels, 2024).

53 ADB and GGGI, *Survey on Green Bonds and Sustainable Finance in ASEAN: Insights on the Perspectives of Institutional Investors and Underwriters*, Global Bond Market Survey (Manila, Seoul, 2022).

54 Frits Klaver and others, "Challenges and solutions in measuring and reporting scope 3 emissions" (Amsterdam, Deloitte, 2023).

55 Casey Herman, "Tackling the scope 3 challenge", PwC, 8 September 2022.

56 Deloitte, "New Era of Climate Disclosure for Hong Kong Listed Companies", 25 April 2024.

57 Tan Zhai Yun, "A game changer for sustainability reporting?", *The Edge Malaysia*, 18 September 2023.

58 Carla Nunes, James Harrington and Anas Aboulamer, "ESG and global investor returns study" (Kroll, 2023).

59 Damien Capelle and others, "Mitigating climate change at the firm level: mind the laggards", BIS No.2023/242 (Washington D.C., International Monetary Fund, 2023).

60 Hong Kong Monetary Authority, "Briefing to the legislative council panel on financial affairs", 17 November 2023.

61 International Sustainability Standards Board (ISSB), "Effects analysis: IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information and IFRS S2 Climate-related Disclosures", 26 June 2023.

62 Allegra Pietsch and Dilyara Salakhova, "Pricing of green bonds: drivers and dynamics of the greenium", ECB Working Paper Series, No. 2728 (Frankfurt, European Central Bank, 2022).

63 Cheng Hoon Lim and others, "Unlocking climate finance in Asia-Pacific: transitioning to a sustainable future", IMF Departmental Paper Series, No. 2024/001 (Washington D.C., International Monetary Fund, 2024).

64 World Bank and Institute of Finance and Sustainability, "Unleashing sustainable finance in Southeast Asia", (Washington D.C., World Bank, 2022).

65 Dominic Webb, "Fund managers rejecting a fifth of green bonds as quality concerns continue", Responsible Investor, 3 November 2022.

66 Neeraj Chouhan, Caroline Harrison and Deepak Sharma, "Sustainable debt: global state of the market 2023" (London, Climate Bonds Initiative, 2024).

67 Eisuke Nakajima and Sharad Jain, "Asia-Pacific sustainable bonds to step up growth in 2024", S&P Global, 21 February 2024.

68 Sara Eberhart and others, "Labelled bonds for the net-zero transition in South-East Asia: the way forward" (Geneva, World Economic Forum, 2024).

69 Carolina Millan, "Mexico buys back $482 million of bonds for never-built airport", Bloomberg, 6 December 2023.

70 International Financing Review, "Hong Kong: jumbo placement", 06 November 2010.

71 Peter Lindner and Kay Chung, "Sovereign ESG bond issuance - a guidance note for sovereign debt managers", IMF Working Paper, No. 2023/058 (Washington D.C., International Monetary Fund, 2023).

72 Caroline Harrison, Lea Muething and Krista Tukiainen, "Green bond treasurer survey", (London, Climate Bonds Initiative, 2020).

73 *Economic and Social Survey of Asia and the Pacific 2023: Rethinking Public Debt for the Sustainable Development Goals* (United Nations publication, 2023).

74 *Economic and Social Survey of Asia and the Pacific 2024: Boosting Affordable and Longer-Term Financing for Governments* (United Nations publication, 2024).

75 Neeraj Chouhan, Caroline Harrison and Deepak Sharma, "Sustainable debt: global state of the market 2023" (London, Climate Bonds Initiative, 2024).

76 KPMG, "Green bonds survey results: tax incentives on green bonds", October 2023. Available at https://kpmg.com/mt/en/home/insights/2023/11/green-bonds-survey-results.html.

77 Dimitri G. Demekas and Jessica Stallings, "Challenges of green finance: private sector perspectives from emerging markets" (Washington D.C., International Financial Corporation, 2023).

78 The Indian Renewable Energy Development Agency (IREDA) offers a credit enhancement guarantee scheme to support the issuance of bonds towards renewable energy (wind and solar energy)

79 Singapore's Green Bond Grant Scheme, launched by the Monetary Authority of Singapore (MAS), covers up to S$125,000 (approx. $96,390) of the expenses related to external reviews of eligible green, social, sustainability, sustainability-linked and transition bonds (MAS, "Scheme and initiatives: Sustainable Bond Grant Scheme", 2025).

80 The Green Bond Grant Scheme in Hong Kong, China covers the expenses of obtaining external review and other issuance costs. It covers eligible green, sustainability and transition bonds and loans (Hong Kong Monetary Authority, "Tax concessions and incentive schemes: Green and Sustainable Finance Grant Scheme", 28 November 2024).

81 ADB and GGGI, *Survey on Green Bonds and Sustainable Finance in ASEAN: Insights on the Perspectives of Institutional Investors and Underwriters*, Global Bond Market Survey (Manila, Seoul, 2022).

82 Ibid.

83 Martin Dropkin, "China green bonds: sprouting issuance, absent greenium", Fidelity International, 1 November 2021.

84 Employees Provident Fund, "EPF sustainable investment policy", 31 March 2022

85 Pathma Subramaniam, "EPF to launch sustainable savings option for members", The Edge Malaysia, 25 April 2022.

86 Tokenization refers to the process of converting the ownership and rights of a bond into a digital token recorded on a blockchain. This digital representation allows for more efficient issuance, trading, and management of bonds by leveraging distributed ledger technology. Tokenized bonds can be divided into smaller units, enabling fractional ownership and broadening investor access.

87 Ebrima Faal, "Tokenization and the future of debt management in Africa", 17 November 2023. Available at https://blogs.lse.ac.uk/africaatlse/2023/11/17/tokenization-and-the-future-of-debt-management-in-africa/.

88 Georgina Lok, "Hong Kong's tokenised green bonds", ICMA Quarterly Report No, 73 (2024).

89 Torsten Ehlers and others, "Scaling up private climate finance in emerging market and developing economies: challenges and opportunities", in *Global Financial Stability Report: Navigating the High-Inflation Environment* (Washington D.C., International Monetary Fund, 2022).

90 Sustainable Finance: Bridging the Gap in Asia and the Pacific, ESCAP Financing for Development Series, No.5 (United Nations publication, 2023).

CHAPTER 2:
FINANCING THE ENERGY TRANSITION IN ASIA AND THE PACIFIC

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2.1 INTRODUCTION

In 2024, global investment in energy was set to exceed $3 trillion for the first time, of which $2 trillion was invested in clean energy technologies and infrastructure.[1] However, at the same time, investment in fossil fuels has been increasing as well since 2020,[2] and the industry continues to receive considerable support through subsidies.[3] Furthermore, imbalances in investment in fossil fuels and clean energy persist around the world. As a result, investment in the transition to renewable energy remains well below what is required and continues to be concentrated in a handful of advanced economies, with insufficient investment in emerging markets and developing economies (EMDEs) other than China.[4] This is despite massive investment in clean-tech research, development and manufacturing, which has significantly lowered prices of solar, electric vehicles and other green technologies globally.

As the most populous and rapidly developing region in the world, Asia and the Pacific faces multifaceted challenges both in meeting growing energy demands and in trying to transition away from fossil fuels and towards renewable energy sources. In 2023, the Asia-Pacific region accounted for 47 per cent of global energy demand, with the economies of China, India, Indonesia, Japan and the Republic of Korea making up almost all of this share.[5] Looking ahead, South-East Asia alone is on course to account for 25 per cent of growth in global energy demand between 2024 and 2035.[6] By 2050, South-East Asia will overtake the European Union in energy demand.[7] In 2023, the Asia-Pacific region had the highest demand of any region, consuming 47 per cent of the world's total demand.[8]

Meeting this growing demand for energy from clean energy sources is paramount for achieving global climate goals and the Sustainable Development Goals (SDGs). The transition away from fossil fuels in the Asia and the Pacific region will profoundly shape the development pathway of a region that is home to two-thirds of the world's population and makes up 46 per cent of the world's GDP.[9] COP28 called on "Parties to contribute to the following global efforts, in a nationally determined manner, taking into account the Paris Agreement and their different national circumstances, pathways and approaches: (a) Tripling renewable energy capacity globally and doubling the global average annual rate of energy efficiency improvements by 2030."[10]

Renewable energy sources are increasingly cost-competitive compared to other sources. In 2023, 81 per cent of new sources of renewable energy capacity[11] worldwide provided cheaper electricity than fossil fuel alternatives,[12] making a strong case for countries (especially in the Asia-Pacific region) to rapidly scale up investment in renewables, especially in view of growing demand.

However, coal continues to expand in Asia and the Pacific despite the availability of cheaper renewables. In 2023, the Asia-Pacific region generated approximately 45 per cent of its electricity from coal,[13] making it not only the most fossil fuel-dependent region in the world but also the most reliant on the "dirtiest" fossil fuel, as reflected in the unparalleled amounts of carbon dioxide it produces from generating electricity. The region remains the global epicentre of coal power generation, hosting 79 per cent of the world's operating coal plants (1.69 terawatts [TW] out of 2.13 TW). Nearly all planned new coal capacity – 96 per cent (553 gigawatts [GW] out of 578 GW) – is concentrated in the Asia-Pacific region.[14] China dominates this trend, accounting for 53 per cent of existing coal capacity in 2024, and 71 per cent of planned expansion globally.[15] Excluding China, most new coal capacity under construction and pre-construction (announced, pre-permit, permitted) is located in India, Indonesia and Bangladesh, where demand for affordable, reliable electricity is soaring.[16] Furthermore, Viet Nam and Bangladesh prioritize coal to meet urgent electricity needs as part of the overall growth in their energy needs,[17] with policymakers viewing coal as a fast, scalable solution, partly because renewables face higher system costs (e.g., upfront investment in grids, storage and complementary infrastructure such as manufacturing facilities), whereas coal can leverage existing supply chains and centralized grids.[18]

This chapter is jointly authored by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the International Renewable Energy Agency (IRENA). Co-authors: Pierre Horna (ESCAP), Faran Rana, Hannah Guinto and Diala Hawila (IRENA). The authors are grateful to Suba Sivakumaran, Matthew Wittenstein, Michael Williamson, Stephen Tan, Latipat Mikled, Lara Kerner, Siqin Sun, Xiaoyin Kang, You Zhang and Jiahui Han from ESCAP for their substantive contributions to this chapter.

The region's economic dependence on coal is not just about its own consumption. Three of the top seven exporters of coal are Asia-Pacific countries (Indonesia, Australia and Mongolia). Indonesia is currently the world's largest exporter of coal – with China and India as its top two clients – followed by Australia.[19] Australia exported more than $91 billion of coal in 2023-2024 and employed around 50,000 people in its coal industry.[20] In Mongolia, coal briquettes were the highest earning export in 2023, at $8.43 billion.[21]

The Asia-Pacific region thus needs to urgently decouple economic growth from fossil-based energy consumption systems and leapfrog to efficient, low-carbon technologies to avoid being further locked into future fossil-based systems (as new demand for energy will require new sources of energy). This will require substantial investment – in the range of trillions of dollars – in clean energy technologies, including energy efficiency, renewable generation and storage.[22]

To support and sustain this transition, a diverse and technologically inclusive energy mix is essential. While renewables such as wind and solar remain essential, they can be complemented by other solutions – such as nuclear power, battery storage, low-carbon hydrogen and some limited carbon capture technologies – to reduce emissions effectively and meet rising energy demand. This integrated approach can achieve climate goals and ensure long-term energy security and economic stability across the region.

As the world works to transition to a cleaner energy system, the region will need to embark on its own country-specific energy transitions. However, many financing challenges need to be overcome, including the significant upfront costs involved in transitioning, the different sources of financing that need to be mobilized, and financing a transition away from reliance on coal in some of the world's largest economies in the region.

This chapter discusses these challenges and the strategies that policymakers, particularly those from EMDEs, can employ to accelerate financing the energy transition. The energy transition is the global shift from fossil fuel-based energy systems (e.g., coal, oil, gas) to sustainable, low-carbon systems dominated by renewable energy sources (e.g., solar, wind) and energy efficiency measures. It aims to mitigate climate change by achieving net-zero greenhouse gas emissions.[23] Investments relating to the energy transition are those that enable the systemic shift from fossil fuel dependence to a sustainable, resilient and equitable energy economy. This includes all technologies, infrastructure, policies and socioeconomic adaptations required to phase out fossil fuels and integrate clean energy into society.[24]

2.2 INVESTMENT TRENDS IN THE ENERGY TRANSITION IN ASIA AND THE PACIFIC

2.2.1 Overall trends

In 2023, global investment in technologies linked to the energy transition exceeded a record $2 trillion. The top recipients were China (48 per cent), the United States (17 per cent), Germany (5 per cent), the United Kingdom (4 per cent) and France (3 per cent).[25] Regionally, the Asia-Pacific region is still a leading recipient of investment relating to the energy transition and clean energy. In 2023, $940 billion was invested in the region, equivalent to more than 45 per cent of the global total.[26]

Since 2010, there has been a substantial rise in investment in the energy transition in the region (figure 2.1).[27] This has been driven by the region's abundant resources, growing demand, favourable policy and regulatory interventions in some countries, and the increased cost-competitiveness of clean energy technologies.

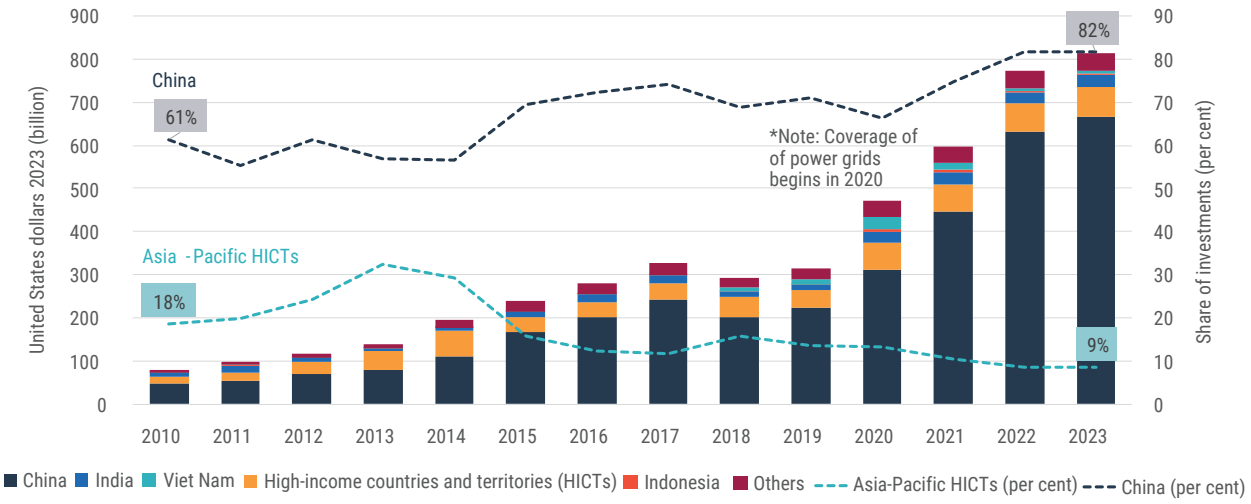
However, current investment in the region linked to the energy transition remains far below required levels. Meeting the targets of Sustainable Development Goal 7 and aligning economies with net-zero emissions objectives will require annual energy investment to grow to between $2.2 trillion and $2.4 trillion by 2030, with 90 per cent of this investment directed towards clean energy, depending on the pathway and level of ambition.[28] Table 2.1 below includes a summary of the SDG goals, targets and their relationship with energy transition financing.

Table 2.1: SDG goals and targets related to Financing the Energy Transition

SDG	Target	Description	Indicator	Why it matters for energy transition financing
SDG 7	7.b.	Expand modern energy infrastructure in developing nations	Renewable energy capacity per capita (7.b.1)	Supports scaling up renewable energy access
SDG 9	9.a.	Support resilient infrastructure in vulnerable countries	Official (ODA + others) support to infrastructure (9.a.1)	Channels aid into sustainable energy systems
SDG 12	12.c	Phase out fossil fuel subsidies that distort markets	Fossil fuel subsidies per GDP (12.c.1)	Frees up capital for clean energy investments
SDG 13	13.a.	Mobilize $100 billion annually for climate action	Climate finance mobilized per year (13.a.1)	Funds renewable energy and climate resilience
SDG 17	17.3	Attract diverse financial flows to developing countries	FDI, aid, remittances as per cent of GDP (17.3.1. & 17.3.2.)	Diversifies funding sources for energy transition
	17.17	Promote public-private and civil society partnerships	Funding committed for PPPs in infrastructure (17.17.1.)	Leverages joint investment in energy transition projects

Source: ESCAP.

Figure 2.1: Investment relating to energy transition in the Asia-Pacific region, by recipient



Source: IRENA analysis based on Bloomberg New Energy Finance (BNEF), 2024.

Notes: i) APAC stands for Asia-Pacific. ii) HICTs stands for "high-income countries and territories". This list includes Australia; Japan; Republic of Korea; New Zealand; Hong Kong, China and the Russian Federation as per World Bank Group's income classifications.[30] As country-specific or territory-specific data for other Asia-Pacific HICTs was not available, they were excluded when calculating shares. Some of this investment may be accounted for in the "Others" grouping but likely makes up a very small proportion of overall investment in HICTs. This includes countries and territories such as Brunei Darussalam; Guam; Macao, China; Northern Mariana Islands; New Caledonia; Nauru; French Polynesia and Palau. iii) Figures shown here do not include investment in energy efficiency, for which country-specific or territory-specific data was not available. Thus, overall totals shown here are lower than actual totals. For example, in 2023 overall investment in energy transition was $940 billion, whereas the figure above shows $813 billion, as the remainder was invested in energy efficiency, which could not be further disaggregated by country or territory. The apparent sharp increase in investment between 2019 and 2020 is primarily due to the inclusion of electricity grid investments starting in 2020, which is not included from 2010 to 2018. When excluding electricity grids, investment rose by four per cent over the same period.

Misaligned priorities persist. In 2023, the Asia-Pacific region accounted for over 90 per cent of global investment in coal, representing 13 per cent of energy investment globally. Demand for coal in ASEAN economies is projected to grow by five per cent annually, from 491 million metric tons (Mt) in 2024 to 567 million Mt by 2027.[29] Without urgent steps to phase out coal and scale up diversified clean energy infrastructure, the region risks locking-in carbon-intensive pathways, undermining both climate goals and long-term energy security, and missing out on the opportunity to reduce air pollution.

2.2.2 Investment remains concentrated in a limited number of countries

Progress in investing in energy transitions to date has mostly been concentrated in a few markets, notably China and high-income countries in the region including Australia, Japan and the Republic of Korea. China has consistently led these investments, with an almost 14-fold increase from approximately $48.6 billion in 2010 to $664.78 billion in 2023 (figure 2.1). High-income countries and territories also saw growth, albeit at a slower pace, from $14.6 billion in 2010 to just over $69 billion in 2023. India, Indonesia and Viet Nam have shown varied investment patterns, with India peaking at $29 billion in 2021, Indonesia at $4.8 billion in 2021, and Viet Nam at $29 billion in 2020.[31]

At a subregional level, South-East Asia requires $190 billion annually in clean energy investment by 2035 to align with regional climate goals. However, in 2023 only $32 billion was invested, leaving a significant investment gap.[32] On the other hand, the outlook is encouraging in countries where investment levels have so far been lower. For example, the Philippines recently signed a $15 billion renewable energy deal with the United Arab Emirates state energy firm Masdar to develop solar, wind and battery energy storage systems to provide up to 1 gigawatt (GW) of clean power by 2030.

Per capita metrics further illustrate disparities in energy transition investment in the region. From 2020 to 2023, investment relating to energy transition in the Asia-Pacific region averaged $115 per capita, roughly 10 per cent below the estimated global average of $131 per capita. However, excluding the largest recipients – China and Asia-Pacific high-income economies – the regional average was only $18 per capita, just 14 per cent of the global average (figure 2.2). Australia led the region with $422 per capita, followed by China at $301, while India, Indonesia and the Philippines attracted between $3 and $10 per capita, highlighting stark disparities.[33]

Figure 2.2: Investment per capita, global and Asia-Pacific, 2020–2023

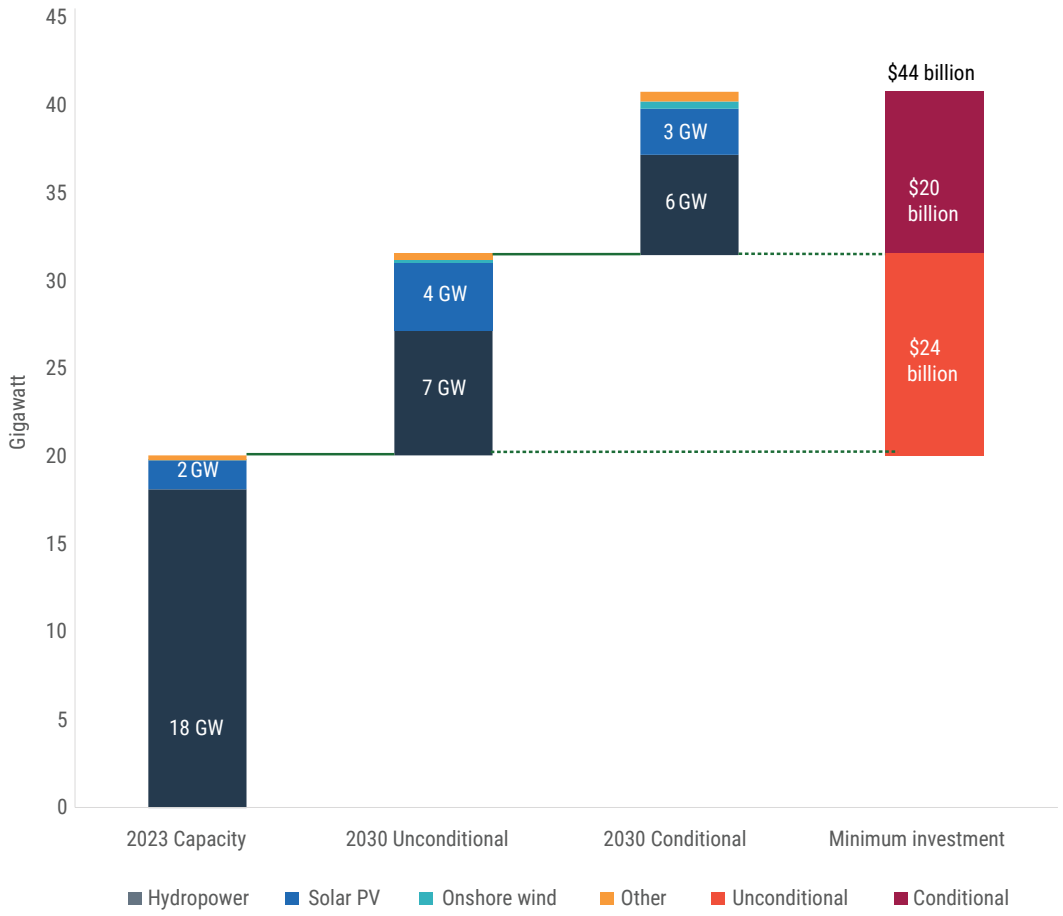
Source: IRENA analysis based on BNEF, "Energy transition investment"; and World Bank, "Population, total", World Bank open data, available at https://data.worldbank.org (accessed on 15 May 2025).

Note: HICTs stands for "high-income countries and territories".

The Asia-Pacific region includes 10 Least Developed Countries (LDCs), which receive only a fraction of the total invested, despite their urgent energy needs. The 10 LDCs secured just 1.4 per cent of total energy transition investment between 2020 and 2023, underscoring the stark financial disparities in clean energy financing. These countries had set renewable energy targets under their Nationally Determined Contributions (NDCs) for COP29, aiming to increase their renewable energy capacity from approximately 20 GW in 2023 to 58 GW by 2030. Of this total, 28 GW is expected to be installed unconditionally, while the remaining 30 GW is conditional on securing international financial support (figure 2.3).

Achieving both conditional and unconditional renewable energy targets in Least Developed Countries will require a minimum investment of $44 billion by 2030 (or $6.3 billion annually) to develop renewable energy projects alone, excluding additional costs of supporting infrastructure, technical assistance and capacity-building.[34] Public finance, including from international sources, plays a significant role in providing the required funding in EMDEs and particularly LDCs, primarily through concessional loans and grants. However, actual financial flows remain insufficient. Since 2010, LDCs in the Asia-Pacific region have received an annual average of just $0.9 billion in international public finance (from a total of over $800 billion for the region), which includes concessional loans, grants and other international support.[35]

Figure 2.3: Renewable energy targets and financing needs in Least Developed Countries in the Asia-Pacific region (based on Nationally Determined Contributions)



Source: IRENA Analysis.

2.2.3 Types of investors, sources of finance and cost of capital

The type of investor and source of finance significantly shape where investments are directed, the technologies invested in, and the cost of finance. There are clear differences in the composition of renewable energy investors across selected countries (figure 2.4). In China, for example, the renewable energy sector has been heavily financed by state-owned enterprises and financial institutions which drive large-scale infrastructure investments, although this mix is now changing.[36] In India, Thailand and Viet Nam, the majority of investments made between 2015 and 2022 was driven by private investors, including commercial financial institutions, households and corporations. This shows the important role of policies such as feed-in tariff programmes and auctions, which are policy mechanisms designed to promote renewable technologies. Feed-in-tariff programmes offer renewable energy producers technology-specific, cost-reflective tariffs through long-term contracts (typically 10-25 years) and typically provide investors with greater certainty regarding recoupment of their costs.

The tariff is technology-specific (so it is different for wind, solar etc.) to reflect differences in initial capital expenditure and generation cost but is set high enough to cover the cost of production and offer a reasonable return. They may also feature purchase obligations, requiring utility companies or system operators to purchase all renewable electricity that is produced and is eligible under the programme (ensuring demand and investor confidence). As renewable energy technologies mature, many jurisdictions have replaced or complemented feed-in-tariffs with competitive auctions, enabling governments to procure electricity at an even lower market-determined price and driving rapid deployment in countries such as India and China.

By affecting the risk-return profiles of renewable energy projects, such programmes critically determine the level of participation and investment provided by private investors, public entities and concessional providers, households and consumers. In less developed markets where such programmes do not exist or are not designed well, risk-averse actors such as institutional investors and commercial financial institutions play a far more limited role, reflecting persistent barriers such as high perceived risk, currency mismatches and limited project bankability.

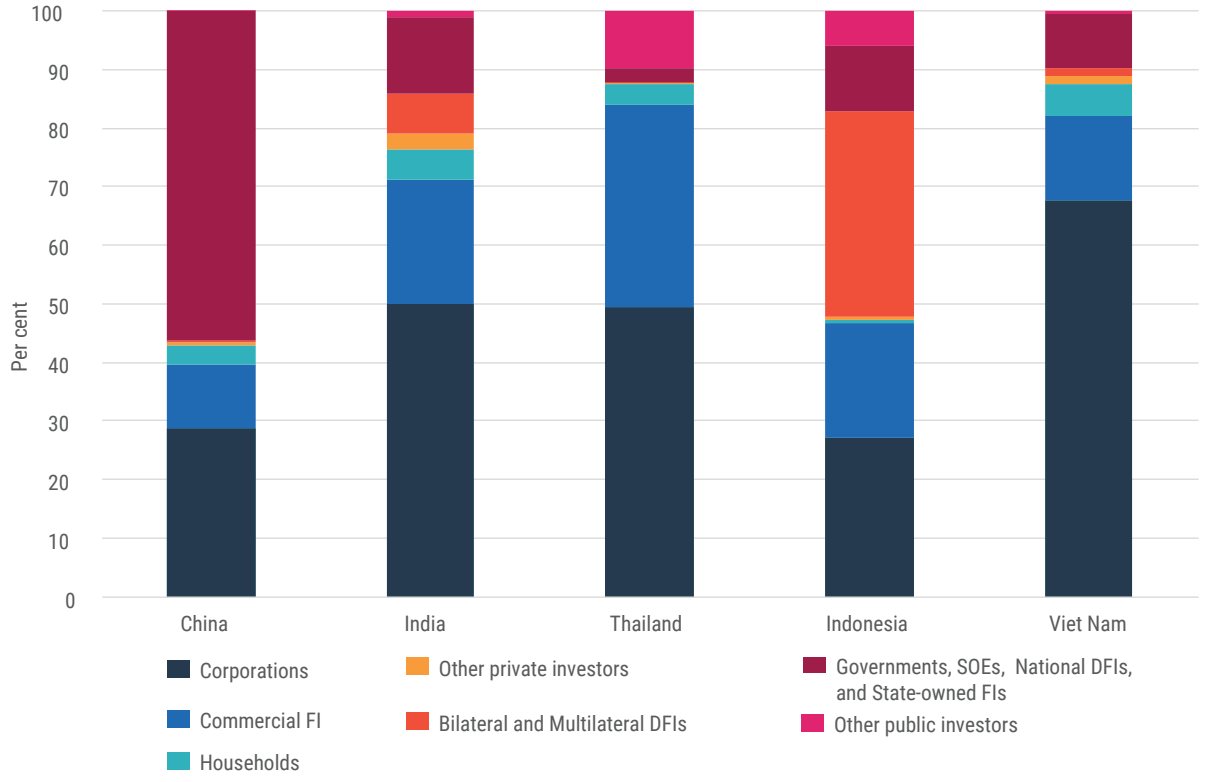
Globally, renewable energy sources such as solar and wind have become cost-competitive in terms of levelized cost of electricity (LCOE),[37] but in EMDEs, higher upfront capital requirements and elevated costs of capital can erode these cost advantages. For example, in recent years solar projects in countries such as India and Indonesia have experienced Weighted Average Cost of Capital (WACC)[38] rates of between approximately 8.5 per cent and 13.5 per cent, which is two to three times higher than those in advanced economies.[39] In LDCs with lower sovereign credit ratings, the cost of capital is much higher and attracting private capital becomes more challenging. In these contexts, public funds must play a greater role. In particular, international flows of public funds are instrumental in countries such as LDCs which have limited domestic public funds.

2.2.4 Continued dependence on coal and challenges in retiring coal-fired power plants

Coal plays a very important role in the region as a source of secure and affordable energy, and as a sector that provides revenues and employment in several economies. Although globally renewables are growing rapidly, coal retains a foothold across the Asia-Pacific region, driven by cheaper upfront costs, favourable financing and, in some examples, policy inertia. This leads emerging economies in Asia and the Pacific to keep investing in coal even as cleaner alternatives become cheaper.

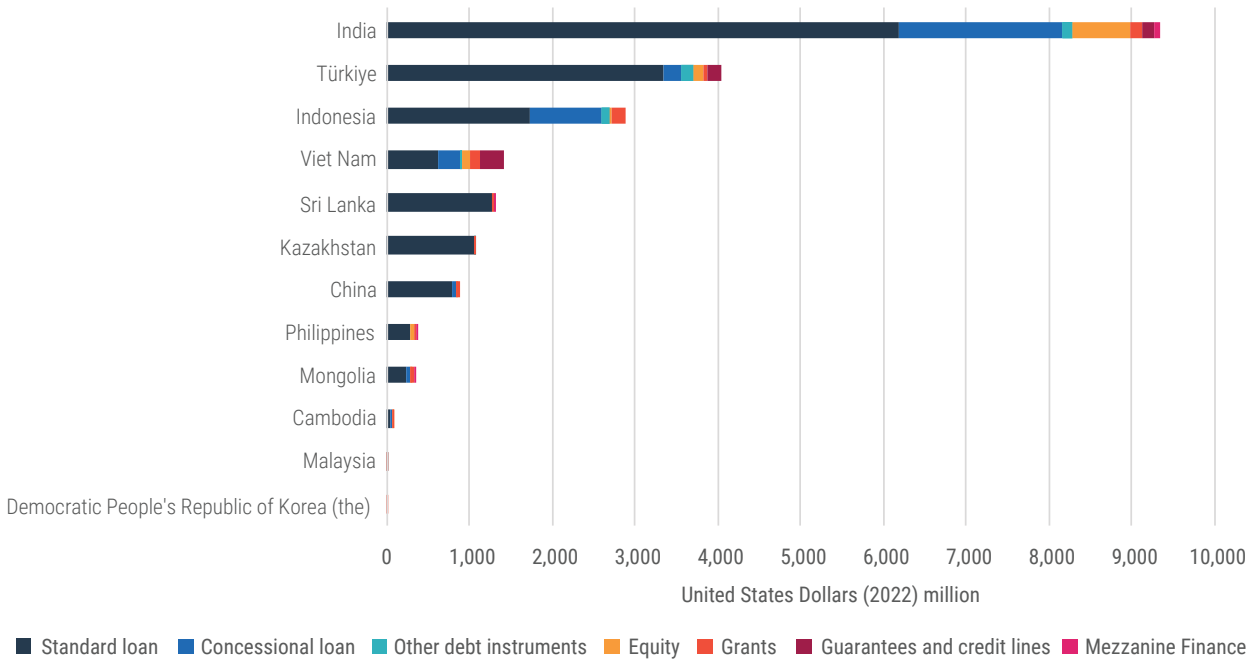
The flow of international public finance to support clean energy in coal-dependent emerging markets and developing economies (EMDEs) continues to be highly uneven, with deep structural barriers hindering the energy transition. Between 2018 and 2023, India received the largest share of international public financial flows, receiving over $9 billion, driven by liberalized foreign direct investment policies, robust institutional frameworks and strong global partnerships.[40] In contrast, the Philippines, which relies on coal for over 40 per cent of its electricity, received just $375 million[41] (figure 2.5).

Figure 2.4: Renewable energy investment 2015–2022 by type of investor



Source: IRENA analysis based on Climate Policy Initiative's climate finance database (2024).

Figure 2.5: International public financial flows for clean energy to selected coal-dependent emerging markets and developing economies by financing instrument, 2018–2023



Source: IRENA, Renewable energy public investments database. Available at www.irena.org/statistics (accessed on 15 May 2025).

A variety of international and multilateral initiatives have emerged to help bridge the financing gap for coal-dependent EMDEs in the Asia-Pacific region (table 2.2). These initiatives hold great promise in the medium term. However, these mechanisms are facing significant implementation challenges, often rooted in fractured coordination between stakeholders. For example, blended finance partnerships such as the ASEAN Catalytic Green Finance Facility (ACGF) Fast Track have faced difficulties in mobilizing private capital at scale, as investors deem risks to be high due to nascent carbon markets and regulatory uncertainty.[42] Newer tools such as transition coal credits (aimed at monetizing early plant retirements through carbon markets) face their own hurdles: complex methodologies for verifying emissions reductions, concerns over additionality and fears of greenwashing. Meanwhile, domestic policy mechanisms – such as Indonesia's coal tax[43] or India's renewable purchase obligations – often clash with international funding conditions, creating bureaucratic bottlenecks.

Table 2.2: Examples of international and multilateral initiatives that can help bridge the financing gap for coal-dependent EMDEs in the Asia-Pacific region

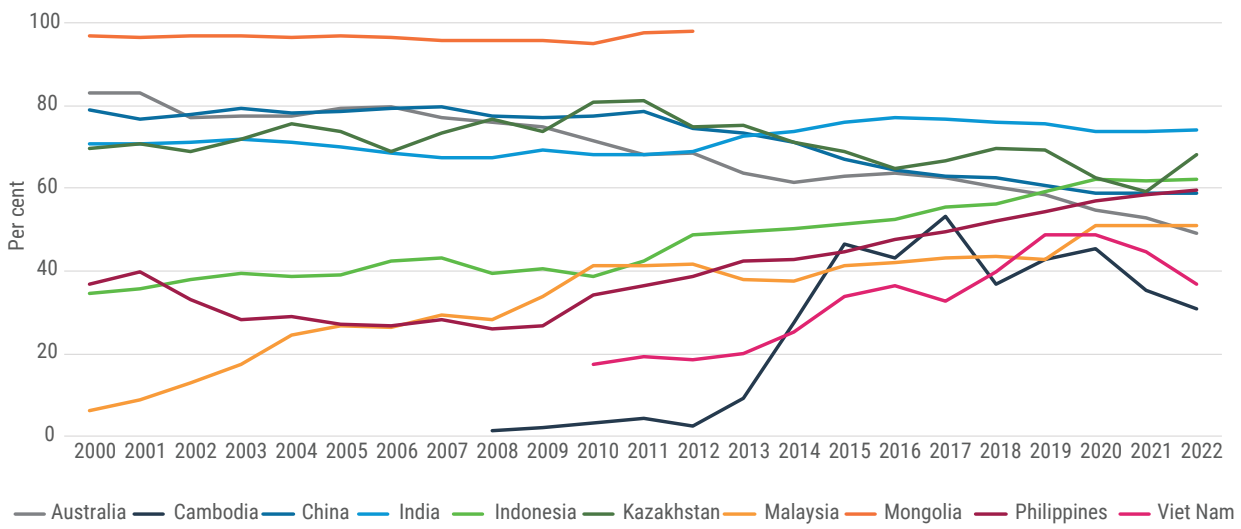
Just Energy Transition Partnerships (JETPs)	Just Energy Transition Partnerships (JETPs) were launched by the International Partner Group (IPG)[44] to accelerate coal phase-outs in Indonesia, Viet Nam, Senegal and South Africa through over $50 billion in pledges, including blending grants, concessional loans and policy reforms.[45] However, progress has stalled due to weak coordination within government line ministries (primarily energy and finance) and structural barriers. Indonesia has secured only $1.2 billion against the pledged $20 billion, with high-interest loans and minimal grants making coal retirements financially unviable.[46] Institutional fragmentation, state utility PLN's[47] long-term coal power purchase agreements (PPAs)[48] and subsidized coal pricing further limit renewable energy integration. Viet Nam's $15.5 billion JETP is also lagging, with no official deals recorded due to sovereign guarantee issues and regulatory delays.[49] However, Viet Nam's new 2025 Electricity Law, which introduced direct power purchase agreements (DPPAs) and competitive pricing, could help unlock private investment.[50] Without clearer policies, stronger incentives and real concessional financing, JETPs are likely to fail to deliver meaningful coal-to-clean transitions.
National transition roadmaps through UNOPS' Energy Transition Partnership	Indonesia's National Planning Ministry (BAPPENAS), with technical support from the South-East Asia Energy Transition Partnership managed by UNOPS, has developed a strategic roadmap to phase out coal-fired power plants.[51] The plan evaluates multiple scenarios (such as retiring all coal by 2040 versus 2050) and models the financial mechanisms (e.g., carbon pricing, green bonds, international grants) and policy reforms (e.g., regulatory adjustments, inter-ministerial collaboration) needed to achieve each pathway. By quantifying costs, trade-offs and socio-economic impacts, the roadmap provides policymakers with actionable options to balance speed, feasibility and fairness in the transition.[52]
Transition Coal Credits	Using carbon markets to monetize emissions avoided by early coal plant closures is a promising mechanism (box 2.1). In 2023, the Monetary Authority of Singapore, in collaboration with McKinsey, proposed the idea of "transition credits", a high-integrity form of carbon credit tied specifically to the early retirement of coal-fired plants.[53] The principle is that when a coal plant is shut down ahead of its expected lifetime and replaced by clean energy, a quantifiable reduction in future CO_2 emissions is achieved. The emissions avoided can be verified and turned into tradeable credits. Buyers (such as corporations seeking offsets, or climate finance investors) could purchase these transition credits, providing additional revenue that helps close the financial gap to make coal retirement possible.[54] Essentially, it creates a market-driven pay-for-performance model: polluters pay to incentivize other emitters to stop polluting. The Monetary Authority of Singapore has launched a coalition (Project TRACTION)[55] to pilot this approach and develop integrity standards for transition credits.[56] Early proposals suggest that Singapore may even allow companies under its domestic carbon tax to use a limited amount of transition credits for compliance, which would bolster demand.[57] If scaled globally, high-quality transition credits could mobilize significant private capital to fund coal plant buyouts and decommissioning. However, this idea is still in its infancy. Ensuring the credits represent genuine, additional emission reductions (and avoiding perverse incentives to build new coal just to earn credits later) will be paramount.[58] It nonetheless exemplifies the kind of financial innovation being pursued to tackle the challenge of exiting coal.[59]
Asian Development Bank's Energy Transition Mechanism (ETM)	The Energy Transition Mechanism (ETM) approach essentially creates a managed fund for coal retirement, through which concessional money lowers the overall cost of capital enough to make early shutdown economically viable. Asian Development Bank's ETM is a flagship blended-finance programme targeting the early retirement of coal plants in Asia. The Cirebon-1 deal in Indonesia is its first pilot (box 2.3). Asian Development Bank (ADB) intends to replicate such transactions in other countries (the Philippines is pursuing a similar ETM pilot, and assessments are underway in Viet Nam, Pakistan and others). If scaled up, ETMs could facilitate the retirement of dozens of coal plants across multiple EMDEs in the coming decade.[60]

2.3 CHALLENGES IN FINANCING THE ENERGY TRANSITION IN ASIA AND THE PACIFIC

Despite the cost-competitiveness of renewable energy technologies and equipment, the renewable energy sector still faces considerable challenges in terms of financing in many countries in the region. For some economies, the main challenges lie in their reliance on coal for cheap and secure energy to supply power, heat households and drive industry, and on the potential socioeconomic impacts of shutting down the coal industry. In other economies, the main obstacles are financial and fiscal challenges and other macroeconomic constraints, especially in the LDCs. In countries with less restricted fiscal space, the energy transition is challenged by the lack of policy and regulatory frameworks to address information asymmetry between stakeholders, monopolistic control of the energy market by incumbents, and issues in integrating renewable energy into the power grid.[61]

Coal-dependent EMDEs face unique hurdles in their transition to clean energy. Many Asia-Pacific EMDEs still rely on coal for a large share of power generation. In countries such as Viet Nam, Indonesia and India, over half of electricity comes from coal (figure 2.6).[62] Crucially, unlike in advanced economies, where coal plants are aging, many of these coal-fired power plants are relatively young.[63] The average coal plant in Asia and the Pacific is less than 15 years old,[64] but was designed with an anticipated lifespan of 30 to 40+ years. Retiring them 10 to 20 years early will result in major capital write-offs.[65] In countries that are still expanding coal capacity such as Viet Nam and Indonesia, each newly added coal plant today becomes another future stranded asset that will be costly to retire. Moreover, the risk of assets being stranded to meet the goals of the Paris Agreement is significant. If all proposed coal plants are built as scheduled, stranded assets may reach $1.4 trillion under a 1.5°C policy and $1 trillion under a 2°C policy. Such risks of stranded assets fall disproportionately on emerging Asian economies with newer and growing coal plants.[66] This highlights the need for financial strategies aimed at either preventing new coal development or making early retirements economically viable.[67] Rapidly transitioning from coal in these countries therefore implies prematurely retiring assets that investors expected to run for decades, while simultaneously investing in new renewable capacity to replace them. This dual burden – decommissioning costs plus new infrastructure investment – creates a heavy financial strain on governments that most coal-dependent EMDEs struggle to bear.

Figure 2.6: Electricity generation – Percentage share of coal



Source: IRENA, *Renewable Energy Statistics 2024* (Abu Dhabi, 2024).

The high upfront cost of phasing out coal in EMDEs is a major challenge. Decommissioning a coal-fired power plant before its planned end-of-life entails financial penalties: outstanding debts must be settled, long-term power purchase agreements may need to be renegotiated or bought out, and investors and owners expect compensation for future revenues that will be forfeited.[68] At the same time, countries must invest in replacement generation – renewables, grids and storage – to maintain energy security and meet increasing energy demands in a matching time frame. As a result, many policymakers opt for a "phase-down" approach, under which coal plants operate at reduced capacity and new coal projects are cancelled, rather than enforcing immediate shutdowns. While this approach minimizes sudden economic disruption, it can delay emissions reductions and extend the operational life of inefficient coal assets. There are financial and socio-economic trade-offs that these countries must navigate. Although Asia-Pacific policymakers are exploring solutions (such as Indonesia phasing out coal-fired power plants, or Asian Development Bank's Energy Transition Mechanism, which aims to retire the Cirebon-1 CFPP 15 years early, or Bangladesh's solar parks), nevertheless progress is slow. Without addressing systemic financing barriers for renewables, coal's grip on the region will endure.

A major factor skewing investment decisions in favour of fossil fuels is government subsidies. Many Asia-Pacific governments directly or indirectly support coal, oil and gas, for example by capping coal prices, offering tax breaks or keeping electricity tariffs low and compensating coal-fired power generators. These subsidies artificially lower the apparent cost of fossil-based power, often making coal plants look like the cheaper option for utilities and investors.[69] In markets like Indonesia, state-backed policies (e.g., the Domestic Market Obligation) ensure that coal is sold at artificially low prices, which makes utilities favour coal investments on their balance sheets.[70] In effect, even though renewables are cheaper per kilowatt-hour, the financial equation for investors in EMDEs is skewed in favour of coal. Thus, many EMDEs in the Asia-Pacific region – lacking established renewable energy industries and fully integrated renewable energy supply chains – still find that local fossil fuel plants benefit from more favourable financing and entrenched subsidy regimes. This creates the paradox of government commitments on climate being undermined by policies that favour immediate cost savings over long-term sustainability.[71] The result is that, from an investor's viewpoint, a new coal plant with subsidies can yield better returns than an unsubsidized solar farm.

According to the IMF, removing fossil fuel subsidies could raise additional fiscal resources of about $1.8 trillion, or 4.4 per cent of GDP, in East Asia and the Pacific.[72] These funds could be redirected toward critical investments in renewable energy infrastructure, healthcare and education, accelerating the region's transition to a low-carbon economy. Simultaneously, such reforms would reduce air pollution and energy market distortions, fostering long-term economic resilience while aligning with global climate goals.

In making investment decisions, investors and planners are also guided by the reliability of the existing grid and the potential risks linked to upgrading infrastructure to accommodate renewable energy sources. Coal plants are seen as proven, dispatchable power sources to meet growing demand, whereas renewables are variable and require expensive storage or grid upgrades for round-the-clock supply.

Coal-dependent EMDEs usually have a weaker domestic renewable industry base as they rely on importing technology and expertise, which can raise project costs. They have fewer experienced installers, less mature supply chains and sometimes a lack of grid infrastructure to integrate renewables. All this means that initial costs for wind and solar projects in these countries can be higher than in countries where the industry is already well-established. By contrast, coal supply chains and power plant skills are long entrenched in the region, so expanding coal capacity can be achieved relatively quickly and cheaply using local resources. In the past, countries like the United States saw renewable costs fall over the course of a decade as the technology scaled up. EMDEs (excluding China) are just at the beginning of this learning curve. Until they achieve similar scale and expertise their early renewable projects can remain comparatively costly, making fossil fuels seem cheaper in the short term.[73]

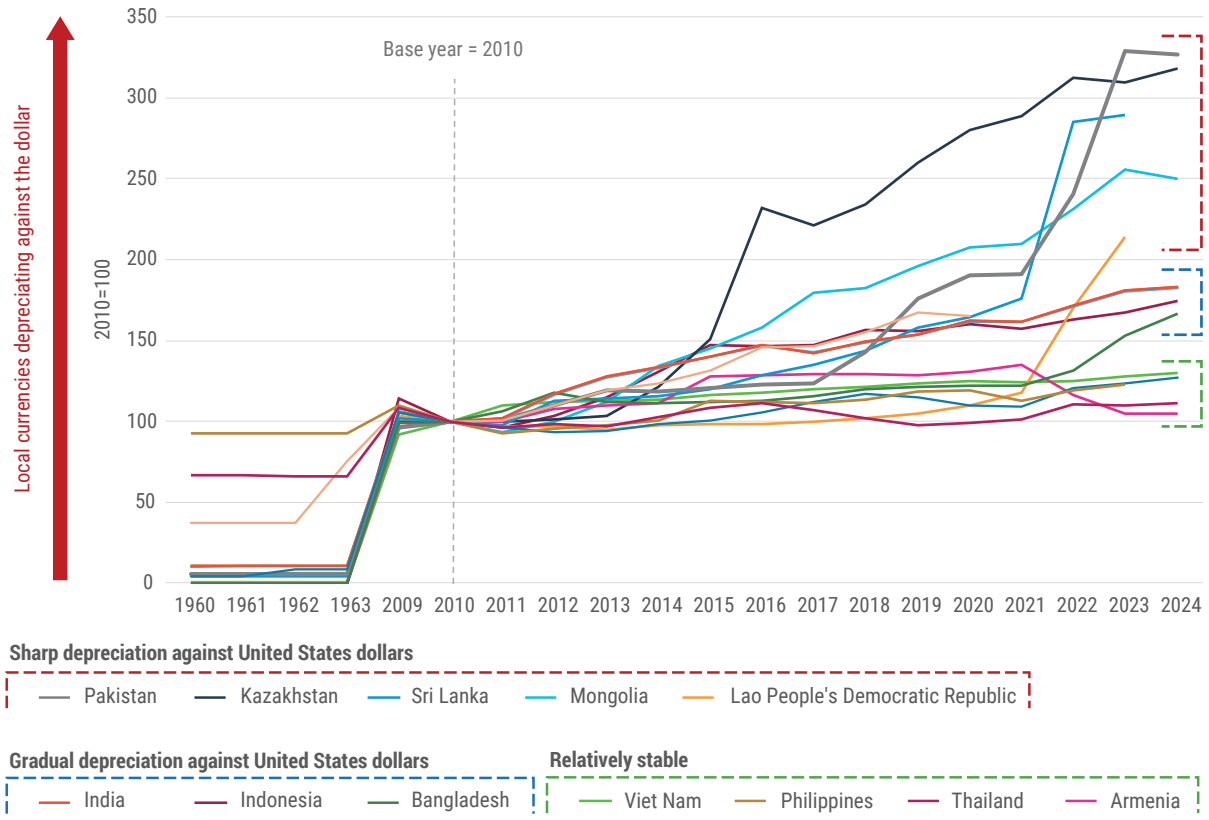
2.3.1 High risks – both real and perceived – associated with financing the energy transition

Across Asia and the Pacific, the policy, regulatory and legal frameworks required to attract domestic and international private finance remain inadequate and fragmented. Investors often perceive renewable energy investments to be risky, especially in EMDEs. To compensate, they charge higher interest rates on loans or demand faster repayment, which makes developing solar or wind farms more expensive. At the same time, governments in many countries actively reduce risks for fossil fuel projects. For example, state-owned companies might guarantee to buy coal power for decades, or governments might cover losses if coal plants fail. This makes coal projects seem safer for investors, even if solar energy is technically cheaper. In Viet Nam, on a levelized basis solar power is cheaper than coal. However, banks charge high interest rates (e.g., 10 to 12 per cent) for solar projects due to perceived risks such as grid instability. Meanwhile, the government supports coal through state-owned utilities such as Viet Nam Electricity (EVN),[74] which guarantees long-term contracts and subsidies for coal plants. This imbalance means utilities often choose coal – despite its higher long-term costs and pollution – because it feels like a "safe bet", while solar struggles to compete financially.[75]

Foreign exchange risks and currency mismatches in power purchase agreements (PPAs) hinder energy transitions in emerging markets. To attract foreign lenders, PPAs often peg electricity prices to foreign currencies (e.g. US dollars), even though payments are made in local currency. This shifts exchange rate risk to utilities (off-takers)[76] – if their currency depreciates, they have to convert more local currency to meet dollar-equivalent purchase obligations. Figure 2.7 shows the depreciation over time of local currencies against the US dollar. In Viet Nam, independent power producers (IPPs) financed solar plants with US dollar loans while earning revenue in Vietnamese dong (VND) through PPAs pegged to the dollar (e.g., $0.10/kWh converted at prevailing exchange rates). When the Vietnamese dong depreciated (e.g., from 23,000 to 24,000 VND to the US dollar), state utility EVN faced a currency mismatch: it had to pay 2,400 VND/kWh (vs. 2,300 VND/kWh) for solar power while selling electricity at fixed local tariffs. This triggered financial losses, delayed payments to independent power producers, and forced Viet Nam to halt new solar projects in 2020.[77] Similarly, Indonesia's state-owned PT GeoDipa Energi relies on dollar-denominated loans for geothermal projects, creating a structural currency mismatch: if the rupiah weakens, dollar debt obligations spike, squeezing finances and diverting capital from clean energy reinvestment.[78] These cases highlight how dollar-indexed PPAs – driven by underdeveloped local capital markets and a reliance on foreign financing – embed exchange rate risks into utility balance sheets in EMDEs. As the World Bank notes, resolving this currency mismatch requires deepening local bond markets and shifting to local-currency funding to shield utilities and independent power producers from foreign exchange volatility.[79]

Essential minerals like lithium, cobalt and nickel are critical for manufacturing clean energy technologies such as batteries, solar panels and wind turbines. However, securing this supply of critical minerals faces significant risks, including long mine development timelines (often exceeding a decade) and geographical concentration in Asia – China controls 60 per cent of global rare earth processing and 70 per cent of lithium refining, while Indonesia dominates 37 per cent of nickel production. These bottlenecks, compounded by trade barriers (e.g., China's rare earth export restrictions[80]) and slow technology transfer due to intellectual property constraints, threaten to inflate costs and stall the clean energy transition. Strengthening Asian supply chain partnerships, harmonizing ESG standards and instituting domestic reforms to streamline mining permits, boost recycling infrastructure and accelerate R&D for alternatives like sodium-ion batteries are just some of the long-term actions needed to secure the supply of critical minerals for the energy transition.

Figure 2.7: Local currency depreciation against the United States dollar, 2005–2024



Source: World Bank, "Official exchange rate". Available at https://data.worldbank.org/indicator/PA.NUS.FCRF.

2.3.2 Unfavourable policy and regulatory frameworks and information asymmetry

The lack of clear interim net-zero targets or granular sectoral transition plans creates uncertainty for investors and policymakers, stalling coordinated action for the energy transition. While the Paris Agreement encourages long-term national low-emission strategies to outline pathways for decarbonization, such strategies remain ineffective unless explicitly linked to measurable short-term benchmarks such as renewable energy capacity goals or fossil fuel phaseout timelines. For example, the Philippines and Viet Nam governments have pledged net-zero emissions by 2050 but have not defined specific renewable energy deployment targets or fossil fuel reduction milestones for 2030 or 2040. This disconnect between long-term aspirations and actionable near-term policies generates ambiguity for investors as they struggle to assess risks and allocate capital. The absence of binding phased targets undermines efforts to mobilize the necessary investments required for a structured, predictable transition. In addition, targets that are conditional on financial and technical support from the international community under the framework of the Paris Agreement (figure 2.3) remain far from being achieved.

The true cost-competitiveness of renewables is not captured due to unpriced externalities of fossil fuels, such as environmental and health impacts. These externalities include emissions of pollutants such as carbon dioxide (CO_2), nitrogen oxides and particulates which contribute to global climate change, health problems and environmental degradation. Thus, the true costs of fossil fuel use are not fully accounted for, making renewable energy projects appear less competitive or financially viable. According to some estimates, these unaccounted costs and externalities amount to approximately $2.2 trillion globally every year.[81] By implementing policies that accurately price these externalities, governments can create a more predictable and stable investment environment, encouraging private finance to support the energy transition.

Fragmented governance and institutional incoherence continue to impede progress. In many countries, responsibilities for renewable energy policy are dispersed across several ministries – ranging from energy and finance to environment and local government – resulting in overlapping mandates, internal competition and inconsistent implementation. In Indonesia and the Philippines, developers often face delays because of the need to secure approvals from multiple agencies, each with its own set of regulations and priorities. This disjointed approach not only delays projects but undermines the credibility of national renewable energy strategies.

Although essential to maximize socioeconomic benefits and achieve social and environmental safeguards, some measures can result in lengthy permitting procedures or can restrict some investments. Such measures include restrictive foreign direct investment policies, such as barriers to foreign ownership and capital repatriation, as well as delays in land acquisition processes – particularly where indigenous land rights or lengthy permitting procedures are involved. Tax complexities such as ambiguous residency rules, inconsistent deductions and high withholding taxes further deter investment, as do import restrictions on renewable energy technologies and weak contract enforcement.[82] For example, in several South-East Asian countries, delayed approvals for land use and disputes over indigenous claims have stalled solar and wind projects, while overlapping tax jurisdictions and limited access to investment treaties amplify risks for developers.[83] The lengthy permitting process (in some cases taking many years) associated with these issues, although essential to support local value chains and ensure environmental and social safeguards, may stifle the region's ability to attract and deploy private capital for clean energy transitions. Much can be done to shorten the time involved in ensuring that safeguard processes are appropriately met.

Information asymmetries and inaccuracies together with skill gaps in the renewable energy sector may increase the perceived risk of investing. Examples of such asymmetries include: lack of information or misconceptions about available renewable energy resources or the current state of renewable energy technologies; high costs and barriers associated with accessing the relevant information; lack of technical or other experience in renewable energy projects; and lack of understanding about the full range of costs, benefits and risks associated with different energy sources, technologies and projects. For example, Viet Nam's solar surge (2020-2022) exposed critical information asymmetries that distorted the market because flawed solar irradiance data led developers to overestimate yields, so projects in Ninh Thuận produced 20-30 per cent less power than expected (adverse selection). Similarly, moral hazard emerged as firms cut costs by using substandard equipment, for example low-quality inverters in Bình Thuận, which went unnoticed post-contract. Outdated resource maps, misconceptions about panel durability, high costs for accurate site data ($50,000-$100,000) and underestimated grid needs led to 30 per cent of solar power being wasted in 2021. The fallout bankrupted projects such as Energy Vision Development's Binh Dinh Phu My PV Plants (Phases 1-3).[84] As highlighted by Marla Garin-Alvarez, Vice President and Head of the Sustainability Office, BDO Unibank Inc., *"Better coordination between banks, corporates, governments and civil society is needed to build common understandings towards energy transition, especially the high-level decision-makers from coal companies."*

The absence of reliable and comparable environmental, social and governance (ESG) data in renewable energy investments is a broader challenge preventing more investment in Asia and the Pacific. Regional banks, institutions and asset managers face a lack of comparable, high-quality, timely data on emissions, ESG and other standards-related factors necessary to make efficient capital allocation decisions. Moreover, without clear and enforceable disclosure standards, regional banks, institutions and asset managers struggle to assess sustainability risks and opportunities, hindering efficient capital allocation and slowing progress towards a standardized, transparent ESG ecosystem. In the Asia-Pacific region, ESG disclosure frameworks are less advanced than in the EU and USA, owing to fragmented regulations, ambiguous materiality[85] and weaker enforcement. This creates uncertainty for companies and investors about which ESG factors are truly material,[86] slowing the region's transition to standardized, transparent sustainability.

2.3.3 Limited financial and fiscal capacity in many EMDEs

Public investment plays a pivotal role in the energy transition, especially in areas where private capital is reluctant to venture. A prime example is the electricity grid: large-scale fiscal expenditure is required to modernize and expand domestic power transmission and distribution networks across the Asia-Pacific region in order to effectively take on renewable power. In most countries in the region, central government shoulders the primary responsibility for funding grid infrastructure upgrades.[87] These investments are essential to absorb and transmit the renewable power produced. In some cases, prime locations with abundant resources are not connected to the grid. In others, aging or inadequate grids lead to significant electricity transmission losses – often 15 to 20 per cent of power is lost in many developing Asian systems, as is the case in India, compared to single-digit losses in advanced economies.[88] The ASEAN power grid, which is a major initiative designed to connect the electricity networks of the 10 member countries of ASEAN and enable cross-border power trading, aims to achieve fully integrated grid operations by 2045. ADB estimates that ASEAN will need more than $100 billion in transmission (grid) infrastructure investment, including both domestic and cross-border projects.[89] Funding is particularly needed for early project preparation stage, risk mitigation in relation to prominent policy, regulatory, technology and currency risks, and for capital investment at scale.

Many Asia-Pacific developing economies are facing a high risk of debt distress, with a significant proportion of government revenues going towards debt servicing.[90] This has reduced fiscal space and increased sovereign risk and borrowing costs, which, among other consequences, is adversely impacting the ability of governments to increase funding for energy transition (e.g., to develop new or upgrade existing infrastructure, develop local capacities, and related priorities). The indebtedness also exacerbates their difficulties in attracting private finance, as sovereign credit ratings remain challenging and governments cannot provide guarantees that may be needed. Consequently, reliance on international concessional financing and grant-based funding remains high (figure 2.5). Without addressing fiscal risks or strengthening fiscal and debt positions, many developing economies will struggle to meet their renewable energy targets, thereby risking increased reliance on fossil fuels.

Governments often provide financial guarantees and subsidies in the energy sector, which further strain public finances. In the renewable energy sector, sovereign guarantees are mostly used to attract investments in generation by independent power producers in countries that suffer from the perception of negative risk. Such guarantees can cover non-payment by the off-taker (state-owned enterprises); any other obligation of the utility as stated in the PPA; unilateral changes in the tax treatment; termination clauses; and currency inconvertibility and currency transfer restrictions.[91] While guarantees can spur private investment, they represent contingent state liabilities that, if triggered, risk inflating public debt. Many Asia-Pacific countries avoid accumulating guarantees that could further destabilize their already strained fiscal positions.

Energy price subsidies remain an essential yet complex challenge across the Asia-Pacific region, with governments frequently regulating retail tariffs to shield households and industries. While measures such as setting electricity or fuel prices below cost-recovery levels provide immediate socio-economic relief and political stability, they impose constraints on fiscal space and can also distort industrial or consumer usage. For example, despite relying on state-backed green *sukuk* (Islamic bonds) to fund clean energy initiatives, Indonesia spent $3.6 billion on electricity subsidies, undermining renewable investments and delaying essential grid modernization and solar projects.[92] In Viet Nam, feed-in tariffs for solar energy initially catalysed a rapid deployment of rooftop solar systems – leading to 9 GW of new capacity in 2020 alone – but were later discontinued due to the financial burden on state utility EVN.[93] Similarly, in the Philippines, the government subsidizes coal-fired electricity generation while simultaneously promoting renewable energy through the Green Energy Auction Programme. However, transmission constraints and policy inconsistencies have slowed the transition, with fossil fuels still accounting for 78 per cent of the country's electricity mix.[94]

Fossil fuel imports, particularly of dollar-denominated crude oil, expose many Asia-Pacific governments to currency and balance of payment risks. For EMDEs with limited foreign exchange reserves and high exchange rate volatility, rising global (dollar-denominated) oil prices can significantly inflate import costs.[95] Oil imports bought with US dollars drain foreign reserves, weaken currencies and force austerity, as was seen in Sri Lanka in 2022 – a cycle that leaves EMDEs unable to fund the green energy transition but also underscores the critical importance of reducing fossil fuel imports and developing local (green) energy solutions over the long term.

2.3.4 Insufficient climate and development finance

EMDEs, particularly in the Asia-Pacific region, face a stark mismatch between their climate transition needs and the international financial support they receive. Official development assistance (ODA) and concessional climate finance have stagnated or declined, leaving a larger financing gap for energy transition projects.[96] This gap creates an urgent need for private finance to step in and support the energy transition if real and perceived risks around political instability, regulatory uncertainties and market volatility can be overcome.

The availability of concessional finance for projects that catalyses private finance remains limited. This restricts the private financing of energy efficiency, grid resilience and community-scale renewable projects, which are essential for energy transitions but cannot provide immediate profitability**.** Concessional finance providers use tools such as blended finance, technical assistance or interest-rate buy-downs to make projects viable. For example, development banks may provide first-loss capital or guarantees to de-risk projects. The aim is to bridge viability gaps, expanding risk sharing instruments so that otherwise-sound projects attract significant private capital. While concessional resources are finite and carefully targeted, a key issue is that even pledged amounts have not been fully delivered.[97] Official development assistance has increased in recent years[98] but the increases have not been sufficiently directed towards financing energy transition, further widening the funding gap for high-impact renewable energy projects, particularly in LDCs.

Developing carbon markets are more challenging in EMDEs. Asia-Pacific EMDEs face significant hurdles in establishing carbon markets with high-integrity and carbon prices that can support financing energy transitions. Box 2.1 illustrates the challenges faced by the Emissions Trading System (ETS) in Indonesia and the Philippines. The region includes two of the six LDCs that account for over 75 per cent of carbon credits issued in voluntary markets and 80 per cent of credits under the Kyoto Protocol's Clean Development Mechanism, namely Bangladesh and Cambodia . LDCs hold considerable potential for climate action, especially in sectors such as forestry and agriculture, which could generate carbon credits equal to 70 per cent of CO_2 emissions from global aviation in 2019, or roughly two per cent of all global emissions.[99] However, realizing this potential requires viable carbon pricing infrastructure and accessible projects. A carbon price of $100 per ton is necessary for profitable land-based investments, but LDCs currently utilize only about two per cent of this potential.[100] Without substantial carbon price increases, around 97 per cent of this mitigation potential may remain unrealized by 2050, underscoring the need for higher carbon prices to enable land-based climate solutions.

Box 2.1: Emissions Trading System (ETS) in Indonesia and the Philippines

Indonesia's government introduced carbon pricing instruments in 2021 to attract financing for mitigation efforts aimed at achieving its NDC targets. These mitigation efforts currently include 20 projects with a total value of $7 billion. Indonesia's key challenges in establishing an Emissions Trading System (ETS) include setting caps, allocation, sectoral coverage and aligning the ETS with international standards to ensure environmental integrity, conservative baselines and additionality while reducing social impacts. Meeting these standards is essential to foster confidence in the integrity of generated and traded carbon units, and to enhance their appeal to buyers.

A significant challenge in carbon market expansion is increasing demand for carbon credits, particularly for carbon transition credits. Building an ETS could support Indonesia's ongoing efforts by assisting with bilateral agreements with Norway (Floating Solar PV Project) and the Republic of Korea under Article 6.2 of the Paris Agreement. Successful agreements, such as the Indonesia-Japan collaboration under the "JCM" scheme, could serve as replicable models.

The Philippines is still in the early stages of developing a carbon pricing or ETS framework but has started to explore carbon pricing to attract clean energy investments and mitigation projects. Challenges remain, however, such as the lack of a comprehensive policy framework, technical expertise or institutional capacity. Additionally, it is essential to ensure that carbon trading does not lead to increased energy costs for consumers, who already face high electricity prices. As both the Philippines and Indonesia work on developing or enhancing their carbon pricing frameworks, there is an opportunity to establish a structured ETS or similar mechanism to channel funds directly toward coal phase-out programmes.

Source: ESCAP, *Diagnostics of the Needs and Challenges in Financing the Energy Transition: The cases of Indonesia, the Philippines, and Viet Nam* (forthcoming); and *Least Developed Countries Report 2024* (United Nations publication).

Mechanisms to mobilize concessional finance for energy transition are still in relatively early stages and have not yet mobilised concessional finance at scale. These include JETPs, ADB's ETM, Singapore's Financing Asia's Transition Partnership (FAST-P) and others, which have been recently instituted and hold great promise. In the early stages, these initiatives have sometimes faced challenges in effectively mobilizing sufficient capital. Key obstacles include underdeveloped financial markets, limited investment capacity, fiscal constraints and economic volatility, all of which hinder the ability of even concessional investors to invest in renewable energy projects. Additionally, policy and regulatory inconsistencies across different countries create an uncertain investment climate, deterring the flow of concessional finance. The risk appetite and lending frameworks of concessional finance providers such as the MDBs also warrant reforms. These challenges underscore the need for more coordinated efforts and clearer frameworks to attract the necessary concessional funding for the region's energy transition.[101]

Box 2.2: Financing Asia's Transition Partnership (FAST-P)

FAST-P is a platform aiming to mobilize up to $5 billion for Asia's green and transition projects, including early coal retirement initiatives. The Singapore government has pledged $500 million in concessional funds as an anchor, to be matched with contributions from other countries and philanthropies. This pool of low-cost capital will then be used to attract much larger sums of private investment by de-risking projects (for example, through loan guarantees, junior equity positions or insurance). FAST-P's focus includes financing new renewable energy in lieu of coal and incentivizing plant owners to shorten the life of existing coal plants. By lowering the overall cost of capital for clean energy projects or coal transition deals, blended finance can make formerly unviable projects bankable. FAST-P is essentially building an investment vehicle to channel global capital into Asia's transition on the scale needed, recognizing that traditional financing alone is not necessarily meeting the need.

2.4 POLICY RECOMMENDATIONS

The Asia-Pacific region encompasses diverse markets with varying challenges, opportunities and energy needs. These markets evolve at different speeds and feature a wide range of electricity market structures, from deregulated wholesale markets to vertically integrated ones. The availability of resources also varies significantly, with abundant solar energy in South-East Asia, India and Australia, offshore wind in Japan and the Republic of Korea, and geothermal potential across the region. Emerging energy storage solutions and advanced clean technologies are being developed and tested, promising future innovation. But while renewable technology costs have fallen and should make clean power the obvious choice, the local financial and policy environment in many Asia-Pacific emerging economies tilts the scales toward coal and other fossil fuels. In essence, some EMDEs may find coal power "cheaper" because the full economic equation includes financing and policy conditions, not just the sticker price of equipment. Strengthening supply chains, lowering financing costs and phasing out fossil fuel subsidies are essential to change this calculus.

Thus, the path to financing decarbonization and energy transition processes must be tailored to each local market, regulatory environment and resource landscape, while considering scalability. In a nutshell, each member state in the Asia-Pacific region needs to own, lead and finance its own energy transition path. As Cecilia Tam, Head of Energy Investment Unit, IEA, has articulated, "Different countries have their own national circumstances, there's no one single formula or one set of policies that fit in each and every single country."

It is also worth noting that the global energy transition will have substantial economic and social ramifications around the world, with the scope to drive even more major shifts in the domestic and regional political economy of Asia-Pacific countries. A new, sustainable and stable social compact between government and stakeholders is required within large-emissions Asia-Pacific countries to ensure citizens, the private sector and other stakeholders can equitably share both the benefits and burdens of this transition.

This chapter has looked at the structural challenges preventing Asia-Pacific EMDEs from attracting investment and finance for renewable energy. The following section offers policy recommendations to governments, the private sector and all stakeholders on how to unlock financing for the energy transition.

Recommendation 1: Reform fossil fuel pricing, energy subsidies and contracts

1a. Gradually implement fossil fuel pricing reforms that reflect the true cost of carbon emissions to ensure fossil fuels are no longer artificially cheaper than renewables. Introducing a carbon price or emissions trading scheme can directly incentivize cleaner energy by fixing a "true" cost on CO_2 emissions. For example, if a high-enough carbon price is implemented, it will mean that running a coal plant incurs a more significant expense, and plant owners will be more likely to consider retiring the plant early or switching fuels.[102] Furthermore, this can assist with the socioeconomic costs associated with the transition. For example, any revenue from carbon pricing can be earmarked into a just transition fund to finance worker retention, site remediation or contributions to buyout deals.[103]

1b. Gradually reduce fossil fuel subsidies to curb carbon emissions, reduce government spending and allow renewables to compete. The gradual removal of subsidies would allow member states to redirect much-needed funds to other national priorities while protecting energy affordability for the low-income. Such subsidy reduction not only releases additional capital and increases fiscal space but allows renewables to become more cost-competitive. A phased approach to subsidy reform, as demonstrated by Indonesia, can be highly effective in managing an energy transition while maintaining socioeconomic protection, ensuring justness and economic stability. Indonesia's significant reforms included a reduction in the number of subsidized fuel products from seven to three, streamlining the subsidy structure and targeting it more efficiently. In addition, a semi-automatic fuel pricing mechanism was introduced, incorporating fixed per-litre subsidies to allow for more predictable and

transparent fuel pricing. Together, these measures illustrate how gradual, well-structured reforms can support broader energy transition goals while minimizing social and economic disruption.[104]

1c. A mix of approaches is needed to finance the early retirement of young coal-fired power plants. The Build-Operate-Transfer (BOT) power purchase agreement (PPA) model used in many Asian countries allows the state utility to take ownership of a coal plant at the end of the contract. This structure limits flexibility around early retirement unless direct buyouts are arranged. In contrast, Build-Own-Operate (BOO) models offer independent power producers greater control over the plant and create additional hurdles when attempting to integrate clean energy alternatives.[105] The conversion from BOT to BOO models could allow independent power producers to sell power to third parties via corporate PPAs after the new PPA ends, leveraging existing infrastructure and ensuring compliance with emission reductions. In some cases, plant owners and off-takers have agreed to end PPAs early in exchange for compensation or alternative arrangements. For example, Indonesia reached a provisional deal in 2023 to retire the 660 MW Cirebon-1 coal plant seven years ahead of schedule by aiming to end its PPA in 2035 instead of 2042 (box 2.3). In Chile, a similar cooperative approach was used by which the government negotiated voluntary coal phase-out agreements with utilities. For example, the French energy company Engie agreed to retire its coal-fired power plants in the Chilean city of Tocopilla several years early once new renewables came online.[106] Financial mechanisms such as concessional loans, reverse auctions, exemplified by Indonesia's approach, can also reduce the funding costs for plant closure and repurposing.[107]

Box 2.3: The Cirebon-1 case: a pioneering coal-fired power plant early retirement deal with real-world hurdles

Indonesia's Cirebon-1 coal-fired power plant in West Java is at the centre of a groundbreaking attempt to retire a coal facility early through a structured financial mechanism. Originally slated to operate until the 2040s, this 660 MW power plant – commissioned in 2012 – is the first pilot transaction under ADB's Energy Transition Mechanism (ETM). The goal of the transaction is to shut down the Cirebon 1 coal-fired power plant by 2035, nearly seven years ahead of schedule, and replace its energy output with cleaner alternatives. The Cirebon-1 project employs a blended-finance structure led by the Asian Development Bank (ADB), which mobilizes and organizes investor capital to refinance the plant's outstanding debt and compensate owners for an early shutdown. In this transaction, ADB's role as arranger and guarantor helps bring together the Indonesian government, state utility PLN, private operator PT Cirebon Electric Power, and the nation's sovereign wealth fund (INA) into a cohesive deal. Valued at roughly $250 million to $300 million, the refinancing is part of Indonesia's broader strategy to retire coal assets ahead of schedule while redirecting investment toward renewables. Cirebon-1 has an innovative and groundbreaking financing structure but also underscores the financial, technical and political challenges inherent in large-scale coal phase-out efforts.

Lessons can be learned from the challenges faced by the early retirement of Cirebon-1:

1) **Legal risks**: Concerns have been expressed about the financial viability of early retirement and potential legal claims from investors due to contract alterations. These concerns have delayed approvals, with negotiations ongoing in late 2023.

2) **High transition costs**: The financial burden of replacing Cirebon-1's power output is significant. Estimates suggest that shifting to renewable alternatives and strengthening the grid could cost the government nearly $1.3 billion.

3) **Unfulfilled international climate finance pledges**: The project is partly reliant on international climate financing, particularly the $20 billion pledged by G7 nations under the JETP. However, most of these funds have yet to be disbursed, and available financing lacks sufficient grants or low-interest loans.

4) **Past environmental and regulatory issues**: Cirebon-1 has faced legal challenges previously. In 2017, a court ruling revoked its environmental license due to spatial planning violations. This history raises additional regulatory and compliance concerns, adding another layer of complexity to its early closure.

Cirebon-1 proves that structured coal retirement deals can be negotiated and financed, but also shows the practical realities of execution. Policy clarity, strong financial incentives and international funding support are essential in making these transitions viable in EMDEs. Indonesia's experience with Cirebon-1 may influence future ETM projects across the Philippines, Viet Nam, Pakistan, Kazakhstan and beyond. Each successful case helps build momentum, but without more predictable financing and regulatory backing, scaling up early coal retirements will remain a major challenge.

Sources: ADB, "New agreement aims to retire Indonesia 660-mw coal plant almost 7 years early", news release, 3 December 2023; and Katherine Hasan, "Cirebon-1, Indonesia's first coal-to-renewables milestone", Centre for Research on Energy and Clean Air, 4 March 2025.

Recommendation 2: Improve policy coherence, especially in areas supporting deployment of renewable energy

2a. To accelerate the energy transition, governments must enact clear guidelines for financing and investment to ensure a structured, predictable pathway towards sustainable energy goals, including binding transition targets. This could include the introduction of bans on new coal plants, explicit timelines for phasing out fossil fuels, and retiring a specified share of the oldest coal capacity annually. Such policies not only signal serious intent to investors in order to unlock private finance, but also enable coordinated grid planning and renewable energy deployment to replace retiring assets. Without such roadmaps, uncertainty will persist. In Viet Nam, for example, the absence of a detailed coal retirement schedule for its 2050 net-zero goal has deterred investment in both fossil fuel exit strategies and replacement clean energy infrastructure.[108] Complementing these targets, a structure such as a Centralized Renewable Energy Law could prioritize low-carbon innovations while excluding projects linked to fossil fuels or carbon-intensive technologies. At the same time, governments must align sub-national and local governance by creating centralized knowledge-sharing platforms, harmonizing permitting processes and reducing bureaucratic bottlenecks. By pairing binding phase-out commitments with transparent regulatory frameworks and multi-level governance coordination, policymakers can reduce risks, attract capital and ensure the financing of the energy transition advances both speedily and equitably.

2b. Establish regulatory and enabling frameworks and supportive policies to unlock private sector finance. These could include deployment policies such as transparent renewable energy auctions, effective feed-in-tariff programmes, and the proper upgrading of grid storage, transmission and distribution networks. To do so, clear, coherent, aligned policies are essential to avoid conflicting mandates which confuse investors and create regulatory gridlock. Strengthening independent regulatory oversight is also essential to prevent politicization and build a credible, reliable, stable and transparent investment environment. For example, India's open-access policies (simplifying grid access for renewables) and Viet Nam's feed-in tariff programmes have spurred corporate and institutional investments.[109] More countries are adopting similar reforms to facilitate greater private sector participation in renewable energy markets.

2c. Streamline the permitting process for renewable energy projects. This includes innovative tools such as a liaison office, knowledge portals and a centralized permitting platform. This can be enhanced by cross-border learning from best-practices in the region. The Energy Virtual One-Stop Shop (EVOSS) launched in the Philippines in 2019, for example, is a key measure that consolidates permitting procedures for large-scale energy projects through a single online platform and mandates government agencies to follow strict timelines to reduce bureaucratic delays. It is one of several innovative measures that can support more efficient, transparent and coordinated permitting processes when complemented by broader institutional and policy reforms.[110] Moreover, a clear and robust legal framework must prioritize streamlined land acquisition processes that balance efficiency with respect for indigenous rights, ensuring projects avoid delays while upholding social equity and safeguards. Clarifying foreign ownership rules and establishing well-defined change-of-control regulations would also reduce execution risks, enabling faster project financing.

2d. Eradicate conflicting policies and ensure transparency and predictability. Establish a comprehensive policy framework that brings together renewable energy deployment policies with trade, industrial and foreign direct investment policies in a way that maximises the socio-economic benefits of the energy transition. Transparent taxation policies, including clarity on residency rules, deductions, withholding taxes and corporate rates, are vital to minimize fiscal uncertainties. Finally, cross-sector integration of energy with agriculture, industry and transportation can be institutionalized to drive systemic innovation, for example in agrivoltaics or green hydrogen corridors.

2e. Strengthen cross-border financing and investment regulation to unlock capital flows, mitigate risks and advance an integrated regional and global energy market. Robust international contract enforcement

mechanisms are essential for effective project finance. Ensuring legal recourse for disputes (particularly in markets with regulatory opacity) builds investor confidence and reduces hesitation. Second, harmonized frameworks for capital repatriation, including transparent profit-transfer rules and tax agreements, would address investor concerns, incentivising long-term commitments to renewable energy projects. Finally, standardised power purchase agreements (PPAs) must complement these reforms. Clauses addressing grid curtailment, force majeure and regulatory reversals would reduce financing uncertainties, enhancing project bankability and enabling optimal risk allocation and accurate risk pricing. Together, these measures – contract certainty, capital mobility and risk-mitigating PPAs – create a cohesive regulatory ecosystem. This not only attracts cross-border investment at scale but also lays the groundwork for resilient, interconnected energy systems, thus accelerating the global transition to decarbonized economies.

Financing the ASEAN Power Grid requires addressing early-stage funding gaps, de-risking cross-border investments, and mobilizing large-scale capital. A Regional Project Preparation Facility could unlock stalled projects by funding critical pre-development studies, while blended finance mechanisms – such as PPAs with multilateral guarantees – would attract private investors deterred by political and currency risks.[111] Issuing ASEAN green bonds could channel global ESG capital into renewable-focused grid infrastructure, complemented by a Regional Risk Mitigation Fund to buffer against revenue uncertainties.[112] Concurrently, tapping climate finance and harmonizing investment rules would accelerate affordable, sustainable funding.[113] By combining these strategies, ASEAN can secure the estimated $100+ billion needed to transform its fragmented grids into a resilient, interconnected energy network by 2045.

Recommendation 3: Modernize and expand transmission and grid infrastructure

3a. Strengthen the planning and financing of grid expansion and upgrades. Grid infrastructure is essential for the energy transition, enabling the reliable and efficient integration of variable renewable energy sources. However, it faces significant underfinancing by private finance due to its perceived limited profitability and lack of immediate commercial returns for private investors.[114] Additionally, many countries in the Asia-Pacific region do not permit private investment in grid infrastructure. In these cases, the grid investments required to support the integration of weather-dependent renewable energy resources such as solar photovoltaic (PV) and wind are therefore typically supported by public finance. Grid upgrades are not only important for renewable integration but also to support regional connectivity and cross-border electricity trading. ESCAP's Regional Road Map on Power System Connectivity emphasizes the importance of mobilizing investment in cross-border grid and generation infrastructure.[115] Improved power grid connectivity enhances the availability and affordability of electricity and, more broadly, accelerates the transition to renewable energy. Governments should therefore coordinate power system planning to enable the development of grid connections with neighbouring countries. The progress made by the ASEAN Power Grid presents important lessons for the rest of the region.

3b. Integrate digitalization and artificial intelligence into grid management and system integration, further bringing down costs, through virtual power plants (VPPs). Virtual Power Plants are software-based systems that integrate and coordinate geographically dispersed, decentralized energy resources – such as solar panels, wind turbines, batteries, electric vehicles and smart appliances – into a unified network, with the potential to significantly reduce costs by accurately predicting supply and demand, minimizing overproduction, reducing fuel consumption, allowing dynamic pricing, predicting equipment failures and transmission losses, and leading to much more efficient cost management. Unlike traditional power plants, VPPs do not generate energy themselves. Instead, they use advanced digital tools (e.g., Internet of Things [IoT] sensors, cloud computing, AI-driven algorithms) to aggregate, monitor and dynamically optimize the collective output, storage and consumption of these distributed assets. By acting as a single, flexible entity, VPPs enable grid operators to balance supply and demand in real time, stabilize energy networks, ensure better pricing and participate in energy markets. The term "virtual"

reflects their reliance on software to orchestrate diverse resources, rather than physical infrastructure. This aggregation unlocks value for both grid operators and distributed energy resources (DER) owners: utilities gain a cost-effective alternative to fossil-fuel peaker plants, which are high-emitting and primarily used during peak electricity demand hours, while consumers and business earn revenue by contributing excess power or adjusting usage during peak periods. Ultimately, VPPs enhance the financing of renewable energy by mitigating intermittency issues, creating efficiencies and over time ensuring cheaper access to energy markets.

Recommendation 4: Governments should further innovate and strengthen their partnership approach with private investors and concessional finance providers.

4a. Governments in EMDEs and LDCs must show leadership in boosting investor confidence and securing further international finance from multilateral and bilateral sources. They must continue strengthening public financing mechanisms, regulatory frameworks and international partnerships to ensure sufficient concessional capital flows into clean energy projects.

4b. Governments should create innovative carbon finance structures for their economies to participate in. This includes not only creating effective carbon markets and their supporting infrastructure, but also examining and developing the appropriate bilateral carbon trading agreements and approaches. LDCs with large carbon sinks may be able to particularly benefit from such approaches. Carbon credits can be issued to renewable energy projects that displace fossil fuels and truly offset carbon emissions, presenting a valuable source of additional revenue. However, institutional and technical capacity gaps – such as weak monitoring, reporting and verification systems – undermine trust in carbon credits. Countries in the region must push for stronger system of this kind. Second, regulatory fragmentation complicates cross-border trading. For example, members of ASEAN should harmonize carbon pricing rules to create certainty for investors.[116] Finally, political economy factors such as fossil fuel lobbies and coal-dependent sectors may resist policies that could shrink carbon-intensive industries. Countries in the region must address these issues or they will fail to capitalize on carbon markets to mobilise the considerable investment needed annually for the transition to clean energy in Asia and the Pacific.

4c. In accelerating financing for energy transitions, governments should continue to strengthen responses to the socio-economic transitions involved. Governments in both EMDEs and advanced economies must work together to both advance and ensure equity in the energy transition. The energy transition will produce shifts in the labour market. Such shifts may be chronological (job creation and job losses occurring at different times); geographical (in different locations); sectoral (affecting different industries); and educational (requiring different skills profiles). Thus, financing worker retraining, relocation or compensation programmes to facilitate labour mobility is an important aspect of managing the political economy of the energy transition. Programmes can then be developed, financed by grants, philanthropies and other sources of public financing to mitigate these issues.

4d. Support stronger regional cooperation across the Asia-Pacific region in financing the energy transition. A fragmented approach currently persists in financing the energy transition, both at the country level but also at the regional level. Across issues such as carbon markets, regional grid financing, cross-border project finance structures, regionally verified emissions data and other such transboundary financing challenges, regional cooperation can help overcome these challenges. Dialogue, experience-sharing and collaboration between governments, regulators, multilateral development banks, development finance institutions and private investors can be strengthened and even institutionalised, instead of occurring in a piecemeal and fragmented manner as it is currently the case happens. A three-pronged regional approach, not only for ASEAN but for the region, in policy alignment, financial innovation and data-driven governance can create a cohesive ecosystem to mobilize capital and scale decarbonization. This would prevent duplicated efforts, inform policymaking and boost investor confidence through transparency. It could address the region's fragmented markets, uneven regulatory maturity and siloed data. It could also streamline cross-border project execution and help scale replicable solutions.

Recommendation 5: Implement innovative and blended financing mechanisms

5a. Advanced economies, multilateral development banks and international financial institutions should continue to better partner with EMDE and LDC governments and private finance to scale up energy transition financing. Donors can commit more grants and concessional loans to EMDEs and especially LDCs in global financing partnership frameworks, given their unique role in spurring blended finance. Multilateral development banks (MDBs) and development financial institutions (DFIs) should also improve transaction structures and pipeline development processes with private financiers to ensure that sufficient private finance is catalysed, which may mean a lower profit share for such MDBs but greater overall volumes of private finance mobilized. Together, this constitutes a blended finance approach which enables greater capital flows into clean energy projects. A notable initiative is Financing Asia's Transition Partnership (FAST-P), announced by Singapore in 2023 at COP28 (box 2.2). Such partnerships, if expanded, could play a pivotal role in funding coal phase-out in EMDEs by providing patient, low-cost financing that these high-cost, high-impact projects require. Another example is Indonesia's JETP, for which, alongside funding from donor governments and development banks, a cohort of commercial financial institutions are expected to provide a significant share of the $20 billion allocated to support the country's power sector transition. Japan's Government Pension Investment Fund (GPIF) has reallocated funds to green bonds, financing renewable energy projects through private-sector partnerships.[117] By prioritising such structures, investors can address Asia's annual renewable financing gap while securing stable returns.

5b. Green finance innovation continues to be essential in accelerating the financing of the energy transition. For example, it is not only green and sustainability bonds or carbon credits that finance the energy transition. Green insurance products, political risk insurance, renewable energy certificates and blockchain-based platforms are some of many additional tools to mobilize private finance. For example, the Multilateral Investment Guarantee Agency (MIGA) has provided political risk insurance for power projects in Lao People's Democratic Republic, such as a $91 million guarantee for a power project in the region.[118] Such political risk insurance can protect foreign investments against political risk perils such as war or civil disturbance, expropriation, breach of contract and currency inconvertibility and transfer restrictions, while also insuring against a list of specified non-payment events.[119] Meanwhile, in Singapore companies can buy and sell renewable energy certificates (RECs) that represent a unit of green energy production from the likes of wind or solar power,[120] ensuring transparency for cross-border investors.[121] Private firms could also pilot decentralized finance (DeFi) models[122] to crowdfund small-scale solar projects in EMDEs in the region. Brazil's Green Receivables Fund (Green FIDC) allows companies to raise capital by securitising receivables through asset-backed securities, combined with a green certification framework.[123] The field of green finance innovation will only continue to grow, and by efficiently assessing risk, return and rigorous environmental standards together, such instruments can provide greater credibility and comfort to green investors, as well as address currency risks and information asymmetries.

5c. Crowdfunding and diaspora funds continue to offer potential for decentralized small-scale energy transition finance. Such funds can be effective tools for energy transition finance. For example, in the Philippines, diaspora funds have channelled remittances into community solar projects in Mindanao.[124] These initiatives reduce dependency on government funding, leveraging private capital's agility to scale renewables and advance net-zero targets.

5d. Blockchain may offer better solutions for fulfilling data requirements around green finance, such as for transparent environmental, social and governance reporting. To enhance transparency, build trust and mobilize greater private sector participation, blockchain-based platforms and standardized data-sharing mechanisms can be prioritized. Blockchain can produce a secure and trusted ledger of green finance flows which ensures data integrity, can standardise data formats and reporting processes across multiple jurisdictions, and can automate data collection, verification and reporting in real time, reducing the reliance on third-party auditors and mitigating data manipulation risks. Blockchain technology can be

deployed to track renewable energy generation, carbon credits and ESG performance metrics, helping to address information asymmetries and enhance investor confidence in green infrastructure projects.[125] Adopting a framework for sharing historical, planning and operational data relating to the regional power trade may increase collaboration, reduce perceived risk and help signal regulatory maturity that will in turn allow for more private sector participation.[126] As Joseph Jacobelli, Managing Director, Bougie Impact Capital, said, "Blockchain platforms can provide strong verification for ESG-related data, carbon credits and the like, enhancing transparency and reliability. The stronger the verification mechanisms, the more confident capital markets will be in the integrity of these assets. Boosting trust boosts investment."

ENDNOTES

1 International Energy Agency (IEA), *World Energy Investment 2024* (Paris, 2024).

2 IEA, "World energy investment 2024 datafile". Available at www.iea.org/data-and-statistics/data-product/world-energy-investment-2024-datafile (accessed on 15 May 2025).

3 International Institute for Sustainable Development (IISD) and Organization for Economic Co-operation and Development (OECD), "Global estimates on subsidies to fossil fuels", Fossil fuel subsidies database. Available at https://fossilfuelsubsidytracker.org/ (accessed on15 May 2025).

4 IEA, *World Energy Investment 2024* (Paris, 2024).

5 Energy Institute, *Statistical Review of World Energy 2024* (London, 2024).

6 International Energy Agency, "Southeast Asia's role in the global energy system is set to grow strongly over next decade", 22 October 2024.

7 ibid.

8 Energy Institute, *Statistical Review of World Energy 2024* (London, 2024), p. 10.

9 International Monetary Fund (IMF), "Asia and the Pacific", IMF DataMapper. Available at www.imf.org/external/datamapper/profile/APQ.

10 United Nations Framework Convention on Climate Change (UNFCCC), document FCCC/PA/CMA/2023/16/Add.1.

11 Defined as newly installed renewable power generation infrastructure, such as solar farms, wind turbines, or hydropower plants (IRENA, *Renewable Capacity Statistics 2024* (Abu Dhabi, 2024)).

12 IRENA, "Record growth drives cost advantage of renewable power", press releases, 24 September 2024.

13 Statista, "Electricity generation in the Asia-Pacific region from 2022 to 2023, by source (in terawatt-hours)", Energy data. Available at www.statista.com/statistics/1537360/apac-electricity-generation-by-source/ (accessed on 16 May 2025).

14 Global Energy Monitor, "Global coal plant tracker", GEM's trackers. Available at https://globalenergymonitor.org/projects/global-coal-plant-tracker/ (accessed on 15 May 2025).

15 At the same time however, clean energy generated a record-high 44 per cent of China's electricity in May 2024, pushing coal's share down to a record low of 53 per cent, despite continued growth in demand (Lauri Myllyvirta, "Analysis: China's clean energy pushes coal to record-low 53% share of power in May 2024", Carbon brief, 11 July 2024).

16 Global Energy Monitor, "Global coal plant tracker", GEM's trackers. Available at https://globalenergymonitor.org/projects/global-coal-plant-tracker/ (accessed on 15 May 2025).

17 Associated Press, "Vietnam plans energy shift toward building more solar, less reliance on gas and coal", ET Energy World, 27 February 2025.

18 OECD, *Clean Energy Finance and Investment Roadmap of Thailand*, Green Finance and Investment (Paris, OECD Publishing, 2024), p. 45.

19 Daniil Filipenco, "Top 10 largest coal-exporting countries", DevelopmentAid, 4 April 2025.

20 Minerals Council of Australia, "Coal: building Australia's future", 2024.

21 Observatory of Economic Complexity, "Mongolia (MNG) exports, imports, and trade partners", OEC PRO database. Available at https://oec.world/en/profile/country/mng (accessed on 15 May 2025).

22 Baseline energy investment projections for Asia and the Pacific – from scenarios based on current and planned policies – point to regional annual energy investment rising to between $1.5 trillion and $1.6 trillion by 2030. See more at United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), document ESCAP/APEF(3)/4.

23 IRENA, "Executive summary and introduction, in *World Energy Transitions Outlook 2023*, vol. 1 (Abu Dhabi, 2023); IRENA, *World Energy Transitions Outlook 2024: 1.5°C Pathway* (Abu Dhabi, 2024); IEA refers to Energy Transition as a unique process where there is no one-size-fits-all approach to clean energy transitions. Each country needs to design its own strategy, taking into account its specific circumstances. See: IEA, "Net Zero by 2050: a roadmap for the global energy sector (Paris, 2021), p. 4.

24 Energy transition related investments are investments that enable the systemic shift from fossil fuel dependence to a sustainable, resilient, and equitable energy economy. This includes all technologies, infrastructure, policies, and socioeconomic adaptations required to phase out fossil fuels and integrate clean energy into society (*World Investment Report 2023* (United Nations publication, 2023))

25 IRENA, *World Energy Transitions Outlook 2024: 1.5°C Pathway* (Abu Dhabi, 2024), p. 9.

26 IRENA analysis based on Bloomberg New Energy Finance, 2024.

27 Figure 1.1 excludes investments in energy efficiency due to the lack of country-specific data.

28 ESCAP, document ESCAP/APEF(3)/4, p. 3.

29 IEA, *Coal 2024: Analysis and Forecast to 2027* (Paris, 2024), p. 34.

30 World Bank, "World Bank country and lending groups", 2025.

31 IRENA analysis based on BNEF, 2024.

32 EnviroSolutions & Consulting, "ASEAN energy transition landscape 2025: opportunities and challenges post-COP29" (accessed on 16 May 2025).

33 Global per capita energy transition investment is estimated using BNEF's total investment figures (2020–2023) (BNEF, Energy transition investment trends 2025", 30 June 2025); and World Bank population data (World Bank, "Population, total", World Bank open data. Available at https://data.worldbank.org (accessed on 15 May 2025)).

34 IRENA, *NDCs and Renewable Targets in 2023: Tripling Renewable Power by 2030* (Abu Dhabi, 2023).

35 *The Least Developed Countries Report 2023* (United Nations publication, 2023).

36 The National Energy Administration (NEA) of China has announced plans to expand financing channels for renewable energy and improve incentives and market mechanisms. This initiative aims to shift state-owned banks from favoring state-owned enterprises and to better engage the private sector in new policy initiatives (Reuters, "China issues guidelines on green power trading", 23 August 2024).

37 IRENA, *Renewable Power Generation Costs in 2023* (Abu Dhabi, 2023), p. 3.

38 WACC is a blend of the costs of debt and equity financing, indicating the overall cost of capital for a project. A higher WACC means financing is more expensive, which can negate the apparent equipment cost advantage of renewables (IRENA, *Renewable Power Generation Costs in 2020* (Abu Dhabi, 2020)).

39 Musa Erdogan and Lucila Arboleya Sarazola, "Cost of capital survey shows investments in solar PV can be less risky than gas power in emerging and developing economies, though values remain high", IEA, 30 November 2023.

40 IEA, *Financing Clean Energy Transitions in Emerging and Developing Economies* (Paris, 2021).

41 Reuters, "Philippines, UAE's Masdar agree $15 bln renewable energy project", 16 January 2025.

42 Elyssa Pullella, "Legitimizing carbon markets: the role of blended finance", Convergence, 19 November 2024; Kaho Yu, "North-South divergence on carbon policy driving uncertainty for business: the trendline", Verisk Maplecroft, 31 October 2024; and ADB, "ASEAN Catalytic Green Finance Facility (ACGF)" (2025).

43 The tax is designed to reduce carbon emissions and encourage a shift towards cleaner energy sources (Indonesia, The Implementation of Carbon Pricing to Achieve the Nationally Determined Contribution Target and Control Over Greenhouse Gas Emissions in the National Development, Presidential Regulation, no. 98 of 2021 (29 October 2021), *State Gazette*, no. 249 of 2021).

44 The International Partners Group (IPG) is composed of advanced economies, including the European Union, the United Kingdom of Great Britain and Northern Ireland, the United States of America, and Japan, among others. The program has already mobilized over $50 billion in pledges to support energy transitions in South Africa, Indonesia, Viet Nam, and Senegal before potentially extending to other EMDEs (Gautam Jain and Ganis Bustami, "Realizing the potential of just energy transition partnerships in the current geopolitical environment", Centre on Global Energy Policy, 30 March 2025).

45 Ibid.

46 Trang Nguyen, "One year into the Indonesia and Vietnam's Just Energy Transition Partnerships", The Interpreter, 6 February 2024.

47 PLN is Indonesia's state-owned electric utility company, wholly-owned by the Government of Indonesia through the Ministry of State-Owned Enterprise (PLN, "What is PLN?", 2025).

48 PPA stands for Power Purchase Agreement and is the most important agreement that governs the sale and purchase of power between the renewable energy producer and the off-taker (IRENA, "Power purchase agreements for variable renewable energy", presentation, August 2018).

49 International Rivers and Vietnam Climate Defenders Coalition, "The missing 'Just' in Vietnam's Just Energy Transition Partnership", June 2024.

50 Grant Hauber, "Vietnam's direct power purchase agreement (DPPA) decree could catalyze a new era for renewable energy", Institute for Energy Economics and Financial Analysis (IEEFA), 29 July 2024.

51 Alongside international programs, some coal-dependent countries are developing their own strategic roadmaps to navigate away from coal. In Indonesia, for instance, the government (BAPPENAS, the National Planning Ministry) with support from the UNOPS-managed Southeast Asia Energy Transition Partnership (ETP) has produced a comprehensive roadmap for phasing out CFPPs (Southeast Asia Energy Transition Partnership, "Indonesia").

52 Energy Transition Partnertship, "Study on the financial implications of the early retirement of coal-fired power plants in Indonesia", 16 December 2022.

53 McKinsey, "Embarking on a new journey to retire coal-fired power plants early", 11 October 2023.

54 Ibid.

55 Allen & Gledhill, "MAS Launches Transition Credits Coalition (TRACTION) and pilot projects to develop transition credits for early retirement of coal-fired power plants in Asia", 19 December 2023.

56 Shabana Begum, Temasek-backed investment firm GenZero and Mizuho Bank join forces to help Asia quit coal, The Straits Times, 20 February 2025.

57 Janice Lim, "Singapore will buy credible carbon credits from coal plant closures", The Business Times, 2 December 2023 and Ivy Yin, "Singapore announces criteria for eligible carbon credits to offset tax-liable emissions", S&P Global, 4 October 2023.

58 IEEFA, "More than 800 coal plants could potentially make a profitable switch to solar", 17 June 2024.

59 verifying emissions reductions requires complex methodologies to establish accurate baselines (e.g., projecting a plant's remaining lifespan), ensuring additionality (proving closures would not have occurred without credit revenue) risks manipulation, and greenwashing concerns loom if credits incentivize building new coal plants for future retirements or allow offsets without clean energy replacements. Singapore's Project TRACTION coalition seeks to address these issues by developing integrity standards, but skeptics argue that without strict safeguards—such as mandating renewable replacements and banning perverse incentives—transition credits could prioritize financial engineering over genuine decarbonization. Success hinges on balancing market innovation with rigorous oversight to ensure credits deliver measurable climate impact, not just creative accounting. See more at Patrick McCully, "Transition offsets: no silver bullet for closing down coal", Eco-Business, 12 March 2025.

60 ADB, "Energy Transition Mechanism (ETM)", 2025.

61 *Coal Phase out and Energy Transition Pathways for Asia and the Pacific* (United Nations publication, 2021).

62 Ibid.

63 IEA, "Average age of existing coal power plants in selected regions in 2020 – charts", Data & statistics. Available at www.iea.org/data-and-statistics/charts/average-age-of-existing-coal-power-plants-in-selected-regions-in-2020 (accessed on 15 May 2025).

64 McKinsey, "Embarking on a new journey to retire coal-fired power plants early", 11 October 2023.

65 Ryna Yiyun Cui and others, "Quantifying operational lifetimes for coal power plants under the Paris goals", *Nature Communications*, vol. 10 , no. 4759 (October 2019), p. 4.

66 Glasgow Financial Alliance for Net Zero (GFANZ), *Financing the Managed Phaseout of Coal–Fired Power Plants in Asia Pacific* (n.p., 2023).

67 Lihuan Zhou and others, "4 priorities for financing early coal retirement in developing countries", World Resource Institute, 6 September 2023.

68 Guanying Liu and others, "Understanding the legal implications of early decommissioning: case studies of foreign-invested coal power plants in Asia", Working Paper (Washington D.C., World Resources Institute, 2024).

69 *Coal Phase out and Energy Transition Pathways for Asia and the Pacific* (United Nations publication, 2021), p. 24.

70 Galen Erickson, "Indonesia's fossil fuel subsidies threaten its energy transition", The Diplomat, 16 February 2024.

71 IRENA, *Renewable Power Generation Costs in 2023* (Abu Dhabi, 2024).

72 Simon Black and others, "IMF fossil fuel subsidies data: 2023 update", Working Paper, No. 2023/169, (Washington, D.C., IMF, 2023).

73 EDP, "Overcoming major challenges to renewable energy growth across Asia", 2025.

74 Vietnam Electricity Corporation was established by decision No.562/QD-TTg dated October 10, 1994. EVN core business activities are: generation, transmission, distribution (including dispatching the power distribution system), and trading of electricity; - Import and export of electric power; - Investment and capital management in the power projects; among others (EVN, "Introduction: overview of Vietnam Electricity").

75 See Melissa Cyrill, "Vietnam's National Electricity Development Plan 2021-2030: Roadmap approved", Vietnam Briefing, 3 April 2024; McKinsey, "Putting renewable energy within reach: Vietnam's high-stakes pivot", 2 October 2023; and Viet Nam, *Resource Mobilisation Plan: Implementing Viet Nam's Just Energy Transition Partnership (JETP)* (n.p., 2023).

76 An off-taker, typically a utility company, government entity or large industrial consumer is the entity that enters into an agreement to purchase electricity from a power producer, usually under a long-term contract such as a Power Purchase Agreement (PPA).

77 ESCAP, *Diagnostics of the Needs and Challenges in Financing the Energy Transition: The Cases of Indonesia, the Philippines, and Viet Nam* (forthcoming).

78 ADB, "INO: geothermal power generation project - PT Geo Dipa Energi", financial management assessment report, September 2019. Available at www.adb.org/sites/default/files/linked-documents/52282-001-sd-02.pdf.

79 Ceyla Pazarbasioglu, "Developing local capital markets to fund domestic long-term financing needs", World Bank, 2 May 2017.

80 Gracelin Baskaran and Meredith Schwartz, "The consequences of China's new rare earths export restrictions", Center for Strategic & International Studies, 14 April 2025.

81 Anil Markandya and others, "The true cost of fossil fuels: saving on the externalities of air pollution and climate change", IRENA, 2016, p. 2; and Penelope Crossley, *Renewable Energy Law: An International Assessment* (Cambridge: Cambridge University Press, 2019), pp. 2-3.

82 Rashmi Mandayam and Nashua, "Compliance challenges in the renewable energy sector", *Journal of Business Research and Reports*, vol. 1, no. 1 (December 2024).

83 Albert Salamanca, "Indigenous peoples of Southeast Asia reaffirm their rights", SEI, 28 October 2019.

84 Thang Nam Do and Paul J. Burke, "Vietnam's solar power boom: policy implications for other ASEAN member states", ISEAS Perspective, no. 2021/28 (March 2021); and Nadhilah Shani and Beni Suryadi, "Vietnam smashes 2020 solar capacity records", The ASEAN Post, 10 April 2021.

85 Ambiguous materiality refers to the uncertainty around which ESG factors are important enough to be disclosed. Materiality in ESG means identifying which factors significantly impact a company's financial performance and are relevant to investors.

86 When materiality is ambiguous, companies and investors are unsure which ESG factors should be prioritized and reported. Companies and investors will therefore struggle to determine which environmental, social and governance issues are most relevant and impactful. This uncertainty can slow down the transition to standardized and transparent sustainability practices because it complicates the process of consistent and meaningful ESG reporting.

87 Kristiansen, Randi, "Attracting private finance to transmission in the Asia-Pacific Region", Energy Division Working Paper Series, No. WP/2022/01 (Bangkok, ESCAP, 2022).

88 Despite considerable improvement since the turn of the century, India has one of the highest levels of electricity transmission and distribution (T&D) losses in the world (United States, Energy Information Administration (EIA), "India aims to reduce high electricity transmission and distribution system losses", 22 October 2015).

89 ADB, "Energy and regional cooperation: ASEAN Power Grid", 2025. Available at www.adb.org/where-we-work/southeast-asia/asean-power-grid.

90 *Economic and Social Survey of Asia and the Pacific 2023: Rethinking Public Debt for the Sustainable Development Goals* (United Nations publication, 2023), p. 19.

91 In the renewable energy sector, sovereign guarantees are used to attract investments in generation by independent power producers in countries that suffer from a negative risk perception. They can cover: (1) non-payment by the off-taker (SOEs), any other obligation of the utility as stated in the PPA, unilateral changes in the tax treatment, termination clauses, and currency inconvertibility and currency transfer restrictions (IRENA, Renewable Energy Finance: Sovereign Guarantees, Renewable energy finance brief, no. 1 (Abu Dhabi, 2020)).

92 ESCAP, *Diagnostics of the Needs and Challenges in Financing the Energy Transition: The Cases of Indonesia, the Philippines, and Viet Nam* (forthcoming).

93 Ibid.

94 Ibid.

95 ADB, *Asian Development Outlook 2023* (Manila, 2023), p. 92.

96 Santosh Kumar Rauniyar and others, "Climate-related bilateral official development assistance (ODA) and vulnerability: A comparative study of allocation and effectiveness", *PLOS Climate*, vol. 4, No. 2 (February 2025).

97 Climate Policy Initiative, "Understanding global concessional climate finance 2024", October 2024.

98 OECD, "ODA trends and statistics", OECD data. Available at www.oecd.org/en/topics/sub-issues/oda-trends-and-statistics.html (accessed on 16 May 2025).

99 *The Least Developed Countries Report 2024* (United Nations publication, 2024).

100 Ibid.

101 United Nations Office for Project Services (UNOPS), "A commitment to support Viet Nam in its energy transition", 16 December 2022.

102 IEA, *Implementing Effective Emissions Trading Systems: Lessons from international experiences* (Paris, 2020).

103 Center for Climate and Energy Solutions, "U.S. State Carbon Pricing Policies", map, January 2025.

104 Ahya Ihsan and others, "Indonesia's fuel subsidies reforms", Equitable growth, finance and institutions insight - macroeconomics, trade and investment (Washington D.C., World Bank, 2024).

105 Adam Hayes, "Build-operate-transfer contract: definition, risks, and framework", Investopedia, 31 March 2025.

106 Shravan Bhat and others, "Transition finance case studies: Logan and Chambers - renegotiate, refinance, redevelop", RMI, 25 June 2024.

107 Ziyi Ma, Guanying Liu and Shuang Liu, "Foreign investors could stall coal plant closures in Asia", World Resource Institute, 17 January 2025.

108 Florian Wengel, "Vietnam's Eight National Power Development Plan (PDP8)", Green Finance and Development Center, 5 June 2023; and Vann Villegas, "Will the government pay for coal power exit in Vietnam?", Asian Power, 2024.

109 The Indian government introduced reverse auctions, grid modernization programs and tax incentives enabling private investments to increase their renewable energy capacity. Similarly, with over $ 16 billion in annual revenues, EVN is a profitable corporation and has a credit rating of BB, with stable outlook, which is at par with the sovereign credit rating of Vietnam. See IEA, *Renewables 2023: Analysis and forecast to 2028* (Paris, 2024); and World Bank "Energy Sector Decarbonization in Viet Nam", 2022.

110 ESCAP, *Governance and Coordination in Financing the Energy Transition in the Asia Pacific Region: The Cases of Indonesia, the Philippines and Viet Nam* (forthcoming).

111 ADB, "Energy and regional cooperation: ASEAN Power Grid", 2025. Available at www.adb.org/where-we-work/southeast-asia/asean-power-grid.

112 ASEAN Centre for Energy, *ASEAN Energy in 2025: Key Insights about ASEAN Energy Landscape and Predictions in 2025* (Jakarta, 2025).

113 Xianbing Liu, "Renewables development for energy transition in ASEAN: Status quo, gaps and the prospect", IGES Working Paper (Institute for Global Environmental Strategies, 2023).

114 Joseph Cordonnier and Benjamin Denis, "Renewables are booming. How can we pay for the energy infrastructure needed?", 8 January 2025.

115 ESCAP, document ESCAP/CE/2021/4.

116 27 Advisory, "Carbon pricing and taxes in ASEAN", 17 November 2022.

117 HayInsights, "Japan's GPIF is transforming ESG investing: a comprehensive look 2024", 21 October 2024.

118 World Bank, "MIGA provides $91 million in political risk insurance for Lao power project", 11 June 2005.

119 Ibid.

120 The idea is that firms seeking to offset their non-green energy production can purchase RECs from a company producing excess green power (Melissa Goh, "Blockchain tech is taking on renewable energy trading in one country", CNBC, 7 November 2018).

121 A consumer in Singapore who wishes to buy green energy can now, through blockchain-powered REC trading, purchase a REC from a hydro-producer based in Lao People's Democratic Republic (Melissa Goh, "Blockchain tech is taking on renewable energy trading in one country", CNBC, 7 November 2018).

122 Decentralised finance (DeFi) builds on distributed ledger technologies (DLT) to offer services such as trading, lending and investing without using a traditional centralised intermediary. The fact that DeFi components can be programmed may open up new possibilities for more competitive financial markets, and could bring efficiency gains. However, DeFi introduces enormous technological and economic complexity that makes it increasingly difficult to assess the risks and potential of DeFi financial products. But financial institutions and regulators dealing with DeFi need just such a systematic evaluation of these factors (Raphael Auer and others, "The technology of decentralized finance (DeFi)", BIS Working Paper, No. 1066 (Basel, Bank for International Settlements, 2023).

123 Global Innovation Lab for Climate Finance, "Green Receivables Fund (Green FIDC)".

124 Ignacio R. Bunye, "Solarizing Mindanao", Manila Bulletin, 25 August 2024.

125 Angaindrankumar Gnanasagaran, "Blockchain gaining ground in Southeast Asia", The ASEAN Post, 10 December 2018.

126 ASEAN Centre for Energy, "Data sharing framework and guidelines to accelerating the expansion of multilateral power trading in ASEAN", 21 October 2024.

CHAPTER 3:

INVESTING IN SUSTAINABILITY: FINANCING NATIONALLY DETERMINED CONTRIBUTIONS THROUGH ROBUST GREEN PROJECT PIPELINES

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3.1 ALIGNING FINANCING WITH NATIONAL CLIMATE GOALS IN ASIA AND THE PACIFIC

Meeting the objectives of the Paris Agreement and achieving the Sustainable Development Goals (SDGs) require an unprecedented level of investment. The United Nations 2024 Financing for Sustainable Development Report notes that globally the SDG financing gap in developing countries is estimated to be between $2.5 trillion and $4 trillion per year.[1] In the Asia-Pacific region, prior to the COVID-19 pandemic, the SDG financing gap was estimated at approximately $1.5 trillion per year, a figure that has only widened in the face of mounting debt levels, economic shocks and accelerating climate impacts.[2]

Climate change is not only one of the greatest development challenges but also a cross-cutting threat multiplier for nearly every SDG. Progress on Sustainable Development Goal 13 (Climate Action) is inextricably linked to goals relating to energy, transport, water, agriculture, infrastructure and biodiversity, among others.[3] Without accelerated efforts to address climate change, the region's development prospects, economic stability and long-term resilience are at risk.

Nationally Determined Contributions (NDCs) are the cornerstone of the Paris Agreement and represent the primary mechanism through which countries communicate their climate goals and strategies. The Asia-Pacific region includes 49 countries that are parties to the Paris Agreement.[4] The region's NDCs outline a combination of mitigation and adaptation commitments, and articulate the enabling conditions required to deliver them, including financing, technology and capacity-building needs.

While there has been progress in developing and submitting NDCs globally, the challenge now lies in moving from commitment to implementation. The forthcoming third round of NDCs (NDC 3.0) is due in 2025 and represents a critical turning point not only in raising ambition but also in developing credible investment plans that translate high-level climate commitments into financeable, bankable projects.

Policies, planning processes and investment flows in the region are currently failing to match the scale of transformation required. While the majority of NDCs have identified broad financial needs estimated globally at $5.036 trillion to $6.876 trillion by 2030, most countries have yet to translate these needs into action, including through concrete project pipelines, capable. of attracting public and private finance at scale.[5]

This chapter explores the critical role of project pipeline development as the essential link between NDC targets and the financing required to implement them. Strengthening project pipeline development is not only about attracting finance but also aligning national climate goals with sustainable development priorities to drive economic transformation and deliver a resilient, low-carbon future for Asia and the Pacific. This chapter examines the enabling ecosystem, policies, institutions and systems needed to support this process. It explores the region's progress in identifying climate investment needs and assesses the barriers that hinder project development and financing. Last, it provides recommendations for strengthening the enabling environment for both public and private sector investments.

3.1.1 The role of NDCs in pursuing climate goals in Asia and the Pacific

NDCs represent nationally led efforts to address climate change.[6] Countries that are party to the Paris Agreement are legally required to submit NDCs to the United Nations Framework Convention on Climate Change (UNFCCC) secretariat every five years and to raise ambition over time. The Paris Agreement stipulates that successive NDCs represent a progression compared to the previous NDC and should reflect the country's highest possible ambition. NDCs typically include both mitigation measures to reduce greenhouse gas emissions and adaptation actions to strengthen resilience to climate change.

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The Asia-Pacific region has made significant progress in submitting NDCs but overall ambition and impact remain insufficient. By April 2025, 46 of the 53 member States from the Asia-Pacific region that are party to the Paris Agreement[7] had submitted two or more NDCs; none had submitted their NDCs after 2020 without submitting Intended Nationally Determined Contributions (INDCs);[8] only two submitted INDCs in 2016 without updating them;[9] and one is yet to ratify the Paris Agreement and has not submitted any NDC so far.[10] In 2020, 49 ESCAP countries[11] that are party to the Paris Agreement collectively emitted 27.19 $GtCO_2e$,[12] which represents over 54 per cent of global emissions.[13] Regional emissions projections indicate that under the current NDCs, by 2030 emissions will only decrease to 25.2 $GtCO_2e$. This still represents a 16 per cent increase from 2010 levels, and is significantly short of the 45 per cent reduction envisaged to align with the 1.5°C climate pathway.

The Asia-Pacific region's current NDCs are insufficient to meet the world's climate goals. For example, even if countries fully implement their NDCs, the region will fall short of the recommended 7 per cent annual emissions reduction for 2021–2030.[14] Despite the submission of revised and enhanced NDCs, most member states in the region have not engaged in comprehensive review processes or initiated the development of long-term low-emission strategies that would correspond with carbon neutrality and net-zero goals.[15]

The upcoming third round of NDCs represents a critical opportunity to close the gap between ambition and implementation. Commonly referred to as NDC 3.0, this third round was due to be submitted by February 2025, nine months ahead of COP30, as per the guidance of the UNFCCC and COP decisions. However, only 18 countries submitted their NDC 3.0 by this time.[16] Others intend to do so over the course of 2025.

NDCs increasingly serve as blueprints for identifying a country's climate investment "needs" and act as a key enabler for implementing climate action effectively. These needs typically fall into five broad categories: finance, technology, capacity-building, policy and regulatory support, and data and information systems. Analysis of the current NDCs of 142 countries worldwide has identified a total of 5,760 specific "needs", spanning mitigation, adaptation and cross-cutting priorities[17] including requests for support in areas such as expanding renewable energy infrastructure, enhancing climate-resilient agriculture, improving early warning systems and increasing access to sustainable transport, among others.

Finance is the most frequently cited need, accounting for 30 per cent of the needs outlined in the NDCs. Out of 648 capacity-building needs reported, 237 have been costed – meaning countries have estimated the financial resources required to implement them – totalling approximately $10.29 billion. Similarly, out of 485 needs for technology development and transfer, 140 have been costed, totalling around $777.18 billion.[18] These data underscore that financing remains a top priority for countries as they work to implement their NDCs.

Overall, however, many NDCs remain only partially costed. By 30 June 2024, only 48 per cent of the needs requiring financing – totalling 2,753 needs reported by 98 parties – had been costed. Cumulatively, they total an estimated $5.036 trillion to $6.876 trillion to 2030.[19] This is the total estimated financing requirement for implementing only the costed needs identified so far.

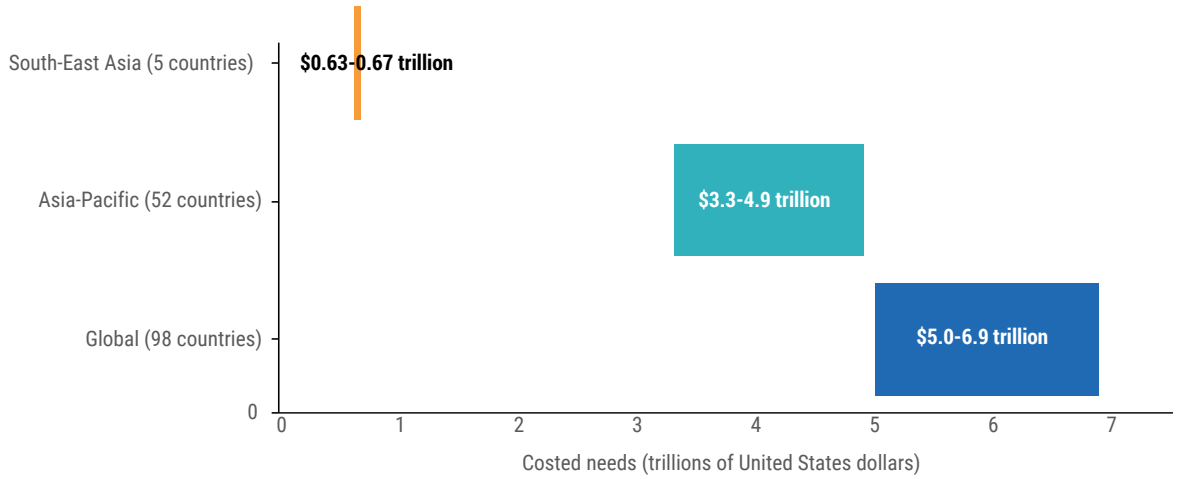
To help understand the scale of this investment challenge, the UNFCCC has calculated an annualized cost estimate of approximately $455 billion to $584 billion per year across the 98 countries that have provided costing data.[20] This is the average financing required per year over the period 2019 to 2030,[21] based on their costed needs.

In the Asia-Pacific region alone, 52 countries (38 in Asia and 14 in Oceania)[22] have reported a combined total of 1,560 needs.[23] Of these, 632 needs have been costed, with an estimated total of $3.3 trillion to $4.9 trillion to 2030, making Asia-Pacific the region with the highest aggregate costed needs.[24] Furthermore, the costed needs of Southeast Asia alone account for $629 billion to $665 billion from five countries, making it the Asia-Pacific subregion with the highest costed needs.[25] Overall, the Asia-Pacific region alone accounts for over 65-70 per cent of global costed needs. Mitigation accounts for the largest share ($2.9 trillion) of these needs in Asia, while adaptation needs are estimated at $325 billion to $431 billion. Oceania's costed needs total $8 billion, divided equally between mitigation and adaptation.[26]

Current NDC cost estimates likely understate the true scale of financing needs. Moreover, while some regions report fewer costed needs than others, this does not necessarily indicate that those regions have fewer financial requirements. Instead, it may reflect a lack of available data, tools and capacity to accurately identify and quantify their needs. Moreover, the starting points for these costed needs vary significantly, with some NDCs covering the period from 2015 to 2030 and others 2020 to 2030.

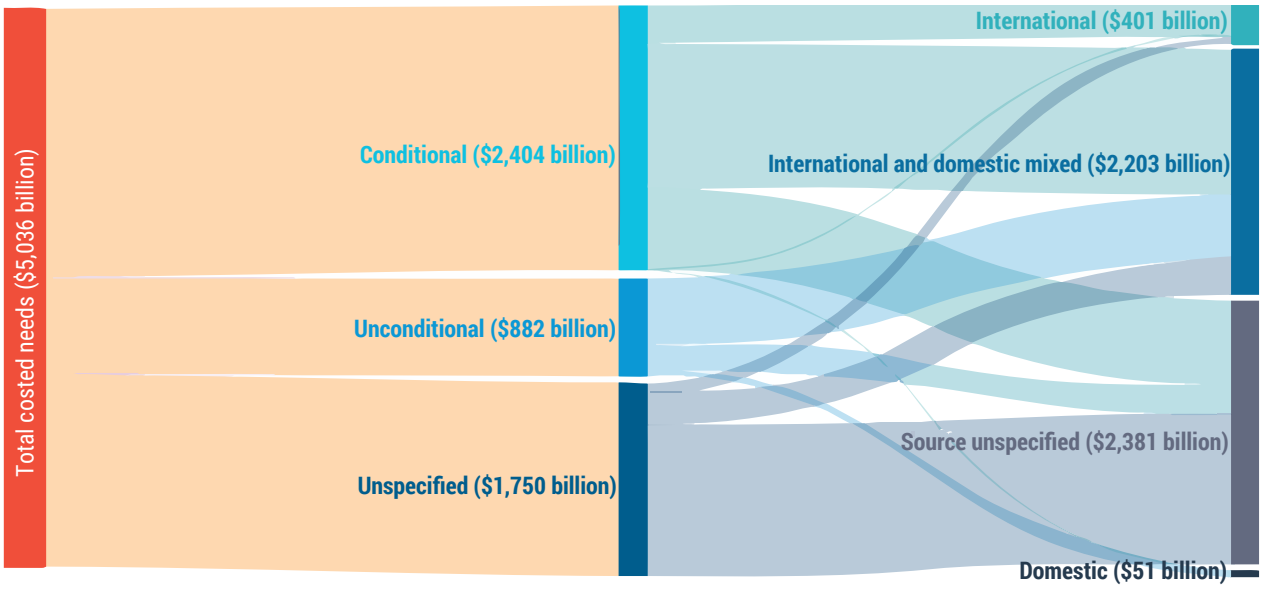
A large share of the costed needs are conditional on receiving international support. Notably, $2.4 trillion of the costed needs, around 48 per cent of the total, are conditional on receiving international financing and support from developed countries. Only $882 billion, or 18 per cent, correspond to unconditional actions, meaning a country could implement the measures with its own resources and capabilities (figure 3.2). Approximately 35 per cent, totalling $1.8 trillion, do not specify whether they are conditional or unconditional. Some countries have provided information on potential financing sources for their NDCs, although detailed data is limited. A total of 44 per cent have indicated that the identified needs could be funded through a combination of international and domestic sources, as well as public and private funding. International financing sources were identified for around 8 per cent of the costed needs, while domestic sources accounted for only around 1 per cent. **However, for the largest portion of needs (47 per cent), no specific financing source was identified, indicating a significant resource gap.**

Figure 3.1: Costed needs: Global versus Asia-Pacific



Source: ESCAP based on UNFCCC, document FCCC/CP/2024/6/Add.2–FCCC/PA/CMA/2024/8/Add.2, pp 5-10.

Figure 3.2: Costed needs in NDCs by conditionality and source of finance



Source: ESCAP based on UNFCCC, document FCCC/CP/2024/6/Add.2–FCCC/PA/CMA/2024/8/Add.2, p.7.

Comparing previous and current NDC costing estimates highlights a sustained data and financing gap. In 2021, the first report on the determination of the needs of 78 developing country parties to the Paris Agreement (NDR)[27] identified costed needs totalling $5.8 trillion to $5.9 trillion by 2030. By comparison, over the same time frame, the costed needs of the most recent NDCs are estimated to be between $5.012 and 6.852 trillion by 2030. This difference is largely due to updated NDCs, which include changes in the scope of reporting and greater information. Many developing countries provided costed estimates in their updated NDCs for the first time in 2025, while others have reported higher estimates than in their previous submissions. A few countries have reported lower costed estimates than in earlier versions, often because they narrowed the scope from overall investment needs – which may include domestic budgets and private sector financing – to specifically the portion requiring international donor support. In some cases, reductions also reflect more detailed and refined costing analyses. **However, current cost estimates cover only 48 per cent of all NDCs, leaving a large gap in establishing the true financial needs required.** As countries prepare their NDC 3.0 submissions, far more detailed costing analyses will be needed. This underscores the critical importance of developing NDC investment plans that translate broad financing needs into specific, bankable projects. Doing so enables countries to generate more accurate and actionable cost estimates, thereby improving their ability to attract climate finance and implement their NDCs effectively.

3.1.2 Addressing climate ambition and financing gaps

The overarching challenge in achieving Sustainable Development Goal 13 on climate action and addressing country-level needs is rooted in the supply and demand of finance. Despite increasing financial commitments from developed and developing countries and from the private sector, a persistent gap remains between the supply of climate finance and the growing demand driven by more ambitious NDCs. The challenge is not only to scale up financing, but also to ensure it is more effectively aligned with national climate strategies and directed towards implementable, NDC-aligned projects. To achieve this, countries must develop clear financing plans and bankable project pipelines that translate national priorities into actionable investment opportunities capable of attracting diverse sources of capital.

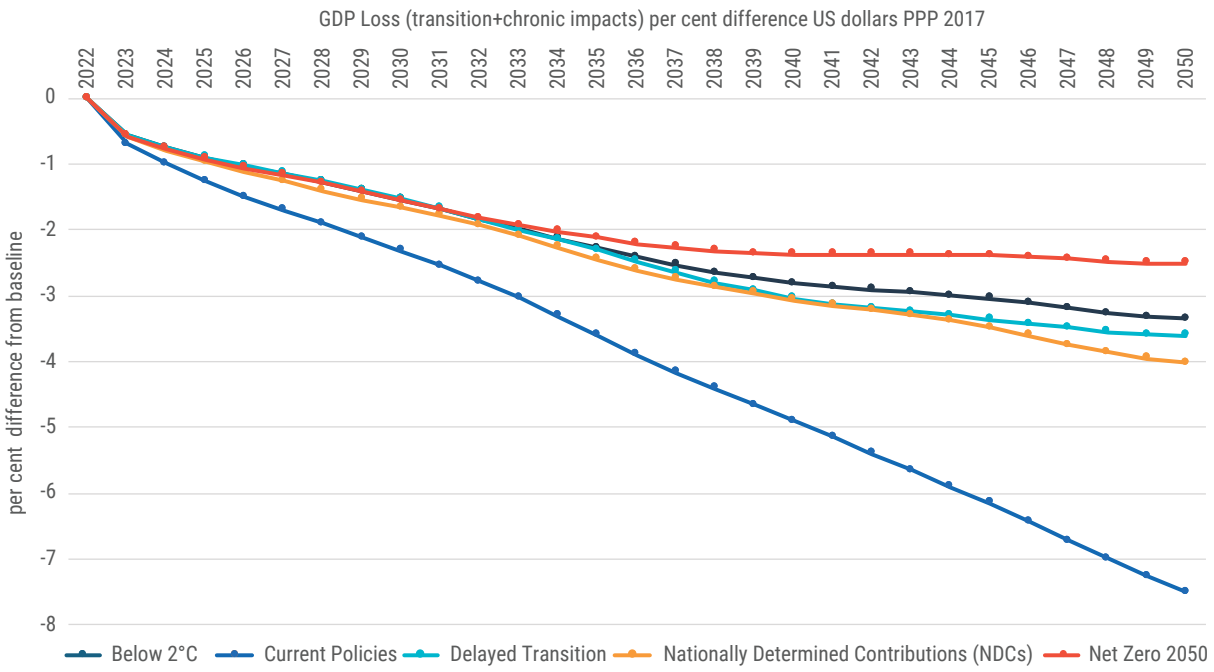
A core focus of this chapter is to identify the policy conditions, institutional reforms and enabling mechanisms that are needed to strengthen the demand side of climate finance. This includes building project pipelines that are viable, investment-ready and aligned with national climate objectives. Without this foundation, even increased financial pledges risk falling short in delivering meaningful climate outcomes.

Recognizing the significant financial investment required to accelerate climate action, the Paris Agreement (COP21) called for a new collective quantified goal on climate finance (NCQG) to be set by 2025.[28] The NCQG aims to build on and surpass the previous $100 billion per year commitment from developed to developing countries, by mobilizing climate finance at a much larger scale—from all sources—and improving transparency and predictability in its delivery. [29]

At COP29, parties agreed on a new NCQG of $300 billion per year by 2035, well below the $1 trillion to $1.3 trillion range initially proposed by developing countries. Nonetheless, it is a step towards increasing global ambition. While this target reflects political compromise, it remains far from sufficient when measured against the actual needs expressed in NDCs and National Adaptation Plans (NAPs). Notably, broader investment goals, including an aspirational target of $1.3 trillion per year by 2035 from all sectors, were acknowledged at COP29, but without formal obligations for developed countries to provide financing at that scale.

Importantly, like the previous $100 billion goal, the new NCQG recognizes that public finance alone will not be enough. Reaching even the new target will require mobilizing capital from a wide ecosystem of actors, including multilateral development banks, development partners, climate funds, philanthropic organizations and especially the private sector.

Figure 3.3: GDP projections under different NGFS scenarios (2022–2050)



Source: ESCAP based on Network for Greening the Financial System (NGFS) Phase 4 Scenario Explorer: NiGEM model GDP impacts in Asia (2017 PPP) [October 2024]; International Institute for Applied Systems Analysis (IIASA).This scenario covers the following Asia-Pacific countries: Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Fiji, Kiribati, Lao's People Democratic Republic, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Nepal, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu. The analysis is based on 2017 purchasing power parity (PPP) US dollars.

While the cost of implementing climate action may seem significant, the cost of inaction is far greater. In the Asia-Pacific region, failure to address the impacts of climate change would result in, among other implications, an average annual loss of nearly $924 billion, or 2.9 per cent of the region's GDP. Under a scenario of a 1.5°C temperature increase, the projections rise to $953 billion, or 3 per cent of the region's GDP, while under a scenario of a 2°C temperature increase, losses will reach nearly $1 trillion, or 3.1 per cent of the region's GDP.[30] These scenarios underscore the urgency of bolstering financing for mitigation and adaptation projects to protect the region's hard-won development gains.

Failing to act swiftly on climate mitigation could carry significant economic consequences for Asia and the Pacific in the medium to long term (figure 3.3). GDP losses could range from -2.5 per cent to -7.5 per cent by 2050, depending on the pace and nature of climate policy interventions.[31] In contrast, early investment in mitigation and a just transition towards net-zero economies can substantially reduce long-term economic harm. These figures underscore the urgent need to scale up climate action and the financing required, not only as a climate imperative but as an economic one.

The extent of impact will ultimately depend on how well global commitments are translated into domestic financing strategies. It will also depend on whether countries have the institutional and project readiness to absorb and utilize this finance effectively. This underscores the need for alignment across global financial pledges, national climate strategies and the actual projects that will deliver emissions reductions and resilience on the ground.

3.2 THE IMPORTANCE AND CURRENT STATE OF PROJECT PIPELINES IN ASIA AND THE PACIFIC

Many countries in the Asia-Pacific region face mounting debt and high debt servicing costs, limiting their fiscal space to respond to economic shocks, pursue development ambitions or implement meaningful climate action. In addition, many developing Asia-Pacific countries struggle to access international climate finance and overcome the structural barriers that prevent the effective allocation and utilization of existing funds. One key structural barrier is the lack of well-structured, investment-ready mitigation and adaptation project pipelines capable of attracting domestic and international, private and public finance. Such pipelines are crucial for mobilizing and deploying finance effectively. Strengthening these pipelines is essential for the region's developing countries to achieve their climate goals, despite the limited fiscal space currently available to them.

To address this challenge, national green finance strategies and roadmaps are essential. These provide the policy foundation necessary by identifying priority sectors, aligning climate targets with investment planning, and ultimately building clear, financeable project pipelines. In the Asia-Pacific region, only a minority of countries have developed formal strategies, roadmaps or policies focused on green finance to support climate action. While some countries (including Armenia, Bhutan, Georgia and Indonesia) have established sustainable finance frameworks, in total, only 20 countries have any type of green or sustainable finance strategy, roadmap or policy in place. Furthermore, just six countries explicitly address project pipeline development in relation to achieving their NDC climate targets.[32] So while many countries recognize the importance of sustainable finance, only some are actively working on creating financeable project pipelines – a critical gap in ensuring the effective implementation of NDCs. **Greater focus is needed not just in securing finance but also in preparing integrated, robust policies, strategies and projects that can efficiently attract green finance.**

An example of how such measures can be undertaken successfully can be seen in the Republic of Tajikistan. With the support of the Asian Development Bank (ADB), Tajikistan's Committee for Environmental Protection developed an NDC Climate Finance Plan outlining a roadmap for financing necessary climate investments.[33] The plan gives a detailed overview of NDC costings, potential climate finance sources, financing instruments and sectoral structural reforms to create an environment conducive to efficient climate finance flows. It includes a comprehensive set of actions for the government to mobilize resources from various sources, and provides a framework for different stakeholders to coordinate efforts and identify areas of support. It offers recommendations for strengthening the capacity of Tajikistan's financial sector to scale up sustainable (or "green") financing for future climate investments. The plan was informed by extensive consultation between government ministries, committees, agencies, development partners, the private sector and the ADB, and was approved by the Chairman of the Committee for Environmental Protection and was launched In July 2024.

The Asian Development Bank's technical assistances and financing efforts support its developing member countries to meet their NDCs and NAPs. Through initiatives such as NDC Advance (figure 3.4), ADB focuses on translating NDC ambitions into actionable investment plans, enhancing access to climate finance, developing tools for monitoring NDC commitments and identifying priority climate projects and programmes. The NDC Advance platform is a cornerstone of ADB's support for climate action, and is specifically tailored to help developing member countries implement robust climate actions to address Paris-aligned goals.

Box 3.1: The role of MDBs

Multilateral Development Banks play an essential role in contributing to the goals of the Paris Agreement. For example, ADB is a leading multilateral development bank supporting inclusive, resilient, and sustainable growth across Asia and the Pacific. Working with its members and partners to solve complex challenges together, ADB harnesses innovative financial tools and strategic partnerships to transform lives, build quality infrastructure, and safeguard our planet. As part of its commitment to supporting the goals of the Paris Agreement, ADB has pledged to scale up its climate financing to at least $100 billion by 2030. This financial commitment reinforces ADB's strategy to strengthen green financial systems, facilitate a sustainable transition, and back country-level climate action plans aimed at reducing greenhouse gas emissions, fostering low-carbon development and strengthening resilience.

Figure 3.4: NDC Advance

TA platform supports to mobilize finance, build capacity, and provide knowledge to Developing Member Countries.

Approved on 7 December 2018 with target completion on 31 December 2025.

$11.02 MILLION in funding

(ADB grant + Government of Austria)

The platform consists of four separate but strategically-linked subprojects with the overall objective to achieve low-carbon and climate resilient development.

1. Translating NDCs into climate investment plans and projects.
2. Improving DMCs access to climate finance, including support for funding mechanisms and linking to private sector.
3. Developing methods and tools to measure, monitor and report on commitments made under NDCs.
4. Identification of climate adaptation investments priorities.

Source: Asian Development Bank, "NDC Advance: Accelerating climate actions in Asia and the Pacific", November 2023.

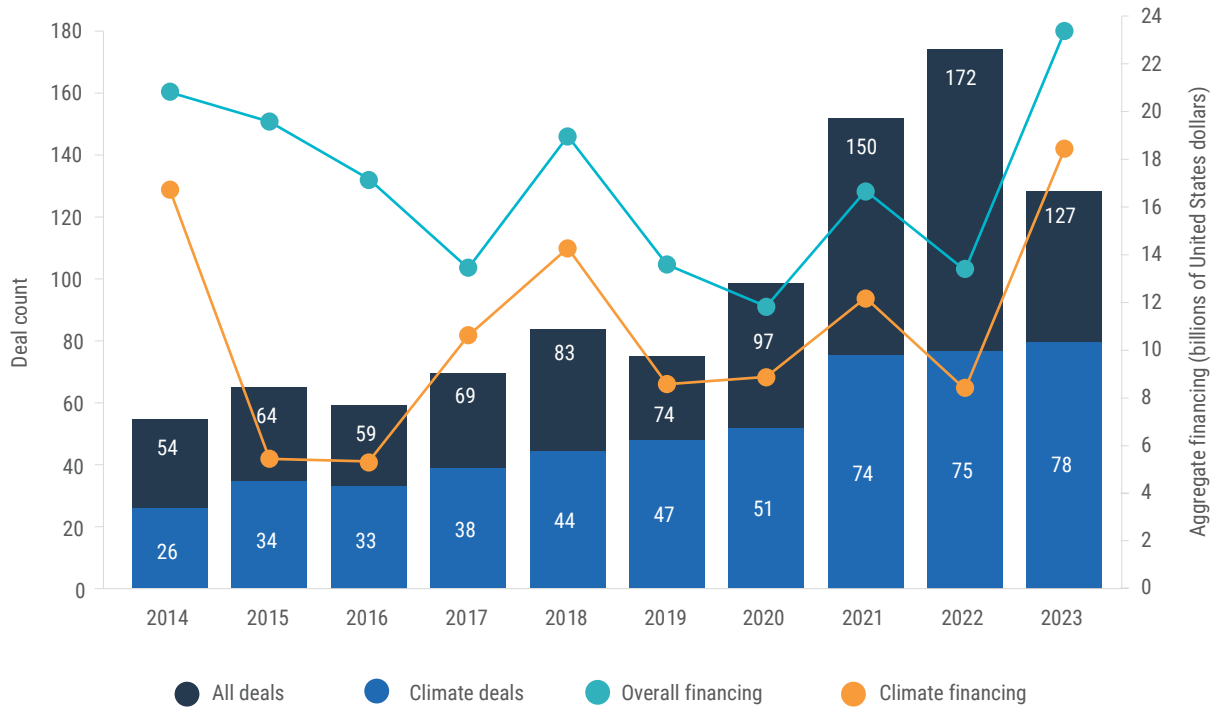
Investment activity in climate-related private equity, venture capital and corporate transactions shows clear disparities among emerging and frontier markets in the Asia-Pacific region. Countries such as Indonesia, Thailand and the Philippines demonstrate comparatively higher levels of climate investment activity, particularly in sectors such as energy, energy equipment and transport. Meanwhile, frontier markets such as Mongolia, Nepal and Bhutan exhibit significantly lower levels of deal activity. This pattern underscores a regional gap in deal-readiness, highlighting the need to strengthen financeable climate project pipelines in countries with lower investment volumes in order to accelerate regional climate action.

As a result, blended finance has emerged as a critical structuring approach to mobilize private capital for sustainable development in developing markets. By using concessional or philanthropic capital to improve the risk-return profile of investments, blended finance helps attract private sector investors into sectors and geographies they might not otherwise consider.

By 2024, a total of 1,233 blended finance transactions had been recorded globally, with a cumulative market value of $231 billion.[34]

Climate blended finance has emerged as one of the fastest growing segments within the blended finance market, playing a critical role in mobilizing private capital for climate action in developing countries. By 2024, climate blended finance accounted for about 57 per cent of market capitalization ($132 billion) and half of all deals recorded across all years.[35] The share of climate deals of $100 million or greater was 56 per cent in 2023, up from 23 per cent in 2022, while the proportion of climate deals greater than $500 million stood at 12 per cent in 2023 compared to just 4 per cent in 2022.[36] Climate-related transactions accounted for 80 per cent of total capital committed to blended finance in 2023, highlighting the growing importance of blended finance in supporting climate objectives across emerging and developing economies.[37]

Figure 3.5: Climate blended finance market, 2014–2023



Source: Convergence, *The State of Blended Finance 2024: Climate Edition* (Toronto, 2024).

Multilateral development banks (MDBs), development financial institutions (DFIs) and private sector financing remain the most prominent sources of commercial financing in climate blended finance transactions, playing a central role in scaling up capital for climate action in developing markets. Since 2018, DFIs and MDBs have provided a total of $18.1 billion in commercial financing to climate-focused blended finance transactions globally, alongside the $18 billion invested by private sector investors over the same period.[38] Between 2021 and 2023, annual investments from DFIs and MDBs averaged $3.5 billion, reflecting a modest increase from previous years.

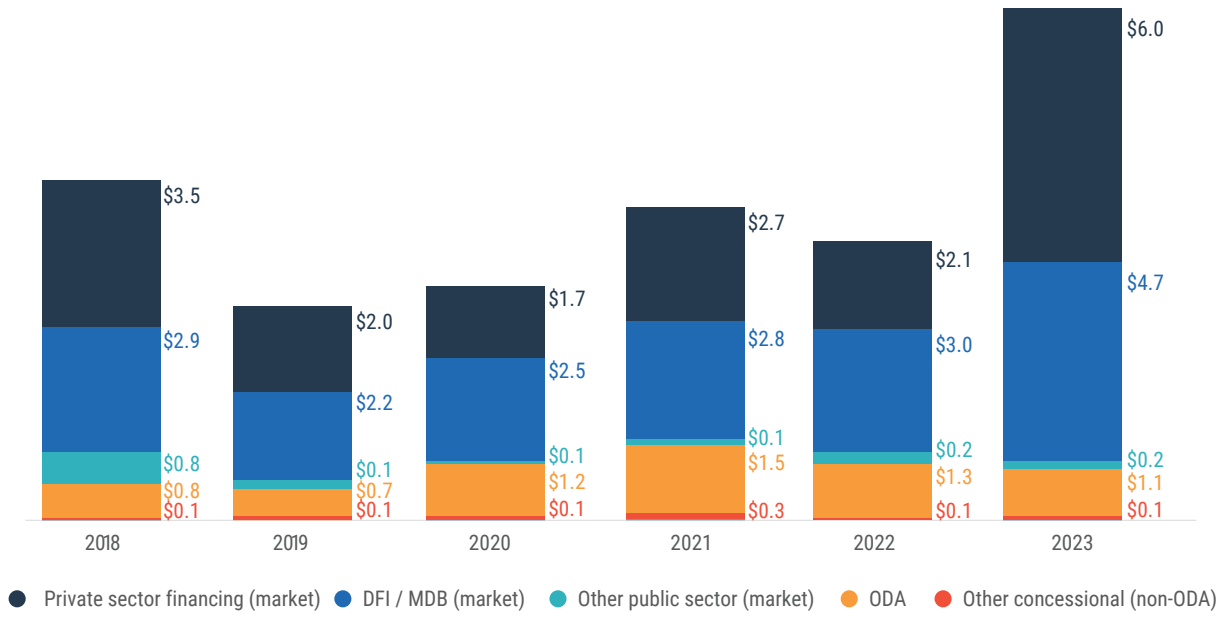
While official development assistance (ODA) funding for blended finance transactions has steadily declined, falling by 45 per cent between 2021 and 2023 (excluding guarantees and insurance instruments), the inclusion of concessional guarantees and risk insurance has softened this decline.[39] In 2023, the dollar value of concessional guarantees rose by over 40 per cent from 2021 levels, accounting for 43 per cent of all concessional funding, compared to only 20 per cent in 2021.[40] This reflects a growing trend towards using risk-transfer instruments and coalition-led blended finance initiatives to develop project pipelines and deploy catalytic capital more efficiently.

Blended finance is not a standalone solution but it remains a vital tool for de-risking investments and crowding-in private capital to climate-related projects, especially in sectors and markets where commercial financing is constrained or absent.

3.3 BARRIERS TO DEVELOPING AND FINANCING GREEN PROJECT PIPELINES

Asia-Pacific countries face several barriers in building and sustaining green project pipelines and the policies and systems needed to finance NDC-aligned initiatives. In the public sector, barriers include top-down national planning constraints, data gaps and parallel or siloed processes between NDC planning, long-term economic planning and national finance plans, including national budgets, medium-term expenditure planning and national development plans. Governments often lack comprehensive valuations of their assets such as forests, coastal ecosystems and mangroves, or of their renewable energy potential, among others. This results in financing decisions that may be misaligned with the

Figure 3.6: Sources of financing to blended finance deals (global, excluding guarantees and insurance instruments), 2018–2023



Source: Convergence, The State of Blended Finance 2024: Climate Edition (Toronto, 2024).

true value or potential of these assets. This can lead to suboptimal choices; for example, prioritizing debt swaps over carbon market opportunities that may offer greater long-term returns.

In the private sector, many banks and firms invest in emission reduction projects, but these efforts are often not captured at the NDC level so their emission reductions are not tracked effectively. Additionally, many projects that require large-scale private financing and investment face substantial issues that affect their pricing in relation to their risk profiles. Systemic issues, or ecosystem barriers, further complicate the development of project pipelines. These include inadequate policy frameworks, a lack of data consistency and measurement capabilities, insufficient stakeholder engagement, and systems that fail to incentivize private investment in NDC-aligned initiatives.

3.4 BARRIERS IN THE SUSTAINABLE FINANCE ECOSYSTEM

Ecosystem barriers are defined as fundamental systemic challenges that impede the flow of finance to climate mitigation and adaptation projects. While these barriers vary across countries, particularly between Asia-Pacific's emerging and frontier economies, persistent gaps in the foundational building blocks for climate finance-ready projects are evident throughout the region. These systemic issues create significant obstacles in mobilizing and deploying public and private, domestic and international capital for climate action-related projects, hindering the region's progress towards its sustainability and NDC targets.

3.4.1 Policy and regulatory (mis)alignment

3.4.1.1 Institutionalization of NDCs

NDCs set out national-level strategies to reduce emissions and adapt to climate change, and can play a vital role in contributing to the overall sustainable development of a country. The identification, development and financing of climate adaptation and mitigation projects are critical aspects in translating NDC ambition into tangible outcomes. However, in many countries, NDCs are not fully integrated into national policies and planning, and therefore are not legally binding. **Enshrining NDCs into law can provide a stronger foundation for their implementation, ensuring policy continuity across political cycles and sending a clear signal to investors and the private sector of a country's commitment to climate action.**

For example, the government of New Zealand signed into law its Zero Carbon Amendment Act (2019), which amended the country's previous Climate Change Response Act (2002). The amendment has set a net zero emissions target by 2050, providing a framework for the country to develop and implement climate change policies aligned with the Paris Agreement.[41] [42] This Act has resulted in the development of the country's Emissions Reduction Plan, which sets out policies and strategies for meeting the country's emissions budget.

However, the country has seen challenges in putting such legislation into practice and maintaining the legislation's effectiveness over time. Despite the legal framework, New Zealand is projected to fall short of its 2050 net-zero targets.[43] This is due to several factors which offer lessons for other countries to consider. These include: short-term economic concerns overshadowing long-term policy goals; political shifts and changes in government leading to policy reversal; and shortcomings in robust implementation mechanisms to execute the policies in place, among other factors.

The New Zealand case shows that while legislating NDC priorities and targets into law is an essential enabler, it is not a guarantee of success for meeting climate targets or developing viable project pipelines. Importantly, creating legal frameworks aligned with NDC goals provides a clear mandate for government agencies, a set of actions for the future and a clear policy environment and credible signals for private sector engagement. However, ensuring effective implementation, securing consistent political will and mobilizing public support are equally important factors.

It is worth highlighting that litigation is increasingly being pursued in relation to government action and inaction on climate change. The enforceability of NDC compliance largely depends on whether NDCs

are considered legally binding under a country's national laws. This can open avenues for litigation if NDC commitments are not being met. For example, in August 2024, the Constitutional Court of the Republic of Korea declared parts of the Carbon Neutrality Act unconstitutional, ruling that it failed to establish greenhouse gas reduction targets beyond 2030, which effectively shifted the burden of climate action to future generations.[44] The case illustrates that while legislation supporting NDCs can enhance accountability and expose governments to potential legal risks for non-compliance, it can also elevate climate action to a constitutional rights issue, emphasizing the need for robust and forward-thinking climate policies.

3.4.1.2 Sustainable finance roadmaps

Sustainable finance strategies or roadmaps are initiatives that have gained momentum both globally and in the region. As noted above, only 20 Asia-Pacific countries have a green or sustainable finance strategy, roadmap or policy currently in place, with only six countries explicitly addressing project pipeline development.

A sustainable finance strategy or roadmap provides a clear framework of the policies, regulations and systems required to operationalize sustainable finance. These include channelling green finance and investment to climate action projects. Such strategies or roadmaps often establish priorities or targets, and outline the policies, regulations and systems that need to be established to operationalize these efforts. They can also recommend the establishment of monitoring and reporting mechanisms to help track progress against climate targets, assess financial risks linked to climate change and support broader risk management efforts and transparency in terms of measuring progress towards targets. They thus create a suitable framework for sustainable projects (especially green projects) to be developed in the real economy, capable of meeting the required standards and successfully mobilizing public and private, domestic and international finance for climate action.

Several countries in the Asia-Pacific region have developed sustainable finance roadmaps. For example, in Indonesia, the Financial Services Authority (OJK) launched its Sustainable Finance Roadmap in 2014, making it one of the first countries in the Asia-Pacific region to develop a formal strategy for sustainable finance. Recognizing that such roadmaps or strategies must constantly evolve, particularly because climate science data and climate finance mechanisms referenced in the roadmaps are rapidly evolving, OJK issued an updated roadmap setting out a vision for the next phase of implementation from 2021-2025.

The roadmap has been instrumental in mobilizing green finance in Indonesia, including significant investments in renewable energy and infrastructure projects. By 2024, Indonesia had the second-largest sustainable finance market in ASEAN, with nearly $10 billion in bond issuances since 2018.[45] Additionally, the momentum of the roadmap led to legislation, specifically OJK's Regulation on Sustainable Finance, which mandates all financial institutions to integrate sustainable principles in their business processes.[46]

Thanks to OJK's Regulation on Sustainable Finance, seventeen banks reported $81 billion in sustainable portfolio financing in their 2019 sustainability/annual reports, an increase of 139 per cent from 2017.[47] This dramatic growth demonstrates the effectiveness that the Sustainable Finance Roadmap and its subsequent regulations have had on mobilizing green and sustainable project financing.

3.4.2 Definition and classification

A significant challenge faced by the public sector, with direct implications for the broader private sector, is the plethora of definitions of 'green' projects or investments. While many countries in the Asia-Pacific region have developed a green or SDG taxonomy – a classification system that defines what qualifies as 'green' or sustainable activity – significant gaps remain. Many countries have yet to establish such frameworks, and definitions often vary between countries (figure 3.7).[48]

Figure 3.7: Green and sustainable finance taxonomy development in Asia and the Pacific

Source: ESCAP, "Strengthening financing for sustainable development in Asia and the Pacific: a discussion of selected policy areas", Issues Paper (Bangkok, 2024).

Note: The information provided here is based on the availability at the time of the writing and may not be exhaustive.
*Malaysia has two taxonomies – green taxonomy for financial institutions and sustainable finance taxonomy for the capital market.

Although a taxonomy is not a prerequisite for green financing or project development, it serves as an indispensable tool in providing clarity to the market on what constitutes 'green' or 'sustainable', and supports efforts to eliminate 'green or social washing'.[49] A well-defined taxonomy enables the domestic market to respond more effectively by developing targeted green financial products, and encourages project owners to align their business models with sustainable practices. When a country aligns its green taxonomy with the sectors and activities prioritized in its NDC, it creates a coherent framework for mobilizing and tracking climate finance towards national targets.

Singapore's recent launch of the Singapore-Asia Taxonomy for Sustainable Finance establishes detailed thresholds and criteria for defining green and transition activities across eight focus sectors.[50] [51] This provides a clear roadmap for local and regional stakeholders. Furthermore, the Monetary Authority of Singapore (MAS) has undertaken a mapping of the Singapore-Asia Taxonomy to the Common Ground Taxonomy, which covers the EU Taxonomy and the People's Bank of China's Green Bond Endorsed Project Catalogue.[52] This approach not only enhances clarity for Singapore's domestic market but also aligns with the widely accepted taxonomies of China and the EU, providing international investors with a clearer understanding of local green standards and allowing them to estimate costs of compliance with precision, leading to better pricing of projects. The third version of the ASEAN taxonomy also aims to enhance interoperability with global standards, including alignment with the European Union's taxonomy. Such efforts not only provide clarity for domestic markets but also position the region more competitively in global sustainability efforts.

The absence of standardized green definitions can lead to market fragmentation and increased transaction costs, potentially deterring investment in critical climate-related projects. It can also contribute to the risk of greenwashing. Recognizing this challenge, regional initiatives such as the ASEAN Taxonomy for Sustainable Finance are gaining traction.

Furthermore, it will be critical for countries that have not yet developed or adopted national or regional taxonomies to consider doing so. When developing taxonomies, it is essential for countries to consider their scope, as this may encompass not only sustainable, green and SDG-related activities but also

those associated with specific NDCs. This process provides essential market transparency and clarity, which are essential for green and sustainable project pipeline development, and further enables investment. Additionally, country engagement in developing regional taxonomies, where relevant, will also help reduce fragmentation across markets.

3.4.3 Disclosure and reporting requirements

Climate disclosure and reporting requirements are additional fundamental tools for effective project pipeline development as they provide enhanced market transparency and allow for effective risk management. While climate disclosure and reporting requirements are usually instituted as compliance measures that allow markets to compare and benchmark activities and projects against one another, they also serve an essential supportive function, enabling disclosing companies to assess the material and financial risks that climate change poses to their operations and overall business strategy. This further supports future green project development by identifying areas where investment is needed to increase resilience or reduce emissions. Moreover, the aggregation of disclosure data at the sectoral or national level can inform policy direction and investment planning, aligning private sector activities with national climate priorities as outlined in NDCs. Furthermore, the creation of clear disclosure and reporting requirements can support market innovation and help catalyse green project pipelines by improving the credibility and bankability of proposed investments.

In the Asia-Pacific region, 13 countries and regions have climate-related risk and disclosure guidelines or mandates in place or in development. These include Australia; China; Hong Kong, China; India; Indonesia; Japan; Malaysia; New Zealand; Philippines; Singapore; Republic of Korea; Thailand and Viet Nam.[53] [54] Several more countries are expected to adopt similar requirements in the coming years.

The climate disclosure landscape is rapidly evolving, with various institutions publishing standards and best practices. With institutional standards now beginning to merge, the International Financial Reporting Standards (IFRS) Foundation is taking a leading role. IFRS has integrated its own International Sustainability Standards Board (ISSB) sustainability reporting standards with those of the Sustainability Accounting Standards Board (SASB) and the Task Force on Climate-related Financial Disclosures (TCFD). This convergence is expected to increase reliability for investors, improve comparability of sustainability disclosures, and help mitigate risks of greenwashing.

However, several challenges persist in the implementation of climate-related disclosures. With multiple climate reporting standards broadly accepted by the market, organisations and governments often remain unclear on which standard to apply. This lack of uniformity can lead to inconsistent reporting and difficulties in comparison across companies and jurisdictions. Additionally, companies, particularly in developing markets, often lack an understanding of how to apply these standards and undertake such reporting, which usually also raises transaction costs for such companies requiring additional financing. This knowledge and financing gap can result in incomplete or inaccurate disclosures, which then also raise liability risks for the company in cases of inaccurate or misleading reporting. Finally, sectors face variations in climate-related risks and have different capacities for disclosure reporting. For example, the financial, materials and real estate sectors show higher adoption rates of sustainability reporting standards than other sectors.[55]

To address these challenges, many jurisdictions are adopting a phased approach to disclosure implementation. This strategy allows companies to gradually build their capacity for climate-related reporting while giving regulators time to refine the requirements. For example, Singapore; Hong Kong, China and Japan are targeting the fiscal year 2025 for the formal adoption of ISSB-aligned disclosure rules.[56]

While challenges persist, advances and convergence in climate-related risk and disclosure reporting also present opportunities. For companies undertaking or about to embark on such an exercise, it can shed light on vulnerable business lines or, in the case of financial institutions, investments and loans at risk. This data and analysis can support companies and industries to shift business practices to more sustainable operations and sectors. For financial institutions, it can shape the development of new financial products

as well as efforts to identify green project pipelines for investment. For example, the Singapore Exchange (SGX) has announced that listed companies and large unlisted companies will be required to publish mandatory climate-related disclosures fully in line with IFRS S1[57] and S2 in a phased approach from 2025 to 2030.[58] As a result, financial institutions in Singapore are likely to develop more sophisticated green finance products tailored to the needs of companies transitioning to low-carbon operations. For example, a bank might create a new sustainability-linked loan product that offers better terms to companies demonstrating improved performance on their climate-related disclosures. **This not only incentivizes better climate risk management and disclosure practices but also helps the bank identify and finance promising NDC-aligned green projects, thereby aligning its loan portfolio with climate goals.**

As the region advances towards more comprehensive climate disclosures, governments must balance the need for robust reporting with the practical challenges faced by businesses. Clear guidance and support to companies, especially SMEs for whom proportionate disclosure requirements are needed, will be critical. Furthermore, regional cooperation and knowledge-sharing will also play a vital role in harmonizing approaches and building capacity across the Asia-Pacific region. By progressively implementing disclosure reporting standards, governments can ensure economic growth and stability while also addressing the urgent need for climate action and transparency. Such actions will not only help companies better understand and manage their climate-related risks but will also provide investors with the information needed to make informed green investment decisions.

3.4.4 Harmonization and regional cooperation

The next round of NDCs must support the facilitation of engagement between countries and the finance sector, including institutional investors.[59] Harmonization of measurement methodologies for emissions is a critical step towards unlocking finance for NDC implementation. While NDCs are rightly tailored to each country's national context, consistent and transparent approaches to measuring emissions reductions are essential for enabling comparability and benchmarking across countries. This consistency not only strengthens investor confidence and risk assessment but also supports the development of standardized metrics that can be applied to project pipelines.[60] Clear and harmonized data allows investors to evaluate the impact and credibility of proposed green projects, making them more bankable. Furthermore, harmonization can help address investment barriers, improve the management of systemic climate risks and enable countries to access diverse sources of finance more effectively, including lending, project finance and capital markets.

In addition to standardized or comparable emissions measurements, the broader landscape of climate finance is rapidly evolving. As noted above, to prevent market fragmentation and enable market coherence, harmonization and multi-stakeholder cooperation is essential. Climate-related risk and disclosure reporting is one example where consistency and harmonization will remain critical, as companies become more informed and capable of gathering and reporting on climate risks. Similarly, the evolving development and convergence of taxonomies will continue to be relevant, particularly for foreign investors seeking to benchmark projects across jurisdictions.

Multilateral development banks and international organizations can also play an important role in supporting the development and application of recognized best practices. For example, UNEP FI has collaborated with organizations such as GIZ to build capacity in Viet Nam for identifying, assessing and disclosing climate risks and opportunities. Similarly, ESCAP is supporting the Bank of Mongolia and the Mongolian Sustainable Finance Association in the development of climate risks and disclosure guidelines and templates based on international best practices.

Overall, harmonization and cooperation can support governments and project owners to develop project pipelines aligned with international standards, transparency requirements and best standards of measurement. This allows for enhanced investment decision-making and benchmarking, potentially unlocking additional capital. **Additionally, coordinated efforts not only optimize the use of available resources but also provide investors with further clarity when executing investments, particularly in frontier markets.**

3.5 BARRIERS FACING THE PUBLIC SECTOR

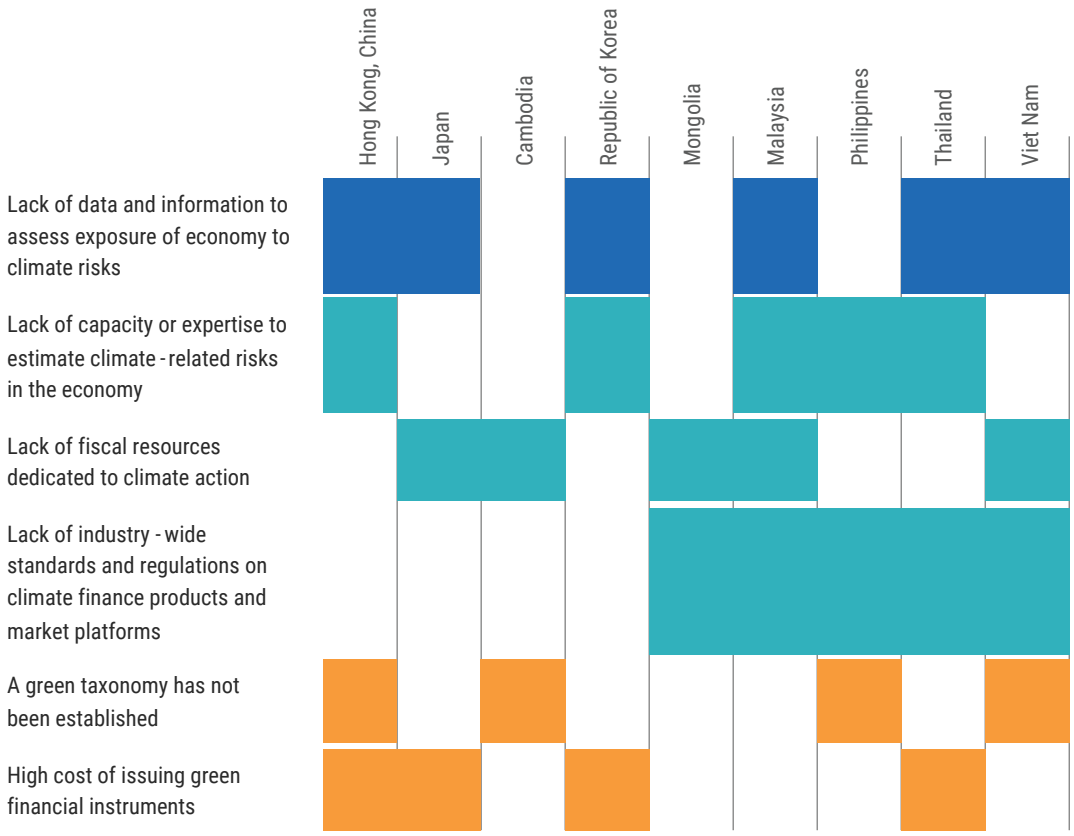
The public sector in most developing Asia-Pacific countries faces several challenges and limitations in developing and financing NDC-aligned projects. An IMF survey of Asia-Pacific conducted in 2022 highlights some of the main challenges governments face, including lack of data, capacity, fiscal resources and high borrowing costs. Additionally, as noted in the previous section, systemic fundamental barriers also persist, including a lack of industry-wide standards and regulations and a lack of green taxonomies (figure 3.8). This section analyses some of the key challenges governments face in mobilizing NDC-aligned climate finance and developing project pipelines. It also provides case studies of best practices in addressing such constraints.

3.5.1 Limited public resources and debt distress

As the most disaster-afflicted region in the world, coupled with a heavy reliance on coal for energy production, Asia-Pacific countries recognize the urgency of climate action and transition activities. These require green projects to be developed to meet national decarbonization targets, as well as to build resilience for countries most affected by climate change.

However, these ambitions are unfolding in a context of tightening fiscal constraints. In many developing and emerging markets in the region, public finances have been severely strained by post-pandemic debt accumulation, rising debt servicing costs and increasing external shocks. This erosion of fiscal space has limited the capacity of governments to invest in climate action and pursue long-term development goals.

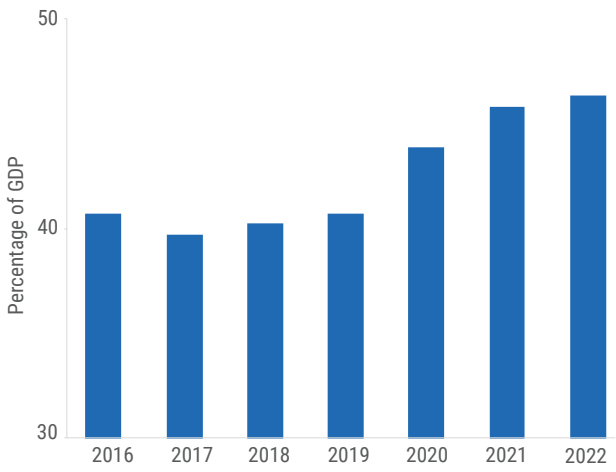
Figure 3.8: Main challenges for accessing climate finance identified by authorities



Source: Cheng Hoon Lim and others, "Unlocking climate finance in Asia-Pacific: transitioning to a sustainable future", IMF Departmental Paper Series, No. 2024/001 (Washington D.C., International Monetary Fund, 2024), p. 28.

In two-thirds of developing economies in the Asia-Pacific region, public debt has risen to its highest levels since 2008.[61] The average debt-to-GDP ratio rose from 40.6 per cent in 2019 to 49.5 per cent in 2021.[62] Moreover, 19 countries in the region are now rated at high risk of debt distress, based on debt sustainability frameworks or credit ratings. Pacific Island countries have experienced particularly acute challenges, with debt-to-GDP ratios exceeding 85 per cent.[63]

Figure 3.9: Average debt-to-GDP ratio, developing Asia-Pacific economies



Source: Economic and Social Survey of Asia and the Pacific: Rethinking Public Debt for the Sustainable Development Goals (United Nations publication, 2023).

These fiscal pressures underscore the urgent need to diversify and scale up financing sources for climate action. While it is essential to strengthen public finances through enhanced mobilization of domestic resources, improved spending efficiency and prudent debt management, these measures alone will not be sufficient to meet the scale of climate investment required.

As a result, developing countries must accelerate efforts to mobilize private sector finance, while also securing expanded access to concessional finance and exploring debt relief options. Innovative financing mechanisms – for example debt-for-climate swaps – offer one potential solution, creating additional fiscal space while directly linking debt relief to climate outcomes.

Importantly, these approaches are also aligned with the objectives of the New Collective Quantified Goal (NCQG) on climate finance, which recognizes the need to mobilize financing from all sources – public, private and blended – and to develop new financing models that can address the specific constraints of highly indebted developing countries.

3.5.2 Policy alignment and coordination

Aligning and coordinating policy on climate action between line ministries remains a persistent challenge in several Asia-Pacific countries. These challenges can be categorized into two types: conflicting policies or measures; and siloed processes between NDC planning and national finance plans, including national budgets, medium-term fiscal planning and national development plans.

3.5.2.1. Policy alignment

Changes in government and policy direction can significantly and adversely impact the achievement of NDC targets and the prioritization of government spending. Moreover, misaligned or competing policies exacerbate these challenges. For example, while fossil fuel subsidies can be viewed as politically necessary, in the long run, they create market distortions through superficially low prices for consumers and comparatively higher prices for non-subsidized renewable energy providers. This leads to overconsumption and further entrenched dependency on fossil fuels. Additionally, such subsidies erode the fiscal resources available that could support investment in longer-term solutions such as renewable energy. When undertaken in parallel, this creates a situation in which governments simultaneously fund climate change mitigation efforts and fossil fuel consumption. Such inconsistency in policy leads to economic inefficiencies and sends mixed signals to consumers and businesses, limiting their motivation to transition to cleaner technologies. Consequently, governments find themselves in the untenable position of providing fiscal resources for both sides of the energy transition, further straining already limited budgets and potentially undermining their climate commitments.

Based on IMF fossil fuel subsidies data, 41 Asia-Pacific countries have fossil fuel subsidies in place.[64] Of these, 40 countries currently have both fossil fuel subsidies and NDCs in place, and 28 of them have also submitted net-zero targets.[65] According to the IMF, removing fossil fuel subsidies could raise additional fiscal resources of about $1.8 trillion, or 4.4 per cent of GDP, in East Asia and the Pacific.[66] Such measures, combined with carbon pricing, can further create fiscal space for NDC-aligned national project financing, while also creating further demand for affordable green alternatives.

3.5.2.2 NDC planning and financing silos

Ministries of Finance play a crucial role in economic policy assessment, including the integration of climate risks and opportunities into decision-making processes. While NDC development typically falls under the responsibility of environment or climate change ministries, early involvement of finance ministries is crucial. The Coalition of Finance Ministers for Climate Action have brought together fiscal and economic policymakers from over 90 countries to work towards a just transition towards low-carbon, resilient development. The coalition's work highlights that while the engagement of Ministries of Finance in the NDC planning process has increased, only a quarter of ministries assessed by the coalition engaged in different stages of NDCs (formulation, validation and implementation) over time. [67]

Comprehensive NDC costing is essential for effective implementation, yet only 56 per cent of Asia-Pacific NDCs are costed. Furthermore, 18 out of 38 countries in Asia and 5 out of 14 in Oceania have yet to do any costing exercises.[68] Without accurate cost estimates, countries cannot fully understand their financing needs, so NDCs become mere target-setting exercises rather than integrated planning tools aligned with national and sector development strategies. Consequently, the development of green project pipelines linked to NDCs remains *ad hoc* and unsystematic. In the absence of a clear project pipeline, Ministries of Finance are unable to conduct thorough cost assessments or develop robust financing and fundraising plans for these climate initiatives. This creates a cycle in which insufficient costing leads to inadequate planning, which in turn hinders the development of comprehensive project pipelines and effective financing strategies.

Developing the next round of NDCs offers Ministries of Finance the opportunity to use NDCs as an investment planning tool integrated with their national development plans. The Coalition of Finance Ministers has identified several actions that governments can take, and has highlighted the importance of a whole-of-government approach in developing NDCs, with Ministries of Finance playing an essential coordinating role between public and private stakeholders[69] in order to enhance climate investment planning and resource mobilization by creating a unified strategy for climate priorities. The coalition recommends aligning NDC processes with national budget cycles and public financial management processes, to provide fiscal and economic data to inform NDC development.[70] **This approach can fast-track priority projects, attract blended finance and prepare investment-ready flagship projects.** It can also support development of projects for the Global Environment Facility (GEF) and other international climate funds.

For countries just starting out on this process, the Government of Cambodia offers a useful model: The public investment programme (PIP) prepared annually by the Ministry of Economy and Finance of Cambodia is a three-year rolling plan aimed at achieving the goals of the National Strategic Development Plan for 2024 to 2028,[71] including comprehensive accounting of the projects planned, funding required, disbursements, actual expenditures and funds committed, broken down by source and funding gaps. Much of the current plan consists of and prioritizes projects aligned with the country's NDCs and SDG goals. Currently, the plan includes 617 projects,[72] totalling $11.9 billion of ongoing projects and $24.66 billion of planned projects. [73] This has allowed the Ministry of Economy and Finance to prioritize which projects will be funded and how. To bridge the country's financing gap, the government aims to mobilize ODA, grants and concessional debt, alongside public investment.

In Fiji, in addition to the role of the Ministry of Finance, the government has established a Climate Change Division at the Ministry of Foreign Affairs, and a Climate Change and International Cooperation Division at the Ministry of Economy. These divisions are responsible for coordinating implementation of the National Climate Change Policy (NCCP) 2012.

This governance structure has facilitated stronger coordination between climate action planning and economic policymaking, creating an integrated approach that bridges environmental goals and financial planning. Importantly, it also strengthens the enabling environment for developing project pipelines linked to Fiji's NDC targets and broader climate priorities.

3.5.3 Capacity gaps

Lack of capacity among government officials also remains a critical cross-cutting issue. Capacity gaps include insufficient knowledge, lack of technical expertise or poor institutional capacity in areas such as NDC development, project costing, implementation, risk modelling and financing. An all-of-government approach as discussed above can help address these deficiencies to some extent. While environment ministries typically hold the mandate for NDC planning and development, they often lack the financial expertise needed to assess whether identified needs, sectors and areas for investment can be turned into viable projects that can attract diverse financing, other than grants, at commercial rates from MDBs, multilateral climate funds and domestic and international private finance.

Further support is particularly needed to accurately cost the identified needs into specific climate projects and align them with broader development objectives, especially for Least Developed Countries. Support includes strengthening institutional capacities to coordinate and conduct economic assessments, identify financing sources and manage risks effectively. Additionally, there is a critical need to build capacity for mainstreaming NDCs into national and subnational planning and budgeting processes. This assists in building ownership of the process and can ensure that NDC-aligned projects are integrated into long-term national development strategies supported by robust fiscal and policy frameworks, thereby enhancing the potential to secure public and private investments.

3.5.4 Assessment of natural capital

To build viable green project pipelines using all public assets, a country needs comprehensive knowledge and valuation of its natural resource-based assets. This can be achieved through natural capital assessments. Natural capital assessments evaluate the stock of natural resources and ecosystems within a particular region or country, such as forests, water, soil, clean air, biodiversity and minerals. Such assessments are important to allow for a quantification of the value of natural assets and an understanding of how they contribute to economic activities. The assessment can also create clarity and transparency on how such resources may be economically affected by climate change, biodiversity loss and/or transition activities.

Natural capital assessments can facilitate NDC planning, shape environmental policies and inform financial decisions. For example, a country with extensive forests that are in danger of deforestation is in a strong position to generate and sell carbon offsets through mechanisms such as REDD+ (Reducing Emissions from Deforestation and Forest Degradation). This enables the country to prevent deforestation while still generating revenue. Projects like these are considered green investments and contribute to the development of a bankable project pipeline aligned with NDC targets.

However, if the country opts for a debt-for-climate swap, where a portion of its national debt is restructured in exchange for preserving the forest or mangrove ecosystem, it may forgo future carbon offset revenues. While this arrangement provides short- to medium-term financial relief and contributes to climate goals, it could limit the country's ability to capitalize on potential increases in the carbon price in the long term. Therefore, governments have to assess the viability of each 'project's' potential financing costs and revenues, to understand how to best 'develop' the project for maximum benefit to the country.

Thus, through natural capital assessments, countries can better forecast the range of benefits provided by their natural assets, including their value in different financial arrangements. This allows them to model various scenarios and develop project pipelines that best align with their financing needs, while maximizing the long-term value of their natural resources in a manner that supports both environmental sustainability and economic growth.

Such assessments can be undertaken through geographic information systems (GIS) mapping, remote sensing and terrestrial and marine mapping. The Government of Fiji has developed an integrated approach allowing for the identification of climate risks and their impacts on communities, alongside establishing project pipelines aimed at addressing these climate challenges. It has deployed GIS applications that provide a set of decision support tools, including maps, apps and data layers, supporting Fiji's climate change streams.[74] It has found that using such technologies provides the evidence-based rationale needed to pursue the right financing solutions. The portal itself can also support the flow of financing towards government priorities, as it showcases Fiji's ongoing initiatives, including nature-based seawalls, e-buses, rural electrification priorities and climate resilience initiatives.[75]

While GIS and remote sensing systems are crucial for the valuation and planning of natural assets, they also play a significant role in supporting green project implementation and decision-making. These tools support climate projects to do no significant harm, safeguarding both ecosystems and communities. For instance, installing wind turbines on a hilltop requires careful assessment to avoid disrupting species migration paths or displacing local populations. Comprehensive assessments of natural ecosystems enable more effective project planning. For example, identifying barren or degraded land with minimal habitat risks can prioritize such areas for renewable energy projects. Therefore, natural capital assessments – alongside the necessary environmental impact assessments that validate project viability – require both technical expertise and adequate funding. The financial burden on governments depends on the project's structure, whether government-owned, a public-private partnership (PPP), or fully private. In cases where projects are government-led, official development assistance (ODA) can play a crucial role. ODA can help finance these preliminary assessments, which are vital for unlocking funding for subsequent green project implementation.

Given that these assessments do not provide immediate financial returns, ODA is particularly appropriate for supporting the data, science, technology and other groundwork needed for sustainable climate action projects. By funding essential feasibility studies and environmental assessments, ODA helps to establish a robust pipeline of environmentally sound projects which can then attract both public and private financing. This ensures that countries can develop robust, green project pipelines, laying the foundation for sustainable growth.

3.6 BARRIERS FACING THE PRIVATE SECTOR

As developing Asia-Pacific economies grapple with fiscal limitations, the role of the private sector in financing climate action becomes relatively more important. According to the World Economic Forum, the private sector manages more than $210 trillion in assets globally, yet investment in green projects remains a fraction of assets under management.[76] International investors frequently cite a lack of bankable projects as a significant challenge, while governments and local private sector actors often point to limited capital availability, both domestically and from international sources.[77] These challenges underscore the urgent need for substantial policy and ecosystem-level improvements to create and enhance robust project pipelines. Currently, many project pipelines remain uncosted and inadequately planned, leading to one-off investments that only partially align with NDCs. This lack of comprehensive planning hampers efforts to address climate change at the necessary scale.

The private sector faces further constraints when it comes to financing green projects in developing countries. These include regulatory uncertainties, insufficient access to information about viable projects, and a lack of alignment between private sector incentives and public climate goals. Addressing these constraints is essential for mobilizing capital to develop and finance green project pipelines that effectively contribute to climate resilience and mitigation efforts.

3.6.1 Misalignment in risk and investment criteria

The risk appetite of investors and the competitiveness of green instruments compared to traditional financial products are crucial factors in driving investment decisions. Institutional investors, in particular, often prioritize short-term returns, which can make the long-term liquidity profile of green investments less appealing. Many green projects require substantial upfront capital and have extended time horizons for returns, which may not align with the investment strategies of these entities.

To enhance the attractiveness of such investments, governments have turned to financial incentives. Some examples include the provision of tax incentives for climate-related project financing and de-risking efforts through blended finance guarantees, first-loss provisions to make investments and green bonds more attractive, and measures such as feed-in tariffs to incentivize renewable energy adoption.

Blended finance has been instrumental in de-risking green projects, making them more appealing to private investors by leveraging concessional capital. One example is the ASEAN Catalytic Green Finance Facility (ACGF). Launched in 2019 under the ASEAN Infrastructure Fund (AIF), the ACGF is a collaborative effort between the Asian Development Bank (ADB), Southeast Asian governments and international finance partners. It provides technical assistance and de-risking loans to catalyse green infrastructure projects in sectors such as energy, transport, water and urban development.

With co-financing commitments exceeding $1.9 billion, the ACGF has helped develop over 39 green project concepts, of which six have secured financing approval from the ADB board. These projects are projected to reduce carbon emissions by approximately 408,434 tons annually. By combining direct funding with knowledge-sharing, capacity-building and risk mitigation mechanisms, the ACGF has made green projects more bankable, attracting private capital and driving green finance in Southeast Asia. Notably, ACGF partnerships with private and institutional investors have unlocked $72 million for capital expenditures and an additional $150 million annually for operational costs, demonstrating how blended finance can amplify public-private collaboration in climate finance.

3.6.1.1. Other risk mitigation and non-financial incentives

Additionally, developed countries which have commitments in place to support developing countries under the Paris Agreement can also use mechanisms to promote investments in developing countries. For example, political risk insurance has been offered by the Development Finance Corporation (DFC) of the United Sates government to support capital market financing structures that catalyse private capital in emerging markets.[78] Political risk insurance helps investors manage risks associated with potential political disruptions, such as expropriation or currency inconvertibility. Such measures have been taken by DFC as a means for shielding investor risk in debt-for-climate swap deals.

Additionally, policy risk insurance, which is often used in the energy sector to prevent sudden changes in subsidies, feed-in tariffs or other supportive policies, can also be used to insure against unforeseen risks. This type of measure, often supported by MDBs, safeguards investors against sudden policy changes that could render projects financially unsustainable.

While financial incentives are critical, non-financial factors can also mitigate private finance concerns. For example, it is important for investor confidence to perceive that there is strong contract enforcement, dispute resolution and a predictable, trusted rule of law in the country of investment. This also applies to permitting and approvals, clear legal frameworks, and having appropriate data sharing and reporting mechanisms in place to ensure investments are indeed green.

While incentive and policy measures can create a supportive environment for enhancing investment in green projects, green projects seeking private finance still need to fulfil the requirements of private finance. Private investors seek a favourable return on investment, an appropriate risk-to-reward ratio, appropriate investment timelines, and reassurance that there is sufficient liquidity in the market (to allow them to exit investments with ease).

3.6.2 Lack of supply of robust green projects

While medium to large projects can significantly contribute towards achieving NDC targets, meeting global climate commitments requires an inclusive, economy-wide approach that leverages contributions from all sectors. Micro, small and medium enterprises (MSMEs) form the backbone of **several** Asia-Pacific economies, representing 98.7 per cent of all enterprises and 64.6 per cent of all employment across 24 Asia-Pacific countries.[79] [80] MSMEs play a crucial role in developing and implementing green projects and can serve as models for innovation and decarbonization through the development of home-grown projects and initiatives. However, these enterprises face significant financing challenges, with a staggering almost $4 trillion financing gap in 33 Asia-Pacific countries.[81] [82] A key challenge MSMEs face in accessing financing relates to challenges in preparing robust financial project proposals for traditional financing, as well as perceptions of being a higher credit risk**.** These challenges, combined with the perception in the banking sector that green business models represent a high risk.[83]

3.6.3 Market readiness and institutional capacity gaps

Despite growing interest in climate investment, many private-sector actors face practical limitations beyond access to capital or risk appetite. Weak institutional capacity, fragmented and underdeveloped project pipelines and a lack of financial incentives for early movers continue to constrain the flow of private capital into green projects. These challenges highlight the urgent need to strengthen the enabling environment for market participation and scale.

Local financial institutions in developing and emerging markets often lack the technical capacity to assess, structure and finance green investments. Even in countries where green or SDG taxonomies have been introduced, gaps in monitoring, reporting and verification systems make it difficult to ensure that projects meet the required criteria. By design, banks are financial intermediaries – not climate experts – yet many lack dedicated staffing, training or internal structures to integrate climate risk and sustainability assessments into their lending practices. This leads to capacity gaps in evaluating green projects and designing climate-aligned financial products, ultimately creating a bottleneck for deal origination and pipeline development.

On the supply side, project developers, particularly smaller originators and local actors, often lack the capacity to package and structure proposals in a way that meets investor requirements. This challenge is not unique to the climate sector, but it is especially pronounced in emerging markets across the Asia-Pacific region, where institutional support and advisory services for project development are often limited.

In addition, there are few financial incentives to motivate early-stage investment in green technologies and infrastructure. In high-risk or first-mover segments, the absence of tax incentives, concessional co-financing or anchor investments often limits private sector participation. Without these tools to de-risk investments or demonstrate market viability, many private actors remain on the sidelines.

3.7 STRATEGIES AND SOLUTIONS TO ACCELERATE PROJECT PIPELINE DEVELOPMENT AND THE FLOW OF FINANCE

A wide range of interconnected challenges act as barriers to developing and financing green project pipelines for public and private finance and domestic and international investors. As a result, successful implementation of NDCs and the transition to a sustainable, low-carbon future remain restricted. Addressing these obstacles requires governments to take a comprehensive and strategic approach in order to mobilize all stakeholders, leverage innovative financing mechanisms and foster an enabling environment for sustainable investments.

This section summarizes best practices and recommendations for addressing the barriers highlighted in this report, with nine strategic actions to tackle these barriers and facilitate robust, NDC-aligned project pipelines and financing solutions.

1. Institutionalize NDCs into national legislation and policies. A key challenge identified across countries globally is that NDCs are not fully integrated into national policies and planning, and therefore are not legally binding. Enshrining NDCs into law can provide a stronger foundation for their implementation, ensuring policy continuity across political cycles, and sending a clear signal to investors and the private sector of a country's commitment to climate action. Such legislation can also create a mandate for government agencies and a clear policy environment for private sector engagement.

While enshrining NDCs into law is an essential step towards effective climate action, it is not a panacea for achieving sustainability goals. Effective implementation requires not only a strong legal framework but also consistent political will, public support, and mechanisms for accountability. As countries navigate these challenges, the potential for litigation underscores the importance of aligning legal obligations with actionable climate strategies that prioritize both current and future generations.

2. Develop and regularly update sustainable finance roadmaps. Governments should take the lead in developing and regularly updating national sustainable finance roadmaps that align with climate and development priorities. These roadmaps serve as essential tools to guide policy, mobilize finance and build green project pipelines. Currently, 20 countries in the Asia-Pacific region have developed green or sustainable finance strategies, with six explicitly recognizing the importance of project pipelines. Developing countries in the region can draw on these experiences to identify best practices and key elements for their own roadmaps.

These roadmaps typically outline environmental priorities and targets, while also identifying the necessary policies, regulations and systems required to operationalize sustainable finance initiatives. In countries where such roadmaps have been implemented, there is evidence, for example in the case of Indonesia,[84] that sustainable finance roadmaps have led to legislative actions and played a significant role in mobilizing green finance.

At the same time, private sector stakeholders including banks and key industry players also have a critical role to play. They can develop their own transition plans and strategies, ideally aligned with national strategies. This can reduce long-term financial and operational risks associated with an unmanaged transition. Additionally, the development of such plans can attract a new set of investors interested in green investment opportunities, and can enable companies to prioritize climate mitigation and adaptation efforts within their operations, such as greening production processes, investment decisions and lending practices.

3. Conduct comprehensive asset and natural capital assessments. Comprehensive natural capital assessments and the use of advanced tools such as geographic information systems (GIS), remote sensing, and terrestrial and marine mapping enables governments to identify natural assets. This can support evidence-based policymaking, assessment of project feasibility and location analysis, and aids in the development of priority climate resilience and mitigation projects. It also supports the accounting of natural assets for the creation and sale of carbon offsets. In short, it enables countries to strategically plan and finance green projects that maximize the long-term value of their natural resources.

Given that such assessments require technical expertise and significant funding, developing countries can consider leveraging official development assistance (ODA) to finance them. ODA is particularly well-suited to supporting preliminary studies and environmental assessments that do not yield immediate financial returns but are crucial for unlocking future investments in green projects.[85] In providing bilateral or multilateral financial support to developing countries, developed countries can fulfil their commitments under the Paris Agreement and have the opportunity to invest in relatively inexpensive assessments that can catalyse significant national climate efforts in those developing countries.

4. Develop NDC investment plans linked to more ambitious NDCs. NDC 3.0 aims to transition from commitments to action, with more ambitious targets than previously set and a clear path forward for achievement. Several factors which underpin the ability of NDCs to translate into investment plans

must be kept in view. Costing NDCs is essential. As noted above, only 48 per cent of all NDCs have been costed.[86] To cost NDCs, countries must establish a list of aggregated mitigation and adaptation projects that align with their NDC targets. This can be achieved by conducting comprehensive assessments to identify potential projects, prioritizing them based on their feasibility and alignment with national climate goals, and engaging stakeholders across sectors to ensure broad support and collaboration. Additionally, countries should leverage existing frameworks for climate investment planning, such as developing country climate investment plans that outline specific funding needs and strategies for mobilizing resources. By creating a structured approach to project pipeline development, countries can better identify financing gaps and opportunities on a continual and recurring basis, ultimately facilitating the successful ongoing implementation of their NDCs.

5. Establish green and/or SDG taxonomies to give investors, banks and project owners greater clarity. The absence of standardized green and sustainability definitions can lead to market fragmentation and increased transaction costs, potentially deterring investment in critical climate-related projects.

Taxonomies categorize and define what constitute green and/or social projects or investments, which provides clarity to the market on what 'green' or 'sustainable' mean. This enhances efforts to prevent greenwashing. The development of localized taxonomies or the adoption of regional taxonomies allows project owners and the market to respond more effectively by developing green and sustainable initiatives aligned with the taxonomy. It also allows the financial sector to respond by developing aligned green and sustainable finance services.

A good taxonomy is appropriately comprehensive, adaptable to local contexts, informed by the most up-to-date science, adaptive to new market developments and aligned with international standards. Additionally, government engagement in developing a regional taxonomy, where relevant, increases harmony and 'interoperability' and will also help reduce fragmentation across markets.

6. Strengthen climate-related disclosure and reporting requirements. These are essential for enhancing market transparency and effective risk management, serving as a fundamental tool for the development and financing of green project pipelines. Such reporting enables companies to assess the material and financial risks that climate change poses to their operations and overall business strategies. It can also inform and motivate financial institutions in their development of sophisticated green finance products tailored to low-carbon transitions.

A uniform approach to climate reporting can mitigate confusion stemming from multiple standards, ensuring consistent reporting and facilitating comparability across jurisdictions. A phased approach to mandated climate-related disclosure and reporting requirements is recommended, particularly for developing countries, to gradually build the private sector's capacity for climate-related reporting. Additionally, as reporting standards are rapidly evolving, it allows developing countries to adapt, based on learnings gained from first movers.

By providing clear guidance and support, governments can balance robust reporting with practical business challenges. This ultimately empowers companies to manage climate risks effectively while equipping investors with the necessary information to make informed green investment decisions. Regional cooperation and knowledge-sharing will further enhance these efforts of harmonization and establishment of best practices.

7. Enhance harmonization through regional cooperation. Aligning methodologies, particularly for measuring emissions reductions, is essential to enhance transparency, facilitate investor confidence and ensure comparability across countries and regions. Currently countries' NDC targets are based on varying methodologies, as are climate-related disclosures and taxonomies. Regional cooperation is needed to support harmonization of such methodologies, which can prevent market fragmentation, enable market coherence and address investment barriers.

Cooperation of such efforts by development organizations, MDBs and governments also optimizes the use of available development resources, provides investors with further clarity, and gives countries the opportunity to leverage diverse financing sources.

8. Strengthen fiscal positions and consider innovative and concessional finance options. While it is essential to adopt prudent debt management measures and fiscal reforms to broaden the tax base and improve public spending efficiency, innovative financing mechanisms should also be explored to create fiscal space. For example, debt restructuring through bilateral or multilateral debt-for-climate swaps can offer countries a way to reduce or restructure their debt while simultaneously generating financial resources for climate action. Additionally, enhanced concessional financing mechanisms, whether bilateral or from development finance institutions, will be vital to enable developing countries to meet their climate commitments while managing their debt levels and increasing investment in green projects.

One prerequisite for innovative financing mechanisms is to undertake an assessment of natural capital to help identify climate-related projects. This will help determine the type of innovative or concessional financing mechanisms that can be considered. For example, debt-swaps are often – though not exclusively – associated with conservation initiatives, whereas large scale energy projects may require concessional lending.

9. Create an enabling policy and regulatory environment to stimulate the supply and demand of green projects. As developing Asia-Pacific markets grapple with fiscal limitations, it is imperative for governments to establish comprehensive policies and mechanisms that effectively mobilize private capital to support implementation of NDCs. International investors frequently cite a lack of bankable projects as a significant challenge, while both governments and local private sector actors highlight limited capital availability, both domestically and from international sources.

To address the nine challenges listed above, governments must prioritize regulatory stability and clarity in their policies on green investments. By establishing clear guidelines and standards for green project eligibility – aligned with international frameworks such as the Green Bond Principles – governments can enhance investor confidence. Furthermore, implementing streamlined permitting processes can significantly reduce barriers to project development, enabling private entities to initiate and scale up green projects more efficiently.

Blended finance can also play a crucial role in increasing the supply of capital for green projects. By reducing investor risks and ensuring that projects align with their risk tolerance, blended finance can attract a broader range of investors. DFIs are pivotal in this context, as they provide guarantees or first-loss capital that mitigates perceived risks for private investors, making green investments more appealing.

Additionally, establishing investment incentive mechanisms – such as tax breaks or subsidies for green initiatives – can stimulate demand for sustainable projects. Setting banking sector targets for green financing and creating dedicated green finance facilities or green banks can further support the flow of financing into the market. These initiatives not only encourage financial institutions to prioritize sustainable investments but also create a robust ecosystem that fosters the development of viable green project pipelines.

By creating a supportive regulatory environment, leveraging innovative financing solutions and establishing targeted incentives, governments in the Asia-Pacific region can effectively stimulate both the supply of bankable green projects and the demand from private investors seeking sustainable investment opportunities.

3.8 A CALL TO ACTION

Despite some progress, the window to limit warming to 1.5°C is rapidly closing. Based on current NDCs, the world is on a trajectory to reach 2.1°C to 2.8 °C of warming by 2050.[87] This makes NDC 3.0 pivotal to increase the level of ambition and develop credible implementation plans that align climate goals with financing strategies. Currently, however, policies and investments are not aligned with this trajectory.

The Asia-Pacific region is central to determining the success or failure of global climate goals. The region is both highly vulnerable to the impacts of climate change and responsible for over 54 per cent of global emissions.[88] Climate action in Asia-Pacific will not only shape regional development but also carry global consequences.

As noted throughout this chapter, many governments in the region have made meaningful progress by developing tools, frameworks and best practices to support implementation of NDCs and mobilization of climate finance. However, what is still lacking is the necessary scale, speed and coordination to translate ambition into action.

At the heart of this transformation lies the development of strong, bankable project pipelines. These pipelines are the bridge between high-level NDC targets and on-the-ground investments that deliver emissions reductions, build resilience and unlock finance. Without clearly defined, investment-ready projects, neither domestic budgets nor international capital can be effectively deployed.

Asia-Pacific governments have the opportunity to lead these global efforts. However, without the full engagement of the private sector (i.e. banks, investors and industry), transformation at scale will be difficult.

The cost of inaction is already staggering. In 2022 alone, the Asia-Pacific region suffered disasters that impacted over 64 million people, including more than 7,500 fatalities and $57 billion in climate-related losses.[89] Under a 2°C warming scenario, annual losses could approach $1 trillion, or 3.1 per cent of regional GDP.[90] These are not distant threats but rapidly emerging realities.

By implementing the nine strategic actions outlined in this chapter, governments and the private sector can move from fragmented initiatives to coordinated, investment-ready planning. Building robust project pipelines backed by clear policies and financing strategies is essential to making NDCs deliver real impact.

At COP30 in Belém, Brazil, in November 2025, countries will discuss the implementation of NDCs submitted. Those decisions will define our collective ability to meet the goals of the Paris Agreement, the Sustainable Development Goals and broader development ambitions. In this rapidly closing window of opportunity, the region's leadership can help preserve a liveable and sustainable future for all. A resilient, low-carbon Asia-Pacific is not only possible, it is essential.

ENDNOTES

1 *Financing for Sustainable Development Report 2024: Financing for Development at a Crossroads* (United Nations publication, 2024).

2 *Economic and Social Survey of Asia and the Pacific: Ambitions Beyond Growth* (United Nations publication, 2019).

3 United Nations, Executive Office of the Secretary-General (UN EOSG) and United Nations Framework Convention on Climate Change (UNFCCC), *Catalysing the Implementation of Nationally Determined Contributions in the Context of the 2030 Agenda through South-South Cooperation* (New York, Bonn, 2017)

4 Afghanistan, Armenia, Australia, Azerbaijan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea (the), Fiji, French Polynesia, Georgia, India, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Kiribati, Kyrgyzstan, Lao People's Democratic Republic, Malaysia (the), Maldives, Marshall Islands; Micronesia (Federated States of), Mongolia, Myanmar, Nauru, Nepal, New Zealand, Pakistan, Palau, Papua New Guinea, the Philippines, Republic of Korea (the), Russian Federation (the), Samoa, Singapore, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Timor-Leste, Tonga, Türkiye, Turkmenistan, Tuvalu, Uzbekistan, Vanuatu, and Viet Nam.

5 UNFCCC, document FCCC/CP/2024/6/Add.2–FCCC/PA/CMA/2024/8/Add.2.

6 Fatima-Zahra Taibi, Susanne Konrad and Olivier Bois von Kursk, *Pocket Guide to NDCs under the UNFCCC, 2020 Edition* (Oxford, European Capacity Building Initiative, 2020).

7 Afghanistan, Armenia, Australia, Azerbaijan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, The Democratic People's Republic of Korea (the), Fiji, France, Georgia, India, Indonesia, Islamic Republic of Iran (the), Japan, Kazakhstan, Kiribati, Kyrgyzstan, Lao People's Democratic Republic (the), Malaysia, Maldives, Marshall Islands, Micronesia (Federated States of), Mongolia, Myanmar, Nauru, Nepal, Netherlands (Kingdom of the), New Zealand, Pakistan, Palau, Papua New Guinea, the Philippines, Republic of Korea (the), Russian Federation (the), Samoa, Singapore, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Timor-Leste, Tonga, Türkiye, Turkmenistan, Tuvalu, United Kingdom of Great Britain and Northern Ireland (the), United States of America (the), Uzbekistan, Vanuatu, and Viet Nam. The Islamic Republic of Iran is party to the Paris Agreement, although it has not ratified it.

8 Intended Nationally Determined Contributions (INDCs) were the initial climate action plans that countries submitted before the Paris Agreement was adopted in December 2015.

9 Afghanistan and Palau.

10 Islamic Republic of Iran.

11 Of the 52 ESCAP countries that are parties to the Paris agreement, this analysis excludes France, the Netherlands, the United Kingdom and the United States, and therefore represents 49 countries.

12 $GtCO_2e$ stands for gigatonnes of carbon dioxide equivalent. It is a standardized unit used to compare the global warming potential (GWP) of different greenhouse gases by converting them into the equivalent amount of CO_2 that would produce the same warming effect. This allows for consistent reporting and comparison of emissions across various gases and sectors.

13 United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), United Nations Environment Programme (UNEP), United Nations Children's Fund (UNICEF), *2022 Review of Climate Ambition in Asia and the Pacific: Raising NDC Targets with Enhanced Nature-Based Solutions* (Bangkok, ESCAP, 2019), p. 29.

14 UNEP, Emissions Gaps Report 2020 (Nairobi, 2020).

15 Ibid.

16 United Arab Emirates, Brazil, the United States of America, Uruguay, Switzerland, the United Kingdom of Great Britain and Northern Ireland, New Zealand, Andorra, Ecuador, Saint Lucia, Marshall Islands, Singapore, Zimbabwe, Canada, Japan, Montenegro, Maldives, and Cuba.

17 UNFCCC, document FCCC/CP/2024/6/Add.2–FCCC/PA/CMA/2024/8/Add.2.

18 Ibid.

19 Ibid.

20 Ibid.

21 2019 is used as the starting point for calculating annualized financing needs as it reflects the operational start of NDC implementation following the adoption of the Katowice Rulebook and the formalization of NDC processes under the Paris Agreement.

22 Based on UNFCCC regional classifications.

23 UNFCCC, document FCCC/CP/2024/6/Add.2–FCCC/PA/CMA/2024/8/Add.2.

24 Ibid.

25 Ibid.

26 Ibid.

27 The NDR, prepared by the UNFCCC Standing Committee on Finance, provides an overview of the climate-related needs of developing country Parties in implementing the Convention and the Paris Agreement. It is submitted every four years.

28 UNFCCC, document FCCC/CP/2015/10/Add.1, para. 53.

29 Organization for Economic Co-operation and Development (OECD), *Climate Finance Provided and Mobilised by Developed Countries in 2013-2021: Aggregate Trends and Opportunities for Scaling Up Adaptation and Mobilised Private Finance*, Climate Finance and the USD 100 Billion Goal (Paris, OECD Publishing, 2023).

30 *Asia-Pacific Disaster Report 2023: Seizing the Moment Targeting Transformative Disaster Risk Resilience* (United Nations publication, 2023).

31 Calculations derived from the Network for Greening the Financial System (NGFS). *NGFS Phase 4 Scenario Explorer: NiGEM model GDP impacts in Asia (2017 PPP)* [October 2024]. International Institute for Applied Systems Analysis (IIASA). Available at https://data.ene.iiasa.ac.at/ngfs-phase-4/.

32 Based on ESCAP analysis of publicly available national sustainable finance frameworks, strategies and policies (2024).

33 This NDC Climate Finance Plan was prepared under the regional knowledge and support technical assistance project: Supporting the Implementation of ADB's Climate Change Operational Framework 2017-2030 - Enhancing Financial Mechanisms to Develop Climate Actions of Developing Member Countries – Subproject 2 (TA 9744-REG).

34 Convergence, *The State of Blended Finance 2024* (Toronto, 2024).

35 Ibid.

36 Ibid.

37 Ibid.

38 Ibid.

39 Ibid.

40 Ibid.

41 New Zealand, Ministry for the Environment, Climate Change Response (Zero Carbon) Amendment Act 2019 (November 2019).

42 New Zealand, Ministry of Business, Innovation & Employment (MBIE), "Emissions reduction plan", 16 July 2024.

43 Eva Corlett, "New Zealand will fail to meet 2050 net zero targets, data shows, after climate policies scrapped", *The Guardian*, 19 July 2024.

44 International IDEA, "South Korean Constitutional Court ruling: a landmark decision in climate litigation", 16 September. 2024.

45 Asian Bonds Online, an initiative supported by the ADB. Available at https://asianbondsonline.adb.org/data-portal/index.php.

46 International Finance Corporation (IFC) & Financial Services Authority (OJK), "IFC-OJK collaboration case study, raising the bar on environmental, social, and corporate governance standards", February 2021. Available at www.ifc.org/content/dam/ifc/doc/mgrt/ifc-ojk-ifc-collaboration-case-brochure-fin.pdf.

47 Ibid.

48 Malaysia has introduced two principle-based taxonomies: (1) the Climate Change and Principle-based Taxonomy (CCPT) issued by Bank Negara Malaysia, which guides financial institutions in classifying economic activities according to climate risk and environmental objectives; and (2) the Principles-based Sustainable and Responsible Investment (SRI) Taxonomy issued by the Securities Commission, which supports sustainable investment classification across a broader range of environmental, social, and governance (ESG) objectives. While both provide foundational guidance, they do not yet constitute fully detailed classification systems with technical screening criteria.

49 Greenwashing and social washing refer to the practice of misleading investors or the public by overstating or falsely claiming environmental or social benefits.

50 Agriculture and forestry/land use, construction/real estate, transportation and fuel, energy – including upstream, industrial, information and communications technology, waste/circular economy, carbon capture and sequestration.

51 Yixiang Zeng, "Asia advances sustainability-related finance taxonomies, disclosure rules & public-private partnerships in ESG", *Thomson Reuters,* 13 February 2024.

52 Ibid.

53 ESGpedia, "A comprehensive guide on Asia Pacific's ESG regulatory and reporting landscape - 2024 and Beyond", 24 May 2024; Yu Ishihara, "Tracking APAC ESG corporate disclosure frameworks against international developments", MSCI, 16 November 2023; and Ecovadis, "India's business responsibility and sustainability reporting (BRSR)", 2023.

54 The data has considered countries and regions with climate-related disclosure guidance and mandates in their ESG regulatory contents. Regarding regulatory requirements specifically related to climate-related risks and disclosures, there are only four countries and territories: Australia; China; Hong Kong, China and Japan.

55 Ingo Tietboehl, "Sustainability disclosures in Asia-Pacific: accelerated transition to new standards", ISS-Corporate, 26 April 2024.

56 Latham & Watkins LLP, "ISSB Implementation Across Asia: September 2024", 3 September 2024.

57 This applies to the general requirements and conceptual foundations of IFRS S1 as they relate to climate-related risks and opportunities.

58 Roohi Ghelani and Reneta Ulloa, "ISSB: global momentum for sustainability reporting", Anthesis, 9 May 2025.

59 Laia Barbarà, "5 ways NDCs can become private climate finance catalysers", World Economic Forum, 30 July 2024.

60 Ibid.

61 *Economic and Social Survey of Asia and the Pacific: Rethinking Public Debt for the Sustainable Development Goals* (United Nations publication, 2023).

62 Ibid.

63 Ibid.

64 Simon Black and others, "IMF fossil fuel subsidies data: 2023 update", IMF Working Paper, No. 2023/169, (Washington, D.C., IMF, 2023).

65 Climate Watch, "Data on countries climate progress". Available at www.climatewatchdata.org/ (accessed on 20 March 2025).

66 Simon Black and others, "IMF fossil fuel subsidies data: 2023 update", Working Paper, No. 2023/169, (Washington, D.C., IMF, 2023).

67 The Coalition of Finance Ministers for Climate Action, "Strengthening Finance Ministries' capacity and engagement in the Nationally Determined Contributions (NDCs) process", 7 August 2024.

68 UNFCCC, document FCCC/CP/2024/6/Add.2–FCCC/PA/CMA/2024/8/Add.2.

69 The Coalition of Finance Ministers for Climate Action, "Strengthening finance ministries' capacity and engagement in the Nationally Determined Contributions (NDCs) process", 7 August 2024.

70 Ibid.

71 Nhean Chamrong, "PM announces 617 PIPs worth $11.7 billion", *Khmer Times,* 20 March 2024.

72 Cambodia, Ministry of Economy and Finance, "Private Investment Programme 2024-2026", unpublished internal document, 2024.

73 Ibid.

74 Fiji Climate Change Portal, "Fiji's climate change information hub".

75 Ibid.

76 Laia Barbarà and Ameya Hadap, "Private climate finance: 4 things you need to know", World Economic Forum, 17 April 2024.

77 *Sustainable Finance: Bridging the Gap in Asia and the Pacific*, ESCAP Financing for Development Series, No. 5 (United Nations publication, 2023).

78 U.S. International Development Finance Corporation, "Political risk insurance" (accessed on 4 November 2024).

79 Asian Development Bank, *Asia Small and Medium-Sized Enterprise Monitor 2024: Designing an MSME Ecosystem for Resilient Growth in Asia and the Pacific* (Manila, 2024).

80 Armenia, Azerbaijan, Bangladesh, Brunei Darussalam, Cambodia, Fiji, Georgia, India, Indonesia, Kazakhstan, the Kyrgyz Republic, Lao People's Democratic Republic, Malaysia, Nepal, Pakistan, the Philippines, Papua New Guinea, Samoa, Singapore, Sri Lanka, Thailand, Tajikistan, Viet Nam, and Uzbekistan.

81 SME Finance Forum, "MSME finance gap", MSME finance gap database, 22 April 2025. Available at www.smefinanceforum.org/data-sites/msme-finance-gap.

82 Afghanistan, Armenia, Azerbaijan, Bangladesh, Bhutan, Cambodia, China, Fiji, Georgia, India, Indonesia, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Malaysia, Micronesia (Federated States of), Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, Russian Federation, Samoa, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Timor-Leste, Tonga, Türkiye, Uzbekistan, Vanuatu, Viet Nam.

83 Based on key informant interviews conducted during the development of the forthcoming publication series "Climate Invest Project: Building Bankable Green Project Pipelines in the Non-Infrastructure Sectors in Cambodia, Mongolia, and Thailand".

84 As noted above, thanks to OJK's Regulation on Sustainable Finance, 17 banks reported $81 billion in sustainable portfolio financing in their 2019 sustainability/annual report, which shows a 139 per cent increase from 2017.

85 OECD, *Aligning Development Co-operation and Climate Action*, (Paris, OECD Publishing, 2019).

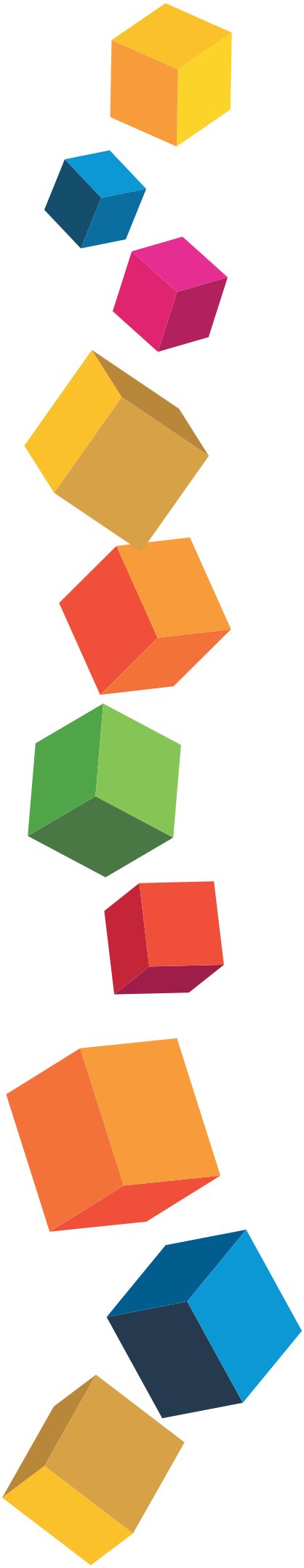
86 UNFCCC, document FCCC/CP/2024/6/Add.2–FCCC/PA/CMA/2024/8/Add.2.

87 UNFCCC, document FCCC/PA/CMA/2023/L.17.

88 *Review of Climate Ambition in Asia and the Pacific: Raising NDC Targets with Enhanced Nature-Based Solutions with a Special Feature on Engagement of Children and Youth in Raising National Climate Ambition,* (United Nations publication, 2022).

89 *Asia-Pacific Disaster Report: Seizing the Moment, Targeting Transformative Disaster Risk Resilience* (United Nations publication, 2023)

90 Ibid.



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