



Greater Mekong Subregion (GMS) Climate Change
and Environmental Sustainability Program (CCESP)

GMS 2030 Strategic Framework for Accelerating Climate Action and Environmental Sustainability



GREATER MEKONG SUBREGION
CLIMATE CHANGE
AND ENVIRONMENTAL
SUSTAINABILITY PROGRAM

Title

GMS 2030 Strategic Framework for Accelerating Climate Action and Environmental Sustainability

Note

This document has been prepared in consultation with the Greater Mekong Subregion (GMS) Working Group on Environment (WGE), development partners, private sector representatives, civil society organizations, academia and other stakeholders at national and regional levels.

In this document, the symbol “\$” refers to US dollars.

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Abbreviations

ADB	Asian Development Bank
AFOLU	agriculture, forestry, and other land use
ASEAN	Association of Southeast Asian Nations
BCI	Biodiversity Conservation Corridor Initiative
CbA	community-based adaptation
CCA	climate change adaptation
CCESP	(GMS) Climate Change and Environmental Sustainability Program
CEP	(GMS) Core Environment Program
CDM	Clean Development Mechanism
DAP	digitalization action plan
DRR	disaster risk reduction
EbA	ecosystem-based adaptation
GDP	gross domestic product
GHG	greenhouse gas
GMS	Greater Mekong Subregion
GTNA	green technology needs assessment
KPI	key performance indicator
Lao PDR	Lao People's Democratic Republic
LCA	low-carbon agriculture
MEWS	mobile phone-based early warning system(s)
MoE	Ministry of Environment
MoNRE	Ministry of Natural Resources and Environment
NbS	nature-based solutions
NDC	nationally determined contribution
PPP	public-private partnership
PRC	People's Republic of China
RIF	Regional Investment Framework
SDG	Sustainable Development Goals
SEA	strategic environmental assessment
SF2030	GMS 2030 Strategic Framework for Accelerating Climate Action and Environmental Sustainability
SME	small and medium-sized enterprise
TA	technical assistance
WGE	(GMS) Working Group on Environment
WHO	World Health Organization of the United Nations



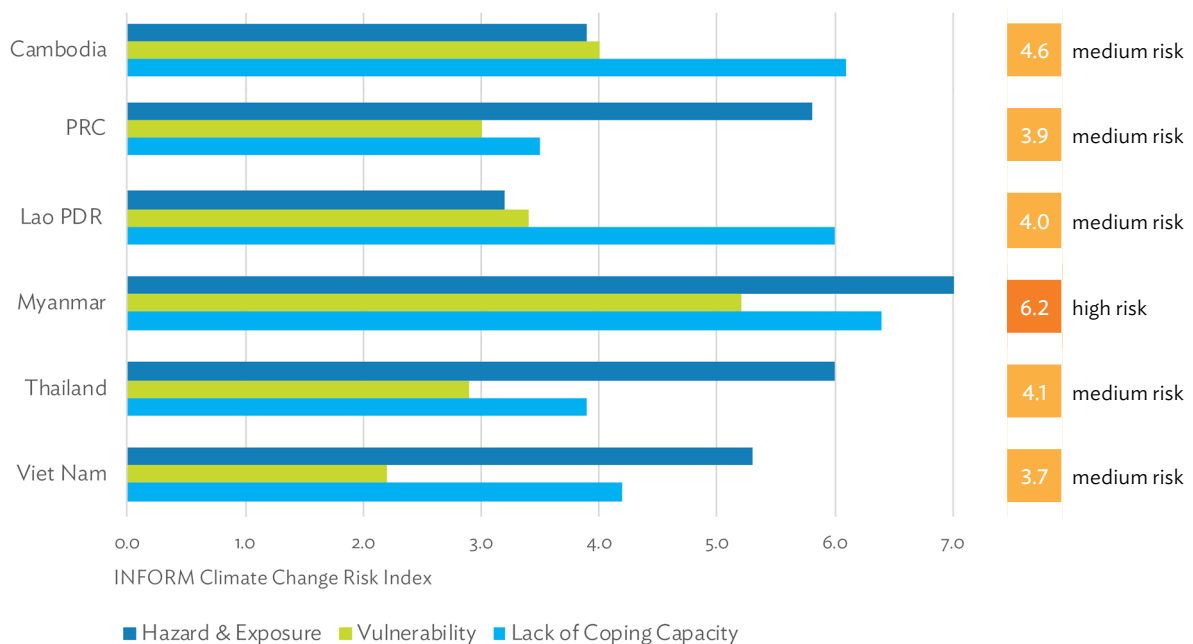
1. Background

1. BACKGROUND

The Greater Mekong Subregion (GMS) remains on a strong path towards economic growth and poverty reduction. The economic progress in the GMS is largely driven by the region's rich natural resources and innovative societies. While these assets have sustained the increasing demand for food, energy, and commodities, unsustainable resource extraction and development are depleting the natural capital resulting in the decline and degradation of ecosystem services and environmental quality.

All GMS countries are highly vulnerable to climate change impacts. The loss of natural capital threatens the region's long-term economic growth and prosperity. Climate change impacts will exacerbate these challenges further straining the GMS's ecosystem and natural resources. According to the European Commission's Climate Change Risk Index, GMS countries experience medium to high relative vulnerability and exposure to natural hazards (**Figure 1**). Meanwhile, the coping capacity of the six GMS countries varies.

Figure 1: GMS Countries Vulnerability, Exposure to Natural Hazards, and Estimated Lack of Coping Capacity



Note: The INFORM Risk Index is a global risk assessment for humanitarian crises and disasters developed by the Inter-Agency Standing Committee Reference Group on Risk, Early Warning and Preparedness and the European Commission. INFORM Climate Change Risk Index incorporates climate and socioeconomic projections into the methodology of the INFORM Risk Index. Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.
Source: European Commission. 2024. [INFORM Climate Change Tool](#).

The estimated cost of inaction in relation to climate change is already high in GMS countries and will continue to increase unless immediate and effective measures are taken. On its current trajectory, Southeast Asia is projected to see an 11% reduction in annual gross domestic product (GDP) due to climate change and related hazard events by 2100, which is, notably, the highest estimated percentage loss of GDP globally. Furthermore, inaction to confront the looming biodiversity crisis is resulting in substantially

high economic, social, and ecological costs. For instance, the Association of Southeast Asian Nations (ASEAN) estimated that mangrove losses alone in Southeast Asia could collectively set countries back by nearly \$2.2 billion annually. More drastically, the loss of natural capital, and the accelerated extinction rate, could put 63% of the Asia Pacific region's GDP at risk due to the region's dependence of key economic activities in nature-based sectors such as agriculture, water resources, and tourism (**Table 1**).

Table 1: GMS Countries Disaster Risk Profile

	Cambodia	PRC	Lao PDR	Myanmar	Thailand	Viet Nam
Number of Disaster Events (1970-2021)	36	495	40	44	124	205
Population Exposure Medium (%)	91.8	68.8	89.0	55.9	76.2	61.6
Population Exposure High (%)	7.73	0.33	10.1	40.1	23.2%	37.7
Number of Deaths (1970-2021)	1,735	77,912	493	139,797	4,983	16,752
Number of affected (millions) (1970-2021)	23.74	2873	1.48	8.67	108.78	96.67
Average Annual Loss – % of GDP (1995-2014)	10.7	2.4	6.6	8.4	6.0	Not Available
GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China. Source: United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). Asia Pacific Risk and Resilience Portal .						



Even though all GMS countries are highly vulnerable to climate change, adaptation remains underfunded and is low compared to funding for climate change mitigation efforts. In 2021, global adaptation financing needs were estimated at about 5-10 times greater than the current adaptation finance flows. It is estimated that developing countries will need \$3.3 trillion in adaptation finance between now and 2035. Even prior to the coronavirus (COVID-19) pandemic, ADB estimated that Southeast Asia will require \$210 billion a year for climate adaptation and mitigation investments through 2030. According to recent climate fund flow sector analyses, at least two thirds of this investment will need to be raised domestically. The engagement of the private sector is, therefore, essential to bridge the adaptation financing gap. However, the private sector faces considerable technical, institutional, and financial barriers to engaging in adaptation, including challenges to creating a viable value stream and receiving financial incentives for taking effective adaptation action or investing in appropriate adaptation products and services.

Greenhouse gas (GHG) emissions continue to rise in GMS countries, primarily in the energy sector, followed by the transport and agriculture, forestry, and other land use (AFOLU) sectors. The GMS countries need to reduce GHG emissions intensity in all sectors to meet their national and international commitments on GHG reduction.

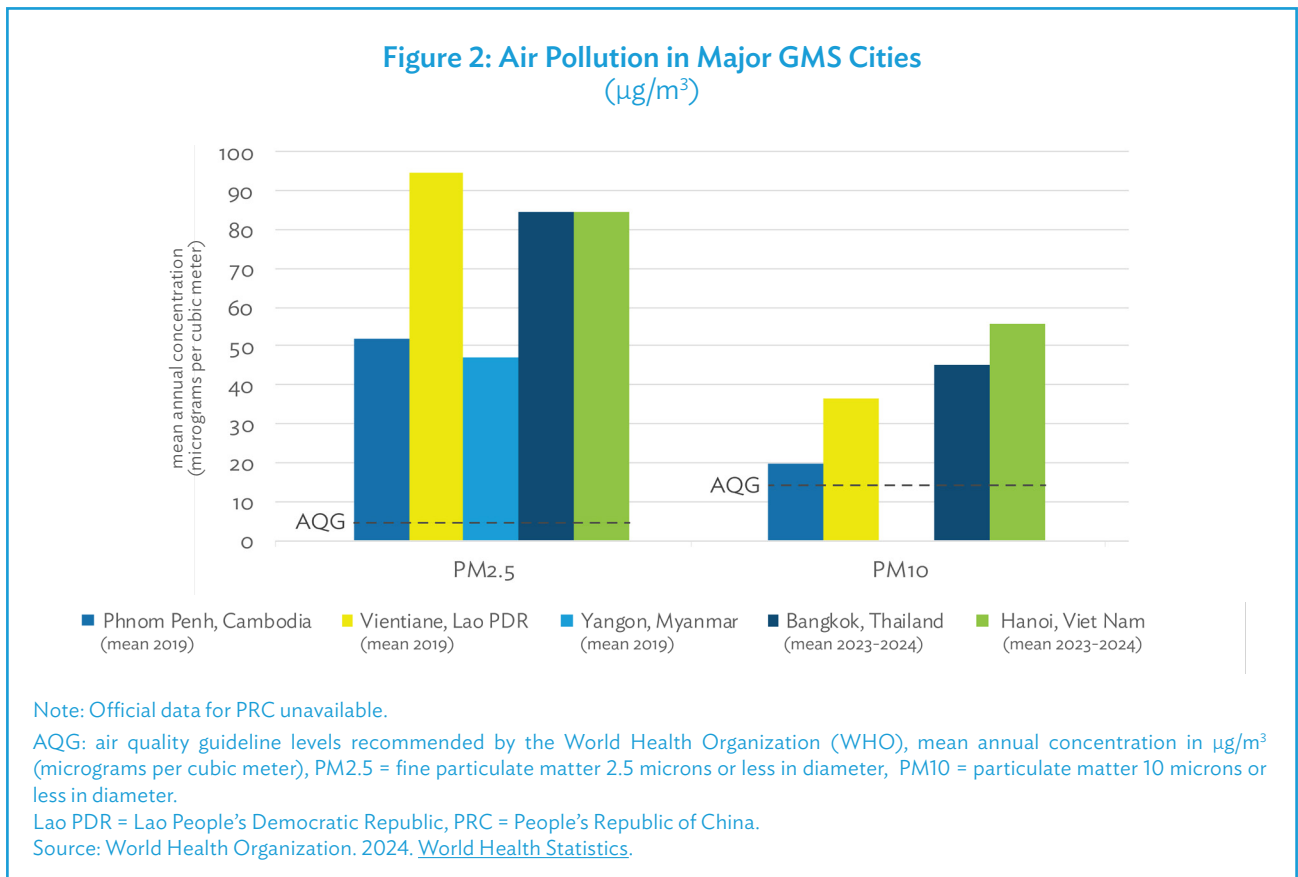
In terms of energy production and consumption, the GMS countries are currently at a crossroads. Due to continuing economic growth as well as population growth, the region's energy demand is expected to rise more than threefold, from 486 Tera Watt Hour (TWh) in 2021 to 1,645 TWh by 2050. Currently, 85% of energy supply is made up of fossil fuels. While the ASEAN region has set ambitious targets aiming to have 23% of all primary energy derived from renewable sources by 2025 as well as a share of 35% of renewable energy in installed capacity, current progress at country level signals that these targets are only partially achievable within the specified time horizon.

The transport sector accounts for 8-23% of the national GHG emissions in the GMS. According to the Asian Transport Outlook, road freight transport in GMS countries increased 2-4 times over the last two decades, whereas freight by rail and waterways did not see a similar increase in most countries.

Agricultural GHG emissions over the past five decades increased by 144%, with the contribution from AFOLU comprising between 13-21% of total GHG emissions. In addition, several countries in the GMS deal with increased degradation of land, which leads to loss of soil fertility, soil erosion, and loss of overall agricultural productivity.

Although many GMS countries currently experience an increasing trend in the extent of land area classified as degraded, some countries have managed to halt the degradation process.

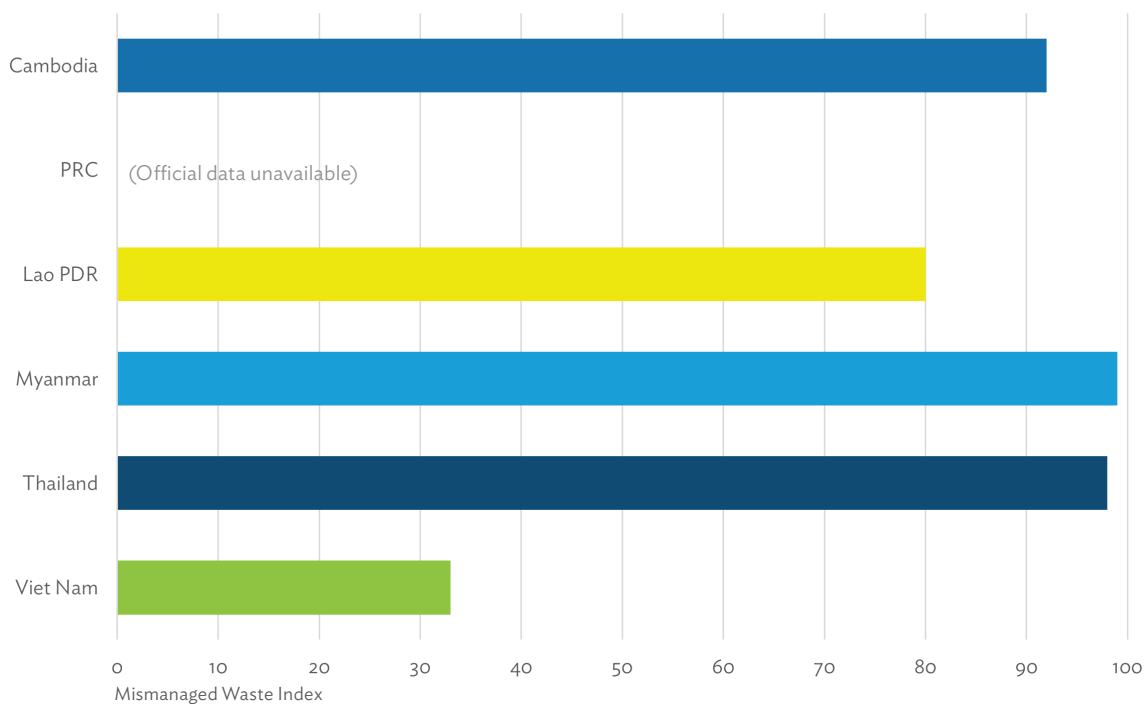
Air pollution has a major impact on the health of populations across the GMS. According to World Health Organization (WHO) statistics, air pollution (PM 2.5 and PM 10) in major GMS cities is much higher than the WHO’s thresholds (**Figure 2**). In most GMS countries, the CO₂ emissions from fuel combustion have also increased over a five-year period, exacerbating the air pollution and correlative problems. Energy-related air pollution in 2018 resulted in 450,000 premature deaths in Southeast Asia.



Waste management, including plastics pollution, is another major challenge across the GMS. In terms of plastic waste generation, between 25-50 kg per capita is produced annually in the GMS region. Despite the various strategies and legislative enforcements to reduce, recycle, and reuse plastics, all GMS countries experience

challenges in effectively managing plastic waste streams. The “mismanaged waste index” (**Figure 3**) showing the sum of uncollected and improperly managed waste divided by the total waste generated, suggests that several GMS countries are struggling to implement and enforce efficient waste management practices.

Figure 3: Relative Amount of Waste not Managed Properly in GMS Countries



Note: Mismanaged Waste Index (MWI) - Sum of uncollected and improperly managed waste divided by the total waste generated x100

Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.

Source: World Population Review. 2024.

The GMS faces significant water-related stresses due to climate change and human interventions such as construction of dams and clearing of forests. Climate change disrupts hydrological cycles, potentially leading to a double threat: more frequent and intense floods that can destroy infrastructure, displace communities, and disrupt farm production; alongside increased droughts and water scarcity that can limit access to clean drinking water, irrigation for crops, and hydropower generation. Furthermore, water pollution in urban areas is a growing problem across GMS countries threatening public health and ecosystem health and complicating the region's efforts to ensure sustainable water management.

Communities across the GMS are at the forefront of the climate crisis. The region is heating up at nearly twice the global rate since the early 1990s, according to the Intergovernmental Panel on Climate Change (IPCC). This accelerated warming has triggered more frequent and severe heatwaves, making the region increasingly vulnerable to climate-related disasters. In April 2024, Thailand and Viet Nam experienced the severe impacts of extreme heat on health and livelihoods, underscoring the urgent need for enhanced adaptation, preparedness, and mitigation efforts. In recent years, Thailand experienced record-breaking temperatures, with some surpassing

records dating back to 1958. In Bangkok, heat index soared past 52°C, classified as extremely dangerous. Viet Nam experienced three waves of extreme heat, with temperatures peaking at 44°C. In response, Viet Nam declared a state of emergency. The southern region faced severe drought devastating rice fields and crippling the livelihoods of local farmers and fishermen.

Accelerating actions towards green growth, climate resilience, and sustainable resource management in the GMS is crucial, involving all relevant stakeholders. Innovations in green technologies have positioned Asia's nature-based industries, including energy, agriculture, forestry, and fisheries, among the largest in the world. This presents a significant opportunity for GMS countries to leverage these advancements.

To ensure sustainable development, it is imperative for the GMS countries to adopt comprehensive strategies that balance economic growth with environmental conservation. This includes investing in sustainable practices, enhancing resource management, and mitigating the impacts of climate change to protect and preserve the region's natural wealth for future generations.



2. GMS PROGRESS, CHALLENGES, AND COMMITMENTS



2. GMS PROGRESS, CHALLENGES, AND COMMITMENTS

2.1 Climate and Disaster Resilience

Climate resilience and disaster risk reduction (DRR) continue to be key themes of the GMS environment program since 2012 and is further aligned with the high to medium climate risk profiles of the GMS countries. Through multiple national and regional programs, GMS countries are engaged in strengthening climate resilience and improving DRR and disaster risk management (DRM) mechanisms at national levels.

Remaining gaps identified in the national adaptation plans (NAPs) and nationally determined contributions (NDCs) and specific sector plans, include effective planning and implementing fit-for-purpose solutions at the societal level in the most climate-sensitive sectors such as water and agriculture.

Operationalization of national adaptation planning across multiple sectors demands actions that are jointly owned by all public stakeholders. Furthermore, the ramping up of discussions and cross-border research on loss and damage due to climate change is urgently needed. A key challenge remains that the GMS is yet to establish mechanisms to facilitate member countries' access to key channels of climate finance (e.g., Green Climate Fund, Climate Investment Funds, Global Environment Facility, Adaptation Fund, Loss and Damage Fund). However, it is heartening to note that some GMS entities (National Committee for Sub National Democratic Development, Cambodia and the Vietnam Development Bank) have obtained accreditation with the Global Climate Fund to propose projects for funding and are working on the modalities to secure financing.



2.2 Low-Carbon Transition

As evident through the development and implementation of the NDCs, all GMS countries are making steady progress toward a low carbon transition. Recent efforts include development of low carbon demonstration zones through subregional cooperation. The prioritized measures for reducing GHG emissions from the energy sector include promotion of renewable energy sources, especially solar and wind, and enhancing energy efficiency. Some progress is also evident in waste to energy conversion. In the transport sector, some efforts are directed at improving fuel efficiency. Freight transport focuses mainly on electromobility and biofuels, although waterborne freight is increasingly on the agenda on a national scale. Across the GMS, however relatively limited attention is still given to logistics planning, and the shift from road to rail and waterways. Cambodia has recently launched the construction of a \$1.7 billion canal to improve in-land waterway transport.

For the agricultural sector, all NDCs mention different pathways, but few thus far have established specific targets for sectoral GHG emissions reductions. The three main causes of on-farm emissions in the GMS are rice cultivation (25%), animal husbandry (23% enteric fermentation), and synthetic fertilizer application (15%). The main challenges identified for low carbon agriculture across the GMS include: (i) environmental challenges, including access to land and water; (ii) access to finance; (iii) food security issues due to potentially lower production; (iv) labor and gender issues; (v) land property and land rights, (vi) economic incentives; and (vii) insufficient technological, and capacity building support.

2.3 Environmental Quality, Pollution Control, and Waste Management

The sources of air pollution in the GMS are well-known and largely driven by transport, industrial activity, and agricultural burning. GMS countries have made modest progress to reduce air pollution by promoting cleaner energy sources and improving public transportation systems. There is growing public awareness and government involvement on the need to address air quality issues. However, gaps prevail. For Cambodia, Myanmar, and Lao PDR, data are sparse and capacity constraints to monitor pollution and enforce regulations exist. In addition, the institutional frameworks generally lack clear coordination mechanisms for the multiple agencies responsible for air quality management.

A study on export of plastic debris by rivers into the sea noted that the Mekong River was one of the 10 rivers that collectively carried between 88–95% of plastics into the world's oceans. Recently, there have been increased efforts to publish and implement national action plans and better enforce laws on plastic waste management. For example, the Guangxi Zhuang Autonomous Region has invested in building recycling facilities in Liuzhou city, with a capacity of up to 200,000 tons of plastic waste per year. Cambodia imposed a ban through a sub-decree on the use of single-use plastic bags in 2020. Thailand has implemented an extended producer responsibility (EPR) policy, which requires manufacturers and importers of plastic products to manage such throughout their full lifecycle, including collection, transportation, and recycling. Viet Nam has enforced a Law on Environmental Protection (2020) emphasizing the need to minimize, reuse, recycle, and treat plastic waste.





2.4 Ecosystem Management and Biodiversity

The GMS harbors approximately 5% of the global threatened wildlife species and nearly 15% of the world's tropical forests. Key economic sectors in the GMS (i.e., agriculture, energy, tourism, and transport) depend on the maintenance and contribution of healthy ecosystems. Natural asset losses in the GMS are valued at 10-12% of annual GDP.

Over the past two decades, Southeast Asia experienced a 12.9% reduction in forest cover, mostly due to illegal logging and the conversion of old forests into plantations in Lao PDR, Cambodia, and Thailand. A slight positive trend of afforestation was found in PRC and Viet Nam over the same period, while Myanmar, with the most forest cover remaining among countries in Southeast Asia, has one of the highest rates of deforestation. Only 30% of the original forest cover remains, leaving many species increasingly vulnerable. Additionally, despite progress made to increase protected (terrestrial) area coverage on a whole in the Asia-Pacific region, important biodiversity hotspots have been neglected. Moreover, GMS countries have not met Aichi

Biodiversity Targets for 2010-2020, which increases the pressure to achieve even more ambitious targets under the new Kunming-Montreal Global Biodiversity Framework adopted in December 2022. The integration of community-focused roles and capacity building as well as integration of biodiversity priorities into transnational river governance in the Mekong River basin remain the major gaps to be addressed.

2.5 National and International Commitments

The GMS countries have set voluntary targets or made several pledges and commitments to international climate and environmental sustainability treaties, including the Nationally Determined Contributions (NDCs), the Sustainable Development Goals (SDGs), the Sendai Framework for Disaster Risk Reduction 2015-2030, and the Kunming-Montreal Global Biodiversity Framework (GBF). **Table 2** provides the updated NDCs made by GMS countries with the objective to achieve the Paris Agreement target. It would be observed that all countries plan to expand their forest cover on a conditional and unconditional basis.

Table 2: Updated Nationally Determined Contributions Made by GMS Countries

	Percentage of global GHG (2022) (%)	Total emissions (2022) (million tons)	GHG emissions per capita (2022) (tons)	Unconditional Target	Conditional Target (dependent upon international, bilateral/multilateral financial, technology and capacity building support)	Land use, Land use change and Forestry (LULUCF)
Cambodia	0.13	71.42	4.30	None	Most mitigation/adaptation targets are conditional. Emission reductions with FOLU by 2030 approx. 64.6 MtCO ₂ e/year (41.7% reduction, of which 59.1% is from FOLU)	Reduce 50% of historical emissions by 2030
PRC	25.89	13000.94	9.8	Strive to peak CO ₂ emissions before 2030 and achieve carbon neutrality before 2060; lower CO ₂ emissions per unit of GDP by over 65% from 2005 level; increase share of non-fossil fuels in primary energy use to 25%; installed capacity of wind and solar power to over 1.2 billion kilowatts by 2030.	None	Increase forest stock volume by 6 billion cubic meters from 2005 level
Lao PDR	0.12	67.29	8.9	13GW total hydropower capacity; 50,000 energy efficient cook stoves; New Bus Rapid Transit system in Vientiane Capital and associated Non-Motorized Transport component; Lao-China Railway	60% GHG emission reductions; Increase forest cover to 70%; Increase solar and wind power to 1GW; Biofuels to meet 10% of transport fuels; water and waste management targets.	Foster conservation, sustainable forest management, national parks buffer zones and enhance forest carbon stocks.
Myanmar	0.43	229.03	4.2	Total emissions reductions of 244.52 MtCO ₂ e. increase the share of renewable energy (solar and wind) to 53.5% and decrease share of coal by 73.5%	Total reduction of 414.75 MtCO ₂ e	Conditional cumulative target of sequestering 10.4 MtCO ₂ e and reducing deforestation by 50% by 2030
Thailand	0.78	422.10	5.9	Total emissions reduction target of 30%	Target of 40% emission reduction by 2030	Increase forest cover to achieve 55% of total area by 2037.
Viet Nam	1.15	619.50	6.3	146.3 MtCO ₂ e or 15.8% reduction in GHG emissions	403.7 MtCO ₂ e or 43.5% reduction in GHG emissions	Increase carbon sequestration; stabilize rate of forestation; improve forest quality. Increase forest cover to 42% by 2030

FOLU=forestry and land use, GHG=greenhouse gases, GW=gigawatt, Lao PDR=Lao People's Democratic Republic, MtCO₂e=million tonnes of carbon dioxide equivalent, PRC=People's Republic of China.

Source: Our World in Data 2024. [Interactive Charts on CO₂ and Greenhouse Gas Emissions](#). UNFCC and country NDCs.

Currently, most of the GMS countries still need more efforts to achieve the SDGs, as can be seen from the SDG Index score that measures overall achievement against the 17 SDG goals (**Table 3**). Regarding the Sendai Framework for DRR, progress has been inadequate, and goals are unlikely to be achieved by 2030. Reporting has been weak. Further, the progress of meeting the international and national targets for biodiversity and ecosystem restoration remains mixed for the GMS. To scale up efforts to achieve the GBF targets, growth in protected areas across Southeast Asia will need to accelerate at a rate 2.4 times faster than observed at present.

2.6 Access, Adequacy, and Availability of Finance

GMS countries lack sufficient funds to combat climate change and promote environmental sustainability. For example, Lao PDR noted that it requires \$4.7 billion to achieve its conditional mitigation targets of the NDC. For Viet Nam, the estimated need is \$86.8 billion. For Cambodia, the financing gap for the implementation of

climate change action plans is estimated to be at 9% of GDP. All GMS countries are making efforts to mobilize green finance through innovative financing instruments such as green bonds, sustainability-linked bonds but the gap between mobilized funds and overall needs is substantial.

In relation to financing low carbon agriculture (LCA), several challenges have been identified: (i) the perceived risk by agribusinesses or small-scale farmers relating to market volatility as investment in new, low-carbon technologies might not provide immediate returns; (ii) lack of collateral; (iii) indebtedness level; (iv) high upfront costs for new LCA practices; (v) small-scale farmers' financial illiteracy and low awareness on benefits of new farming techniques; (vi) access to finance especially in the case of smallholders due to remote locations; (vii) reluctance of institutional financing institutions to operate in rural areas and their lack of understanding and knowledge of rural agro-economics; (viii) underdeveloped microfinancing landscape; (ix) insecure land tenure; and (x) poor or inadequate rural infrastructure leading to supply chain issues.

Table 3: SDG Index Score and Ranking for the GMS Countries

Country	SDG Index (Rank out of 166 Countries)	SDG Index Score (%)
Cambodia	104	64.9
Lao PDR	119	63.0
PRC	68	70.9
Myanmar	120	62.8
Thailand	45	74.7
Viet Nam	54	73.3

Note: The overall score measures the total progress towards achieving all 17 SDGs. The score can be interpreted as a percentage of SDG achievement. A score of 100 indicates that all SDGs have been achieved.
Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China, SDG = Sustainable Development Goals.
Source: J.D. Sachs et al. 2024. *The SDGs and the UN Summit of the Future. Sustainable Development Report 2024.*



2.7. GMS Environment Program Achievements

Since the start of the GMS Environment Program in 2006, the GMS countries have reformed politically and institutionally to improve their response to environmental degradation and climate change impacts and thereby tackling the sustainable development risks. All countries have strengthened legal frameworks and institutional capacity for environmental protection. During the 7th GMS Summit in 2021, leaders reinforced their commitment to inclusive and sustainable development, including to the UN 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change. Phases I to III have advanced in mainstreaming environmental considerations in economic development through policy development and strategic planning, knowledge support, and environment and climate related project investments in the GMS.

In Phases I and II, significant progress was made on policy and strategic planning support, including several Strategic Environmental Assessments

(SEAs) for different sectors, and institutional capacity building and policy support. These have strengthened institutions, complemented several strategy and action plans, and improved the technical and institutional capacity to monitor environmental performance in the GMS. During phase II, GMS countries successfully developed the knowledge portal, applied spatial multicriteria analyses to strategic plans and pipeline investments and mapped ecosystem services values. Several knowledge products and knowledge platforms have been published.

This work has continued in Phase III with additional policy assessments, dialogues and knowledge products being drafted and published. Three calls for demonstration of innovative practices and technologies have been launched, including: a green model for last-mile delivery of goods in Viet Nam, community-led transboundary forest-landscape management between Lao PDR and Thailand, and building community resilience through flood early warning systems in Cambodia.



2.8. Lessons Learned and Way Forward

The programmatic approach in the GMS environment program allowed it to adapt to GMS countries' evolving needs in shifting policy landscapes. The program's ability to respond swiftly to immediate demands was appreciated during phase I and II. However, initiatives sometimes lacked alignment with broader program goals, as the program often took up a large number of small initiatives, on a demand basis. Traditional project designs, especially in Phases I and II overlooked financial sustainability and social inclusion. Phase III interventions focused on policy dialogues, capacity building and knowledge sharing but COVID-19 pandemic imposed several limitations on implementation. Well-designed demonstration projects are essential for promoting environmentally sound practices and attracting investments. Currently, uptake is hindered by uncertainties and financial risks. To address this, the program should focus on demonstrating viability, formulating enabling policies, and de-risking private sector investments. Activities targeting lower administrative levels often lack strategic impact, indicating the need for better dissemination and scaling strategies.

Thematic approach in phase III revealed that engagement and support is needed to achieve further development in areas of climate and disaster resilience, loss and damage, low carbon transitions, nature-based solutions, and pollution control. Lessons learned confirm the need for deployment of digital and other advanced technologies and innovative financing instruments across the GMS. The need for further focus on youth and social inclusion in climate actions and environmental sustainability and for facilitating equitable participation in environmental decision-making processes has become more critical than before.


A private sector roundtable on environmental sustainability was organized to facilitate dialogue between the government and private sector stakeholders, providing a platform to present and discuss selected project investment considerations. The roundtable aimed to enhance communication, identify shared priority areas, explore potential collaborations, and inform stakeholders about ADB's support for developing private sector projects. The discussions revealed that both the government and private sector require significant support in building capacity for project identification, conception, and development. This support

is especially critical when evaluating projects through a financial lens, focusing on economic viability, implementation feasibility, seeking funding support and sustainability.

A series of national stakeholder consultation meetings were organized to assess progress and identify key challenges and priorities for subregional cooperation on accelerating climate action and environmental sustainability. Key stakeholders representing the government, private sector, civil society, academia, and development partners in each country provided valuable inputs. A region-wide stakeholder consultation meeting with selected stakeholders was held to identify common priorities for all GMS countries and to develop the Indicative Investment Project Pipeline and proposed Technical Assistance projects (Appendix A and B). The regional consultations sought close alignment with new GMS Regional Investment Framework national priorities on environmental actions.

Moving forward, the next phase will need to further consolidate and mainstream environment management and climate actions in priority development sectors across the GMS. There will be a need to prioritize alignment with the strategic framework, enhance engagement with other sectors, focus on demonstration projects, strengthen knowledge and access to financing and investment opportunities for up-scaling necessary actions, catalyze private sector participation by designing innovative financial mechanisms, strengthen monitoring and evaluation mechanisms, and address capacity constraints for improved program effectiveness. A road map for resource mobilization identifying potential funding sources, national budgets and other financial mechanisms including partnerships with the private sector and related stakeholders will be developed upon endorsement of the GMS 2030 Strategic Framework for Accelerating Climate Action and Environmental Sustainability (SF2030) by the Environment Ministers.



An aerial photograph of a person in a canoe on a river. The water is a vibrant turquoise color. The left bank is covered in dense, lush green trees. The right bank is a mix of green vegetation and brown earth. The person in the canoe is wearing a white shirt and is using two long paddles. The text '3. GMS 2030 STRATEGIC FRAMEWORK VISION AND SCOPE' is overlaid in white, bold, sans-serif font on the lower half of the image.

3. GMS 2030 STRATEGIC FRAMEWORK VISION AND SCOPE

3. GMS 2030 CLIMATE AND ENVIRONMENT STRATEGIC FRAMEWORK VISION AND SCOPE

The purpose of the GMS 2030 Strategic Framework for Accelerating Climate Action and Environmental Sustainability is to prioritize actions to accelerate implementation of selected GMS-wide interventions towards meeting the national and international commitments on climate resilience, GHG mitigation, biodiversity conservation, and environmental sustainability. The framework proposes a multi-faceted strategy that includes policy alignment, regional cooperation, community engagement, and sustainable development initiatives.

The strategic framework is aligned with national strategies of GMS countries on climate change (e.g., Lao National Strategy for Climate Change towards 2030, Viet Nam's National Climate

Change Strategy to 2050), green growth (e.g., Cambodia's National Strategic Plan on Green Growth 2013-2030; National Green Growth Strategy of the Lao PDR till 2030, Viet Nam's National Green Growth Strategy for 2021-2030), national adaptation plans, disaster risk reduction strategies (e.g., Lao's National Strategy on DRR 2021-2030, Vietnam's National Strategy for Natural Disaster Prevention, Response, and Mitigation by 2030), biodiversity (e.g., China Biodiversity Conservation Strategy and Action Plan 2023-2030, and Lao National Biodiversity Strategy and Action Plan 2015-2025), pollution control and other national commitments to the international agreements.



Likewise, the strategic framework is fully aligned with GMS 2030: Greater Mekong Subregion Economic Cooperation Program Strategic Framework 2030 (GMS 2030), which is focused on GMS fundamental strengths of community, connectivity, and competitiveness, while embracing the core principles of environmental sustainability and resilience, internal and external integration, and inclusivity, for building a GMS community with a bright shared future. The framework is also aligned with the draft GMS Innovation Strategy for Development 2030 which emphasizes (i) digitalization; (ii) green transition; and (iii) connectivity. The framework is aligned with the GMS Gender Strategy Implementation Plan 2025-2030, and the draft GMS Digitalization Action Plan 2025-2027, and other strategies and action plans to increase cooperation among GMS countries.

The SF2030 is based on four interconnected thematic areas critical for a prosperous, inclusive, resilient, and sustainable GMS. These include:

- (i) enhancing climate and disaster resilience for communities and ecosystems.
- (ii) supporting a just and inclusive low-carbon transition.
- (iii) fostering a circular¹ green economy and strengthening pollution control measures.
- (iv) deploying nature-based solutions for promoting biodiversity, ecosystem restoration, and improved livelihoods.

¹ “Circular” refers to strengthening the circular use of resources (e.g., recycling); and “green” refers to promoting environmentally friendly, low carbon production.

The SF2030 will contribute to the medium to long-term vision for environmental protection and climate actions across the GMS, placing focus on the concerted and collective efforts required and priorities to be achieved by 2030. It will enhance regional cooperation and integration, technology transfer, capacity building, and deployment of innovative solutions as a combined means of catalyzing transformative and sustainable development pathways toward a more prosperous and vibrant GMS.

3.1 Vision

The vision of SF2030 is a resilient and sustainable GMS that thrives in harmony with its environment, addresses the impacts of climate change, and preserves natural resources to ensure prosperity and health for future generations. Operationally, the framework will provide support for identifying climate and environmental sustainability projects for technical assistance and possible inclusion in the GMS Regional Investment Framework (RIF). Key technical assistance activities comprise policy dialogues and support, knowledge sharing and capacity building, pilot projects and demonstrations, and investment preparation and financing support.



3.2 Scope Related to the Thematic Areas

The GMS countries face significant environmental challenges, including climate change, deforestation, biodiversity loss, air and water pollution, plastic pollution, and others. This strategic framework aims to address these challenges through a holistic and collaborative approach, leveraging the strengths and resources of each member country. The overall scope of the four thematic areas includes the following:

- (i) to improve integration and sharing of current knowledge and experience on climate change adaptation (CCA) and DRR into national policies and mainstreaming resilience and inclusivity considerations in all investments, to improve knowledge dissemination to vulnerable groups, including women and elderly, and community organizations, and to improve accessibility of climate and DRR finance including loss and damage funds to relevant stakeholders and vulnerable communities thereby mitigating risk to investments;
- (ii) to support a just and inclusive transition towards a low-carbon future with a focus on green rural energy, green freight, and low-carbon agriculture, including bio-based energy production, using best available technologies, and new innovative financing models, such as carbon credits;
- (iii) to promote circular green economy to foster better use, reuse, and recycling of available resources and enhance pollution monitoring and control measures, to reduce the overall waste dumping, burning, and associated air pollution, to support stricter emissions standards for vehicles, to enforce agricultural residue utilization policies and build resilience;
- (iv) to expand the use of nature-based solutions and holistic and people-centric approaches for biodiversity conservation, especially in transboundary regions, and to harness nature-based solutions and ecosystem-based adaptation to enhance resilience of both ecosystems and communities; and
- (v) to build technical capacity and strengthen institutions to formulate projects that focus on environmental sustainability and economic viability to attract and crowd-in much needed private sector investment.



4. STRATEGIC APPROACH, THEMES, AND CROSS-CUTTING ISSUES



4. STRATEGIC APPROACH, THEMES, AND CROSS-CUTTING ISSUES

4.1 Strategic Approach and Themes

The GMS 2030 Strategic Framework for Accelerating Climate Action and Environmental Sustainability (SF2030) proposes a holistic and integrated approach to consider all relevant factors, stakeholders, and potential impacts across the selected sectors. Instead of focusing on isolated problems, the SF2030 aims at emphasizing the interconnectedness of the thematic focus areas across GMS countries and seeks to address the complex issues within their broader context through effective regional cooperation. The framework will catalyze efforts to promote cross-border projects that enhance environmental sustainability, such as joint conservation areas and transboundary climate risk management.

4.1.1 Climate Resilience, including Loss and Damage

The strategic framework aims to strengthen the integration of current knowledge and experience on ecosystem-based adaptation (EbA), community-based adaptation (CbA) and DRR into national and sector policies to effectively support the GMS countries. Knowledge dissemination needs improvement, for vulnerable groups and community organizations, taking into consideration the different needs for youth, women, and elderly in an open and inclusive process, thereby leaving no one behind. Establishing a GMS-wide multi-stakeholder partnership mechanism and/or a regional platform that curates climate change adaptation knowledge, technologies, and approaches, in close cooperation with Asia Pacific Adaptation Network (APAN) and Global Center on Adaptation (GCA) is suggested. The program will strengthen capacity to mobilize funding for adaptation and resilience from regional and international climate funds, including loss and damage funds, and ensure accessibility of climate and DRR finance to relevant stakeholders, including vulnerable communities. It will also explore opportunities for GMS countries to engage and trade in regional carbon markets.

4.1.2 Just and Inclusive Low-carbon Transition

The strategic framework aims to support the GMS countries in promoting and realizing a just and inclusive transition towards a low-carbon future. The prioritized actions include greening rural energy infrastructure, green freight, and low-carbon agriculture. Actions to promote rural renewable energy infrastructure include agrivoltaics, solar irrigation and other interventions aimed at enhancing greater energy independence in rural areas. For the transport sector, proposed actions include strengthening capacity to mobilize investments in multimodal transport hubs and other infrastructure, including dry ports and logistics hubs, to efficiently transfer freight from road to rail and waterways, improving logistics efficiency by establishing voluntary

programs, capacity-building for policymakers to improve transport planning, development, and governance practices, and stakeholders' education and awareness raising campaigns, including environmental labelling of vehicles/vessels and fuels. To speed up the uptake of low-carbon agriculture (LCA) practices, emphasis would be to strengthen capacities to mobilize investments to improve agricultural innovation, communication, and outreach, including the development of digital platforms in local languages, to strengthen the capacity of farmers and other stakeholders on LCA technologies and practices, and realize benefit from carbon markets. Developing subregional standards and agreements would promote a cohesive approach to climate action. This includes exploring harmonization of regulations on GHG emissions, energy efficiency, and environmental protection.





4.1.3 Pollution Control and Circular Green Economy

The strategic framework will assist the GMS countries in developing and sharing effective pollution control measures and monitoring methods utilizing the best available technologies, and in creating broad awareness on pollution issues in a regional context. Specific actions may include exploring methods for data collection, data management, and data sharing. Circular green economy will be promoted and supported to assure a better use, reuse, and recycling of available resources, to reduce the overall waste dumping, burning, and related air pollution problems.

The circular green economy represents a shift towards a more sustainable and regenerative economic model (including eco-design of products and bio-based compostable alternatives to plastic), which maximizes resource efficiency, minimizes waste generation, and promotes renewable energy. Proposed actions under the framework include enhancing recycling systems, promoting extended producer responsibility (EPR) and green procurement, as well as implementing national action plans for management of marine plastic litter and transitioning to a circular economy through community-based waste management initiatives.



4.1.4 Nature-based Solutions

Nature-based solutions (NbS) can help GMS countries in harnessing the inherent resilience of GMS ecosystems to address climate change impacts and promote sustainable development. NbS emphasizes the conservation, restoration, and sustainable management of ecosystems, such as forests, wetlands, mangroves, coastal areas, and cities, to enhance resilience to climate change impacts. The focus on Nature-based solutions will benefit from previous GMS collaborative efforts on sustaining natural capital investments, including comprehensive strategies for conserving and enhancing natural ecosystems, protecting biodiversity, and ensuring sustainable resource use. A more holistic approach to natural capital will support sustainable development and resilience in the face of regional challenges.

The strategic framework will support the GMS countries in harnessing the benefits of NbS in enhancing climate adaptation, ecosystem restoration, and biodiversity conservation through building regional awareness and capacity and embed NbS into regional and national policy and regulatory frameworks for key sectors. Innovative digital technology solutions (e.g., drone-assisted monitoring of biodiversity and satellite monitoring of deforestation) for effective monitoring and conservation of biodiversity will be tested and deployed. Financing gaps for biodiversity conservation will be addressed through innovative financial instruments such as biodiversity bonds, payment for ecosystem services, debt-for-nature swaps, and landscape finance piloted by the Nature-Based Solutions Origination Platform. The use of these innovative financing instruments is to be explored on a voluntary and non-binding basis by relevant parties, taking the form of case-by-case pilots. Key to the successful implementation of NbS is the full and effective engagement of communities through national biodiversity strategies and action plans.

4.2 Cross-Cutting Issues

Cross-cutting issues play a pivotal role in implementation of the strategic framework as they underscore the interconnected nature of the environmental challenges, the need for combining solutions in a holistic approach, and the link to strategic priorities at national and international level. Four cross-cutting issues have been identified as priority themes:

- Youth, gender, and social inclusion
- Green and digital technologies
- Innovative financing mechanisms
- Private sector engagement

Cross-cutting issues are important to ensure that the interventions are holistic, equitable, and sustainable in the long term, thereby enhancing their effectiveness and impact. For instance, incorporating gender perspectives not only promotes women's empowerment, but also fosters resilience and innovation in climate adaptation. The same outcomes are fostered when prioritizing social inclusion, as it enhances community engagement and ownership. By integrating cross-cutting issues into the strategic framework, the program maximizes participation of women and youth to achieve lasting environmental sustainability and resilience.



4.2.1 Youth, Gender, and Social Inclusion

In ADB Strategy 2030, ADB is committed to promote gender equality in at least 75% of all projects and programs. Similarly, the GMS Gender Strategy Implementation Plan 2025-2030 aims to accelerate progress in gender equality across the sectors and countries by reporting gender equality results with sex-disaggregated data. Climate Change operational framework 2017-2030 stresses that ADB's support for climate change action by its DMCs will be gender responsive and support climate change mitigation, adaptation and DRM projects that directly target women to reduce gender gaps and disparities.

Incorporating considerations of youth, gender, and social inclusion into the SF2030 is essential for promoting equitable and sustainable development in the GMS across all thematic areas. Engaging youth as active participants in climate action and environmental stewardship empowers future generations to contribute to SDGs. Enhancing youth education programs and employment opportunities in specific geographical and thematic areas can help in accelerating the process of circular economy, climate resilience, and pollution control.

Promoting gender equality and social inclusion ensures that vulnerable groups, including women and marginalized groups and communities, have equal access to resources, opportunities, and decision-making processes. The GMS SF2030 can enhance community resilience to climate change impacts and achieve the national SDGs by addressing specific social barriers and inequalities, and by including gender performance indicators in the results framework.

4.2.2 Green and Digital Technologies

The opportunities for accelerating climate action and environmental sustainability through digitalization are high in several sectors. For example, digital technologies can help by enabling communication among sensors and databases, monitoring, and tracking changes in ecosystems, optimizing sustainable supply chains to reduce carbon footprint, and reducing the cost of validation in carbon trading. Although technologies such as artificial intelligence enabled pollution monitoring, mobile-phone based early warning systems, and drone-based technologies for biodiversity conservation and monitoring have been piloted, penetration of such technologies in the GMS is still limited. Aligned with the GMS Digitalization Action Plan (DAP) (2025-2027), the strategic framework will support GMS countries in their ongoing work on digitalization to promote climate action and environmental sustainability. Moreover, the framework will support the GMS Innovation Strategy (under preparation), which focuses on building a subregional innovation system.

Green technologies, with a focus on renewable energy systems, energy-efficient transportation, sustainable agriculture, pollution control and waste management practices, can play a pivotal role in advancing circular economy by minimizing resource consumption and waste generation. New technologies can also contribute to climate resilience by reducing GHG emissions and enhancing energy security. Additionally, by promoting the use of environmentally friendly technologies in land-use planning, water use, and natural resource management, the GMS can achieve more sustainable outcomes while preserving valuable ecosystems and biodiversity. Investing in green technologies can further stimulate economic growth and create green jobs, driving innovation and fostering a transition towards a more sustainable and resilient future for the region. The framework will enable GMS countries to utilize digital technologies in a way that maximizes benefit to specific stakeholder groups while increasing the absorption capacity. It will also explore financial approaches like sustainability-linked bonds and the use of proceeds from green bonds as transition finance mechanisms.





4.2.3 Innovative Financing Mechanisms

Across the GMS there is a high need for developing innovative financing mechanisms readily available for the stakeholders in different sectors. Nearly all stakeholder consultations revealed the need for innovative financing mechanisms, such as the development of carbon credit systems for agriculture, forestry, water, waste management, and other “green” sectors. There is a high need for promotion of green finance for local businesses, which may support rural areas through small and medium-sized enterprise (SME) development with an emphasis on green skills and employment generation actions for youth.

There is a good potential for the GMS countries to take advantage of international climate funds and multilateral development finance for scaling up investment in adaptation. Insurance penetration for properties, crops, and livestock as well as other risk financing instruments such as catastrophe (CAT) bonds will play a key role in managing the financial consequences of climate extremes impacts. Innovative instruments such as blended finance, credit guarantee, viability gap financing, green bonds, green loans, sustainability linked loans, PPPs, carbon pricing and emissions trading systems, green crowdfunding, and impact investing are workable alternatives that could

be considered. The use of these instruments needs to be supported by conducive policies and measures to improve efficiency in fund use. Regional developments such as green taxonomies would support the growth of dynamic thematic bonds markets in the region and could also serve as a basis to embed more adaptation objectives in green investment.

By leveraging diverse funding mechanisms and investment instruments, the SF2030 can mobilize resources to support climate adaptation, mitigation, and environmental protection initiatives. Innovative financing mechanisms, such as green bonds, climate funds, and impact investment funds, enable the GMS countries to access additional capital for green projects and initiatives. These instruments de-risk and incentivize private sector and international participation in climate-resilient infrastructure development, renewable energy deployment, and ecosystem restoration efforts. Additionally, innovative financing models, such as pay-for-performance schemes and results-based financing mechanisms, promote accountability and ensure that funding is allocated to projects with measurable environmental and social benefits. By embracing innovative financing instruments, the SF2030 can catalyze transformative change and foster sustainable development.



4.2.4 Private Sector Engagement

Private sector engagement is highly relevant to support the other cross-cutting issues, in that the private sector offers innovation, expertise, and financing. The GMS Economic Cooperation Program mentions the importance of the private sector for leveraging knowledge and technical resources. Moreover, a recent ADB sector analysis suggests that private sector engagement is essential to bridge the widening climate adaptation financing gap. The economic downturn triggered by the pandemic has necessitated increased public spending on social protection programs. This has diverted critical resources from other government programs. It is therefore necessary that the private sector is catalyzed through financially feasible investment opportunities to fill the funding gap. By collaborating with the private sector, the strategic framework can support GMS countries to leverage their respective expertise, resources, and innovative technologies to accelerate climate action and promote environmental sustainability. On endorsement by the

GMS Environment Ministers, the framework will be detailed to provide solutions to engage with the private sector through de-risking investment initiatives, overcoming barriers and incentivizing private investment in climate adaptation and mitigation. Private sector engagement facilitates the development of market-based solutions, such as renewable energy projects, sustainable agriculture practices, and green infrastructure investments, which contribute to decarbonization and reducing GHG emissions and enhancing resilience to climate change impacts. Furthermore, partnerships with businesses enable knowledge sharing, technology transfer, and capacity building initiatives, thereby leading to innovation, and promoting best practices adoption across sectors. Through public-private partnerships, the GMS countries can additionally unlock new opportunities for sustainable growth, job creation, and economic prosperity while at the same time safeguarding the environment and improving the well-being of local communities.

4.2.5 Project preparation and capacity building

Capacity for preparation of bankable investment projects focusing on climate action and environmental sustainability in GMS countries is often limited due to various factors. The challenges include inadequate human and financial resources, weak project management systems, and limited access to technical expertise. Some countries lack the necessary policy and regulatory frameworks to ensure effective project preparation. This deficiency in capacity has been a major barrier to the successful development of environmental projects in the region and has hindered the ability of GMS countries to attract and leverage foreign direct investment (FDI), private sector participation and climate finance. Without adequate capacity, countries struggle to properly assess the viability of projects, prepare sound business plans, and secure the necessary investments. This issue is particularly acute in the development of environment and nature-based

projects, which require specialized knowledge and expertise leading to inefficient resource allocation.

To overcome the above challenges, it is crucial to provide targeted capacity-building initiatives that can equip both the public and private sectors with the skills and resources needed to develop bankable investment projects. Capacity building should focus on human resource development, institutional strengthening, technical assistance and consultancy services for the identification, design and evaluating the feasibility of environmental projects. This will need to be backed by policy and regulatory support to attract institutional and private sector investment. It is essential to establish robust project monitoring, reporting and evaluation systems to track progress and ensure accountability. More importantly, GMS countries can share project experiences and expertise when replicating projects through knowledge sharing platforms, best practice dissemination and mentoring programs.

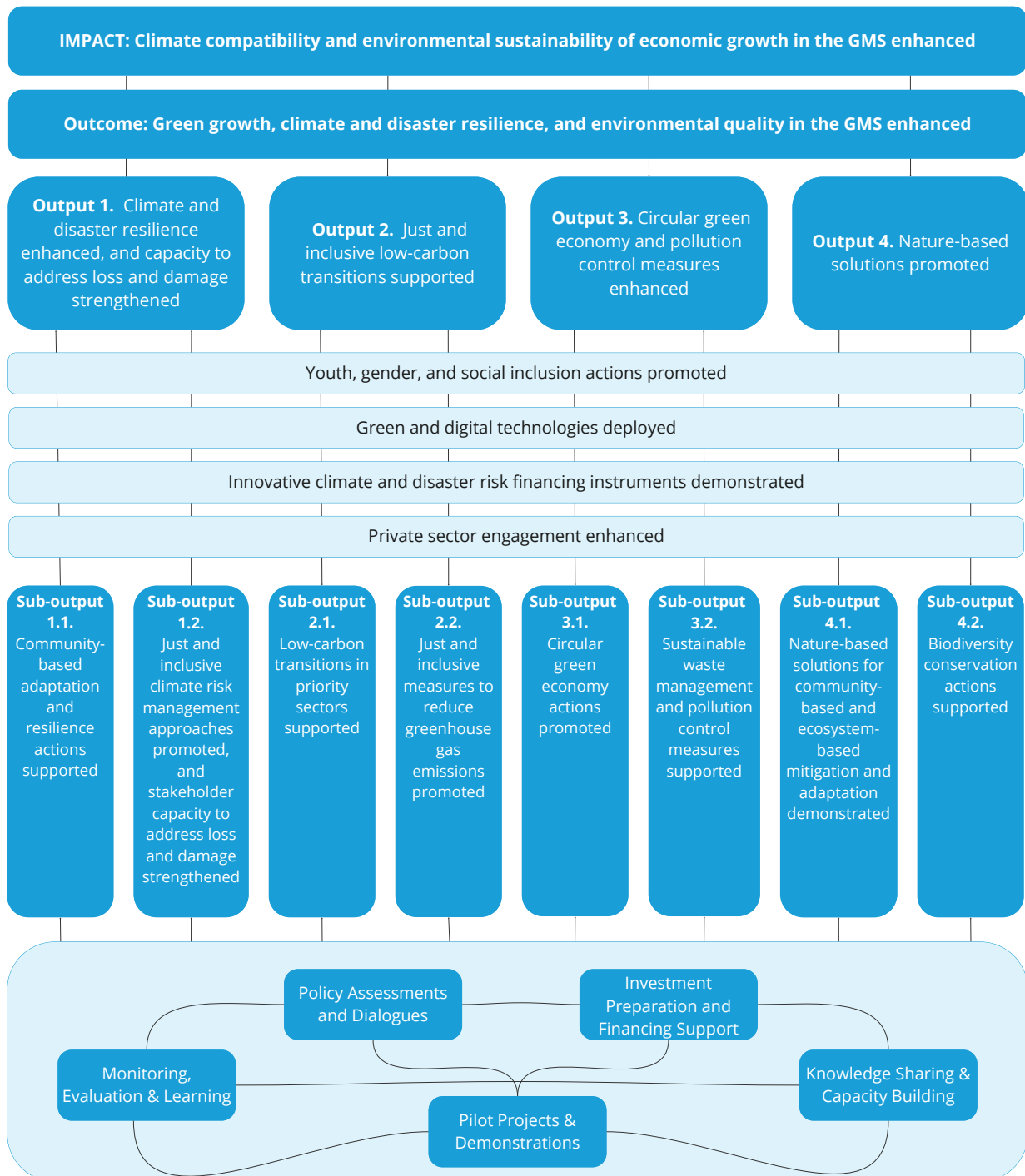


4.3 Theory of Change

The Theory of Change (TOC) briefly describes the logical structure (Figure 4) and links between impact, outcome, and expected outputs.

Specific Key Performance Indicators (KPIs) and means of verification will be developed at a later stage, as part of the overall Design and Monitoring Framework (DMF).

Figure 4: Theory of Change



Source: Authors

4.3.1 Impact, Outcome, and Outputs

The GMS 2030 Strategic Framework for Accelerating Climate Action and Environmental Sustainability is aligned with the following impact: climate compatibility and environmental sustainability of economic growth in the GMS enhanced. It will have the following outcome: green growth, climate and disaster resilience, and environmental quality in the GMS enhanced.

Four outputs are proposed to achieve the outcome and impact. These are:

- (i) Climate and disaster resilience enhanced, and capacity to address loss and damage strengthened.
- (ii) Just and inclusive low-carbon transitions supported.
- (iii) Circular green economy and pollution control measures enhanced.
- (iv) Nature-based solutions promoted.

Each output has two sub-outputs:

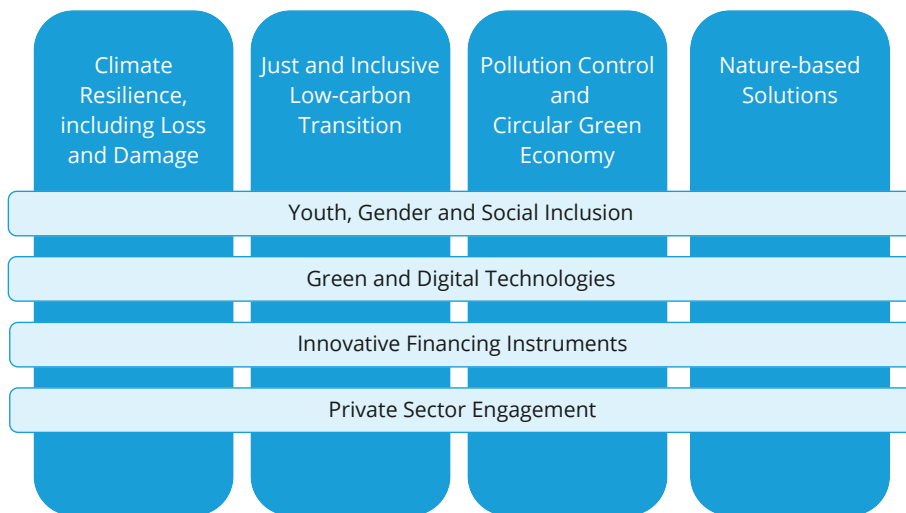
- 1.1. Community-based adaptation and resilience actions supported.

- 1.2. Just and inclusive climate risk management approaches promoted, and stakeholder capacity to address loss and damage strengthened.
- 2.1. Low-carbon transitions in priority sectors supported.
- 2.2. Just and inclusive measures to reduce greenhouse gas emissions promoted.
- 3.1. Circular green economy actions promoted
- 3.2. Sustainable waste management and pollution control measures supported.
- 4.1. Nature-based solutions for community-based and ecosystem-based mitigation and adaptation demonstrated.
- 4.2. Biodiversity conservation actions supported.

Four important cross-cutting issues are included to ensure the maximum long-term impact:

- (i) Youth, gender, and social inclusion actions promoted.
- (ii) Green and digital technologies deployed.
- (iii) Innovative climate and disaster risk financing instruments demonstrated.
- (iv) Private sector engagement enhanced.

Figure 5: Thematic Areas and Cross-cutting Issues



Source: Authors

Five types of activities have been identified to achieve the objectives of the strategic framework. They include: (i) Policy dialogues and support, (ii) Knowledge sharing and capacity building, (iii) Pilot projects and demonstrations, (iv) Investment preparation and financing support, and (v) Monitoring, evaluation, and learning.

To link these types of activities with the outputs, outcomes and impact, specific tangible activities, measurable outputs, key performance indicators, and means of verification must be established. Examples of key indicators for each theme and cross-cutting issue and potential data sources are in Appendix C.

Clear performance indicators at each level in the TOC are needed to monitor and evaluate the progress of climate action and environmental sustainability initiatives. Each indicator should be SMART, i.e., specific, measurable, attainable, realistic and timebound. The framework includes a system for regular reporting and transparency to keep stakeholders informed about progress and challenges on a regular basis. The framework will follow an adaptive management approach to continuously improve strategies and actions based on monitoring and evaluation results.





4.4 Regional Cooperation

Under the framework, the GMS countries will utilize the following modalities of regional cooperation:

- (i) technical cooperation on national priorities of regional significance,
- (ii) regional coordination, harmonization, and information exchange,
- (iii) regional investment projects.

Technical cooperation will entail knowledge sharing among two or more GMS countries. It can be in the form of triangular cooperation whereby a development partner or partners will facilitate and support technical cooperation among GMS countries. Countries that are not members of the GMS may also participate.

Coordination, harmonization, and information exchange may entail coordination of climate change and environmental rules, regulations, and new projects with cross-border spillover effects. It may also involve harmonization of environmental standards, technical regulations, and procedures. Information on policies and regulations related to climate change adaptation, disaster risk management, climate mitigation, climate financing, and environmental protection

and monitoring will be exchanged through regional mechanisms. Further, the cooperation will involve exchange of information through the regional early warning system(s) for climate-related risks and coordination of responses to adverse events (e.g., natural hazards).

Regional investment projects under the GMS Regional Investment Framework (RIF) can be public or private, or public-private partnerships (PPPs). Suggested new regional investments include (i) community-based and nature-based solutions for enhanced climate and disaster resilience; (ii) support for broader access to suitable financial products to empower small-scale farmers engaging more in low-carbon agriculture; (iii) sustainable aquatic waste management in the GMS; (iv) water pollution prevention in shared river systems across the GMS; and (v) trans-boundary nature-based solutions for bio-diversity conservation, ecosystem restoration and improved livelihoods. Other investment projects may be suggested, depending on needs. The proposed technical assistance projects include (i) accelerating climate action and environmental sustainability in the GMS (2026-2030) and (ii) enhancing climate resilience along the Mekong-Lancang River to improve livelihood and adaptation capacity of communities.

4.5 Proposed Implementation Arrangements

Apart from the GMS Working Group on Environment (WGE), the GMS national governments, international development partners and the private sector are expected to participate and co-finance activities under the framework. ADB, in collaboration with Climate Investment Funds and PRC, is already providing some technical assistance to support selected activities under the GMS CCESP. Upon endorsement of the SF2030 by GMS member countries and further consultations, ADB, in cooperation with other development partners, will consider providing knowledge and support technical assistance to assist implementation of the framework. ADB and other development partners will consider providing targeted capacity building support to relevant government ministries and departments to develop bankable, sustainable and outcome-based investment projects relevant to the focus areas of the framework.

GMS countries jointly urge developed countries to fulfill their commitments to provide climate finance and other support to developing countries and take the lead in creating a fair and open atmosphere for cooperation. The governments of the GMS countries could provide in-kind funding for technical cooperation activities, in accordance with their respective capacities and resources on a voluntary basis. The PRC has already provided some support to the current phase of the program through PRC Regional Cooperation and Poverty Reduction Fund.

The governments of the GMS countries may also co-finance investment projects through cash and in-kind contributions on a voluntary basis. The private sector is expected to co-finance a few investment projects, possibly through PPPs, however for this to materialize it will be essential to develop commercially viable and bankable projects supported by an investment conducive environment.

The successful implementation of this strategic framework requires strong commitment and cooperation among GMS countries. By working together, the GMS can become a leader in climate action and environmental sustainability, ensuring a prosperous and resilient future for its people and ecosystems. It is important to accelerate the GMS efforts towards green growth, climate resilience and sustainable resource management involving all relevant stakeholders. Due to innovations in green technology industries and related fields, Asia's nature-based industries, including energy, agriculture, forestry, and fisheries, are now some of the largest in the world. This provides an opportunity for the GMS countries to leverage this advantage. This imposes corrective and preventive actions to ensure a sustainable future, as the pressure on natural resources and the need for improving environmental quality have reached a critical point across the GMS. Addressing these challenges requires a multi-faceted approach that combines policy reforms, investments in sustainable infrastructure, and capacity building supported by a project pipeline that ensures regional collaboration and cooperation.



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Appendix A: Indicative Investment Project Pipeline

Theme	Climate Resilience and Loss and Damage
Countries	Cambodia, Lao PDR, Myanmar, Thailand, Viet Nam ^a
Project name	Community-based and nature-based solutions for enhanced climate and disaster resilience
Rationale	Across the GMS, the integration of community-focused and nature-based approaches for climate adaptation and disaster risk reduction remains underdeveloped and requires up-scaling. There is a need to empower local communities, including women and youth, to have clear roles in the management and governance of landscapes.
Outputs and Activities	<p>The project will scale-up experience from previous national and transboundary programs with a focus on transferring knowledge, approaches and technologies from one region and country to others in need. Project activities will include but not limited to the following:</p> <ul style="list-style-type: none"> (i) Knowledge dissemination from national and regional organizations to vulnerable groups and communities, and their supportive community organizations. (ii) Establishment of a GMS-wide multi-stakeholder partnership mechanism and/or a regional platform that curates climate change adaptation knowledge, digital technologies, and approaches is suggested. (iii) Improvement of accessibility of climate and DRR finance to relevant stakeholders and vulnerable communities. (iv) Development of funding mechanisms, including access to loss and damage funds including climate insurance products.
Crosscutting themes	Youth, gender, and social inclusion, Green and digital technologies, Innovative financing mechanisms and Private sector engagement
Links to new RIF proposals	<ul style="list-style-type: none"> • Promoting Private Investment in Small-Scale Private Forest Plantations and Tree Planting to Support Forest Landscape Restoration, Bio-Circular-Green Economy (BCG Economy) at the Lower Mekong Region” (Cambodia) • Promoting community-based ecosystem restoration and advancing climate change mitigation practices in the central Dry Zone of Myanmar (Myanmar)
Funding needed	\$160 million

Theme	Low-carbon Transition and Climate Mitigation
Countries	Thailand, Cambodia, and Lao PDR
Project name	Support for broader access to suitable financial products to empower small-scale farmers engaging more in low-carbon agriculture
Rationale	The importance of easing access to suitable financial products to empower small-scale farmers including women farmers engaged in low-carbon agriculture (LCA) has been highlighted in multiple GMS events. Financial institutions, agri-businesses, and small-scale farmers are reluctant to invest in new LCA technologies, due to their high upfront cost, without sufficient technical support and product guarantee.
Outputs and Activities	<p>Project activities will include but not be limited to the following:</p> <ul style="list-style-type: none"> (i) Develop inclusive taxonomies that account for country's unique context, taking into consideration the Nationally Determined Contributions (NDCs) of respective countries. (ii) Develop an applicable carbon calculation framework that quantifies emission reductions achieved through LCA and establishes carbon pricing and incentives structures to foster the carbon market. (iii) Establish digital platform for sharing information on sustainable business models, LCA technologies, market insights, climate data, available financial products, and knowledge tools. (iv) Promote the integrated digital solutions in LCA to enhance its effectiveness and impact, where possible. (v) Strengthen Public-Private Partnerships. (vi) Report for gender equality results with sex-disaggregated data of participation in activities.
Crosscutting themes	Youth, gender, and social inclusion, Green and digital technologies, Innovative financing mechanisms and Private sector engagement
Links to new RIF proposals	<ul style="list-style-type: none"> • GHG Monitoring System Establishment by applying flux towers such as Eddy Covariance Flux Towers in the GMS (Viet Nam)
Funding needed	\$150 million
Potential stakeholders	Climate Change Institute, The Federation of Thai Industries (Carbon Market Club), Bank for Agriculture and Agricultural Cooperatives (BAAC), Thailand Agricultural and Rural Development Bank (ARDB), Cambodia

Theme	Pollution Monitoring and Control and Circular Green Economy
Countries	Cambodia Thailand, Lao PDR, Viet Nam ^a
Project name	Sustainable aquatic waste management in the GMS
Rationale	Despite multiple national and regional initiatives, the disposal of plastic and other waste in rivers is not effectively monitored and managed. The problems and possible solutions go beyond national policies and therefore require streamlining the institutional, capacity, technical and financial challenges for cross-sectional and cross-border collaboration. The lack of public awareness on plastic waste and its impact on water resources, also needs to be more effectively addressed.
Outputs and Activities	<p>The project will support the development and implementation of policies for aquatic waste management and capacity development from regional to national and local levels, involving the relevant stakeholders from public, private, and NGO sectors. This will include but not be limited to the following support:</p> <ul style="list-style-type: none"> (i) Improve the legal framework and develop and implement Regional Strategy and Action Plans on waste management (based on 3R principles and green circular economy) for rivers and lakes. (ii) Develop detailed SWM management plans for communities by participation and ownership of local people, communities, public and private sectors. (iii) Strengthen collection, analyses, and evaluation of waste management data in order to facilitate monitoring and reporting to national and regional levels. (iv) Invest, implement, and operate SWM systems along the Mekong River and its tributaries, including sustainable financing and business plans for service providers, e.g., through public-private partnerships. Financing schemes must be based on public waste fee systems and/or other forms of financing to ensure long-term costs coverage. (v) Increase awareness on waste management in rural and urban households and communities as well as among public and private sectors. (vi) Develop and implement EPR schemes and recycling policies (standards, regulations, database, data sharing) to enhance recycling cooperation in the GMS. (vii) Establish plastic prevention technologies at hotspots along the Mekong River and its contributors, including capacity building and investments into community-based SWM systems. (viii) Install and operate effective technologies to reduce pollution, clean and rehabilitate rivers and lakes contributing to the Mekong, and prevent waste (particularly plastic) from entering these water bodies, including AI-based technologies and barriers. (ix) Identify and manage waste at upstream sources, particularly plastic waste, before it enters water bodies, to prevent downstream pollution. (x) Clean pollution and restore natural habitats affected by pollution from mismanaged solid waste.
Crosscutting themes	Youth, gender, and social inclusion, Green and digital technologies, Innovative financing mechanisms and Private sector engagement
Links to new RIF proposals	<ul style="list-style-type: none"> • Promoting Private Investment in Small-Scale Private Forest Plantations and Tree Planting to Support Forest Landscape Restoration, Bio-Circular-Green Economy (BCG Economy) at the Lower Mekong Region” (Cambodia) • Supporting the implementation of science, technology and innovation policies and strategies for inclusive and sustainable development in Mekong countries on the establishment of STI platform for closed loop plastics packaging and policy design and implementation support for the sustainability of cassava value chain (Thailand)
Funding needed	\$500 million

Theme	Pollution Monitoring and Control and Circular Green Economy
Countries	Cambodia, Lao PDR, Myanmar, Thailand, Viet Nam ^a
Project name	Integrated approaches for water pollution prevention in shared river systems across the GMS
Rationale	Combating river water pollution, achieving water security, and equitable basin-wide use in Southeast Asia can be done by applying integrated approaches and managing river basins as unified ecological units. It also necessitates the development of regulatory frameworks and policy incentives to strengthen basin-wide planning and decision-making processes, as well as utilizing innovative financing mechanisms to leverage public sector finance, encourage private sector engagement, and advance sustainable development.
Outputs and Activities	<p>Project activities will include but not be limited to the following:</p> <ul style="list-style-type: none"> (i) Developing relevant types of water reservoirs for storing water and to reduce water pollution from streams and lakes. (ii) Constructing treatment systems that use natural processes involving wetland vegetation, soils, and their associated microbial assemblages to improve water quality. (iii) Developing “Room for the River” approaches, managing and restoring the natural flow and course of rivers to reduce the risk of flooding and enhance the ecological health of river ecosystems). (iv) Mangrove reforestation in the lower part of the Mekong River. (v) Investigation of suitable policy measures such as Payment for ecosystem services, Water quality credit and Water pollution taxes.
Crosscutting themes	Green and digital technologies, Innovative financing mechanisms and Private sector engagement
Funding needed	\$250 million
Potential stakeholders	TBD

Theme	Nature-based Solutions
Countries	Lao PDR, Viet Nam, Cambodia ^a
Project name	Transboundary nature-based solutions for biodiversity conservation, ecosystem restoration and improved livelihoods
Rationale	Across the GMS, the integration of community-focused and nature-based approaches for biodiversity conservation and ecosystems restoration remain underdeveloped and require up-scaling by ensuring that local communities (especially women and youth) are empowered and have clear roles in the management and governance of landscape management and ecosystem restoration. Through the protection and management of the main wetland areas, lakeside marshes, agricultural areas, and vegetation ecosystems and their biological diversity, the structural characteristics and ecological functions of the wetland ecosystem are comprehensively maintained, and the damage or change of the wetland ecosystem is effectively prevented.
Outputs and Activities	<p>The project will scale-up experience from previous national and transboundary programs with a focus on transferring knowledge, approaches and technologies from one region and country to others in need. Project activities will include but not be limited to the following:</p> <ul style="list-style-type: none"> (i) Construction of specific transboundary forestry and/or wetland protection and management capacity systems. (ii) Developing and testing innovative digital technology solutions for effective monitoring and conservation of biodiversity. (iii) Bridging financing gaps for biodiversity conservation and restoration through innovative financing instruments, including biodiversity bonds, and payment for ecosystem services. (iv) Sharing of knowledge and technology transfer across borders. (v) Engage with private sector and explore partnership opportunities. (vi) Promotion of eco-tourism corridor (Cambodia, Viet Nam, Lao PDR). (vii) Promotion of zero plastic waste development (such as alternatives to single use plastic products + sustainable consumption and production to reduce plastic uses).
Crosscutting themes	Youth, gender, and social inclusion, Green and digital technologies, Innovative financing mechanisms and Private sector engagement
Links to new RIF proposals	<ul style="list-style-type: none"> • Forests Restoration for Protecting the Environment and Biodiversity (Lao PDR) • Promoting Digital Economy for Public-Private-People Partnership Investment Spectrum in Forest Plantations and Tree Planting Towards Forest Landscape Restoration, Bio-Circular-Green Economy (BCG Economy) at Lower Mekong Regions (Cambodia) • Community-Driven Forest Restoration and Carbon Market Integration in the Greater Mekong Subregion
Funding needed	\$350 million
Potential stakeholders	TBD
<p>^a PRC may consider participation in accordance with domestic approvals in the future DRR=disaster risk reduction, EPR=extended producer responsibility, GHG=greenhouse gases, GMS=Greater Mekong Subregion, Lao PDR=Lao People's Democratic Republic, LCA=low-carbon agriculture, NDCs=Nationally Determined Contributions, NGO=non-governmental organization(s), PRC=People's Republic of China, SWM=sustainable waste management. Source: Authors</p>	

Appendix B: Proposed Technical Assistance projects

Theme	All themes
Countries	All GMS countries
Project name	Accelerating Climate Action and Environmental Sustainability in the GMS (2026-2030)
Rationale	A Knowledge and Support Technical Assistance (KSTA) is needed to support the next phase of the ADB supported program for Accelerating Climate Action and Environmental Sustainability in the GMS (2026-2030). The aim as described above is to “improve climate resilience and environmental sustainability for economic growth in the GMS region, by enhancing the climate and disaster resilience, green growth, and environmental quality in the GMS.”
Outputs and Activities	<p>Four outputs are proposed:</p> <ul style="list-style-type: none"> (i) Climate and disaster resilience enhanced, and loss and damage funds accessed including insurance products. (ii) Just and inclusive low-carbon transition promoted and supported. (iii) Pollution control enhanced and circular green economy promoted and supported. (iv) Nature-based Solutions promoted for ecosystem restoration and improved livelihoods. <p>Five types of activities are proposed to contribute to the success and sustainability of GMS countries, by supporting frameworks, capacity building and providing support for identifying climate and environmental sustainability projects for possible inclusion in the ADB Regional Investment Framework (RIF). Proposed activities include:</p> <ul style="list-style-type: none"> • Policy dialogues and support • Knowledge sharing and capacity building, through showcasing innovative technologies, and reporting results on gender equality with sex-disaggregated data of participation in activities. • Pilot projects and demonstrations • Project preparation, financial feasibility, and identification of investment/financing support • Monitoring, evaluation, and learning
Crosscutting themes	Youth, gender, and social inclusion, Green and digital technologies, Innovative financing mechanisms and Private sector engagement
Links to new RIF proposals	<ul style="list-style-type: none"> • Improvement of the Environment and Sustainability for Greater Mekong Subregion in Cambodia
Funding needed	\$20 million
Potential stakeholders	TBD

Theme	Climate Resilience and Loss and Damage
Countries	All GMS countries
Project name	Enhancing climate resilience along the Mekong-Lancang River to improve livelihood and adaptation capacity of communities
Rationale	<p>The current issues that hamper effective national adaptation planning are the lack of technical knowledge among those tasked with planning and the dissemination of knowledge to the groups who most need the information to enable their adaptation. Secondly, the operationalization of national adaptation planning and integration is lacking because of missing effective coordination mechanisms and because much current action around NAPs is siloed. The establishment of a regional platform on climate change adaptation knowledge and approaches can support with those gaps.</p> <p>Communities are vulnerable to the increasing adverse impacts of climate change, but they lack the capacity to adapt. There is the need to help communities to build up their capacity to adapt to climate change, including knowledge and infrastructure, especially for the most vulnerable groups, and improve their livelihood at the same time. (related to priority area 1 climate and disaster resilience).</p>
Outputs and Activities	<ul style="list-style-type: none"> (i) Promote knowledge dissemination on climate change adaptation and DRR, especially to vulnerable groups and communities, in a simplified manner (reducing technical and specialized nature of knowledge), including climate-resilience agricultural production technologies, and carbon offset mechanisms. (ii) Strengthen public sector capacity on national adaptation planning, technologies, and technical knowledge, by integrating the operationalization across multiple sectors and policy levels. Translate priorities at sub-national level to integrate with their plans. (iii) Promote joint capacity building and knowledge dissemination initiatives on climate change adaptation and DRR to establish a regional collaboration platform. (iv) Improve gender equality and social inclusion in national adaptation plans, and inclusion of vulnerable groups, such as Indigenous Peoples, older people, the youth, and people with disabilities. (v) Improve climate resilient infrastructure. (vi) Strengthen adaptation policy with active participation of stakeholders and reporting results on gender equality with sex-disaggregated data of participation in activities. (vii) Provide alternative sources of income for vulnerable communities. (viii) Formulate tailor-made guidelines and lessons for each community, including transformation of mind.
Crosscutting themes	Youth, gender, and social inclusion, Green and digital technologies, Innovative financing mechanisms and Private sector engagement
Links to new RIF proposals	<ul style="list-style-type: none"> • Universities in the Greater Mekong Subregion Community: The United Nations Carbon Offset Platform (Viet Nam, Thailand)
Funding needed	\$30 million
Potential stakeholders	TBD
<p>DRR=disaster risk reduction, GMS=Greater Mekong Subregion, KSTA=Knowledge and Support Technical Assistance, NAP=National Adaptation Plan(s), RIF=Regional Investment Framework</p> <p>Source: Authors</p>	

Appendix C: Design and Monitoring Framework

Examples of key indicators for each theme and cross-cutting issue and potential data sources are found below.

Indicators	Potential Data Source
Impact: Climate compatibility and environmental sustainability of economic growth in the GMS enhanced	
Outcome: Green growth, climate and disaster resilience, and environmental quality in the GMS enhanced	
<p>a. A pipeline of climate-resilient and green investment projects for public and private sector of at least \$1 billion leveraged.</p> <p>b. At least 8 new gender-responsive and socially inclusive strategies and policies on climate action and environmental sustainability supported.</p>	
Output 1. Climate and disaster resilience enhanced, and capacity to address loss and damage strengthened	
Sub-output 1.1. Community-based adaptation and resilience actions supported	
<p>1.1.a. At least 200 communities enhanced their knowledge on community-based approaches for climate change adaptation and disaster risk reduction.</p> <p>1.1b At least 12 gender-responsive community-based adaptation (CbA) demonstrations implemented.</p> <p>1.1c. At least 500 government staff (30% women) acquired capacity to support community-based climate and disaster risk management action plans.</p>	1. Investment programme and TA progress reports
Sub-output 1.2. Just and inclusive climate risk management approaches promoted, and stakeholder capacity to address loss and damage strengthened	
<p>1.2a At least 3 funding instruments, including access to loss and damage funds and climate insurance products are tested in at least two GMS countries to de-risk and safeguard investment and build resilience to climate shocks.</p> <p>1.2b. At least 5 capacity-building workshops held on loss and damage de-risking mechanisms for local government officials and community leaders.</p> <p>1.2c. At least two risk-sharing mechanisms to build resilience and address loss and damage with at least 20,000 household beneficiaries are piloted.</p> <p>1.2d. At least 3 successful ecosystem-based adaptation (EbA) pilot projects (e.g., mangrove restoration, reforestation, green infrastructure) implemented.</p>	1. Investment programme and TA progress reports

Indicators	Potential Data Source
Output 2. Just and inclusive low-carbon transitions supported	
Sub-output 2.1. Low-carbon transitions in priority sectors supported	
2.1a. At least 15 demonstrations on climate mitigation solutions implemented. 2.1b. At least 500 GMS public and private sector stakeholders acquired capacity to implement the Paris agreement-aligned policies and measures to address climate change. 2.1c. At least 6 investment projects on climate change mitigation in priority sectors prepared.	1. TA progress reports and National Determined Contributions
Sub-output 2.2. Just and inclusive measures to reduce greenhouse gas emissions promoted	
2.2a. At least 2 digital platforms for sharing information on sustainable business models, mitigation technologies, financial products, and knowledge tools are developed in a youth and gender sensitive manner. 2.2b. At least 3 investment projects employing just and inclusive climate change mitigation measures prepared.	1. TA progress reports 2. Digital platforms
Output 3. Circular green economy and pollution control measures enhanced	
Sub-output 3.1. Circular green economy actions promoted	
3.1a At least 3 EPR schemes and recycling policies implemented to enhance regional cooperation on circular green economy. 3.1b At least 6 workshops on circular green economy approaches and applications conducted. 3.1c At least two exhibitions showcasing new technologies using secondary raw materials in production processes (metals, wood, paper, plastic, etc.) organized. 3.1d At least 12 partnerships established with local businesses, NGOs, and research institutions to promote green circular economy practices.	1. TA progress reports 2. Policy assessments 3. National EPR standards and regulations 4. National and regional databases
Sub-output 3.2. Sustainable waste management and pollution control measures supported	
3.2a At least 5 investment projects with advanced technologies to reduce pollution, clean and rehabilitate rivers and lakes prepared. 3.2b At least 2 waste-to-resource conversion projects prepared (e.g., composting, biogas production). 3.2c. At least 12 private sector firms adopt pollution prevention practices.	1. Technical reports and TA progress reports

Indicators	Potential Data Source
Output 4. Nature-based solutions promoted	
Sub-output 4.1. Nature-based solutions for community-based and ecosystem-based mitigation and adaptation demonstrated	
4.1a. At least 3 specific transboundary forestry and/or wetland protection projects developed. 4.1b. At least 3 eco-tourism corridors emphasizing nature-based solutions developed. 4.1c. At least 2 tourism circuit master plans focusing on nature-based climate actions covering 3 GMS countries developed.	1. Investment programme and TA progress reports 2. Plans for eco-tourism corridors
Sub-output 4.2. Biodiversity conservation actions supported	
4.2a. At least 3 biodiversity conservation action plans to encourage nature-positive impact developed. 4.2b. At least 3 transboundary biodiversity conservation corridors supported.	1. Investment programme and TA progress reports
Cross-cutting issue A. Youth, gender, and social inclusion actions promoted	
1. At least 3 national adaptation plans are updated to integrate youth, gender equality and social inclusion concerns.	1. National Adaptation plans
Cross-cutting issue B. Green and digital technologies deployed	
1. At least 2 digital technology solutions for transboundary monitoring and conservation of biodiversity developed and tested. 2. At least 2 digital technology solutions for transboundary pollution monitoring developed and tested.	1. Investment program and TA progress reports 2. Technical reports and TA progress reports
Cross-cutting issue C. Innovative financing instruments demonstrated	
1. At least 3 innovative financing instruments developed and tested to accelerate climate action and environmental sustainability.	1. Investment program and TA progress report
Cross-cutting issue D. Private sector engagement enhanced	
1. At least 5 investment projects with effective private sector engagement prepared.	1. TA progress reports
GMS=Greater Mekong Subregion, DRR=disaster risk reduction, TA=Technical Assistance, LCA=low-carbon agriculture, EPR=extended producer responsibility, Lao PDR=Lao People's Democratic Republic Source: Authors	

GMS 2030 Strategic Framework for Accelerating Climate Action and Environmental Sustainability

About the GMS Working Group on Environment

The Working Group on Environment (WGE) provides overall leadership and direction for ADB's GMS Environment Program and its current phase, the GMS Climate Change and Environmental Sustainability Program, in the Greater Mekong Subregion. WGE also plays an important role in facilitating cross-sector environmental collaboration within the six countries in the subregion. The working group members are nominated senior government officials from the environment ministries of each GMS country.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two thirds of the world's poor: 1.7 billion people who live on less than \$2 a day, with 828 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.



GREATER MEKONG SUBREGION
CLIMATE CHANGE
AND ENVIRONMENTAL
SUSTAINABILITY PROGRAM

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