Green Public Investment Management
Governance Aspects of Strengthening Infrastructure Sustainability

Summary. This brief discusses the importance of green public investment management (PIM) for supporting economic growth and attaining infrastructure sustainability in the Asian Development Bank (ADB) developing member countries (DMCs), assesses options for identifying priority green infrastructure governance reform needs, and seeks to facilitate discussion on the further strengthening of ADB support to green infrastructure governance in the DMCs. It argues that better green PIM will help DMCs improve their public investment outcomes, meet their adaptation and mitigation objectives, and strengthen infrastructure sustainability. The brief summarizes the main assessment tools that can help countries strengthen their PIM and green PIM institutions. In line with the approach set out in ADB’s Supporting Quality Infrastructure in Developing Asia, the brief argues that the longer-term effort of building sustainable institutions in DMCs would best be accompanied by longer-term and programmatic support from international organizations. This would include both lending—in the form of investment (project) loans for PIM reforms and/or a sector development program that combines policy-based and investment lending—and a sustained increase in related technical assistance (TA) and training.

This Governance Brief has been supported under ADB Technical Assistance 6749: Improving Infrastructure and State-Owned Enterprise Governance for Sustainable Investment and Debt Management.

Background and Context

The global climate emergency is here, and the fight against it will be won or lost in Asia and the Pacific. Most ADB member countries in Asia and the Pacific, but particularly the DMCs, are at high or heightened risk from climate change, including the resulting increased intensity and frequency of extreme weather events. At the same time, countries in Asia and the Pacific account for more than half of all global carbon dioxide (CO₂) emissions, and some of the DMCs are among the largest global contributors to the increased atmospheric concentration of greenhouse gases (GHGs), particularly CO₂. With the increased atmospheric concentration of CO₂ being
“man-made”—reflecting a range of human activities such as burning fossil fuels (e.g., coal, natural gas, and petroleum), manufacturing cement, producing fertilizer, clearing forests, and various other changes in land use—the increased CO₂ concentrations could also be “man-unmade.”

Accordingly, the global community has been ramping up its work on the global climate emergency. Fundamental in this regard is the Paris Agreement, which aims at “holding the increase in the global average temperature to well below 2°C Celsius above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C Celsius above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change.” Since then, other important actions have been taken to help countries achieve the goals of the Paris Agreement. Key in this regard are the nationally determined contributions (NDCs), which are critical for achieving the Paris Agreement’s long-term goals.

More recently, the Coalition of Finance Ministers for Climate Action, which brings together fiscal and economic policymakers from over 70 countries, has been advancing the climate action agenda and spearheading the global transition toward low-carbon resilient economic development.

Notwithstanding the efforts of the global community, achieving energy sustainability based on renewable energy sources remains difficult. In particular, the global efforts to “unmake” CO₂ emissions have become even more complicated by new global challenges and threats to economic development, including those stemming from the coronavirus disease (COVID-19) pandemic and the Russian invasion of Ukraine. The latter has triggered a rush to replace nonrenewable (“dirty”) energy sources from the Russian Federation with dirty energy sources from elsewhere, requiring substantial additional dirty investments to address immediate energy security needs. At the same time, massive additional investments for renewable energy sources are being pursued with even greater urgency, to secure energy needs over the medium to long term.

### ADB’s Approach to Addressing Climate Change and Supporting Disaster Resilience

ADB has fully embraced the international climate action agenda, guided by the Paris Agreement Alignment (PAA) framework and the Quality Infrastructure Investment (QII) Principles.

The 2018 PAA framework, which builds on the 2015 Paris Agreement, has six main building blocks that are seen as the core areas for aligning the operations of the multilateral development banks (MDBs) with the objectives of the Paris Agreement.

As a signatory of the PAA, ADB has been building its climate-related operations to support its DMCs around three core dimensions: (i) strengthening ADB’s project-related operations related to mitigation and adaptation, including through the selection of appropriate projects and effective project financing; (ii) strengthening financing and resource mobilization so as to increase ADB’s lending envelope for projects that address climate change and improve disaster resilience; and (iii) assisting its DMCs in building strong institutions that will use resources effectively and efficiently.

By contrast, the 2019 QII Principles set out nonbinding principles that define a common overall strategic direction toward quality infrastructure investment by the members of the Group of

---

6 The Paris Agreement is an international treaty that came into force on 4 November 2016; it has been signed by 193 parties. The agreement reflects commitments from all parties to reduce their GHG emissions, work together to adapt to the impacts of climate change, and foster climate resilience. It also asks all parties to strengthen their commitments over time; calls on advanced economies to support other countries in their climate mitigation and adaptation efforts; and suggests a framework for monitoring and reporting on the progress of all parties toward addressing their climate-related goals. Implementing the agreement is also essential for achieving the Sustainable Development Goals (SDGs). See: United Nations (UN). 2015b. UN Framework Convention on Climate Change (UNFCC). Paris, UN. 2015a. The Paris Agreement. https://www.un.org/en/climatechange/paris-agreement.


9 The PAA defines the common approach of the nine major MDBs to integrating the Paris Agreement into their own operations.

For further detail, see: The MDBs’ Alignment Approach, Joint declaration.
20 Twenty (G20). The Principles also help guide ADB operations beyond its own PAA commitments.

In implementing the PAA framework and advancing the QII Principles, ADB initially focused on establishing a comprehensive vision and framework to guide its lending operations. Most fundamental in this respect are ADB’s Climate Change Operational Framework 2017–2030; its Strategy 2030; and its Operational Plan for Priority 3: Tackling Climate Change, Building Climate and Disaster Resilience, and Enhancing Environmental Sustainability, 2019–2024. In addition, ADB has established operational guidelines for its day-to-day climate-related work across the bank’s broad spectrum of operations. As a result of these efforts, climate change and disaster risk management have been mainstreamed into project lending operations, among others, by climate- and disaster-proofing projects in key sectors (e.g., agriculture, energy, transport, and water), enhancing climate- and disaster-resilience measures, accounting for GHG emissions in energy and transport sector projects, assessing the social cost of carbon emissions in the economic analysis of projects, and by integrating climate risk and GHG emissions into ADB’s safeguards policies.

These efforts have enabled ADB to increase its climate lending and climate-related resource mobilization, allowing its DMCs to advance their “green” (i.e., low-carbon and climate-resilient) investment agendas. More specifically, since the Paris Agreement was established in 2015, ADB has doubled its climate financing, thereby helping its DMCs achieve significant gains, particularly in the mitigation of climate change. Having renewed its commitment to the Paris Agreement recently, including by pledging to align all its lending operations fully with the Paris Agreement, ADB has also announced its ambition to deliver climate financing to its DMCs of $100 billion during 2019–2030. In line with its commitment and vision, ADB has been mobilizing the necessary financing and resources for the building blocks of the PAA.

Looking ahead, ADB will continue to strengthen its climate-related project lending operations in line with the PAA, and will help advance the international agenda regarding resilient infrastructure. Given the goal of sharpening ADB’s focus on climate outcomes, a recent internal ADB review will help the bank to strengthen further the climate relevance of its project design, clarify some issues related to climate finance and GHG accounting, improve climate risk and adaptation assessment methodologies, enhance the monitoring of climate actions and outcomes, and to reassess its approach regarding the social cost of carbon. Accordingly, ADB has issued internal guidelines to align its operations with the Paris Agreement’s climate mitigation, adaptation, and resilience goals.

At the same time, ADB will continue to advance international efforts related to building climate-
and disaster-resilient infrastructure, among others through its commitment to the Sendai Framework,\textsuperscript{18} engagement with the G20, ongoing contributions to various global infrastructure forums, and membership in the Coalition for Disaster Resilient Infrastructure.

In this context, ADB continues to be fully committed to advancing the full PAA framework and all the QII Principles. Since 2018, much of the MDBs’ attention in implementing the PAA has been on building blocks 1–3 (mitigation, adaptation, and climate finance). The MDBs, both jointly and individually, have also made much progress on building blocks 5–6 (reporting and aligning their internal activities). The focus has been on the project-lending operations of the MDBs, which was a natural choice. Less attention has been paid by the MDBs to Building Block 4 (engagement and policy development support), which largely concerns support for institution building in DMCs, and ADB is no exception in this regard. There is a parallel pattern in the work on advancing the QII Principles, as the international community has focused more closely on advancing the principles that could more easily be reflected in project lending (principles 2–5) than the two broader principles: Principle 1 (on the general impact of infrastructure investment on sustainable growth and development) and Principle 6 (on infrastructure governance).

Against this background, ADB will also assist its DMCs in addressing those PAA framework building blocks and QII Principles that have taken more of a “back seat” so far. First and foremost, this will include continued ADB involvement in building the capacity of its DMCs to integrate climate change issues into their infrastructure investments, including when designing projects that can be supported by ADB financing. At the same time, ADB will pay stronger attention to the broader institutional and governance arrangements in its DMCs that are crucial for the effectiveness and efficiency of infrastructure investments.

Further strengthening ADB support for green infrastructure governance, i.e., the institutions and frameworks needed for building low-carbon and resilient infrastructure, is of particular importance. In general, ADB views inadequate capacity for PIM as a main constraint on reducing infrastructure investment gaps and ensuring an effective allocation of public resources that would maximize the economic and social benefits of infrastructure investment. Accordingly, ADB has started to increase its delivery of TA to help DMCs strengthen their infrastructure governance, including PIM and other key drivers of quality infrastructure. ADB is keen to strengthen further its support for infrastructure governance, with a particular focus on green governance.\textsuperscript{19}

Why Strengthen Infrastructure Governance?

Achieving the Paris Agreement climate targets will first and foremost require a lot of additional infrastructure spending. Ramping up infrastructure spending, or “closing the infrastructure spending gap,” will be crucial for achieving the Sustainable Development Goals (SDGs) and the Paris Agreement goals. Estimates suggest that low-income developing countries (LIDCs) would need to invest a cumulative 36 percentage points of gross domestic product during 2019–2030 to meet the SDGs by the end of that period, an almost impossible undertaking.\textsuperscript{20}
Focusing on green public investment would help the DMCs close their infrastructure spending gaps. There exists a two-way relationship between climate change and infrastructure investment. Ongoing climate change and the resulting increase in severe weather events increase the damage done to existing infrastructure assets and the losses due to disruptions in infrastructure services; on the other hand, public investment today improves a country’s resilience and ability to adapt to climate change and withstand severe weather events tomorrow. Hence, ignoring issues related to climate change adaptation and disaster risk management will reduce the value of infrastructure assets, and ultimately drive up the cost of public investment. Climate- and disaster-responsive public investment will thus improve resilience, contribute to a country’s objectives related to climate change mitigation and adaptation, and support disaster risk management. It will thereby contribute to a country’s efficient use of public resources by considering how climate change affects the future value of public assets and related maintenance costs. In this context, ADB’s project lending operations support the DMCs in advancing their green public investment agendas.

However, achieving the Paris Agreement climate targets will require the DMCs to improve their infrastructure governance, in order to close their public investment efficiency gaps. Poor infrastructure governance manifests itself in an overall low efficiency of public investment spending. Estimates by International Monetary Fund (IMF) staff suggest that there is much room for improving public investment efficiency, with around 35% of the invested resources “lost” on average during the public investment process. Still, estimated efficiency losses vary widely across income groups and regions, with poorer countries usually having larger efficiency gaps. LICs, for example, have an average estimated efficiency gap ranging from 44% to 53%, depending on the methodology used, while in advanced economies the average efficiency gap ranges from 15% to 27%, again depending on the methodology used. Based on a hybrid indicator, countries in the Asia and Pacific region are estimated to have an average efficiency loss of 32%, which is close to the global average, and compares

**Figure 1: Capital Investment Requirements by 2030**

Scenario for Annual Investment Spending that Is Compatible with the Sustainable Development Goals and Paris Agreement (annual average % of regional GDP)

<table>
<thead>
<tr>
<th>Region</th>
<th>Flood protection</th>
<th>Irrigation</th>
<th>Water supply and sanitation</th>
<th>Transport</th>
<th>Electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>South Asia</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>East Asia and Pacific</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

GDP = gross domestic product.

with the 21% in Europe and 48% in Sub-Saharan Africa.\(^{21}\)

These efficiency gap estimates for public investment spending are indicative of the amount of wasted spending and point to potential institutional weaknesses. The estimated efficiency gaps may reflect a broad range of different issues—including, for example, different forms of corruption or bid rigging, and shortcomings in infrastructure governance, including weaknesses in project design, appraisal, selection, or execution, all of which will result in elevated costs and/or cost overruns.\(^{22}\)

Strengthening infrastructure governance will be key for supporting economic growth and securing planned infrastructure outcomes in an efficient manner. Strengthening infrastructure governance will help reduce a large portion of existing public investment efficiency losses, and will make government spending go further, including for achieving climate outcomes and improving disaster resilience in the DMCs (“getting more bang for the buck”). Available evidence suggests that good infrastructure governance (in the form of good PIM institutions) is highly correlated with public investment efficiency. Accordingly, for a country with a median efficiency gap, improvements in PIM practices could be expected to reduce the average public investment efficiency gap by half.\(^{23}\)

This suggests that improvements in infrastructure governance are important for complementing efforts to increase infrastructure spending and for ensuring that scarce financial resources do not go to waste.

Climate change, along with the related increases in infrastructure risks and uncertainties, adds to the urgency of improving infrastructure governance to avoid falling further behind. In general, “climate proofing” makes infrastructure investments more expensive, but not “climate proofing” will also be costly, as infrastructure investments will be less resilient to climate change. This means that climate change drives up efficiency losses, and therefore the efficiency gaps between infrastructure spending that takes climate change into account and infrastructure spending that does not. This gives additional urgency to improving infrastructure governance and considering climate change issues in undertaking infrastructure investments. At least for some areas of the public investment cycle, this may mean that governments will have to use new approaches and build entirely new PIM capacities.

### How to Go About Strengthening Public Investment Management

Strong PIM, including green PIM, with its focus on strengthening infrastructure resilience, helps countries carry out public investments efficiently and allows public investment budgets to go further. This holds for traditionally procured public investment and infrastructure spending, and for public–private partnership (PPP) projects (i.e., infrastructure assets that involve at least some private participation in the form of financing and/or management). As in all reform undertakings, prioritization and trade-offs will be inevitable, including, for example, those involving the environmental, social, and economic costs and benefits of different PIM and green PIM reforms. With government budgets of DMCs frequently under pressure, priority should be given to reforms that are both most urgent and important (i.e., those offering the most “bang” in terms of outcomes).

**There are several assessment tools that can help DMCs strengthen their green PIM, including in terms of reform prioritization.** All existing assessment tools evaluate the strengths and weaknesses of a country’s PIM institutions against a set of best–practice criteria for different institutions. In general, this allows governments to assess their own PIM and green PIM institutions (or a subset of them) against the defined best practice and the actual functioning of PIM and green PIM institutions of other countries. Most tools also take into account the broader aspects of PIM, including fiscal transparency (e.g., budget cycles), external oversight (e.g., by national independent institutions), coordination with state-owned enterprises (SOEs) and subnational governments, and tax issues (e.g., government role

---


\(^{23}\) For additional details, see: Baum, Mogues, and Verdier (2020).
in carbon taxation, cash transfer for adaptation or mitigation, and in clean and resilient infrastructure investment). Also, all country assessments come with a set of recommendations for strengthening different PIM and green PIM institutions. Still, the assessment tools differ significantly in form, format, focus, and scope. Specifically, some assessment tools are more comprehensive, covering PIM institutions along the entire investment cycle (from project planning to implementation), while others focus on only a subset of PIM institutions. Similarly, some assessment tools look explicitly at both the PIM legal framework and actual PIM practice, while others do not. The assessment tools also differ in the extent to which they consider the enabling environment that surrounds the different PIM and green PIM institutions.

The following subsections review five major PIM assessment tools, highlighting their main features and the extent to which they cover green PIM issues. Four of the assessment tools reviewed here have a single institutional sponsor: the IMF, the World Bank (two tools), and the United Nations Development Programme (UNDP), while the fifth represents a collaborative effort among different institutions. In addition to these assessment tools, there are also various guidance frameworks, which are mostly aspirational in nature. In contrast to the assessment tools, the guidance frameworks lack follow-up: There are no dedicated evaluations of existing country institutions and practices against the guidance provided and, hence, no country-specific actionable recommendations either.

**International Monetary Fund: Public Investment Management Assessment Tool and Climate Module**

The IMF’s Public Investment Management Assessment (PIMA) and Climate–PIMA (C-PIMA) module are the only dedicated and comprehensive assessment tools for assessing both PIM and green PIM, respectively. The PIMA–C-PIMA combo is embedded in the IMF’s overall strategy for helping its member countries address climate-related challenges; it is applicable to all countries and covers the full project investment cycle. Over 80 assessments have been carried out, using the original and the revised PIMA tools. The C-PIMA module was added in 2021 to assist governments in identifying potential improvements in PIM institutions, so as to build low-carbon infrastructure that will be resilient to the effects of climate change.

In general, the PIMA and C-PIMA tools view the public investment process as a “chain” that can only be as strong as its weakest link. That is, the efficiency of public investment in a country is to a great extent determined by the weakest parts of the country’s PIM institutional framework. For example, having great investment planning institutions is not enough for achieving efficient public investment spending outcomes if implementation is weak. Similarly, having great implementation institutions is not enough for achieving efficient public investment spending outcomes if investment planning institutions are weak. This approach naturally lends itself to identifying “technical” or “objective” bottlenecks that hinder effective infrastructure governance.

More specifically, the PIMA tool assesses and scores a total of 15 PIM institutions across the three stages of the public investment cycle: planning, resource allocation, and implementation. Significantly, each of the 15 institutions is assessed separately for its design (i.e., the organizational structures, policies, rules, and procedures that exist on paper) and its effectiveness (i.e., to what extent the intended design is put into practice). In addition, each PIMA assesses three crosscutting factors that affect the overall effectiveness of PIM: (i) legal and regulatory frameworks, (ii) staff capacity, and (iii) information technology systems. Each PIMA provides country-specific, comprehensive, and prioritized recommendations for strengthening infrastructure governance.

---


27 For more detail, see IMF.2021b. Strengthening Infrastructure Governance for Climate-Responsive Public Investment. IMF Policy Papers. No. 2021/076. Washington, DC. A total of 30 C-PIMAs had been carried out by the of May 2023.
The C-PIMA, which can either be carried out alone or combined with a PIMA, is designed around five priority areas that are seen as key for creating climate-resilient and low-carbon infrastructure. These are planning, coordination across government, project appraisal and selection, budgeting and portfolio management, and fiscal risk management. The rationale for inclusion in the C-PIMA is different for each priority area.

- **Planning.** Putting in place public sector infrastructure that is resilient to climate change requires that national and sectoral plans, and the associated investment portfolios, be aligned with climate objectives. The planning phase is particularly important for incorporating climate change issues into spatial planning and construction requirements.

- **Coordination across government.** Public investment processes involve many institutions. Usually, these include various layers of government (e.g., national, regional, and local), SOEs, private companies, and PPP entities. The effective integration of climate change into PIM requires coordination across all these bodies and entities as well.

- **Project appraisal and selection.** These are crucial for decision-making processes on infrastructure projects, as they determine which projects are carried out. Effective green PIM requires including climate-related mitigation and adaptation aspects in the appraisal and selection of investments.

- **Budgeting and portfolio management.** Green public investment and infrastructure maintenance spending should be budgeted for and reported on through the standard fiscal institutions and frameworks, including the annual budget, medium-term expenditure framework, and government financial statements. Public asset management and ex post audits and reviews should integrate climate change-related issues and objectives as well.

- **Fiscal Risk Management.** Climate change increases the fiscal risks related to public investment and infrastructure, and therefore can have large impacts on government budgets. The fiscal risks coming from climate change need to be analyzed and considered when developing management strategies for disasters triggered by natural hazard. Similarly, risk-mitigation strategies also need to consider issues and objectives related to climate change.

These priority areas are further elaborated in Figure 3, which focuses on key fiscal institutions for assessing green PIM issues. Based on the assessment of each of these areas, each C-PIMA provides prioritized country-specific recommendations for improving the climate responsiveness of PIM institutions.

**The C-PIMAs also inform the IMF’s Climate Macroeconomic Assessment Program (CMAP), which looks at the various macroeconomic implications of climate change.** The CMAP, which builds on the earlier Climate Change Policy Assessment (CCPA) framework, is currently undergoing testing and development. The CMAP is intended as a diagnostic tool for analyzing policies and preparedness related to climate change in climate-vulnerable countries. CMAPs look at both adaptation and mitigation policies and feature a macroeconomic modeling approach that allows for the effects of climate change adaptation of investment on economic growth and debt sustainability. Also, the CMAP uses a condensed C-PIMA to assess overall PIM readiness.

**United Nations Development Programme: Climate Public Expenditure and Institutional Review**

The Climate Public Expenditure and Institutional Review (CPEIR) was the first diagnostic to assess green aspects of public financial management (PFM); it is now one of several climate-related UNDP diagnostic assessment tools. The CPEIR framework, set out already in 2012, is reviewed here as an example of a tool that assesses various aspects of PFM and climate change, often with a focus on government budgets or budget financing. Other examples include the Pacific Climate Change

---

28 These areas are linked closely to the 15 PIMA institutions; also see Figure 2 in this report.

29 The description of the C-PIMA tool is based on the following sources, which also provide additional detail: IMF 2021b and IMF 2022.

30 Compared with the earlier CCPAs, CMAPs have strengthened their focus on mitigation. For example, they also look at the design of carbon pricing and its associated distributional impacts.

btw = between, IT = information technology.


C1. Climate-aware planning
1a: National and sectoral public investment planning
1b: Spatial planning-land use regulations and building codes
1c: Centralized guidance and support for planning

C2. Coordination between entities
2a: Coordination across central government
2b: Coordination with subnational governments
2c: Coordination with and oversight of public corporations

C3. Project appraisal and selection
3a: Project appraisal with climate change
3b: PPP framework and allocation of climate risks
3c: Project selection with climate change

C4. Budgeting and portfolio management
4a: Tagging of climate-related public investment expenditures
4b: Ex post reviews of climate outcomes
4c: Asset management and maintenance with climate change

C5. Risk management
5a: National disaster risk management strategy
5b: Ex ante financing mechanisms to manage climate risks
5c: Fiscal risk analysis with climate change

PPP = public–private partnership.

Finance Assessment Framework (PCCFAF), and work related to the Climate Change Budget Integration Index (CCBI). These have been complemented by Climate Change Financing Frameworks (CCFFs), also referred to as Climate Fiscal Frameworks (CFFs), by various frameworks and strategies related to the financing of NDCs under the Paris Agreement, and by Domestic Finance Assessments (DFAs) for specific sectors.

CPEIRs offer both a qualitative and quantitative assessment of a country’s public expenditures in relation to climate change. The CPEIR methodology, which draws from the World Bank’s Public Expenditure Review (PER), uses a three-pillar structure (policy analysis, institutional analysis, and climate public expenditure analysis). CPEIRs provide a starting point for assessing climate-related spending and mainstreaming climate change into PFM systems. CPEIRs have shown that climate change expenditure has increased in absolute terms, but not always as a share of total spending. They have contributed to a greater awareness of climate change risks and opportunities and strengthened the political dialogue on climate change, although, often, this had no direct impact on expenditure priorities.

CPEIRs were instrumental in defining “green PFM,” although the pace of delivery has been slow, and the framework has not been updated recently. The first CPEIR was carried out in Nepal in 2011; since then, 12 countries in Asia and the Pacific have applied the tool, although only one of these is less than 5 years old. While most CPEIRs follow a standardized approach and try to classify climate-related public expenditure, the lack of an agreed-upon international definition for the degree to which expenditures contribute to climate adaptation and/or mitigation has meant that definitions differ between countries, thus making cross-country comparisons difficult. Wide differences in the format of available CPEIR county reports and a perceived lack of uptake of CPEIR recommendations led to a review of the framework in 2022, which will require further follow-up.

Public Expenditure and Financial Accountability Main Tool and Climate Diagnostic

The Public Expenditure and Financial Accountability (PEFA) assessment tool evaluates a country’s PFM system against the seven pillars of PFM performance; a climate diagnostic tool (Climate PEFA) is still undergoing pilot testing.

33 The PCCFAF was developed to assess the specific climate challenges faced by Pacific island economies. Compared with the CPEIR methodology, it includes a more comprehensive assessment of available financing sources and of in-country capacities. PCCFAFs combine the analysis of climate change and disaster risk. In 2019, the framework was extended to also assess aspects of gender and social inclusion. See also: Pacific Islands Forum Secretariat and the Pacific Community. 2019. Pacific Islands Forum Secretariat and Pacific Community. 2019. Regional Synthesis Report of the Pacific Climate Change and Disaster Risk Finance Assessments. Suva, Fiji: The Pacific Community.
The PEFA tool assesses the likely impact of a broad range of PFM institutions on three desirable budgetary dimensions:

- **Aggregate fiscal discipline**, which refers to effective control of the overall budget and the management of fiscal risks.
- **Strategic allocation of resources**, which assesses budget planning and execution in line with government priorities and policy objectives.
- **Efficient service delivery**, which involves using budgeted revenues to achieve the best levels of public services within the available resources. 40 Climate PEFA, released in 2020 on a pilot basis, seeks to assess the responsiveness of a country’s overall PFM system to its climate objectives. A finalized Climate PEFA diagnostic tool is to be released based on the findings during the pilot phase. 41

Climate PEFA consists of 14 indicators that gauge the extent to which a country’s PFM system can support the implementation of the government’s climate change policies. 42 More specifically, Climate PEFA focuses on whether a country’s laws and regulations, institutions, systems, procedures, and processes contribute to implementing climate change activities throughout the budget cycle. This includes the extent to which the planning and design of budgetary policies consider (i) the issues related to climate change, (ii) the budget allocations necessary for implementation, (iii) the tracking mechanisms to ensure that implementation matches intentions, and (iv) the monitoring and evaluation of the efficiency and effectiveness of these policies and investments. There are 14 Climate PEFA indicators in all, each of which has between one and four sub–indicators (“dimensions”). The Climate PEFA indicators are fully aligned with the main PEFA tool and mirror the mapping of PFM practices, institutions, processes, and systems that are part of a main PEFA tool. In this context, Climate PEFA also looks at the climate responsiveness of a country’s revenue administration (i.e., the extent to which revenue instruments support climate change responses).

While focused on a broader set of PFM institutions, Climate PEFA also zooms in on four areas of green PFM. These include climate-related provisions in the regulatory framework for PIM, climate-related project selection, climate-related provisions for project appraisal, and the reporting from implementation agencies and entities. All four fall under PEFA’s Pillar III (management of assets and liabilities) and are mapped into one of the three PEFA dimensions (i.e., aggregate fiscal discipline, strategic allocation of resources, and efficient service delivery).

In addition, Climate PEFA looks at areas that are closely related to green PIM, such as climate-responsive nonfinancial asset management and public procurement. Climate-responsive asset management also falls under PEFA’s Pillar III (management of assets and liabilities), whereas climate-responsive public procurement falls under Pillar V (predictability and control in budget execution). The four procurement dimensions—a climate-responsive procurement framework, climate-responsive public procurement operations, climate-responsive public procurement monitoring, and climate-responsive public procurement reporting—are all mapped into the main PEFA’s dimension of efficient service delivery.

World Bank’s “Must–Haves”: Diagnostic Tool and Infrastructure Governance Tool

Like ADB, the World Bank fully integrates climate change issues into its assessments of the infrastructure projects it finances. This happens through a three–step process that includes screening projects for climate and disaster risks, conducting a GHG accounting, and assessing a shadow carbon price for all investment undertakings. 43 The World Bank’s Environmental and Social Framework (ESF), in place since 2018,

---


41 Samoa is the only country in the Asia and Pacific region that was included in the Climate PEFA pilot phase. The assessment, led by the IMF, was done in 2021, with the report available from the PEFA website (www.pefa.org).


43 Climate and disaster-risk screening facilitates the assessment and management of climate risks in investment projects. It shows climate risk exposures and indicates options for risk mitigation in the design of projects. GHG accounting seeks to quantify a project’s impact on GHG emissions, indicating both the project’s gross and net GHG emissions. Assessing the shadow price of carbon helps put a price on a project’s GHG emissions by integrating the carbon externality into the economic analysis of the project. Also see: World Bank. 2017. *World Bank Environmental and Social Framework*. Washington, DC; and IMF, Strengthening Infrastructure Governance.
Table 1: Public Investment Management and Green Public Investment Management Assessment Tools—An Overview

<table>
<thead>
<tr>
<th>Institutional Sponsor</th>
<th>PEFA/PEFA-C</th>
<th>PIMA/C-PIMA</th>
<th>CPEIR&lt;sup&gt;a&lt;/sup&gt;</th>
<th>InfraGov</th>
<th>Must-Haves Diagnostic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall focus of the tool</strong></td>
<td>PFM</td>
<td>PIM institutions (design and performance)</td>
<td>Public expenditure and climate change</td>
<td>PIM institutions</td>
<td>PIM institutions</td>
</tr>
<tr>
<td><strong>Comprehensiveness of the tool’s PIM focus</strong></td>
<td>Not comprehensive; PIM assessed as part of PFM</td>
<td>Comprehensive</td>
<td>Not comprehensive, PIM assessed in the context of assessing public expenditure</td>
<td>Comprehensive; one of three pillars of the World Bank’s InfraSAP framework</td>
<td>Comprehensive</td>
</tr>
<tr>
<td><strong>Explicit climate focus</strong></td>
<td>Yes (PEFA-C), but focused on broader PFM issues</td>
<td>Yes (C-PIMA)</td>
<td>Yes</td>
<td>Limited (featuring in one of the 11 dimensions; assessment relying in part on PEFA-C)</td>
<td>None</td>
</tr>
<tr>
<td><strong>Country focus</strong></td>
<td>All countries and their subnational entities</td>
<td>All countries</td>
<td>Mostly low-income countries</td>
<td>IDA-eligible low-income countries</td>
<td>All countries</td>
</tr>
<tr>
<td><strong>Performance scoring</strong></td>
<td>Yes</td>
<td>Yes, separate scores for design and performance</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Number of assessments completed</strong></td>
<td>PEFA: About 600 (national and subnational) in 153 countries.</td>
<td>PIMA: 80 C-PIMA: 30</td>
<td>36 in 31 countries</td>
<td>20+ (including both narrow sectoral InfraGov and broad InfraSAP assessments)</td>
<td>Up to 100 (exact number and countries not public)</td>
</tr>
<tr>
<td><strong>Comparability across assessments</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>No, specific PIM-related focus differs across assessments</td>
<td>No, hampered by selective assessments of the 11 dimensions, often in the context of broader InfraSAPs</td>
<td>Yes, in principle, but assessments are significantly different in form and content</td>
</tr>
</tbody>
</table>


<sup>a</sup> There exist several CPEIR “spin-offs,” i.e., frameworks, including UNDP-sponsored frameworks, that build on the CPEIR, but have a somewhat different focus. An example is the UNDP’s Climate Change Financing Framework (CCFF). The information here refers to the original CPEIR framework, which is still in use.

<sup>b</sup> Current PEFA partners are the World Bank, IMF, European Commission, and government agencies and institutions from six European countries.

## Table 2: Asia and the Pacific—Selected Country Assessments of Public Financial Management and Public Investment Management Institutions

<table>
<thead>
<tr>
<th>Country</th>
<th>C-PIMA</th>
<th>CPEIR</th>
<th>PCCFAF</th>
<th>CCFF/CFF</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan &lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>2016</td>
<td>PEFA (2018)</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>2022</td>
<td></td>
<td></td>
<td></td>
<td>PIMA (2022)</td>
</tr>
<tr>
<td>PRC</td>
<td></td>
<td></td>
<td>2015</td>
<td></td>
<td>PEFA (eight subnational assessments only)</td>
</tr>
<tr>
<td>Cook Islands</td>
<td>2022</td>
<td></td>
<td></td>
<td></td>
<td>PEFA (2015, 2021), PIMA (2022)</td>
</tr>
<tr>
<td>Federated States of Micronesia</td>
<td></td>
<td>2018</td>
<td></td>
<td></td>
<td>CCPA (2019)</td>
</tr>
<tr>
<td>Fiji</td>
<td></td>
<td>2015</td>
<td></td>
<td></td>
<td>PEFA (2020)</td>
</tr>
<tr>
<td>French Polynesia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PEFA (2015)</td>
</tr>
<tr>
<td>India &lt;sup&gt;b&lt;/sup&gt;</td>
<td>2022b</td>
<td>2015, 2016, 2016</td>
<td>2015, 2016</td>
<td>PIMA (2022) &lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Kyrgyz Republic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PPEER (2019)</td>
</tr>
<tr>
<td>Lao PDR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PEFA (2019)</td>
</tr>
<tr>
<td>Malaysia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PIMA (2017)</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td></td>
<td></td>
<td>2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PEFA (2020)</td>
</tr>
<tr>
<td>Nauru</td>
<td></td>
<td></td>
<td>2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Caledonia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PEFA (2019)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Continued on next page
### Table 2 continued

<table>
<thead>
<tr>
<th>Country</th>
<th>C-PIMA</th>
<th>CPEIR</th>
<th>PCCFAF</th>
<th>CCFF/CFF</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palau</td>
<td></td>
<td>2017</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PEFA (2015, 2020)</td>
</tr>
<tr>
<td>Samoa</td>
<td>2012</td>
<td></td>
<td>PEFA (2014), PEFA-C (2021), CMAP (2022)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solomon Islands</td>
<td></td>
<td>2017</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>2012</td>
<td></td>
<td>PIMA (2016)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Note: Not all documents are publicly available.

- This refers to the subnational PIMA/C-PIMA carried out only for the state of Tamil Nadu.
- The CCFF was called State Action Plan Financing Framework (SAPFIN) and limited to three states (Bihar, Chhattisgarh, and Kerala).
- The CPEIR occurred at the provincial level.
- The 2016 CPEIR occurred at the district level.
- The 2015 CPEIR was updated in 2017.
- This included partial use of the PCCFAF framework.

enables it and its borrowing member countries to improve the management of environmental and social risks and development outcomes. The ESF integrates climate change and disaster risk issues into the World Bank’s environmental and social due-diligence processes.

At the same time, the World Bank does not have its own green PIM assessment tool, although green PIM elements feature in several World Bank initiatives. Up to the release of the IMF’s C-PIMA, in 2021, infrastructure governance diagnostic tools were not focused on dealing with the impact of climate change on public investments. In particular, the World Bank’s “must-haves” diagnostic tool, which has been the “workhorse” of the World Bank’s PIM assessments until recently, does not explicitly feature considerations related to climate change.44 Yet, the World Bank has focused on climate-related PIM issues in different contexts.45

The World Bank’s most recent PIM-related initiative, the Infrastructure Governance (InfraGov) assessment, released at the end of 2020, includes various green PIM issues that relate to resilience and climate change.46 The new tool builds on existing World Bank tools to assess infrastructure governance, and focuses on “three governance buckets” (project life cycle, crosscutting principles, and service provision) that comprise a total of 11 dimensions. Resilience and climate change feature as one of four crosscutting principles for the development of infrastructure projects.47 The InfraGov tool can either be used to complete the Governance Pillar under the World Bank’s Infrastructure Sector Assessment Program (InfraSAP) or to undertake a stand-alone assessment. The latter could either be comprehensive, including all 11 dimensions, or it could focus on a subset of the 11 dimensions, with the selection of the focus areas to be defined in cooperation with country counterparts. The tool is sufficiently flexible to allow for assessing one or more of the 11 dimensions in any combination.

Overall, though, the InfraGov tool features a narrow approach to resilience and climate change that focuses on issues related to project appraisal and selection. Specifically, the assessment of Dimension 5 (resilience and climate change) is limited to four key questions, some supplementary questions, and several indicators that are largely drawn from other sources, including Climate PEFA assessments and third-party data. In contrast to the PIMA and C-PIMA or PEFA and Climate PEFA assessments, InfraGov assessments do not have their own country performance scoring. As a result, and similar to the “must-haves” diagnostic, InfraGov assessments are mostly of a qualitative nature and do not allow for ready cross-country comparisons.

The InfraGov tool is focused on International Development Association (IDA)-eligible (lower-income) countries, and the actual country assessments are quite heterogeneous. To date, the World Bank has carried out over 20 InfraGov country assessments as part of its “IDA19” commitments and plans to do up to 20 more over the next 3 years in the context of its planned “IDA20” commitments.48 As the actual InfraGov assessments do not look comprehensively at all 11 dimensions in each country (i.e., the assessments are selective and differ from country-to-country), the approach risks overlooking key areas needing improvement and reform. For example, actual InfraGov assessments may not look specifically at green PIM issues, even though the tool’s Dimension 5 (resilience and climate change) is seen as a crosscutting principle for the development of infrastructure projects. In general, the selective and heterogeneous nature of the assessments does not facilitate cross-country comparisons. A comprehensive review of the implementation of the InfraGov initiative is still outstanding.

---


45 See, for example: Xiao, D’Angelo, and Lê, Infrastructure Investment. They discuss options for a climate-focused PIM assessment.


47 The other three crosscutting principles are environmental and social considerations, transparency, and integrity.

48 The World Bank’s InfraGov work initially focused on meeting the IDA’s “IDA19” commitment to assess governance in at least 20 of the 55 IDA countries that had a rating of 3.0 or less on the World Bank’s Country Policy and Institutional Assessment (CPIA) indicator 16 (which looks at transparency, accountability, and corruption) when the IDA19 replenishment took place. The purpose has been to help IDA-eligible countries identify major governance gaps and bottlenecks related to their infrastructure investments, and to inform policies and/or regulations to address these gaps and bottlenecks.
Strengthening Green Public Investment Management: A Pragmatic Approach

Both theory and available evidence point to the importance of green PIM for achieving effective, efficient, and fiscally sustainable low-carbon and climate-resilient infrastructure investments. That is, strengthening PIM and green PIM institutions and practices can be expected to reduce the costs of public investment, enhance economic growth, and help avoid debt distress. Given significant weaknesses in the PIM and green PIM institutions and practices in many DMCs, reform needs are extensive, and so is the need for additional external support for reform. To close the existing investment efficiency gaps, the DMCs could follow a pragmatic approach. This would include taking stock of all recent assessments of PIM and green PIM institutions and practices, reviewing the relevant reform recommendations, and intensifying the dialogue with the organizations that have carried out the assessments.49

Results can only be expected from longer-term and sustained PIM and green PIM reform efforts.50 Institution building is not done overnight, and building PIM and green PIM capacities is a long-term undertaking that focuses on strengthening both PIM institutions and the human capacities needed to operate these institutions effectively and efficiently. Likewise, effective support efforts to accompany the processes of strengthening specific PIM and green PIM institutions and fostering human capacity development across the full public investment cycle (from planning to implementation and operation) will need to take a long-term (or at least multiyear) programmatic view.

PIM and green PIM reforms need to be well coordinated with other reform efforts, particularly in the broader PFM area. PIM and green PIM reforms are not undertaken in isolation, and they are best embedded in (or coordinated with) other reforms, particularly reforms of a country’s PFM systems and institutions. For example, reforms to strengthen a country’s medium-term fiscal framework (MTFF)—a common PFM reform area—will have important implications for public investment planning, including the provision of medium-term guidance. Similarly, improving public investment planning will provide important data for MTFFs. Therefore, efforts to strengthen PIM and green PIM institutions will need to consider the PFM reforms already underway or being planned. Such coordination can often be complex, particularly if different levels of government or public entities outside of the central government are involved. For example, when SOEs manage large public assets and carry out public investment reforms to strengthen PIM and green PIM, it will usually be necessary also to improve the corporate governance structure of the SOEs.

These suggestions align well with recent findings by the World Bank’s Independent Evaluation Group (IEG).51 The IEG argues that effective support for PIM reforms requires both a long-term engagement and different forms of support. It finds that World Bank support to PIM reforms in its IDA-eligible member countries was insufficient for achieving meaningful reform outcomes since it did not prioritize support for long-term PIM institution building. It argues that, instead, World Bank operations were overly focused on establishing PIM-related loan conditionality, particularly in the form of prior actions in the World Bank’s budget-support operations, and on using its technical support engagements to identify its loan conditionality. The IEG argues that achieving meaningful results would have required (i) establishing a clear reform vision to facilitate the sequencing of PIM reforms; (ii) providing support in the form of investment loans (e.g., for establishing PIM institutions and/or strengthening their operational capacities); (iii) linking public investment programs with investment budgets and project selection; (iv) putting in place ex ante and ex post evaluation tools and methodologies; (v) developing project management and monitoring manuals; and (vi) utilizing more programmatic and ongoing technical support to strengthen key PIM institutions across the project investment cycle.

Strengthening green PIM in the DMCs would need to include both lending—either project lending or policy-based lending—and a programmatic approach to TA and training. As highlighted in the IEG report, TA and training

49 The stock take would include both dedicated assessments, particularly C-PIMAs (currently the only dedicated green PIM assessment tool), and assessments that have some green PIM components (e.g., PEFA-C, InfraGov, and CPEIR). It would also include available data, including data from different QII-related indicators, as set out by the G20. See: G20, Compendium of Quality Guidance Note; and G20, Compendium of Quality Guidance Note.


are important complements to lending and financing, that is, building good green PIM and green investment programs in DMCs also requires sufficient human capacity. In this context, it will be important for ADB to strengthen further its support for TA and capacity building in the DMCs, including in the various line agencies involved in planning, preparing, and executing green investment projects. Such support could, for example, be integrated into a multiyear investment project or into a sector development program that support a country’s reform policies, along with a specific investment project linked to the program.

Further ADB support to PIM and green PIM reforms could be advanced on the basis of the comprehensive approach already in place. ADB views as critical the fact that DMCs are in a position to identify and manage infrastructure risks at all levels of government. In this context, national government support for subnational infrastructure investment is critical for advancing investments in sustainable and resilient infrastructure, particularly considering the large volume of investments at the subnational levels of government. This requires having in place strong capacities to monitor and evaluate the quality of infrastructure governance at all levels of government. Accordingly, ADB has already started to embrace programmatic approaches to strengthening infrastructure governance at the national and subnational levels. Among others, this includes support for governance reforms through policy-based lending and infrastructure (investment) projects (footnote 3). Also, ADB has committed additional TA resources to helping DMCs implement their NDCs, mobilize additional financing, and monitor and track climate action and financial flows in line with the Paris Agreement. To date, this includes three subprojects under ADB’s TA cluster: (i) supporting ambitious climate action by implementing the NDCs; (ii) strengthening financial mechanisms to develop the climate action agenda and operations of the DMCs; and (iii) establishing mechanisms to measure, monitor, and report on their commitments made under the Paris Agreement.52

Given the importance of green infrastructure governance for investment outcomes, and the ambitious public investment agendas of many DMCs, there is an urgent need to advance key governance reforms. In practice, this means that ambitious investment agendas need to be accompanied by equally ambitious and sustained efforts to strengthen key PIM and green PIM institutions. Further discussions on how ADB can best accompany and support its DMCs with these urgent and challenging reform efforts aimed at strengthening their infrastructure governance institutions and practices would be useful.

---

Acknowledgments

The author would like to thank Hanif Rahemtuilla, principal public management specialist, Asian Development Bank, David Bloomgarden, and the peer reviewers for their many excellent comments and suggestions. He also appreciates the feedback provided by the participants of an October 2022 ADB webinar on “Green Public Investment Management.”

The following ADB peer reviewers provided their invaluable comments to this governance brief: Hiranya Mukhopadhyay, chief, Governance Thematic Group, Sustainable Development and Climate Change Department (SDCC); Ananya Basu, director, Operations Planning and Coordination Division, Strategy, Policy, and Partnerships Department concurrently director, Social Sectors and Public Sector Management Division, Pacific Department; Jose Antonio Tan, director, Public Management, Financial Sector, and Trade Division, Southeast Asia Department (SEPF); Tariq Niazi, director, Public Management, Financial Sector, and Trade Division, Central and West Asia Department (CWPF); Arghya Sinha Roy, principal climate change specialist (Climate Change Adaptation), Climate Change and Disaster Risk Management Division (SDCD); Declan Magee, principal economist, Office of the Director General, SDCC; Giacomo Giannetto, principal financial sector specialist, CWPF; Priyanka Sood, principal private sector development specialist, CWPF; Aekapol Chongvilaivan, senior economist (Public Finance), SEPF; Anjum Israr, senior public management specialist (Domestic Resource Mobilization), CWPF; Belinda Hewitt, senior disaster risk management specialist, SDCD; and Jhelum Tini Thomas, senior public management specialist, SEPF.
References


———. 2022a. Guidance Note on Implementing Operations’ Alignment with the Paris Agreement at ADB. Draft. Manila: ADB.


the Sustainable Development Goals in Small Developing States with Climate-50098.


