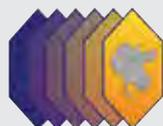




GREATER MEKONG SUBREGION
CORE ENVIRONMENT PROGRAM

STRATEGIC FRAMEWORK AND ACTION PLAN 2018-2022



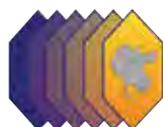
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GREATER MEKONG
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PROGRAM

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December 2017



GREATER MEKONG
SUBREGION
CORE ENVIRONMENT
PROGRAM

Title: Greater Mekong Subregion Core Environment Program Strategic Framework and Action Plan 2018-2022

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Abbreviations

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
CEP	Core Environment Program
CEP-SF	CEP Strategic Framework and Action Plan 2018-2022
CRV	climate risk vulnerability
DMF	design monitoring framework
DRM	disaster risk management
EIA	environmental impact assessment
EOC	Environment Operations Center
GCF	Green Climate Fund
GEF	Global Environment Facility
GMS	Greater Mekong Subregion
IPPS	industrial pollution projection system
KSI	Knowledge Sharing Initiative
NSU	National Support Unit
PES	payment for ecosystem services
PFES	payment for forest environmental services
PPF	Project Preparation Facility
RIF	Regional Investment Framework
SDG	Sustainable Development Goals
SEA	strategic environmental assessment
SMART	specific, measurable, achievable, relevant, and time-bound
SMCA	spatial multicriteria assessment
TA	technical assistance
WGE	Working Group on Environment



Executive Summary

The Greater Mekong Subregion (GMS) remains on a steady trajectory of economic growth and poverty reduction. This trend is expected to accelerate following the establishment of the Association of Southeast Asian Nations (ASEAN) Economic Community, and the implementation of the \$64 billion *GMS Regional Investment Framework 2022*.

The GMS countries' economic success is anchored on the region's rich natural resources. However, a steady depletion of natural stocks is resulting in the decline and degradation in ecosystem services and environmental quality, which threatens to undermine sustainable development. Green growth provides an opportunity for GMS countries to achieve their Sustainable Development Goals.

In recognition of emerging environmental challenges and opportunities, the GMS Core Environment Program (CEP) was initiated in 2006. The program implementation was planned over three successive phases comprising a pilot period followed by scaling up interventions, and finally the consolidation of activities. The program is currently implementing Phase II, which will be completed in March 2018.

Since its inception, CEP has strived to improve environmental quality and climate resilience across the subregion by creating an “environmentally friendly and climate resilient GMS Economic Cooperation Program.” The Asian Development Bank (ADB) is the CEP executing agency while the GMS Working Group on Environment (WGE) provides overall leadership and direction for the program. The GMS Environment Operations Center (EOC) in Bangkok, Thailand coordinates program implementation and provides secretariat support to the WGE.

Progress Toward Sustainability

Over the decade of CEP implementation, GMS countries have advanced policy and institutional reforms to accelerate their response to critical risks of environmental degradation and climate change. All countries have strengthened legal frameworks and institutional capacity for environmental protection and have committed to inclusive and sustainable development. However, effective operationalization is constrained by inadequate strategic planning capacity and investment project readiness. Consequently, a significant investment gap continues to persist in the environment and natural resources sector.

The first two phases of CEP have contributed significantly to mainstreaming environmental considerations in economic development in the GMS. The major achievements include:

- (i) **Promoting sustainability through policy and strategic planning support.**
The CEP does this by: (i) strengthening technical capacity and developing enabling regulatory frameworks for undertaking strategic environmental assessment (SEA) and environmental impact assessment (EIA); (ii) performing over 10 SEAs in economic corridors, land use management, and key sectors such as energy and tourism; (iii) the environmental and social screening of RIF pipeline projects; (iv) achieving legal recognition and regulatory provisions for biodiversity conservation corridors; (v) enhancing technical and institutional capacity to monitor environmental performance; and (vi) supporting the development of national strategies for biodiversity conservation, environmental management, and pollution control. Examples of national strategies are Cambodia's National Environmental Strategy and Action Plan, and the Pollution Control Strategy of the Lao People's Democratic Republic.

- (ii) **Knowledge capitalization and establishing an information management and sound decision support system.** This is being done by: (i) launching and maintaining an online GMS Information Portal, (ii) applying spatial multicriteria analysis to RIF pipeline projects, (iii) embedding spatial analysis (land demand modeling, ecosystem service valuation, mapping, etc.) into key strategic plans, (iv) undertaking climate vulnerability assessments in agrarian communities, and (v) introducing the industrial pollution projection tool to strengthen pollution control policy and planning. So far, CEP has held over 500 capacity building events involving more than 19,000 technical staff and stakeholders.
- (iii) **Stimulating environment and climate investments.** This includes: (i) a \$70-million biodiversity conservation corridors investment and (ii) approximately \$20 million for climate interventions including the Green Freight Initiative and Forest Investment Program, Pilot Program for Climate Resilience, and Global Environment Facility support for climate resilience in biodiversity conservation corridors.

In 2015, in response to the 5th GMS Summit directives and in recognition of these achievements, the WGE requested the EOC to develop a CEP Strategic Framework and Action Plan 2018–2022 (CEP-SF). The CEP strategy will guide the implementation and monitoring of the next phase of the program. It seeks to consolidate and leverage the progress made, accelerate and stimulate increased regional cooperation on environmental sustainability and climate resilience, decentralize program implementation arrangements to the countries, and develop a green and sustainable development focused program that would be underpinned by a bankable project pipeline.



Core Environment Program Strategic Framework and Action Plan 2018–2022

To support the GMS Regional Investment Framework 2022 and the GMS Program’s vision to ensure subregional development is equitable and sustainable, CEP-SF aims to “mainstream sound environment management and climate resilience across priority development sectors to enhance the development impact and sustainability of the GMS Program.” The CEP-SF is designed to help the GMS Program safeguard environment and social interests during its implementation.

The initial step in the development of the CEP-SF was to scope the broader strategic positioning of the program. This involved a thorough review of: (i) GMS country priorities, (ii) international development and environmental policy i.e., the adoption of the 2030 Agenda for Sustainable Development Goals (SDGs), the 2016 Paris Agreement on strengthening global responses to climate change, and the adoption of the ASEAN Community to promote economic, political, social, cultural cooperation and environmental protection across the region, (iii) the investment priorities of global environment and climate funds, and (iv) CEP’s core competences and comparative advantages. The aim was to provide a sound and coherent strategic framework to select activities that can be developed and packaged for funding and timely delivery.

Based on the findings of the review, a number of guiding principles were applied to the design of the future CEP strategy. It was concluded that the program should undertake the following:

- (i) Align with GMS countries’ global and regional priorities with an emphasis on SDGs, commitments to delivering on nationally determined contributions as articulated in the 2016 Paris Agreement under the United Nations Framework Convention on Climate Change and the 2010 Aichi biodiversity targets agreed in the United Nations Convention on Biological Diversity.
- (ii) Sharpen the thematic focus to concentrate efforts on knowledge exchange, facilitate the consolidation of project outputs at the regional level and promote green growth development.
- (iii) Realign the geographic focus on the GMS economic corridors and RIF pipeline projects to promote effective environment and climate mainstreaming in the GMS Program for improved developmental impact.
- (iv) Focus on the key development sectors of natural resources, agriculture, energy, and transport to reduce environmental pressures from sector competition for natural resources, improve resource use efficiency, internalize ecosystem service values, and ameliorate ecosystem and environmental degradation.
- (v) Adopt an integrated value chain approach to provide significant scale to enhance the effectiveness and efficiency of RIF investment planning, improve resource allocation, drive greater resource productivity (resource use efficiency), promote gender and social inclusiveness, and increase financial returns.
- (vi) Strengthen and support environmental governance through policy advisory services.
- (vii) Encourage the active participation of the private sector to attract investment, mobilize partnerships, and reduce the investment gap for environment and climate projects.



Reflecting the program’s achievements, comparative advantages, and institutional experience, the new CEP-SF will focus on three priority thematic areas: (i) green technologies and sustainable infrastructure, (ii) natural resources and ecosystem services, and (iii) climate resilience and disaster risk management. Within each of these priority areas the CEP will support three types of interventions that influence the investment project cycle: (i) investment preparation and financing, (ii) knowledge management and technology uptake, and (iii) policy and strategic planning. These interventions will leverage CEP’s competencies on developing and supporting investment projects (such as the Biodiversity Conservation Corridors project, Green Freight Initiative and Climate-Friendly Agri-Business Value Chain). CEP will continue to incubate and scale environmental projects to be included in the RIF. Knowledge and policy advisory support will complement the development and implementation of investment projects. CEP will contribute to high-level cross-sector policy dialogue within the framework of the GMS Program through engagement with GMS sector working groups, GMS Ministers’ Meetings, and the GMS Summit.

The strategic realignment of CEP and the need to ensure strong country ownership necessitated a careful activity identification and prioritization process. To achieve this, selection guidelines and an activity or project identification template using criteria based on the principles of national commitments, thematic alignment, scalability, replicability, impact, sustainability, and risk management were developed. During country consultations these were used for identifying priority activities in each country. Following the consultations, activities were evaluated to assess commonality and to determine their potential for “bundling” in to broader activities, ideally with subregional and transboundary aspects.

Core Environment Program Strategic Framework: Program Description

The anticipated impact of the program is “improved environmental quality and climate resilience across the GMS,” and the outcome, an “environmentally friendly and climate resilient GMS Economic Cooperation Program.”

Consistent with the program’s three thematic priorities and its three intervention areas, CEP-SF aims to produce the following three outputs:

- Output 1.** Increased adoption of green technologies and sustainable infrastructure by GMS countries.
- Output 2.** Increased investment in the protection of natural resources and ecosystem services in the GMS.
- Output 3.** Improved Climate resilience and Disaster Risk Management (DRM) in GMS sector investment plans.

The CEP-SF has identified a range of activities following country priorities under each of the three outputs:

- (i) **Green technologies and sustainable infrastructure.** CEP will provide support for countries to develop more effective legal, fiscal, and planning instruments to encourage the adoption of green technologies in the agriculture, natural resources, energy, and transport sectors. This will be supported through a green technology market place to promote the exchange and transfer of relevant technologies. CEP will strengthen GMS investments by promoting the uptake of green technologies and best practices through appropriate policy and technical support, and by mainstreaming the incorporation of green growth principles into investment planning and design.
- (ii) **Investment in the protection of natural resources and ecosystem services.** Building on previous work on biodiversity conservation corridors and transboundary biodiversity conservation landscapes, CEP will prioritize the sustainable management of areas with high ecosystem service values, economic growth pressures and potential. Examples of the proposed support include (i) the valuation of land, natural resource, and ecosystem services; (ii) integrated sustainable land and natural resource management planning; (iii) sound land management strategies and action plan design and development; (iv) transparent land use change monitoring; and (v) restoration and remediation of degraded land. Program support will continue for regional knowledge sharing initiatives and sustainable financing instruments such as payments for ecosystem services. This is to ensure the economic sustainability of the initiatives and activities.
- (iii) **Climate resilience and disaster risk management.** CEP will promote the integration and mainstreaming of climate change and disaster risk preparedness considerations into the planning and design in key development sectors. Lessons learned and best practices from ongoing activities on climate risk vulnerability and adaptation will be documented and shared through the CEP-led GMS Climate Change Roundtable on Climate Adaptation and other appropriate mechanisms. Support will be provided for GMS countries for planning and designing climate resilient infrastructure investments, formulating bankable projects on climate resilience and disaster risk reduction, and developing climate and disaster risk financing options.

The EOC, together with National Support Units (NSUs) will establish, organize, and facilitate multistakeholder platforms to implement the CEP-SF by supporting:

- (i) environment project preparation and facilitating access to finance including conservation financing and impact investments;
- (ii) a GMS Help Desk on policy support; and
- (iii) a GMS knowledge hub comprising of the GMS Information Portal supported by three new knowledge sharing initiatives i.e., GMS Platform for Green Technologies and Sustainable Infrastructure, GMS Knowledge Sharing Initiative on Natural Resources and Ecosystem Services and GMS Network on Climate Adaptation.

The EOC will provide project preparation and readiness support for priority projects. Six indicative pipeline projects for investment have been identified based on the results of in-country consultations:

- (i) rural environmental management, pollution control, and waste management;
- (ii) integrated land use management for sustainable development;
- (iii) green road freight financing;
- (iv) public and private investment for electronic waste management;
- (v) climate proofing of rural infrastructure and risk financing; and
- (vi) programmatic support to strengthen environmental management.

The first two projects (\$540 million) along with associated project development technical assistance inputs (\$3 million) have been prioritized and included in the RIF. The other projects will be incubated and readied for subsequent inclusion.

A Design and Monitoring Framework (DMF) has been developed that comprises a set of indicators that effectively capture, describe, and quantify CEP-SF outputs, their contribution to the sustainability of the GMS Program (outcome) and attaining sustainable growth in the GMS (impact). The DMF is supported by an analysis of potential risks and sustainability issues along with proposed management strategies for each.

Benefits from CEP will accrue at multiple levels, including the household, community, subnational, (sector, provincial, and corridor), national, and up to the GMS subregion as a whole. The type of benefits received will vary significantly, but will be targeted at the key needs of beneficiaries at each level.

The CEP-SF has been developed on the basis of what needs to be done in the next 5 years to ensure sustainable pathways to generate local and regional benefits that are tangible, measurable, and have specific activities linked to program outputs. Its sustainability will depend on:

- (i) increased ownership by national governments and beneficiaries and continued support from development partners,
- (ii) extended network of potential development partners and financing agencies,
- (iii) increased private sector participation,
- (iv) improved risk return and cost recovery ratios of bankable and viable projects, and
- (v) innovations in blending financing options and de-risking green investments.

Implementation Arrangements

CEP will continue to be implemented under the guidance and oversight of the WGE, which will set the strategic direction for the successful implementation of the program. The WGE will provide periodic reports to the GMS Environment Ministers and implement any decisions made.

Following a decision of the WGE in 2016, the management structure for the delivery of CEP will be reorganized and streamlined to better serve the needs of the evolving program. Under the new structure, the EOC will be reorganized from one of project management to an environmental services provider that will deliver project readiness support. It will undertake four main functions: (i) preparing and maintaining the CEP project pipeline and facilitating access to funding, (ii) providing knowledge management and advisory services, (iii) program monitoring and reporting, and (iv) acting as secretariat to the WGE.

While the EOC will coordinate regional and cross-border activities and the delivery of CEP services, most national activities will be implemented by the relevant line agencies, supported by NSUs. National responsibilities will include data collection and management, coordination with implementing line agencies, serving as counterparts to CEP technical specialists, and organizing national meetings, workshops, and study visits. These functions will be handed over to CEP focal ministries and NSUs in a phased manner according to each country's capacity and ability to absorb support costs. The timing and scope of the decentralization plan will be informed by the findings of the needs assessment of the GMS countries.

Financing

The successful implementation of the CEP-SF is reliant on developing and maintaining a pipeline of projects to attract funding and promote collaboration with development partners. The funding for pipeline projects can be sourced from ADB grants and/or loans, Climate Investment Funds, the Green Climate Fund, Global Environment Facility, the Nordic Development Fund, the Government of Sweden, and other potential bilateral and private sector investors. Development partners will have the option of subscribing to specific activities or projects in the pipeline either on a stand-alone basis or through an ADB technical assistance (TA) project. This will enable donors and financing institutions to be closely connected with the project and thereby help ensure flexible implementation and good governance. Budgets will be sourced under three categories of activities:

- (i) support for policy development, strategic planning, and legal frameworks;
- (ii) support for investment project readiness for funding by financing institutions; and
- (iii) environmental “add-ons” to new or ongoing development sector projects.

The proposed CEP funding will initially take a hybrid approach of financing through technical assistance and securing funds for specific pipeline projects and activities from donors and financial entities based on their investment priorities and funding requirements.

The ADB regional TA will be used to cover costs associated with policy advisory services, project preparation, maintaining a knowledge-based repository, consultant costs and EOC operations. Project implementation budgets will be secured from a wider network of funding sources by developing projects that meet donor or private sector investment criteria.





I.

Introduction



I. Introduction

A. Background

The Greater Mekong Subregion (GMS) remains on a trajectory of economic growth and poverty reduction. This trend is expected to continue and even accelerate following the establishment of the Association of Southeast Asian Nations (ASEAN) Economic Community and the implementation of the \$64 billion GMS Regional Investment Framework (RIF) 2022.

The GMS countries' economic success is strongly anchored on the region's rich natural resources. While this has so far sustained the growing demand for food, energy, and commodities, there has been a considerable depletion of natural stock or assets. This is resulting in a decline and degradation in ecosystem services and environmental quality. This now threatens to undermine the sustainable development of the GMS, adversely impacting its future economic growth and prosperity. However, in recent years, innovations in green industry¹ and its related infrastructure have grown significantly in Asia. This has made Asia's green industry one of the largest in the world particularly in the areas of low carbon goods and services and its contribution to gross domestic product.² Green industry provides an opportunity for GMS countries to benefit and leverage from its wider usage and acceptance. This is significant, as the urgency for improving environmental quality has reached a critical stage and it has become imperative to take remedial and preventive measures to ensure a sustainable future.

In recognition of these emerging environmental challenges and opportunities, the GMS Core Environment Program (CEP) was initiated in 2006. The program implementation was planned over three successive phases comprising a pilot period followed by scaling up interventions, and finally the consolidation of activities. The program is currently implementing Phase II planned for completion by March 2018.

Phase I of CEP (2006–2012) helped improve environmental management in the GMS in three ways. These are: strengthening developmental or key sector strategic planning processes, supporting enhanced biodiversity and livelihoods in key biodiversity landscapes, and improving national environmental monitoring systems. In Phase II, enhancing environmental and social safeguards, adapting to climate change and building resilience, institutional capacity strengthening, and ecosystem financing mechanisms were added.

Since its inception in 2006, CEP has strived to improve environmental quality and climate resilience across the subregion by creating an “environmentally friendly and climate resilient GMS Economic Cooperation Program.” The Asian Development Bank (ADB) is the CEP executing agency while the GMS Working Group on Environment (WGE) provides overall leadership and direction for the program. The GMS Environment Operations Center (EOC) in Bangkok, Thailand coordinates program implementation and provides secretariat support to the WGE. The WGE consists of one nominated senior government official (focal point) from the environment ministries of each of the six GMS countries. It is responsible for driving regional environmental cooperation under the GMS Economic Cooperation Program (GMS Program), including oversight of the CEP.

¹ The term “green industry” was coined by the United Nations Industrial Development Organization in the context of new global sustainable development challenges. Green industry entails economies striving for a more sustainable pathway of growth, by undertaking green public investments and implementing public policy initiatives that encourage environmentally responsible private investments.

² Asian Development Bank (ADB). 2017. Green Growth Opportunities for Asia. *ADB Economics Working Paper No. 508*. January.

B. Progress Towards Sustainability

Over the past decade of CEP implementation, GMS countries have advanced policy and institutional reforms to accelerate their response to critical sustainable development risks of environmental degradation and climate change. All countries have strengthened legal frameworks and institutional capacity for environmental protection. During the 5th GMS Summit in 2014, country leaders reinforced their commitment to inclusive and sustainable development, adding momentum to the environmental response at the regional level. However, effective operationalization of the 5th GMS Summit commitment is constrained by inadequate strategic planning capacity and investment project readiness. Consequently, a significant investment gap continues to persist in the environment and natural resources sector.

CEP Phases I and II have contributed to mainstreaming environmental considerations in economic development through policy development and strategic planning, knowledge support, and environment and climate related project investments in the GMS. Major achievements include:

- (i) **Promoting sustainability through policy and strategic planning support.** The CEP does this by: (i) strengthening technical capacity and developing enabling regulatory frameworks for undertaking strategic environmental assessment (SEA) and environmental impact assessment (EIA); (ii) performing over 10 SEAs in economic corridors, land use management and key sectors such as energy and tourism; (iii) the environmental and social screening of RIF pipeline projects; (iv) achieving legal recognition and regulatory provisions for biodiversity conservation corridors; (v) enhancing technical and institutional capacity to monitor environmental performance; and (vi) supporting the development of national strategies for biodiversity conservation, environmental management and pollution control. Examples of national strategies are Cambodia's National Environmental Strategy and Action Plan, and the Pollution Control Strategy of the Lao People's Democratic Republic.
- (ii) **Knowledge capitalization and establishing information management and sound decision support system.** This is being done by: (i) launching and maintaining an online GMS Information Portal,³ (ii) applying spatial multicriteria analysis to RIF pipeline projects, (iii) embedding spatial analysis (land demand modeling, ecosystem service valuation, mapping, etc.) into key strategic plans, (iv) undertaking climate vulnerability assessments in agrarian communities, and (v) introducing the industrial pollution projection tool to strengthen pollution control policy and planning. So far, CEP has held over 500 capacity building events involving more than 19,000 technical staff and stakeholders.
- (iii) **Stimulating environment and climate investments.** This includes: (i) a \$70 million biodiversity conservation corridors investment, and (ii) approximately \$20 million for climate interventions including the Green Freight Initiative and Forest Investment Program, Pilot Program for Climate Resilience, and Global Environment Facility support for climate resilience in biodiversity conservation corridors.

These achievements, summarized in Table 1, are testimony to the CEP's core competences and have been recognized and endorsed by GMS countries during the biannual meetings of the WGE, by the 4th Environment Ministers Meeting, as well as by the CEP Phase II Mid-Term Review. In 2015, the WGE requested the EOC to develop a CEP Strategic Framework and Action Plan (2018–2022). The aim was to consolidate and leverage the achievements of previous phases, accelerate and stimulate increased regional cooperation on environmental sustainability and climate resilience through knowledge sharing, decentralize implementation arrangements to the countries, and develop a robust green and sustainable development focused program underpinned by a bankable project pipeline.

³ Greater Mekong Subregion Environment Operations Center. www.gms-eoc.org

Table 1: Core Environment Program Achievements 2006-2017

Activity	Outcomes	Countries
1. Policy and strategic planning support		
Production of technical guidelines and policy support for EIA	Strengthened capacity and improved regulatory framework for EIA.	Cambodia and Myanmar
Biodiversity conservation corridors policy support	Legal recognition and regulatory provisions established for biodiversity conservation corridors.	PRC, Thailand, and Viet Nam
Strategic plan development for biodiversity conservation	Production of a national master plan for biodiversity corridor, biodiversity conservation, elephant conservation, forest restoration, ecosystem based approaches.	Lao PDR, PRC, Thailand, and Viet Nam
Policy support for environmental management	Formulation of a National Environmental Strategy and Action Plan.	Cambodia
Environmental protection policy support	Support for the development of a technical guideline on Environmental Protection Planning.	Viet Nam
Institutional capacity building for pollution control	Strengthened institutions and development of a National Pollution Control Strategy.	Lao PDR
P(F)ES capacity, best practice and policy development	Results used as inputs to develop policy instruments and legal frameworks.	Cambodia and Viet Nam
SEA capacity development and policy support	Strengthened SEA capacity and enabling regulatory framework.	Cambodia, Lao PDR, and Viet Nam
SEAs for area-based plans	Results used in Red River Basin Plan, Quang Nam LUP 2011-20 and National LUP Revision 2015-20.	Viet Nam
Energy sector SEAs	Results used in Viet Nam PDP 6, 7 and revision of 7. Input into GMS Regional Power Planning.	GMS and Viet Nam
Transport sector SEAs	Results used in the North-South Economic Corridor Strategy and Action Plan (NSECSAP).	Lao PDR, PRC (Yunnan), and Thailand
Tourism sector SEAs	Results used in developing the Mekong Tourism Marketing Strategy and Action Plan (2015-2020).	Cambodia and the Golden Quadrangle
Support for sustainable tourism strategy development	Formulation of a National Ecotourism Management Strategy.	Myanmar
EPA implementation and capacity support	Improved technical and institutional capacity to monitor environmental performance in the GMS.	All member countries
Estimating and mapping industrial pollution	Results used in development of the Pollution Control Strategy.	Cambodia and Lao PDR
Transboundary conservation landscape management	Bilateral MoU signed on transboundary landscape management between Lao PDR and China.	Lao PDR and PRC

Activity	Outcomes	Countries
2. Environmental knowledge capitalization, information management and decision support		
Development of the EOC knowledge portal	GMS environmental information, spatial data and analysis tools used by a range of stakeholders.	GMS
Application of SMCA to strategic plans	Identification of distribution of ecosystem risks and opportunities (e.g., in the NSECSAP).	GMS
Application of SMCA to RIF pipeline investments	Recommendations for environmentally and socially appropriate investment placement (RIF pipeline).	GMS
Development and application of land use change model	Results used to formulate sustainable sector and area based plans (e.g., NSECSAP and Land Use Plans).	Lao PDR, PRC, Thailand, and Viet Nam
Mapping ecosystem services values	Use of SMCA in SEAs and river basin planning processes.	Lao PDR, PRC, Thailand, and Viet Nam
Participatory Climate Vulnerability Assessment	Strengthened climate change adaptation in trans-boundary conservation landscapes.	Cambodia, Lao PDR, PRC, Viet Nam, and Thailand
Knowledge products	25+ published briefs, reports, papers, guidelines.	GMS
Knowledge platforms	Transboundary Biodiversity Landscape Forum, Climate Change Adaptation Roundtable, GMS Land Use Modelling Network.	GMS
3. Preparation and implementation of environmental pilots and investment projects		
Biodiversity conservation corridor management	BCC loan and grant-funded investments leveraged in 3 countries and the approach expanded in one.	Cambodia, Lao PDR, Viet Nam, Thailand (expansion)
Climate adaptation support in conservation corridors	GEF funding leveraged for climate resilient management of transboundary landscapes.	Cambodia, Lao PDR, PRC, Viet Nam, and Thailand
Support for green growth in the transport sector	Low carbon options adopted by GMS freight transport operators.	Lao PDR, Thailand, and Viet Nam
Collaboration with other GMS Working Groups	Environment mainstreamed in a number of energy, agriculture, tourism, and transport investments.	GMS
Environmental and social screening support to the RIF	Environment and climate mainstreamed in some sector investments in the RIF.	GMS

BCC = biodiversity conservation corridor, EIA = Environmental Impact Assessment, EOC = Environment Operations Center, GEF = Global Environment Facility, GMS = Greater Mekong Subregion, Lao PDR = Lao People's Democratic Republic, LUP = Land Use Plan, MoU = memorandum of understanding, P(F)ES = Payment for (Forest) Ecosystem Services, PRC = People's Republic of China, SEA = strategic Environmental Assessment, RIF = Regional Investment Framework, SMCA = spatial multicriteria analysis.

Source: Authors



C. Lessons Learned

Several important lessons were learned during Phases I and II of the CEP, which shaped the evolution of the program over its 10 years of implementation. The Phase II Mid-Term Review together with other internal and external evaluations, in-country consultations and feedback from development partners identified a number of issues that needed to be addressed. These are summarized in the paragraphs below.

A programmatic approach has enabled the CEP to remain flexible and respond to countries' emerging demands, in line with the shifting policy and institutional landscape. Policy and planning are time bound processes and therefore often have very short windows of opportunity for engagement. Utilizing the flexibility inherent within the program, CEP has been able to mobilize support for such processes at relatively short notice. GMS countries appreciated the CEP's ability to respond to immediate needs and opportunities. However, in the past, the CEP ended up taking on a large number of small initiatives, which did not entirely directly align with the program's broader outcomes and impact. Moving forward, alignment with the CEP strategic framework, government ownership, and addressing strategic priority needs are key criteria that have to be applied if such opportunities are to lead to sustainable outcomes.

Alignment of activities with national policy priorities is important for country ownership and sustainability. CEP achievements highlighted in Table 1 include the SEA of Viet Nam's Seventh Power Development Plan (PDP7) and improvements in fuel efficiency produced by the Green Freight Initiative. Successes with these activities were greatly aided by the aspirations of the target countries

to achieve energy diversification and added security. Similarly, in the case of the People's Republic of China (PRC) and Thailand, biodiversity conservation corridor activities were closely aligned with the environmental priorities of these countries to enhance ecosystem connectivity. An outcome of this was that matching funds in excess of \$1 million for the corridors was sourced from national government budgets.

Engaging other development sectors has been a challenge. As a result, efforts at mainstreaming environmental considerations in GMS sector investments have been difficult. The CEP strives to mainstream environment across all GMS sectors and increase investments in the sustainable management of natural resources. The aim is to achieve the program outcome of an environment-friendly and climate-resilient GMS Economic Cooperation Program. Unfortunately, there is a tendency for other sectors to view the environment sector and its related safeguards as an impediment to their own developmental activities rather than seeing it as a means of providing more sustainable benefits. Even where the CEP environmental “add-ons” have significantly enhanced the economic performance of sector investments or contributed directly to poverty reduction, the benefits have not been adequately monitored, assessed, or demonstrated to policy-makers. The CEP has aligned its activities to promote sustainability and inclusiveness in the RIF. However, engaging with the RIF is challenging due to its scale and size, and because formal regional planning processes and mandates are still evolving. The most realistic opportunity for the CEP to leverage influence and enhance coordination between national stakeholders is likely to be during the design phase of investment projects in priority sectors.

The uptake of new tools and strategic approaches to environmental planning and policy development requires significant awareness raising to ensure their utility is understood. The CEP experience has demonstrated that targeted awareness raising through regional and international exchange events and study visits are useful means of generating interest in new tools and approaches. For example, Payment for Forest Environmental Services and Industrial Pollution Projection System (IPPS) initiatives were adopted by some GMS countries, stimulated by CEP knowledge exchange facilitation.

Legal frameworks and technical capacity are crucial for the broader uptake of new tools and approaches. Current CEP efforts are mostly targeted at building technical capacity in using the tools. Irrespective of the adoption of some tools by some countries, broader uptake in the subregion as a whole will require stronger and more supportive legal frameworks and institutional capacity.

The monitoring and evaluation of policy and planning outcomes is challenging. Demonstrating that changes in planning and policy are contributing to environmentally sound practices can be difficult. For example, the CEP-supported energy SEA certainly influenced the PDP7 in Viet Nam. This was demonstrated by the acceptance of recommendations on the energy mix, cancellation of candidate projects with high social and environmental impacts, and promotion of renewable energy and energy efficiency. Usually, policy impacts can take a long time to materialize into visible impact. A systematic approach to monitor and evaluate the impact of program activities needs to be established and strengthened.

The CEP Phase II programmatic interventions focused mainly on capacity building, knowledge sharing, and environmental safeguards. As a consequence, there were fewer on-the-ground projects that could demonstrate the effectiveness of these interventions or assess the beneficial impact on communities, infrastructure, natural resources, ecosystem services, and GMS investment performance. Well-designed demonstration projects are crucial for the uptake of environmentally sound practices. While the CEP is advocating for increasing investment in natural resources and cleaner technologies, “proof of concept” is essential for broad uptake. Uptake is usually hindered by perceived uncertainties, inadequate capital, and risks associated with the performance of new technologies and practices. For example, small and medium-sized enterprises involved in freight transport see the benefits of cleaner technologies, but are often reluctant to adopt these due to

inaccessibility of adequate capital and risks associated with these “yet-to-be proven” benefits. The program should focus on demonstrating the viability of these investment, creating an enabling environment policy, and assisting in developing institutional arrangements for de-risking private sector investments to boost investor confidence.

Some CEP activities targeted lower administrative levels such as households, villages, and communes and therefore lacked strategic impact. Climate change activities are good examples of this. Although promising results were produced appropriate for dissemination and out-scaling through national and regional fora such as the GMS Climate Change Adaptation Roundtable, this has only occurred to a limited extent. The establishment of platforms for learning and facilitating policy dialogues are crucial to feeding lessons from the ground to ensure broader policy impact.

Activities implemented under Phases I and II of the CEP were designed primarily as traditional development projects rather than as “bankable investments.” As such, insufficient attention was paid to financial returns and future revenue flows, leading to issues of sustainability. This was particularly the case in the biodiversity conservation landscapes component. Continued government funding for this type of investment is now in question as future returns on such investments cannot be clearly demonstrated. Although gender and social inclusion was integrated in the CEP Phase II design, in practice work remained isolated and inadequately resourced. In particular, the program lacked an overarching poverty reduction strategy, and although many activities contributed directly to poverty reduction, these links were not explicitly identified nor adequately quantified and monitored.

Adopting an integrated value chain approach to project planning and implementation could provide necessary scale, cross-sector coordination, and greater inclusiveness of communities and the private sector. Strengthening the design and monitoring framework would enhance its usefulness in guiding and monitoring program implementation. A key constraint was that the indicators were not specific, measurable, attributable, relevant, and time-bound and therefore insufficiently focused and failed to properly represent outputs, outcome, and impact. Social and Gender disaggregated indicators should be included in the design and monitoring framework.

The WGE focal agencies could do many of the tasks performed by the EOC with support from the National Support Units (NSUs). Supported by appropriate capacity building, a phased handover of key tasks to the NSUs would not only improve efficiency. It would also increase ownership and promote member country leadership of the CEP. However, human resource and institutional capacity remains the major impediment.

Though considerable capacity building and knowledge management support have been provided through various initiatives, there is still a lack of objective information and data analytical skills related to project preparation and assessing transactional and underlying risks. As a consequence, there was somewhat an *ad hoc* approach to project identification, selection, development, and resourcing. This contributed to poor project planning and the inability to obtain project approvals and financing, both internally as well as from external financing institutions. Remedial action would entail a new role for the EOC as an environment services facility rather than as a program manager providing limited support services.







II.

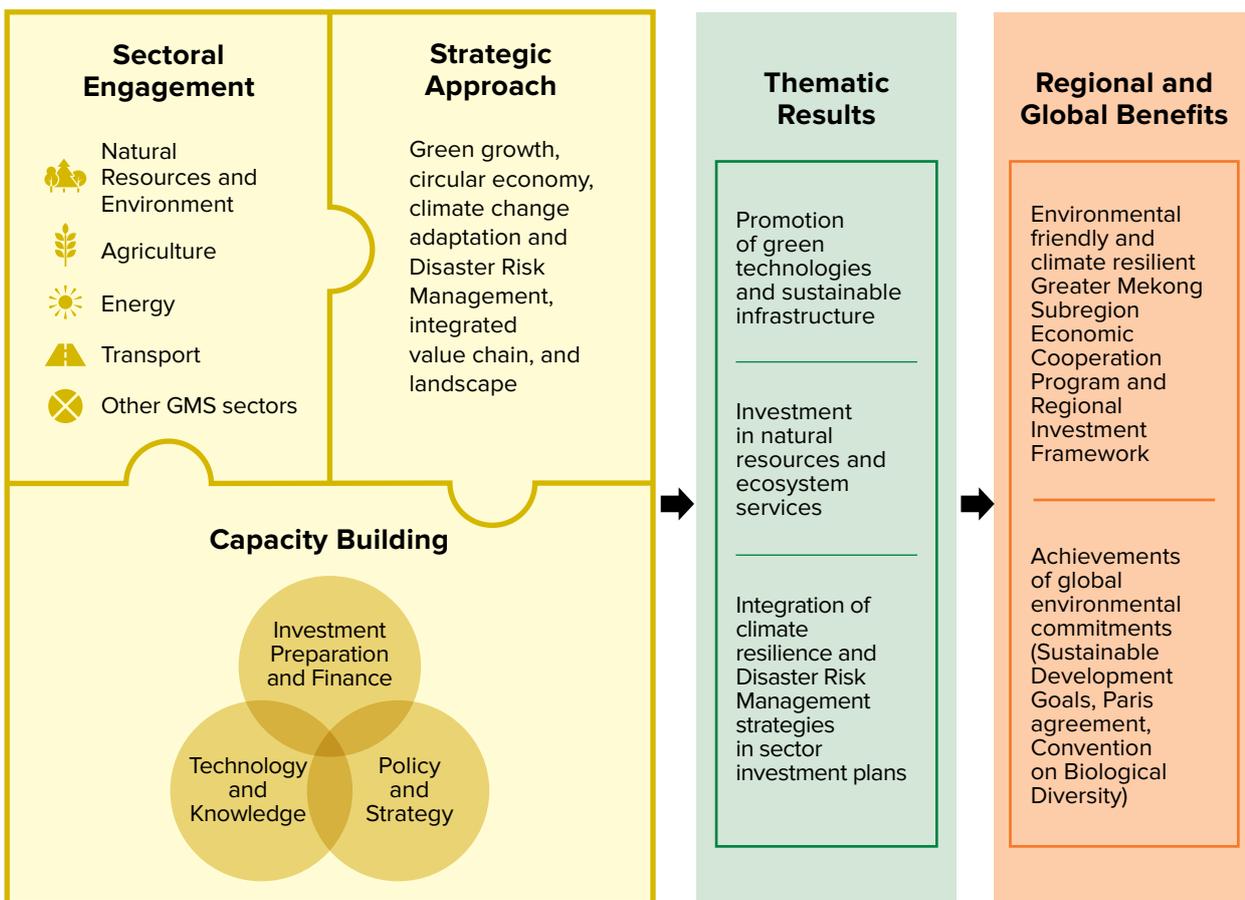
**Core
Environment
Program
Strategic
Framework
(2018–2022)**



II. Core Environment Program Strategic Framework (2018–2022)

The initial step in the planning process for the Core Environment Program Strategic Framework (CEP-SF) was to scope out the broader strategic positioning. This was done based on a thorough review of Greater Mekong Subregion (GMS) country priorities, international development and environmental policy (e.g., the United Nation’s Millennium Ecosystem Assessment, the Convention on Biodiversity’s Aichi Targets and the Paris Agreement), and the evolution of global financing architecture. In addition, the investment priorities and the financing criteria of global environment and climate funds, and CEP lessons learned, core competencies and comparative advantages were also considered. The objective of this strategic planning step was to provide a sound and coherent strategic framework to select individual activities that can be identified, developed, and packaged for funding and timely delivery. Figure 1 summarizes the overall CEP-SF architecture, which is further explained in subsequent sections.

Figure 1: Core Environment Program Strategic Framework Architecture



Source: Authors

The international policy architecture on environment and climate change has evolved considerably with recent global commitments. In turn, these have had cascading effects on sustainable development in the GMS. All member countries have adopted Sustainable Development Goals (SDGs), and are committed to delivering on nationally determined contributions (NDCs) as articulated in the 2016 Paris Agreement under the United Nations Framework Convention on Climate Change. GMS countries have also adopted and are in various stages of implementing the Aichi biodiversity targets agreed in 2010 under the United Nations Convention on Biological Diversity. Taken together, these developments underscore the main themes and priorities of the CEP and provide the context for developing the strategic framework that will guide the future of the program. The CEP-SF has been developed to be more adaptive and responsive to country requirements while keeping their international commitments and regional priorities in focus. This has been done through extensive in-country consultations and by developing a project pipeline based on national environmental priorities and global commitments.

A number of important issues are emerging from natural resources and environmental management initiatives globally and these are largely mirrored by the CEP experience to date. Some key conclusions based on internal reviews, external feedback, and discussions with member countries are considered in the design of the next phase of the CEP. These form the rationale and justification for the CEP-SF and the proposed activities and interventions have been designed and developed to address these conclusions.

To support the GMS Strategic Framework (2018–2022), particularly the vision to ensure that GMS development process is equitable and sustainable, the CEP-SF aims to “mainstream sound environment management and climate resilience across priority development sectors to enhance the development impact and sustainability of the GMS Program.” The CEP-SF is designed to help the GMS program to safeguard environment and social interests during its implementation.

A. Strategic Approach

A regional approach is required to achieve the outputs that are pertinent to regional public goods. It will promote economies of scale, better management of opportunities and risks, reduced transaction costs, diversified markets and market-based mechanisms, and provide access to a wider network of financing options. Recognizing the new opportunities created by an improved knowledge base, innovations, and growth of green industries and sectors in the region itself, greater emphasis will be given to south–south⁴ and triangular cooperation.⁵ A regional program will assist developing socially inclusive and integrated regional value chains that are worthy of public and private sector investment. A regional programmatic approach will also be valuable in strengthening regional and national environmental governance and creating enabling policy conditions to mitigate investment risks and attract private sector capital.

⁴ The framework of operational guidelines on United Nations (UN) support to south–south and triangular cooperation defines South–South cooperation as “a process whereby two or more developing countries pursue their individual and/or shared national capacity development objectives through exchanges of knowledge, skills, resources and technical know-how, and through regional and interregional collective actions, including partnerships involving governments, regional organizations, civil society, academia and the private sector, for their individual and/or mutual benefit within and across regions.” High-level Committee on South–South Cooperation 19th Session. *Framework of Operational Guidelines on United Nations Support to South–South and Triangular Cooperation*. New York, 16–19 May 2016.

⁵ The UN’s working definition for triangular cooperation is “Southern-driven partnerships between two or more developing countries, supported by a developed country(ies) or multilateral organization(s), to implement development cooperation programs and projects.” Ibid.



The CEP is strategically well-positioned to further facilitate and strengthen regional cooperation on green growth and climate actions. However, the GMS process is still evolving and decision making and underpinning institutional support to work regionally across borders need to be continuously strengthened. Hence the program design is guided by the principle of planning regionally while keeping national priorities and commitments in the background and providing support linkages to the Regional Investment Framework (RIF). An adaptive management approach will be adopted to facilitate interventions at the appropriate level.

From a focus on the biodiversity corridors in Phase I, the CEP evolved into a broader focus on the economic and social value of biodiversity, natural resources, and ecosystem services in Phase II. It is proposed to realign the program's geographic focus with the GMS economic corridors and the projects in the RIF pipeline. Within the economic corridors, areas of high ecosystem service values will be identified and targeted following criteria established by the Millennium Ecosystem Assessment (MEA), the Economics of Ecosystems and Biodiversity (TEEB), and related assessments. This will learn from and build on previous work done by the CEP in the biodiversity conservation corridors and transboundary biodiversity landscapes. The "ecosystem service landscapes" identified will serve as a broad framework for national and regional strategic plans and investments within their respective sector and administrative contexts.

Focus on green growth. Asian countries have been among the first to understand the potential of, and the need for, green growth. The pursuit of green growth is a direct response to the demand for sustainable development that meets the requirements of the current generation without compromising the ability and potential of future generations to meet their own needs. Green growth strives to intensify economic development, without reducing aggregate natural assets. This is done through the adoption of strategic approaches such as better allocation of natural resources, improving resource use efficiency, employing innovative technology, minimizing waste, and ensuring inclusive value chain development. Green growth has been adopted as an underpinning principle in the design of the CEP-SF.

Integrated value chain approach for project development. The benefits of green interventions and investments have been fragmented and piecemeal. They lack sufficient empirical evidence of economic and social benefits such as increased employment opportunities, improved livelihoods, and greater economic returns. In response, the new focus under the CEP-SF intends to promote an integrated value chain approach in the design of interventions. This will result in scale, greater inclusiveness of communities, and an increased participation of the private sector. In addition, key concepts of the circular economy approach relating to continuous regenerative and restorative development will be embedded in the design of interventions and planning processes. This approach will enhance the effectiveness of RIF investment planning, reduce waste, drive greater resource productivity (resource use efficiency), position GMS countries to better address issues relating to resource security and depletion from extractive processes, and mirror the sustainable production and consumption initiatives already implemented in some GMS member countries. Quantitative indicators will be designed to capture key data, the analysis of which will provide sufficient evidence of the impact and benefits of the activity in particular, and the CEP on a wider programmatic basis.

Environmental governance. Effective environmental conservation is dependent upon governance and public policy reforms that safeguard natural resources and ensure that natural resource management contributes to poverty reduction and sustainable development. Toward this, the CEP will continue to strengthen the capacity of government agencies to develop and implement sound environmental policies. The CEP will foster partnerships between these agencies and civil society to integrate social concerns, such as livelihoods within the policies. The CEP will also support government agencies to actively engage in multisector consultation and collaboration processes to develop environmental laws that will be implemented as intended.

Mainstreaming of climate resilience and disaster risk reduction. These types of initiatives in GMS investments will be an overarching principle for all activities implemented under the CEP-SF. It will form the foundation for all project planning and will be considered and included at all stages of a project life cycle as an essential prerequisite. This will require cross-sector cooperation and knowledge sharing for which substantial resources will need to be devoted to capacity building and project formulation.

Financial sustainability and benefits analysis. Recent developments have demonstrated that the traditional regulatory approach to environmental management has only been partially successful, as it is perceived as a deterrent to development interventions. In the absence of compliance capacity, the command-and-control approach alone cannot ensure sufficient behavioral change required to achieve sustainable results. It is therefore imperative to strike the right balance between regulated and nonregulated mechanisms, including market driven instruments based on “user-pay” and “polluter-pay” principles. In response, the CEP will establish robust monitoring systems that identify and quantify the economic benefits of environmental interventions at household, community, ecosystem, national, and regional levels.

Widening the investment network through bankable projects. It has become increasingly evident that without the active participation of the private sector and the larger funds and financial instruments (e.g., pension, insurance, climate funds, green bonds, etc.), the investment gap for environment friendly and low carbon technology and infrastructure will further widen. De-risking and developing bankable projects that are financially viable is critical to attract investment by the private sector and funding institutions. Hence, public sector policy should focus on creating a conducive environment to attract private sector investment. This is especially important in developing countries where access to capital and the perception of risk continue to hinder private sector’s engagement.

B. Thematic Areas

The CEP-SF sharpens the focus of the program into three thematic areas: (i) promotion of green technologies and sustainable infrastructure; (ii) investment in natural resources and ecosystem services; and (iii) integration of climate resilience and disaster risk management strategies in sector investment plans with a specific focus on natural resources, agriculture, energy, and transport sectors.

Green technologies⁶ and sustainable infrastructure. These will be promoted to ensure that economic growth is efficient in its use of natural resources, clean in that it minimizes pollution and environmental impacts, and resilient in that it accounts for natural hazards and the role of environmental management and ecosystem services in preventing physical disasters. Specific areas of focus will include: (i) strengthening national planning and safeguard systems, strategic environmental assessment (SEA) and environmental impact assessment (EIA), for sustainable infrastructure; (ii) rural environment management, pollution control, and waste management; (iii) electronic waste management; and (iv) green road freight. Under this thematic area, green growth readiness will be stimulated by facilitating access to relevant innovative technologies and through enhanced support for legal and knowledge aspects to build a sound regulatory framework and enabling investment environment for it.

Natural resources and ecosystem services. These can be defined as the stocks of natural assets, which include geology, soil, air, water, and all living things that generate a flow of services essential for sustaining socioeconomic development and supporting human wellbeing. Significant achievements were accomplished under Phase I of the CEP in the management and protection of biodiversity in conservation corridors and transboundary biodiversity conservation landscapes. This evolved into Phase II of the CEP assuming a broader role of promoting better land use management and resource protection in strategic planning. The CEP will build on these successes with a special focus on integrated spatial planning and sustainable land use management.

Climate resilience. This can be described as the capacity for both physical and socioecological systems to absorb stresses and maintain functions in the face of external pressure caused by climate change. The concept also embodies the ability to adapt, reorganize, and evolve into more desirable configurations that improve the sustainability of the ecosystem, leaving it better prepared for future climate impacts. Under the CEP-SF, climate-related activities will build resilience at all levels and across all sectors through technical interventions, policy support, use of analytical tools and the provision of climate-related information.

Disaster risk management. Disaster risk management⁷ (DRM) and climate change adaptation are closely related as both involve solutions for hazards, exposure, and vulnerabilities. They will, therefore, be addressed within a single thematic area under the CEP-SF, which will adopt approaches to climate proof rural infrastructures and communities including promotion of ecosystem approaches to DRM. Under the proposed approach, climate resilience will be enhanced by systematically addressing all elements of the disaster risk equation, namely regulating hazards, controlling exposure, improving preparedness through capacity building and reducing vulnerability. Such an approach will lead to social, economic, and environmental benefits by increasing livelihood opportunities, contributing to gross domestic product, reducing poverty, protecting biodiversity, and facilitating carbon sequestration.

⁶ Green technology corresponds to the definition of environmentally sound technologies outlined in Chapter 34 of Agenda 21 (The United Nations Programme of Action from Rio, 1992). According to Agenda 21, “environmentally sound technologies” protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes.

⁷ DRM principles are endorsed internationally by the Sendai Framework for Disaster Risk Reduction, endorsed in 2015. The framework sets four priorities for action: (i) understanding disaster risk; (ii) strengthening disaster risk governance to manage disaster risk; (iii) investing in disaster risk reduction for resilience; and (iv) enhancing disaster preparedness for effective response, recovery, rehabilitation, and reconstruction.



C. Sector Linkages

Development pressure and its impacts on natural resources and the environment often manifest itself through uncoordinated and fragmented development decisions that lead to negative environmental and social impacts. Recognizing that decisions on natural resources use are made on a sector-by-sector basis and at multiple levels (i.e., national, provincial, and local), CEP will engage key players through a multisector and integrated process. The program will work with sectors that have the greatest bearing on natural resources, ecosystem services, and environmental quality, aiming to strengthen sector processes and thereby ensure that the value of environment is properly reflected in corresponding investments.

CEP interventions will focus at both the sector and national levels (i.e., national socioeconomic development, sector development plans, etc.) as well as at the spatial level (i.e., area-based land use, economic corridor development, etc.). Support will concentrate on providing policy and investment decision-makers the tools to better understand the balance between competing resource demands. For example, irrigation and energy planning within a river basin are typically undertaken separately, but rely on the same limited resource base (i.e., water), necessitating that water management planning at the basin level be accomplished in an integrated manner to reconcile energy and irrigation targets as well as other competing needs on the same water resources. Climate change must additionally be integrated into natural resource planning processes. While GMS countries are increasingly planning for climate change adaptation and mitigation, climate change strategy also needs to be incorporated into existing sector and socioeconomic planning processes.

The CEP will further increase its efforts to mainstream environmental considerations in all GMS sectors to improve the environmental performance of GMS investments. Building on the collaboration and synergies created with key development sectors in Phase II, the CEP will continue to focus on the natural resources and environment, agriculture, energy, and transport sectors. The program has been designed in response to the key issues facing these sectors. These include sustainable and equitable allocation of resources (reducing inter-sector competition); improving resource use efficiency; remediating ecosystem, environment degradation, internalizing ecosystem services value, accessing finance; and building capacity to better manage environmental and climate risks and vulnerabilities. These issues need to be addressed through targeted interventions across the four key sectors. To this end, the CEP will support a multisector growth trajectory that will follow an integrated value chain approach toward developing national priority projects that take into consideration cross cutting and sector-specific issues.

D. Program Services and Core Environment Program Core Competences

Under each of the new thematic priorities and within the realigned geographical focus areas, the CEP will support three types of service intervention that reflect the institutional experience and comparative advantages that will enable the CEP to contribute to the success and sustainability of GMS investments. These are:

- (i) investment preparation and financing support,
- (ii) knowledge management support and technology uptake, and
- (iii) policy and strategic planning support.

1. Investment Preparation and Financing Support

Building on the CEP's competencies in developing and supporting investment projects (such as the Biodiversity Conservation Corridor project, Green Freight Initiative, and climate-friendly agri-business value chain), the CEP will continue to incubate and scale environmental projects to be included in the RIF. It will provide a range of project development, financing, and investment services to member countries, including:

- (i) assisting in identifying, conceptualizing, and prioritizing projects for investment;
- (ii) undertaking technical pre-feasibility and financial feasibility studies;
- (iii) providing data and information required for project development and funding applications;
- (iv) developing regional projects, ideally with a transboundary footprint;
- (v) identifying and matching potential funding opportunities and financing institutions to pipeline projects;
- (vi) assisting as a transaction enabler through risk mitigation, resource blending and project pooling measures;
- (vii) Incubating and scaling up of investments projects;
- (viii) developing "proof of concept" projects to demonstrate sustainability and viability;
- (ix) developing innovative financing mechanisms; liaising with and reporting to potential donors and funding facilities; and
- (x) assistance with monitoring and evaluation of progress, outcomes and impacts.

Developing innovative financing mechanisms and partnership opportunities will help attract capital. A pipeline of technically and financially sound projects will mitigate perceived risk and ensure reasonable returns thereby stimulating private sector and public-private partnership investment.

Relationships with key global and regional sources of funding will be established. These will be built on a sound understanding of their strategic priorities, areas of interest, funding criteria, and grant procedures. Funding sources will include the Green Climate Fund, the Global Environment Facility, Climate Investment Funds, the Integrated Disaster Risk Management Fund of the Asian Development Bank (ADB), trust funds managed by the ADB, the World Bank, Asian Infrastructure and Investment Bank, and other multilateral international agencies, bilateral agencies and charitable institutions. In addition, the Environment Operations Center will provide linkages to global institutions such as the

Global Infrastructure Hub,⁸ Organisation for Economic Co-operation and Development's Centre on Green Finance and Investment,⁹ Global Infrastructure and Investor Association,¹⁰ and similar entities and databases to leverage investment opportunities for CEP pipeline projects. The CEP will assist in introducing and securing both commercial and noncommercial lending facilities by providing financial viability analyses and other economic data to support project proposals. The CEP will not implement these projects as they will remain the responsibility of the GMS countries and their respective execution agencies. However, wherever required, capacity, knowledge, and technology advisory support will be provided on a needs basis to ensure a smooth implementation process.

2. Knowledge Management and Technology Uptake Support

During its 10 years of implementation, the CEP has disseminated extensive environment related information and knowledge based on lessons learned from its own activities and best practices, as well as from other relevant initiatives in the subregion and beyond. Information and knowledge services will continue to be a priority for the program. The CEP will build regional environmental performance monitoring and assessment capacity. GMS statistics, indicators, and other information on natural resources, environmental quality, drivers of change, together with spatial data and thematic maps will be regularly compiled, updated, and maintained on the GMS Information Portal.

Technological advances are at the forefront of catalytic changes in the way businesses operate and the impacts this has on environment and human wellbeing. The combination of advances in information and communication technology and improvements in resource efficient and renewable energy technologies have generated new opportunities for developed and developing economies to pursue a green growth trajectory. The CEP will provide support for green technology transfer, knowledge sharing, and decision support. Its communication and outreach efforts will increasingly focus on knowledge generation and sharing initiatives that directly build on the knowledge management and technology uptake services. These services will include:

- (i) raising awareness and facilitating collective learning on environmental and climate change practices through regional forums and study visits;
- (ii) establishing a green technology transfer platform as a market place for the exchange and dissemination of information on proven green technologies appropriate for adoption by GMS countries;
- (iii) providing environmental and climate knowledge advisory services to GMS countries, including assessments to support project formulation on sustainable infrastructure;
- (iv) developing and providing access to risk and vulnerability assessment tools;¹¹
- (v) connecting projects to financing opportunities and databases¹² that suit project specific demands;

⁸ A G20 initiative with the goal of increasing the flow and quality of private and public infrastructure, by facilitating knowledge sharing, highlighting reforms, and connecting public and private sectors globally.

⁹ The Centre on Green Finance and Investment helps catalyze and support the transition to a green, low-emissions and climate-resilient economy through the development of effective policies, institutions and instruments for green finance and investment.

¹⁰ The association plans and delivers a program of global advocacy and stakeholder engagement, working with governments and regulators around the world towards a shared goal of building and modernizing infrastructure.

¹¹ The World Bank has developed a tool (ReFine) to identify financial instruments that can be used to overcome user specified project risks and barriers. The International Renewable Energy Agency's Financial Navigator tool connects renewable energy projects with financing opportunities. It highlights funding opportunities that suit project specific demands and helps project developers to formulate a realistic financing approach that precludes non-bankable projects.

¹² The World Bank Private Participation in Infrastructure database includes over 6,400 projects across the globe and provides project related information, status updates, contractual arrangements, checklists, sample agreements, standard bidding documents, etc.

- (vi) developing generic project contract documentation for procurement and other services;
- (vii) promoting open access to environment and climate data in all GMS countries, including online dissemination of data and knowledge (experience and best practice);
- (viii) supporting knowledge events and producing knowledge products facilitating policy-science linkages; and
- (ix) organizing technology based knowledge events that stimulate regional participation and cooperation especially for the small-medium enterprises sector.

3. Policy and Strategic Planning Support

The CEP will provide advice and technical support for policy and regulatory framework development and for improving strategic, sector, and area-based planning processes. Support will include:

- (i) facilitating high level policy dialogue through GMS Working Group on Environment, senior officials', and Environment Ministers' meetings;
- (ii) support for the development and/or reform of legal and regulatory frameworks;
- (iii) strengthening national environmental safeguards, monitoring, and compliance capacity;
- (iv) assisting in mainstreaming environment and climate change considerations into sector planning procedures (e.g., SEA, EIA, etc.) and across sector- and area-based plans and infrastructure investments;
- (v) supporting use of innovative environmental analysis tools in strategic planning and investment preparation;
- (vi) developing and applying relevant decision support tools (including multicriteria and spatial analysis, and simulation support) and make these tools and their results available to a subregional audience; and
- (vii) identifying constraints to the institutionalization of innovative strategic planning concepts and tools and target these challenges with tailored capacity building, awareness raising and knowledge investments.

CEP-SF builds on the achievements of CEP Phases I and II by focusing on its core competences in regard to the three program services described above. It intends to leverage the program's core competences and further reinforce and expand the impacts generated that are summarized in Table 2.



Table 2: Building on Core Environment Program Competencies

Core Competency	Proposed Strategy under the CEP
1. Preparation and implementation of environmental investment projects	
Transboundary biodiversity conservation corridor management	Use a broadened landscape definition of ecosystem services landscapes and integrate related valuation methods into strategic plans and investments.
Climate adaptation in vulnerable communities and infrastructure	Leverage additional funding for climate resilience and target climate risk and vulnerable areas and infrastructure. Adopt a value chain approach to pro-climate investments to ensure social and economic inclusion.
Environmental support to GMS development sectors	Cooperation with GMS sector working groups to create demand-driven environmental mainstreaming into development sectors.
Environmental support for the RIF	Identify RIF opportunities for environmental and climate resilience support.
Green growth initiatives in the transport sector	Create conditions to replicate and scale-up earlier pilots on low carbon freight options for GMS transport operators.
2. Environmental knowledge capitalization and information management	
GMS Information Portal	Further development and/or updating and addition of new data sets and other knowledge resources, particularly on information required for project development and funding applications.
Application of Spatial Multicriteria Analysis to RIF pipeline projects	Continued use to ensure appropriate siting of RIF infrastructure in the GMS in conjunction with ecosystem service value mapping.
Climate Vulnerability Assessment	Strengthened climate change adaptation in higher risk areas.
Application of the Industrial Pollution Projection tool	Support to address pollution issues in upstream planning and development of pollution control strategies and environmental taxation systems with a focus on agriculture, mining and industry.

Core Competency	Proposed Strategy under the CEP
3. Policy and strategic planning support	
SEA policy and regulatory framework development	Create an enabling policy and regulatory environment for SEA supported by a Regional Centre of Excellence Network on Policy Support for Green Infrastructure.
Technical guidelines and policy development for EIA	Strengthen EIA institutional and organizational capacity and policy supported by a Regional Centre of Excellence Network on Policy Support for Green Infrastructure.
Policy development for biodiversity conservation	Strengthen the recognition of natural resources/ ecosystem service protection by SEAs and other upstream land use planning tools.
Policy development and strategic planning for pollution control	Focus on institutional capacity development, provision of standards and support for National Pollution Control legislation.
PES/PFES best practice and policy development	Focus on policy and legal framework support and replication of Viet Nam's PFES model to other GMS countries.
SEA implementation and use of the results	Focus on incorporation of SEA results into relevant sector master plans, spatial plans, and regional investments (RIF).
Application of land use planning tools and best practice	Strengthening sound land use practices in strategic planning and the use of land use change modeling to evaluate risks and opportunities of different land development scenarios.
Assessment and mapping of ecosystem service values	Use of ecosystem service value mapping in support of sector planning and for developing RIF investments.
EPA implementation capacity development	Revise priorities for greater consistency across GMS countries and align systems with global EPI themes.

CEP = Core Environment Program, EIA = Environmental Impact Assessment, EPA = Environment Performance Assessment, EPI = Environment Performance Index, GMS = Greater Mekong Subregion, PFES = payment for forest environmental services, PES = payment for ecosystem services, RIF = Regional Investment Framework, SEA = strategic Environmental Assessment,

Source: Authors



E. Selection of Core Environment Program Activities

The strategic realignment of CEP to provide (i) project preparation and financing support, (ii) technology uptake and knowledge management, and (iii) policy and strategic planning; necessitated streamlining the activity prioritization process. Activity and project identification and selection guidelines, together with an activity or project profile template, were developed to collate information and standardize the prioritization of national activities for inclusion in the CEP Strategic Framework and Action Plan. The template contains details on several key areas, including goal and rationale; expected outputs and activities; executing agencies, stakeholders and target beneficiaries; monitoring and reporting arrangements; and costs. During the country consultations, activities under each of the CEP strategy priority thematic areas were identified and detailed in the template. Identification of national priority activities and projects was undertaken using selection criteria that required proposed activities to:

- (i) Align with national policy directives and environmental strategies and be consistent with and included within the country's national development plans, environmental strategies, and sector master plans.
- (ii) Contribute to international commitments of GMS countries, such as Sustainable Development Goals, Nationally Determined Contributions (NDCs) under Paris Agreement, Aichi Target under the Convention on Biodiversity, etc.
- (iii) Include activities under one or more CEP thematic areas i.e., (a) promotion of green technologies and sustainable infrastructure, (b) investment in natural resources and ecosystem services, and (c) integration of climate resilience and disaster risk management strategies in sector investment plans.
- (iv) Build on the experience and core competencies developed under CEP Phases I and II.
- (v) Demonstrate economies of scale and have significant financial, environmental and social impacts with a large number of beneficiaries.
- (vi) Provide opportunities for piggy-backing or project add-ons, be complementary with and leverage ongoing initiatives.
- (vii) Leverage existing infrastructure and potential supply chain linkages projects.
- (viii) Identify gaps and barriers to entry that require to be redressed as part of project formulation.
- (ix) Identify cost saving, waste reduction, and technology improvements that can improve service delivery.
- (x) Identify revenue generating streams and opportunities for private sector investment to make the project financially sustainable over time.
- (xi) Aligned to regulatory frameworks and institutional mandate thereby leading to efficient and timely implementation of activities.
- (xii) Adopt an integrated value chain approach through production optimization, service delivery efficiencies, lower costs and reduced wastages and greater inclusiveness.

F. Program Beneficiaries

The CEP has both direct and indirect beneficiaries. Direct beneficiaries include public sector agencies, private sector project developers, green technology providers and financing institutions. These are explained below:

- (i) **Public sector agencies.** Institutional strengthening to create an enabling environment for green technology deployment, investment in ecosystem services, and climate resilient infrastructure development is at the core of the next phase of the CEP. The aim is to increase investor confidence by removing existing institutional barriers to promote increased investment and private sector involvement in the environment. The CEP support for policy development; legal framework reform and strategic planning will assist governments to provide a level playing field for prospective actors in the environment. For example, steps towards ensuring contracts are enforced (for PES schemes), pollution penalties put in place and enforced fairly will strengthen institutions, which in turn will enhance overall participation in environmental project development.
- (ii) **Private project developers.** Project developers are often unable or unwilling to take upstream project development risks; but are less averse to projects that have undergone appropriate technical due diligence at the early stages. With the proposed “Centers of Excellence” and “GMS Environmental Information Portal” for priority sectors (natural resources, energy, transport, and agriculture), the transaction costs associated with developing sustainable infrastructure will be reduced. Through CEP advisory role and networks, prospective developers will be able to identify the risks and possible mitigation measures for a given project. Investment de-risking initiatives (policy and financial) will stimulate private sector engagement, as risk return ratios will be considerably improved. The CEP will foster an enabling environment to facilitate private sector involvement in environmental best practices.
- (iii) **Green technology providers and users.** The CEP will facilitate knowledge sharing and access to proven technologies by aggregating available new technologies from priority sectors (natural resources, energy, transport, and agriculture). The aim is to reduce resources and time spent by prospective developers on partnering with suitable green technology providers. Furthermore, the CEP will offer advice on optimal technology selection based on user requirements; effectiveness of technology including environmental benefits and climate change aspects; capital expenditure constraints; downstream operation and maintenance costs; and available financing options.

Indirect benefits from the CEP will further accrue at multiple levels, including the household, community, subnational, (sector, provincial, corridor, and landscape), national, and subregional. As shown in Table 3, the type of benefits received will vary, but will address the key needs of beneficiaries at each level.

Table 3: Program Beneficiaries and Expected Benefits

Beneficiary	Benefits Expected
Households	Improved environmental quality and access to clean air and water; more equitable access to land and natural resources; poverty reduction and sustainable livelihoods based on intact ecosystem services; climate resilient livelihoods; enhanced ethnic and gender inclusive employment opportunities from more integrated value chains.
Communities	Enhanced community capacity for environmental management and DRM; improved local governance for the management of natural resources; enhanced ecosystem functions, goods and services for community use; climate-resilient infrastructure (irrigation systems, feeder roads, etc.), greater social and gender inclusion.
Provincial agencies	Clearer mandates and devolved responsibility for environmental management; locally relevant environmental management plans; improved capacity and governance for natural resources management.
National agencies and civil society	Enhanced capacity for environmental management; better environmental planning and safeguard systems; improved environmental and socioeconomic monitoring; environmentally aware decision-makers; better access to environmental and climate information; enhanced access to environmental funding sources.
GMS development sectors	Improved access to green technologies and sustainable infrastructure; enhanced economic performance and sustainability of investments; reduced financial risk; climate proofed investments; enhanced synergies from cross-sector cooperation.
Economic corridors	Improved environmental conditions; reduced environmental and disaster risk; increased productivity and economic output; greener corridors, energy efficient transport systems; climate-resilient infrastructure.
Ecosystem landscapes	Improved bilateral conservation co-management; strengthened landscape protection; increased habitat integrity and connectivity; enhanced watershed management; sustainable conservation corridor financing.
GMS	Direct access to relevant technical support via Centers of Excellence; improved co-management of transboundary landscapes; enhanced transboundary wildlife migration; better enforcement to curb illicit trade; improved subregional cooperation.

DRM = disaster risk management, GMS = Greater Mekong Subregion.

Source: Authors

As a result of the realigned geographic focus of the CEP, significant benefits will accrue particularly to communities, line agencies, and sector investments located within or nearby the economic corridors, particularly in areas with significant levels of environmental risk and high ecosystem service values.

G. Sustainability Strategy

The CEP has demonstrated sustainable results since its inception in 2006, primarily because of the support and reinforcement it has received from GMS countries and development partners. Program deliverables have been tailored to regional environmental priorities that facilitate cross border interventions, knowledge sharing, and technical cooperation. Capacity building has been a major focus, as it provides national stakeholders with the skills to undertake activities on their own and assume greater ownership of the program and its resultant impacts. Despite an initial steep learning curve, procedural issues and the complexity that a crosscutting multisector program poses, the CEP has been able to make significant achievements and is now well recognized and embedded in the national programmatic planning process.

A phased decentralization and transfer of responsibilities to NSUs is planned. It will be based on a function-wise capacity assessment and will underpin country ownership of the program. The role of development partners has been significant and going forward, the CEP will continue to engage with a wider range of partners both as financiers and as technical implementers. This will expand the network of development partners and increase interest in CEP activities, thereby promoting the sustainability of the program.



The CEP will build on existing knowledge sharing and cofinancing partnerships but will increasingly seek to forge new associations with emerging global associations that have similar priorities. This will result in several benefits that will strengthen the sustainability of the program. It will: (i) enable GMS countries to tap a diversified investment marketplace; (ii) create awareness for the program; (iii) access international best practices and technical systems; (iv) adopt proven green technologies; (v) reduce lead time for project implementation; and (vi) increase opportunities for skill transfer, learning, and knowledge sharing.

Private sector engagement is a critical aspect for the CEP to widen the investment base, reduce reliance on constrained public funding, and develop the small and medium-sized enterprise sector. The private sector is often reluctant to invest in project preparation that they have to bid and win or are unsure about the consistency of state policies. Private sector involvement in the CEP will be promoted by: (i) providing bankable environment projects with risk return ratios that mirror or are close to conventional investments, (ii) dismantling barriers to investment, (iii) building investor safeguards through policy advice, (iv) providing incentives by easing access to long term concessional finance, and (v) providing financing instruments to cover short term capital requirements. An integrated value chain approach to project development will provide greater opportunities for SME participation and social inclusiveness that will contribute to the sustainability of the program.

Measuring the economic benefits of environmental interventions, in financially quantifiable terms has been challenging as natural resource valuations, and social benefits derived from cleaner air and conservation activities are difficult to quantify. Decision makers responsible for the planning and allocation of public finance, do not take into account the depletion of natural resources and the impacts of climate change and greenhouse gas emissions on the economy. In recent years, adverse weather events and disasters have necessitated a shift in perspective, as the economic costs of remediation, reconstruction, and human welfare have forced governments to divert limited resources from development activities to providing relief and rebuilding. Several economic methodologies have now been developed that assess the true social costs of natural resource depletion. These cost benefit analysis ratios provide an indication of whether benefits outweigh the cost of an intervention thus providing a decision-making tool for policy makers.¹³ The CEP promotes the use of these methodologies and analyses with GMS stakeholders responsible for planning and resource allocation. It is anticipated that this will provide a more realistic assessment of the economic benefits of environmental interventions and result in a higher allocation of funds for green initiatives and sustainable development.

The sustainability of CEP initiatives can be guaranteed through a cost recovery based approach that incorporates a recurrent revenue stream in all projects to offset investment and operating and maintenance outlays. This reduces dependence on state subsidies, strengthens prudent financial management, and provides more assured returns to investors. Several direct financing mechanisms can be employed to recover costs including consumption or usage fees, taxes, environmental offsets, etc. In addition, indirect risk mitigation measures such as policy incentives, credit guarantees, insurance, or pooling of investments can be used to spread the risk. It is, therefore, imperative to develop viable and bankable projects that are investment worthy and provide potential investors with an attractive risk return ratio. This can be demonstrated through proof of concept or pilot projects that will foster confidence and provide know-how to investors.

¹³ The World Health Organization has developed guidelines for conducting a cost-benefit analysis (CBA) of interventions to reduce indoor air pollution. Due to the complete lack of cost-benefit studies conducted on the topic of indoor air pollution, these guidelines describe how a CBA could be performed to identify the potential economic return on investments when cleaner fuels, or cleaner uses of existing fuels, are more widely adopted.

Infrastructure development underpins core economic activity and is essential for inclusive sustainable development and poverty alleviation. There is a pressing need to create climate smart and resilient infrastructure to tackle the challenges of climate change and extreme weather events. However, access and availability to adequate, timely and cost-effective funding remains a major constraint to environmental friendly and climate proofed infrastructure development. This poses a serious challenge to sustainable development initiatives that seek to transition to a green economy built on efficient natural resource use, reduced greenhouse gas emissions, and low carbon technology deployment. Investment risk mitigation can be achieved through a combination of policy and financing instruments that spread risk. These include trade incentives, credit guarantees, insurance, pooling of smaller investments,¹⁴ senior and subordinate debt options,¹⁵ mezzanine,¹⁶ and bridge financing,¹⁷ etc.

Short-term repayments can be restructured with longer term debt obligations once the project has achieved a level of operational stability or is past its gestation period. This guaranteeing of a proportion of the revenue stream, together with concessional finance will also reduce the cost of capital. Increasingly, blending of traditional funding options is being adopted for green infrastructure investments along with innovative financing mechanisms. These include green bonds, crowdfunding¹⁸ or crowdsourcing, structured notes, public-private partnerships, combining commercial and concessional debt instruments, securitization,¹⁹ on-bill financing,²⁰ leasing options provided by equipment suppliers, and results based financing. Conservation finance²¹ together with impact investing²² are two mechanisms that are gaining support from financial institutions (pension funds, insurance companies, and fund managers) and private investors (family foundations, religious and philanthropic organizations, and individuals) as it provides a new asset class for investments that were traditionally considered the responsibility of the public sector. These options have significantly expanded the resource mobilization base and provided additional avenues to seek investment funds thus enabling green infrastructure projects, which require longer payback and investment return periods, to be sustainable.

¹⁴ Also termed as “warehousing” or aggregating small projects to reduce transaction costs.

¹⁵ Senior debts rank higher in priority for repayment after the liquidator, government, and taxes in the hierarchy of creditors. Subordinate or junior debts have the lowest priority for repayment in the event of liquidation.

¹⁶ A hybrid of debt and equity financing where the lender has the right to convert the debt into equity.

¹⁷ A short-term credit or equity subscription extended to cover immediate financing needs till adequate resources are generated (fulfillment of an order, public offering, etc.), or a longer-term loan can be put in place.

¹⁸ An alternate financing option that raises capital for a project or venture by monetary contributions, both equity and debt, from a large number of people. It has the potential to promote entrepreneurship by expanding the pool of investors from whom funds can be raised beyond the traditional circle of institutional investors. It uses popular social and other networking options to showcase its projects.

¹⁹ Non-traded and small assets are bundled together as a tradable asset and securitized.

²⁰ Adopted by Energy Service Companies (ESCOs) – borrowers pay through efficiency gains.

²¹ Conservation finance is a mechanism through which a financial investment in an ecosystem is made, either directly or indirectly through an intermediary, with the aim to conserve the values of the ecosystem for the long term.

²² Investments made into companies, organizations and funds to generate social and environmental impact alongside a financial return.



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III.

Action Plan



III. Action Plan

A. Impact, Outcomes, and Outputs

The anticipated impact of the program is “improved environmental quality and climate resilience across the Greater Mekong Subregion (GMS),” and the outcome, an “environmentally friendly and climate resilient GMS Economic Cooperation Program.”

Consistent with the program’s three thematic priority areas and embedded four areas of interventions, the Core Environment Program Strategic Framework and Action Plan (CEP-SF) aims to produce the following three outputs:

- Output 1.** Green technologies and sustainable infrastructure increasingly adopted by GMS countries.
- Output 2.** Investment in the protection of natural resources and ecosystem services increased.
- Output 3.** Climate resilience and disaster risk management (DRM) strategies increasingly incorporated in GMS sector investment plans.

The CEP-SF has been developed on the basis of what needs to be done in the next 5 years to ensure sustainable pathways to generate local and regional benefits that are tangible, measurable, and have specific activities linked to program outputs. A detailed action plan with indicative timelines will be drawn up subsequently to assist in sequencing activities and in monitoring and evaluating progress.

B. Proposed Activities

Several project proposals were received from all countries applying the activity or project selection guidelines and template. Following the country consultations, these were reviewed to assess common or similar activities as well as to determine their scope and regional footprint thereby assisting in the development of broader programmatic interventions that have subregional and ideally transboundary aspects. These include ongoing activities supported by CEP Phases I and II, as well as new initiatives, identified during the formulation of this strategic framework and action plan.

The CEP-SF has identified a suite of activities based on country priorities under each of the three program outputs (Table 4). It is summarized as follows:

- (i) **Green technologies and sustainable infrastructure.** To enable countries to successfully adopt green technologies and sustainable infrastructure, support is needed to make these know-hows accessible and available to GMS countries and to embed green growth principles in national legal and planning systems. The CEP will provide support for countries to develop more effective legal and fiscal instruments to encourage the adoption of green technologies. It will establish a regional platform to promote the exchange and transfer of appropriate technology that is innovative, relevant, and effectively implemented. Through appropriate policy and technical support, the CEP will strengthen GMS investments by incorporating green growth principles into upstream design and planning thereby promoting the uptake of resource use efficient technologies and best practices. The resulting improvements in the economic performance of investments in the GMS, and in particular in the RIF pipeline, will be monitored, quantified, and demonstrated to development sector planners to seek their participation.



- (ii) **Investment in protection of natural resources and ecosystem services.** The CEP will continue to prioritize the sustainable management of areas with high ecosystem service values, with a focus on protecting and enhancing non-use values (regulating, cultural, supporting services) and lowering the environmental impact of capitalizing provisioning services. Examples of the type of support to be provided include (i) evidence-based evaluation and monetization of land, natural resource, and ecosystem service values; (ii) promoting integrated planning approaches for sustainable land and natural resource allocation; (iii) development of sound land management strategies and action plans; and (iv) transparent land change monitoring tools. The CEP will continue to provide support for sustainable financing instruments such as payment for ecosystem services, to maintain future revenue streams thereby ensuring economic sustainability of the initiatives.
- (iii) **Climate resilience and disaster risk management.** The CEP will promote the integration of climate change and disaster risk preparedness considerations into the upstream planning of investments by key development sectors, with a particular focus on natural resources, agriculture, energy, and transport. Lessons learned and best practices from activities on climate risk vulnerability and adaptation assessments will be synthesized, evaluated, documented, and shared through a regional platform and other appropriate mechanisms. Ongoing technical support will be provided to practitioners to create and implement viable and bankable projects with climate resilience and reduced disaster risk characteristics for implementation in GMS countries.

Table 4: Proposed Activities

Output	Activities
<p>Green technologies and sustainable infrastructure increasingly adopted by GMS countries</p>	<ul style="list-style-type: none"> • Provide environmental policy, strategic planning and safeguards support (SEA, EIA, Environmental Quality Standards, Economic instruments, Air, Water, and Soil Pollution Control and Remediation, Waste Management, and Low Carbon). • Promote knowledge sharing and transfer of cleaner technologies (including cleaner production, resource and energy use efficiency, air, water, and soil treatment, etc.) • Project preparation support for: (i) rural environment quality improvement and management, (ii) green road freight financing, and (iii) electronic waste management. • Identify and adopt measures to de-risk investments, and matchmaking, develop, and provide linkages to risk and vulnerability assessment tools, facilitate public and private sector involvement through impact investment, viability gaps, green bonds, and other innovative funding mechanisms.
<p>Investment in natural resources and ecosystem services increased</p>	<ul style="list-style-type: none"> • Provide policy and legal framework support for natural resources conservation and sustainable land management. • Facilitate regional knowledge sharing on natural resources and ecosystem services. • Land resource planning support: integrated spatial planning, ecosystem assessment, valuation and mapping, risk assessment, and integration in key sector plans and investments. • Project preparation support for integrated natural resources and land management for sustainable development (protection of high value ecosystems, restoration or remediation of degraded lands, and soil pollution control and remediation). • Development of sustainable financing policy, pricing support and benefit distribution mechanism (PES potentially with tourism industries and hydropower companies, biodiversity offsets, etc.)
<p>Climate resilience and DRM strategies increasingly incorporated in GMS sector investment plans</p>	<ul style="list-style-type: none"> • Regulatory frameworks for climate proofing infrastructure. • Regional sharing of best practices on CRV assessment and adaptation. • Technical support for strengthening CRV and DRM assessments in investment project planning. • Project preparation support including: (i) climate proofing rural infrastructure investments, (ii) DRM and risk financing options, and (iii) value chain approach to promote social and economic inclusion for pro-climate initiatives. • Promote climate and disaster risk financing options.

CRV = climate risk vulnerability, DRM = disaster risk management, EIA = Environmental Impact Assessment, GMS = Greater Mekong Subregion, PES = payment for ecosystem services, SEA = strategic Environmental Assessment.

Source: Authors



Three innovative support mechanisms are proposed under the CEP-SF that will be embedded in the Environment Operations Center (EOC) and National Support Units (NSUs) to enhance the delivery of outputs and activities mentioned above. These are summarized below and details are provided in Appendix 1.

- (i) **GMS Environment Project Preparation Facility.** The facility will offer comprehensive solutions for developing environmentally, technically, institutionally, and economically viable projects; and will subsequently work to link such projects to downstream financing. The facility will offer project proponents (i) advisory support in identifying, prioritizing, and conceptualizing projects; (ii) support in the preparation of upstream project preparation documentation; (iii) assistance in undertaking demonstration and pilot projects and incubating them for scaling up; and (iv) support structuring of finance and link with potential investors.
- (ii) **GMS Help Desk on Policy Support.** The proposed arrangement aims to support environmental governance by strengthening environmental laws, institutional arrangements, implementation mechanisms, and accountability regimes. It will provide: (i) advice on developing regulatory frameworks, (ii) targeted capacity-building, (iii) documentation of lessons learned and best practices, and (iv) support for knowledge sharing and cooperation across the GMS. The GMS Help Desk will be established through a phased approach, gradually devolving the role of the EOC and international experts to the national competence centers and national and regional experts.
- (iii) **GMS Knowledge Hub.** Since 2006, the CEP has engaged in coordinating and enhancing knowledge and information dissemination. Information sharing through the GMS Information Portal has significantly broadened the environmental knowledge base available to GMS countries. The information exchanged has included animated statistics, web-maps, decision-making software, spatial and statistical data downloads, a rich repository of reports and knowledge products, and the latest news and events (online and newsletters). The scope of the portal will be further expanded by leveraging the potential of user interaction and crowd collaboration to enhance regional knowledge sharing. Three knowledge sharing initiatives are envisaged to be launched with the objective to drive and advance data generation and access, knowledge production and sharing, and stakeholder exchange and cooperation under the respective CEP priority themes. Each knowledge initiative will be led and implemented by a group of national competence centers, with inputs, supervision, and oversight provided by the EOC. The three knowledge sharing initiatives are:
 - (a) GMS Platform on Sustainable Infrastructure and Green Technologies,
 - (b) GMS Knowledge Sharing Initiative on Natural Resources and Ecosystem Services, and
 - (c) GMS Network on Climate Adaptation.

C. Pipeline Projects

Achievement of the CEP-SF outcome and outputs is reliant on developing and maintaining a pipeline of projects to attract funding and promote collaboration with development partners. Although the CEP will not be involved in the implementation of these projects, it will provide technical and networking support to demonstrate their bankability and help countries access funds. It is expected that the results of the CEP's process interventions (legal, knowledge, planning, and investment preparation) will yield bankable projects with secured funding. An initial indicative project pipeline has been established and the EOC will provide ongoing project preparation and readiness support for the projects. Activities were identified during in-country consultations and later integrated at the subregional program level into six pipeline projects (Appendix 2):

- (i) **Rural environmental management, pollution control, and waste management.** The project aims to improve environmental quality with special reference to rural and peripheral urban communities by making them environmentally more resilient and economically self-reliant. It will help reduce vulnerability to water, food, and health security and subsequently improve market competitiveness (through the production of safe food) and enhanced income of rural communities. (\$300 million)
- (ii) **Integrated land use management for sustainable development.** The project will provide integrated land management interventions for better allocation and management of land resources and develop pro-poor green commodities and services. A multidisciplinary, value chain approach will be adopted to enhance productivity and market linkages and reduce environment (degrading air, water, and soil quality) and climate related risks. (\$240 million)

These two projects worth a total of \$540 million, along with associated project development technical assistance inputs of \$3 million, have been prioritized and included in the RIF. The following projects will be incubated and readied for subsequent inclusion in the RIF:

- (i) green road freight financing,
- (ii) public and private investment for electronic waste management,
- (iii) climate proofing of rural infrastructure and risk financing, and
- (iv) programmatic support to strengthen environmental management.

D. Design and Monitoring Framework and Reporting

A results-based design and monitoring framework (DMF) will guide implementation of the CEP. The program will institute an adaptive management approach underpinned by a robust results-based framework disaggregated by beneficiaries (social and gender responsive indicators), outlining key milestones, and deliverables. A reporting framework and associated procedures will be established based on the DMF. The proposed DMF comprises a set of indicators that efficiently capture and describe the program's outputs and their contribution to the sustainability of the GMS Program (outcome) and to attaining sustainable growth in the GMS (impact). The DMF is presented in Appendix 3.

E. Risk Management

The risks associated with the CEP achieving its intended impact, outcome, and outputs have been identified and assessed with regard to their likelihood of occurrence and their potential impacts. Mitigation strategies have been developed for each area of risk and these have been incorporated in the project design. Results of the analysis for key risks are summarized in Table 5.

Table 5: Risk Analysis and Management Strategy

Risk	Risk Management Strategy	Level
Impact and Outcome Level Risks		
<p>Rapid increases in economic growth dramatically increase environmental pressures.</p>	<ul style="list-style-type: none"> Economic benefits of sound environmental management will be highlighted and used to promote policy dialogue at the national level for sustainable development incorporating suitable environmental safeguards and monitoring processes in all developmental activities across key sectors. 	H3
<p>Increased national debt burdens reduce willingness of governments to take loans for environmental projects.</p>	<ul style="list-style-type: none"> Grant-funded financing options and blended financing will be explored and exploited under CEP. Support will be provided for value chain development to generate future revenue streams for CEP pipeline projects. Agencies responsible for investment planning and finance will be more closely engaged under CEP. Increased opportunities will be generated for private sector participation and involvement in investments. 	H2
<p>Decreased overseas development assistance for the environment sector leads to reduced funding opportunities.</p>	<ul style="list-style-type: none"> CEP will continue to raise the awareness of policy makers on the importance of the environment for sustainable development with the intention of leveraging additional government funding for the environmental projects. The financing strategy for CEP will target a broader network of donors and funding sources, thereby reducing the risk of being dependent on only a small number of donors. 	H2
<p>Shorter-term investment priorities override long term environmental concerns.</p>	<ul style="list-style-type: none"> The economic benefits from environmental interventions will be monitored and demonstrated to decision makers. De-risking initiatives will be designed to make investments more attractive and improve the risk reward ratio in the short term. Agencies responsible for planning and investment will be engaged and supported under CEP and targeted for institutional capacity development. 	M2
Output 1: Green technologies and sustainable infrastructure adopted by GMS countries		
<p>Green and sustainable technologies and infrastructure are too expensive for GMS countries to adopt.</p>	<ul style="list-style-type: none"> Economic benefits of green growth strategies will be monitored, quantified, and demonstrated to decision makers. Simple, inexpensive, and proven climate resilient technologies will be targeted under CEP. Financial incentives such as viability gap funding, import tariff reductions, discounted inputs, supplier credit, mezzanine, bridge financing, etc., will be considered. 	M2
<p>Regionalization of environmental standards puts undue pressure on some countries.</p>	<ul style="list-style-type: none"> Regionality will be encouraged and opportunities for synergies will be identified and targeted (e.g., regional ecotourism development benefits all countries and has positive spin-offs for ecosystem services protection, poverty, ethnicity, and gender). 	M2

Risk	Risk Management Strategy	Level
Results of strategic planning exercises are not taken up in national development plans or sector strategies.	<ul style="list-style-type: none"> • CEP will provide policy advice and support for regulatory change using evidence-based results from successful pilots. Economic and social benefits and impact will be highlighted with quantifiable data, wherever possible. • Greater involvement of the finance and planning ministries for program development and project planning in CEP. 	M3
Environmental safeguards are seen as a hindrance to implementation by other development sectors.	<ul style="list-style-type: none"> • Development sectors will be engaged and environment will be mainstreamed through the RIF. Greater coordination and understanding will be fostered through workshops and joint consultative meetings. • Economic benefits of sound environmental management will be demonstrated (e.g., valuation of ecosystem services will be used to show the need for environmental protection). • Mainstreaming environmental considerations within the planning process will reduce the requirement for additional environmental regulations. 	M3
Output 2: Increased investment in the protection of natural resources and ecosystem services		
Conservation of natural resources seen as too expensive for GMS governments to support through national budgets.	<ul style="list-style-type: none"> • Economic benefits of sound environmental management will be demonstrated (e.g., valuation of ecosystem services will be used to show the need for environmental protection). • Sustainable financing will be emphasized through value chain development, community participation and generation of revenue flows. 	H3
Climate change erodes the benefits generated by conservation corridor activities.	<ul style="list-style-type: none"> • Climate-proofing of development activities will be prioritized. • Biodiversity (including agro-biodiversity) will be conserved as a hedge against climate change. • Climate-resilient infrastructure, agriculture, and livelihood interventions will be implemented across the GMS economic corridors. 	M3
Output 3: Climate resilience and DRM strategies incorporated in sector investment plans		
Climate-proofing technologies are too expensive for GMS countries to adopt.	<ul style="list-style-type: none"> • Economic and development advantages of climate-proofing will be demonstrated. • Simple, inexpensive and proven climate resilient technologies will be demonstrated and implemented under CEP. 	M3
International commitment to global climate agreements wane and funding diminishes.	<ul style="list-style-type: none"> • A range of potential funding sources for climate-related initiatives will be explored including increased opportunities for private sector investment. 	L3
Climate changes more dramatically than current model predictions.	<ul style="list-style-type: none"> • Climate support activities under CEP will remain responsive and adaptive to changing conditions. • CEP will provide support for down-scaling global climate models for more accurate local predictions. 	L3

CEP = Core Environment Program; DRM = disaster risk management; GMS = Greater Mekong Subregion; Likelihood: L = low, M = medium, H = high; Potential impact: 1 = low, 2 = medium, 3 = high; RIF = Regional Investment Framework.

Source: Authors

F. Implementation Arrangements

The long-term sustainability and success of the CEP will largely depend on the commitment and ownership of the program by the GMS countries. Financial sustainability and increased GMS country contributions to the delivery of the core functions of the CEP are the two major institutional objectives of the next phase of the program. It is anticipated that once the capacity of the Working Group on Environment (WGE) focal agencies and National Support Units (NSUs) has been enhanced, implementation of future CEP activities will shift from the EOC to the GMS countries. This will significantly reduce core operating costs and increase country ownership of the program.

1. Core Environment Program Strategic Framework Governance and Service Delivery Structure

The CEP will be implemented under the guidance and oversight of the WGE with particular regard to:

- (i) directing and facilitating development and implementation of CEP activities as envisaged in the agreed action plan;
- (ii) ensuring that environmental issues relating to natural resources and ecosystem services are prioritized and mainstreamed as crosscutting interventions in subregional projects in other sectors;
- (iii) facilitating regional cooperation and the integrated coordination of program implementation; and
- (iv) reporting, monitoring, and evaluation of CEP projects and services.

The WGE, under the broad framework of GMS Program, sets the strategic direction and provides critical inputs to ensure the successful implementation of the CEP. It will provide periodic reports to the GMS Environment Ministers and implement decisions taken at the ministerial meetings for fine-tuning the CEP. The organizational and reporting structure and reporting relationships of GMS program and WGE program are in Appendix 4.

It was decided at the 22nd WGE Annual Meeting that the management structure for the delivery of the CEP, currently implemented by the EOC, will be reorganized and streamlined to better serve the needs of the evolving program. Several alternate structures for the EOC were reviewed and evaluated based on existing models and institutions.

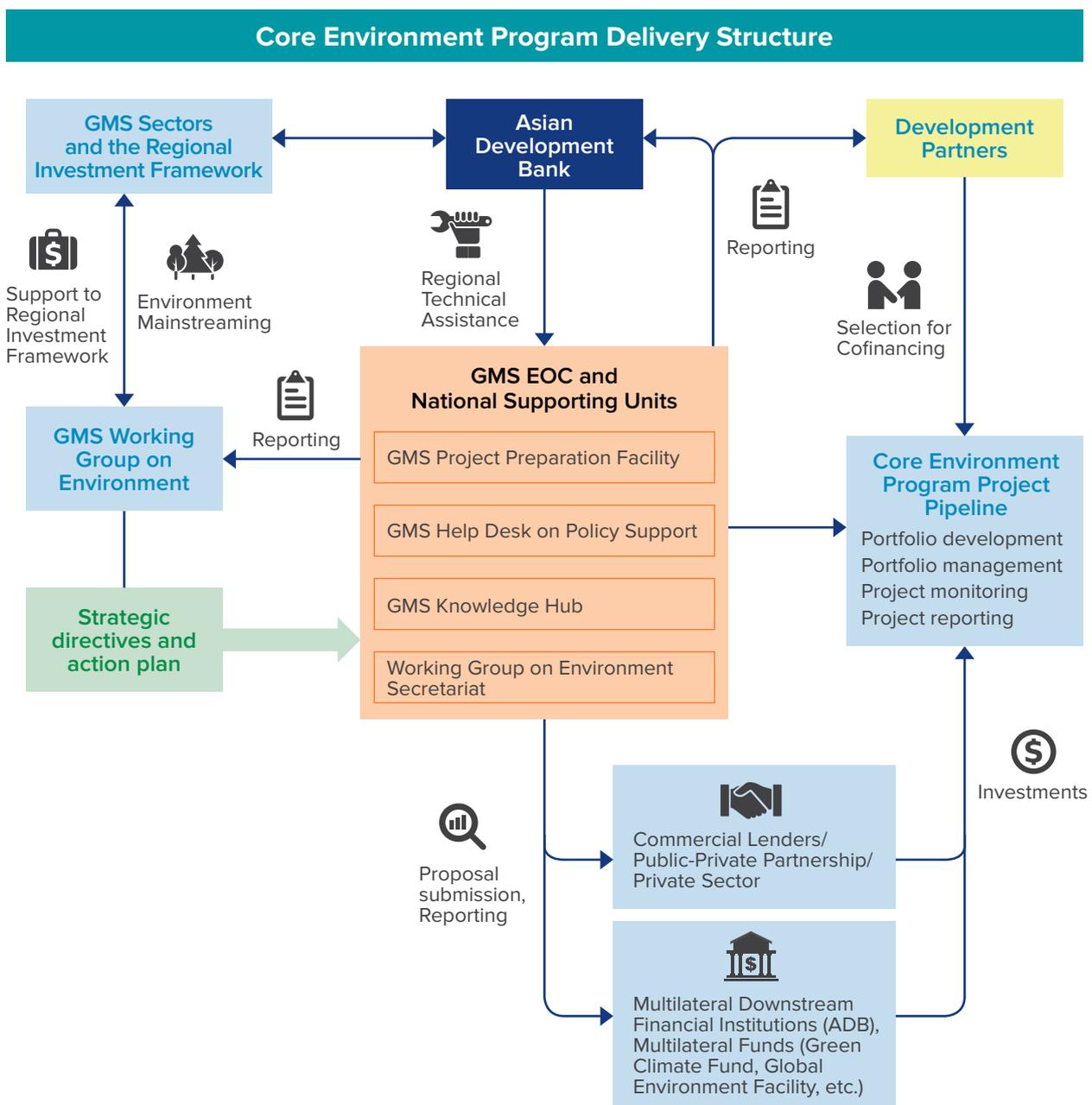
Formal structures (such as multicountry organizations managed by secretariats), based on legal agreements and with high-level ministerial and even parliamentary or head of state ratifications already exist in the GMS. Examples include the Greater Mekong Railway Association, the Regional Power Coordination Center, the Mekong River Commission, and the Coral Triangle Initiative. All of these work with varying levels of success in terms of their functional capabilities and operating dynamics. All required several years of planning, negotiation, and coordination with member nations prior to reaching consensus on organizational set-up and technical and administrative functions. Among the major contentious issues were agreement on hosting, contributory payments, division of responsibility, program implementation and recruitment of professional and qualified personnel for a formal secretariat.

A comparative review of existing formal institutions revealed that they tend to be bureaucratic, decision-making is slow, donor support is limited and member country contributions are at times insufficient to meet the operational needs of the secretariat. On the plus side, the legal status provides credibility, stature, and an official identity to the organization. Unfortunately, these advantages are outweighed by the lack of flexibility, complex reporting relationships, and the inability to respond quickly to problems and opportunities.

A simpler and more practical option is to continue with the current EOC operating structure. However, there will be a greater focus on a regional programmatic approach in providing policy advice and knowledge support and developing a pipeline of viable projects. There will also be a closer liaison with donors and the devolution of project implementation tasks to the member countries. This also has its limitations as the CEP has evolved to become an important GMS initiative that relies on external funding sources to fulfill its mandate. It therefore needs to be responsive to the program priorities of new donors. Unfortunately, the current model perpetuates dependence on the Asian Development Bank (ADB) and a small group of donors, limiting the CEP both in scope and impact and in its ability to tap a wider network of climate and environment related funding sources.

The options were discussed at the WGE and Senior Officers Meetings and it was decided that the future delivery structure would focus on the CEP adopting a “services model” for providing the aforementioned services. Financial sustainability and project formulation and management will be the two major institutional objectives. The proposed structure for CEP service delivery, financial, and reporting flows is illustrated in Figure 2.

Figure 2: CEP Service Delivery Structure and Financial Flows



2. Role of the Environment Operations Center

Learning from the lessons in earlier phases and in response to the priority needs of the GMS countries, the role of the EOC will be reorganized from one of project management to an environmental services provider that will deliver project readiness support. The EOC will undertake four main functions: (i) preparing the CEP project pipeline and facilitating access to funding, (ii) providing knowledge management and advisory services, (iii) monitoring and reporting, and (iv) acting as a secretariat to the WGE.

The lack of objective information and data and inadequate analytical skills to assess transactions and underlying risks at the national level together with skill shortages and weak enabling policy environment to encourage investment, reinforces the EOC's role as a service delivery facility providing project readiness support to GMS countries. It will also be a facilitator, advisor, and knowledge service provider and act as a reference point for donors and investors to obtain information and participate in CEP activities. The EOC, together with NSUs through its regional service platforms, will perform the following functions:

- (i) Assist in project identification, selection, prioritization, and development of a robust project pipeline.
- (ii) Strengthen environmental governance, cooperation, and management capacity across identified sectors to promote the transition to green growth while simultaneously addressing climate change issues.
- (iii) Facilitate access to finance for priority projects by acting as a 'transaction enabler' providing innovative financing options and mechanisms for project funding.
- (iv) Establish linkages and leverage access to global institutions and programs.
- (v) Develop and maintain a knowledge base and management tools providing information on climate related best practices, green technologies, investment commitments, vulnerability and risk analysis, funding opportunities, data requirements of financing institutions, etc.
- (vi) Organize knowledge events²³ focusing on proven green technologies and develop a market place for suppliers, financing agencies, and private sector investors to consider investments in prioritized investment projects through the Knowledge Sharing Initiative.
- (vii) Develop and maintain an up-to-date GMS Green Technology and Sustainable Infrastructure Policy Support Platform.
- (viii) Act as the secretariat to the WGE, facilitate periodic meetings of the WGE, Senior Officials and Environment Ministers and provide appropriate support to the NSUs.
- (ix) Coordinate and liaise with relevant government institutions, nongovernment organizations, private sector entities, donors, and other investors.
- (x) Report implementation progress and undertake monitoring and evaluation activities that may be required by program funding institutions.

²³ Regional Round Table of Climate Adaptation, Policy Dialogue Forums, etc.

3. Decentralization Plan and National Support Units

While the EOC will coordinate regional and cross-border activities and the delivery of CEP functions, most national activities will be implemented by the relevant line agencies, supported by the NSUs. The phased transfer of these functions to NSUs will take into account the capacity of relevant departments and institutions in each country and their ability to absorb program costs. The following functions will be systematically delegated to focal agencies and NSUs in a phased manner:

- (i) collecting and sharing data, statistics, and information at the national and subnational levels;
- (ii) functioning as the focal point for all CEP activities and coordinating with CEP implementing agencies, consultants, and partners;
- (iii) facilitating government inputs and arrangements for CEP meetings, workshops, and study visits;
- (iv) updating and maintaining national information portals and ensuring strong linkages with the GMS Information Portal;
- (v) facilitating the in-country activities of CEP experts and serving as counterparts to the experts;
- (vi) conducting country needs assessments and developing and updating the project pipeline; and
- (vii) preparing progress reports and assisting in program and project monitoring and evaluation reviews.

G. Financing

ADB, donors, and the GMS countries recognize that the CEP has attained a level of maturity. This is demonstrated by its streamlined management functions and financial arrangements, reduced procurement timelines, improved monitoring, enhanced liaison with donors and increased private sector participation. This, together with the limited funding available under ADB's technical assistance (TA) and grant funding, as well as a greater emphasis on green infrastructure, has occasioned a reassessment of the financing strategy needed to achieve program objectives.

The proposed strategy is reliant on the CEP developing and maintaining a pipeline of projects to attract funding and promote collaboration with development partners. Under the strategy, funding for pipeline projects can be sourced from ADB grants or loans, the Climate Investment Fund, the Green Climate Fund, the Global Environment Facility, the Nordic Development Fund, the Government of Sweden, and other potential bilateral and private sector financing. It is envisaged that development partners will be able to finance specific activities either on a stand-alone basis or through an ADB TA project, thus providing them with the flexibility to implement projects according to their own funding priorities. Budgets will be sourced under three categories:

- (i) support for policy development, strategic planning, and legal frameworks;
- (ii) support for investment project readiness for funding by financing institutions; and
- (iii) environmental “add-ons” to new or ongoing development sector projects.

The proposed CEP management strategy will initially take a hybrid approach to financing, through technical assistance and by securing funds for pipeline projects and activities from donors and financial entities based on their investment priorities and institutional requirements.

The EOC and NSU functions will be resourced under an ADB regional TA estimated at approximately \$10 million to cover the costs of full time and short-term technical experts, administrative staff, office space, associated overheads, NSU support, meetings of the WGE, Senior Official Meetings,

and Environment Ministers Meeting, knowledge events, and reports and publications. It is envisaged that WGE focal agencies will gradually absorb some CEP costs at the country level. This may include operating costs and salaries of NSU staff; cost-sharing of project and business development activities; and other related in-kind contributions. This will take effect in a phased manner over a period of time and will be dependent upon the capacity and ability of the countries to assume greater responsibility for the implementation of the program. Meanwhile, the CEP will continue to finance operating costs of NSUs, so that countries continue to develop the requisite capacity to support implementation of the program. Table 6 summarizes the numbers, roles, and responsibilities of the proposed EOC and NSU personnel.

Project pipeline investment budgets will be secured from a wider network of funding sources that meet donor or private sector investment criteria. Financing institutions will have the option of subscribing to specific activities or components and will not be required to invest in the entire program or project. This will lead to resource blending and allow several alternate funding options to be explored for project financing. These could include debt, equity, mezzanine finance, guarantees, grants, subsidies, fees, venture capital, payment for ecosystem services, etc. This will enable donors and financing institutions to be closely connected with the project and will also help to ensure that program operations remain lean, flexible, and focused on implementation and governance. These will then enable a smooth transition to a sustainable funding structural arrangement.

Table 6: Proposed Technical and Administrative Staff

Area of Expertise	No.
Asian Development Bank Project Officer	1
Environment Operations Center	
Program Manager	1
Technical Advisor	1
Project Development and Finance Specialist	1
Knowledge Solutions Specialist	1
Administrative Assistants or Analysts	3
National Supporting Unit	
National Support Unit Head ^a	1
Policy and Project Development Advisor	1
National Supporting Unit Coordinator	1
Administrative Assistant	1
Finance Assistant	1
Roster of Technical Support Specialists ^b	As required

^a In-kind contribution from the government.

^b Technical Support Specialists will work both regionally and in-country to provide support for project development and implementation in the fields of: (i) green growth, (ii) natural resources, (iii) climate change and/or DRM, (iv) safeguards and strategic planning, (v) monitoring and evaluation, (vi) communications and outreach, and (vii) social and gender issues.

Source: Authors





Appendixes



Appendix I: Description of Innovative Support Mechanisms

Mainstreaming environmental considerations in upstream project design will be key to the Core Environment Program (CEP) achieving its desired outcome, and will require a stronger enabling policy environment. Linking projects to downstream financing will also be necessary, but currently capacity and relevant information are inadequate to support this investment. Green technologies and sustainable infrastructure are essential prerequisites to sustainable green growth, but access to these, in the Greater Mekong Subregion (GMS), is currently limited. In light of these constraints, the CEP Strategic Framework and Action Plan (CEP-SF) identified four innovative support mechanisms that will provide essential policy development, information management, and technology support services to GMS countries.

A. Project Preparation Facility

Introduction

A Project Preparation Facility (PPF) will provide a range of advisory services to member countries covering project development, networking, and access to financing. A pipeline of technically and financially viable projects will be identified and prioritized to attract public and private sector investments in the natural resources and environment sectors. It will also seek support for environmental add-on activities to investments in the priority sectors of natural resources, agriculture, energy, and transport. The emphasis will be on preparing projects that create impact, have scale, demonstrate bankability, and manage risk reward expectations of the investors.

Rationale

At present, there is a dearth of bankable projects and a general lack of investment readiness in the environment and natural resources sectors in the GMS. The PPF will serve as a catalyst for clean and climate resilient infrastructure and will offer comprehensive solutions for developing environmentally, technically, institutionally, economically, and financially viable projects. It will facilitate access to relevant funding institutions and assist in developing innovative capital blending mechanisms that will spur downstream financing of green infrastructure.

The PPF will assist in the incubation of project ideas, identification of suitable activities that are aligned to national targets, and provide support through pre-feasibility or initial assessment studies. Its objective is to encourage potential project developers to actively pursue environmentally sound, yet commercially viable, interventions. It is envisaged that such a facility will ultimately increase “green” investment spending and deal-flow, thereby increasing economic development and environmental resiliency within the GMS.

Collaboration with Project Proponents and Downstream Financing Institutions

The PPF will accelerate the process of CEP implementation through structuring and project preparation exercises that make them investment worthy. With its extensive knowledge of the subregion, the GMS Environment Operations Center (EOC) is in a unique position to understand sector priorities of project proponents in the member countries. Furthermore, it has a global financial reach, enabling the PPF to link potential projects with public and private financial institutions that provide funding to environmentally sustainable and economically viable projects according to their own investment criteria.



Components

The PPF will support project development under three categories:

- (i) technical assistance for policy development, strategic planning, and legal frameworks;
- (ii) investment projects for natural resources and environment sectors; and
- (iii) environment and climate change add-ons to investment projects in priority sectors (agriculture, energy, and transport).

Functions

Drawing from a wide range of international expertise, the PPF will offer these project development support services:

- (i) Provide advisory support for identifying, prioritizing, conceptualizing and incubating projects.
- (ii) Prepare upstream project documentation including: environmental due diligence, vulnerability and risk assessments, technical and financial pre-feasibility studies for high priority investment projects.
- (iii) Provide liaison support for engaging with technology providers and matchmaking with potential technology adopters (Section C on Green Technology Transfer Marketplace).
- (iv) Strengthen technical and institutional capacity in project monitoring, reporting, and evaluating environmental management plans for projects in construction and operational stages.
- (v) Identify potential project finance sources, including public and private funding options; and provide recommendations on optimum blending structure and possible financial instruments and mechanisms for project funding.
- (vi) At a later date, consider organizing crowdsourcing events for smaller projects to take advantage of low transaction costs, greater flexibility, larger potential investor networks, greater inclusiveness, and quicker implementation.

Structure

The PPF will be housed in the EOC with national nodes in the NSUs to support the functions listed above. The PPF will be permanently staffed by a Regional Project Development and Financing Specialist in the EOC and project development advisors in the NSUs and will draw on a roster of regional and international technical experts in different thematic areas for project formulation, monitoring, and reporting.

B. Greater Mekong Subregion Help Desk on Policy Support

Introduction

The widespread adoption of a green growth pathway requires a combined and sustained effort on the part of the public and private sectors. Private infrastructure investors will experience the benefits of adopting sustainable and climate proofed infrastructure, greener technologies, ecosystem based approaches, if market incentives and national environmental governance systems reward such investment with adequate returns. Experience gained from Phases I and II of the CEP, along with consultations undertaken during the preparation of future phases of the CEP, has shown that a majority of the countries in the GMS still do not have robust environmental governance systems to effectively support the adoption of public and private investments in green and climate proofed infrastructure and ecosystem services. A significant component of the CEP will be the establishment of a GMS Help Desk on Policy Support underpinned by a “center of excellence network” that supports the development of strong and effective national policies that are adequately supported by both safeguards and an investment friendly strategic framework.

Rationale

The transition to a green economy requires an integrated policy approach combining climate action with fiscal initiatives. It will require substantial investments in climate smart, clean, and modern infrastructure, with minimal negative impact on natural resources. While it is possible to increase investments in sustainable climate proofed infrastructure, natural resources, and ecosystem services, GMS countries will need strong environmental governance systems to implement compatible policies and secure private sector support. Experience has shown that good environmental governance can be thought of as an additive equation, where:

$$\text{Environmental governance} = \text{Environmental Laws} + \text{Institutional Arrangements} + \\ \text{Implementation Mechanisms} + \text{Accountability Regimes.}$$

All of the GMS countries have these components in place, but to varying degrees. For example, in the rapidly developing discipline of strategic environmental assessment (SEA), a number of GMS countries are now at a “critical mass” turning point, and consultations have indicated that help is needed to establish SEA regulations, along with institutional arrangements and implementation mechanisms for administering the process. The CEP can assist by establishing a regional policy support network.

Integration and Collaboration with Donors

Several donors have been active in supporting some aspects of the environmental governance equation associated with financing infrastructure projects. For example, the Government of Sweden has funded extensive environmental impact assessment (EIA) and SEA training over the last 10 to 15 years. The Australia Department of Foreign Affairs and Trade–World Bank Partnership on Environmental and Socially Sustainable Infrastructure in the East Asia and Pacific Region is in the process of establishing regional safeguard “learning centers” in Indonesia, the Philippines, and Viet Nam. These centers focus on safeguards training for donor established project management units, and as such have tended to concentrate on project-level EIA and environmental management planning.

The proposed help desk supported by the Center of Excellence Network will integrate, but not duplicate the abovementioned initiatives. In particular, it will complement the Australia-World Bank partnership by specifically focusing on strategic planning and SEA, and with a reduced emphasis on project-level EIA. It will also focus on provision of policy advice, rather than on short-course training.

Components

The help desk will focus on the following content areas:

- (i) SEA policy initiatives and enabling regulatory frameworks;
- (ii) strategic planning, especially in relation to land use, natural resources, air, water, and soil pollution control and remediation, waste management, and low carbon innovation;
- (iii) application of economic instruments; and
- (iv) safeguards support (EIA, environmental management planning, monitoring systems).

Functions

The functions undertaken by the help desk will depend on the specific needs of countries.

In general, the Center of Excellence Network will support the following activities:

- (i) provision of expert advice on the development of laws, regulations, guidelines, institutional arrangements, implementation mechanisms and accountability regimes for the components listed above;
- (ii) targeted capacity-building, with a particular focus on on-the-job support;
- (iii) documentation and publication of lessons learned and best practices; and
- (iv) fostering knowledge sharing and cooperation across GMS countries.

Structure

Initially, a strong GMS green infrastructure policy support “help desk” will be established in the EOC to support the functions listed in the previous paragraph. This will be permanently staffed by one or two international or regional experts and will draw on a roster of consultants to assist with specialist tasks, as required. A number of models currently exist that could be drawn on for inspiration. Possibly the best example is the Swedish International Development Cooperation Agency’s Environment and Climate Change Help Desk.



Once the help desk has demonstrated positive impacts, and country policy capacity has been strengthened, then policy advice centers will be established in each GMS country embedded in NSUs. These will be staffed by an experienced national expert who will service the aforementioned functions. In addition, a regional “hub” will be established in the EOC. This will compile a roster of regional and international consultants, who are available on an as-needed basis to assist with specialist tasks that cannot be adequately managed by the national policy advice centers.

C. Greater Mekong Subregion Knowledge Hub

Introduction

As GMS countries work on transitioning from agrarian low-income countries to diverse middle-income economies, their need for more complex planning and decision support tools and systems is growing. Over the past 10 years, the CEP and other sustainable development initiatives have supported the GMS countries in building capacity, awareness and commitment on related planning and decision-making tools. To avoid duplication of efforts, learn and replicate success stories, and avoid challenges already encountered and solved elsewhere, efficient knowledge capture and sharing is essential for sustainable development efforts to succeed.

Rationale

Since 2006, the CEP has engaged in coordinating and enhancing knowledge and information capture and sharing. In Phase I of the CEP, these efforts were still largely limited to report writing and publishing on a static website. In Phase II, the CEP significantly advanced and broadened its knowledge portfolio, with animated statistics, web-maps, decision making software, spatial and statistical data downloads, a rich repository of reports and knowledge products, and the latest news and events (online and newsletters).

At the same time, the portal has not fully leveraged the potential of (coordinated) user interaction, crowd collaboration and stakeholder engagement to strengthen knowledge contributions and exchange. The GMS Information Portal and its content has largely been maintained by the EOC. As a consequence, national stakeholders, in particular national research and academic centers of excellence, have not been systematically engaged in contributing to its content.

Goal and Objectives

The goal of the CEP knowledge activities is to strengthen the availability, accessibility, and application of information relating to the three CEP thematic pillars, to facilitate the successful delivery of CEP outcome and impact targets.

Related key objectives are:

- (i) **Grow the GMS Information Portal database.** This is to be done both through conventional ways (data collection and integration) as well as other forms of data and knowledge capture (metadata archive).
- (ii) **Forge strategic partnerships.** Establish connections with other knowledge producers (e.g., World Resources Institute, the United States Agency for International Development’s SERVIR initiative) to translate and make their data available to the GMS context.
- (iii) **Enhance interactivity.** This is to be done by exploring related tools such as online blogs, moderated thematic discussion fora, and establishing systems to engage users in data contributions, reviews, and rating.

- (iv) **GMS learning center.** Broaden the GMS Information Portal into a regional learning center by including, for instance, instructor-led trainings, self-teaching manuals, training videos, and training podcasts.
- (v) **Identify and invest in unique data, tools, and knowledge products.** These data, tools, and knowledge products should demonstrate the innovation of the CEP (e.g., ecosystem services maps and demand modeling, pollution modeling, SEA experiences, etc.), and are relevant and marketable at global conferences (e.g., International Association for Impact Assessment, Global Land Project Science Meetings).
- (vi) **Reflect the CEP thematic structure.** The respective knowledge initiatives reflecting the CEP thematic structure are to be strongly driven by national centers of excellence and the results should integrate well with the GMS Information Portal as the overarching host.
- (vii) **Engage and build national competence centers and prepare transition of ownership.** This is to be done for the GMS Information Portal and the knowledge initiatives beyond CEP funding.

GMS Information Portal

In its earliest form, the GMS Information Portal went online in 2012 as part of the CEP program website. In a major redesign in 2016, data and knowledge outputs of CEP were separated from the CEP program website (portal.gms-eoc.org and www.gms-eoc.org) to provide users with more direct access to CEP data and to broaden the options for long-term sustainability (ownership transfer).

In addition to its current content and functionality, the following items were identified as improvements to enhance the GMS Information Portal during 2018–2022:

- (i) Develop and add additional specific, measurable, achievable, relevant, and time-bound indicators as feasible (statistics section).
- (ii) Maintain existing sector spatial data (e.g., special economic zone location datasets, hydropower datasets, etc.) and develop and add new layers as required by the GMS Program.
- (iii) Broaden the integration of metadata or data links into the data and knowledge base instead of collecting and hosting data directly, to reduce data collection, maintenance, and approval effort and achieve faster database growth.
- (iv) Consolidate portal themes to align well with other monitoring platforms (United Nations Environment Programme Live, United Nations Statistics Division, etc.), Sustainable Development Goals, and other sector and/or thematic groups under the GMS Program.
- (v) Add functionality for users to submit content (data, reports, news, or events) for consideration and integration into the portal database (pending review, endorsement, and manual entry by portal managers).
- (vi) Integrate a category for “knowledge initiatives” into the portal user interface, strongly emphasizing the outputs of the CEP thematic priority areas—knowledge activities (GMS Platform on Green Technology, GMS Platform on Natural Resources and Ecosystem Services, and GMS Network on Climate Adaptation).
- (vii) Create a dedicated sub-page or tag on capacity building, offering a variety of self-teaching manuals, learning videos or podcasts, and materials for instructor-led on-site trainings.

Knowledge Initiatives

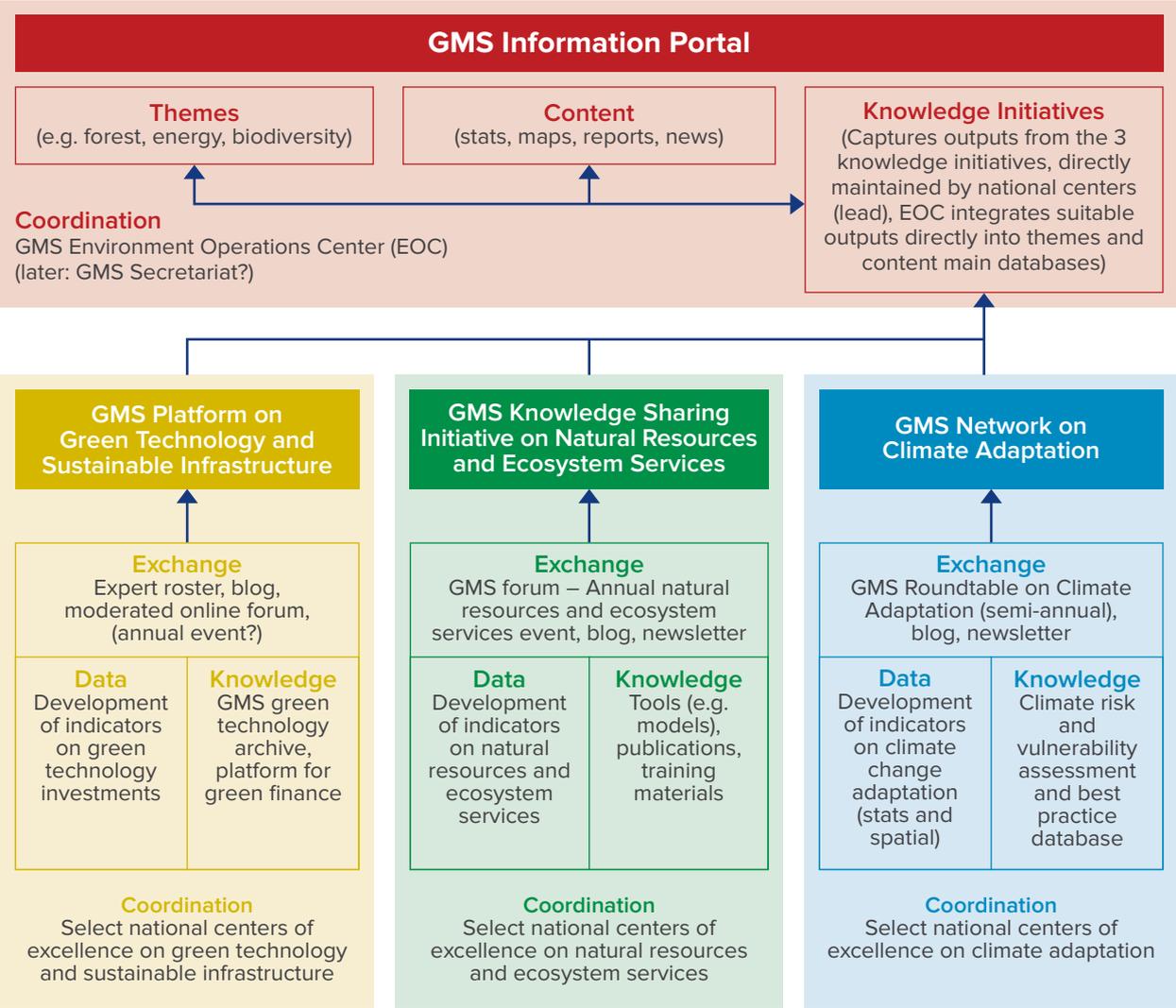
For each of the three CEP thematic pillars a knowledge initiative will be launched with the objective to drive and advance data generation and access, knowledge production and sharing, and stakeholder exchange and cooperation under the respective CEP priority themes. Each knowledge initiative will be led and implemented by a group of national competence centers, with inputs, supervision, and oversight being provided by the EOC. Technical support will be provided to the national competence centers as required to successfully deliver their knowledge initiative, through individual consultants and/or firms. It is expected that the transition of ownership and responsibilities to the national competence centers will be gradual. The EOC will take a more prominent role during inception and hand over tasks and responsibilities to the national competence centers in a phased manner. The role of GMS coordination will, however, remain the responsibility of the EOC.

Results of the knowledge initiatives will be integrated into the GMS Information Portal in two steps. First, all relevant results will be documented on dedicated sub-pages for each knowledge initiative (separate menu item in the main menu of the portal). It is envisaged that the national centers of excellence involved in the knowledge initiatives at least co-maintain these sub-pages (under the guidance of the EOC). As a second step, all knowledge initiative outputs (e.g., statistics, maps, tools, reports, databases, events, news) that are compatible with the “theme” and “content” tagging system presently used by the GMS Information Portal, and that are fulfilling minimum quality standards, will be tagged by EOC staff accordingly. As a result, the initiatives will be featured across the entire portal (not only on the knowledge initiative sub-pages).

Three knowledge sharing initiatives are envisaged and are expected to produce outputs that include but are not limited to the following:

- (i) **CEP Thematic Area 1.** Green Technologies and Sustainable Infrastructure — GMS Platform on Sustainable Infrastructure and Green Technologies:
 - (a) Data: Statistical indicators on green technology and sustainable infrastructure investments, risk, and suitability maps;
 - (b) Knowledge: GMS Archive on Green Technologies (cleaner production, energy and resource use efficiency, air, water and soil treatment) and innovative financing, knowledge products (publications); and
 - (c) Exchange: Green technology expert roster, blog and/or newsletter, trainings, annual expert meetings or events.
- (ii) **CEP Thematic Area 2.** Natural Resources and Ecosystem Services — GMS Knowledge Sharing Initiative on Natural Resources and Ecosystem Services:
 - (a) Data: Statistical indicators and spatial baseline data on natural resources and ecosystem services including profile for key biodiversity landscapes;
 - (b) Knowledge: Natural resources and ecosystem services decision support tools (spatial multicriteria assessment, land change modeling, ecosystem services demand modeling), and knowledge products (publications); and
 - (c) Exchange: GMS Natural Resources and Ecosystem Services Forum (annual event,) blogs, newsletters, training programs etc.
- (iii) **CEP Thematic Area 3.** Climate Resilience—GMS Network on Climate Adaptation:
 - (a) Data: statistical indicators and spatial baseline data on climate change and climate adaptation;
 - (b) Knowledge: climate risk and vulnerability assessment and best practice database and knowledge products (publications); and
 - (c) Exchange: GMS Roundtable on Climate Adaptation (semi-annually), blog and/or newsletter and training.

Figure 3: Knowledge Initiatives



EOC = Environment Operations Center, GMS = Greater Mekong Subregion
Source: Authors

The specific institutional setup, objectives, tasks, outputs, and budget of each knowledge initiative will be summarized in separate concept papers.



D. Greater Mekong Subregion Platform on Green Technologies and Sustainable Infrastructure

Introduction

Technological advances are at the forefront of catalytic changes in the way businesses operate and the impacts this has on environment and human wellbeing. The combination of advances in information and communication technology and improvements in resource efficient and renewable energy technologies have generated new opportunities for developed and developing economies to pursue a green growth trajectory. However, green technologies are not widely adopted in GMS member countries as existing barriers impede their transfer and uptake, and are hence perpetually trapped in 'business-as-usual' practices. The key impediments include a lack of technology awareness, weak institutional arrangements, and access to adequate financial resources to support green technology investments.

Goal and Objectives

The goal of the GMS Platform on Green Technologies and Sustainable Infrastructure is to enhance the adoption of green technologies in infrastructure investments in the GMS. It will provide a platform for technology and knowledge support to CEP thematic areas by focusing on renewable energy, waste management, resource efficiency, and climate resiliency. The following are the key objectives of the platform:

- (i) Convince investors of the benefits of adopting green technologies in their investments and match them with enabling fiscal incentives.
- (ii) Invest in regionally standardized, reliable information on green technologies serving both government and investors.

- (iii) Create opportunities to bring together all stakeholders involved in green technology and sustainable infrastructure to connect, share lessons learned, network, and eventually directly cooperate in planning sustainable infrastructure investments.
- (iv) Monitor trends and challenges to achieve a wider adoption of green technologies in infrastructure investments.

Functions and Outputs

The platform will identify, evaluate, and match technology providers with potential technology adopters in the following content areas:

- (i) green technology and sustainable infrastructure;
- (ii) natural resources including air, water, and soil pollution control and remediation; and
- (iii) climate resilience and disaster risk management.

The platform will have the following three main functions:

- (i) **Exchange and collaboration.** This function aims to create opportunities for practitioners to share their experience and to act as an incubator for establishing direct networking and collaborations between governments, investors, and green technology experts.
 - (a) **Moderated online forum.** The online forum will capture the news and trends pertaining to green technology and sustainable infrastructure, complementing the more documentary and detail-focused role of the GMS Archive on Green Technology and Finance. Implementation could either be through an own web-platform, a LinkedIn group, or a Facebook group. Moderation of the group will be necessary to maintain a minimum of direction and quality of the posts. It is suggested to encourage all experts on the roster of green technology experts to contribute at least biannually, and number and quality of contributions could be used as an incentivizing system for the experts to grow visibility and recognition on the roster. It is also possible to combine the roster and the online forum (and the GMS Archive), which could both cross-fertilize the components as well as simplify information technology implementation and handling.
 - (b) **GMS expert meetings.** The platform will plan regional events to discuss innovations, challenges, and lessons learned on green technology and sustainable infrastructure.
 - (c) **Outreach to internationally relevant fora.** To make the platform sustainable, knowledge and funding contributions are required in addition to CEP's technical assistance funding. Raising the visibility and demonstrating the innovations featured by the platform at appropriate international fora such as the International Association for Impact Assessment (IAIA) will be critical. The work of the platform should be presented at the IAIA Annual Meeting, ideally after knowledge and data products have been launched and advisory services have led to initial tangible outputs (improved policies, plans, and investments).
 - (d) **Introduce and matchmaking with technology providers.** The platform will assist in identifying opportunities for the uptake of green technology and connect potential users with existing technology providers and users. It will foster knowledge sharing and develop readiness capacity for the uptake of the technology by assisting project developers conduct pre-assessment and other related due diligence studies.
 - (e) **Promote entrepreneurship and youth initiatives.** It is envisaged that the green technology platform will promote entrepreneurship and skills transfer through catch-up innovation and use of open source applications. The EOC will also explore opportunities for youth initiatives to build entrepreneurial skills.

- (ii) **Knowledge generation.** For the platform to be able to respond quickly and to build credibility with its users, it is critical to develop a GMS-specific knowledge base on green technology and finance by showcasing well-documented and successfully operating instances and best practices.
 - (a) **GMS Archive on Green Technology and Finance.** This is an online portal that will host a database of proven (commercially and technically viable) green technologies in the natural resources, energy, transport, and agriculture sectors. Apart from describing the technology the database will also capture financial aspects relating to capital expenditure requirements, operation and maintenance costs, and financial incentives (if any). To foster and facilitate the adoption of these technologies, the portal will also capture and document relevant enabling policies and financing options. Ideally, this archive would be closely linked with the expert roster to use their capacity in populating and maintaining the database, parallel to the more discussion-centric moderated online forum.
 - (b) **Publications.** Dedicated knowledge products tailored to specific stakeholder groups to maximize impact will be developed by the EOC experts in collaboration with the national competence centers. The expert roster will be used to identify specific experts to provide additional inputs as needed.
- (iii) **Data foundation.** To make a compelling, evidence-based case for investments into green infrastructure, gaps in quality statistical and spatial data need to be addressed.
 - (a) **Green technology and sustainable infrastructure investment indicators.** Statistics on green technology and sustainable infrastructure policy and investment are an essential element to measure the help desks' success and its contributions to CEP outcomes and impacts. The indicators are expected to feed into the GMS Information Portal and CEP reporting.
 - (b) **Suitability maps.** Building on CEP Phases I and II experience, spatial data are a critical element to make sound investment decisions. Risk and suitability maps derived from spatial multicriteria assessments can significantly improve the quality strategic plans and investment cost-benefit analyses and safeguards assessments. Key spatial layers covering aforementioned aspects for investments in natural resources, energy, transport and agriculture sectors will be developed, in close coordination with related data efforts of the other two CEP pillars (ecosystem mapping and climate change mapping).

Structure

The GMS Platform on Green Technologies and Sustainable Infrastructure will be established through a phased approach, gradually devolving the role of the EOC and international experts to the national competence centers and national and regional experts. Initially, one or two international or regional experts will facilitate the functioning of the platform. These EOC experts will put together and then draw on a roster of regional and international experts (consultants) to assist with specialist tasks, as required.

Appendix II: Investments and Technical Assistance Projects

Table 7: Prioritized Projects Included in the Regional Investment Framework

Project Name	Period	Countries	Estimated Budget in \$ Million
Rural Environmental Management, Pollution Control, and Waste Management	2018–2022	All GMS countries; Peri-urban and nearby rural areas of select corridor towns and agri-industrial zones (One identified town or agri-industrial zone per country).	300 (Potential Sources of Funds: ADB, GCF, NDF, national funds, public-private partnership, and private sector)

Rationale

Rapid urbanization and an ever-increasing population have resulted in agricultural intensification and industrialization to meet the growing demand for food that has put severe pressure on environmental quality. The rising level of water and soil quality degradation coupled with the effects of climate change have contributed to a serious threat to human health and wellbeing. Degraded agriculture input (soil and water) in turn has posed a significant threat in terms of ability to produce safe food. This has necessitated a need for finding effective solutions to soil and water pollution, and GHG emissions. Limited investments have been made in environmental quality improvements, as they are perceived as high-risk low return initiatives. The project aims to improve environmental quality with special reference to rural and peripheral urban communities by making them environmentally more resilient and economically self-reliant.

Scope

The project will help to improve environmental quality, reduce vulnerability to water, food, and health security and subsequently improve market competitiveness through production of safe and environmental friendly agriculture products (SEAP) and income of rural communities.

The project will target the geographic nexus between rural and peri-urban areas along the GMS economic corridors focusing on environmental quality issues arising from flow of agriculture goods and services. It will aim to enhance environmental performance of agriculture and small corridor towns development investments listed in the RIF.

Some of the targeted ongoing and planned investment projects are as follows:

- (i) GMS Corridor Town Development Project.
- (ii) Agroindustry Zones (AIZ) to support promotion for SEAP value chains.

Objectives

- (i) Provide policy recommendations to prevent and minimize environmental quality degradation.
- (ii) Promote efficient resource utilization and production enhancement best practices.
- (iii) Establish effective waste management and pollution control systems through green technology solutions.
- (iv) Develop and upgrade climate resilient and disaster resistant agri-based infrastructure.
- (v) Propose interventions to reduce input costs and reduce wastage.
- (vi) Create opportunities for private sector and impact investments through revenue generating assets and services.

Outputs and Activities

- (i) Integrate pollution control measures in agriculture SMEs (e.g., pig and dairy farming):
 - Infrastructure for waste treatment, waste recycling and reusing organic content of waste as agricultural inputs.
 - Integrated livestock management for reduced GHG emissions.
 - Waste to energy technology selection and related clean solutions infrastructure.
 - Promote nutrient and water management in agricultural practices.
 - Low carbon and climate resilient infrastructure for Agroindustry Zones (AIZ) to support promotion for SEAP value chains project.
- (ii) Develop integrated environmentally sustainable aquaculture:
 - Infrastructure for wetlands conservation and water re-circulation including flow-through-farm effluent management systems.
 - Restore and improve degraded and polluted fish ponds.
 - Controlled use of additives and environmentally safe chemicals.
 - Adoption of low cost aquaculture farming technologies.
- (iii) Improve rural environment management regimes:
 - Establish water conservation and purification systems for community and farm use.
 - Identify and test resource use efficiency and productivity enhancement measures and technologies to lower input costs and increase market competitiveness.
 - Strengthen community climate resilience capacity through knowledge initiatives such as agriculture and climate related information tools and databases by focusing on resource use and productivity efficiency parameters.
 - Cost effective technologies for waste reduction, collection, transportation, processing and recycling.
 - Develop innovative financial mechanisms and incentives to promote participation of private sector.

Project Name	Period	Countries	Estimated Budget in \$ Million
Integrated Land Use Management for Sustainable Development	2018–2022	All GMS countries; Cambodia (national level) and four Transboundary Landscapes.	240 (Potential Sources of Funds: ADB, GCF, GEF, national funds, private sector, and other bilaterals)

Rationale

Land degradation has affected 23 percent of landscapes under human use, including about two-thirds of agricultural land (GEF estimates). It is the greatest threat to food production and has a significant impact on living standards. It is a critical environmental concern for GMS countries as over 70% of the population is dependent upon land for their livelihood and sustenance and its degradation has serious socioeconomic consequences. The adoption of sustainable land use management approaches will help halt and reverse the loss of productive land. It will restore, conserve, and protect vital ecosystems and associated services at the regional level and create carbon sinks at the global level.

Scope

The project will provide integrated land management interventions for better allocation and management of land resources and develop pro-poor green commodities and services. A multidisciplinary, value chain approach will be adopted to enhance productivity and market linkages and reduce environment (degrading air, water, and soil quality) and climate related risks.

The project will target critical agriculture production landscapes with the aim to better manage vital ecosystems. These ecosystems are providing provisioning and regulating services to improve productivity and resiliency.

The project will support ongoing and planned investment projects such as:

- (i) Climate Friendly Agri-Business Value Chains in the GMS, and
- (ii) Cluster and Value Chain Development for Geographic Indications.

It will build on proven investment models such as GMS Biodiversity Conservation Corridor Project and it will align with currently under development GMS transboundary biodiversity landscape management strategies.

Objectives

- (i) Provide policy recommendations to reduce land degradation, increase productive land and conserve protected areas.
- (ii) Undertake land usage and productivity assessments for preparing an integrated plan with community support.
- (iii) Adopt soil and water conservation practices and technologies.
- (iv) Support farming techniques, practices and inputs to enhance yield without depleting soil productivity.
- (v) Adopt farmer-driven innovations supported by appropriate infrastructure and mechanization.
- (vi) Provide climate and crop related knowledge to farmers for better land use and reduced vulnerability to adverse weather-related events.
- (vii) Adopt a community development approach through opportunities for participation in related economic activities to supplement incomes.

Outputs and Activities

- (i) Strengthen land management:
 - Undertake integrated spatial and land use planning (delineation, demarcation, titling and registration).
 - Land management, protection, and restoration.
 - Soil pollution control and remediation.
 - Recommend community development initiatives to enhance livelihood options, provide food security, and reduce poverty.
- (ii) Market development for green commodities and ecotourism:
 - Strengthening of certification and accreditation systems for green commodities.
 - Adopting a value chain approach to develop ecotourism and related economic activities to provide livelihood support.
 - Developing market linkages through private sector participation.
 - Develop downstream economic opportunities with revenue generating potential for private sector participation.
- (iii) Skill development for value addition and inclusion of rural communities in green commodity value chains:
 - Introduction and transfer of technology and best practices.
 - Developing market linkages through private sector participation.
 - Providing extension services and technical skill enhancement programs to leverage commercial opportunities.
- (iv) Financing for management of ecosystems services:
 - Analysis and design of compensation mechanisms for environmental services following an ecosystems approach and developing PES mechanisms.

GHG = greenhouse gas, GMS = Greater Mekong Subregion, PES = payment for ecosystem services, RIF = Regional Investment Framework, SMEs = small and medium enterprises.

Source: Authors

Table 8: Indicative Investment Project Pipeline

Project Name	Countries
<p>Green Road Freight Financing</p> <p>Rationale</p> <p>The Green Freight Initiative was launched in Lao PDR, Thailand, and Viet Nam to foster low carbon sustainable freight transport. It provided ecodriving workshops for instructors and drivers, aero-dynamic vehicle enhancements, efficient, low-friction tires, fuel consumption monitoring equipment, GPS kits and information materials. The combined effect of these innovations contributed to a 10% to 13% reduction in fuel consumption and lower GHG emissions.</p> <p>The road freight industry in the region is characterized by old trucks that require replacement or modification to conform to global standards on efficiency and vehicle emissions. Access and cost of capital has been a major constraint for smaller freight companies to modernize their fleets.</p> <p>Outputs and Activities</p> <p>The project will recommend innovative financing mechanisms and incentives to assist small and medium sized fleet operators to undertake a phased fleet upgrade/replacement program. This will include but not be limited to the following:</p> <ul style="list-style-type: none"> (i) Policy directives relating to emission standards and phasing out of older vehicles; (ii) Incentives for newer fleet operators; (iii) Group purchasing options; (iv) Support from climate funds; (v) Reduction of other operating costs such as insurance, registration, taxes, or price support from fuel efficient vehicle manufacturers, etc.; and (vi) Exploring the potential for the inclusion of green freight innovations in NAMAs to secure funding. 	<p>Thailand and Viet Nam</p>
<p>Public and Private Investment for Electronic Waste Management</p> <p>Rationale</p> <p>Electronic waste (e-waste) has become a major pollutant due to the presence of hazardous materials in the equipment. Recycling of e-waste has proved profitable with state backed policies and financial support. The major segregated materials from e-waste include metals, glass and plastic that can be recycled for re-use using conventional smelting equipment and re-processors. Precious and hazardous materials require more sophisticated extraction technology and specialized skills. The recycling of e-waste will reduce soil and water pollution and also make positive contribution to community health.</p> <p>With increased urbanization and the growing use of electronic products and equipment, the volume of e-waste has increased exponentially. PRC has a well-developed e-waste industry that contributes recycling materials to the manufacturing industry thereby reducing extractive activities and input costs and providing new livelihood opportunities. It has developed proven waste disposal and recycling technologies and is in a position to transfer skills and technology to other GMS countries.</p> <p>Outputs and Activities</p> <p>The project will undertake a needs analysis of e-waste quantities, disposal, and resource utilization. This will involve:</p> <ul style="list-style-type: none"> (i) Reviewing GMS country waste disposal and recycling policies; (ii) Assessing the quantity of e-waste and existing disposal methods; (iii) Analyzing resource requirements; (iv) Assessing the applicability of technology; (v) Evaluating technology transfer and skill levels; and (vi) Conducting feasibility and assessment studies to determine market and financial viability. 	<p>PR China and Thailand</p>

Rationale

The frequency of weather and climate related disasters are a major concern for GMS countries and the adverse effects of climate change have further exacerbated this problem. The nexus between climate change and disaster risk necessitate an integrated approach to adapting to the impacts of climate change and reducing risks to disasters as they seek to build resilience and reduce the vulnerabilities of communities.

The project will be:

- (i) regional in nature and focus on issues that require cross-border disaster risk management (DRM) efforts;
- (ii) aligned with regional DRM priorities of the GMS countries;
- (iii) introduce innovative solutions;
- (iv) promote community-based, gender-focused, and socially inclusive interventions on DRM; and
- (v) support stronger engagement with civil society and the private sector.

Outputs and Activities

- (i) Climate proof rural supply chain infrastructure:
 - Mainstreaming of climate change adaptation, mitigation and disaster risk management considerations in the planning process for all development projects to reduce vulnerability and build resilience;
 - Undertaking vulnerability and risk assessments to determine threats to infrastructure; and
 - Develop climate proof rural supply chain infrastructure—roads, storage facilities, irrigation networks, and energy systems.
- (ii) Strengthening disaster risk preparedness of vulnerable communities and SMEs:
 - Collation and maintenance of climate and hazard exposure data to assess vulnerabilities of communities and determine measures required to build resilience;
 - Strengthen institutional capacity to apply risk tools for vulnerability reduction and emergency preparedness;
 - Assess disaster risk by identifying critical links in the supply chain;
 - Take actions to reduce risks faced by communities, businesses, infrastructure and supply chains; and
 - Manage residual risk by implementing business continuity plans for SMEs.
- (iii) Investing in risk financing for communities and sustainable livelihoods. This will include:
 - Climate insurance;
 - Regional and/or national catastrophe risk insurance pool and incentive structures; and
 - Risk sharing and re-insurance to promote community-based, gender-focused, and socially inclusive interventions on DRM.

Project Name	Countries
Programmatic Support to Strengthen Environmental Management	All GMS countries
<p>Rationale</p> <p>All GMS countries are signatories of major international agreements on sustainable development and climate change (Sustainable Development Goals, Conventional on Biodiversity and Aichi Targets, Paris Agreement on climate change). Meeting their obligations under these international treaties will require significant reform of national policies and institutions. Over the past decade, GMS countries have strongly advanced policy and institutional reforms to address environmental and climate change issues.</p> <p>All six countries have strengthened legal frameworks for environmental protection and have been investing in building institutional capacity. Cambodia is working toward promulgating a national environmental code, and has also developed a National Environmental Strategy and Action Plan. Lao PDR recently updated its Environmental Law and issued a decree on National Environmental Standards covering SEA, EIA, pollution control and related environmental protection measures. Myanmar is planning to revise its Environmental Conservation Rules (2014) over the next 1 to 2 years, has completed formulation of a new Environmental Policy, and is formulating a National Environmental Strategy and Action Plan.</p> <p>These policy reforms reflect strong and growing country commitments to enhanced natural resources management and environmental protection. In addition to regulatory support, the countries will require substantial capacity building technical assistance as they expand staffing at the national, subnational and local levels. Recognizing the significant policy and institutional measures underway, CEP will support countries to develop investment proposals and assist in securing funds.</p> <p>Outputs and Activities</p> <ul style="list-style-type: none"> (i) Identification of priority policy and legal instruments and development of detailed action plan to build compliance capacity applicable to air, water, and soil pollution control and remediation; (ii) Provide policy and technical advisory services to formulate key policy and legal instruments; (iii) Build technical and human resource capacity of pertinent institutions including providing budgetary support; and (iv) Develop environmental safeguards and build requisite institutional and staff capacity. 	

EIA = Environmental Impact Assessment, GHG = greenhouse gas, GMS = Greater Mekong Subregion, GPS = global positioning system, Lao PDR = Lao People's Democratic Republic, NAMA = Nationally Appropriate Mitigation Action, PR China = People's Republic of China, SEA = strategic Environmental Assessment, SMEs = small and medium-sized enterprises.

Source: Authors

Table 9: Technical Assistance Projects Included in the Regional Investment Framework

Project Name	Period	Countries	Estimated Budget in \$ Million
GMS Core Environment Program 2018–2022	2018	All GMS Countries	10
<p>A Knowledge and Support Technical Assistance (KSTA) entitled GMS Environment Service Facility is in the 2018 ADB-SEER pipeline. CEP (2018–2022) aims to transform the GMS Environment Operation Center and National Support Units into a GMS environment services facility to provide the following services:</p> <ul style="list-style-type: none"> (i) Policy and regulatory framework support, (ii) Investment project preparation support, and (iii) Knowledge capitalization and information management support. 			
Rural Environmental Management	2019	All GMS countries	1.5
<p>This preparatory ADB technical assistance will assess the technical, financial, and institutional rural environmental management, pollution control, and waste management project.</p>			
Integrated Land Use Management for Sustainable Development	2020	All GMS countries	1.5
<p>This preparatory ADB technical assistance will assess the technical, financial, and institutional feasibility of integrated land use management systems for sustainable development.</p>			

ADB = Asian Development Bank, CEP = Core Environment Program, GMS = Greater Mekong Subregion, SEER = Environment, Natural Resources, and Agriculture Division.

Source: Authors

Appendix III: Design and Monitoring Framework

The proposed Design and Monitoring Framework (DMF) for the Core Environment Program Strategic Framework (CEP-SF) comprises a set of indicators that efficiently capture and describe CEP achievements (outputs), their contribution to the sustainability of the GMS Program (outcome) and to attaining sustainable growth in the Greater Mekong Subregion (GMS) (impact). Indicators identified were developed on the following basis:

- (i) All indicators need to be specific, measurable, achievable, relevant, and time-bound.
- (ii) Data for all indicators exists in all GMS countries, are reasonably compatible, and will be collected at regular intervals at least until 2022.
- (iii) Outcome indicators have the potential to be spatially disaggregated to link with the GMS economic corridors.

Table 10: Core Environment Program Strategic Framework (2018–2022) Design and Monitoring Framework

Indicators	CEP Activities	Potential Data Source
IMPACT: Improved environmental quality and climate resilience across the GMS		
<ol style="list-style-type: none"> By 2022, all GMS countries maintain or improve their EPI scores on ecosystem vitality compared to 2012 EPI. By 2022, all GMS countries achieve or are on track to achieving their commitments with multilateral environmental agreements and targets. By 2022, all GMS countries achieve or are on track to achieving their Nationally Determined Contributions (NDCs). 	...	<ol style="list-style-type: none"> EPI Report – Ecosystem Vitality sub-indicator. EPI report produced every 2 years. MEA country reports, national tracking of SDG indicators (General statistics offices, Environment Ministries’ statistics offices). National SDG indicators/ NDC reporting.
OUTCOME: Environment friendly and climate resilient GMS Economic Cooperation Program		
<ol style="list-style-type: none"> By 2022, at least 25% more environment investments in the RIF pipeline than proposed in 2012. By 2022, at least 75% of RIF environment sector projects successfully funded. 	...	<ol style="list-style-type: none"> RIF investment pipeline 2012, RIF IP 2014–2018 & 2019–2022, GMS project database 2014–2022. GMS IP 2019–2022 projects in the GMS project database 1992–2022.

Indicators	CEP Activities	Potential Data Source
<p>3. By 2022, all funded RIF infrastructure projects include climate risk assessment and/or investment in climate resilience and DRM.</p> <p>4. Future GMS Strategic Framework project pipeline (2022–2032) identifies 25% more environmental investment projects than previous Regional Investment Framework (for SF 2012–2022).</p> <p>5. By 2022, GMS Program includes at least 5 concrete (SMART) environmental and climate indicators in its performance reporting.</p> <p>6. By 2022, GMS Information Portal formally recognized by GMS Secretariat.</p>		<p>3. Project data sheets, PPTA documents, RRP documents.</p> <p>4. National investment statistics?</p> <p>5. GMS project database 1992–2022.</p> <p>6. GMS statistical database (https://www.greatermekong.org/statistics/) and related publications.</p> <p>7. GMS Website (http://www.gms-eoc.org/), portal funding or co-funding commitment by GMS Secretariat.</p>

OUTPUT 1: Green technologies and sustainable infrastructure adopted by GMS countries

<p>1. SEA and safeguards legal framework and guidelines endorsed for two additional GMS countries.</p> <p>2. At least 10 relevant support requests received by GMS Help Desk on Policy Support and responded to with appropriate knowledge inputs.</p> <p>3. At least one blog or newsletter on Green Technology and Sustainable Infrastructure established and updated monthly, and at least one regional knowledge sharing event on green technology organized/held.</p> <p>4. At least five SMART regional indicators on green technology and sustainable infrastructure investment developed and updated annually.</p>	<p>1. Provide environmental policy, strategic planning and safeguards support (SEA, EIA, Environmental Quality Standards, Economic instruments, Air, Water, Soil Pollution Control and Remediation, Waste Management and Low Carbon).</p> <p>2. Promote knowledge sharing and transfer of cleaner technologies (including cleaner production, resource and energy use efficiency, air, water, and soil treatment, etc.)</p> <p>3. Project preparation support:</p> <p>(i) Rural Environment Quality, pollution control, and waste management;</p> <p>(ii) Green Road Freight Financing; and</p> <p>(iii) Electronic Waste Management.</p>	<p>1. Government decision, decree or planning document with firm commitment to the former.</p> <p>2. News and Activities on GMS Portal—GMS Platform on Green Technology sub-page, and annual progress reports.</p> <p>3. Published blog, newsletter(s), event proceedings.</p> <p>4. Indicators on GMS Portal website.</p> <p>5. Online accessible database (on GMS Portal or separate with link from the GMS Portal).</p> <p>6. Online accessible database (on GMS Portal or separate with link from the GMS Portal).</p> <p>7. (Online accessible) database (on GMS Portal or separate with link from the GMS Portal).</p>
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Indicators	CEP Activities	Potential Data Source
<ol style="list-style-type: none"> 5. Regional Archive on Green Technology and Finance launched and populated with at least 100 relevant green technology examples and at least 50 finance measures (to de-risk investments, and matchmaking, facilitate public/private sector involvement through impact investment, viability gap and other innovative funding mechanisms). 6. Green technology expert roster established with at least 100 international and national experts and firms included. 7. Two additional GMS countries develop and endorse environmental quality standards. 8. Two additional GMS countries have enterprise databases that are suitable for pollution risk categorization and mapping 9. Waste management strategy and action plan developed and adopted by at least one GMS country 10. Funding for GMS Green Freight investment project secured, including private sector funding component (e.g., impact investment or gap fund). 11. Investment project on e-waste incentives, recovery and recycling mechanism developed and funding secured, including private sector funding component (e.g., impact investment or gap fund). 12. Investment project on farm waste management for energy production developed and funding secured. 		<ol style="list-style-type: none"> 8. Published national environmental quality standards or guidelines. 9. Enterprise database in digital format including geographic attributes (at least commune, town name) and pollution risk categorization (e.g., based on IPPS results). 10. Waste management strategy and action plan (stand-alone or part of a Pollution Control Strategy/Plan). 11. Investment project documents and firm funding commitment. 12. Investment project documents and firm funding commitment. 13. Investment project documents and firm funding commitment.

Indicators	CEP Activities	Potential Data Source
OUTPUT 2: Investment in natural resources and ecosystem services increased		
<ol style="list-style-type: none"> 1. Legal framework reforms to address challenges with natural resources, ecosystem service and sustainable land management initiated by at least three GMS countries. 2. At least three GMS countries formalize plans on addressing environmental compliance challenges. 3. At least two GMS Natural Resources Forum meetings organized and related blog and/or newsletter maintained. 4. At least five SMART regional indicators on Natural Resources and Ecosystem Services and three related spatial base maps developed and updated annually. 5. At least two NR/ES planning and decision support tools developed and/or enhanced and at least five related hands-on trainings or case studies conducted. 6. At least three GMS institutions have dedicated staff on ecosystem service value mapping and other integrated spatial planning tools. 7. At least one area-based plan and two sector plans make use of integrated spatial planning tools (e.g., land demand modeling, SMCA). 8. Integrated Spatial Planning principles anchored in the planning of the RIF pipeline 2022–2032. 9. At least two impact investments demonstrate private sector recognition of the value of ecosystem services. 10. PES policies and/ agreements established or improved in at least three GMS countries. 	<ol style="list-style-type: none"> 1. Provide policy and legal framework support for sustainable land management. 2. Facilitate regional knowledge sharing on Natural Resources and Ecosystem Services. 3. Land resource planning support: Integrated spatial planning, ecosystem assessment, valuation and mapping, risk assessment, and integration in key institutions, sector plans and investments. 4. Project preparation support for integrated land management for sustainable development (Protection of high value ecosystems, restoration/ remediation of degraded lands, soil pollution control and remediation). 5. Development of sustainable financing policy, pricing support, benefit distribution mechanism (PES, biodiversity offset, etc.) 	<ol style="list-style-type: none"> 1. Government decision, decree. 2. Revised or enhanced environmental compliance targets, Resources assigned to closing compliance gap (staff, related tasks or outputs, TORs, etc.) 3. Published blog, newsletter, event proceedings, etc. 4. Indicators and maps on the GMS Portal website. 5. Tools online on CEP website and/or GMS Portal, documentation of trainings and case studies in news archive and activity library. 6. Government staff designations, staff TORs. 7. Approved plans (or SEA of these plans) with related method section and results analysis. 8. Reference to ISP (methods, results, recommendations) in RIF document(s). 9. Impact investment funding commitment (LoA, contract?). 10. PES project documents and firm funding commitment.

Indicators	CEP Activities	Potential Data Source
11. Two PES pilots on agriculture and tourism benefit sharing developed and funded.		

OUTPUT 3: Climate resilience and DRM strategies incorporated in GMS sector investment plans

<ol style="list-style-type: none"> 1. Climate proofing regulatory framework developed and adopted by at least three GMS countries. 2. At least one blog or newsletter on climate adaptation established and updated monthly, and at least three GMS Roundtables on Climate Adaptation organized or held. 3. At least five SMART regional indicators on climate change (adaptation) and two related spatial base maps developed and updated annually. 4. CRV assessment & best practice database developed and populated with at least 100 relevant cases or examples. 5. CRV and DRM considerations anchored in the planning of the RIF pipeline 2022–2032. 6. CRV and DRM assessments integrated in at least five GMS projects. 7. Climate proofing technical guidelines effectively applied to at least three GMS sector investments. 8. Feasibility of climate and disaster risk financing scheme assessed at least in two countries. 	<ol style="list-style-type: none"> 1. Regulatory framework for climate proofing infrastructure. 2. Regional sharing of best practices on CRV assessment and adaptation. 3. Technical support for strengthening CRV and DRM assessments in investment project planning. 4. Project preparation support <ol style="list-style-type: none"> i) Climate proofing rural infrastructure investments ii) DRM and risk financing options. 	<ol style="list-style-type: none"> 1. Promote climate and disaster risk financing options (8) Related official government documents. 2. Published blog, newsletter(s), roundtable proceedings, news flash, etc. 3. Indicators and maps on GMS Portal website. 4. (Online accessible?) database (on GMS Portal or separate with link from the GMS Portal). 5. Reference to CRV and DRM (methods, results, recommendations) in RIF document(s). 6. Project data sheet, project planning (PPTA) documents. 7. Project data sheet, project planning (PPTA) documents. 8. Project document and reports.
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... = not applicable, CEP = Core Environment Program, CRV = climate risk and vulnerability, DRM = disaster risk management, EIA = environmental impact assessment, EPI = _environmental performance index, ES = environmental services, GMS = Greater Mekong Subregion, IP = implementation plan, ISP = integrated spatial planning, LoA = Letter of Agreement, MEA = Millennium Ecosystem Assessment, NDC = Nationally Determined Contribution, NR = natural resources, PES = payment for ecosystem services, PPTA = project preparatory technical assistance, RIF = Regional Investment Framework, RRP = report and recommendation of the president, SDG = Sustainable Development Goal, SEA = strategic Environmental Assessment, SMART = specific, measurable, achievable, relevant, and time-bound, SMCA = spatial multicriteria assessment, TORs = terms of reference.
Source: Authors

Appendix IV: Organizational Structure and Reporting Relationship

Figure 4: Greater Mekong Subregion Economic Cooperation Organizational Structure

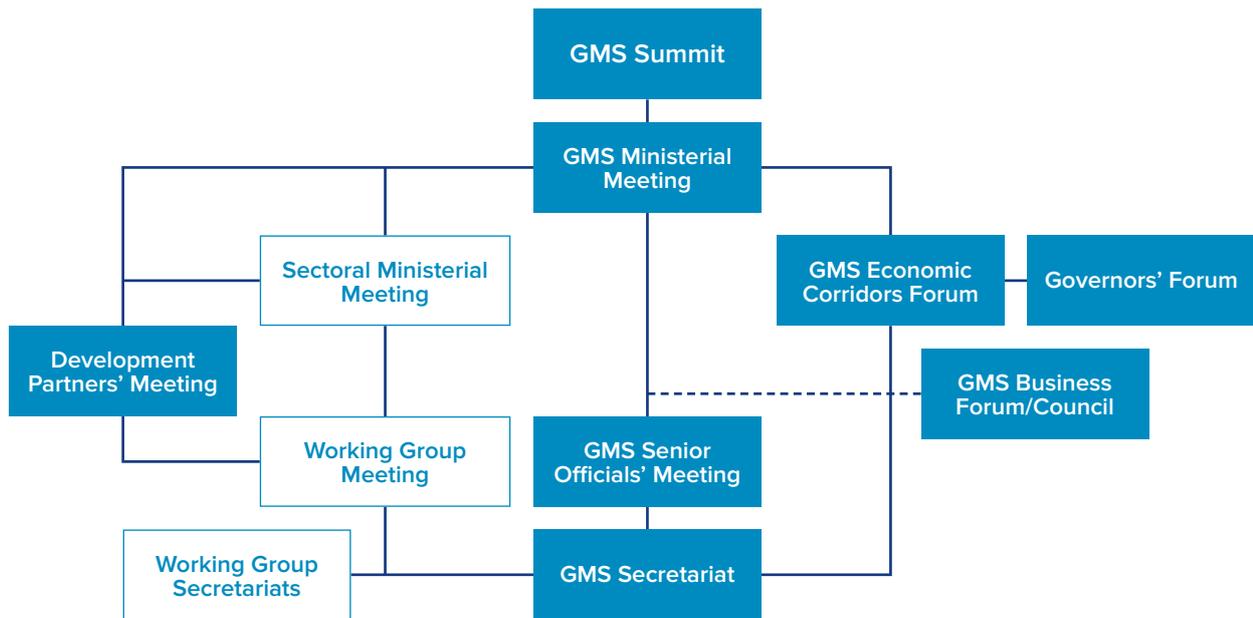
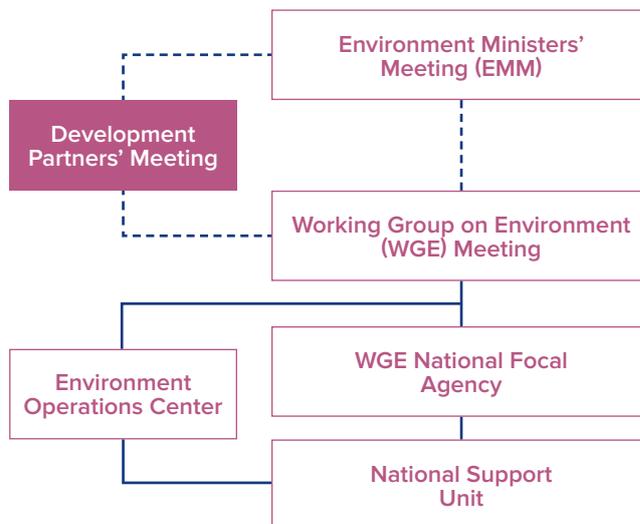


Figure 5: Greater Mekong Subregion Working Group on Environment's Organizational Structure

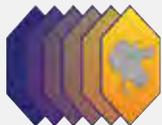


About the Core Environment Program

The Core Environment Program (CEP) supports the Greater Mekong Subregion (GMS) in delivering environmentally friendly economic growth. Anchored on the ADB-supported GMS Economic Cooperation Program, CEP promotes regional cooperation to improve development planning, safeguards, biodiversity conservation, and resilience to climate change — all of which are underpinned by building capacity. CEP is overseen by the environment ministries of the six GMS countries and implemented by the ADB-administered Environment Operations Center. Cofinancing is provided by ADB, the Global Environment Facility, the Government of Sweden, and the Nordic Development Fund. Past cofinancing support was provided by the Government of Finland and the Government of the Netherlands.

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