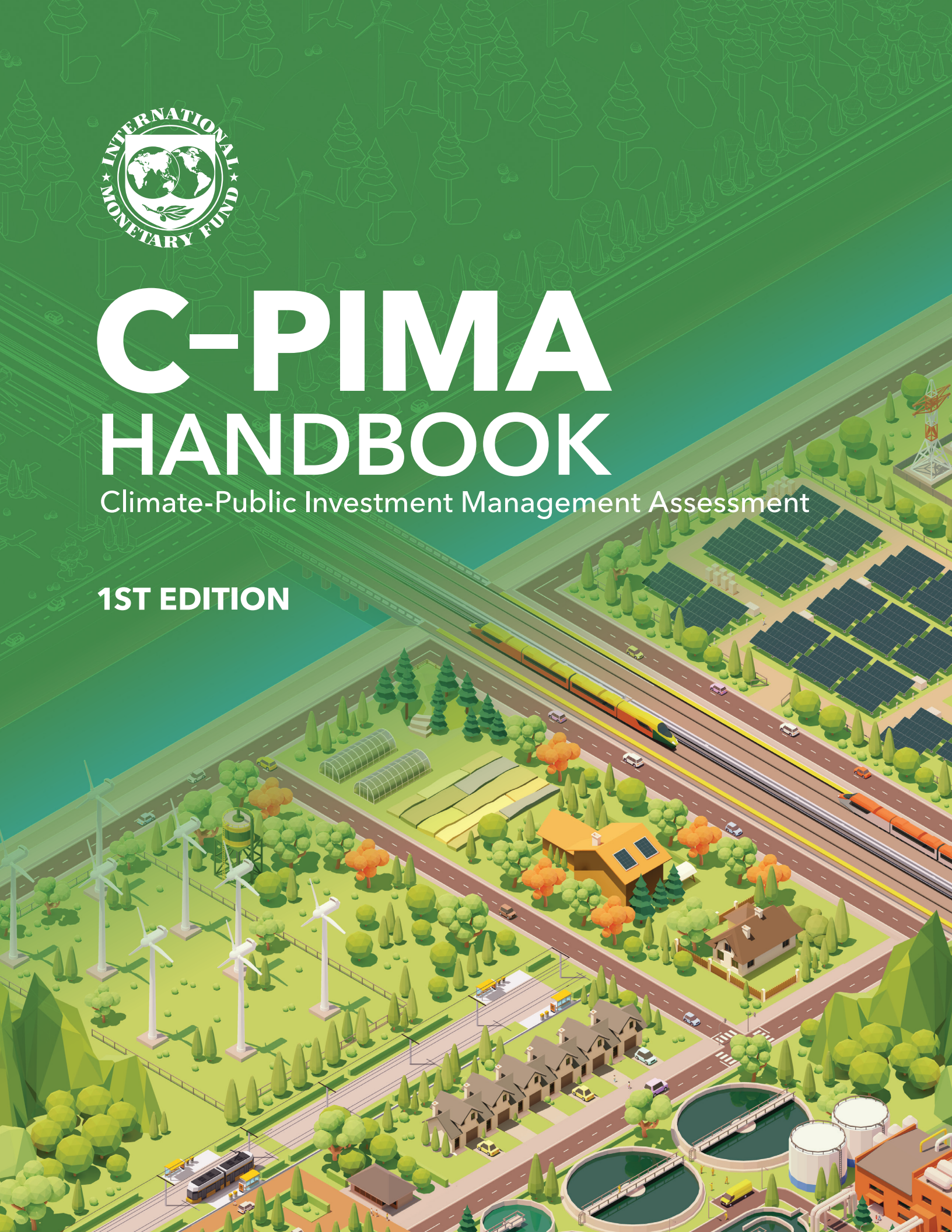
C-PIMA HANDBOOK

Climate-Public Investment Management Assessment

1ST EDITION



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ABBREVIATIONS

ADB	Asian Development Bank
C-PIMA	Climate-PIMA (module)
CC	climate change
CCIA	Climate Change Institutional Assessment
CCPA	Climate Change Policy Assessment
CF	Climate Fund
CMAP	Climate Macroeconomic Assessment Program
EBE	extra-budgetary entity
EIA	Environmental Impact Assessment
ETS	emissions trading scheme
EU	European Union
EV	electric vehicle
FRS	fiscal risk statement
FTC	Fiscal Transparency Code
GCF	Green Climate Fund
GDP	gross domestic product
GFSM	Government Finance Statistics Manual
GHG	greenhouse gas
GIS	geographic information system
IPCC	Intergovernmental Panel on Climate Change
IT	information technology
LIDC	low-income developing country
MDA	ministry, department, and agency
MDB	multilateral development bank
MOENV	Ministry of Environment
MOF	Ministry of Finance
MRV	measurement, reporting, and verification
NDC	Nationally Determined Contribution (under the UNFCCC)
NDRMS	National Disaster Risk Management Strategy
NPAMCC	National Plan for Adaptation and Mitigation to Climate Change
PC	public corporation
PEFA	Public Expenditure and Financial Accountability
PFM	public financial management
PIM	public investment management
PIMA	Public Investment Management Assessment
PIP	public investment plan
PPP	public–private partnership
SAI	supreme audit institution
SDG	Sustainable Development Goal
SNG	subnational government
SOE	state-owned enterprise
UK	United Kingdom
UN	United Nations
UNFCCC	UN Framework Convention on Climate Change
WBG	World Bank Group

FOREWORD

Resilient and green infrastructure is macro-critical because it underpins long-term economic stability, inclusive growth, and climate sustainability. Climate change undermines fiscal and debt sustainability through more frequent and severe natural disasters, rising adaptation costs, and potential disruptions to infrastructure services. At the same time, accelerating investment in low-carbon infrastructure is essential for transitioning to a sustainable growth path. Accordingly, strengthening institutions that govern public investment to promote green and resilient infrastructure investment is not only a development imperative but a central element of macroeconomic management and risk mitigation.

Governments must lead in building greener, more resilient infrastructure while ensuring that limited fiscal resources are used efficiently and transparently. Yet, many countries face practical constraints in aligning public investment management (PIM) systems with climate goals. Governments may lack the tools, processes, or data needed to integrate climate risks into project planning, appraisal, budgeting, and oversight.

To help address this need, the IMF has developed the Climate-Public Investment Management Assessment (C-PIMA)—a diagnostic framework that complements the core Public Investment Management Assessment (PIMA) by focusing on how climate considerations are integrated into public investment systems. Since its launch in 2020, the C-PIMA has been deployed in more than 60 countries, offering concrete insights and action plans to strengthen climate-smart public investment systems.

By helping countries identify institutional gaps and implement targeted reforms, the C-PIMA contributes to the broader global effort to deliver resilient infrastructure, mobilize climate finance and safeguard fiscal sustainability. The IMF is committed to working with its members to strengthen climate-informed infrastructure governance—because strong institutions are essential for effective climate action.

We hope this Handbook serves as a valuable reference and practical resource in that journey.

Katherine Baer
Deputy Director, FAD

Ruud de Mooij
Deputy Director, FAD

EXECUTIVE SUMMARY

This handbook is aimed at anyone who is involved in a Climate–Public Investment Management Assessment (C-PIMA) or has a practical interest in public investment management (PIM) and climate change. It is intended to be useful for country authorities, oversight institutions, civil society, IMF staff, staff of other financial institutions and development organizations, and anyone interested in understanding how country systems are designed to incorporate climate considerations into PIM and how they can be improved.

Countries have committed, through the Paris Agreement and the Sustainable Development Goals (SDGs), to pursue climate targets and policies that would limit global temperature rise to well below 2 degrees Celsius, compared to preindustrial levels. A shift toward green public investment will help mitigate greenhouse gas (GHG) emissions. In addition, substantial public investment will be necessary to build public infrastructure that makes economies more resilient to climate change and related natural disasters. The dual issues of mitigation and adaptation are therefore core to the C-PIMA approach.

Climate change mitigation and adaptation challenges thus compound preexisting needs for public investment to foster development and to meet the SDGs in a broader range of areas, often in the context of limited fiscal space. Against this backdrop, a priority for all countries is to manage their public investment efficiently and effectively. To help countries improve the institutions and processes for infrastructure governance (the planning, allocation, and implementation of public investment), the IMF developed in 2015 the Public Investment Management Assessment (PIMA), which has already been applied in more than 100 countries. However, the PIMA must be complemented with a more tailored assessment to take into account how PIM can support climate change mitigation and adaptation.

To fill this gap, in 2020, the IMF introduced a new module to the PIMA, the C-PIMA, whose goal is to help governments identify potential improvements in public investment institutions and processes to build low-carbon and climate-resilient infrastructure. The C-PIMA is designed around five pillars (or institutions) of PIM that are key for climate-aware[1] infrastructure: (1) planning, (2) coordination across government, (3) project appraisal and selection, (4) budgeting and portfolio management, and (5) risk management. The C-PIMA also provides a set of recommendations in the form of a sequenced and prioritized action plan that can support the implementation of green and resilient infrastructure. The C-PIMA has been deployed in 63 countries as of August 2025, providing early lessons on its efficacy.

Although the C-PIMA can be conducted as a standalone exercise, a thorough understanding of a country's overall PIM system is necessary to do the C-PIMA effectively. In many cases, the climate aspects of dimensions and institutions can only be assessed if the assessment team understands how relevant parts of the overall PIM system work—and if these PIM system basics are not in place, it will be difficult to add the climate-related elements. This means that there is some preference for doing the PIMA and the C-PIMA jointly or as a sequenced two-part exercise unless there has been an earlier and recent PIMA assessment, or the PIM system of a country is well documented.

The handbook is structured as follows:

Part 1 opens with an introduction that explains the importance of green and resilient infrastructure investment to sustainable development. Section 2 contains an overview of the C-PIMA and discusses its role as part of a climate-responsive expansion of public financial management (PFM) tools. Section 3 explains how

[1] The guide uses a number of terms to refer to climate-smart public investment management, including climate-aware, and climate-responsive.

climate change impacts public infrastructure and the role of public investment in mitigating and adapting to climate change.

Part 2 provides a detailed description of the C-PIMA framework. Section 4 provides a detailed description, explanation, and discussion of each of the five pillars/institutions (and the 15 dimensions within them): (1) planning, (2) coordination across government, (3) project appraisal and selection, (4) budgeting and portfolio management, and (5) risk management. Section 5 provides guidance on the three cross-cutting issues in C-PIMA: (1) the legal framework, (2) information systems, and (3) staff capacity.

Appendices provide additional guidance on the C-PIMA framework. Appendix I contains the C-PIMA questionnaire. Appendix II discusses general issues arising in a C-PIMA assessment. Appendix III contains templates of a C-PIMA report. Appendix IV comprises a glossary of commonly used terms.

PART 1: Climate–PIMA Overview

1. INTRODUCTION

Green and resilient infrastructure investment will be critical for inclusive, sustainable, and climate-focused development. Green public investment in energy, water, buildings, transport, agriculture, or other priority sectors will help countries make progress toward meeting their Paris Agreement targets and the United Nations' (UN) SDGs. Public investment in these sectors and other basic infrastructure will also make economies more resilient to climate-related risks (The Global Commission on Adaptation 2019; Stern 2021). Ensuring that such public investments are well-chosen and provide longer-term economic and social returns will be essential to preserve macroeconomic stability and sustainable development.

Green and resilient investment is core to countries' commitments under their Nationally Determined Contributions (NDCs). Green and resilient investment is defined as an investment that is aligned with long-term climate goals as defined in the NDC or overarching national climate strategies and is resilient to the impacts of climate change.[1] This includes investment in infrastructure that is low/zero carbon and withstands climate-related impacts, addresses climate-related risks in infrastructure design and operation, incorporates natural disaster preparedness and responsiveness, and/or has positive impacts on the local environment (such as water and air quality) and natural resources (such as forests, ecosystem, and biodiversity), among others.

Although the scale, financing, and exact nature of climate-related public investments will vary across countries, the need to ensure the efficient use of resources is a common priority for all. For some countries, such as those in the European Union, major financing has already been identified, and the priority is to scale up investment quickly while ensuring value for money. For other countries, including most low-income countries, financing constraints imply that "doing more with less" will be an even more important piece of the puzzle. IMF research has shown that, on average, countries lose one-third of the resources spent on public investment to inefficiencies in their PIM institutions (Schwartz and others 2020). While the scale of inefficiencies varies across income levels, all countries can benefit significantly from improvements in at least some specific aspects of public investment planning, allocation, or implementation. As countries invest their resources more efficiently, they can do it with an appropriate focus on climate.

The C-PIMA module of the PIMA framework has been developed as a dedicated instrument to address climate-responsive public investment. The new module aims to identify the main PIM institutions—defined as processes and practices—that are critical for developing climate-smart infrastructure. These institutions relate to climate-focused national planning, coordination within the public sector, appraisal and selection, budget and portfolio management, and risk management. These five institutions, and their components, are key in developing PIM practices that support climate goals on mitigation and adaptation. The C-PIMA module assesses a country's strengths and weaknesses when it comes to the integration of climate considerations into PIM and provides them with a reform roadmap in that direction.

The C-PIMA can be conducted as a standalone exercise, but a thorough understanding of the country's overall PIM system is necessary to do the C-PIMA effectively. The climate aspects of dimensions and institutions can only be assessed if the assessment team understands how relevant parts of the overall PIM system

[1] This paper also uses the terms "climate-aware," "climate-responsive," and "climate-smart" investment interchangeably with "green and resilient investment."

work. This is the case, for example, in coordination with subnational governments, appraisal and selection, and asset management. This means that there is some preference for doing the PIMA (or PIMA update) and the C-PIMA jointly or as a sequenced two-part exercise. Particularly when a PIMA assessment has been done recently or the PIM system of a country is well documented, a C-PIMA may be conducted as a standalone exercise and a number of such assessments have been completed.

2. THE CLIMATE–PIMA FRAMEWORK

A. Overview of the Climate–PIMA

The IMF established the PIMA diagnostic in 2015 in response to the need for countries to strengthen their infrastructure governance.[2] The PIMA is a comprehensive and standardized framework to assess PIM and infrastructure governance for countries at all levels of economic development. It evaluates infrastructure governance using 15 key institutional features across the three phases of the public investment cycle: (1) planning sustainable investment across the public sector, (2) allocating investment to the right sectors and projects, and (3) implementing projects on time and on budget. The PIMA assesses the institutional design ("what is on paper") and effectiveness ("what is in practice") of each PIM institution. PIMAs also include a qualitative assessment of three cross-cutting enabling factors that often impact the overall effectiveness of infrastructure governance institutions: the legal and regulatory framework, supporting information systems, and public sector staff capacity to implement the institutional framework. The PIMA's in-depth analysis and customized action plans, complemented by cross-country comparisons, raise awareness and build a shared understanding among key stakeholders of the PIM reforms needed to improve efficiency of public investment and achieve quality infrastructure. To date, PIMAs have been carried out in 103 countries as of August 2025 and have provided useful benchmarks for governments' reform agendas.

Climate change creates additional challenges and opportunities for PIM with respect to both mitigation and adaptation. The current PIMA framework does not explicitly address climate-related aspects of public investment. The C-PIMA module aims to fill this gap. It focuses on institutions that are critical for building climate-resilient and low-carbon infrastructure. It identifies five priority areas for the integration of climate considerations in the PIM cycle—in procedures, policies, or methodologies; they could also be enshrined in the legal framework:

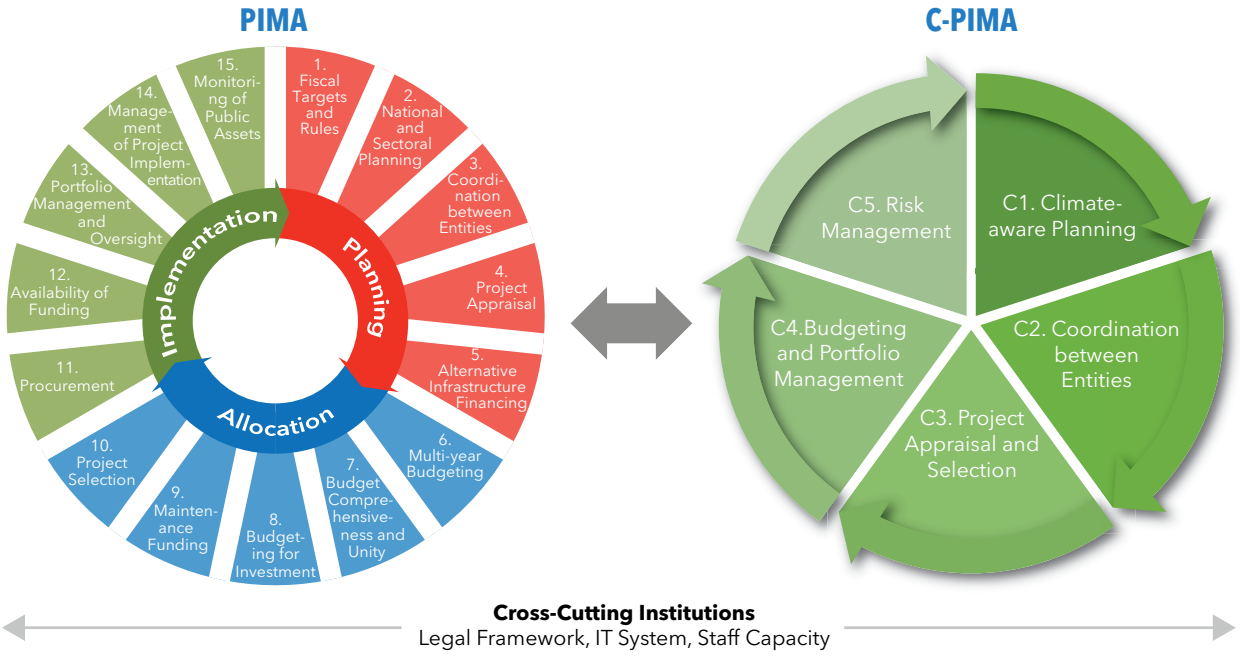
- ***Planning:*** Aligning national and sectoral plans and associated investment portfolios to climate objectives is essential in transforming public sector infrastructure in the direction of climate resilience and sustainability. The planning phase is also seen as particularly relevant for incorporating climate into spatial planning and construction requirements.
- ***Coordination:*** Public investment can involve various layers of government, state-owned enterprises, and public-private partnerships (PPPs). Integrating green considerations into PIM thus means coordinating across all parts of the public sector and on joint ventures with the private sector.
- ***Appraisal and selection:*** This is a crucial phase in the decision-making process on major infrastructure projects. It determines which projects get done. It is essential that climate-related analysis of mitigation and adaptation impacts of investments is included in this phase.

[2] The PIMA framework was introduced in 2015 and updated in 2018. The revised 2018 PIMA framework strengthened the assessment of maintenance, procurement, independent review of projects, and the enabling environment (e.g., adequacy of the legal framework, information systems, and staff capacity). See the *PIMA Handbook*, IMF 2022.

- ***Budget and portfolio management:*** Green investment and maintenance allocations should be budgeted for and reported on through the annual budget and other fiscal instruments such as the medium-term expenditure framework and the government's financial statements. Asset management and ex post audit and review should similarly take into account climate objectives.
- ***Fiscal risk management:*** Climate change involves risks that will have potential impacts on public infrastructure and the budget. It is important that natural disaster management strategies and fiscal risk analyses incorporate such risks, and that risk mitigation strategies also take climate considerations into account.

The C-PIMA follows the same general structure and logic of the PIMA to assess how a country's PIM system incorporates climate change policies. The module is designed using the structure of institutions (or practices) involved in the PIM cycle. The C-PIMA involves an assessment of the five institutions that incorporate the most critical climate-relevant elements from the PIMA. Each institution is further analyzed along three dimensions that reflect the institution's key features, similar to the approach in the PIMA. Figure 2.1 illustrates the coverage of PIMA and the C-PIMA.

Figure 2.1. PIMA and C-PIMA Framework



Source: IMF staff.

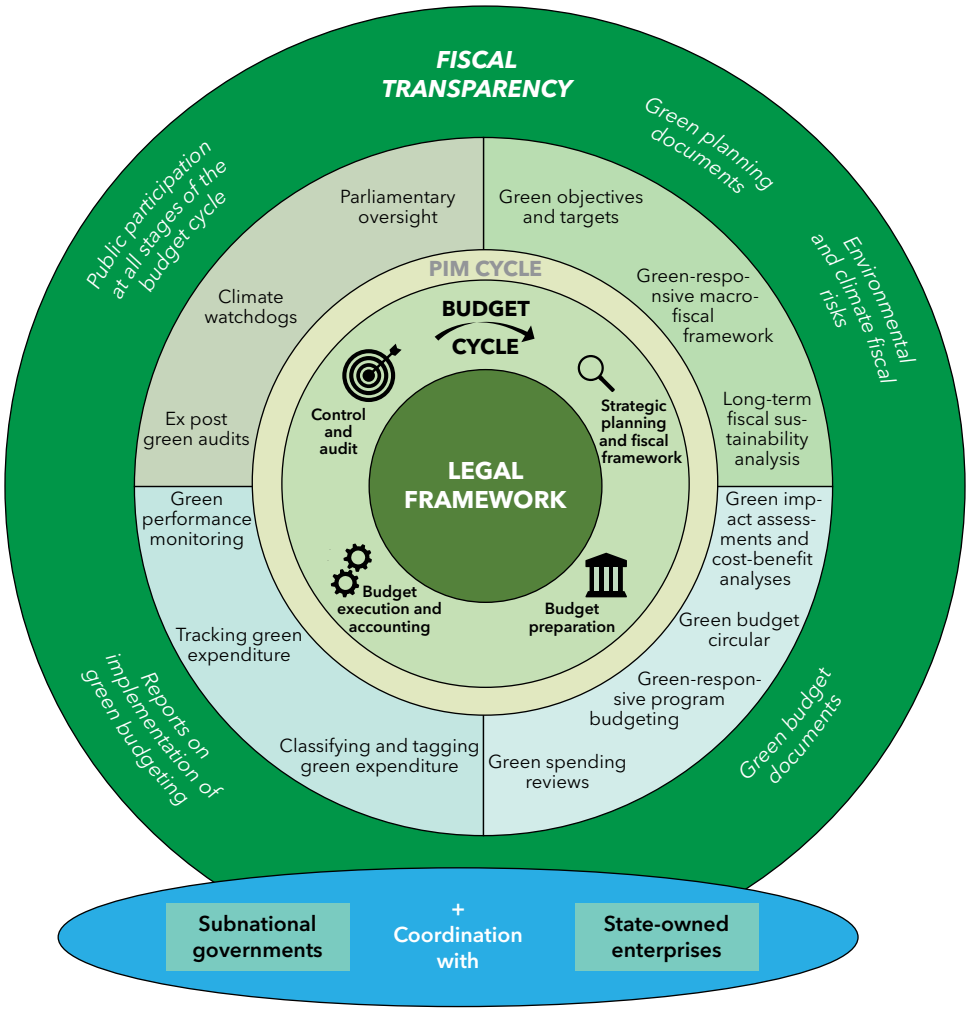
The C-PIMA follows a similar evaluation approach as the PIMA, although there is no scoring of the effectiveness of institutions at this stage. Three possible scores—fully met, partially met, or not met—are assigned to each dimension, and the average of the three dimensions within an institution produces a score for that institution. Scores are presented for institutional design in all countries. The C-PIMA can include a discussion of the effectiveness of these institutions where there is adequate information, but there is no explicit scoring of effectiveness at this stage (see Appendix II for further discussion of assessing institutional design and effectiveness). A formal scoring system on institutional effectiveness will be developed in the future consistent with the approach to incorporating effectiveness into the PIMA. The C-PIMA also assesses the same three cross-cutting issues evaluated in the PIMA, as they are equally important to managing climate-relevant PIM institutions (the legal and regulatory framework, information systems, and government staff capacity).

Recommendations to improve climate-aware institutions, taking into account the country's circumstances and capacity, are also presented in the C-PIMA as a roadmap of reform priorities.

B. C-PIMA Is Part of Climate-Responsive Expansion of Public Financial Management Tools

The development of an institutional framework for climate-responsive public investment is an important component of Climate-Responsive Public Financial Management. The C-PIMA is complementary to other existing green PFM and macroeconomic diagnostic tools, as described in Box 2.1. For instance, the IMF's green PFM framework extends beyond public investment to integrate an environment and/or climate-friendly perspective in all public expenditures as well as revenues and financing and in addition considers the institutions and processes that support fiscal strategy and the budget process. Green PFM emphasizes the need for an approach combining various entry points within, across, and beyond the budget cycle. Figure 2.2 summarizes the green PFM framework and illustrates how it incorporates the PIM cycle assessed in the C-PIMA, following a similar pattern—planning, allocation, execution, and control.

Figure 2.2. A Holistic View of Green PFM Practices



Source: Aydin Sakrak, O, B. Battersby, F. Gonguet, C. P. Wendling, J. Charaoui, and M. Petrie, 2022, How to Make the Management of Public Finances Climate-Sensitive–"Green PFM," IMF How-To Note No 2022/006.

Box 2.1. Synergies between Climate–PIMA and Other Climate–PFM and Macroeconomic Tools

The C-PIMA is complementary to other existing PFM and climate-focused PFM and macroeconomic tools.

- The Climate-Responsive Public Financial Management Framework (PEFA Climate) diagnostic assesses the responsiveness of the overall PFM framework to a country's climate objectives. PEFA Climate is a set of supplementary indicators that builds on the PEFA framework to collect information on the extent to which a country's PFM system is ready to support and foster the implementation of climate change policies. Indicator CRPFM 5 assesses the climate responsiveness of PIM in four dimensions: the regulatory framework, project selection, project appraisal, and reporting. Other directly relevant indicators include the alignment of the budget with climate change strategies, tracking climate-related expenditure, the budget circular, climate-responsive nonfinancial asset management, climate-related liabilities including fiscal risks, climate-responsive fiscal decentralization framework, climate-related performance information, and evaluation.
- The World Bank Reference Guide for Climate-Smart Public Investment seeks to provide practitioners with the tools and information needed to respond to the public expenditure policy and management challenges arising from climate change. It contains an extended discussion of expenditure policy issues, and of embedding climate change in the Bank's eight core stages of PIM, from climate-smart concept development through appraisal, selection, implementation, operation, and evaluation.
- The IMF Fiscal Transparency Code (FTC) contains some principles that relate closely to some dimensions of C-PIMA. Principle 3.2.1 on budget contingencies and Principle 3.2.7 on environmental risks have close parallels with institution 5 of the C-PIMA on risk management. Similarly, some commonalities exist between C2 in C-PIMA on coordination across the public sector, and the fiscal coordination aspects covered in Dimension 3.3 of the FTC; between elements of the coverage and integrity of fiscal reporting in Pillar I of the FTC and institution C4 in the C-PIMA; and between elements of Pillar II on transparency of investment projects and the policy orientation of budgets and institution C4 in the C-PIMA.
- The World Bank Climate Change Public Expenditure and Institutional Review Sourcebook 2014 (CCPEIR) seeks to provide practitioners with the tools and information needed to respond to the public expenditure policy issues arising from climate change as well as the public management challenges.
- The World Bank's Climate Change Institutional Assessment (CCIA) identifies the strengths and weaknesses of the institutional framework for addressing climate change governance challenges. It is organized into five pillars: organization (regulatory framework, functional mandates, coordination arrangements, and technical capacity), planning (systems for managing CC risks and vulnerabilities), public finance (integration in plans and PFM practices and the mobilization of climate resources), subnational governments and state-owned enterprises (management, capacity, and incentives), and accountability (transparency and engagement mechanisms for civil society, the private sector, and the roles of expert advisory and oversight institutions).
- The Climate Policy Diagnostic (CPD) provides countries with an in-depth analysis of their climate policies, focusing on mitigation and adaptation strategies. It also addresses the necessary institutional and legal frameworks to support these policies. The CPD complements other IMF climate capacity development tools, such as the Climate–Public Investment Management

Assessment (C-PIMA) and Green Public Financial Management (PFM), as well as diagnostics from other international organizations such as the World Bank Country Climate and Development Reports. The CPD's flexible and modular design is tailored to meet the specific needs, contexts, and challenges of each country. It provides a detailed set of recommendations, including potential timelines and priorities, to help countries build long-term resilience to climate challenges. The CPD has already been instrumental in shaping the Resilience and Sustainability Facility programs in countries like Tanzania, Moldova, Cabo Verde, and Kenya. As part of the IMF's support to countries on climate mitigation, adaptation, and institutional issues, the CPD leverages the Fund's analytical tools and diagnostic products. This support is crucial for integrating climate change considerations and related fiscal measures into macro-fiscal policies, planning, and frameworks.

- The IMF's Climate Change Indicators Dashboard includes data that could help monitor the impact of public investment on climate change and other indicators of climate change–related fiscal policy.

Source: IMF staff.

3. CLIMATE CHANGE AND PUBLIC INVESTMENT

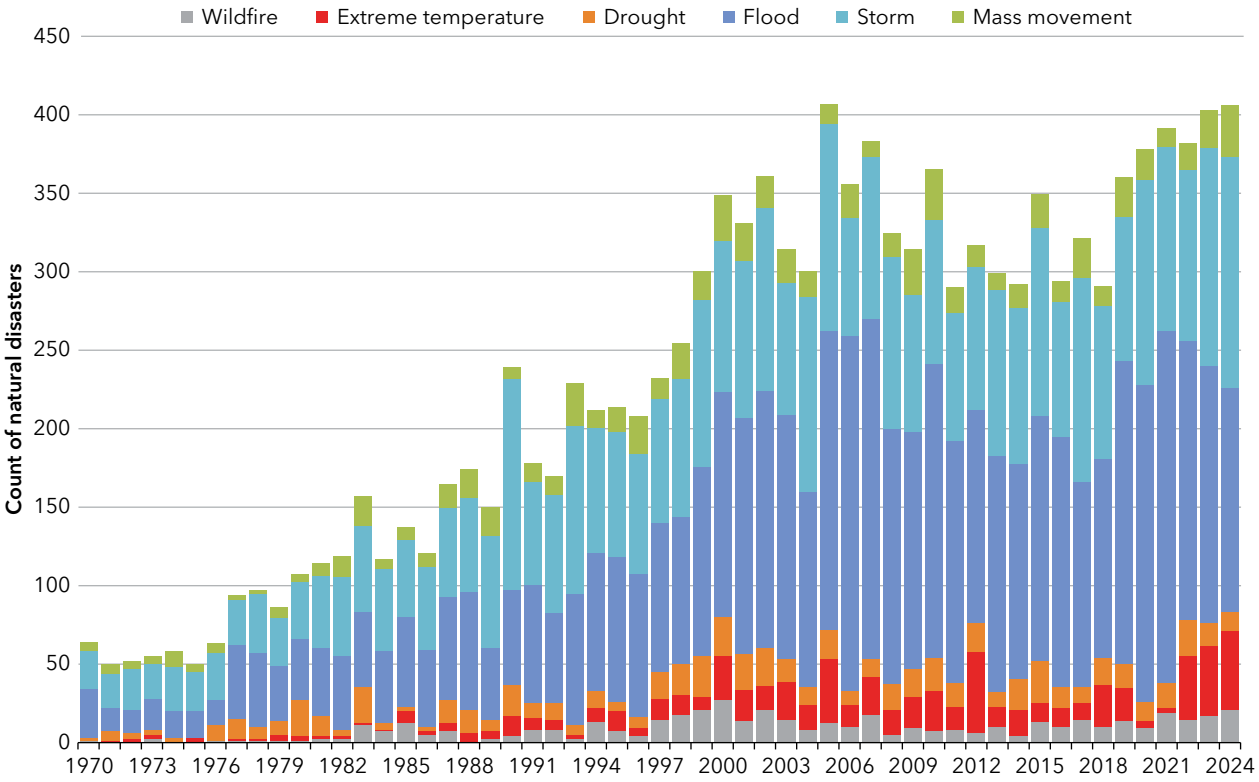
The relationship between climate change and public investment goes two ways. Climate change and natural disasters cause direct damage to infrastructure and disrupt infrastructure services—imposing billions of dollars of economic cost a year. At the same time, choices made today about the types of infrastructure will have major implications for both the level of global GHG emissions and countries' resilience to natural disasters for decades to come.

A. Climate Change Impact on Public Infrastructure

Climate change and natural hazards are already having adverse impacts on critical infrastructure and economies around the world. Natural disasters claim tens of thousands of lives every year, displace millions of people, and cause significant economic losses (CRED-UNDRR 2020). Most natural disaster events are climate related and/or exacerbated by climate change, with floods and storms being the most impactful. The occurrence of extreme weather, extreme temperature, floods, and droughts has increased sharply over the past decades (Figure 3.1). Natural disasters cost about $18 billion a year in low- and middle-income countries through direct damages on infrastructure assets and impose $391 to $647 billion of economic cost a year through service disruption (World Bank 2019). Climate-related damage to infrastructure will also have a significant impact on vulnerable populations and increase inequalities.

Damages from natural disasters and other climate impacts impose large and variable costs on public finances. Disasters disrupt the economy and require government funds for reconstruction. They also disproportionately affect the poor and vulnerable. The macroeconomic effects of climate change could result in a loss of government revenues and trigger greater spending on climate mitigation and adaptation. Infrastructure that is not climate resilient will require additional routine and emergency maintenance over its lifespan and could lead governments to reallocate resources from other productive capital to adaptation capital. Investing in retrofitting traditional technologies to adapt to climate change is usually more costly than the initial cost of ensuring climate-resilient infrastructure (Gonguet and others 2021). Constructing new public infrastructure that is high GHG emitting may result in a loss of value over the life of the asset as carbon prices impact the value of infrastructure.

Figure 3.1. Global Reported Natural Disasters by Type, 1970–2024

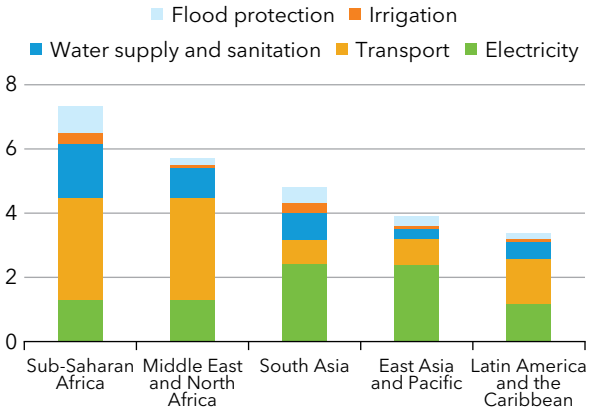


Source: EM-DAT.

B. Role of Public Investment in Addressing Climate Change

Attaining the SDGs while getting on track to achieve Paris Agreement goals requires significant infrastructure investment. It has been estimated that low-income developing countries (LIDCs) would need to spend about 4.5 percent of annual gross domestic product (GDP) on average by 2030 to meet their combined targets, through public and private investment (Fay and Rozenberg 2019). The need for infrastructure investments in low-carbon and climate-resilient projects will vary from region to region, country to country (with island economies being particularly vulnerable), and across sectors. Energy-related and water resources management which are a major part of the SDG infrastructure agenda are examples of sectors that will require additional, transition-focused, investments (Figure 3.2). Global annual infrastructure investment will have to accelerate to address historic underinvestment and to transform systems toward a net-zero emissions and climate-resilient economy (Box 3.1). The respective shares of the public and private sectors in this will depend on government policies and the relative development of the private sector in the infrastructure sector. In general, low-income and emerging market economies will have to rely more on the state for their infrastructure needs.

Figure 3.2. Capital Investment Requirement by 2030—SDG and Paris Agreement Compatible Scenario
(annual average in percent of regional GDP)



Source: Rozenberg and Fay 2019.

Box 3.1. The Cost of Green and Resilient Infrastructure

Global infrastructure investment needs to be scaled up and sustained by $3 to $3.8 trillion (2–3 percent of GDP per annum) over the present decade to deliver a robust, sustainable, and green recovery. There are significant opportunities for investing in green and resilient infrastructure to pave the way for a low-carbon and climate-resilient economy. Table B3.1.1 (based on Stern 2021) provides an overview of pre-2021 annual investment levels and estimated gross annual investment requirements during 2021–30, by type and sector.

Table B3.1.1. Annual Global Investment by 2030 Toward Net-Zero Emission and Climate-Resilient Economy

Sector	Current Investment p.a. ($ trillion)	Gross Investment p.a., 2021–30 ($ trillion)	Increase
Physical Capital (large-scale infrastructure)			
Energy (incl. energy efficiency in buildings)	1.9	2.8–3.3	0.9–1.4
Transport	1.3	2.7	1.4
Water and sanitation	0.6	0.9	0.3
Telecoms and digital	0.7	1	0.3
TOTAL (rounded to nearest 0.5)	4.5	7.5–8	3–3.5
Adaptation and Resilience			
Adaptation and resilience in developing countries	0.02	>0.1–0.3	>0.1–0.3
TOTAL	0.02	>0.1–0.3	>0.1–0.3

The actual pre-2021 annual global investment is estimated at $4.5 trillion in energy, transport, water and sanitation, and telecom and digital infrastructures, while gross annual investment opportunities in these sectors to support a sustainable recovery and green transformation are estimated at $7.5 to $8 trillion on average in the same period. The need for investment increase across these opportunities in physical infrastructure is estimated at $3 to $3.8 trillion per annum on average. This increase is essential to address historic underinvestment and to restructure systems toward a net-zero emissions and climate-resilient economy.

Key investment areas include (1) clean electricity generation, storage, and networks; energy efficiency in buildings and industry; electric vehicle charging infrastructure; green hydrogen; investment to decarbonize heavy transport (aviation and shipping) and industry; and a decline in fossil fuel investment, (2) investment in light rail; enhancing road infrastructure, airports, and ports, including investments to ensure that these infrastructures are climate resilient, (3) urban and (to a lesser extent) rural water services, including to support climate resilience and adaptation, and (4) investment to scale up data centers[3] globally. Furthermore, an estimated $0.1 to $0.3 trillion increase in investment per year is required in developing countries to support adaptation and resilience.

Source: Stern 2021.

[3] Data centers lie in the investment in telecoms.

Climate-responsive investment is an important enabler for sustainable development (IMF 2021c). The urgent need to scale up infrastructure investment creates a unique opportunity to shift investments toward green and resilient infrastructure. Public investment can stimulate private sector investment. Green and resilient public investment has multiple benefits—it promotes economic growth, supports employment, and addresses climate change. The multiplier of green investment projects is higher than those associated with fossil fuel energy investment if benefits and costs, including impact on climate and environment, are taken fully into account (Batini and others 2021).

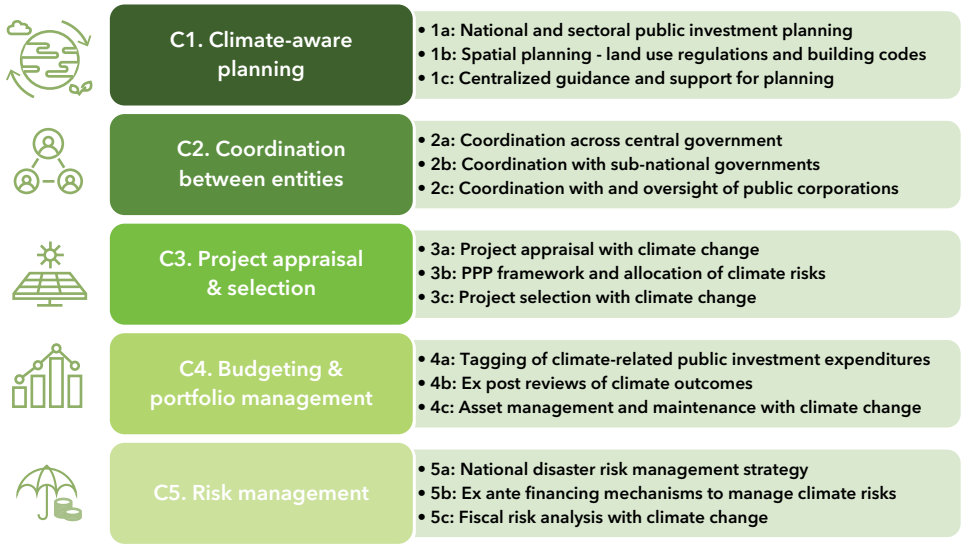
Given constraints on fiscal space, it is important that green and resilient investments are supported by strong enabling PIM institutions. Strong institutions help ensure that every dollar is spent in the best possible way, and that waste and corruption are avoided. Green investment requires a number of specific institutional capacities to ensure that investments are aligned with climate objectives.

PART 2: Climate–PIMA Practitioners' Guide

4. DETAILED DESIGN OF THE C-PIMA MODULE

This section discusses the five C-PIMA institutions (Figure 4.1). Institutions are defined as the practices and frameworks used for planning, allocating, and implementing infrastructure investment. As each institution is further broken down into 3 dimensions, the questionnaire has a total of 15 dimensions (Appendix I).

Figure 4.1. An Overview of the Climate–PIMA



Source: IMF staff.

A. C1: Climate-Aware Planning—Is Public Investment Planned from a Climate Change Perspective?

Climate-aware planning assesses the extent to which public investment plans consider the need for climate change adaptation and mitigation. Box 4.1 provides guidance on the foundational terms, climate change mitigation and adaptation.

Box 4.1. Climate Change Mitigation and Adaptation

Climate change mitigation refers to actions to limit the magnitude and/or rate of long-term climate change, while adaptation refers to actions that reduce vulnerability to the effects of climate change. Mitigation generally involves reductions in human-caused emissions of greenhouse gases (GHGs) but may also be achieved by increasing the capacity of carbon sinks, for example, through reforestation, or the use of new technologies for carbon capture and storage.

(*Continues on next page*)

Mitigation can entail using new technologies and renewable energy, making older equipment or buildings more energy efficient, or changing management practices or consumer behavior.[4]

Mitigation impacts can be quantified through ex ante estimations of net GHG emissions relative to a baseline scenario.

Climate change adaptation refers to the process of adjustment to actual or expected climate conditions and its effects, in order to moderate harm or exploit beneficial opportunities (IPCC 2021). This applies particularly to the adverse impacts of changes in the variation or the extremes of climate conditions, rather than changes in average conditions.

Adaptation actions can be either *incremental* adaptation—actions where the aim is to maintain the essence and integrity of a system, for example, retrofitting infrastructure to higher standards or *transformational* adaptation—actions that change the fundamental attributes of a system in response to climate change and its impacts, for example, relocating an infrastructure asset.

Care must be taken to avoid *maladaptation*—an action that may lead to an increased risk of adverse climate-related outcomes, increased vulnerability to climate change, or diminished welfare, now or in the future (IPCC 2021). For instance, building new public infrastructure in locations that are exposed to increased incidence and/or severity of natural disasters (and possibly thereby also encouraging new private investment in those locations).

Some public investments may contribute to both mitigation and adaptation, for example, replacement of GHG-emitting energy production by distributed solar power systems that are less vulnerable to natural disasters; building resilient, low-carbon mass transit systems; protecting coastal mangroves that are barriers against storm surge and sequester carbon, in comparison to building new sea walls.

Other public investments promote mitigation (adaptation) but impact negatively on adaptation (mitigation), for example, a water desalination plant promotes adaptation but is a high user of energy; small hydro schemes generate renewable electricity but may exacerbate water stress. Some projects are negative for both mitigation and adaptation, for example, new highways without adequate drainage.

Source: IMF staff.

Dimension C.1.a: Are national and sectoral public investment strategies and plans consistent with NDC or other overarching climate change strategy on mitigation and adaptation?

This dimension assesses the extent to which public investment is planned in a manner that is consistent with the government's climate change objectives and international commitments such as the NDC.

Climate-aware planning in this context refers specifically to the planning of public investment and covers both mitigation and adaptation as included in the NDC, domestic legal commitments, or overall climate strategy.[5]

Around 60 countries have now adopted domestic climate change framework laws that establish long-term climate change objectives, and also introduce the institutions and interinstitutional processes required to meet them (Setzer and Higham 2023). Of these, nearly half include a target to achieve net-zero emissions by 2060 or earlier. Such laws often enshrine commitments made at the international level through countries' NDCs. However, national laws may also be more ambitious than the NDCs (at least initially) and surpass them in scope.

Assessing this dimension often involves considering a large number of strategy and planning documents covering different periods and having different statuses. At any given time, some important documents may

4 UNEP. https://www.unep.org/topics/climate-action/mitigation

5 This dimension considers national circumstances and country-specific priorities on climate mitigation and adaptation, as determined in their NDC in accordance with the principle of "common but differentiated responsibilities" of the Paris Agreement.

be in the process of being updated. In other cases, the NDC commitments may not yet have been formally incorporated in all plans (e.g., sector plans). Nevertheless, it is possible to assess whether the quantum and time path of mitigation and adaptation commitments in the current suite of planning documents are consistent with NDC commitments or other overarching climate strategies. In addition, whether key planning documents are consistent with each other should also be assessed.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
National and sectoral public investment strategies and plans are not consistent with NDCs or other overarching climate change strategies.	National and sectoral public investment strategies and plans are consistent with NDCs or other overarching climate change strategies for ***some*** sectors.	National and sectoral public investment strategies and plans are consistent with NDCs or other overarching climate change strategies for ***most*** sectors.

RELATED INSTITUTIONS IN PIMA

2.a, 2.b

MEANING OF KEY TERMS

Term	Definition
Strategies	Set out the direction and high-level ambition or aspirations for future policies and public investment, informed by current gaps and trends (e.g., population, technology, environmental) that would shape future infrastructure needs and demands.
Plan	A document that describes how strategic goals and objectives are to be achieved. This may be a part of the strategy document (strategic plan) or a separate document. A plan includes statements of goals and objectives over a short-, medium-, or long-term period; identifies the entity or entities that are accountable for it; and is separate from the budget cycle and budget documentation. For this dimension, the plan must include discussion of public investment and set out the role of major investment projects and programs in meeting climate goals.
National	In this context, a national plan is one that is produced by the central government and includes all types of projects regardless of location within the national boundaries. In addition to projects under the responsibility of the central government, it may also include projects implemented by subnational governments (SNGs) or other parts of the public sector.
Sectoral	A sectoral plan may be a subset of a national plan or may be a sector as defined in the country's NDC or as defined by a line ministry, for example, the transport sector, the energy sector, and the health sector. Subsectors are often defined for specific economic activities, such as air, land, and sea transport within the transport sector. The key climate-exposed or climate-related sectors will be country specific but are likely to include some or all of transport, energy, telecommunications, water, waste management, agriculture, natural resources, forestry, and fishing.
Consistent with	Means that implementation of current public investment strategies and plans can be expected to result in outcomes that contribute positively to the achievement of the government's mitigation and adaptation objectives and targets, and on a time path that implies targets are likely to be achieved. Consistency also requires that time-bound targets (e.g., for emissions reductions or the rate of increase in renewable energy production) are consistent between different documents.

SPECIFIC QUESTIONS

- What does the country's NDC contain on mitigation and adaptation objectives, targets, and expected outcomes? Are there additional commitments on climate change mitigation and adaptation in domestic law? Are there any legal requirements for the government to publish a strategy or national plan on mitigation or a national adaptation plan? Is there a national public investment strategy or plan or sectoral public investment strategies and what do they contain regarding public investment? What is their coverage of the public sector (central government, general government, and public corporations [PCs])? Do plans incorporate government's climate change objectives, targets, the expected impacts of investments on the climate, and the exposure of infrastructure to climate-related disasters and transition risks?
- Are there sector or subsector investment strategies in key climate-related sectors such as transport and energy that incorporate climate change–related public investments?
- Are there any independent assessments of the consistency of public investment strategies and plans with the NDC or other overarching climate change strategy, for example, by a Climate Change Commission or other independent body?

A **not met** score indicates that the national and sectoral public investment strategies and plans do not include a discussion of the role of public investment in meeting climate change mitigation and adaptation goals. These strategies and plans do not provide a concrete description of the green and resilient projects or an overview of planned green and resilient investments in the sector.

A **partially met** score indicates that the national and sectoral public investment strategies and plans include a description of planned green and resilient investments for some sectors. To qualify for a partially met score, the strategies and plans should identify planned green and resilient infrastructure in less than half of the sectors that are referred to in national climate change mitigation or adaptation strategies or plans, such as an NDC, NAP, or equivalent documents.

A **fully met** indicates that the national and sectoral public investment strategies and plans include a description of planned green and resilient investments for some sectors. To qualify for a fully met score, the strategies and plans should identify planned green and resilient infrastructure in more than half of the sectors that are referred to in national climate change mitigation or adaptation strategies or plans, such as an NDC, NAP, or equivalent documents.

IMPORTANT DOCUMENTS

Documents	Use
• NDCs under the Paris Agreement, domestic climate change laws, National Communication Report on Climate Change (to UN Framework Convention on Climate Change), or similar high-level documents containing official climate change targets	• Identify the government's adaptation and mitigation commitments, objectives, targets, and expected outcomes
• National strategies or development plans, including public investment plans	• Assess how planned public sector investment is likely to impact climate change adaptation and mitigation and whether this is consistent with meeting the government's climate change objectives, targets, and expected outcomes

Documents	Use
• Sectoral and subsectoral plans and strategies	• Assess how planned public sector investment is likely to impact climate change adaptation and mitigation and whether this is consistent with meeting the government's climate change objectives, targets, and expected outcomes
• Independent assessments of consistency of public investment strategies and plans with NDCs or other overarching climate change strategies	• Draw on as available

Box 4.2 gives an example of how Cambodia integrates climate considerations into the planning process and enables the planning of public investment projects that contribute to the country's climate objectives and targets.

Box 4.2. Climate-Aware Public Investment Planning in Cambodia

Cambodia is strongly committed to addressing climate change as a key priority within its national development goals, which includes greener and more resilient infrastructure as a priority. The country's updated Nationally Determined Contribution (NDC), released in December 2020, targets a 42 percent reduction in greenhouse gas emissions by 2030 compared to a business-as-usual scenario. This commitment covers critical sectors such as energy, forestry, agriculture, and waste management.

Over the past decade, various climate strategies and plans have been developed to support the integration of climate change into national, sectoral, and subnational investment planning. At the national level, the country's long-term planning frameworks—the Rectangular Strategy (2018–30) and the National Strategic Development Plan (2019–23)—identify climate change as a cross-cutting issue and guide public investment toward climate adaptation and mitigation projects. At the sector level, the Cambodia Climate Change Strategic Plan, initiated in 2013, has led more than 10-line ministries to adopt 14 Climate Change Action Plans (CCAPs). These CCAPs outline strategic priorities and major climate-relevant projects for each sector. Recently, some ministries have also integrated climate change considerations into their sector strategies and performance indicators.

Source: Cambodia PIMA Update and C-PIMA 2023.

Dimension C.1.b: Do central government and/or subnational government regulations on spatial and urban planning, and construction address climate-related risks and impacts on public investment?

This dimension assesses the extent to which government regulations—either from central or subnational government—are mitigating exposure to climate-related risks and disasters, which are location specific in nature. Government regulations have a key role to play in influencing the location and design of new public investments, which in turn influence the government's direct exposure to climate risks as the owner of the assets. New public infrastructure investments also influence the location of new private investments that will use the services and may increase the government's implicit exposure to damages from climate-related disasters—hence the importance of spatial regulations, including urban development, and construction regulations (such as codes for buildings and other structures, e.g., bridges, dams, power plants). Box 4.3 provides an example of spatial planning, land use, and building codes in Nepal.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
Central government and/or subnational government regulations on spatial and urban planning, and construction do not address climate-related risks and impacts on public investment.	Central government and/or subnational government regulations on spatial and urban planning, ***or*** construction (through building codes) address climate-related risks and impacts on public investment.	Central government and/or subnational government regulations on spatial and urban planning, ***and*** construction (through building codes) address climate-related risks and impacts on public investment.

RELATED INSTITUTIONS IN PIMA

This C-PIMA institution does not have a related PIMA institution.

MEANING OF KEY TERMS

Term	Definition
Regulation	Formal written statement in law, rule, or code issued by a public authority intended to constrain conduct.
Spatial and urban plans	Spatial planning refers to the coordination of practices and policies affecting spatial organization. It applies to a range of scales from local, urban, regional, and national. Examples include town plans, city master plans, coastal plans, and regional and territorial plans.
Central government	All government entities that are included in the budgetary central government, plus any units funded by extra-budgetary funds, and nonmarket nonprofit institutions that are controlled by the central government. Does not include PCs, even when these companies are owned and controlled by the government.
Subnational governments	All state, regional, provincial, municipal, or local governments including all extra-budgetary entities (EBEs) at each of these levels of government and all nonmarket nonprofit institutions that are controlled and financed mainly by them.

Term	Definition
Address climate-related risks	The regulation or plan imposes a substantive restriction on public investment that is intended to reduce the exposure of assets and/or their vulnerability to climate-related disasters.

SPECIFIC QUESTIONS

- Are there climate-related regulations on spatial and urban planning that apply across the country? Are there national or subnational regulations that require all public sector entities within the relevant jurisdiction to implement land-use regulations and/or building codes that address climate change–related concerns? To what extent are they consistent and coherent?
- Are there climate change–related requirements with respect to codes applicable to buildings and other structures, for example, roads, bridges, power plants, and dams? To what extent are they consistent and coherent?
- Are there location-specific restrictions or conditions on construction in areas exposed to the effects of climate change? For instance, flood plains, landslide-prone areas, and low-lying coastal areas.

A **not met** score indicates that there are no published central government and/or subnational government regulations on spatial and urban planning, and construction addressing climate-related risks and impacts on public investment.

A **partially met** score means that regulations on spatial and urban planning or construction that address climate-related risks are in place for territories where more than half the population of the country lives or where more than half of public investment takes place.

A **fully met** score requires that regulations on spatial and urban planning, and construction that address climate-related risks are in place for territories where more than half the population of the country lives or where more than half of public investment takes place.

IMPORTANT DOCUMENTS

Documents	Use
• Central government and subnational government regulations on spatial and urban planning	• What is the geographic coverage and consistency of the relevant regulations across the country?
• Central government and subnational government codes applicable to buildings and other structures	• What is the geographic coverage and consistency of the relevant regulations across the country?

Box 4.3 describes the building code regulations and land-use policies in Nepal, which promote green and resilient infrastructure.

Box 4.3. Spatial Planning, Land Use, and Building Codes in Nepal

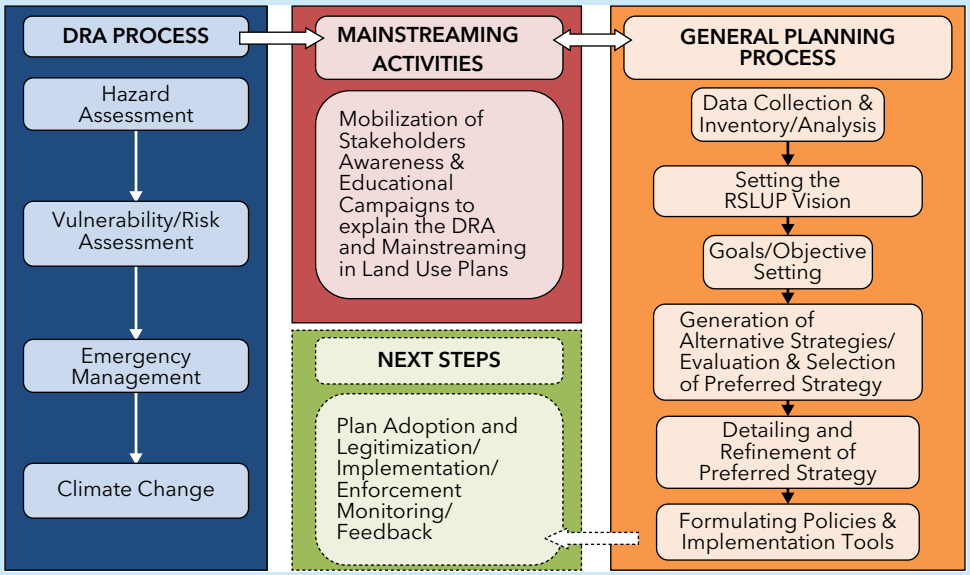
The Land Use Policy and the National Urban Development Strategy explicitly address climate risks to public infrastructure, while the National Building Codes (NBCs) include elements addressing climate-induced disaster risks. The Land Use Policy takes into account potential climate change impacts on land use plans, restricts infrastructure development in disaster-prone areas, seeks to ensure green spaces

(*Continues on next page*)

and control industrial zones, as well as promotes forest conservation (Figure B4.3.1). The National Urban Development Strategy commits to the internalization of climate resilience and sustainability in urban land use and urban infrastructure. The NBCs incorporate the impacts of natural hazards (e.g., earthquakes) and climate-induced disaster risks (e.g., floods and landslides). Specifically, the codes related to site selection, use of construction materials, and architectural design requirements consider the effects of climate change in some detail.

Both the Land Use Policy and the NBC apply nationwide. The NBCs have been updated. Nevertheless, there is room for enhancement, particularly in extending the scope of NBC to address climate change mitigation through improving energy efficiency in public buildings and strengthening compliance with the codes. Limited enforcement of the NBC in the issuance of building permits by municipalities calls for additional efforts.

Figure B4.3.1. Climate-Sensitive Land Use Planning Process in Kathmandu



Sources: Nepal Land Use Policy (2015), National Urban Development Strategy (2017), National Building Codes (2020), and Risk-Sensitive Land Use Plan Kathmandu Metropolitan City, Nepal (2010).

Dimension C.1.c: Is there centralized guidance/support for public sector entities on the preparation and costing of climate-aware public investment strategies?

This dimension assesses whether central government ministries, departments, and agencies that plan public investment are provided with appropriate guidance and support in incorporating climate change considerations into their investment planning activities, into subsector or sector investment strategies or plans, or into a public investment plan (PIP) or pipeline of projects. The dimension also assesses whether SNGs and PCs are provided with appropriate guidance. In a number of countries, the Ministry of Environment (MoEnv) leads on adaptation and may also lead on mitigation, although mitigation may be the responsibility of a Ministry of Economy or other ministry.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
There is no centralized guidance/ support for public sector entities on the preparation and costing of climate-aware public investment strategies.	There is centralized guidance/ support for public sector entities on the ***preparation*** of climate-aware public investment strategies.	There is centralized guidance/ support for public sector entities on the ***preparation and costing*** of climate-aware public investment strategies.

RELATED INSTITUTIONS IN PIMA

This C-PIMA institution does not have a related PIMA institution.

MEANING OF KEY TERMS

Term	Definition
Public sector entities	Central government ministry, department, and agency (MDAs), SNGs, and PCs.
Centralized guidance	Written guidelines such as a circular, manual, or guide, issued by a central agency (Ministry of Finance or Planning or similar agency) or a sector ministry (e.g., MoEnv, Ministry of Transport or Energy, disaster management agency) containing information and instructions on planning and costing public investment from the perspective of climate change adaptation and mitigation.
Support	Assistance provided to MDAs and other public sector entities in addition to written guidelines, such as briefings, seminars, workshops, and a help desk.

Note that the scope of this dimension is confined to national and sectoral investment planning. It covers guidance issued by central government agencies to all entities of central government, and all parts of the public sector, including SNGs and PCs.

SPECIFIC QUESTIONS

- Is there written guidance from central agencies or other relevant agencies to MDAs on technical issues in climate-aware investment planning and costing covering both mitigation and adaptation?
- Is there written guidance from central agencies or other relevant agencies to SNGs, and/or to PCs, on technical issues in climate-aware investment planning and costing covering both mitigation and adaptation?
- Is there detailed guidance on the preparation and content of sectoral and subsectoral investment plans from the perspective of climate change, for example, on the costing, prioritization, and sequencing of investments? Does the guidance cover planning with respect to location-specific analysis of hazards to infrastructure, asset exposures, and asset resilience?
- Is relevant information and data consolidated and shared across the public sector, such as location-specific data on climate and climate projections, the incidence of climate-related disasters, historical damages to infrastructure from climate-related disasters, and the costs of repair and reconstruction of infrastructure after climate-related disasters?
- Is there support for MDAs, and SNGs and/or PCs, through activities such as workshops on climate-aware investment planning and costing, standardized templates to guide agencies, a central "help desk" to answer queries, or other technical/financial support to implement climate-friendly policies. Which government agencies provide guidance and/or support for adaptation? For mitigation?

A **not met** score indicates that there is no central guidance or support to develop climate-aware public investment strategies.

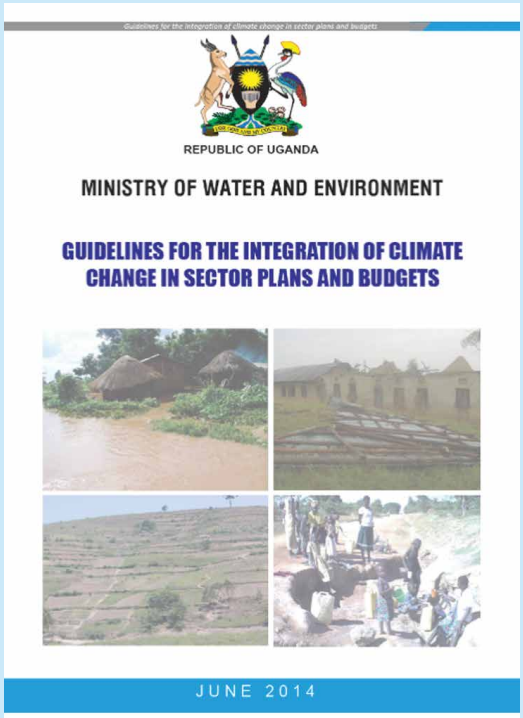
A **partially met** score means that guidance or support exists on how to prepare climate-aware public investment strategies. For a partially met score, the guidance should apply to public sector entities responsible for less than half of sectors referred to in national climate change mitigation or adaptation strategies or plans, such as an NDC, NAP, or equivalent documents.

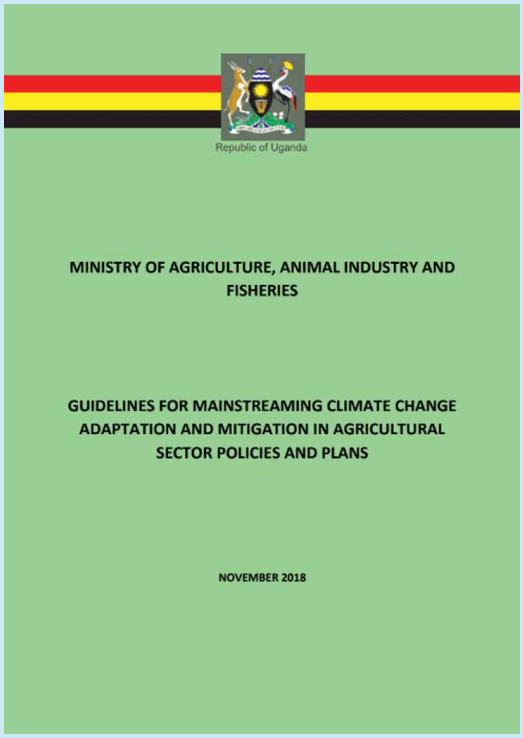
A **fully met** score requires that guidance or support exists on how to *prepare* and *cost* climate-aware public investment strategies. For a fully met score, the guidance or support should apply to public sector entities responsible for more than half of sectors referred to in national climate change mitigation or adaptation strategies or plans, such as an NDC, NAP, or equivalent documents.

Box 4.4 describes Ugandan strategic guidance to ministries and agencies on the development of climate strategies and climate-sensitive public investment projects.

Box 4.4. Centralized Guidelines in Uganda

The 2014 guidelines on the integration of climate change in sector plans and budgets provide extensive strategic guidance to ministries and agencies on the development of climate strategies and public investment projects. The guidelines outline the climate change management's roles and responsibilities of various government entities. Additionally, it describes other climate change stakeholders' role, including developing partners and the private sector. The guidelines give thorough guidance on how to include impact and vulnerability assessments throughout the development of the sectoral strategies: formulation process, financing, implementation, and evaluation at national, local, and community levels. The key steps of integrating climate change in sector consist of (1) assessing the climate change impact of the sector, (2) identifying and analyzing the mitigation and adaptation options, (3) identifying and costing the programs and actions for climate interventions, (4) designing and implementing a plan for mainstreaming climate change in the different sectors, (5) monitoring the implementation process, and (6) evaluating the performance and assess results.





Some sectors, including agriculture, have developed more detailed sector guidelines to provide practical, step-by-step guidance for all agricultural sector stakeholders including local governments, on how to mainstream climate change adaptation and mitigation in their planning and decision-making processes. The 2018 specific agricultural sector guidelines also provide a tool for climate-smart adaptation screening of agriculture sector policies and plans.

Sources: Uganda 2014 Guidelines on integration of climate change in sector plans and budgets, and Uganda 2018 Guidelines for mainstreaming climate change adaptation and mitigation in agricultural sector policies and plans.

IMPORTANT DOCUMENTS

Documents	Use
• Technical guides covering public investment planning and costing, either government-wide or at the sector level; guidance issued to SNGs and public corporations; budget circulars and instructions	• Assess the extent and depth of coverage of climate change adaptation and mitigation issues
• Invitations, announcements to relevant briefings, workshops, existence of standardized templates, and so on	• Assess whether they cover climate change adaptation and mitigation issues

B. C2: Coordination between Entities—Is There Effective Coordination of Climate Change–Related Public Investment across the Public Sector?

This institution focuses on the need to adopt a whole-of-government approach to climate change by coordinating across all the components of the public sector. Climate change obligations are national obligations and coordination needs to take place within government, between different layers of government, and between government and the wider public sector. This institution assesses the extent to which decisions on public investment are taken across different parts of the public sector in isolation or whether there are practices that act to coordinate decision making.

Decision making here refers to all the stages of the public investment cycle that take place after national and sectoral planning. Coordination of national and sectoral investment planning is covered in institution C1. Project appraisal is covered in C3.

The role played by the MOF here is important for the mainstreaming of climate change policies in fiscal policy and budgets. The Budget Call Circular is a key instrument for coordinating budgetary decision making within central government.

Dimension C.2.a: Is public investment coordinated across central government from a climate change perspective?

This dimension assesses the reach of coordination on climate change across the central government sector—budgetary central government, externally financed projects, and EBEs—and with PPPs.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
Public investment is not coordinated across central government from a climate change perspective.	Public investment is coordinated across ***budgetary central government*** from a climate change perspective.	Public investment is coordinated across ***all central government, including externally financed projects, PPPs, and extra-budgetary entities,*** from a climate change perspective.

RELATED INSTITUTIONS IN PIMA

7.a, 7.b, 7.c, 3.c

MEANING OF KEY TERMS

Term	Definition
Budgetary central government	The ministries, departments, agencies, and other entities belonging to the central government whose spending, revenues, and borrowing activities are included in the central government's annual budget.
Externally financed projects	Financing provided by international financial institutions or bilateral development partners, by means of grants and concessional or nonconcessional loans.
EBEs	Entities set up under legislation that carry out central government functions but also receive funds other than through annual appropriations by the legislature, for instance through earmarked taxes or fees.

SPECIFIC QUESTIONS

- Is there a lead agency or agencies for coordination of climate change decision making across central government in relation to mitigation and with respect to adaptation?
- Do budget guidelines and related materials cover climate change with respect to public investment? For example, do they contain instructions on defining, presenting, tracking, and reporting climate-related spending; and on the need to demonstrate consistency between proposed public investment projects and government policies on climate change adaptation and mitigation?
- Is there guidance on reporting allocations and impacts of relevant public investments with respect to mitigation and with respect to adaptation?
- To what extent are externally financed climate-related projects and Climate Funds incorporated into central government budget processes?
- Does the government impose any requirements with respect to setting climate-related objectives and targets and reporting against them for PPPs, Climate Funds, or other EBEs implementing climate-related public investments?

A **not met** score indicates that there is no procedural, legal, or regulatory requirement to coordinate public investment projects across the central government from a climate change perspective.

A **partially met** score indicates that there is a procedural, legal, or regulatory requirement to coordinate public investment projects across the budgetary central government from a climate change perspective.

For a **fully met** score, there is a procedural, legal, or regulatory requirement to coordinate public investment projects across all central government from a climate change perspective, regardless of how the public investment projects are financed.

IMPORTANT DOCUMENTS

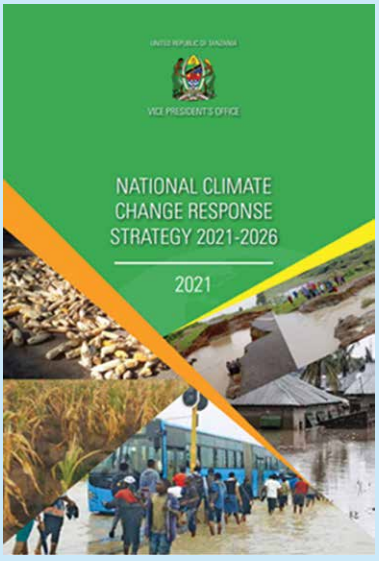
Documents	Use
• Budget circulars and related instructions	• To what extent is climate change adaptation and mitigation covered in these documents within the central government?
• Published documents on a government's strategy for the integration of external financing into government public investment planning	• Are institutional arrangements and procedures in place to align external financier decisions on climate-related infrastructure projects with government strategy and policy?
• Institutional arrangements and guidelines for the coordination of decisions on infrastructure projects between government and external financers	• Are institutional arrangements and procedures in place to align external financier decisions on climate-related infrastructure projects with government strategy and policy?
• PPP laws and regulations	• Do PPP laws and regulations contain provisions to coordinate decisions on new PPPs with government climate change adaptation and mitigation policies?
• Government's guidelines to entities on how to report on progress with implementing climate change-related activities	• Clarity of guidance on reporting climate-related spending, outputs, and outcomes

Box 4.5 describes the institutional, legal, and policy framework in Tanzania, which facilitates climate-sensitive public investment coordination across central government.

Box 4.5. Public Investment Coordination across Central Government in Tanzania

Public investment decisions are coordinated across all central government regardless of financing source, including from a climate change perspective. Overall, the central government coordinates public investment planning and decision making through the National Climate Change Response Strategy, the Five-Year Development Plan (FYDP), and the PIM processes. These processes include climate-related capital projects that support national climate goals, although there is no specific definition of climate projects.

In parallel, the Vice President's Office, Union and Environment, is responsible for overseeing the implementation of climate-related activities and the NDC at the national level. A National Climate Change Steering Committee has been established, chaired by



(*Continues on next page*)

the Permanent Secretary of the Vice President's Office, to ensure coordinated actions across various sectors and institutions.

The 2004 Environmental Management Act also establishes Sector Environmental Sections in line with ministries with the role of coordinating with the Vice President's Office on environmental management. The FYDP III for 2021/22 to 2025/26 provides good evidence of how climate-related public investment is well coordinated across the central government in the planning phase.

Source: National Climate Change Response Strategy, 2021.

Dimension C.2.b: Is capital spending of subnational governments coordinated with the central government from a climate change perspective?

This dimension assesses whether climate-related public investments by SNGs are undertaken in coordination with national processes. The types of coordination will depend on the constitutional, legal, and regulatory framework defining the competencies and mandates of SNGs vis-a-vis central government related to climate change mitigation and adaptation. Mechanisms may include guidance on the implementation of climate-related public investment projects, information sharing, joint publication, discussions, intergovernmental fiscal transfers, and central government direction. The design of intergovernmental transfers for public investment and the coordination of their use between central and subnational governments is one of the important instruments that countries have used to ensure that climate considerations are taken onboard in decentralized PIM systems (Box 4.6).

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
Capital spending of SNGs is not coordinated with the central government from a climate change perspective.	The central government issues guidance on the capital spending from a climate change perspective and information on major climate-related projects of SNGs is shared with the central government and is published alongside data on central government projects.	The central government issues guidance on the capital spending from a climate change perspective, information on major climate-related projects of SNGs is shared with the central government and is published alongside data on central government projects, ***and there are formal discussions between central government and SNGs on the climate-related investments.***

RELATED INSTITUTIONS IN PIMA

3.a[6]

[6] Note that when scoring C-PIMA C.2.b, if there has been a previous or simultaneous PIMA, any difference in the score for PIMA 3.a. should be justified by reference to the specific criteria for the dimensions that vary between the two indicators. The scoring for both indicators refers to publication of SNG capital spending alongside the central government investment, and formal discussions. However, C-PIMA C.2.b covers only climate-related capital spending of SNGs, not all their public investment, and also refers to guidance on capital spending from a climate change perspective. These differences can result in differences in scores.

MEANING OF KEY TERMS

Term	Definition
Major projects	See Appendix II.
Published	Information that is made readily accessible to the general public in a proactive and inexpensive way. Modes of communication that constitute publication include printed documents prepared by the government and open-access government websites.
Formal discussions	A meeting between representatives of central government and a subnational government or governments involving formal documentation of the topics to be discussed as well as of the outcome of the meeting.

SPECIFIC QUESTIONS

- Does the legal and regulatory framework define the competencies and mandates of SNGs vis-a-vis central government related to climate change mitigation and adaptation?
- Are SNGs required to set specific climate objectives and targets?
- Does the legal and regulatory framework specify the mitigation objectives and adaptation requirements for investment programs and projects of subnational governments?
- What information on SNG climate-related investments is required to be shared with the central government? Does it cover both mitigation and adaptation? Through which processes is the information to be shared, with which institutions, and at what times?
- Is there a requirement for formal discussions between central government and SNGs on public investment by SNGs from a climate change perspective? Through which processes are the discussions to take place, with which institutions, and at what times? What is the outcome of the discussions? For instance, a formal record, a section in a report?
- Has the central government developed and disseminated any guidance for SNGs or provided any technical support to them on public investment allocation and implementation from a climate change perspective?
- Has the central government introduced any mechanisms to try to ensure consistency between public investments by subnational governments and national climate change policy commitments, goals, and targets? For instance, related to expenditure tracking, reporting obligations.
- Are there any climate change–related intergovernmental fiscal transfers? Are SNGs required to report (and publish) their public investment activities from a climate change perspective? For instance, their contribution to GHG mitigation, what are they doing with respect to adaptation?

A **not met** score indicates that there is no legal, regulatory, or institutional requirement for systematic sharing and coordination of climate-related capital spending.

A **partially met** score requires that a country meets any one of the three criteria: issuance of guidance, sharing of information on major climate-related projects, or publication of climate-related public investments.

A **fully met** score means that, in addition to the requirements for partially met, there are formal discussions between central government and SNGs on climate-related public investments.

IMPORTANT DOCUMENTS

Documents	Use
• The legal and regulatory framework defining the competencies and mandates of SNGs vis-a-vis central government	• Does it contain elements related to climate change mitigation and adaptation, and specifically on public investment spending?

(*Continues on next page*)

Documents	Use
• Public investment reports covering central government or the main climate-related line ministries	• Do they refer to climate-related public investments of SNGs?
• Documents that refer to intergovernmental discussions on or other coordination arrangements covering public investment	• Do they refer to climate-related public investments?
• SNG reports covering climate-related investments	• Do they refer to climate-related public investments and how they are coordinated with the central government?

Box 4.6 describes Indonesia's institutional arrangements for coordination between the central government and the SNGs on climate-related public investment.

Box 4.6. Coordination of Subnational Governments in Indonesia

In Indonesia, information about major climate-related projects of subnational governments (SNGs) is shared with the central government. There are formal discussions between central government and SNGs on the planning and implementation of climate-related investments, and information on SNG investments is published. SNGs are responsible for a major share of infrastructure investment as shown in Figure B4.6.1, and the national planning agency, Bappenas, plays an active role in coordinating national and SNG investments (Figure B4.6.2).

Provincial governments are required to draw up local action plans for greenhouse gas (GHG) emission reduction (RAD-GRK), which are approved by the governors. The RAD-GRK serves as a translation of the national climate planning documents (National Action Plan for Reducing Greenhouse Gas Emissions and National Action Plan for Climate Change Adaptation) and is used to guide local governments in developing and implementing climate change mitigation and adaptation actions at the local level. The RAD-GRK informs the development of regional development plans, work plans, and budgets.

Figure B4.6.1. Funding Shares of Infrastructure Investment (in percent of investment)

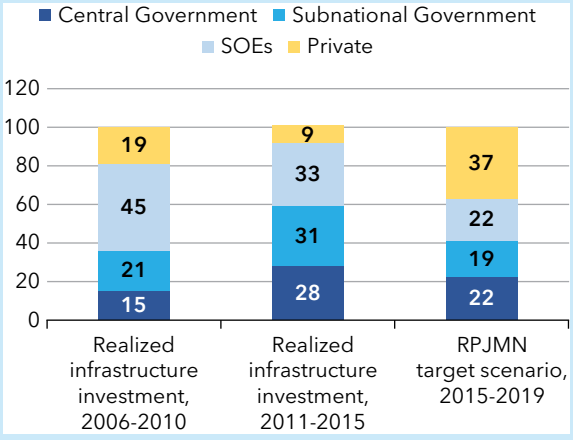
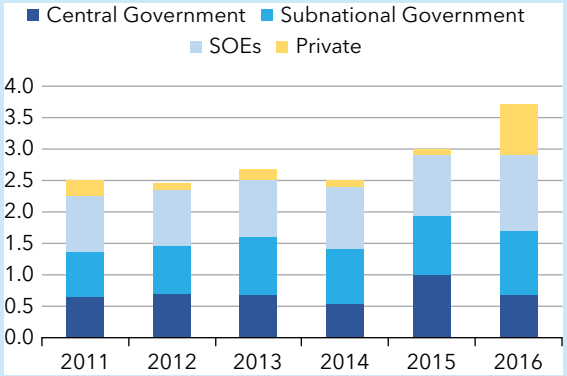


Figure B4.6.2. Funding of Infrastructure Investment (in percent of GDP)*



Source: Guidelines for implementing GHG emission reduction plan, 2011, World Bank.

*2015 and 2016 reflect budgeted amounts.

Dimension C.2.c: Does the regulatory and oversight framework for public corporations ensure that their climate-related investments are consistent with national climate policies and guidelines?

PCs play an important role in climate-relevant public investment in many countries. This dimension assesses whether there are mechanisms in place to encourage, support, facilitate, or require consistency between public investments by PCs and the government's climate policies.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
The regulatory and oversight framework for public corporations does not promote consistency between their climate-related investments and national climate policies and guidelines.	The regulatory and oversight framework for public corporations ***promotes consistency*** between their climate-related investments and national climate policies and guidelines.	The regulatory and oversight framework for public corporations ***requires that their climate-related investments be consistent*** with national climate policies and guidelines.

RELATED INSTITUTIONS IN PIMA

5.c, 2.a[7]

MEANING OF KEY TERMS

Term	Definition
Regulatory and oversight framework	The set of rules set by the government in its capacity as owner or majority owner of PCs covering requirements for PCs to prepare corporate strategic planning documents; to follow prescribed processes for infrastructure project planning, appraisal, and approval; and to report on project implementation, outputs, and outcomes. The rules may be contained variously in broad laws, regulations, or formal instruments such as MOF/central agency instructions or circulars. It also includes the general market regulatory framework as it applies to PCs and affects their climate-relevant investments.
Promote consistency	Use of mechanisms such as encouragement, guidance, support, facilitation, or provision of incentives that fall short of imposing a mandatory obligation or requirement.

Note that the provision of central guidance to PCs on the preparation and costing of climate-aware public investment strategies is covered in C.1.a.

SPECIFIC QUESTIONS

- In the exercise of its ownership function, does the regulatory and oversight framework stipulate that relevant central government entity(s) discuss strategic plans, including investment plans of relevant nonfinancial and financial PCs from a climate change perspective? Is the government required to approve strategic investment plans?
- Does market regulation—for example, of electricity markets—encourage or discourage low-carbon investments by PCs?

[7] Note that when scoring C-PIMA C.2.c, if there has been a previous or simultaneous PIMA, it is important to ensure consistency with PIMA 5.c, which refers to government review of corporation investment plans. If the review includes climate change elements, then this is a mechanism that promotes consistency with government climate policies.

- Does the regulatory and oversight framework stipulate that a government entity discuss, formally review, and approve major individual climate change–related projects or programs with implementing PCs?
- Does the government require relevant PCs to incorporate climate objectives, targets, and indicators in their performance contracts or statements of corporate intent and to report against them?
- Are PCs required to report publicly on their GHG emissions and their exposures to climate-related risks?

It is insufficient for government oversight of PCs to rely only on the participation of government officials on corporation boards of directors. While this may help promote or at times require consistency on climate-related investments, it is not formalized, open, or consistent in design across different ministries that may be represented on a single board or across different corporation boards. The requirement for an open and more arms-length regulatory and oversight framework is also consistent with clearer accountability of corporation boards for corporate performance. To the extent that the framework imposed on PCs with respect to climate change mitigation or adaptation impacts their financial performance, an open oversight framework provides clearer accountability both for corporations and government.

A **not met** score indicates that the legal and oversight framework for PCs either does not exist or does not promote consistency between their climate-related investments and national climate policies and guidelines.

A **partially met** score indicates that the legal and oversight framework for PCs promotes consistency between their climate-related investments and national climate policies and guidelines.

For **fully met**, the legal and oversight framework for PCs requires that the climate-related investments of PC be consistent with national climate policies and guidelines.

IMPORTANT DOCUMENTS

Documents	Use
• The laws and regulations covering public corporations	• Do these refer to climate change adaptation or mitigation?
• Strategic plans, statements of intent, performance agreements, and annual reports of the largest public corporations in terms of climate change mitigation and adaptation	• Do these refer to climate change adaptation or mitigation and to government requirements, policies, and guidelines?

Box 4.7 describes the comprehensive oversight of PC climate-related infrastructure investments in Mauritius.

Box 4.7. Regulatory and Oversight Framework in Mauritius

The strategic planning and budget framework in Mauritius facilitates coordination and decision making on climate change-related projects across the public sector. These planning documents apply to all central government, subnational government, and public corporations, including PPPs and externally financed projects.

The regulatory and oversight framework for public corporations promotes consistency between climate-related investments and national climate policies and guidelines. The main public corporations in Mauritius include the Central Electricity Board, MARENA (Renewable Energy), Central Water Authority, Wastewater Management Authority, Airport of Mauritius, Mauritius Port Authority, Roads Authority, and Mauritius Shipping Corporation. These corporations are owned by the Government of Mauritius with senior personnel from line ministries serving as board members, and they operate as state monopolies. They coordinate closely with the respective line ministries, and major infrastructure projects are

included in both sectoral strategies and the Public Sector Investment Program (PSIP). Public corporations' investment projects contribute to achieving national climate change-related goals, particularly in the energy, water, and transport sectors. The tender announcement from MARENA in the figure below illustrates the close collaboration between public corporations and government agencies in pursuing climate-related initiatives.

MARENA
Mauritius Renewable Energy Agency

CALL FOR PROPOSALS

The **Mauritius Renewable Energy Agency (MARENA)** in collaboration with the Ministry of Energy and Public Utilities, the Central Electricity Board, the Energy Efficiency Management Office and the Mauritius Research and Innovation Council (MRIC) is pleased to invite proposals from prospective Developers/Promoters under Round 1 of the "***National Scheme for Emerging Project Concepts based on Renewable Energy Technologies***".

Proposals should be submitted online at https://www.marena.org/schemes/NSEPCRET by 14 December 2022. Only online applications will be considered. Please visit the above website for more information.

Level 6, The Célicourt Tower, Sir Célicourt Antelme Street, Port Louis 11302
Tel: (+230) 214 2222 | **Fax:** (+230) 214 2230
Website: www.marena.org | **Email:** info@marena.org

Source: Capital Projects Process Manual, MOF 2017, https://www.marena.org/

C. C3: Project Appraisal and Selection—Do Project Appraisal and Selection Include Climate-Related Analysis and Criteria?

A climate focus during the project appraisal and selection phases of the PIM cycle is key to ensure that climate-resilient and low-carbon projects are developed and selected. This institution assesses whether the appraisal and selection of public investment projects are conducted using appropriate and adequate climate-related analysis and methodologies, and whether the framework for PPPs explicitly addresses climate-related challenges. The inclusion of climate-related elements weighs them together with economic, fiscal, social, and other environmental factors in the overall appraisal and selection process.

Dimension C.3.a: Does the appraisal of major infrastructure projects require climate-related analysis to be conducted according to a standard methodology?

This dimension assesses whether the possible impacts of projects on GHG emissions, and the exposure of projects to physical and transition risks from climate change including damage from climate-related disasters, are identified and analyzed in the project preparation stage before projects are included in a PIP or pipeline of projects, or when selected for funding in the budget. Relevant methods for this type of assessment include, for instance, climate risk screening, GHG accounting, and the use of social cost of carbon and quantification of climate-related risks in the project economic analysis. This is a crucial reform for countries to align their investment projects with mitigation and adaptation objectives. Box 4.8 describes arrangements in the United Kingdom.

The standard methodology for Environmental Impact Assessments (EIAs) of infrastructure projects does not incorporate a project's impact on GHG emissions. EIAs typically consider local environmental impacts, such as air and water quality, flora and fauna, habitats, visual impacts, noise, and more. A requirement to assess such impacts on the local environment is enshrined in law in many countries. However, traditional EIAs do not incorporate global impacts such as GHG emissions, although some countries have recently

amended their EIA regulations to include GHG emissions. The assessment of whether EIA requirements contribute to the scoring of this dimension C.3.a must therefore be on a country-specific basis. Finally, EIAs do not consider the reverse direction of impact—the project's exposure to climate-related disasters.

Note also that a C-PIMA does not consider the level of carbon pricing in the economy (e.g., the level of taxes on carbon or the prices set by an emissions trading scheme [ETS]). A C-PIMA does, however, include an assessment of whether the government uses a shadow carbon price in conducting cost-benefit analysis of major infrastructure projects—see below. A shadow carbon price is an institutional arrangement within government for conducting project appraisal to ensure that the negative externalities related to GHG emissions are incorporated in cost-benefit analysis of public investment projects. Fiscal and regulatory policies such as a carbon tax or an ETS, on the other hand, are not internal to government but act directly on the economy. They are outside the scope of PFM and of the C-PIMA.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
The appraisal of major infrastructure projects does not require climate-related analysis to be conducted according to a standard methodology.	The appraisal of major infrastructure projects requires climate-related analysis to be conducted according to a standard methodology.	The appraisal of major infrastructure projects requires climate-related analysis to be conducted according to a standard methodology, ***and a summary of appraisals is published or subject to independent external review.***

RELATED INSTITUTIONS IN PIMA

4.a, 4.b, 4.c

MEANING OF KEY TERMS

Term	Definition
Climate-related appraisal analysis	Technical details relating to: • Climate change adaptation, for example, hazard analysis, risk mapping and screening, loss and damage estimation, vulnerability analysis, use of risk scenarios, dealing with climate uncertainty in project design, for example, through climate-robust physical design features, delaying full implementation until better information is available, by implementing in stages, by doing "no regrets" elements first,[8] or through the use of real options.[9] • Climate change mitigation, for example, estimation of business-as-usual GHG emissions and gross and net GHG impacts of alternative technologies; estimation of marginal abatement cost curves; use of parameters such as the social cost of carbon, shadow price of carbon, and appropriate long-term discount rates.

[8] No-regrets elements refer to project components that are likely to generate net benefits under a wide range of future climate scenarios.

[9] Real options with respect to public investment refer to the opportunity to delay full implementation of an adaptation measure until better information is available to enable resolution of uncertainty about climate impacts, for example, building a seawall with a stronger than necessary foundation now to enable the height to be raised in future should sea level rise be higher than anticipated.

Term	Definition
Standard methodology	One or more methodologies that should be used for specified purposes, as officially directed in legislation, regulations, and guidelines from a responsible government unit. At a minimum, the standard appraisal methodology for climate-related analysis should cover both screening and project appraisal. Appraisal methodologies may vary based on the sector or size of the project.
Major projects	See Appendix II.
Summary of appraisals	A summary of the appraisal of each individual major project or two or several project appraisals (as opposed to a single combined summary of all appraisals).
Independent external review	A review of an appraisal methodology and results conducted by an external party that has no connection to or involvement in the original appraisal, hired to provide impartial advice, and thus more likely to objectively apply a standard set of rules or criteria.

SPECIFIC QUESTIONS

- Is there a standard methodology for appraisal in government that includes climate-related elements? Is it a requirement to apply the standard methodology?
- Does a standard methodology contain technical details on climate change adaptation?
- Does a standard methodology contain technical details for climate change mitigation?
- Does a standard methodology contain information on relevant data sources, for example, climate data and projections, hazard data, historical damage to infrastructure, GHG emission factors, and life cycle costs for climate-relevant technologies?
- Is there guidance on appraising climate-related investment projects on a proportional basis? For instance, threshold project size(s) above which more detailed climate appraisal should be conducted.
- Is it mandatory that major climate-related investment projects are appraised both for their impacts on the climate and for potential climate change impacts on the projects as relevant?
- Is there central support for the application of climate-sensitive project appraisal?
- Are the project appraisals (or summaries of appraisals) of major climate-related projects—including the key climate-related details—published on either a routine or ad hoc basis, or if not are they at least publicly available on request?
- Are the project appraisals of major climate-related projects—including the key climate-related details—subject to independent external review?
- What are the practices of development partners in a country with respect to the conduct of project appraisals? (Box 4.9). This is not relevant to the scoring of this dimension but is part of the context in which national appraisal takes place.

A **not met** score indicates that there is no procedural, regulatory, or legal requirement for climate-related appraisal of major climate-related projects. The requirement for appraisal might be completely missing or it might not include climate-related elements.

For a **partially met** score, there will be a procedural, regulatory, or legal requirement for project appraisal of major climate-related projects and the appraisal methodology provides clear guidance on how to appraise projects from a climate change perspective.

A **fully met** score means that, in addition to the requirements for partially met, the appraisal results are required either to be published or subject to independent external review. Publication should, as a minimum, include a description of the overall project, key issues, conclusions stemming from the analysis, assumptions made in the analysis, and any recommendations for modifying the project proposal. If appraisal results are

made subject to external review, it is expected that the external reviewers are qualified for the task and will have access to full information about the project and the appraisal that has been done.

Note that when scoring C-PIMA C.3.a, if there has been a previous or simultaneous PIMA, it is important to ensure consistency with PIMA 4.a and 4.b. PIMA 4.b refers to a standard methodology for project appraisal, and PIMA 4.a refers to selected results of appraisals being published or undergoing independent external review.

IMPORTANT DOCUMENTS

Documents	Use
• Project appraisal requirements, guidelines, cost-benefit analysis manual, or similar documents issued by the central government, e.g., the Ministry of Finance or Planning or a relevant sector ministry	• To what extent do these cover climate-related elements?
• Published project appraisals or appraisal summaries of climate-related projects	• Is publication required? How extensive is the publication of relevant appraisals or summaries?

Box 4.8 describes the climate-sensitive project appraisal framework in the United Kingdom.

Box 4.8. Incorporating Climate-Related Analysis into Project Appraisal in the United Kingdom

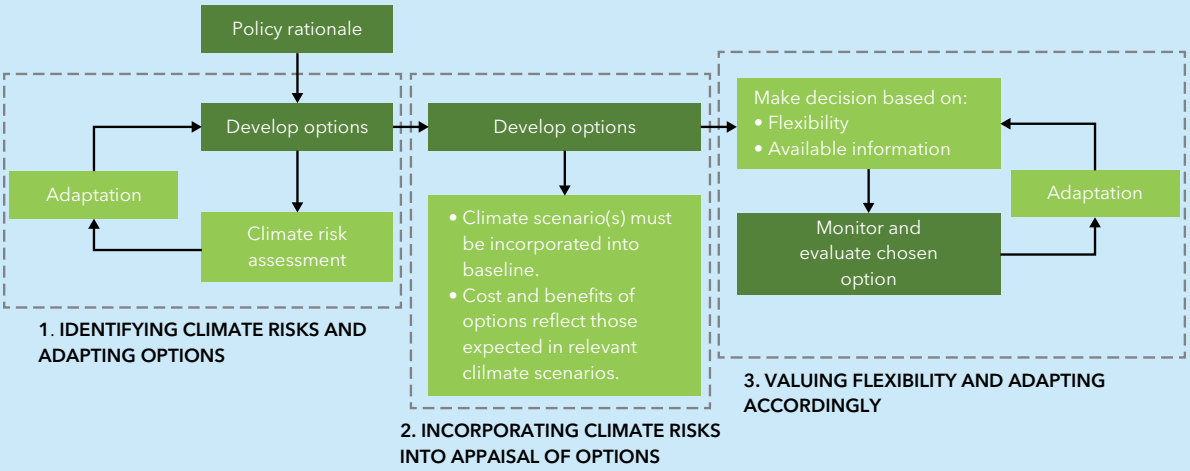
Infrastructure projects are required to incorporate climate analysis in progressively more developed business cases as they undergo gateway reviews. These business cases adhere to a standard methodology outlined in the Green Book and other guidance materials. Business cases prepared for investment projects outline the outputs and outcomes of a project, evaluating its design and return on investment. The "five-case model" is applied, which entails defining (1) the strategic case, (2) the economic case, (3) the commercial case, (4) the financial case, and (5) the management case. These cases are developed through the Strategic Outline, Outline Business Case, and Full Business Case, which are akin to the project concept, pre-feasibility and feasibility stages in other countries.

The United Kingdom's appraisal methodologies, templates, tools, and examples are typically publicly available. Support is also offered by the Treasury (HMT) to assist departments and agencies in implementing this framework. Certain departments offer guidance on how to apply appraisal methodology within their sectors, with the Department for Transport providing the most comprehensive guidance in this regard.

The Infrastructure and Projects Authority performs business case assurance for major projects in the government portfolio, and in recent years has increased the effort placed on assurance of projects that are relevant to achieving net-zero GHG emissions. Business cases are also reviewed by HMT and relevant departments to ensure quality. Additionally, HMT provides monthly training sessions to assessors of business cases.

"Accounting for the Effects of Climate Change: Supplementary Green Book Guidance" outlines the methodology for integrating climate change considerations into project development and decision-making processes (Figure B4.8.1). Originally published in 2009 and updated in 2020, this document provides guidance on how project development, appraisal, and decision making should take into account climate change.

Figure B4.8.1. Building on the Green Book Approach to Account for Climate Change



Source: Accounting for The Effects of Climate Change: Supplementary Green Book Guidance, 2020.

Box 4.9 describes the Multilateral Development Bank's practices of climate-sensitive project appraisal.

Box 4.9. Multilateral Development Bank Practices in Integrating Climate Change in Project Appraisal

The World Bank Group (WBG) mainstreams climate change into the analysis of infrastructure project proposals, through (1) screening for climate risks and building in appropriate risk mitigation measures, (2) conducting GHG accounting, and (3) applying a shadow carbon price for all material investments.

- GHG accounting is about quantifying the impact of a project on GHG emissions and disclosing both gross and net GHG emissions of a project.
- Shadow price of carbon puts a price on the project's emissions and includes the carbon externality in the economic analysis.
- Climate and disaster risk screening is an initial, but essential, step to ensure that climate risks are assessed and managed in development projects. The screening exercise maps out climate risk exposures and suggests options for risk mitigation measures in project design.
- The new Environmental and Social Framework (ESF) enables the World Bank and borrowing countries to better manage environmental and social risks and to improve development outcomes. The ESF integrates climate change and disaster risks into its environmental and social due diligence process.

The Asian Development Bank (ADB) also has a comprehensive practice in mainstreaming climate change and disaster risks in lending operations. The main elements are (1) climate risk management and climate proofing of ADB projects in the agriculture, energy, transport, and water sectors, (2) GHG emission accounting for energy and transport projects, (3) application of social cost of carbon in economic analysis of projects, and (4) integration of climate risk and GHG emissions into the bank's safeguards policy.

The ADB's and WBG's practices on climate change and disaster risk mainstreaming are consistent and form part of the broader collaboration and joint efforts between the multilateral development banks to align their investments with the Paris Agreement goals.

Sources: Asian Development Bank; World Bank; https://climatescreeningtools.worldbank.org/

Dimension C.3.b: Does the framework for managing longer-term public investment contracts, such as PPPs, explicitly address climate-related challenges?

PPPs and other long-term infrastructure contracts commit the government over the term of the contract, typically 20 to 30 years. This means that risks from climate change—either exposures to climate-related disasters, mitigation risks such as the lock-in of high-emitting infrastructure, or both—are likely to arise at some point during the term of the contract, depending on the nature of the project. It is important that careful analysis of climate-related risks is integrated into PPP project appraisal, selection, procurement, and contract management procedures.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
The referred framework does not include explicit consideration of climate change for risk allocation or contract management.	The referred framework includes explicit consideration of climate change with respect to how risks are allocated between the parties in infrastructure contracts.	The referred framework includes explicit consideration of climate change with respect to how risks are allocated between the parties in infrastructure contracts, ***and contract managers in government departments and agencies are mandated to address climate-related challenges.***

RELATED INSTITUTIONS IN PIMA

5.b

MEANING OF KEY TERMS

Term	Definition
PPPs	Long-term arrangements where the private sector supplies infrastructure assets and services that have been traditionally provided or financed by the government. PPPs typically comprise a long-term contract between a private party and a government entity for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance.
Framework for managing PPPs	Includes provisions in laws and regulations, as well as detailed guidance material issued by responsible authorities.

SPECIFIC QUESTIONS

- Does the framework for the management of longer-term public investment projects such as PPPs explicitly recognize that long-term contracts expose the government to risks and uncertainty in the face of climate change in comparison to standard public investment?
- Is climate change risk analysis an explicitly required component in comparing a proposed PPP against a public sector comparator project?
- Does the framework for PPPs (including any manuals or guidelines) contain explicit guidance on the allocation of risks between the PPP operator and government that are influenced by projected and possible climate change?

- Is the exposure of PPP assets to future climate change an explicit element in the design of PPPs? For instance, in requirements for risk allocation, in construction, service delivery, asset handover, in assessing possible contractual restrictions on future policy change?
- Are procedures in place to ensure that critical aspects identified in the project preparation phase are then included in the preparation of the tender documents and, as well, inform the performance indicators in the contract management phase?
- Is there a requirement for responsible officials to formally indicate that potential climate change impacts have been incorporated in the analysis at project appraisal, selection, procurement, and the design of contract management procedures?

A **not met** score on this dimension indicates that there is no reference to climate change in the PPP framework. That is, while disasters may be referred to that are climate related, there is no reference to the possible increase in their incidence and/or severity due to climate change and to implications of this for how PPPs should be designed, appraised, or managed. This is likely to be the case currently in many countries.

A **partially met** score requires that the PPP framework contains some discussion of the implications of climate-related disasters for the design of PPPs. This might include a discussion of force majeure risks and how they should be allocated between the government and the partner.

A **fully met** score requires that the PPP framework contains at least one formal requirement for PPP contract managers in government departments and agencies to address climate-related challenges. This could include the following:

- A formal requirement (e.g., in a regulation or central agency circular) that rigorous climate change risk analysis be presented to decision makers in justifying a proposed PPP project in comparison to standard public investment
- A requirement that all PPP contracts contain mandatory insurance against force majeure risks including risks from climate-related disasters

IMPORTANT DOCUMENTS

Documents	Use
• PPP law and/or procurement regulations relating to long-term contracts	• Do they include any explicit references to climate change considerations?
• Guidance material on the design of PPP projects issued by central agencies or relevant sector ministries	• Is there any discussion of how to design PPP projects to reduce the exposure of infrastructure assets and services to climate-related risks in the context of long-term contracts? Is exposure to climate change–related risks an element in comparing a PPP against a public sector comparator?

Box 4.10 describes Jamaica's PPP legal framework and manual, which enable climate-related analysis in PPP project appraisal, selection, procurement, and contract management.

Box 4.10. PPP Framework in Jamaica

Jamaica has utilized public-private partnership (PPP) arrangements extensively since 2011.

These PPPs are likely to gain importance as an avenue to tackle climate-related investment needs, where resources and expertise of both the public and private sectors must come together to address the existential challenges facing the island. To this end, in 2023, the authorities amended the Policy

(*Continues on next page*)

and Institutional Framework for the PPP Policy Program to integrate climate-related analysis in PPP project appraisal, selection, procurement, and contract management procedures. Additionally, the authorities revised the PPP Standard Operating Procedure Manual to reflect these requirements.

The manual which operationalizes the policy defines the processes and procedures to integrate climate considerations in the four critical PPP project phases: (1) project identification, (2) business case, (3) transaction, and (4) contract management. The procedures outlined in the manual for each PPP project phase are summarized below. Furthermore, the manual includes useful templates for each PPP project phase. It is intended to be useful for the government entity in charge of PPPs—the Development Bank of Jamaica (DBJ)—as well as the enterprises, financial institutions, and development organizations interested in exploring various aspects of PPP management.

The PPP Standard Operating Procedure Manual: Guidance by Project Phase Embedding Climate

- Resilience at the PPP Project Identification Stage: the assessments and guidance in this section help the DBJ/Government of Jamaica (GoJ) PPP teams in ensuring that their projects align with GoJ development goals and objectives. Guidance is also provided to help project teams consider, at a high level, how climate risks can impact the potential project.
- Embedding Climate Resilience at the PPP Business Case Stage: this section provides guidance to help project teams integrate climate resilience considerations into the various technical, financial, economic, and environmental analyses conducted to determine if the project is viable and best delivered as a PPP.
- Embedding Climate Resilience at the PPP Transaction Stage: the guidance in this section helps DBJ PPP teams/enterprise teams in integrating climate resilience considerations into designing the contract, qualifying bidders, tendering the project, and evaluating bids received.
- Embedding Climate Resilience at the PPP Contract Management Stage: the decision support tools in this section of the toolkit assist governments and project planners in tracking any climate-related agreements established during the Transaction Stage. They also help in managing any unforeseen climate-related risks that may arise over the life of the PPP.

Sources: 2023 Policy and Institutional Framework for the Public-Private Partnership (PPP) Policy Program and the 2023 PPP Standard Operating Procedure Manual; IADB, 2020, Climate Resilient Public Private Partnerships: A toolkit for Decision Makers.

Dimension C.3.c: Are climate-related elements included among the criteria required by the government for the selection of infrastructure projects?

This dimension assesses whether, at the key project gateway of selection for funding in the budget, or other source of financing, climate-related elements are explicitly included among the list of decision criteria used by the government. These criteria normally include elements such as consistency with government's policy priorities, expected net benefits, and fiscal affordability. The criteria should also include consistency with government's climate change mitigation objectives and appropriate design to mitigate exposure and vulnerability to climate risks.

Project selection may be done before the budget decision, for instance, through a separate cabinet decision or as part of the budget decision process. The institution focuses on the government's decision regarding the project, although this may be subject to subsequent endorsement by the legislature.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
Either there are no explicit selection criteria or climate-related elements are not included among the criteria required by the government for the selection of projects for financing.	Climate-related elements are included among the criteria required by the government for the selection of all major ***budget-funded projects,*** and the criteria are published.	Climate-related elements are included among the criteria required by the government for the selection of ***all major projects, including externally financed projects, projects financed by extra-budgetary entities, and PPPs,*** and the criteria are published.

RELATED INSTITUTIONS IN PIMA

10.a, 10.b, 10.c

MEANING OF KEY TERMS

Term	Definition
Major project	See Appendix IV.
Project selection	The government's decision to implement a specific investment project.
Published	Information made readily accessible to the general public in a proactive and inexpensive way. Modes of communication that constitute publication include printed documents prepared by the government and open-access government websites.

SPECIFIC QUESTIONS

- If the government has formal project selection criteria for public investment projects, do they explicitly refer to climate change? Do they cover both mitigation and adaptation?
- Are the selection criteria well designed? Do they refer to elements of prioritization across projects? Do they refer to alignment with national climate change policy or NDC targets? Do they refer to any details? For instance, for mitigation, a comparison against Business-as-Usual baseline, or for adaptation, to asset exposure to and resilience to climate change?
- Is there a formally mandated process for selecting projects from a climate perspective?
- If the project selection criteria include climate-related elements, are the criteria published?

A **not met** score indicates that there are no published selection criteria or criteria that are general and do not provide clear guidance on which projects should be selected or not. It is common that countries require projects to be consistent with national plans and priorities such as climate strategies and policies. However, this level of generality does not necessarily provide clear guidance.

A **partially met** score indicates that the selection process is defined in law or regulation, there are published selection criteria, and these provide clear guidance on which projects are to be selected, for example, by requiring consistency with time-bound NDC commitments. However, the selection criteria only apply to major budget-funded projects.

A **fully met** score means that, in addition to the requirements for partially met, the selection criteria apply also to major projects financed externally, by EBEs, and PPPs.

Note that when scoring C-PIMA C.3.c, if there has been a previous or simultaneous PIMA, it is important to ensure consistency with PIMA 10.b which also refers to published criteria for project selection.

IMPORTANT DOCUMENTS

Documents	Use
• Project selection criteria in official documents such as the annual budget circular, a planning ministry circular, and a guide on cost-benefit analysis	• What references do these documents contain to climate change–related selection criteria?

Box 4.11 describes Rwanda's climate-sensitive project prioritization and selection.

Box 4.11. Project Selection in Rwanda

In 2023, Rwanda updated its multicriteria project selection analysis to be more climate change sensitive. Table B4.11.1 provides the full list of project selection criteria and their respective weights.

Table B4.11.1. Selection Criteria with Climate Consideration

Criteria	Percentage	Weighting Multiplier
National Sector Priority	20	0.2
Sector Ministry's own Project Priority	10	0.1
Project Efficiency	20	0.2
Effects on the Climate	15	0.15
Resilience to the Effects of CC	15	0.15
Degree of Gender Balance	5	0.05
Compliance with other ESG requirements	5	0.05
Number and Type of Jobs Created	5	0.05
Distribution of Benefits	5	0.05
Total	100	1

Effects on the Climate	Number of Points Awarded
Carbon Positive	3
Carbon Neutral	2
Carbon Negative but with maximum mitigation	1

Resilience to the Effects of CC	Number of Points Awarded
No risk (or minor theoretical risk) from CC	3
Small risk/low impact from CC but acceptable mitigations in place	2
Significant risk/low to medium impact from CC but acceptable mitigations in place	1

Source: Green & Climate sensitive project pre-screening and selection procedures (2023), Ministry of Finance and Economic Planning (MINECOFIN) of Rwanda.

D. C4: Budgeting and Portfolio Management—Is Climate-Related Investment Spending Subject to Active Management and Oversight?

Managing public investment resources with an eye on climate considerations throughout the budget cycle is an essential part of climate-aware (or broader "green") PFM. This institution assesses requirements relating to how the government's portfolio of climate-related public investment projects is identified and managed, from budgeting and reporting through to maintenance and the management of completed assets.[10] This institution provides the essential link between the planning and implementation phases of climate-related public investment projects and is one of the keys to mainstreaming climate in fiscal policies and budgets.

Dimension C.4.a: Are planned climate-related public investment expenditures, sources of financing, outputs, and outcomes identified in the budget and related documents, monitored, and reported?

This dimension assesses whether the government has requirements and systems in place that enable the identification of budgeted climate-related investment projects and to track expenditures and how they are financed. Tracking refers to the ability to identify, classify, and monitor climate-related public investment expenditures. A government may for instance define a list of climate-related public investment projects and track spending on them using the project classification of expenditure. There is no need to have a climate budget tagging system in place that defines specific budget expenditure line items, program codes, elements in the government's chart of accounts, or markers such as Rio markers.[11]

Having an operational definition of what constitutes climate-related investment spending enables identification of the quantum of budgets and outturns allocated to climate-related projects, facilitates external financing, tracking of trends over time, and evaluations of the results achieved by these expenditures.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
Planned climate-related public investment expenditures are not identified in the budget and related documents.	***Some*** planned climate-related public investment expenditures are identified in the budget and related documents, including projects funded externally, by extra-budgetary entities, and PPPs.	***Most*** planned climate-related public investment expenditures, ***sources of financing, and outputs and outcomes*** are identified in the budget and related documents, including projects funded externally, by extra-budgetary entities, and PPPs, ***and expenditure on these projects is monitored and reported.***

RELATED INSTITUTIONS IN PIMA

6.a, 6.c, 7.b

MEANING OF KEY TERMS

Term	Definition
Budget and related documents	The executive's annual budget submission to the legislature together with documents that are published with it. In addition to the draft appropriation bill,

(*Continues on next page*)

[10] Allen and others (2020) discuss the importance of integrating the planning and budgeting functions.

[11] The distinction between tracking and tagging is the approach adopted in PEFA Climate indicator CRPFM-2 on tracking climate-related expenditure.

Term	Definition
	these documents could include a fiscal strategy statement, a medium-term budget framework, a fiscal risk statement (FRS), a document on public investment,[12] a document on program budgets, a climate or green budget statement, and a report on the execution of the budget for the previous year.
Sources of financing	Term used in the budget to describe types of financing with broadly similar conditions, such as external financing or PPPs.
Outputs	Goods and services produced by government agencies, for example, a completed highway.
Outcomes	The effects on social, economic, or environmental indicators arising from the delivery or completion of outputs, for example, change in GHG emissions due to a public investment project.
Scope of dimension	All of central government.

SPECIFIC QUESTIONS

- Does the government have a formal operational definition of what constitutes climate-related public investment spending by the central government? This could be a definition used during project planning, appraisal, and selection, as well as during budget preparation to identify projects intended to reduce GHG emissions and/or to adapt to climate change.[13]
- Does the government formally identify climate-related investment spending in a National Development Plan or National Investment Plan and if so, does it report actual spending, financing, and outputs and outcomes?
- Does the government have a formal definition of climate-related spending that can be used to identify and report a subset of projects that are financed from a domestically established Climate Fund or Environment Fund (real or notional), or from international climate finance such as sovereign green bonds?
- Does the government have a program budgeting system as part of its PFM system that requires or enables the identification of climate-related public investment in project and budget documents and in fiscal reports from the specification of programs? If so, is climate-related investment identifiable in the budget documents?
- Is there a requirement that any definitions, budgets, and reports of climate-related public investment include expenditures that are anticipated to have harmful effects on the environment? For instance, increased GHG emissions.
- Is there a requirement that the annual budget and related documents present information on central government climate-related public investment spending? At what level of detail? For instance, by MDA, by project, by program, disaggregated by adaptation and mitigation. Does the required information include performance information, for example, key performance indicators (KPIs), outputs, and outcomes?
- Does the information above include relevant PPPs, any climate-related transfers to SNGs, to a Climate Fund or other EBF, or to PCs responsible for implementing climate-related investments on behalf of the government?

[12] A document on climate-related public investment may be published by a Planning Ministry or other agency at a different time from the budget documents but must relate to the forthcoming budget year.

[13] The definition may also be applied during implementation to report actual spending. If so, how is the definition applied in practice in project and budget preparation, budget implementation, and in-year and end-of-year reporting? (Although this is not part of the scoring of institutional design.) Is the definition used to identify public projects eligible for nongovernment sources of climate finance, for example, external public finance, private, and alternative sources of project finance?

- Are there requirements for the financing of climate-related public investment to be identified and published in budget documents? For instance, projects or activities financed by external development partners, international green financing, or green bonds.
- Are there requirements for budget and related documents to include information at the project or program level on the anticipated outcomes of climate-related investments, such as reduced GHG emissions, co-benefits of GHG reductions such as improvements in air quality or human health, or reduction in the costs of climate-related disasters?
- Is there a requirement for reports to be published on actual spending on climate-related public investment? With what periodicity and lag? Does the requirement include reporting on outputs?
- Is there a requirement that ex post information be reported on the actual outcomes of climate-related investment projects, for example, impacts on GHG emissions?

This dimension should assess whether there is a requirement to identify climate-related public investment expenditure in the budget and a requirement to monitor and report the expenditures. Whether climate-related public expenditures are actually tracked in the budget, monitored, and reported is an issue of effectiveness that does not influence the institutional design score.

A **not met** score implies that there is no formal requirement to identify climate-related public investment expenditures in the budget and other related documents.

A **partially met** score indicates that the legal and regulatory framework requires the identification of climate-related public investment expenditures in the budget, including projects funded externally, by EBEs, and PPPs. For a partially met score, the identification of climate-related public spending is required for less than half of the sectors that are referred to in national climate change mitigation or adaptation strategies or plans, such as an NDC, NAP, or equivalent documents.

For a **fully met** score, the legal and regulatory framework requires the identification, sources of financing, outputs, and outcomes of the climate-related public investment expenditures in the budget, and monitoring and reporting of these expenditures. For a fully met score, the requirement should apply to more than half of the sectors that are referred to in national climate change mitigation or adaptation strategies or plans, such as an NDC, NAP, or equivalent documents.

IMPORTANT DOCUMENTS

Documents	Use
• PFM and budget laws, regulations, and treasury instructions	• Are there any formal requirements for identifying climate-related spending across the budget cycle? • Is there a program budget system that enables the identification of climate-related spending?
• Budget and related documents	• What do the various budgets and related documents contain on planned climate-related public investment expenditures, sources of financing, outputs, and outcomes?
• Budget implementation reports by the Ministry of Finance or line ministries and agencies	• What do budget implementation reports contain on climate-related public investment expenditures, sources of financing, outputs, and outcomes? • Is there evidence of any monitoring of these parameters during the year or at the end of the year? For instance, comparison with previous years, variance analysis, and adjustments.

Box 4.12 describes Bangladesh's climate budget reporting.

Box 4.12. Budget Reporting in Bangladesh

Budget Report 2023–24 represents Bangladesh's Sixth Annual Climate Budget Report. This report encompasses an analysis of climate-relevant allocations across 25 ministries/divisions of the government for the fiscal years FY 2019–20 to FY 2023–24, as well as an expenditure analysis for the period from FY 2019–20 to FY 2021–22. The report is structured into four sections. The first section provides a brief overview of Bangladesh's climate change policy, planning, and implementation framework, alongside presenting global and national perspectives on climate change. The second section delves into the budget allocations for 25 climate-relevant ministries/divisions, including an assessment of the nature of expenditures and tracking of key thematic data (Figures B4.12.1 and B4.12.2). The third section provides a brief account of the Bangladesh Climate Change Trust Fund, Green Climate Fund, National Adaptation Policy (NAP), Nationally Determined Contribution (NDC), Delta Plan, and the allocation of finance for climate-relevant planning and funds. Finally, the fourth and final section concludes with some observations and recommendations based on the analysis presented earlier.

In FY 2023–24, the total climate-relevant budget allocation across the 25 ministries/divisions accounts for 54.09 percent of their total budgets, with 8.99 percent specifically for climate-relevant expenditures. The climate-relevant allocation for operational budget increased from 6.88 percent in FY 2019–20 to 7.04 percent in FY 2023–24. The development budget allocation for climate change increased from 9.83 percent to 10.84 percent during the same period.

Figure B4.12.1. Climate-Relevant Allocation across BCCSAP Thematic Areas in FY2023–24 (in percent of total climate change-relevant allocation)

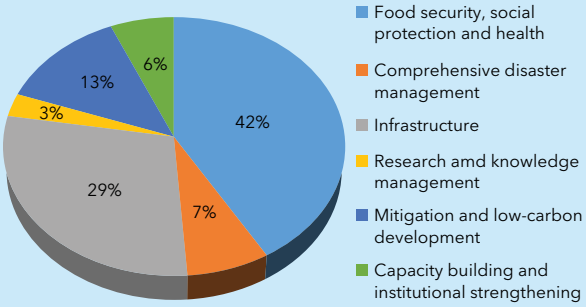
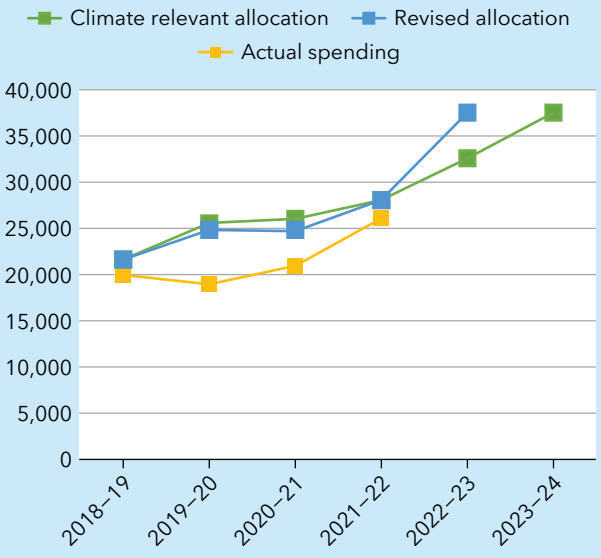


Figure B4.12.2. Climate-Relevant Allocation and Expenditure of 25 Ministries/Divisions (2018–19 to 2023–24) (amount in crore taka)



Source: Bangladesh Climate Budget Report 2023–24.

Dimension C.4.b: Are ex post reviews or audits conducted of climate change mitigation and adaptation outcomes of public investments?

Ex post reviews or audits are exercises conducted after the completion of the construction stage of a project and during the service delivery phase. Their purpose is to compare climate mitigation or adaptation outcomes of investment projects against the anticipated outcomes in approved planning and project documents. Reviews may be ad hoc or part of a systematic process and include reviews by government entities and performance audits by the Supreme Audit Institution.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
No ex post reviews or audits are conducted on the climate change mitigation and adaptation outcomes of public investments.	Ex post reviews or audits are conducted for selected major public investments in ***either climate change mitigation or adaptation outcomes.***	Ex post reviews or audits are conducted ***and published*** for selected major public investments in ***both climate change mitigation and adaptation outcomes.***

RELATED INSTITUTIONS IN PIMA

13.c, 14.c

MEANING OF KEY TERMS

Term	Definition
Published	Information that is made readily accessible to the general public in a proactive and inexpensive way. Modes of communication that constitute publication include printed documents prepared by the government and open-access government websites.

SPECIFIC QUESTIONS

- Is there a formal requirement to review the actual climate-related impacts of public investments or projects (for example, GHG impacts, adaptation components)?
- Does the review requirement cover all central government public investments no matter how they are financed?
- What review mechanisms are required? For instance, post project review by the implementing agency, evaluation by specialized staff, sector review, and performance audit by the Supreme Audit Institution.
- Is there a requirement or policy on the publication of reviews and performance audits? If they are not published, are they publicly available on request? For instance, through the application of a Freedom of Information Law.
- Is there a requirement that completed projects are monitored for possible adjustment needs in response to climate change? For instance, where projects include an embedded real option, is there a requirement that those projects be monitored to assess whether and when the government should exercise the option?

This dimension should assess whether there is a requirement for ex post reviews or audits to be conducted and published. Whether reviews or audits are conducted and published in practice is an issue of effectiveness that does not influence the institutional design score.

A **not met** score indicates that there is no legal requirement for ex post reviews of the climate-related impacts of public investments and the legal mandate of the Supreme Audit Institution does not include audit of climate-related elements.

A **partially met** score indicates that there is a legal requirement or mandate to undertake either an ex post review or an external audit of a climate-related public investment project. The ex post review or external audit should cover either climate change adaptation or mitigation outcomes of the project.

A **fully met** score indicates that there is a legal requirement or mandate to undertake either an ex post review or an external audit of a climate-related public investment project and mandates that the results be published. The ex post review or external audit should cover both climate change adaptation and mitigation outcomes of the project.

IMPORTANT DOCUMENTS

Documents	Use
• Legal and regulatory framework for public investment management and the Supreme Audit Institution (SAI)	• Are there requirements in the legal and regulatory framework for climate-related post project reviews and SAI audits?
• Project reviews and evaluation reports	• Does any review or report contain information at the project level on the impacts of the project on GHGs, or on changes in the exposure to or actual damage to infrastructure from climate-related disasters?
• Audit reports	• Does any report contain information at the project level on the impacts of the project on GHGs, or on the exposure to or actual damage to infrastructure from climate-related disasters?

Box 4.13 describes Tamil Nadu's audit process and procedures for climate-related investment programs.

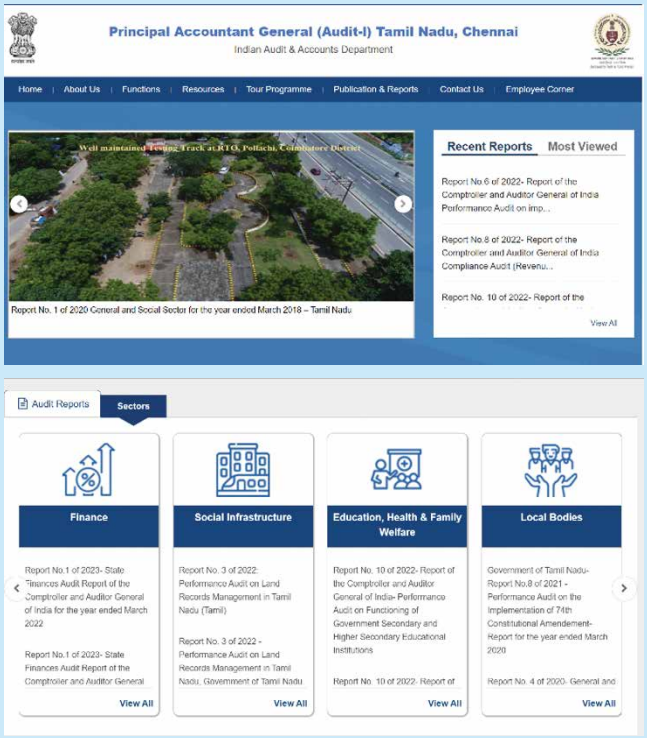
Box 4.13. Audit in Tamil Nadu, India

The audit wing of the Comptroller and Auditor General (CAG) has taken steps to integrate climate change in its audit program, building upon capacities developed at the national level.

The International Centre for Environment Audit and Sustainable Development (ICED) was operationalized in 2013 under the aegis of the Indian CAG for capacity building and knowledge sharing in environment audit and sustainable development. ICED is a designated Global Training Facility of the Working Group on Environmental Audit of the International Organization of Supreme Audit Institutions. Its research and training activities have extensively covered topics related to climate change (audit of urban transport and bus rapid transit; urban flood management in India).

Benefiting from these training and research activities, the Tamil Nadu branch of the CAG has already published a report on flood management and response in Chennai and its suburban areas (2017), as well as contributed to a report on the conservation of coastal ecosystems covering several Indian states (2022).

All reports are published and available for scrutiny by the Public Accounts Committee, Audit Reports|Principal Accountant General (Audit-I) Tamil Nadu, Chennai (cag.gov.in).



Source: India – State of Tamil Nadu PIMA/C-PIMA 2023.

Dimension C.4.c: Do the government's asset management policies and practices, including the maintenance of assets, address climate-related risks?

Climate change is likely to result in increased maintenance requirements in specific sectors while also resulting in an increased incidence of disaster-related damage to infrastructure assets. This dimension assesses the government's policies and requirements for incorporating climate considerations in monitoring and maintaining the service delivery potential of assets.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
Neither the government's asset management policies and practices nor methodologies for estimating the maintenance needs of climate change-exposed infrastructure assets address climate-related risks.	Methodologies prepared by the government for estimating the maintenance needs of ***some*** climate change-exposed infrastructure assets address climate-related risks.	Methodologies prepared by the government for estimating the maintenance needs ***and associated costs*** of ***most*** climate change-exposed infrastructure assets address climate-related risks, ***and government asset registers include climate-related information on these assets.***

RELATED INSTITUTIONS IN PIMA

9.a, 9.b, 9.c, 15.a, 15.b

MEANING OF KEY TERMS

Term	Definition
Asset register	A record of the fixed assets a government entity owns that contains each asset details such as date of purchase, cost, specification, physical condition, depreciation, and potentially other climate change-related information such as energy efficiency rating or damage to or impairment of assets due to climate-related disasters or loss of value due to climate change transition risks.
Methodology for estimating maintenance needs	Refers to a formal procedure involving an assessment of the physical requirements to maintain infrastructure asset performance and the associated cost of performing the maintenance, for example, a highway requires resealing every x years, at a budgeted cost of y percent of asset cost.

SPECIFIC QUESTIONS

- Do the methodologies used to estimate routine maintenance needs and maintenance costs for climate change-exposed infrastructure assets incorporate explicit consideration of the exposure of assets to increased maintenance needs due to climate change, for example, is there an additional allowance for increased maintenance needs and does it apply differentially across infrastructure and asset types based on differentiated estimates of increased exposures?
- Are the climate-related maintenance methodologies published?
- Do the methodologies used to determine the need for major improvements to climate change-exposed infrastructure assets incorporate explicit consideration of the exposure of infrastructure assets to increased requirements for major reconstruction, refitting, or retrofitting due to climate change?
- Are there requirements for asset registers (or other records) to contain information either on the exposure of public infrastructure assets and networks to climate change or to actual damage to or impairment of assets due to the impacts of climate change? Are asset registers required to be regularly updated?
- Are asset registers (or other records) required to contain information on the contribution to the emission and capture of GHGs of relevant assets?
- Are asset registers required to contain other climate-related information, such as the energy efficiency rating of buildings?
- Is there a requirement that climate change transition risks to the value of relevant assets are recorded in asset registers? For example, the risk of a coal-fired power station suffering a major loss of value as carbon taxes or carbon prices increase (stranded asset risk).
- Is there a requirement that the government publishes a balance sheet that incorporates changes in infrastructure asset values due to climate-related impairments?

A **not met** score implies that there are either no government asset management policies and practices and methodologies for assessing maintenance needs, or those documents do not provide guidelines on how to assess the maintenance needs of climate change-exposed infrastructure assets.

A **partially met** score indicates that there are methodologies for assessing maintenance needs for some climate change-exposed infrastructure assets. For a partially met score, the methodologies should apply to 25 percent or more of the sectors referred to in NDC and NAP or equivalent strategies and plans.

A **fully met** score implies that there are methodologies for assessing maintenance needs for some climate change-exposed infrastructure assets. For a fully met score, the methodologies should apply to 50 percent

or more of the sectors referred to in NDC and NAP or equivalent strategies and plans. The government asset registers should also include climate-related information on these assets for 50 percent or more of the sectors referred to in NDC and NAP or equivalent strategies and plans.

IMPORTANT DOCUMENTS

Documents	Use
• Legal and regulatory framework for public asset management	• Are there requirements for asset registers to record climate-related information on assets?
• Relevant sector ministry documents/ methodologies for estimating maintenance costs	• Is exposure to climate-related risks referred to as a factor in setting norms for maintenance or for estimating maintenance budgets?
• Ministry of Finance guidelines or circulars on budgeting for maintenance	• Is exposure to climate-related risks referred to as a factor in setting maintenance budgets in relevant sectors?

Box 4.14 describes the United Kingdom's incremental approach to a climate-resilient asset registry.

Box 4.14. Asset Registers and Management in the United Kingdom

In the United Kingdom, the Better Business Case process incorporates an assessment of whether a project has plans for maintenance and resilience in place at project completion. The Gateway 5 Review includes tests of how the assets will be satisfactorily maintained over the lifecycle of the asset, and whether sustainability targets are met or exceeded and are appropriately aligned to net zero. The review also tests whether management has a resilience framework in place, including a plan to undertake regular stress tests and implement plans to address any vulnerabilities identified. The Gateway 5 Review also tests whether ongoing management plans take account of who will maintain the asset and who will run operational services, for example, for a rail project, this could include Network Rail and the relevant Train Operating Companies.

The asset maintenance also addresses climate change adaptation risks. The two main operators of infrastructure assets in the transport sector, Network Rail and Highways England, have integrated climate change adaptation into their strategies and activities. Technical standards for estimating maintenance needs have been updated to reflect the increased incidence of disasters, which impacts funding and pricing reviews.

There is a central property register that records climate-related data and supports reporting against targets. Government organizations are required to record their property information on the government's central database, the Electronic Property Information Mapping Service to support performance reporting. It covers property owned or occupied by central government departments, executive agencies, and nondepartmental public bodies, and government companies and the coverage is expanding. The Government Property Unit collects performance data for inclusion in an annual State of the Estate Report published by the Cabinet Office. Individual organizations also report on the energy rating of newly procured buildings and this information is summarized in the State of the Estate Report.

The key performance indicators reported are the following:

- The overall size of the Central Estate
- The total cost of the Central Estate
- The utilization of office space per person
- Compliance with the commitments to procure buildings in the top quartile of energy performance
- Sustainable performance for GHG emissions, waste, and water consumption

Source: United Kingdom C-PIMA 2023.

E. C5: Risk Management—Are Fiscal Risks Related to the Impact of Climate Change on Infrastructure Incorporated in Budgets and Fiscal Risk Analysis and Managed According to a Plan?

As with other types of fiscal risk, governments need to be aware of climate-related risks to public investments and their potential impact on public finances. This institution takes stock of how the government identifies and manages its exposures to climate change–related fiscal risks in public investment, recognizing that a growing number of mechanisms are available to countries to mitigate these risks. These risks that are increasing in significance are expected to be chronic sources of fiscal risk in all countries, and therefore warrant explicit attention.

Note that fiscal risk mitigation needs to be distinguished from climate change mitigation. Fiscal risks are factors that may cause fiscal outcomes to deviate from expectations or forecasts. These factors comprise potential shocks to government revenues, expenditures, assets, or liabilities, which are not reflected in the government's fiscal forecasts or reports (IMF 2018b). Climate change mitigation refers to actions to limit the magnitude and/or rate of long-term climate change. Therefore, climate change mitigation and fiscal risk mitigation are two different concepts, although the meaning of the term "mitigation" is common to the two: taking actions to reduce the likelihood of negative outcomes.

Dimension C.5.a: Does the government publish a National Disaster Risk Management Strategy that incorporates the projected impact of climate change on public infrastructure assets and networks?

This dimension assesses governments' readiness to manage disaster-related risks to existing and new public infrastructure. This covers a range of elements from location-specific data on hazards and asset exposures to arrangements for rebuilding infrastructure after a disaster. A National Disaster Risk Management Strategy (NDRMS) generally covers exposure to disasters; disaster risk governance at the national and subnational levels; disaster risk reduction approaches; and disaster preparedness and response. The UN Office for Disaster Risk Reduction has actively supported national efforts in disaster risk reduction for a number of decades and 122 countries now have a National Disaster Risk Management Strategy.[14] Table 4.1 summarizes the main types of climate-related disasters.

Table 4.1. Types of Climate-Related Disasters

Sudden impact disasters	Tropical storms, floods, landslides, wildfires, and heatwaves.
Slow-onset (chronic) disasters	Sea level rise, droughts, desertification, deforestation, and pest infestation.
Compound disasters	Typhoon following earthquake[15]; combination of sea level rise and storm surges; industrial accident triggered by a disaster; epidemic disease following a disaster.

Source: IMF staff estimates and projections.

[14] See the UN Sendai Framework implemented by the UN Office for Disaster Risk Reduction, https://www.undrr.org/implementing-sf

[15] For instance, the 1855 Edo earthquake in Japan severely damaged the structures earlier erected as defenses against typhoon events. They were not rebuilt before a typhoon almost a year later caused extensive damage and much greater damage than if the typhoon defenses had been rebuilt in time. Liu and Huang, *Compound Disasters and Compounding Processes: Implications for Disaster Risk Management*. Asian Development Bank Institute/National Graduate Institute for Policy Studies, January 8, 2014.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
Either there is no published National Disaster Risk Management Strategy, or the strategy does not identify the key climate-related risks to public infrastructure assets and networks.	The government publishes a National Disaster Risk Management Strategy that identifies the key climate-related risks to public infrastructure assets and networks in terms of hazards, exposure, and vulnerability.	The government publishes a National Disaster Risk Management Strategy that identifies ***and analyses*** the key climate-related risks to public infrastructure assets and networks in terms of hazards, exposure, and vulnerability, ***and includes the government's plans to mitigate and respond to these risks.***

RELATED INSTITUTIONS IN PIMA

This C-PIMA institution does not have a related PIMA institution.

Note that Principle 3.2.7 in the IMF Fiscal Transparency Code (FTC), on environmental risks, assesses whether government's potential fiscal exposure to natural disasters is analyzed, disclosed, and managed, and published country Fiscal Transparency Evaluations have information on this.

MEANING OF KEY TERMS

Term	Definition
Publishes	Information made readily accessible to the general public in a proactive and inexpensive way. Modes of communication that constitute publication include printed documents prepared by the government, open-access government websites.
Hazard	The type of climate-related disaster that could damage an infrastructure asset, for example, typhoon, coastal flooding, landslip, torrential rain.
Exposure	Location-specific assessment of the potential for disasters to impact on an infrastructure asset. Table 4.2 contains data on the exposure of infrastructure assets to coastal flooding in the United Kingdom.
Vulnerability	How vulnerable or resilient the asset is to damage or service impairment from the hazards to which it is exposed.
Disaster	A serious disruption of the functioning of a community or a society involving widespread human, material, economic, or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources (UNISDR).
Compound disaster	Where one disaster may precipitate another, either by directly causing it or by severely impairing the resilience and response to the second event, for example, tropical storm triggering technological accident or epidemic.

Table 4.2. Exposure of Infrastructure Assets to Coastal Flooding in the United Kingdom

Infrastructure Asset at 1:75 or Greater Risk of Coastal Flooding (present day)	England	Northern Ireland	Scotland	Wales	Total (UK wide)
Water sites (no.)	3	11	0	8	22
Sewage treatment works (no.)	53	0	20	18	91
Power stations (no.)	34	0	1	0	35
Electricity substations (no.)	23	0	4	7	34

(*Continues on next page*)

Rail length (km)	114	20	65	312	511
Rail stations (no.)	5	3	5	12	25
Landfill sites	0	0	0	0	0

Source: Technical Report of the Third UK Climate Change Risk Assessment (CCRA3), Chapter 4.

SPECIFIC QUESTIONS

- Is there a legal requirement for government to publish an NDRMS or equivalent document? Is the strategy published?
- What is the strategy required to cover with respect to public investment? For instance, improving understanding of risks to public infrastructure assets and networks from climate-related disasters; building data on the level of exposure of public infrastructure to disasters and the level of vulnerability to damage; strengthening disaster risk governance; investing in climate-related disaster risk reduction (e.g., higher infrastructure construction standards, early warning systems); enhancing disaster preparedness for effective responses to climate-related disasters, for example, operational frameworks for "Building Back Better" after a disaster.
- Does the strategy assess the potential economic and social impacts of climate-related damage to public infrastructure? Is the strategy required to include plans to mitigate these impacts?
- Are government-provided insurance/support mechanisms (explicit schemes such as flood insurance or implicit coverage such as post disaster relief) potentially encouraging new building or rebuilding of private assets in high-risk areas that then generate demand for public infrastructure services in those areas?
- Are there procedures to speed up public investment procurement in response to climate-induced disasters? Are the procedures appropriate? Do they include ex ante and ex post safeguards?

A **not met** score implies that the national disaster risk management strategy is absent or the climate-related risks to infrastructure have not been identified and analyzed in the strategy.

A **partially met** score indicates that the government has issued a national disaster risk management strategy. This should identify hazards, exposure, and vulnerability of infrastructure assets and networks.

For a **fully met** score, a national disaster risk management strategy is published and it identifies and analyses the hazards, exposure, and vulnerability of infrastructure assets and networks. The strategy also includes mitigation measures to decrease the risk posed by natural disasters to critical infrastructure and plans to respond to these risks.

IMPORTANT DOCUMENTS

Documents	Use
• National Disaster Risk Management Strategy (NDRMS) or similar national strategy document	• To what extent does the NDRMS identify and analyze the key climate-related risks to public infrastructure assets and networks in terms of hazards, exposure, and vulnerability? Does it include government plans to mitigate and respond to these risks? • Does it cover post disaster reconstruction of infrastructure?

Box 4.15 describes several countries' use of technology in climate-related hazard risk mapping.

Box 4.15. Using Technology to Improve Climate-Related Hazard Risk Mapping

An effective response to the challenge of climate-related hazards requires accurate geophysical information on the location, nature, and frequency of such hazards. Generating this kind of information requires the synthesis of a range of data, including accurate geophysical maps; precise data on the location of current and planned infrastructure, housing, buildings, and other structures; detailed data

on past, present, and predicted future incidence of hazards; data on other environmental factors; and information on the location, size, and nature of past climate-related natural disasters.

In many cases, technology can help support the development of this kind of synthesized data through the use of sophisticated satellite imaging techniques and through the use of mapping programs to bring multiple datasets together. Several countries' experience demonstrates how this can be done:

- **Jamaica:** The government is investing in geohazard mapping tools to support its response to the risk of climate-related disasters. The Planning Institute of Jamaica (PIOJ) is developing the Jamaica Systematic Risk Assessment Tool (J-SRAT) as a geospatial analysis platform that identifies hotspots of climate vulnerability across critical infrastructure to help prioritize the planning of resilient capital investment. Functional improvements underway include use of spatial "event sets" of hurricanes and flooding, and enhanced analysis of adaptation options. J-SRAT will contribute directly to risk screening for public infrastructure projects.
- **Cook Islands:** Infrastructure Cook Islands (ICI) has commissioned a study using sophisticated "light detection and ranging" (LiDAR) approaches to map land and marine areas up to 35 meters in depth across all 15 islands of the country. This will generate accurate 3D information on the earth's surface and objects such as buildings, trees, other ground cover, and stores of underground water. The imaging will support a number of uses: for planning, it will map the current landscape more accurately; for environmental protection, it will improve understanding of existing land use and land use change over time; for transport, the data will clarify understanding of optimal transport paths; and for emergency management, the data will allow the identification of areas and assets most at risk to natural disaster and severe weather impact.
- **Costa Rica:** The "Commision Nacional de Emergencias" operates a number of public-access disaster and hazard maps, covering issues such as hurricanes, fires, emergency callouts, and earthquakes. This is part of the commission's role under the National Law on Emergencies and Risk Prevention which mandates it to coordinate the activities of all state institutions active in the field of disaster preparedness and response.
- **Grenada:** The government publishes a national disaster risk management and response strategy and conducts analyses of key climate-related risks to public infrastructure assets. The Disaster Resilience Strategy 2022 (DRS) consolidates Grenada's disaster risk management strategies and presents a comprehensive set of responses and risk mitigation plans. The DRS builds on the solid foundation of past and ongoing disaster preparedness and response efforts in the country, including the National Hazard Mitigation Plan 2006 (NHMP), which undertook a detailed analysis and hazard mapping of climate-related disaster risks (such as floods, landslides, storm surges, and coastal erosion) and their impacts on different types of infrastructure including roads, ports, energy and water supply infrastructure, government buildings, schools, and hospitals.

Sources: DRS 2022, NHMP 2006; IMF (2023) "Cook Islands: Public Investment Management Assessment"; IMF (2023) "Jamaica: Climate Public Investment Management Assessment"; website of the CNE: www.cne.go.cr

Dimension C.5.b: Has the government put in place ex ante financing mechanisms to manage the exposure of the stock of public infrastructure to climate-related risks?

How a government meets the fiscal cost of damage to public infrastructure caused by climate-related disasters is increasingly important for service delivery, fiscal sustainability, and efficient public investment. This includes the extent to which ex ante mechanisms are in place to meet the costs of smaller more frequent

events as well as to finance infrequent major disasters. This includes budget contingencies, insurance mechanisms, and capital market access.

Ex ante financing mechanisms may have benefits compared to financing arranged after a disaster strikes. For instance, an annual budget contingency fund enables rapid response to smaller-scale and possibly regular disasters (such as seasonal flooding), allowing faster restoration of infrastructure and resumption of service delivery. Buffer funds allow a faster and more focused response to a major disaster compared to international disaster relief. Insurance mechanisms often contain incentives for disaster risk reduction (e.g., risk-related premia), while instruments such as parametric insurance[16] are triggered immediately on occurrence of a major calamity allowing rapid disaster response and can also help ameliorate the impact of a major disaster on government's debt servicing capacity.

As with insurance of private sector assets, insurance schemes for public assets should guard against incentives to build excessively in disaster-prone areas, for example, through risk-related premia and through appropriate zoning regulation.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
The government has not put in place any ex ante financing mechanisms to manage the exposure of the stock of public infrastructure to climate-related risks.	There is an annual contingency appropriation in the budget ***or other financing mechanisms*** that is available to meet the costs of climate-related damages to public infrastructure.	There is an annual contingency appropriation in the budget ***and other financing mechanisms*** that are available to meet the costs of climate-related damages to public infrastructure.

RELATED INSTITUTIONS IN PIMA

This C-PIMA institution does not have a related PIMA institution.

Note that Principle 3.2.1 in the IMF FTC, on budget contingencies, assesses whether the budget has adequate and transparent allocations for contingencies that arise during budget execution, and published country Fiscal Transparency Evaluations will have information on this.

MEANING OF KEY TERM

Term	Definition
Other financing mechanisms	A range of mechanisms that includes a Disaster Fund with balances that carry over at the end of the year, a disaster-contingent credit line (such as Catastrophe Deferred Drawdown Options, or CAT DDOs), risk transfer instruments such as indemnity insurance, parametric insurance, or disaster-contingent bonds, and other types of instruments. The key element of this type of mechanism is that it must, according to the formal rules for its activation, be available to meet the costs of climate-related damages to public infrastructure.

[16] Parametric insurance is a type of insurance contract that insures a policyholder against the occurrence of a specific event by paying a set amount based on the magnitude of the event (e.g., wind speed above a specific threshold in kilometers per hour), as opposed to the magnitude of the losses in a traditional indemnity policy, which can take an extended period to assess.

SPECIFIC QUESTIONS

- Does the government's annual budget include an appropriation that is formally available to meet the costs of climate-related damage to infrastructure? For instance, the costs of smaller more frequent disasters such as annual floods. Is this a general contingency appropriation (whether lapsing at the end of the budget year or with carry-over of unspent amounts) or an appropriation specifically devoted to meeting the costs of disasters? If the former, do the criteria for accessing the appropriation include meeting the costs of (climate-related) disasters?
- Does the ordinary budget of a line ministry or agency, such as a Road Agency, routinely include a line intended to meet the cost of emergency repairs following a natural disaster?
- If there is no available contingency appropriation, how is it intended that smaller disaster-related repairs to infrastructure will be financed? For instance, through virement (transfer of funds in-year from other projects), which can interrupt project implementation, or supplementary budgets, or are repairs delayed, allowing asset condition to deteriorate, impairing service delivery?
- Instead of, or in addition to an annual contingency appropriation, what other ex ante financing mechanisms are in place, if any, such as a multiyear Disaster Fund, contingent credit, risk transfer instruments such as indemnity insurance, parametric insurance, disaster-contingent bonds, or other similar instruments?
- Is there a national disaster risk financing strategy incorporating a risk layering approach to the financing of climate-related damages to public infrastructure? For instance, contingency appropriation funding for smaller annual storm damages; reserve funds for higher cost disasters such as periodic floods; risk transfer (e.g., insurance) for public infrastructure assets damaged by high cost/lower probability climate-related disasters such as typhoons.

A **not met** score indicates that there is neither an annual contingency appropriation in the budget nor other financing mechanisms to meet the costs of climate-related damages to public infrastructure.

A **partially met** score indicates that there is either an annual contingency appropriation or other financing mechanism to meet the costs of climate-related damages to public infrastructure.

A **fully met** score indicates that there is both an annual contingency appropriation in the budget and at least one other financing mechanism to meet the costs of climate-related damages to public infrastructure.

IMPORTANT DOCUMENTS

Documents	Use
• Budget laws, documents, and budget implementation reports, and Ministry of Finance circulars relating to contingency appropriations, Disaster Funds, or similar instruments and their use	• Is there a contingency appropriation, Disaster Fund, or other instrument that is intended to be used to meet the costs of damage to public infrastructure from climate-related disasters?
• Ministry of Finance or sector ministry documents	• Is there evidence of instruments to transfer financial risk from damage to infrastructure from climate-related disasters? • Do the instruments have features that create incentives for disaster risk reduction? How rapidly is the financing expected to be available following a disaster?

Box 4.16 describes Mozambique's comprehensive range of ex ante financing mechanisms to manage reconstruction of infrastructure after natural disasters.

Box 4.16. Ex Ante Financing Mechanisms in Mozambique

Mozambique has a range of financing instruments drawn on to manage the exposure of infrastructure assets to climate-related risks, including budget instruments and parametric risk insurance mechanisms. In 2022, the government adopted a Plan for Financial Protection against Disasters (2022–27), which outlines financing mechanisms for disaster management.

- **Ordinary budget:** The Road Fund of the Ministry of Public Works, Housing, and Water Resources has a specific annual subprogram budget line for national-level emergency maintenance of roads and bridges. Between 2014 and 2024, the budget allocation to the emergency recovery of roads and bridges averaged MT 2.4 billion per year.
- **Sovereign parametric insurance:** In 2022, the government through the National Institute of Disaster Management secured a parametric risk transfer insurance against tropical cyclones, covering the cyclone and rainy season of 2022/23. The annual insurance premia of $4 million/year was financed by the WB. The $35 million coverage (per hazard) was designed to provide Mozambique with a payout when certain triggers are met. This insurance facilitated the government's response to Cyclone Freddy in February 2023. With financial support from the WB, the insurance against tropical cyclones was renewed for the cyclone and rainy season of 2023/24 and will continue in 2024/25. In addition, with support from the African Development Bank, which also financed the premia of $2 million/year, authorities secured a parametric risk transfer insurance against drought, covering the 2023/24 drought season.

Source: 2022–27 Plan for Financial Protection against Disasters.

Dimension C.5.c: Does the government conduct and publish a fiscal risk analysis that incorporates climate-related risks to public infrastructure assets?

Governments should formulate their fiscal policy with knowledge of the potential exposure of the budget and fiscal outlook to the impacts of climate change on public infrastructure. This should include analysis of the exposure to a range of fiscal risks relating to climate change, including physical risks and transition risks, as outlined in Box 4.17.

While the likely increase in the incidence and severity of climate-related disasters is widely recognized, the exposure of public infrastructure to these risks is less well developed. There is also a wider range of fiscal risks from climate change that are even less well recognized, and that MOFs need to identify, analyze, and respond to.

Box 4.17. Fiscal Risks from Climate Change Related to Public Infrastructure

Climate change creates fiscal risks through a number of channels:

- The costs of *adapting* to climate change due to the likely increased incidence and severity of natural disasters and the increased exposure of assets to disasters, for example, preventive costs (e.g., building protective infrastructure such as flood barriers, retrofitting or building new infrastructure to higher standards) and recovery costs (such as replacing damaged infrastructure). Key sectors include transport infrastructure and urban water supply to increase climate resilience.

Climate change is also likely to exacerbate other environmental pressures, such as stress on freshwater resources, which is a critical threat to sustainable development in many countries even in the absence of climate change and therefore creates significant macro-critical fiscal risks.

- The costs of maladaptation to climate change, such as continuing to construct public infrastructure in, and allowing private investment in, areas highly exposed to climate-related disasters.
- The costs of *mitigation of GHG emissions*. Building new low-carbon infrastructure generally entails higher initial capital outlays, although the cost of renewables has fallen, and operating costs may be lower. Governments may need to partially finance the transition to a low-carbon economy to meet their international and domestic climate commitments, e.g., investments in the electricity network to accommodate renewables and the construction of EV charging infrastructure. As a large part of the investment required to cut carbon emissions is undertaken by the private sector, the government may also provide fiscal support to de-risk private investment (e.g., by reallocating, sharing, or reducing risks borne by private infrastructure investors). Key investment areas include low-carbon electricity generation, storage, and networks, and public transport.

Transition risks are risks arising from the shift to a low-carbon economy due to policy changes (e.g., carbon pricing), technological changes, and changes in consumer and investor preferences. Transition risks relating to public infrastructure include the following:

- The loss of value of publicly owned (government or public corporation) fossil fuel power stations, oil refineries, and other carbon-based infrastructure as carbon prices increase. These assets risk becoming "stranded assets."
- Exposure of financial public corporations to losses on loans for or insurance of climate-exposed infrastructure assets.
- Fiscal support for research and development on new infrastructure technologies, e.g., nuclear power, carbon capture, and storage.
- Possible legal action against government or public corporations relating to major infrastructure projects based on their climate impacts.
- Delayed investment in the energy transition, resulting in escalating costs as the length of the required/targeted transition becomes shorter.

Public infrastructure is particularly exposed to risks from climate change because of its long-lived nature. The C-PIMA is designed specifically to assess and improve the resilience of public infrastructure to climate change and to reduce the impacts of infrastructure on the climate.

Source: IMF staff estimates and projections.

QUESTIONNAIRE

Not Met	Partially Met	Fully Met
The government does not conduct a fiscal risk analysis that incorporates climate-related risks to public infrastructure assets.	The government conducts and publishes a fiscal risk analysis that incorporates a ***qualitative*** assessment of climate-related risks to public infrastructure assets over the medium term.	The government conducts and publishes a fiscal risk analysis that incorporates a ***quantitative*** assessment of climate-related risks to public infrastructure assets over the medium term ***and policies to mitigate these risks, and a qualitative assessment of the risks that may arise over the long term.***

RELATED INSTITUTIONS IN PIMA

This C-PIMA institution does not have a related PIMA institution.

MEANING OF KEY TERMS

Term	Definition
Fiscal risk analysis	An assessment of the likelihood of occurrence and possible cost of risks to the public finances and of possible measures to mitigate the fiscal risks. May be of specific sources of fiscal risk, for example, the physical and transition risks from climate change. Or the analysis may combine risks from different sources to conduct an alternative macro-fiscal scenario or a fiscal stress test, for example, a combined macroeconomic shock and shocks from specific fiscal risks such as climate-related natural disasters. In addition, the impacts of climate change on public investment spending represent a long-term challenge to fiscal sustainability.
Qualitative assessment	In addition to identifying relevant specific sources of risks, some discussion of the nature of the risks, their relative size, and which types of infrastructure assets are most exposed to the risks.
Medium term	A period usually covering the current year plus two to three additional years which may be applied both to budgets and planning documents.
Long term	Anything beyond the medium term, although in some contexts is taken to mean 10 to 30 years plus, for example, in the IMF *Fiscal Transparency Handbook*.

SPECIFIC QUESTIONS

- Are there any legal requirements for government to publish information on fiscal risks from climate change, including a Strategy or National Plan on Climate Change Mitigation or a National Adaptation Plan, a fiscal risk statement (FRS), or a long-term FRS, or other equivalent document?
- If so, what are the specific legal requirements? Do they include both qualitative and quantitative information and analysis?
- To what extent does any assessment of fiscal risks from climate change related to public investment spending consider all risk transmission channels: mitigation costs, adaptation costs, and all transition risks?
- Do the assessments include only descriptive and qualitative material, or do they also include quantitative material?
- What does any quantitative material cover? For example, estimates of the historical incidence of climate-related disasters, estimates of historical costs of damages to public infrastructure from climate-related disasters, estimates of the possible future incidence of climate-related disasters, categorization of possible future fiscal costs of climate-related disasters (e.g., high/medium/low/remote probability), or estimation of possible future fiscal costs of climate-related disasters.
- Does the advice to government on medium-term fiscal strategy and/or annual budget strategy refer to climate-related risks to public investment? If so, in what depth?
- Does any fiscal stress test include the possible occurrence of a major climate-related disaster(s)?
- Is the advice above included in the published budget or other documents?
- Does the government publish an FRS that includes a section on or separate discussion of natural disasters including climate-related disasters? Does the FRS assess the possible impacts of climate-related disasters on public investment expenditures and public asset values? Does it discuss the possible fiscal costs of climate change adaptation and of climate change mitigation? Does it discuss strategies to mitigate these risks?
- Does the government conduct any analysis of fiscal sustainability beyond the medium term, for example, 10 years or beyond? If so, does the analysis refer to risks to fiscal sustainability from the

impacts of climate change on public investment spending? Is there any quantitative component in the analysis, such as long-term projections of the fiscal aggregates, does it include different assumptions about the possible impacts of climate change on public investment or different climate scenarios? Is the document(s) published?

- What are the institutional arrangements across government and within the MOF for compiling the necessary data, conducting analyses, and for publishing information on climate-related fiscal risks?

Note that in scoring this dimension for institutional design, the wording of the questionnaire should be interpreted as whether the government is required to conduct and publish a fiscal risk analysis. Whether the government does so is an issue of the effectiveness of the institutional design.

A **not met** score indicates that there is either no legal requirement to conduct and publish a fiscal risk analysis or an analysis of climate-related risks to public infrastructure assets is not required.

For a **partially met** score, the government is required to conduct and publish a fiscal risk analysis that incorporates a qualitative assessment of climate-related risks to public infrastructure assets over the medium term.

A **fully met** score indicates that the government is required to conduct and publish a fiscal risk analysis that incorporates a quantitative assessment of climate-related risks to public infrastructure assets over the medium term. The analysis should include measures to mitigate these risks, and a qualitative assessment of the risks that may arise over the long term.

IMPORTANT DOCUMENTS

Documents	Use
• Public finance and budget laws and regulations	• Do they refer to the conduct and publication of details of fiscal risks, including climate-related fiscal risks?
• Fiscal Strategy Report, fiscal risk statement, Long-Term Fiscal Statement	• Do these documents discuss climate-related fiscal risks relating to public infrastructure in qualitative terms, in quantitative terms? • Do they discuss policies to mitigate these risks?
• Strategic plans of main climate-exposed sector ministries	• Do these documents discuss climate-related fiscal risks relating to public infrastructure in qualitative terms, or in quantitative terms? • Do they discuss policies to mitigate these risks?

Box 4.18 describes Costa Rica's analysis of climate transition risks in the transport sector.

Box 4.18. Fiscal Risk Analysis in Costa Rica

Costa Rica is implementing a plan to decarbonize its transportation sector. This long-term plan will have a series of significant benefits for the Costa Rican economy, especially in making economic growth sustainable and environmentally friendly. However, these actions could generate fiscal risks.

In the case of Costa Rica, the fiscal risks are quantified by considering (1) the potential cost for the central government of implementing electric public transportation means, (2) the change in fuel tax revenues due to increased importation of electric or environmentally friendly vehicles, and (3) the change in revenue from other taxes due to increased importation of electric or environmentally friendly vehicles. Regarding the implementation of electric public passenger transportation means, the cost would be associated with the subsidies required to be transferred to the service operator

(*Continues on next page*)

to maintain a minimum expected profitability. As for the fuel tax, the effect would come from the decrease in fossil fuel demand, which would have a direct impact on revenue.

The 2023–28 Medium-Term Fiscal Framework (MTFF) estimates the fiscal cost of the three analyzed elements at 2.4 percent of GDP in present value terms. Additionally, the MTFF presents some scenario analysis.

Source: 2023–2028 Medium Term Fiscal Framework.

5. CROSS-CUTTING ISSUES

Climate-sensitive infrastructure governance requires support frameworks to make it effective. A C-PIMA also assesses the same three cross-cutting issues evaluated in the PIMA, as they are equally important to managing climate-relevant PIM institutions: the legal framework, information systems, and staff capacity.

A. Legal Framework

While legal aspects of C-PIMA institutions are discussed under each institution, it is important to also consolidate and summarize common legal themes. The assessment needs to take account of the type of legal system (civil law or common law) and national legal traditions.[17] A typical legal hierarchy incorporates primary laws, secondary laws (or regulations), and technical guidelines and methodological documents at the third level (which are not part of the formal legal framework but should be assessed as part of the wider regulatory framework). A useful part of the cross-cutting issue section could be a table listing for each C-PIMA institution the existing laws, regulations, and guidelines as shown in Table 5.1.

Table 5.1. The National Legal Framework for Climate-Related PIM

Legal Hierarchy	Main Laws, Regulations, Guides with Dates	Relevant C-PIMA Dimension
Laws governing climate-related PIM		
Regulations governing specific aspects of climate-related PIM		
Guidelines and methodological documents for climate-related PIM functions		

Source: IMF staff.

General issues to cover in the assessment of the legal framework include the following:

- Are there any substantive gaps in the legal framework relating to climate change and PIM?
- Are there any inconsistencies in the legal framework, for example, between recent or new climate-related instruments relating to PIM and existing general PIM and PFM laws?
- Are there any overlapping formal competencies or lack of clarity over respective roles of different entities with respect to climate-related PIM? This assessment is an important input to designing capacity-building efforts.

[17] See further discussion in the PIMA Handbook, 2022, p. 171.

B. Information Systems

Information systems support PIM by capturing relevant climate-related data. They can include IT systems or other databases that capture project and asset-level information, which may be linked to or integrated with other government financial management information systems. Assessments related to adaptation are often particularly data heavy. Therefore, the ability of the country to capture, organize, and make this information accessible for infrastructure planning, appraisal, evaluation, and asset management is a key enabler of strong performance.

Some issues that should be considered in the assessment include the following:

- In some countries, multiple IT systems are being used to support different information needs with respect to climate-sensitive PIM, leading to fragmentation and lack of information sharing. Developing interfaces and data exchange between different IT systems is necessary to introduce climate considerations in PIM. In some cases, integration of separate systems may be feasible and desirable.
- The potential value of interface and data exchange between the national GHG measurement, reporting, and verification (MRV) system typically maintained by MoEnv as part of Paris Agreement commitments, and the PIM database maintained by the Ministry of Planning or MOF. The PIM database will desirably increasingly contain data on the emissions impacts of new public investment projects.
- Geographic Information System (GIS) mapping tools are increasingly important in managing risks to public infrastructure from climate-related hazards. Many countries are enhancing GIS mapping of hazards to incorporate multihazard maps and integrating in them the location of physical infrastructure to facilitate analysis of asset exposure and vulnerability and actions to reduce risks. Investing in freely accessible natural hazard and climate change data can have large returns:
  - Investments in risk data and models (such as hydrological models, maps of flood hazards, digital elevation models, and inventories of infrastructure assets) can improve the resilience of existing and new infrastructure.
  - Public access to online hazard data can help reduce private investment in hazard-prone areas, reducing economic losses and the government's implicit exposure to the costs of repairing private infrastructure.
- With respect to budgeting systems, it is important to carefully consider whether the desirability of identifying and reporting climate-related public investment spending requires the addition of new budget codes and investment in IFMIS capacity. Where feasible, consideration should be given to using existing program and project classifications to generate additional reports on climate-related public investment spending and performance.

C. Staff Capacity

Capacity to manage climate-sensitive PIM relates to individual staff skills, staff numbers, centralized guidance, support, and training, and to institutional capacity within key ministries and coordination capabilities between key ministries. While capacity is a key determinant of the effectiveness of institutions, it is also required to design the necessary laws and regulations, policies, standard operating procedures, and organizations and coordination arrangements.

The cross-cutting analysis of capacity should build on and summarize the assessments of different C-PIMA institutions and dimensions for which capacity, coordination, and skills gaps have been identified.

Staff capacity is a critical factor in the implementation of climate-sensitive public investment policies but given the recent emergence of the required functionalities—for example, design of climate-resilient infrastructure, use of shadow carbon prices in project appraisal—capacity limitations are a feature of all countries assessed to date. This is true even of early movers on climate change among advanced economies, such as the United Kingdom. People with the required skills in climate-sensitive PIM are scarce and in demand

by multiple institutions in the public and private sectors. The availability and uptake of staff training and support on the technical aspects of climate-sensitive PIM are particularly important, as many long-serving staff are unlikely to be trained in this area.

It is therefore important to be realistic in the assessment, and to identify the key constraints on climate-sensitive PIM, any opportunities to leverage existing expertise within and across entities, and any possible connections to wider capacity-building efforts underway on PIM, PFM, or climate change.

In general, the environment ministry is the entity with the most relevant capacity on climate change mitigation and adaptation in many countries. Some large infrastructure ministries may also have a separate unit responsible for climate change issues, for example, the transport and energy ministries. MoEnv is typically the lead agency with respect to the submission of NDCs and update reports, and in LIDCs and Middle-Income Countries, it has been the focus of international efforts to build in-country capacity, for example, by UNEP, the World Bank, activities financed by the Green Climate Fund. There will often be a climate change directorate in the environment ministry with some specialist staff and with responsibilities for coordination of climate policy and monitoring and reporting across government, for example, monitoring of a National Adaptation Plan and implementing the MRV platform. The environment ministry may have separate units responsible for mitigation and adaptation. It may be worth considering the possibility of leveraging the climate change expertise in the environment ministry to contribute to climate analysis by the Planning Ministry/MOF at key stages of the PIM cycle, such as project appraisal, and selection.

In some countries, government has fostered and leveraged capacity in local universities and research institutions.[18] There may also be opportunities to leverage the climate expertise in development partners that are financing public infrastructure in-country, for example, by transferring skills from national staff in project implementation units or by inviting IFI staff to give technical presentations (e.g., on the findings of post project reviews).

The central agencies with investment-related PIM responsibilities, such as the MOF or Planning Ministry, typically do not currently have separate units responsible for climate change, and in many countries have few if any staff with climate policy expertise.

It is important to reflect on whether the challenges for PIM created by climate change are appropriately reflected in the capabilities of central fiscal agencies to address them. It has been argued recently that effective climate action will not happen unless central fiscal agencies take action to drive climate action. With respect to PIM, MOFs need to manage fast-escalating economic and fiscal risks with macro-critical consequences, while also taking advantage of significant growth and development opportunities from the clean energy transition. MOFs will need to mainstream climate action within their core functions including fiscal management and public expenditure management. Different institutional approaches are emerging, depending on the available resources and the mandate of the MOF. The minimum requirement is to have designated and qualified staff acting as focal points for climate change issues, such as climate-sensitive PIM. Larger ministries may create dedicated climate units, while smaller ones may focus on coordination and focal point roles (Coalition of Finance Ministers for Climate Action 2023).

[18] For example, in the Indian state of Tamil Nadu, a Center for Climate Change and Disaster Management (CCCDM) and Climate Studio was established in 2008 at Anna University (Chennai) with support from the government and German development cooperation to address all research and technology development issues related to climate change. The CCCDM plays a pivotal role in the "Strategic Knowledge Management" workstream of the state's Action Plan on Climate Change. It houses a "Climate Studio" equipped with a high-performance supercomputer, enabling further advances in producing state-level climate scenarios.

Appendix I: Climate-PIMA Questionnaire

C1. Climate-Aware Planning: Is Public Investment Planned from a Climate Change Perspective?

	Question	Not Met	Partially Met	Fully Met
C.1.a	Are national and sectoral public investment strategies and plans consistent with NDC or other overarching climate change strategy on mitigation and adaptation?	National and sectoral public investment strategies and plans are not consistent with NDC or other overarching climate change strategy.	National and sectoral public investment strategies and plans are consistent with NDC or other overarching climate change strategy for ***some*** sectors.	National and sectoral public investment strategies and plans are consistent with NDC or other overarching climate change strategy for ***most*** sectors.
C.1.b	Do central government and/or subnational government regulations on spatial and urban planning, and construction address climate-related risks and impacts on public investment?	Central government and/or subnational government regulations on spatial and urban planning, and construction do not address climate-related risks and impacts on public investment.	Central government and/or subnational government regulations on spatial and urban planning, ***or*** construction (through building codes) addresses climate-related risks and impacts on public investment.	Central government and/or subnational government regulations on spatial and urban planning, ***and*** construction (through building codes) address climate-related risks and impacts on public investment.
C.1.c	Is there centralized guidance/support for public sector entities on the preparation and costing of climate-aware public investment strategies?	There is no centralized guidance/support for public sector entities on the preparation and costing of climate-aware public investment strategies.	There is centralized guidance/support for public sector entities on the ***preparation*** of climate-aware public investment strategies.	There is centralized guidance/support for public sector entities on the ***preparation and costing*** of climate-aware public investment strategies.

C2. Coordination between Entities: Is There Effective Coordination of Climate Change–Related Public Investment across the Public Sector?

	Question	Not Met	Partially Met	Fully Met
C.2.a	Is public investment coordinated across central government from a climate change perspective?	Public investment is not coordinated across central government from a climate change perspective.	Public investment is coordinated across ***budgetary central government*** from a climate change perspective.	Public investment is coordinated across ***all central government, including externally financed projects, PPPs, and extra-budgetary entities,*** from a climate change perspective.
C.2.b	Is capital spending of SNGs coordinated with the central government from a climate change perspective?	The capital spending of SNGs is not coordinated with the central government from a climate change perspective.	The central government issues guidance on the capital spending from a climate change perspective and information on major climate-related projects of SNGs is shared with the central government and is published alongside data on central government projects.	The central government issues guidance on the capital spending from a climate change perspective, information on major climate-related projects of SNGs is shared with the central government and is published alongside data on central government projects, ***and there are formal discussions between central government and SNGs on the climate-related investments.***
C.2.c	Does the regulatory and oversight framework for public corporations ensure that their climate-related investments are consistent with national climate policies and guidelines?	The regulatory and oversight framework for public corporations does not promote consistency between their climate-related investments and national climate policies and guidelines.	The regulatory and oversight framework for public corporations ***promotes consistency*** between their climate-related investments and national climate policies and guidelines.	The regulatory and oversight framework for public corporations ***requires that their climate-related investments be consistent*** with national climate policies and guidelines.

C3. Do Project Appraisal and Selection Include Climate-Related Analysis and Criteria?

	Question	Not Met	Partially Met	Fully Met
C.3.a	Does the appraisal of major infrastructure projects require climate-related analysis to be conducted according to a standard methodology?	The appraisal of major infrastructure projects does not require climate-related analysis to be conducted according to a standard methodology.	The appraisal of major infrastructure projects requires climate-related analysis to be conducted according to a standard methodology.	The appraisal of major infrastructure projects requires climate-related analysis to be conducted according to a standard methodology, ***and a summary of appraisals is published or subject to independent external review.***
C.3.b	Does the framework for managing longer-term contracts, such as PPPs, explicitly address climate-related challenges?	The referred framework does not include explicit consideration of climate change for risk allocation or contract management.	The referred framework includes explicit consideration of climate change with respect to how risks are allocated between the parties in infrastructure contracts.	The referred framework includes explicit consideration of climate change with respect to how risks are allocated between the parties in infrastructure contracts, ***and contract managers in government departments and agencies are mandated to address climate-related challenges.***
C.3.c	Are climate-related elements included among the criteria required by the government for the selection of infrastructure projects?	Either there are no explicit selection criteria or climate-related elements are not included among the criteria required by the government for the selection of projects for financing.	Climate-related elements are included among the criteria required by the government for the selection of all major ***budget-funded projects,*** and the criteria are published.	Climate-related elements are included among the criteria required by the government for the selection of ***all major projects, including externally financed projects, projects financed by extra-budgetary entities, and PPPs,*** and the criteria are published.

C4. Budgeting and Portfolio Management: Is Climate-Related Investment Spending Subject to Active Management and Oversight?

	Question	Not Met	Partially Met	Fully Met
C.4.a	Are planned climate-related public investment expenditures, sources of financing, outputs and outcomes identified in the budget and related documents, monitored, and reported?	Planned climate-related public investment expenditures are not identified in the budget and related documents.	***Some*** planned climate-related public investment expenditures are identified in the budget and related documents, including projects funded externally, by extra-budgetary entities, and PPPs.	***Most*** planned climate-related public investment expenditures, ***sources of financing, and outputs and outcomes*** are identified in the budget and related documents, including projects funded externally, by extra-budgetary entities, and PPPs, ***and expenditure on these projects is monitored and reported.***
C.4.b	Are ex post reviews or audits conducted of the climate change mitigation and adaptation outcomes of public investments?	No ex post reviews or audits are conducted of the climate change mitigation and adaptation outcomes of public investments.	Ex post reviews or audits are conducted for selected major public investments of ***either the climate change mitigation or adaptation outcomes.***	Ex post reviews or audits are conducted ***and published*** for selected major public investments of ***both the climate change mitigation and adaptation outcomes.***
C.4.c	Do the government's asset management policies and practices, including the maintenance of assets, address climate-related risks?	Neither the government's asset management policies and practices nor methodologies for estimating the maintenance needs of climate change-exposed infrastructure assets address climate-related risks.	Methodologies prepared by the government for estimating the maintenance needs of ***some*** climate change-exposed infrastructure assets address climate-related risks.	Methodologies prepared by the government for estimating the maintenance needs ***and associated costs*** of ***most*** climate change-exposed infrastructure assets address climate-related risks, ***and government asset registers include climate-related information of these assets.***

C5. Risk Management: Are Fiscal Risks Related to the Impact of Climate Change on Infrastructure Incorporated in Budgets and Fiscal Risk Analysis and Managed According to a Plan?

	Question	Not Met	Partially Met	Fully Met
C.5.a	Does the government publish a national disaster risk management strategy that incorporates the projected impact of climate change on public infrastructure assets and networks?	Either there is no published national disaster risk management strategy or the strategy does not identify the key climate-related risks to public infrastructure assets and networks.	The government publishes a national disaster risk management strategy that identifies the key climate-related risks to public infrastructure assets and networks in terms of hazards, exposure, and vulnerability.	The government publishes a national disaster risk management strategy that identifies ***and analyzes*** the key climate-related risks to public infrastructure assets and networks in terms of hazards, exposure, and vulnerability, ***and includes the government's plans to mitigate and respond to these risks.***
C.5.b	Has the government put in place ex ante financing mechanisms to manage the exposure of the stock of public infrastructure to climate-related risks?	The government has not put in place any ex ante financing mechanisms to manage the exposure of the stock of public infrastructure to climate-related risks.	There is an annual contingency appropriation in the budget ***or other financing mechanisms*** that is available to meet the costs of climate-related damages to public infrastructure.	There is an annual contingency appropriation in the budget ***and other financing mechanisms*** that are available to meet the costs of climate-related damages to public infrastructure.
C.5.c	Does the government conduct and publish a fiscal risk analysis that incorporates climate-related risks to public infrastructure assets?	The government does not conduct a fiscal risk analysis that incorporates climate-related risks to public infrastructure assets.	The government conducts and publishes a fiscal risk analysis that incorporates a ***qualitative*** assessment of climate-related risks to public infrastructure assets over the medium term.	The government conducts and publishes a fiscal risk analysis that incorporates a ***quantitative*** assessment of climate-related risks to public infrastructure assets over the medium term ***and policies to mitigate these risks, and a qualitative assessment of the risks that may arise over the long term.***

Appendix II: General Issues in Assessing C-PIMA Institutions

Some common issues and challenges apply to all C-PIMAs. This appendix discusses the main common issues, as follows:

1. How is institutional design assessed in practice?
2. The effectiveness of institutions is not formally assessed at this stage.
3. What is the scope of the C-PIMA?
4. How are major projects defined?
5. The relationship between C-PIMA and PIMA.
6. C-PIMA assessments are confined to PFM issues and do not cover climate policy or fiscal policy.

1. How Is Institutional Design Assessed in Practice?

The analysis of institutional design in C-PIMA looks at the formal PIM system, including policies, strategies, legislation, and regulations, to see whether its design is in line with international good practices. The institutional design assessment describes the potential effect of the current framework if it is fully applied. Assessments of institutional design are based on current legal frameworks and formal strategies, and policies. Design scores should be made based on literal interpretation of the dimension criteria. For example, if existence of a law, regulation, or policy is a scoring criterion, full credit should be given if it has been approved by the parliament irrespective of the level of adherence. If a law is under consideration, this can be mentioned in the narrative but should not impact the score on institutional design. Alternatively, if a policy or strategy document exists in name but is outdated and no longer considered relevant, then assessors may regard it as not being part of the institutional framework.

The thresholds for institutional design focus on the legal basis for relevant provisions, including laws, regulations, strategies, policies, and other formal requirements. Legal requirements are embedded in law enacted by a legislative body. Regulatory requirements are included in regulations, typically issued by the cabinet, the council of ministers, or the president. Other formal requirements include ministerial regulations and guidelines, including from the Ministry of Finance, Ministry of Planning, or MoEnv. Examples may include guidelines for climate-related project appraisal, the Budget Call Circular, and, in some countries, requirements for climate-related aspects in EIAs. The requirements for EIAs are generally contained in laws and regulations, but requirements for budget submissions and for project appraisal would not necessarily be defined in laws or regulations.

2. The Effectiveness of Institutions Is Not Formally Assessed at This Stage.

Assessing effectiveness means assessing how well the systems work in practice, as is conducted in PIMAs. Are the implementing agencies fully compliant with the different rules and procedures (the institutional design), and does the formal framework have the intended effects on planning, resource allocation, implementation, and risk management?

In the implementation of the C-PIMA, there is no explicit scoring of effectiveness. The scores for each of the 15 dimensions are based solely on institutional design. Whether the law, regulation, or practice is implemented in practice is not assessed.

This is because for most countries that are still in the development stage of their climate-aware investment management, it appears too early to assess effectiveness of nascent institutions. A formal scoring

system on institutional effectiveness will be developed in the future consistent with the approach to incorporating effectiveness into the PIMA. While the effectiveness of institutions will generally not be evaluated at this stage, where relevant, it may be a point of discussion with country authorities and included in the assessment. The C-PIMA may include discussion of the effectiveness of institutions where there is adequate information on hand. For instance, it may be apparent while collecting details of the institutional framework that a requirement is not met in practice, for example, a required strategy, policy, or report has not been produced, and this may be noted. In other instances, a requirement may be in place, and it is apparent that it is complied with in some respects but not all, for example, it is apparent that land use regulations restricting development on flood plains are enforced in at least some jurisdictions. The assessment should note this in the discussion of the relevant dimension.

3. What Is the Scope of the C-PIMA?

The C-PIMA focuses on investments by the central government sector. Institution C2 covers the coordination with other levels of government and oversight of PCs. The assessments under the other institutions, including the cross-cutting issues, will generally be based on central government practices. In some countries, SNGs or PCs are major contributors to climate-related public investment, and the PIMA mission team may choose to expand the assessment to cover practices in these sectors, either generally or for selected institutions. If this is done, the report should clearly specify where the scope of the assessment has been expanded and how this has impacted the findings.

The C-PIMA assessment framework can also be applied to a subnational government itself, with some appropriate adaptations. For instance, the scope of planning documents in dimension C.1.a would be the subnational government territory rather than the nation. Depending on the intergovernmental system, an SNG may be required to follow some central government climate policies (e.g., in setting targets for GHG emissions or renewable energy production), while in other areas, it will often have considerable autonomy (e.g., in managing climate change adaptation through instruments such as land use planning). Some national policies may apply directly in all SNGs, while in other cases, the central government may use schemes that provide incentives for SNGs to adopt particular practices. A combined C-PIMA and PIMA, conducted in the Indian states of Odisha and Tamil Nadu, illustrated some of these considerations (Box AII.1.).

Box AII.1. C-PIMA Applied at the State Level in India

While objectives and strategies on climate change are set at the central government level through the NDC, the Government of India has asked all states and union territories to prepare state action plans on climate change (SAPCCs). Hence, the implementation of climate policy largely relies on individual Indian states, even though many of the levers remain at central level (general legislation and regulatory powers) and even though most states continue to be largely dependent on the federal government for grants and budgetary allocations to implement their SAPCCs.

Tamil Nadu and Odisha have developed a series of strategies and policies for climate adaptation as well as GHG mitigation.

Data are available at the state level in India on public infrastructure quality, on the incidence of impacts of disasters, and on climate change projections.

Data are also available in India to compile cross-state rankings on climate change performance on a range of metrics (e.g., emissions intensity of gross state domestic product, current renewable energy compared to potential, energy efficiency of industrial output, and growth in forest cover).

Source: India – State of Odisha PIMA/C-PIMA 2024; India – State of Tamil Nadu PIMA/C-PIMA 2023.

4. How Are Major Projects Defined?[1]

Some elements of the C-PIMA Questionnaire refer to major projects. The definition of major projects varies across countries and the assessment should generally be based on the national definition—and where applicable, a regional definition such as the definition of major project in the EU. However, the assessment team should verify that this definition is reasonable and consistent with national practices.

- The most common definition of a major project is in terms of total project costs. All projects above a certain threshold (for instance, 10 million local currency units) are defined as major. National rules determine the thresholds and the definition of total project costs (for instance, investment costs or lifecycle costs).
- It is common that projects that are particularly complex and entail high risks also are defined as major projects, even if total costs are lower than the general threshold. In some countries, there are lower thresholds for certain project types (for instance, IT investments).
- Some projects are defined as major projects for political reasons. They may be part of a government's top priorities, have important regional impacts, or be particularly visible to the public.
- In some countries, all projects with external financing or projects procured as PPPs are defined as major projects, even if total costs are below the general threshold. These projects will often entail high risks and be politically important.

The number of major projects and their share of the total public investment will vary between countries. In many countries, the number of major projects under preparation and implementation ranges from 30 to 100. Their share of the total investment budget will often be in the range of 50 to 75 percent.

5. The Relationship between C-PIMA and PIMA.

There are many points of intersection between the C-PIMA and PIMA frameworks. Many institutions and dimensions in C-PIMA have close parallels in PIMA, while in other cases, the relationships are more nuanced. Some C-PIMA indicators, particularly those relating to risk management, have no direct counterpart in the PIMA framework. Table AII.1. summarizes the relationships. In Section 4, the text describing each C-PIMA dimension refers to the related PIMA dimension(s).

The score for a C-PIMA dimension should be consistent with the score for the related PIMA dimension(s). There are no dimensions that are identical between the two frameworks, reflecting the fact that in all cases, the C-PIMA applies only to climate change-specific PIM, while the PIMA covers PIM across all sectors and domains. However, there are significant overlaps between a few dimensions that mean care should be taken to ensure consistency between scores for C-PIMA and PIMA. These dimensions are as follows:

C-PIMA C.2.b and PIMA 3.a
C-PIMA C.2.c and PIMA 5.c
C-PIMA C.3.a and PIMA 4.a and 4.b
C-PIMA C.3.c and PIMA 10.b

When scoring C-PIMA C.2.b, for instance, where there has been a previous or simultaneous PIMA, any difference in the score for PIMA 3.a should be justified by reference to the specific criteria for the dimensions that vary between the two indicators.

The C-PIMA can be conducted as a standalone exercise, but a thorough understanding of the country's overall PIM system is necessary to do the C-PIMA effectively. In many cases, the climate aspects of dimensions and institutions can only be assessed if the assessment team understands how relevant parts of the overall PIM system work. This has been the case, for example, on coordination with subnational governments,

[1] This definition is identical to that in the *PIMA Handbook*.

Table AII.1. The Relationships between C-PIMA and PIMA Dimensions

C-PIMA Institution and Dimension	Related PIMA Institution and Dimension
C.1.a National and sectoral public investment strategies	2.a, 2.b
C.1.b Planning and construction regulations	No counterpart
C.1.c Guidance on climate-aware planning	No counterpart
C.2.a Coordination across central government	7.a, 7.b, 7.c, 3.c
C.2.b Coordination with subnational governments	3.a
C.2.c Coordination with public corporations	5.c, 2.a
C.3.a Climate-related project appraisal	4.a, 4.b, 4.c
C.3.b PPP framework	5.b
C.3.c Climate-related project selection criteria	10.a, 10.b, 10.c
C.4.a Information on climate-related investment spending in budget documents and reports	6.a, 6.c, 7.b, 7.c
C.4.b Ex post reviews or audits	13.c, 14.c
C.4.c Asset management policies	9.a, 9.b, 9.c, 15.a, 15.b
C.5.a National disaster risk management strategy	No counterpart
C.5.b Ex ante financing mechanisms	No counterpart
C.5.c Analysis of climate-related risks to infrastructure	No counterpart

Source: IMF staff estimates and projections.

in appraisal and selection, and asset management. This means that there is some preference for doing the PIMA and the C-PIMA jointly or as a sequenced two-part exercise. Particularly when a PIMA assessment has been done recently or the PIM system of a country is well documented, a C-PIMA may be conducted as a standalone exercise and a number of such assessments have been completed.

6. C-PIMA Assessments Are Confined to PFM Issues and Do Not Cover Climate Policy or Fiscal Policy.

PFM comprises the laws, organizations, systems, and procedures used by governments to implement their fiscal policies; PFM is distinct from fiscal policies themselves. In a C-PIMA, this means that the assessment is of the design of the institutional arrangements for planning, budgeting, and implementing climate-related public investment spending and for managing climate-related fiscal risks. The C-PIMA does not consider, for instance, the degree of ambition of a country's NDC, or the level of carbon pricing in the economy (e.g., the level of taxes on carbon or the prices set by an ETS). A C-PIMA does, however, include an assessment

of whether the government uses a shadow carbon price in conducting a cost-benefit analysis of major infrastructure projects. A shadow carbon price is an institutional arrangement within the government for conducting project appraisal to ensure that the negative externalities related to GHG emissions are incorporated in the cost-benefit analysis of public investment projects. Fiscal policies such as a carbon tax or hybrid tax and regulatory instruments such as an ETS, on the other hand, are not internal to the government but act directly on the economy.

Appendix III: Templates for C-PIMA Reports

A. Template for C-PIMA Report Combined with PIMA Assessment

Box AIII.1. describes a common organization of the combined PIMA and C-PIMA report. Box AIII.2. presents the outline of the C-PIMA report standalone.

Box AIII.1. Common Organization of the C-PIMA Report Combined with PIMA Assessment

Executive Summary (The C-PIMA findings and recommendations should be included in the executive summary together with the C-PIMA flower chart)

Section 1. Public Investment Context

- Trends in Total Public Investment
- Composition
- Impact
- Efficiency

Section 2. Public Investment Management Institutions

- Overall Assessment
- PIMA Institutional Analyses

Section 3. Climate Change Public Investment Management Assessment

- Climate Change and Public Infrastructure
- The Climate Change PIMA Framework
- Detailed Assessment and Recommendations

Section 4. Cross-Cutting Issues (C-PIMA cross-cutting issues' analysis should be included under each cross-cutting issue)

Appendix 1. Action Plan (the C-PIMA recommended reform actions should be embedded in the Action Plan)

Appendix 2. PIMA Questionnaire

Appendix 3. Detailed PIMA Scores

Appendix 4. C-PIMA Questionnaire

Appendix 5. Detailed C-PIMA Scores

B. Template for Standalone C-PIMA Report

Box AIII.2. describes a common organization of the standalone C-PIMA report.

Box AIII.2. Common Organization of the Stand-Alone C-PIMA Report

Executive Summary

Section 1. Climate Change Context

- Climate Change and Public Infrastructure
- Climate Change Objectives and Strategies

Section 2. Climate Change Public Investment Management Assessment

- The Climate Change PIMA Framework
- Detailed Assessment and Recommendations
- Cross-Cutting Issues

Appendix 1. C-PIMA Questionnaire

Appendix 2. Detailed C-PIMA Scores

Appendix 1. Action Plan

The C-PIMA report should include a detailed action plan outlining the necessary steps and the timetable to implement the recommendations. Table AIII.1. provides an example of a C-PIMA action plan for Jamaica.

Table AIII.1. Proposed Action Plan in Jamaica

Recommendation	Institution	Actions	2023	2024	2025	2026	Responsible Agency	TA Needs
1. Improve the climate-informed medium-term fiscal and budget framework to guide budget preparation.	**C5**	Integrate disaster risks to public infrastructure assets and other climate-related risks in fiscal risk analysis.	X	X	X	X	MOFPS	X
		Finalize and approve the National Natural Disaster Risk Financing Policy to inform the selection of the most cost-effective financing mechanisms.	X				MOFPS	
2. Strengthen the climate change strategic guidance of planning for capital budgeting.	**C1, C2**	Develop centralized guidance on how to integrate climate change perspectives into sector-specific public investment planning.	X	X			PIOJ, MEGJC	X
		Integrate national climate objectives and climate-related major capital projects in sectoral plans as they are updated.	X	X	X	X	PIOJ, LMs	
		Revise the legislation on land use and physical planning to integrate a climate change perspective.		X	X		NAPA	X
		Introduce climate change's capital investment-related aspects in cross public sector coordination.	X	X	X	X	PIOJ, MEGJC, MOFPS, LMs	

Table AIII.1. *(continued)*

Recommendation	Institution	Actions	2023	2024	2025	2026	Responsible Agency	TA Needs
3. Revise the framework for private and public bodies' participation in climate-smart infrastructure.	**C2, C3**	Finalize and approve the revised public–private partnership (PPP) policy, including climate change requirements into PPP arrangements from project design to contract management.	X				MOFPS, DBJ	
		Revise the PPP Standard Operating Procedure Manual to reflect these requirements.	X				MOFPS, DBJ	
		Integrate national climate objectives when developing a new overarching regulatory framework for public corporations.		X	X		MOFPS	X
4. Develop climate change project appraisal and selection methodologies and apply them consistently to all projects, regardless of financing source.	**C3**	Develop a standardized methodology for climate change analysis in project appraisal.	X				MOFPS	X
		Establish a transparent process, with clearly defined and published selection criteria, including climate change criteria, for the selection of projects for implementation.	X				PIOJ	X
5. Enhance transparency on green and resilient investment projects in budget documentation.	**C4, Cross-cutting**	Gradually introduce green budgeting identifying and tracking climate-related expenditures with the Ministry of Finance and Public Service (MOFPS) quality review.	X	X	X	X	MOFPS, LMs	X
		Include the climate tags in the coding structure of the financial management information system (FMIS).		X	X		MOFPS	
		Interface the FMIS with the Public Investment Management Information System (PIMIS).		X			MOFPS	

Table AIII.1. *(continued)*

Recommendation	Institution	Actions	2023	2024	2025	2026	Responsible Agency	TA Needs
6. Introduce climate change arrangements for the ex post evaluation of investment projects.	**C4**	Develop a methodology and requirements for ex post reviews of climate-relevant infrastructure projects with respect to adaptation and mitigation.		X			MOFPS, PIJO	X
		Conduct ex post reviews on climate outcomes of a selected number of major projects completed every year according to the new methodology.			X	X	MOFPS, LMs	
		Develop a methodology to conduct climate change audit of green and resilient infrastructure.			X		AG	X
		Include in the auditor general's (AG) work plan at least two climate change audits of a major public investment project each year.				X	AG	
7. Develop a climate-smart assets register and ensure adequate funding for maintenance of assets.	**C4**	Develop a centralized register of infrastructure assets—indicating the values and condition of the assets including climate-related information—and ensure that is updated on a regular basis to support determination of appropriate maintenance levels.	X	X	X		MOFPS, LMs	X
		Develop a standardized methodology for estimating current and capital maintenance needs including climate-related risks.		X			MOFPS, LMs	X

Table AIII.1. *(continued)*

Recommendation	Institution	Actions	2023	2024	2025	2026	Responsible Agency	TA Needs
8. Ensure that the legal framework and staff capacity are supportive of climate change PIM reforms.	**Cross-cutting**	Revise the Financial Administration and Audit Act (FAA) to include climate change requirements throughout the project cycle.	X				MOFPS	X
		Develop a Climate Change Law to clarify, roles, responsibilities, and coordination.		X			MEGJC, MOFPS	X
		Strengthen the Planning Institute of Jamaica (PIOJ) to provide more guidance on climate-aware planning and preparation of public investment plans and projects from a climate change perspective.	X	X			PIOJ	X
		Enhance the capacities of the PIAB in the MOFPS to provide support to MDAs in project appraisal, including for climate analysis for project appraisal.	X	X			MOFPS	X
		Enhance the capacities of the Development Bank of Jamaica (DBJ) and the Public Enterprise Division in MOFPS to develop and supervise climate-smart PPP arrangements.	X	X			MOFPS, DBJ	X
		Strengthen staff capacity on mainstreaming climate change into public investment management across the central government and municipal corporations.	X	X	X	X	LMs	X

Source: Jamaica C-PIMA

Appendix IV: Glossary

Term	Definition
Adaptation	Climate change adaptation refers to actions to reduce vulnerability to the effects of climate change.
Assets	Any economic resource controlled by an entity as a result of past transactions or events and from which the economic owner may obtain future economic benefits over a period of time. Assets may be financial or nonfinancial, and the latter includes infrastructure assets (see definition of infrastructure below).
Budgetary central government	The ministries, departments, agencies, and other entities belonging to the central government whose spending, revenues, and borrowing activities are included in the central government's annual budget.
Budget documents	The documents that are published with the executive's annual budget submission to the legislature or that are related to the process of preparing the budget. In addition to the draft appropriation bill, these documents could include a fiscal strategy statement, a medium-term budget framework, an FRS, and a report on the execution of the budget for the previous year.
Central government	All government entities that are included in the budgetary central government, plus any units funded by extra-budgetary funds and nonmarket nonprofit institutions that are controlled by the central government. Depending on legal arrangements, social security funds are often considered part of the central government.
Contingency funds or reserves	A separate fund or a budget provision set aside to meet unforeseen and unavoidable requirements that may arise during the budget year. Certain types of contingency (e.g., meeting the costs of natural disasters) may be specified as a potential use for such funds.
Dimension	The lowest level in the PIMA questionnaire. There are 45 dimensions in the PIMA questionnaire and 15 dimensions in the C-PIMA module.
Earmarked taxes	Taxes raised and allocated by a mechanism specified in policy or law to specific expenditure programs, often through an EBE (see EBEs).
Exposure	Risks arising from interactions between physical public investment assets and climate-related events and disasters, for example, the exposure of a highway to damage from flooding. Exposure is a necessary, but not sufficient, determinant of risk. It is possible to be exposed but not vulnerable (e.g., by living in a floodplain but having sufficient flood defenses). However, to be vulnerable to an extreme event, it is necessary to also be exposed.
External financing	Financing provided by international financial institutions or bilateral development partners, by means of grants and concessional or nonconcessional loans. Sometimes, it includes project-related loans provided, in the context of a bilateral agreement, by a foreign commercial bank to the government or a PC—often under the assumption that the project will generate enough funds to repay the loan. This term does not include funds supplied by externally based investors in domestic securities or by the issuance of securities in foreign capital markets.

Term	Definition
Extra-budgetary entities (or funds)	Entities (or public funds) set up under legislation that carry out government functions but receive funds other than through annual appropriations by the legislature, for instance, through earmarked taxes or fees.
Financing source	Term used in the budget to describe a type of financing; it is not an accounting or banking term. The term is used to describe types of financing with broadly similar conditions, such as external financing or PPPs. The term "budget funds" is commonly used to refer to the pool of funds from tax, nontax, and domestic borrowing over which the government has full discretion over its use. "Financing source" should not be confused with "financing" or "below the line" transactions, used in the Government Finance Statistics Manual (GFSM) 2014 framework.
Fiscal risks	Potential shocks to government revenues, expenditures, assets, or liabilities that may cause fiscal outcomes to depart from expectations or forecasts. Fiscal risks can be classified into macroeconomic risks that arise when forecasts of key macroeconomic variables are different from forecast, or specific risks such as natural disasters.
General government	Comprises all entities of the central, state, regional, provincial, municipal, or local government; all EBEs, including social security funds, at each level of government; and all nonmarket nonprofit institutions that are controlled and financed mainly by government units. It does not include PCs, even when these companies are owned and controlled by the government.
Greenhouse gas (GHG) emissions	A GHG is a gas that absorbs and emits radiant energy within the thermal infrared range. There are six GHGs covered by the UN Framework Convention on Climate Change and its Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
Hazards (climate-related)	With respect to public investment, an event that may cause damage to public infrastructure assets and impact negatively on the services they deliver. Climate-related hazards include tropical cyclones, tornadoes, drought, heavy rain episodes causing floods or landslides, high winds, fires, and temperature extremes. Hazards can be described quantitatively by the likely frequency of occurrence of different intensities or above a certain threshold, for different areas, as determined from historical data or scientific analysis.
Indemnity insurance	A type of insurance policy that compensates an insured party for specified unexpected damages or losses up to a certain limit, typically the amount of the loss itself.
Infrastructure	Nonfinancial fixed assets, including economic and social infrastructures. Social infrastructure supports the provision of public services such as schools, hospitals, and public housing. Economic infrastructure supports economic activity with telecommunication networks, transportation assets (such as roads, railways, canals, ports, and airports), water and wastewater pipes and treatment plants, and electricity production and transmission (see https://www.imf.org/external/np/fad/publicinvestment/).

Term	Definition
Intended Nationally Determined Contribution (INDC)	As countries formally join the Paris Agreement and look forward to implementation of these climate actions—the "intended" is dropped and an INDC is converted into a Nationally Determined Contribution (NDC).
Maladaptation	With respect to public investment, an action that may lead to increased risk of adverse climate-related outcomes, increased vulnerability to climate change, or diminished welfare, now or in the future (IPCC), for example, building new public infrastructure in locations that are exposed to increased incidence and/or severity of natural disasters (and possibly thereby also encouraging new private investment in those locations).
Medium term	A period usually covering the current year plus two to three additional years which may be applied both to budgets and planning documents.
Mitigation	Climate change mitigation refers to actions to limit the magnitude and/or rate of long-term climate change. Mitigation generally involves reductions in human-caused emissions of GHGs but may also be achieved by increasing the capacity of carbon "sinks." A "sink" refers to forests, vegetation, or soils that can reabsorb CO_2. Mitigation can also be achieved using new technologies for carbon capture and storage.
Nationally Determined Contributions (NDCs)	Under the Paris Climate Change Agreement NDCs embody efforts by each country to reduce national emissions and adapt to the impacts of climate change. In the lead-up to the adoption of the Paris Agreement in 2015, more than 160 countries and the European Union publicly outlined what climate actions they intended to take under the global pact, known as Intended Nationally Determined Contributions (INDCs). A country's INDC is converted to an NDC when it formally joins the Paris Agreement.
National disaster risk management strategy	A government strategy to strengthen disaster risk governance that covers disaster prevention, mitigation, preparedness, response, recovery, and rehabilitation (Sendai Framework for Disaster Risk Reduction 2015–30).
Outputs and outcomes	In a performance-assessment framework for government, outputs are defined as the goods or services produced by government agencies, such as public services (e.g., roading), delivered through public investment assets. Outcomes are defined as the effects on social, economic, or other indicators arising from the delivery of outputs, for example, a reduction (or increase) in GHG emissions, or a reduction (increase) in the vulnerability of public infrastructure to climate-related damages.
Parametric insurance	A type of insurance contract that insures a policyholder against the occurrence of a specific event by paying a set amount based on the magnitude of the event (e.g., wind speed above a specific threshold in kilometers per hour), as opposed to the magnitude of the losses in a traditional indemnity policy.
PPP	A long-term contract between a public and a private entity, whereby the private entity acquires or builds an asset or set of assets, operates it for a period, and then usually hands the asset over to the public entity. C-PIMA assessments should treat any long-term concession for the construction, improvement, extension, or operation of public infrastructure as a PPP (see GFSM 2014).

Term	Definition
Public corporation	A legal entity that is owned or controlled by the government and that produces goods or services for sale in the market at economically significant prices.
Published information or publications	Information that is made readily accessible to the general public in a proactive and inexpensive way. Modes of communication that constitute publication include printed documents prepared by the government, open-access government websites, social media, radio, television, newspapers, and magazines.
Real options	With respect to public investment, refers to the opportunity to delay full implementation of an adaptation measure until better information is available to enable resolution of uncertainty about climate impacts, for example, building a sea wall with a stronger than necessary foundation now to enable the height to be raised in future should sea level rise be higher than anticipated.
Resilience	With respect to public investment, the ability of an asset or network exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.
Risk mitigation	With respect to public investment, refers to actions to reduce the exposure of public investments to climate-related hazards, or to reduce the vulnerability of public assets to hazards. The process of identifying, analyzing, and managing hazards, exposure, and vulnerability, tolerating, or transferring risks, and reporting.
Stranded assets	Assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities, due to factors associated with climate change, such as an increase in carbon prices or a decrease in the cost of green technologies.
Subnational government	Decentralized government entities, created by constitution or law, are units that have legislative, judicial, or regulatory authority over a geographically delineated part of the country. These entities are governed by bodies whose members are elected by universal suffrage from persons residing within the delineated area, and they have some autonomy with respect to budgets, staff, and assets. Subnational governments include state, provincial, or regional governments, as well as municipalities and other local governments.
Transition risks	With respect to public investment, the financial risks government bears as owner of non-financial assets which could result from the process of adjustment toward a lower-carbon economy, for example, the risk of a coal-fired power station suffering a major loss of value as carbon taxes or carbon prices increase (stranded asset risk).
Vulnerability	With respect to public investment, refers to the characteristics and circumstances of a public investment asset that make it susceptible to the damaging effects of a hazard. It is possible to be exposed but not vulnerable (e.g., by living in a floodplain but having sufficient flood defenses). However, to be vulnerable to an extreme event, it is necessary to also be exposed.

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Recognizing the increasing need for climate-responsive infrastructure investment, the IMF introduced the Climate-Public Investment Management Assessment (C-PIMA) in 2021 as an extension of the PIMA framework. The goal of the C-PIMA is to help governments identify potential improvements in public investment institutions and processes to build low-carbon and climate-resilient infrastructure. It has been conducted in more than 50 countries worldwide as of October 2024.

The Climate-Public Investment Management Assessment Handbook (C-PIMA Handbook) outlines the importance of green resilient infrastructure investment for sustainable development and provides a detailed description of the C-PIMA framework, including discussions and explanations of all five institutions (and the 15 dimensions within them) with numerous examples from country practices.

The handbook is aimed at anyone who is involved in a C-PIMA or has a practical interest in public investment management and climate change. It is intended to be useful to provide practical guidance to country authorities and development practitioners on how country systems are designed to incorporate climate considerations into public investment management and how they can be improved.

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