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Building a Blue Economy Roadmap for Cambodia

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Abbreviations and Acronyms

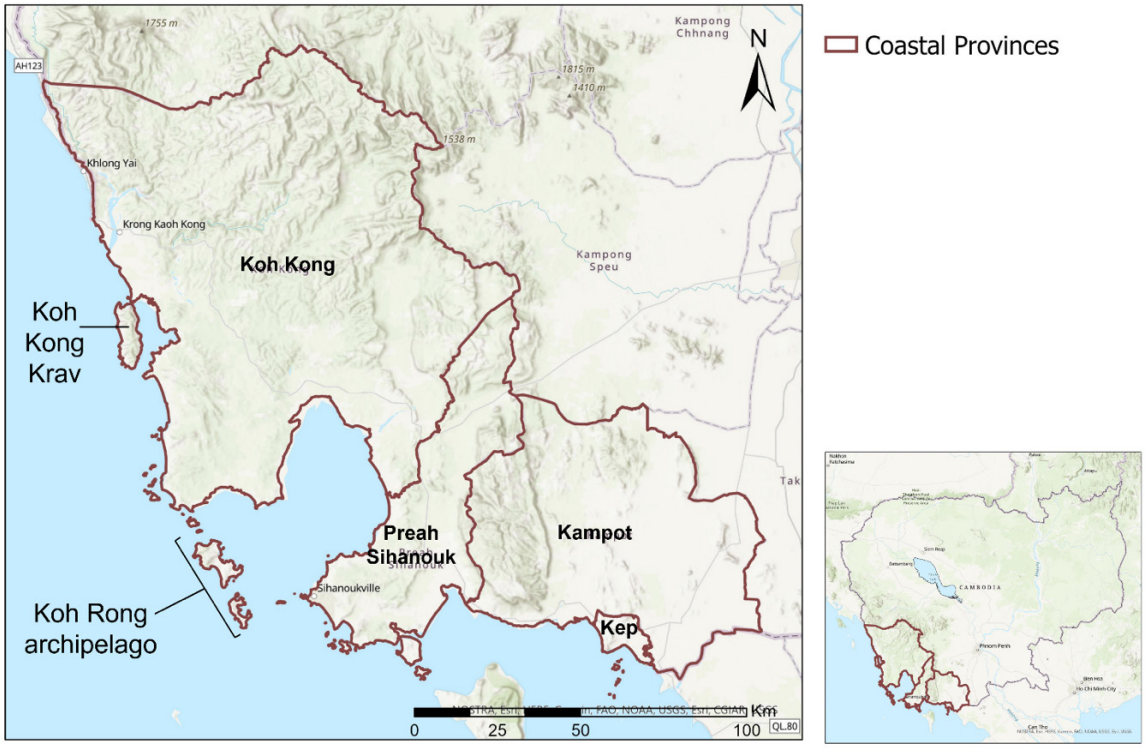
ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
CBD	Convention on Biological Diversity
CCU	Coastal Coordinating Unit
CFi	Community Fisheries
DAFF	Department of Agriculture, Forestry and Fisheries
Danida	Danish International Development Assistance
DFC	Department of Fisheries Conservation
DLMUPCC	Department of Land Management, Urban Planning, Construction and Cadastre
DMCC	Department of Marine and Coastal Conservation
DoE	Department of Environment
DoF	Department of Fisheries
DoT	Department of Tourism
EEZ	Exclusive Economic Zone
ELC	Economic Land Concession
ES	Ecosystem Services
ESMS	Environmental and Social Management System
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FFI	Fauna and Flora International
FiA	Fisheries Administration
FPIC	Free, Prior and Informed Consent
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic Information System
ICM	Integrated Coastal Management
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature and Natural Resources
IUU	Illegal, Unreported, and Unregulated (Fishing)
JICA	Japan International Cooperation Agency
MAFF	Ministry of Agriculture, Forestry and Fisheries
MCC	Marine Conservation Cambodia
MEF	Ministry of Economy and Finance
METT	Management Effectiveness Tracking Tool
MFF	Mangroves for the Future
MFMA	Marine Fisheries Management Area
MLMUPC	Ministry of Land Management, Urban Planning and Construction
MME	Ministry of Mines and Energy
MNP	Marine National Park
MoE	Ministry of Environment
MoT	Ministry of Tourism
MPA	Marine Protected Area
MPWT	Ministry of Public Works and Transport
MSP	Marine Spatial Planning
NCCMD	National Committee for Coastal Management and Development in Cambodia
NCMS	National Committee for Maritime Security

NGO	Non-Governmental Organization
NOTC	National Ocean Technology Centre
NPASMP	National Protected Area Strategic Management Plan
OECM	Other Effective Area-Based Conservation Measures
PCCMD	Provincial Committee for Coastal Management and Development in Cambodia
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
PES	Payment for Ecosystem Services
PFP	Physical Framework Plan
PKWS	Peam Krasop Wildlife Sanctuary
PWG	Provincial/Municipal Working Group
REDD	Reducing Emissions from Deforestation and Forest Degradation
SDG	Sustainable Development Goals
SDS-SEA	Sustainable Development Strategy for the Seas of East Asia
SEAFDEC	Southeast Asian Fisheries Development Center
SEEA-ES	System of Environmental-Economic Accounting (for Ecosystem Services)
SEZ	Special Economic Zone
RGC	Royal Government of Cambodia
RUPP	Royal University of Phnom Penh
TWG	Technical Working Group
UN DESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
UNFCCC	UN Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
WB	World Bank

Executive Summary

Cambodia's coastlines make up a vital component of Cambodia's national economy, contributing to the country's growth, employment, and food security. In addition, Cambodia's coastal areas provide critical ecosystem services (ES) that provide natural protection to coastal communities against adverse impacts of climate change. The Royal Government of Cambodia (RGC) is increasingly recognizing this importance and taking steps to harness the potential of the Blue Economy to ensure the sustainable use of marine and coastal resources for economic growth, improved livelihoods, and jobs, while preserving the health of the ocean ecosystem.

This report is intended to provide an analysis of, and subsequent recommendations for, Cambodia's sustainable Blue Economy development. Here we focus on three fundamental areas related to marine policy, Marine Spatial Planning (MSP) and coastal livelihoods including blue growth sectors.[1] We consolidate existing knowledge and data related to Cambodia's marine and coastal resources and provide recommendations to support the development of a sustainable Blue Economy for Cambodia which can serve as an input for the RGC in the development of its own national blue economy plan or strategy.



Map of the Cambodian Coastal Region, Highlighting the Four Coastal Provinces: Koh Kong, Preah Sihanouk, Kampot and Kep.

[1] Blue Growth sectors are defined here as emerging sectors that harness the sustainable use of marine resources (e.g., tourism and renewable energy).

Current State of Knowledge of Cambodia's Marine and Coastal Resources

With 440km of coastline, Cambodia's coastal region is home to 6.94% of the national population, spread across the provinces of Kampot, Preah Sihanouk, Koh Kong and Kep. Cambodia's oceans support a diversity of marine wildlife and habitats, provide ecosystem services that support communities living throughout its coastline, and contribute to absorbing human-induced CO_2 emissions and excess heat created by human-induced greenhouse gases. Coastal waters support a vast range of human uses, including fisheries, shipping and ports, and tourism industries, and contribute to approximately 16% of the country's gross domestic product (GDP). At a national level, shipping and ports are the most economically valuable marine activity, while providing comparatively low employment opportunity compared with fisheries and tourism, with fewer than 1,000 people employed in the sector. Fisheries and aquaculture generated US$1.1 billion in economic revenue in 2015, accounting for 1.14% of gross domestic product (GDP) in 2014, though this figure largely accounts for inland fisheries, with a dearth of information available for marine fisheries. Tourism accounted for 17% of Cambodia's annual GDP on average from 2010-2019. It is estimated that Cambodia's islands received approximately 1 million tourists in 2019 with high potential for further growth following the Covid-induced downturn.[2] Other non-fisheries resource extraction activities in Cambodia's waters include offshore oil and gas exploration, though revenues from these industries are yet to be reported.

Development has come at the cost of Cambodia's coastal and marine seascapes, evidenced by declining marine biodiversity, habitat loss, and the associated depletion of natural capital due to lack of integrated planning and management. Threats to fisheries come from conflict between small-scale and commercial fishing, overfishing, illegal, unreported, and unregulated (IUU) fishing, habitat conversion and pollution. Cambodia's European Union (EU) Red Card status places the country on the list of 'non-cooperating' countries from which capture fishery exports to the EU market are prohibited. Increasing pressures from tourism have also resulted in habitat degradation, pollution, increased waste generation, irresponsible tourism practices and limited human resource skills. Infrastructure development to support ports and shipping has brought additional challenges related to construction and dredging, oil spills from operations and accidents and pollution from ships and ports. These pressures are exacerbated by threats operating at a global scale such as climate change, which contributes to the vulnerability of Cambodia's coastal communities.

In addition, the current waste management system in Cambodia's coastal provinces does not meet the demands of the growing economy and population. Factors limiting the current waste management system include logistics, infrastructure, capacity, and resourcing limitations. The current waste management system is considered unsafe, inadequate, and unsustainable, resulting

[2] Rawlins, M., Kornexl, W., Baral, S., Baromey, N., Martin, N., & Ray, N. (2020). Enabling Ecotourism Development in Cambodia. World Bank: Washington, DC.

in undesirable waste disposal practices such as open burning, burying of waste, and direct disposal into open areas or waterways. Marine plastic pollution is also perceived by locals as having negative impacts on tourism and local livelihoods. As tourism recovers from disruptions caused by the global Covid-19 pandemic, Cambodia's waste management systems will be under increasing pressure to cope with growing waste generated from tourists.

Policy/Institutional Landscape

Underpinning the above threats are challenges related to historically weak and uncoordinated coastal planning and development. Integrated planning and management for coastal areas in Cambodia has received relatively little prominence in the country's political or economic agenda. There is no specific law on sustainable coastal and marine development, nor is there a consistent policy for implementing Integrated Coastal Management (ICM). Several sectoral laws aimed at directly and indirectly managing and conserving natural resources for sustainable development (i.e. Law on Protected Areas (2006), Law on Forestry (2002), Law on Fisheries (2006, under revision as of 2022), Land Law (2001), and Law on Water Resources Management (2007)) provide valuable direction on managing coastal resources, yet each has partial overlaps in responsibility for the management of protected areas, creating general confusion related to scope of responsibility. Overlapping jurisdictions among key ministries have led to ambiguity as to which ministry has top-level authority for the management of certain resources.

Recent coastal development in Cambodia have been poorly received by various public and private stakeholders. Large-scale land-use decisions and investments in coastal areas, including those associated with the gaming industry and land concessions, are typically undertaken informally without adequate planning, stakeholder consultation or due consideration of long-term environmental and socioeconomic consequences. To halt such major recent coastal developments and shift gears toward a more sustainable development path, Cambodia critically needs stronger institutions guiding integrated Blue Economy development and ensuring the rule of law.

Seen in this light, the establishment of the National Committee for Coastal Management and Development (NCCMD) in 2012 as an inter-ministerial committee tasked with providing oversight of coastal development planning was a positive development. NCCMD's mandate is to improve the effectiveness of coordination, management, and development of coastal areas in Cambodia, such as contributing to promoting sustainability and responsibility for the management and conservation of coastal ecosystem and enhancement of local communities' livelihoods. This mandate, however, has not been adequately fulfilled by the committee to date. Another challenge lies in that the current scope of the NCCMD does not cover jurisdiction over marine spaces or marine fisheries. However, the NCCMD is currently preparing a draft sub-decree on Cambodia's coastal and marine management and development to expand its mandate and jurisdiction over the whole of Cambodia's marine waters as a coordinator with key stakeholders including the National Committee for Maritime Security (NCMS).

At the provincial level, the Provincial Committee for Coastal Management and Development (PCCMD) is chaired by the provincial governor for each of the four coastal provinces, with members from department and district decision makers. The provincial committee should play a key role as a subordinate to the national-level General Secretariat and the NCCMD to monitor and evaluate all development activities, protect the environment and natural resources in the coastal zones, and coordinate between national and sub-national institutions and donors on coastal issues and address coastal environmental issues. Challenges lie in that the PCCMD does not have a clear annual work plan or budget allocation from the national government and carries out its responsibilities with available resources from line departments, relying on the commitment and willingness from its members to plan, implement and address all coastal issues. This could be improved through increased funding allocation, coupled with quarterly workplans developed in coordination between PCCMD, NCCMD and the national-level General Secretariat.

A wide range of sector-specific opportunities exists in Cambodia's coastal provinces, yet these require improved integrated planning and management in order to fully capitalize on them and resolve any perceived intersectoral conflict. While the establishment of the NCCMD and PCCMD, the emergence of ICM approaches, the breadth of marine policy documents published, and the progress in MSP are positive steps towards a sustainable Blue Economy, the application of these instruments needs to be strengthened and the implementation scaled-up and integrated within a broader cross-sector framework to achieve meaningful sustainable Blue Economy objectives.

There is also a current lack of government funding and private-sector sustainable investment for coastal and marine management, reflecting institutional gaps and low sectoral awareness and support for integrated planning and management approaches. While there is some funding for ICM implementation at the sub-national and local levels, the national government budget allocation for direct ICM implementation is lacking. In and around MPAs, there is no overall mechanism to direct external funding or revenues collected from fees, fines, and taxes back into the MPA system to cover operational costs, infrastructure investments, or habitat restoration efforts, except for a small revenue collection from boat ticket fees for the Koh Rong MPA. Though management authorities are increasingly cognizant of the critical importance of domestic revenue and resource mobilization in order to achieve effective ICM implementation, a sustainable financing mechanism for integrated coastal and marine management is yet to be operationalized. Sustainable financing for ICM and MPAs will rely on improved access to and use of existing and emerging budget through public financing, and resources leveraged from the private sector, development partners and global funds through the national coastal and marine programs. This will largely depend on the arrangements and program designs from the central government, including using development finance to incentivize private sector investment in sustainable coastal development.

There is also a pressing need to build capacity at the central and local levels to address a range of coastal and marine natural resource and environmental management issues. Institutional

and technical capacity building has been consistently raised as a priority activity to improve the effectiveness of ICM implementation, yet this has been limited due to inadequate budget allocation from the central government. Importantly, there appears to be a strong interest among relevant national and sub-national staff to generate additional knowledge through strengthened local research capacity, training, and direct research. Particular areas that could benefit from improved technical skills are monitoring and evaluation, proposal development, coastal planning, coastal use conflict resolution, geographic information system (GIS), economic valuation, coastal erosion management, environmental monitoring and marine biodiversity assessment. Moreover, coastal and marine development practices require a more evidence-based approach to informing policy making and planning.

MSP and MPA Development

Since 2007, the Royal Government of Cambodia has incorporated MSP elements into planning documents and processes, including spatial zoning of MPAs, ecosystem mapping through GIS, and developing responses to pollution and climate change issues. The most contemporary framework underpinning ongoing MSP implementation in Cambodia is a draft marine spatial plan for Cambodia's Exclusive Economic Zone (EEZ) developed by the Ministry of Environment (MoE) in collaboration with the Chinese National Ocean Technology Centre (NOTC). This process involved consolidating available spatial datasets into overlaying maps, and zoning these areas based on their functional uses. Outputs from stakeholder consultations across the coastal provinces, coupled with national-level, cross-sectoral workshops in Phnom Penh, resulted in the identification of nine functional types and 33 marine functional zones. Given the increasing scale and intensity of marine resource extraction and maritime area usage in Cambodia, coupled with the complexity of balancing the needs of different stakeholders, ongoing adaptation of existing MSP frameworks is highly important.

MPAs are receiving increasing attention in Cambodia as a means to complement the existing protected area network, safeguard marine biodiversity and promote sustainable resource use. While early attempts were made to incorporate marine and coastal areas into protected area systems, until recently, these sites have experienced limited management, with no zoning, monitoring or active protection of marine habitats. More recently, community-based management approaches (e.g., Marine Fisheries Management Areas (MFMAs)) have played a central role in Cambodia's coastal management, underpinned by a robust legal framework. MFMAs are co-managed by Community Fisheries (Cfis), comprising elected village members responsible for local fisheries management measures and representatives from the Fisheries Administration (FiA) under the Ministry of Agriculture, Forestry and Fisheries (MAFF).

Approximately 3.5% of Cambodia's EEZ is currently designated or proposed as a form of MPA, including Wildlife Sanctuaries, Marine National Parks (MNPs), Ramsar sites and MFMAs. Cambodia's two existing MPAs are the Koh Rong MNP and the Kep MFMA, which cover nearly 60,000

ha (hectares) across three provinces. Additional MPAs are at various stages of the planning process, including the Koh Sdach MFMA, Koh Kong MNP, Peam Krasop Wildlife Sanctuary (PKWS) and Koh Kapik Ramsar site, and Kampot MFMA.

Roadmap for the Development of Blue Sectors

This report details opportunities for sustainable improvements in fisheries, tourism, and shipping and ports, as well as exploring emerging blue growth areas, such as blue carbon. This includes a sector-by-sector analysis of the aforementioned key Blue Economy sectors.

The sustainable management of Cambodia's fisheries sector (freshwater and marine) is vital to ensuring food security, health, and livelihoods for coastal communities. While marine fisheries contribute a relatively small proportion of national-level fisheries production, they act as a significant source of direct livelihoods to communities living in Cambodia's coastal provinces. In addition, actual marine fisheries production is likely underestimated due to the large volume of family-scale fisheries and illegal fishing activities, both of which are mostly unrecorded. To address the current challenges to the fisheries sector highlighted in Chapter Two, Cambodia requires an improved legal framework for the fisheries sector, and institutional mechanisms for overseeing sanitary control at all stages of production, including capture, handling, processing, and marketing. Furthermore, a 2015 assessment that aimed to identify where improvements could be made across the fisheries supply chain, highlighted opportunities to further develop the fisheries sector through increasing productivity, better management of resources, upgrading of the infrastructure and strengthening the institutional climate. The proposal published a roadmap for marine fisheries value chain development which notes opportunities for improvements at several entry points in the fisheries value chain.

Cambodia's tourism sector is anticipated to be a key driver of economic recovery in the post-COVID19 period. If efforts are channeled into ecotourism approaches (such as birdwatching, fishing, snorkeling, diving, camping, hiking, kayaking and adventure tourism in natural areas), then there is significant potential for tourism to provide socioeconomic benefits, and help ensure the sustainable management of Cambodia's natural coastal assets. In addition, opportunities exist to generate finance from ecotourism revenues (e.g., park fees) which can provide a mechanism for sustainable financing to support the management of Cambodia's MPA network. These approaches are already being explored, and Cambodia's Ministry of Tourism (MoT) is currently focusing on promoting ecotourism sites within protected areas, though further support is needed to scale-up efforts in coastal provinces. To improve coastal tourism planning in Cambodia, lessons can be learned from programs such as the Reef Resilience Network for designing sustainable tourism plans that are locally adaptable, that benefit people's livelihoods, and generate funding for conservation.

Cambodia's shipping and ports industry is a major contributor to the national economy, though local employment opportunities remain low. Given that shipping is the main transportation method for food products, energy, materials and consumer goods, there is potential to implement sustainability and social improvements. Cambodia's Blue Economy could benefit from sustainable ocean-based trade, driven by focused investment into transport infrastructure, service improvements and policy reforms. For example, new international regulations require the shipping industry to make improvements in emissions, waste, and ballast water treatment. Opportunities for improving socioeconomic impacts for local resource users include a reformed fee structure for local resource users, whereby they are charged low or no fees for use of ports and cold-storage units. Broader regional collaboration on mitigating risks arising from port construction and dredging, oil spills, and additional pollution (garbage, sewage) from ships and ports, is also a priority.

Balancing multiple social, economic development and environmental objectives for current and future uses requires coordinated planning efforts with integration across all contributing sectors. We highlight five broad cross-cutting development objectives for progressing a sustainable Blue Economy in Cambodia that are relevant to all sectors:

1. **The institutional (legal and policy) framework.** A transparent, inclusive, and equitable governance structure will promote strong decision making with accountability and form a solid foundational enabling environment to support implementation. The regulatory role of the Government and its constituencies needs to be strengthened to encourage allegiance to the goals and engagement from stakeholders.

2. **Integrated planning and zonation.** Access to high-quality education, trainee pathways, job opportunities and local investment opportunities in an integrated planning framework promotes social equality alongside sustainability targets through cross-sector collaboration. Cross-sector collaboration in coastal management and planning needs to be advanced to achieve diverse socioeconomic and sustainability targets.

3. **MPAs and other area-based conservation areas.** Increasing the coverage and effectiveness of areas that aim to sustainably use marine and coastal resources and protect high value marine and coastal assets and ecosystem services, including blue carbon. For example, community-based fisheries and eco-tourism can support sustainable use.

4. **Capacity building.** Investing in research, technology, and innovation, establishing partnerships between Government, private sector, and civil society both across the region and internationally, to build capacity, skills and knowledge of managing coastal and marine spaces for sustainable use.

5. **Sustainable financing.** Driving investment into Blue Economy opportunities through sustainable investment vehicles will promote economic efficiency, incentivize sustainable initiatives, diversify livelihoods, reduce vulnerability, and improve resilience to economic and environmental shocks.

This report provides detailed recommendations for each of these objectives to advance the development of Cambodia's Blue Economy framework.

CHAPTER 1

Introduction and Thematic Scope

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1.1 Objective and Structure

During the 38th Association of Southeast Asian Nations (ASEAN) Summit on the 26th October 2021, members of ASEAN provided a declaration on the Blue Economy. ASEAN members committed themselves to cooperating in the promotion of the Blue Economy by engaging and partnering with relevant stakeholders such as the private sector (including micro-, small-, and medium-enterprises), financial institutions, youth, the scientific community, and academia, and to strengthen cooperation among ASEAN Member States to pursue greater understanding of the Blue Economy. As a member of ASEAN, it is timely for Cambodia to begin the process of strengthening the development of a sustainable Blue Economy.

This report has been developed to support Cambodia's commitment to sustainable Blue Economy development. The report is intended to provide an analysis of, and subsequent recommendations for, blue sector development around three fundamental areas of marine policy, marine spatial planning, and coastal livelihoods. To this end, the report consolidates existing knowledge and data related to Cambodia's ocean and coastal resources and provides recommendations to support the development of a sustainable Blue Economy for Cambodia. This report builds upon the previous efforts and knowledge of scientists, practitioners, and decision makers, including ecological assessments, descriptions of sites, the development of various frameworks and roadmaps, and the implementation of a broad range of strategies and activities. It also recognizes the impressive work done by the Royal Government of Cambodia (RGC), at a national and sub-national scale, in coastal development, natural resource management and marine conservation.

This report is structured as follows:

- *Chapter 2* outlines a literature review and gap analysis on the current knowledge base of Cambodia's Blue Economy with respect to natural assets and ecosystem services, coastal livelihoods, vulnerability to climate change and marine pollution;
- *Chapter 3* describes current marine policy frameworks in Cambodia, highlighting recommendations for reforms and opportunities for capacity development;
- *Chapter 4* provides an overview of Marine Spatial Planning application in Cambodia and efforts to support area-based management (e.g., Marine Protected Areas); and
- *Chapter 5* provides an evaluation of Cambodia's current blue sector industry, focusing on tourism and fisheries sectors.

Box 1.1 Definitions: Blue Economy vs Ocean Economy

The 'Blue Economy' concept describes a strategy for safeguarding the world's oceans and marine resources. In 2017, the World Bank (WB) and United Nations Department of Economic and Social Affairs (UN DESA) defined the Blue Economy as *"the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem"*.[3] This definition embraces the multi-dimensions of oceanic sustainability, ranging from sustainable resource extraction to ecosystem health and services, to mitigating marine pollution and safeguarding oceans against the negative impacts of climate change. Importantly, the definition itself requires collaboration across borders and sectors, through various partnerships and stakeholders.

The 'ocean economy' is described as encompassing all economic activities related to ocean and coastal seascapes, covering a range of interlinked sectors, both established and emerging (blue growth sectors). While the ocean economy encompasses all sectors (sustainable or not), a Blue Economy approach is one that focuses on the *sustainable* use of ocean resources for economic growth and improved livelihoods, while preserving the health of ocean ecosystems. Activities are considered sustainable when they can cope with, and recover from, system stresses and shocks (e.g., extreme weather, global pandemics, invasive species), and maintain or enhance capabilities both now and in the future without undermining the underlying natural resource base. The Blue Economy can encompass a multitude of intersectional activities including the harvesting and trade of marine resources, extraction, and use of marine non-living resources (oil and gas), use of renewable non-exhaustible natural energies (wind, wave and tidal), commerce and trade in ocean and

[3] World Bank and United Nations Department of Economic and Social Affairs (2017). *The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries*. Retrieved from Washington DC.

coastal environments, and indirect contribution to economic activities and environments. A Blue Economy may emerge when economic activities are in balance with the long-term capacity of ocean ecosystems to support the activity in a sustainable manner. The concept of a Blue Economy highlights the need to balance two seemingly conflicting priorities of growth and development, and the safeguarding of ocean resources.

1.2 Overview of Cambodia's Blue Economy Potential

Cambodia's coastal and marine environments support a diversity of industries, driving economic growth, job creation and food security, through tourism, fisheries, aquaculture, trade, energy development, and other natural resource–based activities. These sectors are spread across the four coastal provinces of Kep, Kampot, Preah Sihanouk and Koh Kong and provide livelihoods and employment to an estimated 2.4 million people.[5]

Cambodia's ocean economy provides an estimated US$2.4 billion in value added, equating to approximately 16% of the country's gross domestic product (GDP).[4] Coastal tourism has been expanding rapidly in recent years (pre-Covid-19), with the number of international tourists increasing by 72% from approximately 2.9 million in 2011, to 5.0 million in 2016. In 2016, Preah Sihanouk Province alone attracted almost 2.4 million tourists, and generated US$96 million in revenue.[5] In addition, mostly nature-based coastal tourism attracted an average of 2 million visitors annually in the pre-Covid period, including domestic and international tourists. In 2016, the Cambodian tourism sector directly supported 988,000 people through employment (inclusive of hotels, travel agents, airlines, and other transport services), making up 11.4% of the country's total employment for that year.[5]

Cambodia's coastal areas also provide critical ecosystem services that provide natural protection to coastal communities against adverse impacts of climate change. The total economic value of the coastal and marine ecosystems (mangroves, seagrass, tidal swamps, and coral reefs) is estimated to range between US$200.4 million and US$583.4 million annually.[5] In-migration to coastal areas has resulted in the degradation of coastal natural resources. Rapid economic development in coastal areas, without well-coordinated planning, has led to a significant increase in pressure and demand for more coastal resources, accelerating overexploitation and environmental degradation. Major drivers of resource overexploitation and habitat degradation range from fuelwood production, salt farming, sand mining, coastal small-scale fisheries, and brackish shrimp aquaculture, to port development and uncontrolled coastal tourism.

4 http://pemsea.org/sites/default/files/NSOC_Cambodia.pdf
5 Cambodia State of the Ocean and Coast Report (2018)

1.3 Threats to Meeting Cambodia's Blue Economy Potential

Coastal development has come at the cost of Cambodia's coastal and marine seascapes, evidenced by declining marine biodiversity, habitat loss and the associated depletion of natural capital due to lack of integrated planning and management. Threats to fisheries come from conflict between small-scale and commercial fishing, overfishing, IUU fishing, habitat conversion and pollution. IUU fishing not only threatens ocean ecosystems and sustainable fisheries, but it also disadvantages small-scale fishers and coastal communities, who depend on these resources for subsistence, food security and livelihoods. Increasing pressures from tourism have also resulted in habitat degradation, pollution and increased waste generation owing to limited carrying capacity, irresponsible tourism practices and limited human resource skills. Finally, infrastructure development to support ports and shipping has brought challenges related to construction and dredging, oil spills from operations and accidents and pollution from ships and ports. Underpinning these threats is a backdrop of historically weak and uncoordinated governance, coastal planning, and development.

Other threats operating at a global scale such as climate change have serious implications for Cambodia's coastal seascapes and communities, increasing threats of drought, storms, heat waves, rising sea levels and warming waters. In Cambodia, climate change has resulted in beach erosion and inundation of coastal lands, thereby increasing the costs of protecting coastal communities and infrastructure from climate impacts. Typhoons and tropical storms regularly cause significant damage to coastal economic activities, infrastructure, and livelihoods. The low-lying nature of Cambodia's coastal and island provinces make communities particularly vulnerable to such events, impacting social welfare, livelihoods, coastal habitats, and ecosystem services. From an economic perspective, the report *"Addressing Climate Change Impacts on Economic Growth in Cambodia"* indicates that climate change is projected to reduce average GDP growth to 6.6% and absolute GDP by 0.4% in 2020, 2.5% in 2030 and 9.8% in 2050.[6] Furthermore, Cambodia's Second National Communication to the UN Framework Convention on Climate Change (UNFCCC) (2016), indicates permanent loss of 25,000 ha of coastal land with a sea level rise of 1 meter.

The long-term sustainability of Cambodia's Blue Economy cannot be ensured unless measures are in place to mitigate the above-mentioned threats, and the underlining governance framework is improved. It is important to note that given the broad diversity of industry and sector that the Blue Economy covers, differing values held by stakeholders will favor particular focuses or interpretations of the definition to meet their own, sometimes competing, interests. Rival business, development, and conservation interests interact and compete with traditional livelihoods in this area, and can result in challenges with regard to the equitable use of natural resources, food security, and well-being.[7] This highlights the potential for conflicts that may arise due to different stakeholders' preferences or interests, but also a functional institutional mechanism to resolve such conflicts if active engagement of stakeholders is incorporated in the development of a Blue Economy strategy.

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6 NCSD, MoE & MEF, (2019). Addressing Climate Change Impacts on Economic Growth In Cambodia, NCSD pp 84.

7 Cohen, P.J., et al., (2019). *Securing a Just Space for Small-Scale Fisheries in the Blue Economy*. Frontiers in Marine Science, 6.

1.4 Global Context for the Blue Economy

An intensification of ocean economy activities across the globe has resulted in the ocean becoming a new frontier for economic development. According to the United Nations (UN), each year the ocean economy is estimated to turn over between US$3 trillion and US$6.5 trillion, an amount expected to double by 2030. This includes values of employment, and ecosystem services provided by the ocean, including cultural services (non-use value). Since the concept's inception, several country- and regional-level strategies have been developed to help the realization of their Blue Economy potential. For example, the European Union (EU) Blue Economy Report 2021[8] presents an annual overview of the performance of the EU economic sectors related to ocean environments. The EU implements initiatives under the European Green Deal in line with the new approach for a sustainable Blue Economy, and these initiatives rely on reliable, accurate and centralized data for monitoring and aim to implement the UN's 2030 Agenda and Sustainable Development Goals (SDGs).

The Blue Economy is an integral part of the UN SDGs that embody a pressing call to action to address integrated global challenges of poverty, food security, livelihoods, sustainable natural resource use, gender equity and social justice.[9] These goals highlight the importance of inclusive and environmentally sound economic development and the need to balance the economic, social, and environmental dimensions of sustainable development in relation to oceans. Particularly pertinent to the Blue Economy, SDG 14 (Life Below Water) emphasizes the need to adopt specific initiatives to support small-scale fishers to enhance their resilience to climate change and depleting fish stocks. SDG 14 also highlights the importance of MPAs as a management tool to support both the conservation of marine biodiversity, and to safeguard ecosystem services and coastal livelihoods (e.g., fisheries and tourism). The UN declared 2021 to 2030 as the 'Decade of Ocean Science for Sustainable Development' to support efforts to reverse the cycle of decline in ocean health and gather ocean stakeholders worldwide behind a common framework. This framework aims to ensure ocean science can fully support countries in creating improved conditions for sustainable development of the ocean.

Marine Protected Areas (MPAs) are a central tool to supporting Blue Economy strategies, as highlighted in the Convention on Biological Diversity (CBD) Aichi Target 11 and SDG 14.5, that aimed to protect at least 10% of coastal and marine environments globally by the year 2020. The inclusion of 'other effective area-based conservation measures' (OECMS) in Aichi Target 11 recognizes the conservation, economic and social values of areas that do not meet the formal definition of a protected area, but whose presence contributes to the conservation of biodiversity, such as some networks of community-based management areas (e.g., Marine Fisheries Management Areas) and temporary or permanent closures of fisheries. Over time, functional MPAs can increase fish diversity and biomass, leading to spillover into adjacent open-access waters.[10,11] MPA zoning can also enhance food security for specific resource users by reallocating fishing rights that reduce local competition for

8 European Commission (2021). The EU Blue Economy Report. 2021. Publications Office of the European Union. Luxembourg.
9 United Nations, 2015. Transforming Our World: The 2030 Agenda for Sustainable Development. New York: UN Publishing
10 NRC, Marine protected areas: tools for sustaining ocean ecosystems. 2001, National Research Council, National Academy Press: Washington D.C.
11 Topor, Z.M., et al., *Marine protected areas enhance coral reef functioning by promoting fish biodiversity*. Conservation Letters, 2019: p. e12638.

fishes and supports other livelihoods such as tourism through discrete tourism-zones.[12,13] A growing number of countries are expected to commit to a new MPA target that aims to protect at least 30% of the world's oceans by 2030: the '30x30 target'. The science underpinning this target suggests that protecting 30-40% of an ocean area is necessary to achieve conservation and fisheries benefits.[14]

As a party to the CBD, Cambodia has a responsibility to protect its marine biodiversity and the ecosystem services they support and monitor this process accordingly. Globally, a synergy of human-generated threats including overfishing, illegal, unreported, and unregulated (IUU) fishing, poorly planned coastal development, climate change and pollution have resulted in the rapid decline in marine biodiversity, evidenced by reductions in ocean wildlife as high as 90% for some species.[15] For example, since 1970, the global abundance of oceanic sharks and rays (indicator species for ocean health) has declined by 71%.[16] In addition, global wetland areas have declined by more than 85% since the 1970s, and live coral cover is down by approximately 50% since the 1870s.[17] This decline has grave consequences for the >3 billion people worldwide who rely on oceans for their livelihoods, >200 million of whom depend directly or indirectly on marine fisheries.[18] While a large number of technical reports highlight that Cambodia's marine biodiversity is declining, this remains largely anecdotal, and difficult to quantify given the lack of long-term and systematic biodiversity monitoring.

The Blue Economy definition (see above) implies an alignment with social objectives and small-scale fisheries concerns, highlighted in the UN Food and Agriculture Organisation's (FAO's) Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines). Small-scale fishers represent 90% of the individuals engaged in capture fisheries globally, though these often remain informal, lacking regular monitoring and effective management.[19] Women, who make up 47% of the people working in fisheries, are particularly vulnerable, due to the concentration of low-skilled, low-paid jobs with irregular, seasonal employment in postharvest operations, often working without contracts or health, safety, and labor rights protections.[20] Incorporating the SSF Guidelines into Blue Economy strategies will help to ensure that the rights, interests, and voices of small-scale fishers are incorporated into the management and development of ocean resources. The SSF Guidelines also highlight the need to adopt initiatives to support small-scale fishers to enhance resilience to climate change. Innovative and adaptive measures, requiring minimal resources to implement, are critical for ensuring that vulnerable

12 Christie, P., A.T. White, and D. Buhat, *Community-based coral reef management on San Salvador island, the Philippines*. Society & Natural Resources, 1994. 7(2): p. 103-117.

13 Mascia, M.B., C.A. Claus, and R. Naidoo, *Impacts of marine protected areas on fishing communities*. Conserv Biol, 2010. 24(5): p. 1424-9.

14 O'Leary, B.C., et al., *Effective Coverage Targets for Ocean Protection*. Conservation Letters, 2016. 9(6): p. 398-404.

15 Luypaert T., et al. (2020) Status of Marine Biodiversity in the Anthropocene. In: Jungblut S., et al. (eds) YOUMARES 9 - The Oceans: Our Research, Our Future. Springer, Cham. https://doi.org/10.1007/978-3-030-20389-4_4

16 Pacoureau, N., et al., *Half a century of global decline in oceanic sharks and rays*. Nature, 2021. 589(7843): p. 567-571.

17 Díaz, S, et al. "Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services"

18 United Nations, 2015. Transforming Our World: The 2030 Agenda for Sustainable Development. New York: UN Publishing

19 FAO. (2015). Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. Retrieved from Rome: http://www.fao.org/3/a-i4356en.pdf

20 FAO (2013), *Good practice policies to eliminate gender inequalities in fish value chains*, p. xi.

coastal communities are able to adapt to, and recover from, extreme climatic events, building resilience to withstand fluctuations in external support.

Healthy oceans are also critical to the achievement of the goals of the 2015 Paris Agreement. Its primary goal is to "strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change". To achieve this long-term goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate-neutral world by 2050. Oceans absorb approximately 23% of human-induced CO_2 emissions and over 90% of the excess heat created by human-induced greenhouse gases. This represents a high-impact opportunity to include ocean-specific strategies, such as climate-informed Blue Economy planning, that can help countries reach their climate targets. The threat of climate change is particularly pressing for coastal and nearshore regions in the tropics, which will also need to address adaptation challenges acutely experienced by vulnerable communities.[21] This is particularly true of low-lying parts of Cambodia's coastline[22] which are particularly vulnerable to rising sea levels and the intensification of extreme climatic events.

[21] Glaser, M., et al., *Measuring and understanding sustainability-enhancing processes in tropical coastal and marine social–ecological systems*. Current opinion in environmental sustainability, 2012. 4(3): p. 300-308.

[22] Bureau, P.R. 2021; Available from: https://www.prb.org.

CHAPTER 2

Current State of Knowledge of Cambodia's Marine and Coastal Resources

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2.1 Overview of Coastal Provinces, Ecosystems and Biodiversity

Cambodia's coastline extends approximately 440 km across four provinces and three municipalities.[23] The four coastal provinces of Koh Kong, Preah Sihanouk, Kampot and Kep (Figure 1), are home to over one million people,[24] most of whom rely heavily on marine and coastal resources for their livelihoods. Within the four provinces, there are 21 districts, 152 communities and 705 villages. Cambodia's EEZ extends 200 nautical miles (370 km) from the coastline, covering approximately 55,600 km^2 (~5,560,000 ha) of the Gulf of Thailand, and including 70 islands.[25]

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23 MoE & China National Ocean Technology Center. (2018). Initial Cambodia Marine Spatial Planning (2018-2023).

24 National Institute of Statistics, Ministry of Planning. (2019). General Population Census of the Kingdom of Cambodia 2019.

25 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.

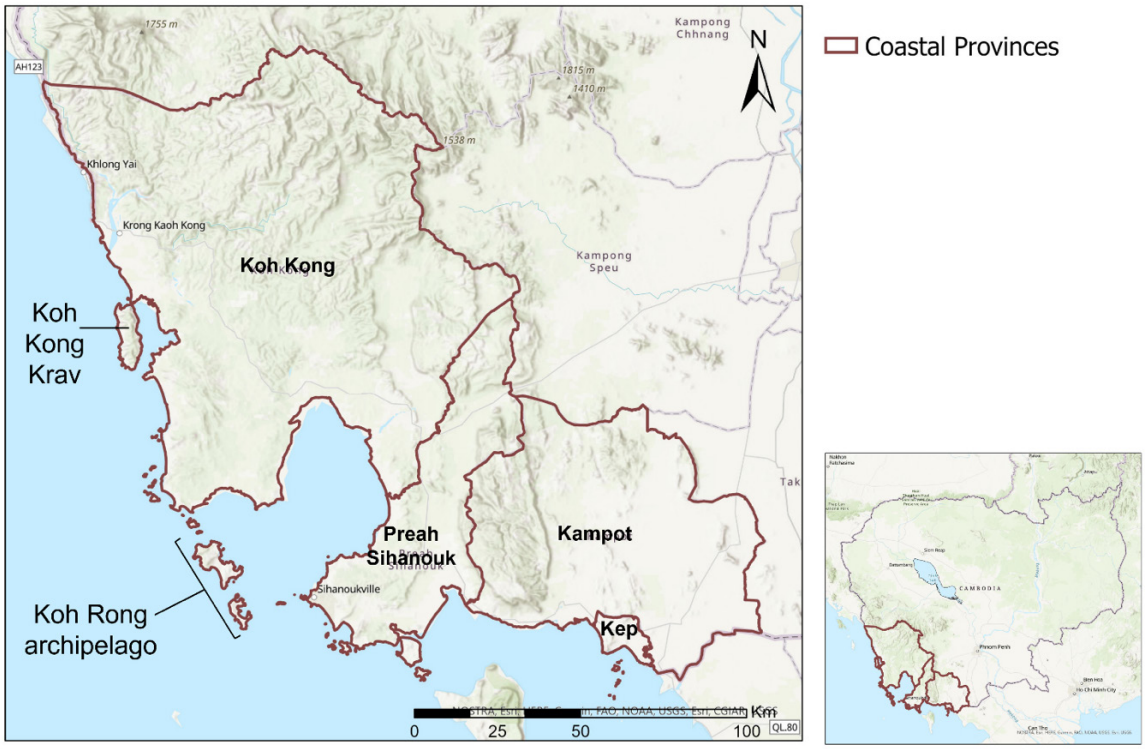

Figure 2.1 Map of the Cambodian Coastal Region, Highlighting the Four Coastal Provinces: Koh Kong, Preah Sihanouk, Kampot and Kep.

Cambodia's coastal waters support a rich diversity of marine ecosystems including mangrove forests, coral reefs, and seagrass meadows. The total area of mangrove forest covers approximately 51,603 ha as of 2019,[26] distributed along the mainland and island coastlines, and the banks of estuaries. The majority of mangrove forests are found within Koh Kong province and are considered to be wetlands of international importance.[27] Mangroves are an important ecosystem in Cambodia due to the essential habitat they provide for juvenile and adult marine fish that are in turn a major food source for coastal populations, the protection they provide coastlines from erosion and extreme weather events, and the vast amounts of carbon they store and sequester above and below ground. Coral reefs cover an area of approximately 2,806 ha (28 km^2), fringing the coastlines, and are dispersed throughout the islands,[28] the majority of which are found in Preah Sihanouk province. Most of Cambodia's coral reefs are located near offshore islands, in shallow depths between 2.5 and 30 meters below the surface,[29] and include an estimated 111 hard and 17 soft coral species. Coral reefs are highly valuable to coastal communities due to the ecosystem services they provide including food security, income generated from tourism, and coastal protection from erosion, storms, and inundation.[30] Seagrass meadows cover approximately 32,492 ha, including nine species of seagrass.[31]

26 Kozhikkodan Veettil, B., & Quang, N. X. (2019). Mangrove forests of Cambodia: Recent changes and future threats. *Ocean & Coastal Management*, 181, 104895. doi:https://doi.org/10.1016/j.ocecoaman.2019.104895

27 Johnson SN & Munford GB, 2012. Country Environment Profile: Royal Kingdom of Cambodia *European Union Delegation to Cambodia* 44 pp.

28 Boon, PY. (2011). A Review of Marine Protected Area Monitoring Programmes. Flora and Fauna International

29 Krell B, Skopal M & Ferber P 2011. Koh Rong Samloem and Koh Kon Marine Environmental Assessment, Marine Conservation Cambodia.

30 Brown, C. J., Abdullah, S., & Mumby, P. J. (2015). Minimizing the short-term impacts of marine reserves on fisheries while meeting long-term goals for recovery. *Conservation Letters*, 8, 180-189.

31 Sudo, K., Quiros, et al., (2021). Distribution, Temporal Change, and Conservation Status of Tropical Seagrass Beds in Southeast Asia: 2000–2020. *Frontiers in Marine Science*, 8(779). doi:10.3389/fmars.2021.637722

Seagrass meadows serve as habitat, nursery grounds and as a food source for a wide variety of marine life, support the purification of the ocean, and store and sequester carbon.

Cambodia's marine and coastal habitats are home to a biodiverse array of fish, invertebrates, and marine mammals. Marine fish in Cambodia are estimated to include 525 species, from 202 genera and 97 families.[32] Marine invertebrates are estimated to represent 20 species of crustaceans, 42 species of marine gastropods, 24 species of shellfish, and the super-rare Neptune's Cup Sponge (*Cliona patera*). Near-shore waters are also home to 11 species of marine mammals including the Dugong (*Dugong dugon*), Irrawaddy dolphin (*Orcaella brevirostris*), Spinner dolphin (*Stenella longirostris*), Indo-Pacific Humpback dolphin (*Sousa chinensis*), Common dolphin (*Delphinus delphis*), Bottlenose dolphin (*Tursiops truncatus*), Spinner dolphin (*Stenella longirostris*), Finless porpoise (*Neophocaena phocaenoides*), and up to five species of sea turtles: Olive Ridley (*Lepidochelys olivacea*), Hawksbill (*Eretmochelys imbricata*), Loggerhead (*Caretta caretta*), Green (*Chelonia mydas*) and Leatherback (*Dermochelys coriacea*).[33]

Box 2.1 Koh Kong Province

Koh Kong is the largest coastal province in Cambodia, with 273 km of coastline bordering Thailand, and a total land area of 10,046 km2 including the Cardamom Mountains – Southeast Asia's largest contiguous rainforest. The province is made up of six districts and one municipality with a total population of 123,618 people, of which 57.5% depend on agriculture and fishing for their livelihood.[34]

Koh Kong is particularly rich in coastal biodiversity including seagrass meadows (3,993 ha), and coral reefs (602 ha).[35] Furthermore, Koh Kong is home to the country's largest area of mangrove forests, with over three-quarters of Cambodia's mangrove forests (80%) located in the province (41,122 ha).[36] As a result of the valuable coastal resources, numerous nature-based tourism sites are located along the islands and coastline.

The Koh Kong coastline is undergoing rapid development, including new port facilities being developed for international trade. This Sino-Cambodian port development project, in Dara Sakor, is planned to span over 45,000 ha, made up of casinos, golf courses, resorts, an airport and a deep-water port.

32 Rizvi, A. R., & Singer, U. (2011). *Cambodia Coastal Situation Analysis*. IUCN: Gland, Switzerland.
33 McNamara, A., Mizrahi, M. Vibol, O., & West, K. (2016). *Marine Turtle Status Report*. Fauna & Flora International.
34 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.
35 MoE & China National Ocean Technology Center. (2018). Initial Cambodia Marine Spatial Planning (2018-2023).
36 Kozhikkodan Veettil, B., & Quang, N. X. (2019). Mangrove forests of Cambodia: Recent changes and future threats. Ocean & Coastal Management, 181, 104895. doi:https://doi.org/10.1016/j.ocecoaman.2019.104895

Box 2.2 Preah Sihanouk Province

Preah Sihanouk province covers a total land surface of 2,658 km^2 and 109 km of coastline.[37] The province is made up of three districts and the Sihanoukville Municipality, with a population of 302,887 people and an annual population growth rate of 2.8%.[38] The province's capital city of Sihanoukville is the third-most-populated city in Cambodia.

Coral reefs are located around most of the islands. Koh Rong Archipelago is one of the nation's most popular diving destinations.[39] The latest estimates report there are 1,198 ha of coral reefs, 1,360 ha of seagrass[40] and 7,539 ha of mangroves[41] in Preah Sihanouk. The coral reefs within the Koh Rong Archipelago were the first reefs in Cambodia to undergo long-term monitoring at 20 permanent transects, across the six management zones. The most recent monitoring was conducted in 2019-2020.[42] Following application of the monitoring methods, a national benchmark was developed to support a Cambodian Coral Reef Monitoring Network.

Historically, coral reefs and associated fisheries in the Koh Rong archipelago were heavily exploited, shown by a depletion of marine resources, and low biomass of key reef fish: grouper and parrotfish. In 2016, the area was gazetted as a Marine Fisheries Management Area (MFMA), and in 2018 it was upgraded to Koh Rong Marine National Park (*See Chapter 4*). Signs of recovery are evident with hard coral cover increasing, biomass of fish stabilizing, and high overall fish diversity.[43]

Preah Sihanouk has an economy supported by shipping, tourism and agriculture. Preah Sihanouk province has undergone rapid growth in infrastructure and urban development, in alignment with the Cambodian Industrial Development Policy 2015-2025 (Royal Decree 581, dated 30 May 2020). Preah Sihanouk Autonomous Port (PSAP) is the main public deep-sea port of Cambodia and earned a total revenue of US$70 million in 2016, of which cargo shipments generated revenues of US$53 million (76%). The total tonnage has been rising consistently and is expected to grow further in the coming years.[44] Japan International Cooperation Agency (JICA) and a group of Japanese companies have supported development improvements of PSAP.

37 MoE & China National Ocean Technology Center. (2018). Initial Cambodia Marine Spatial Planning (2018-2023).

38 National Institute of Statistics & Ministry of Planning. (2019). General Population Census of the Kingdom of Cambodia 2019: Provisional Population Totals. Retrieved from https://cambodia.unfpa.org/sites/default/files/pub-pdf/PopCen2019-ProvReport -Final-Eg-27 July 2019.pdf

39 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.

40 MoE & China National Ocean Technology Center. (2018). Initial Cambodia Marine Spatial Planning (2018-2023).

41 Kozhikkodan Veettil, B., & Quang, N. X. (2019). Mangrove forests of Cambodia: Recent changes and future threats. Ocean & Coastal Management, 181, 104895. doi:https://doi.org/10.1016/j.ocecoaman.2019.104895

42 Glue, M., Teoh, M., & Duffy, H. (2020). Interim Report: Status of coral reef habitat in the Koh Rong Marine National Park. Fauna & Flora International.

43 Glue, M., Teoh, M., & Duffy, H. (2020). Interim Report: Status of coral reef habitat in the Koh Rong Marine National Park. Flora and Fauna International.

44 PEMSEA. (2019). National State of Oceans and Coasts of Cambodia. Quezon City, Philippines.

Box 2.3 Kampot Province

Kampot is the third-largest coastal province in Cambodia, with a land area of 4,687 km^2, coastline of 36 km, and a marine area of 55,800 ha (558 km^2). Kampot borders Vietnam in the east and extends into the Gulf of Thailand. The province is made up of 93 communes and one municipality, with a population of 592,845 people. Kampot is the most densely populated of the four coastal provinces, housing over 50% of Cambodia's coastal population.[45]

The seagrass meadows, coral reefs and mangroves in Kampot province are threatened by coastal development and climate change. There are 2,444 ha of mangroves and 953 ha of coral reefs estimated to remain in Kampot province.[46] In 2006/2007, it was estimated that 25,241 ha of seagrass meadows were in the near-shore waters. However, two-thirds of this seagrass meadow were lost by 2014 due to seaport expansion and coastal development, with only 8,435ha remaining.[47]

Currently, a new marine protected area is being proposed in Kampot province, to protect the seagrass, coral reefs and marine mammals from ongoing and planned industrial development, land reclamation and illegal fishing (*see Chapter 4*).

Box 2.4 Kep Province

Kep province is significantly smaller than Cambodia's other coastal provinces, with a coastline of only 21 km, a land area of 375 km^2 and a sea area of 647 km^2, very close to the border with Vietnam. Originally a municipality of Kampot, Kep was established as a separate province through a Royal Decree in 2008. Kep province houses 41,798 people from 2 districts, and is composed of 5 communes and 16 villages.[48]

Kep province has 498 ha of mangrove forests,[49] 3,096 ha of seagrass meadows and 53 ha of coral reefs.[50] Aquaculture, ecotourism, agriculture (rice, pepper and salt) and fishery activities are dominant livelihood activities in the province.

The Koh Por and Koh Tonsay Archipelago MFMA was established in 2018, covering 11,307 ha of coral reefs, seagrass beds and mangrove forests, including habitat of the endangered Irrawaddy dolphin, dugong, sea turtles and seahorses (*see Chapter 4*). The protected archipelago is a popular tourism site.

45 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.

46 Kozhikkodan Veettil, B., & Quang, N. X. (2019). Mangrove forests of Cambodia: Recent changes and future threats. Ocean & Coastal Management, 181, 104895. doi:https://doi.org/10.1016/j.ocecoaman.2019.104895

47 Supkong, P. and Bourne, L. (2014). A survey of seagrass beds in Kampot, Cambodia. Thailand: IUCN. 91pp.

48 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.

49 Kozhikkodan Veettil, B., & Quang, N. X. (2019). Mangrove forests of Cambodia: Recent changes and future threats. Ocean & Coastal Management, 181, 104895. doi:https://doi.org/10.1016/j.ocecoaman.2019.104895.

50 MoE & China National Ocean Technology Center. (2018). Initial Cambodia Marine Spatial Planning (2018-2023).

2.2 Socioeconomic Baseline Information

Cambodia's coastal communities account for 6.94% of the national population. As of 2019, Kampot had the largest population of the four coastal provinces (592,845; Table 2.1), followed by Preah Sihanouk (302,887), Koh Kong (123,618) and Kep (41,798). The national rate of population growth in Cambodia averaged 1.79% per year from 1998 to 2014.[51] Almost half (41%) of the people inhabiting the coastal areas migrated from interior provinces. Most households along the coast make a living from fishing and farming.[52]

Table 2.1 Population Breakdown of Coastal Provinces from 2019 Census.[53]

Province	Households	Males	Females	Total population (% of total coastal population)
Kampot	138,374	280,537	312,308	592,845 (56%)
Kep	9,347	20,615	21,183	41,798 (4%)
Koh Kong	26,716	62,304	61,314	123,618 (12%)
Preah Sihanouk	51,983	153,255	149,632	302,887 (29%)
Total	**226,420**	**516,711**	**544,437**	**1,061,148**

Cambodia's coastal and marine waters support three main industries: fisheries (including aquaculture), ports and shipping, and tourism. The total value of these three industries is estimated at US$2.4 billion in value added, or approximately 16% of the country's GDP (Table 2.2).[54] This figure does not take into account other ocean-related economic activities, such as non-fisheries resource extraction, for which income is not reported. Figures are not readily available on the growth of the ocean economy. Cambodia's main coastal and marine economic activities are discussed in the section below.

Table 2.2 Estimated Economic Value of Cambodia's Coastal and Marine Industries.[55]

Economic Activity	Estimated Gross Value Added (US$ 2015)	Employment
Fisheries and aquaculture[56]	1.1 billion	2.4 million (nationwide; 10,000 estimated for marine fisheries)
Shipping and ports	1.2 billion	944
Coastal and marine tourism[57]	70.1 million (Sihanoukville)	782,500 (nationwide)
Total	**2,385,701,690**	**3,183,444**

51 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.

52 Rizvi, A. R., & Singer, U. (2011). *Cambodia Coastal Situation Analysis*. IUCN: Gland, Switzerland.

53 National Institute of Statistics & Ministry of Planning, 2019

54 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.

55 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.

56 It is not possible from the values published to separate value of inland and marine fisheries; though marine fisheries' value is known to be much smaller than inland fisheries'. World Fish estimate that 10,000 people are employed in marine fisheries https://www.worldfishcenter.org/where-we-work/asia/cambodia/

57 Tourism revenue reported is only for Sihanoukville. Tourism employment figures are not separated from the country-level numbers. PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.

Shipping and ports, including marine transport, storage, and communication, is the most economically valuable marine activity for Cambodia at the national level, earning US$1.2 billion in revenue in 2015. That said, it provides comparatively low employment opportunity compared with fisheries and tourism, with only 944 people employed in the sector (Table 2.2).[58] Three main seaports are located in Preah Sihanouk, Kampot and Koh Kong provinces, as well as numerous smaller sea ports. Cambodia's main commercial and only deep-sea port is the Preah Sihanoukville Autonomous Port (PSAP), located in Sihanoukville at the southeast entrance of Kampong Som Bay. The port can accommodate large ships of 10,000-15,000 tons deadweight. The Koh Kong Port, near the Thai border, is used by small boats for international and domestic trade. The Kampot seaport is small and no longer used for large international shipping. In addition to the main autonomous ports, several private ports and numerous small wooden jetties occur along the coastline and islands. Data on the use of those ports are not readily available.

Fisheries, including aquaculture, is the dominant source of employment in Cambodian coastal provinces and is an economically valuable ocean-based activity. Nationally, fisheries generated US$1.1 billion in economic revenue in 2015 and accounted for 5% of the national gross domestic product (GDP) in 2019;[59] however inland fisheries and aquaculture accounts for 80% of total production. In 2016, Cambodia's fishery production was reported to be 801,000 tons, comprising 509,000 (64%) tons from inland fisheries, 120,000 (15%) of marine fisheries and about 172,000 tons of aquaculture (21%). Total fisheries production grew at an average rate of 5.2% per annum between 2000 and 2015.[60] Furthermore, the fisheries sector is the dominant source of income for 80% of the population in Kampot and Kep, and around 52% of the population of Sihanoukville. In addition to the livelihood contribution of fisheries, fish accounts for 66% of daily animal protein and 19% of total protein in the Cambodian diet. Domestic demand has historically favored freshwater fish, with most marine fisheries products being exported. Coastal aquaculture, including shrimp ponds, crab farms, and green mussel farms, accounts for less than 2% of total aquaculture production.[61]

In 2019, 6,610,000 international tourists visited Cambodia, with annual arrivals steadily increasing since the 466,000 visitors in 2000.[62] Tourism accounted for 17% of Cambodia's GDP on average from 2010-2019.[63] In 2019, tourism revenues reached US$4.9 billion,[64] before dropping sharply amid the global COVID-19 pandemic. Visitor numbers dropped by 80% in 2020 and continued to decline to 15% of their pre-pandemic numbers in 2021.

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58 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.
59 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.
60 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.
61 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.
62 World Data. www.worlddata.info/asia/cambodia/tourism.php
63 Rawlins, M., Kornexl, W., Baral, S., Baromey, N., Martin, N., & Ray, N. (2020). Enabling Ecotourism Development in Cambodia. World Bank: Washington, DC.
64 World Data. Available at: www.worlddata.info/asia/cambodia/tourism.php

The number of visits to ecotourism sites doubled between 2014 and 2019.[65] In 2019, ecotourism accounted for 16% of all tourist visits, with approximately 1 million tourists visiting Cambodia's islands. Nature-based tourism activities, such as birdwatching, fishing, camping, hiking and adventure tourism, are increasing in popularity.[66] Domestic tourism numbers are less widely available, though it is estimated to account for 70% of tourism in Sihanoukville. Domestic tourism maintained reasonable momentum during the pandemic. Tourism is estimated to contribute to between 1.3 million[67] and 2.7 million[68] direct and indirect Cambodian jobs, including jobs in hotels, travel agents, airlines, and other passenger transportation service.

Other non-fisheries resource extraction activities in Cambodia's waters include offshore oil and gas exploration, though revenues from these industries are not reported. Oil is mainly distributed under the continental shelf of the gulf of Thailand, extending through Kampot and Koh Kong provinces. A 2020 working report into offshore oil and gas[69] found there are six offshore blocks, one of which has been established since the 1990s. The blocks are licensed by companies from Singapore (KrisEnergy3, Singapore Petroleum Company), Hong Kong (Polytec Petroleum) and China (China Petrotech Holdings). All refineries are still in the construction phase, with none in operation yet. Initial estimates were in the vicinity of 2 billion barrels of oil and 1 billion cubic feet of natural gas from the six offshore blocks, though actual figures are now believed to be much smaller.[70] Aside from oil and gas, other resources found in the area include quartz sand, charcoal, and salt. Salt production in Cambodia has a long history in Kampot and Kep, where farmers mostly use traditional methods of harvesting salt in the dry season. According to the Ministry of Industry, Science, Technology, and Innovation there are approximately 4,748 hectares of salt ponds in Kampot and Kep, which employ 5,000 workers as of 2019.[71] Preliminary estimates for national coal deposits are approximately 7 million tons, but no commercial-scale mining is in operation. Given that Cambodia is entirely dependent on imported fossil fuels, there is potential for Cambodia to invest in renewable energy sources (e.g., solar, wind) to derive its energy more sustainably and self-sufficiently.

65 MoT (Ministry of Tourism). 2007-2020. Cambodia Tourism Statistics 2007-2020. Cambodia, Phnom Penh: Royal Government of Cambodia. https://www.tourismcambodia.com/tourist-information/tourist-statistic.htm. Note: Coastal areas are included in data on ecotourism by MoT, and some coastal areas like Sihanoukville have significant visitors for business and casinos. This means that ecotourism data likely captures visitors for non-ecotourism activities.

66 Rawlins, M., Kornexl, W., Baral, S., Baromey, N., Martin, N., & Ray, N. (2020). Enabling Ecotourism Development in Cambodia. World Bank: Washington, DC.

67 WTTC (World Travel and Tourism Council). 2019. Travel and Tourism Economic Impact 2018 Cambodia. London: WTTC

68 WEF (World Economic Forum). 2019. The Travel and Tourism Competitiveness Report 2019 – Travel and Tourism at a Tipping Point. Geneva: World Economic Forum. http://www3.weforum.org/docs/WEF_TTCR_2019.pdf.

69 World Bank. Working Report. Offshore Oil and Gas in Cambodia.

70 MoE & China National Ocean Technology Center. (2018). Initial Cambodia Marine Spatial Planning (2018-2023).

71 Pisei,H. (2021). Unseasonable rainfall melts salt production hopes. Publication date 21 April 2021, Phnom Penh Post.

Table 2.3 Basic Geographic and Socioeconomic Indicators for Cambodia.

Indicator	Estimate
Coastline	440 km[72]
Sea area (EEZ waters up to 200 nautical miles, or 370 km)	55,600 km^2
Coastal population (2019)	1,061,148 (6.94% of total population)[73]
Gross domestic product (GDP, in 2020 US$ prices)	US$25.81 billion[74]
Human development index (HDI, 2020)	0.594 (medium human development category—positioning it at 144 out of 189 countries and territories)[75]
Gross national income (GNI) per capita (at 2020 PPP prices)	US$4,250[76]
Existing MPAs (percentage of EEZ)	1.44%[77]

2.3 Threats to Coastal Resources, Ecosystems and Biodiversity

Cambodia's ecosystems, biodiversity and natural resources are threatened by a combination of rapid and unregulated coastal development, illegal, unreported, and unregulated (IUU) fishing practices, climate change and marine pollution. Marine habitats and fish stocks are further threatened by land encroachment for agriculture, fuelwood and charcoal production, seaport expansion, salt and shrimp farming, and coastal development.

The uncontrolled expansion of transport, tourist, industrial and agricultural facilities has placed increasing pressure on coastal resources.[78] The rising level of development pressure is associated with increased levels of marine pollution, soil erosion, and widespread environmental degradation, which are exacerbated by more extreme and frequent climate events impacting coastal provinces. For example, 42% of mangroves were cleared from 1989-2017 (1,415 ha per year) in Koh Kong, Kampot, Preah Sihanouk and Kep provinces to make way for salt farming and aquaculture.[79] In addition to the initial clearing and conversion of natural ecosystems, the increasing volume of municipal and industrial waste arising from an increasing population and industrial growth is causing ongoing pollution, due to poor management of solid waste and wastewater.[80] Agricultural runoff of chemicals and sediment from rice fields, charcoal production, salt harvesting and aquaculture are discharged

72 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.
73 National Institute of Statistics & Ministry of Planning, 2019.
74 World Bank. Available at: www.data.worldbank.org
75 UNDP. (2020). Human Development Report 2020. Briefing note for countries on the 2020 Human Development Report, Cambodia.
76 World Bank. Available at: data.worldbank.org
77 UNEP-WCMC (2022). Protected Area Profile for Cambodia from the World Database of Protected Areas, April 2022. Available at: www.protectedplanet.net
78 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.
79 Kozhikkodan Veettil, B., & Quang, N. X. (2019). Mangrove forests of Cambodia: Recent changes and future threats. *Ocean & Coastal Management*, 181, 104895. doi:https://doi.org/10.1016/j.ocecoaman.2019.104895.
80 Rizvi, A. R., & Singer, U. (2011). *Cambodia Coastal Situation Analysis*. IUCN: Gland, Switzerland.

into the marine environment. Pollution from dredging to create navigational routes, sewage, garbage, and oil spills from shipping are impacting the health of the nearshore waters (see Marine Pollution Impacts Assessments below).

Marine pollution is a significant threat to the health of coastal and marine environments, coastal communities and tourism. Asia is considered to be the epicenter of the issue, with its large and growing population coupled with inadequate solid waste management systems.[81] Cambodia generated more than 10,000 tons of municipal solid waste (MSW) per day in 2017, of which 48% is not properly managed, polluting the land and waterways.[82] Within Cambodia, the coastal city of Sihanoukville was ranked as the second-highest producer of plastic waste. Waste generation in Sihanoukville increased by 400% between 2016 and 2020.[83] Due to its proximity to the Koh Rong Archipelago, the plastic pollution stemming from Sihanoukville poses a direct threat to the coastal and marine resources in the Koh Rong Marine National Park (MNP).[84]

The global intensification of fishing effort over the course of the last century has resulted in overall marine species population declines; this has occurred also in Cambodia. Although bottom trawling is illegal in water depths shallower than 20m, a 2015 review revealed that trawling practices are widespread in the shallow waters surrounding Koh Tonsay (an important area for seagrass habitat) and areas throughout the Koh Rong Archipelago.[85] Bottom trawlers are operated by both offshore industrial-scale trawling by foreign fishing vessels, and inshore smaller-scale trawling and push-netting by local fishing vessels. Shrimp make up one of the largest targeted marine species in Cambodia and are generally targeted through trawling. Shrimp trawling is considered one of the most indiscriminate fishing methods in Cambodia as the small mesh used to capture shrimp allows few other animals to escape. Other highly destructive fishing practices include dynamite and cyanide fishing that spill harmful chemicals into the water, damaging coral polyps and algae. As a result of persistent and destructive IUU fishing accounts, the European Union (EU) has red-carded Cambodia.[86] This places Cambodia on the list of 'non-cooperating' countries from which capture fishery exports to the EU market are prohibited. Fishing effort, both intensity and equipment (e.g., vessels, gear) has increased in recent years. Therefore, establishing more marine protected areas (MPAs), and improving management in existing conservation areas, is essential to support a sustainable marine fisheries industry and ensure food security for coastal populations (*see Chapter 4*).

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81 Lebreton, L., & Andrady, A. (2019). Future scenarios of global plastic waste generation and disposal. *Palgrave Communications*, 5(1), 6. doi:10.1057/s41599-018-0212-7.

82 Fauna & Flora International (2020) Investigating solutions to marine plastic pollution in Cambodia. Review and Research Synthesis. Fauna & Flora International, Phnom Penh, Cambodia.

83 The World Bank (2020). Cambodia: solid waste and plastic management improvement plan. Retrieved from: http://documents1.worldbank.org/curated/en/722141586260533194/pdf/Concept-Project-Information-Document-PID-Cambodia-Solid-Waste-and-Plastic-Management-Improvement-Project-P170976.pdf

84 Sea Circular (2020). Country Profile CAMBODIA [Internet]. Available from: https://www.sea-circular.org/wp-content/uploads/2020/05/SEA-circular-Country-Profile_CAMBODIA.pdf

85 McNamara, A., Mizrahi, M. i., Vibol, O., & West, K. (2016). *Marine Turtle Status Repor*t. Fauna & Flora International.

86 https://www.pewtrusts.org/en/research-and-analysis/articles/2018/08/01/eu-fights-illegal-fishing-one-card-at-a-time

The impacts of climate change on coastal resources and communities are severe and worsening, with Cambodia ranked 13 out of 181 countries in terms of vulnerability to climate change. Climate impacts are projected to reduce Cambodia's absolute gross domestic product (GDP) by nearly 10% by 2050. The most notable climate impacts include floods, droughts, sea level rise, coastal erosion, ocean acidification, saline intrusion and increasing sea temperatures.[87] Cambodia is projected to experience warming of 3.1°C by the 2090s, compared to baseline conditions between 1986–2005 under the highest emissions pathway (RCP8.5). The projected impacts of increasing annual minimum and maximum temperatures on human health and livelihoods include a greater rate of water and vector-borne disease transmission, reductions in agricultural yields, and direct impacts on health.

The ability of coastal ecosystems to continue providing ecosystem services, including fisheries resources, coastal protection, and tourism, is negatively impacted by the destruction and degradation of mangroves, coral reefs, and seagrass beds. Destruction and degradation of these natural habitats interferes with the provisioning services provided by the ecosystems, including declines in commercially important fisheries stocks, with cascading negative impacts on health and food security. Degradation to breeding, nursery and feeding grounds for populations of rare and charismatic species, such as endangered sea turtles, dolphins, and seahorses, negatively impacts ecotourism, recreational fishing, and cultural heritage. Further, the destruction of coastal habitats increases the likelihood of coastal erosion and community vulnerability to climate change. The conservation and sustainable management of mangroves, coral reefs and seagrass beds is vital to ensure that people living in the coastal provinces have continued access to the socioeconomic, cultural and health benefits of coastal and marine resources and the important regulating services that nature-based assets provide.

2.4 Coastal Vulnerability

Cambodia's coastal communities are vulnerable to depleting coastal and marine resources and climate change, due to a high dependence on ocean resources as a source of livelihood and the rapid rate of economic growth placing high pressure on existing resources. Ocean resources are integral to livelihoods and wellbeing; however, marine, and coastal habitats have historically been poorly protected. Coastal waters are polluted by untreated waste that is discharged directly into coastal waters, impacting human and marine health. Coastal provinces are also highly vulnerable to climate change, due to their proximity to estuaries and seawater and exposure to storms and floods; however, locally derived coastal vulnerability assessments are largely incomplete. A synthesis of coastal vulnerability assessments is presented below.

In Koh Kong province, mangrove forest loss and channel sedimentation have been linked to community displacement and negative impacts on ecotourism. The International Union for

[87] Climate Risk Profile: Cambodia (2021). The World Bank Group and Asian Development Bank.

Conservation of Nature and Natural Resources (IUCN) conducted a study into the causes and impacts of mangrove forest loss and channel sedimentation in Peam Krasop Wildlife Sanctuary of Koh Kong province and explored community-based solutions.[88] Through surveys, sampling and interviews, the study found that communities are heavily dependent on the health of the mangrove, due to the habitats provided for fish, crustacean, and shellfish species, for protection from coastal hazards, for provision of fresh drinking water, and to promote ecotourism. As the sandy beach barrier protecting Cambodia's largest mangrove forest migrated 390 m landwards between 1973 and 2011 (10.3 m per year), due to dam construction, sand mining, and storm damage, widespread declines were reported in mangrove health. Cascading negative impacts were reported; for example, fish catch dropped by 70-90%; water turbidity increased over a 40 km stretch; and households on the shoreline were forced to retreat 100 m inland due to extensive erosion. Despite the core area of the wildlife sanctuary being zoned for conservation to encourage sustainable use, stronger management is required to reverse the degradation, including channel and mangrove restoration.

A climate vulnerability assessment conducted in 2015 on Kampot Province found communities to be vulnerable to drought, storms, pollution, sea level rise and saline intrusion, which directly negatively impacts access to clean water and sanitation. The report[89] noted that 30 of the 92 communes (33%) in Kampot displayed medium level vulnerability to climate change, and 62 communes (67%) were rated as 'low vulnerability'. Vulnerability was found to impact social welfare metrics, including public health, livelihoods and the state of marine habitats and ecosystems.[90] The report noted that because Kampot has the largest agriculture area of Cambodia's coastal provinces, households are vulnerable to direct climate impacts on agriculture systems, which can reduce yields and income coupled with indirect impacts on infrastructure, such as flooded drainage systems and structural damage in canals. The impacts of saltwater intrusion have not been documented as a major issue in the report, but impacts are considered to be increasing in severity as sea levels rise, which could reduce soil quality due to excessive salinity and the availability of fresh drinking water. Aside from the aforementioned studies discussed, other climate vulnerability assessments have been completed by Fauna and Flora International (FFI) in Koh Rong Archipelago[91] and Koh Kapik RAMSAR site[92] and a Global Environment Facility (GEF)-funded project 'CamAdapt',[93] approved in 2020 that aims to support coastal fishery-dependent communities in their effort to adapt to climate change.

88 Kastl, B., Kimsreng, K., Kong, S., Chuerattanakul, S., Prohorsarith, N., & Ran, O. Study of Coastal Mangrove Forest Devastation and Channel Sedimentation: Community-based Solutions Koh Kong Province, Cambodia.

89 Vulnerability Assessment and Adaptation Programme for Climate Change. (2015). Vulnerability Assessment to Climate Change in Kampot Province. The Coastal Coordination Unit of the Ministry of Environment.

90 The analysis was based on data from the Commune Database (CDB) extending until 2012. The level of vulnerability influenced by population density, poverty, major land uses, infrastructure, climate-preparedness and temporal factors, such as season.

91 Chea, P. & West, K. (2017). Knowledge and perception of local community on climate change in Koh Rong Archipelago: Applying vulnerability reduction assessment tools.

92 Sorn, P. and Veth, S. (2019). Climate Change Vulnerability Assessment Koh Kapik Ramsar Site, Cambodia. Bangkok, Thailand: IUCN. www.iucn.org/sites/dev/files/climate_change_vulnerability_assessment_koh_kapik_ramsar_site_cambodia.pdf.

93 https://www.thegef.org/projects-operations/projects/9201.

2.5 Marine Pollution

Marine pollution is a significant threat to the health of coastal and marine environments and the communities inhabiting them globally, and Cambodia is no exception. Globally, marine pollution includes toxic metals, plastics, chemicals, petroleum, waste, pesticides, fertilizers, and sewage, 80% of which comes from land-based sources.[94] Among all sources of pollution, plastic pollution is one of the most pervasive and damaging types of all marine litter, due to the increasing volume of plastics in the ocean and the long-lasting impacts on ocean health.

The growing volume of plastics found in the ocean is a widespread threat to marine life, causing death due to plastic ingestion and entanglement,[95] and to human health through ingestion of plastic found in fish and seafood. Globally, it is estimated that between 275-380 million tons of plastics are produced every year, of which approximately half are for single use, with 4.8 to 12.7 million tons entering the ocean.[96,97] Southeast Asia has above average volumes of marine plastic pollution per capita.[98] In 2015, Asia was the leading generating region of plastic waste, of which 63% of plastics were inadequately disposed.[99]

The rapid economic and population growth in Cambodia is shifting patterns of resource consumption and leading to very high levels of waste generation. A 2021 unpublished report commissioned by the World Bank investigated the impact of marine litter on marine health in the Koh Rong Archipelago in Preah Sihanouk province and provided recommendations for the Solid Waste Management in the Koh Rong Municipality.[100] The below synthesizes the key outcomes from this impact assessment.

The development of a waste management system in Cambodia is lagging behind the growing economy and population, especially along the coast. Factors limiting the current waste management system include logistics, infrastructure, capacity, and resourcing limitations. The current waste management system is unsafe, inadequate and unsustainable, leading to undesirable waste disposal practices such as open burning, burying of waste, and direct disposal into open areas or waterways. In the Koh Rong MNP, no formal waste collection services exist, but rather private individuals at some sites are paid to transport waste to the mainland (Sihanoukville) for a fee. Few government-managed

94 Landrigan, P. J. et al (2020). Human health and ocean pollution. *Annals of global health*, 86(1). https://annalsofglobalhealth.org/article/10.5334/aogh.2831/#.

95 Gall, S. and Thompson, R., 2015. The impact of debris on marine life. Marine pollution bulletin, 92(1-2), pp.170-179.

96 Ocean Plastic. The Facts. [Internet]. Available from https://plasticoceans.org/the-facts/.

97 Jambeck, J. R., Geyer, R., et al. (2015). Plastic waste inputs from land into the ocean. *Science*, 347(6223), 768-771. doi:10.1126/science.1260352.

98 Todd PA, Ong X, Chou LM. (2010). Impacts of pollution on marine life in Southeast Asia. Biodiversity and Conservation. 19(4):1063–82.

99 Lebreton, L., & Andrady, A. (2019). Future scenarios of global plastic waste generation and disposal. *Palgrave Communications*, 5(1), 6. doi:10.1057/s41599-018-0212-7.

100 Fauna & Flora International (2021) Solid Waste Management and Marine Litter in the Koh Rong Archipelago: Findings & recommendations from an assessment of Solid Waste Management systems. Fauna & Flora International, Phnom Penh, Cambodia.

waste services exist, there are no formal collection contracts, no door-to-door collection services, and no effective recycling facilities. However, the Ministry of Agriculture, Forestry and Fisheries (MAFF) fund community and beach clean-up activities, totaling 156 million riels (~US$38,000) per annum. Local households dispose of their waste from daily to weekly, using a waste transport service at the piers, disposing at the community dumpsite for incineration, self-burning, selling, burying, or throwing into the sea.

Marine plastic pollution is perceived by locals as having negative impacts on tourism and local livelihoods in the Koh Rong Archipelago. A survey found that 90% of households and 100% of businesses were concerned that mismanaged waste in their community would cause a decline in tourists and their source of income due to the plastic littering the beaches and ocean. Other findings suggest that as tourism recovers from the global pandemic, the waste systems will be under more pressure to cope with growing waste generated from tourists (Figure 2). Communities of the Koh Rong Archipelago are vulnerable to negative impacts of plastic pollution on coastal and marine ecosystems due to their moderate level of livelihood diversity (Figure 3). Numerous respondents noted a reliance on the tourism industry to directly or indirectly support their income, which is at risk from the deficient waste management system, service and infrastructure. A 2020 FFI study found that the majority of residents (75%) in the Koh Sdach Archipelago noted they were "concerned" or "very concerned" about plastic waste resulting in an increased incidence of water-borne diseases.[101]

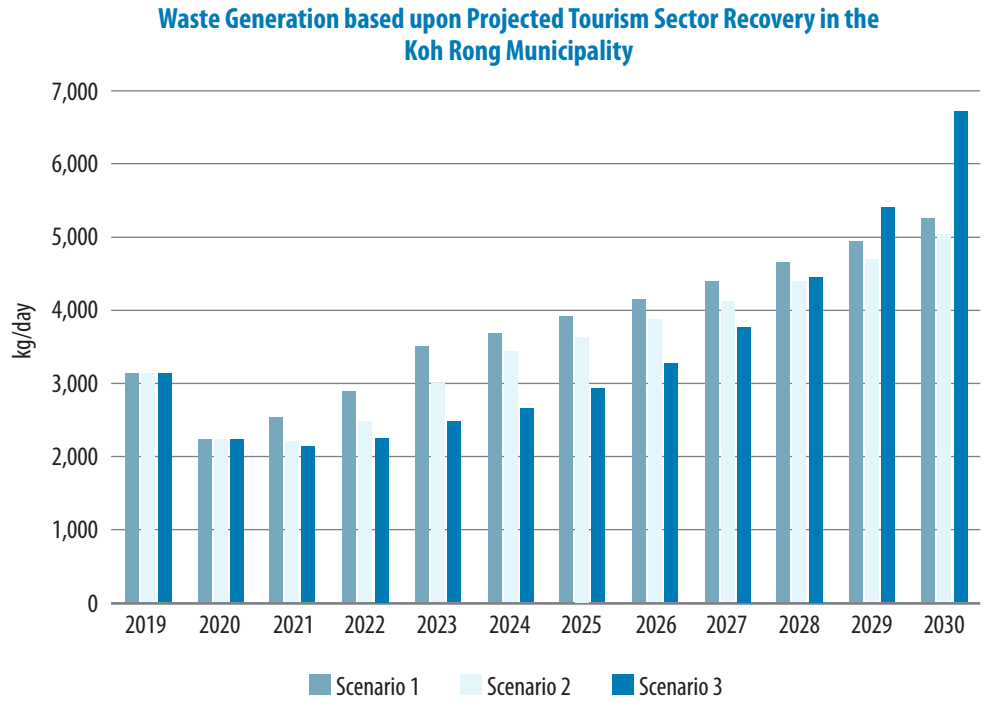

Figure 2.2 The Projected Waste Generated in the Koh Rong Municipality based upon Estimates of Tourism Sector Recovery.

[101] Fauna & Flora International (2020) Investigating solutions to marine plastic pollution in Cambodia. Review and Research Synthesis. Fauna & Flora International, Phnom Penh, Cambodia

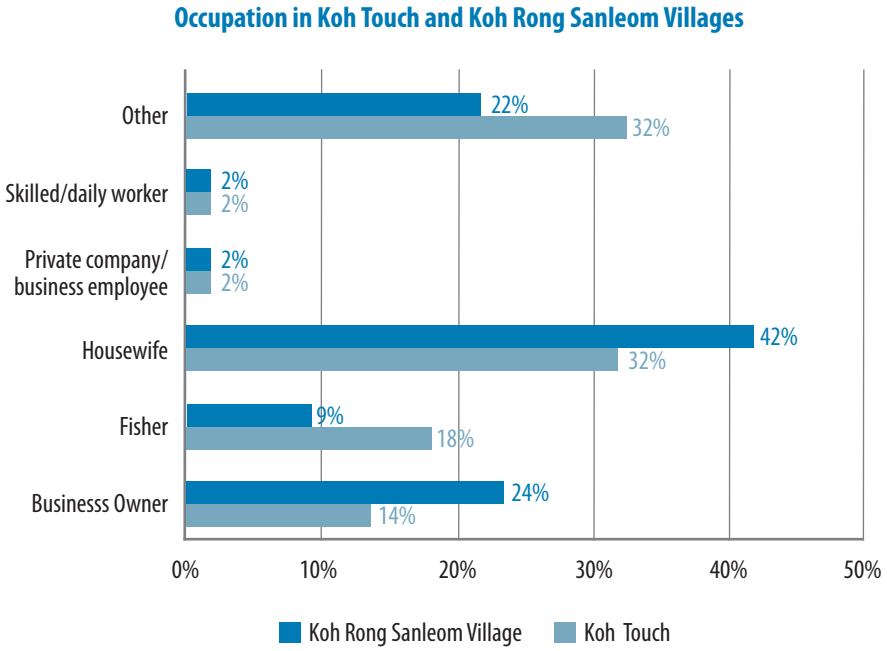

Figure 2.3 The Main Occupations of Household Survey Respondents in Koh Touch and Koh Rong Sanloem Villages, Koh Rong Archipelago in Preah Sihanouk province.

2.6 Knowledge Gaps in Assessing the Value of Marine and Coastal Ecosystems

There is a current lack of established baseline information on the state of Cambodia's natural marine and coastal resources, or a standardized method for monitoring changes over time. Though knowledge of the extent and condition of coral reefs has been improved by the establishment of a Cambodian Coral Reef Monitoring Network, estimates of baselines and changes in mangrove cover and seagrass beds are not up to date and vary considerably between the published literature.[102] Due to a lack of information on the data and methods used to estimate the state of most resources, it is not possible to estimate change accurately. Further, information at the provincial level on the state of coastal resources and changes is incomplete, and inconsistencies in reported figures persist between sources. For example, different estimates are routinely published on the length of the coastlines of the four provinces.

Publishing standardized, consistent figures through a central reporting system would improve monitoring and aid management of coastal resources. A dashboard containing temporal and spatial data on livelihoods, economic growth in fisheries, transportation and tourism, food security, coastal infrastructure development projects and progress in marine spatial planning would support

[102] The WB team has been informed that the Fisheries Administration (FiA) recently completed a national-level inventory of coral reefs and seagrass meadows in collaboration with FFI. However, the data have not been made publicly available as of May 2023.

improvements in integrated coastal planning and management and cross-sector collaboration. Publishing standardized, consistent figures is rudimental to improve monitoring and aid management of coastal resources. A central reporting system would help easily identify where new knowledge needs lie, and how to improve the accuracy of available data.

There is no comprehensive study on the total economic value of coastal and marine ecosystem services in Cambodia. The most recent and comprehensive figure is from a report published by the UN Environment Programme (UNEP) in 2007[103] that estimated the annual net economic value of seagrass and mangroves to be US$1,186/ha/year, and US$882.35/ha/year, respectively (Table 2.4). The value of coral reefs covers only the Koh Rong Archipelago (US$117 million to US$500 million).[104] Based on this information, the total value of the coastal and marine ecosystems is estimated to be between US$200.42 million and US$583.42 million per year (Table 2.4).

Table 2.4 Value of Coastal and Marine Ecosystems in Cambodia[105]

Habitat	Area	Valuation	
	(ha)	(US$/ha/yr)	(US$ millions/yr)
Mangroves	50,860	882.35	44.88
Seagrass	32,494	1,186	38.54
Coral reefs	2,805	230.1 - 2,700	
Coral reefs in Koh Rong Archipelago	NA	NA	117 – 500
Tidal swamps	54,500	NA	
Total			**200.42 - 583.42**

An immediate priority is the need for a thorough and rigorous assessment of the total economic value of coastal and marine ecosystems. An ecosystem service valuation method would lend itself well to valuing coastal ecosystems and their uses. Such approaches can be applied to marine and coastal ecosystems, thereby capturing the value of coastal zones for the commercial, cultural, economic, and social contribution of these ecosystems to people. This work could draw from the approach applied in the recent valuation of forest-related ecosystem services for Cambodia.[106]

There is no complete study on the value of ocean-based economies, including coastal tourism, marine fishing, and shipping. The figure that is routinely published is US$2.4 billion Gross Value Added or (16% of GDP in 2015);[107] however, there are several factors limiting the accuracy of the available information on the economic value and employment of ocean-based economies. For

103 UNEP/GEF. (2007). National Reports on Coral Reefs in the Coastal Waters of the South China Sea.
104 Coral Cay Conservation. 2011. Cambodia Reef Conservation Project. Year 1 Report.
105 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines
106 Rawlins, M., Pagiola, S., Shaad, K., Alam, M., Portela, R., Roy, S., Kornexl, W. (2020). Valuing the Ecosystem Services provided by Forests in Pursat Basin, Cambodia. Retrieved from Washington D.C.
107 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines

example, within the fisheries estimate, inland and marine fisheries appear to be grouped together, which would overestimate the value of the marine fisheries sector. Similarly, coastal tourism numbers are often grouped with nation-wide tourism. Finally, ocean-related industries are not included in this figure, which would underestimate the value.

The impacts of climate change on coastal populations, ecosystems and biodiversity warrant further research and monitoring, based on initial assessments of climate change vulnerability in Cambodia. The impacts of sea-level rise on livelihoods are understudied,[108] but preliminary estimates from the UK Meteorological Office suggest that 30,000 people may experience flooding each year resulting from sea-level rise by 2070–2100 under an RCP8.5 scenario without adaptation.[109] The World Bank and Asia Development Bank study[110] estimates that at the national-scale, Cambodia is one of the most vulnerable countries to the impacts of climate change. The site-based vulnerability assessments that have been conducted in Cambodia to date demonstrate cascading negative impacts to livelihoods and wellbeing due to climate change. Additional climate vulnerability assessments need to be completed across more of the coastal provinces. The findings from the vulnerability assessments should be incorporated into coastal management and marine spatial planning processes, based on projections of climate change, exposure, sensitivity, adaptive capacity of both human and ecological communities, ecosystems, and coastal systems more broadly.

108 Climate Risk Profile: Cambodia (2021): The World Bank Group and Asian Development Bank.

109 UK Met Office (2014). Human dynamics of climate change: Technical Report. Met Office, UK Government. URL: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/climate/human-dynamics-of-climate-change/hdcc_alternative_version.compressed.pdf

110 Climate Risk Profile: Cambodia (2021): The World Bank Group and Asian Development Bank.

CHAPTER 3

Policy/Institutional Landscape

CHAPTER 3

Policy/Institutional Landscape

3.1 Background

While Cambodia's marine and coastal areas are seen as a great resource for economic growth, this economic growth has also led to the depletion of marine and coastal resources. Chapter 2 of this report highlights the current knowledge base related to Cambodia's Blue Economy, including threats to ecosystems, biodiversity, and livelihoods. The country's marine and coastal areas are seen as a promising frontier for economic growth, encompassing multiple sectors including fisheries, tourism, energy, and transport. However, the pursuit of economic growth without well-coordinated planning has led to a significant increase in pressure and demand for more coastal resources, accelerating overexploitation, and environmental degradation. Major drivers of resource overexploitation and habitat degradation range from IUU fishing, marine pollution, and uncontrolled coastal tourism.

Such growing threats highlight the need for improved frameworks for coastal planning, management, and coordination. The implementation of effective approaches to improve the management of coastal resources is contingent on the capacity of decision-makers to effectively implement policy through coordinated approaches. Enhanced structures and mechanisms that balance sectoral objectives, assess trade-offs, sustain ecosystem services, ensure equitable sharing of benefits, and are adaptable to political, social and climate change, are required to improve resilience in coastal areas and sustainably develop Cambodia's Blue Economy.

Integrated coastal management (ICM) is a well-recognized approach for the management and sustainable development of marine and coastal areas.[111] ICM addresses the governance of human activities affecting the sustainable use of goods and services generated by marine and coastal

[111] Chou, L.-M., Chua, T.-E., & Bonga, D. (2021). 4 - "Integrated coastal management" enhances coastal resilience to climate change—The East Asia experience. In D. S. K. Ting & J. A. Stagner (Eds.), *Climate Change Science* (pp. 59-79): Elsevier.

ecosystems and takes a holistic view of coastal and marine management that serves to overcome conflicting interests and priorities of various sectors. An ICM approach recognizes that marine and coastal areas are complex and dynamic systems, encompassing interactions between resource users and ecosystems, and should be managed as a collective whole. ICM provides national and local governments, civil society, the scientific community, and the private sector with a common management framework and systematic process for planning, developing, and implementing strategies, programs, investments, and services that respond to the needs and expectations of coastal communities and contribute to sustainable marine and coastal development. It includes the integration of all relevant policy areas, sectors, and levels of administration as well as terrestrial and marine components of the geographical area under consideration. To implement ICM effectively, various elements are required, including policies and legal instruments, stakeholder participation, effective coordination, enforcement systems and human and financial resources.[112]

While there have been attempts to implement ICM in Cambodia, their effectiveness has been limited to date. Improvements are required to take ICM planning into practice within Cambodia's marine and coastal areas. While the nation has witnessed various ICM policy and management interventions aimed at improving the governance of activities that influence the sustainable use of coastal and marine ecosystems, and while many significant outcomes and lessons have been gained, these efforts require improved coordination between government agencies and stakeholders.

The following section provides an overview of the institutional, and policy landscape for coastal management in Cambodia, highlighting the most relevant national and provincial government institutions involved in coastal management and its pertinent legal/policy framework, while also looking at mechanisms for sustainable financing where relevant.

3.2 ICM Trajectory in Cambodia

Strengthening coastal resilience includes conserving natural resources and maintaining environmental quality so that ecosystem services can continue to benefit human society. Since the 1990s, Cambodia has been progressively setting the groundwork for ICM implementation. In 1994, the Global Environment Facility (GEF)-funded regional project '*Regional Programme for the Prevention and Management of Marine Pollution Project in the Seas of East Asia*'[113] was initiated. While its focus was on marine pollution, this project formally introduced the ICM concept to Cambodia and examined how governments could effectively implement ICM as a governance approach in the region. In 1997 the Danish International Development Assistance (Danida) provided direct support to Cambodia for ICM, including policy, legal and institutional analyses, and the development of the National Resources and Environment (NRE) Programme Document (2001 and 2005). The Danida ICM support also yielded

[112] Chou, L.-M., Chua, T.-E., & Bonga, D. (2021). 4 - "Integrated coastal management" enhances coastal resilience to climate change—The East Asia experience. In D. S. K. Ting & J. A. Stagner (Eds.), *Climate Change Science* (pp. 59-79): Elsevier.

[113] Executed by the United Nations Development Programme (UNDP) and International Maritime Organization (IMO).

the ICM participatory framework for planning (Physical Framework Plans: PFPs) and Coastal Zone Action Plans for each Province/Municipality. A National Coastal Steering Committee (NCSC) was established in 2001, with a Coastal Coordinating Unit (CCU) based in the Ministry of Environment, functioning as the Secretariat based in the Ministry of Environment and with Provincial/Municipal Working Groups (PWGs) comprising the governor and the heads of thirteen provincial departments or provincial authorities.[114] This program provided an initial framework and foundation for ICM to help Cambodia implement existing policy elements and to develop new policies directed specifically at the sustainable development of the coastal zone.

Building on this work, the second phase of the project (led by GEF between 1999–2007) was initiated, focusing on forging intergovernmental, interagency, and multi-sectoral partnerships for environmental management. Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) was established to represent the new project initiatives. Under this phase, an ICM framework was developed and promoted as a national approach to sustainably manage and protect coastal and marine environment in the country. Preah Sihanouk was selected as the first national ICM demonstration site and the project started in 2001, with the Ministry of Environment (MoE) as the lead national focal point. Demonstration sites ensued for participatory beach management and coastal use zoning activities throughout the province in 2004 and were adopted by the National Committee to Support Communes (NCSC) in 2005. Pilot projects for wastewater treatment, reservoir rehabilitation and water supply management were also implemented.

The PEMSEA/ICM program also supported the formation of Cambodia's State of the Ocean and Coast Report, updating the White Paper: Strategy and Work Program for Coastal and Marine Sustainable Development in Cambodia and established an ICM Learning Center at the Royal University of Phnom Penh (RUPP). As the regional coordinating mechanism for the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA), PEMSEA has endeavored to scale up ICM interventions since 2016, expanding ICM demonstration sites to include Kampot, Koh Kong and Kep by 2020.

The Japan International Cooperation Agency (JICA) funded the "Study on National Integrated Strategy of Coastal Area and Master Plan of Preah Sihanouk for Sustainable Development" between March 2009 to September 2010. The report outlines management strategies for coastal areas, including novel recommendations related to environmental management and sustainable tourism development, and proposed establishment of a single coordination body (the "Coastal Area Development Program Coordination Committee"). With support from the Mangroves for the Future (MFF) program of the International Union for Conservation of Nature (IUCN), a regional post-graduate certificate training program for ICM was developed and in 2018 integrated into the undergraduate study program of the RUPP.

[114] Lyngby, Jens & Jeppesen, Gorm & Vann, Monyneath. (2017). Integrated Coastal Management and Planning Principles in Cambodia.

The ICM programs described above have helped to raise awareness in some communities and strengthened the technical and human resource base for ICM at the national and provincial levels. However, integrated management has yet to be fully institutionalized and MPA managers require additional support in coordinating resource management and control activities among various sectors.

3.3 Coordination Mechanisms for ICM in Cambodia

Several Ministries have jurisdiction within Cambodia's marine and coastal areas (Box 3.1). These agencies have historically operated with limited coordination with one another, which presents an obstacle to progressing with ICM.

Box 3.1 Ministries Related to Coastal and Marine Conservation and Protection

Ministry of Land Management, Urban Planning and Construction (MLMUPC)

The Ministry of Land Management, Urban Planning and Construction is responsible for land policy, urban planning, construction projects, and resolution of land use conflicts across the country, including in coastal areas. The MLMUPC minister also acts as the chair of the national committee tasked with the inter-ministerial oversight of coastal development planning (see below).

Ministry of Environment (MoE)

The Ministry of Environment was established in 1993 to lead and manage environmental protection, biodiversity conservation, and the sustainable use of natural resources. As part of jurisdictional reforms in natural resource management, the Royal Government of Cambodia (RGC) has transferred the responsibility for all forestry protection and forest conservation areas (previously under the Ministry of Agriculture, Forestry and Fisheries (MAFF)) to the MoE, while MAFF takes over responsibility for all Economic Land Concession areas previously under the jurisdiction of the MoE (Sub-decree No. 34 dated 04 March 2016). The Department of Marine and Coastal Conservation (DMCC) was established in 2016 within the MoE, whose mandate revolves around implementing ICM activities in Cambodia's marine and coastal areas.

Ministry of Agriculture, Forestry and Fisheries (MAFF)

The Ministry of Agriculture, Forestry and Fisheries is also responsible for managing and controlling natural resource uses in Cambodia including coastal and marine resources.

There are two responsible administrations under MAFF: Fisheries Administration (FiA) and Forestry Administration. The FiA is responsible for the management, regulation and promotion of the national fisheries sector (marine and freshwater). The Forestry Administration is responsible for the sustainable management of Cambodia's forests for the social, economic and environmental benefits, including conservation of biological diversity and cultural heritage.

Ministry of Mines and Energy (MME)

The major responsibilities of the MME related to coastal development and coastal zone management are to promote the economy and generate employment opportunities through the development of industrial activities; to promote mining activities, hydropower development and oil and gas exploration in the coastal and marine zone of Cambodia; and to develop legislation, policy and plans that encourage the growth of these industries.

Ministry of Tourism (MoT)

The Ministry of Tourism is a key institution with its main responsibility related to the coastal zone of Cambodia including working with other ministries to preserve the coastal zone; developing accessible infrastructure in the coastal zone; promoting various coastal zone attractions of the Kingdom; developing a master plan to manage the coastal zone for tourism; and developing tourism legislation, policy and plans related to the coastal zone tourism sector.

Ministry of Public Works and Transport (MPWT)

The Ministry of Public Works and Transport is responsible for the development and implementation of policies and legislation for the transportation sector throughout the country. The MPWT is also responsible for all transport infrastructures in the country including roads, railways, airports, ports and waterways as well as public buildings.

Provincial/District authorities

The provincial authorities are under the direct control of the Ministry of Interior. The provincial authorities are the main government authorities that oversee local government administration, promote economic development and strengthen law enforcement through coordination. The provincial authorities are divided into districts, which are then further sub-divided into communes and villages.

The government's decentralization reforms have devolved more responsibility for natural resource management to sub-national administrations. At the district level, responsibility over natural resource management lies with the Agriculture, Natural Resources and Environment Offices (ANEROs) in districts, which report to the district unified command committee. These reforms are an opportunity to better define roles and responsibilities.

Faced with the challenge of coordinating the six national and multiple provincial ministries with regulatory interests in Cambodia's coastal assets, the RGC established the National Committee on Coastal Area Management and Development (NCCMD) in 2012, tasked with the inter-ministerial oversight of coastal development planning. The leadership structure of the NCCMD consists of the Prime Minister, who serves as Honorable Chair, the Minister of the Ministry of Land Management, Urban Planning and Construction (MLMUPC), who serves as Chair, the Minister of Environment, who serves as the Vice-Chair, and the Minister of Tourism serving as the Permanent Vice-Chair. Additional 19 members from all key governmental agencies in Cambodia,[115] including planning, investment, decision making, and armed forces are part of the committee (Figure 1). The committee is a direct subordinate of the RGC in charge of managing and developing coastal areas of the country in a sustainable, responsible, and inclusive manner (Box 3). The NCCMD's objective is to improve the effectiveness of coordination, management, and development of coastal areas in Cambodia, thus contributing to promoting sustainability and responsibility for the management and conservation of coastal ecosystem and enhancement of local community's livelihoods.

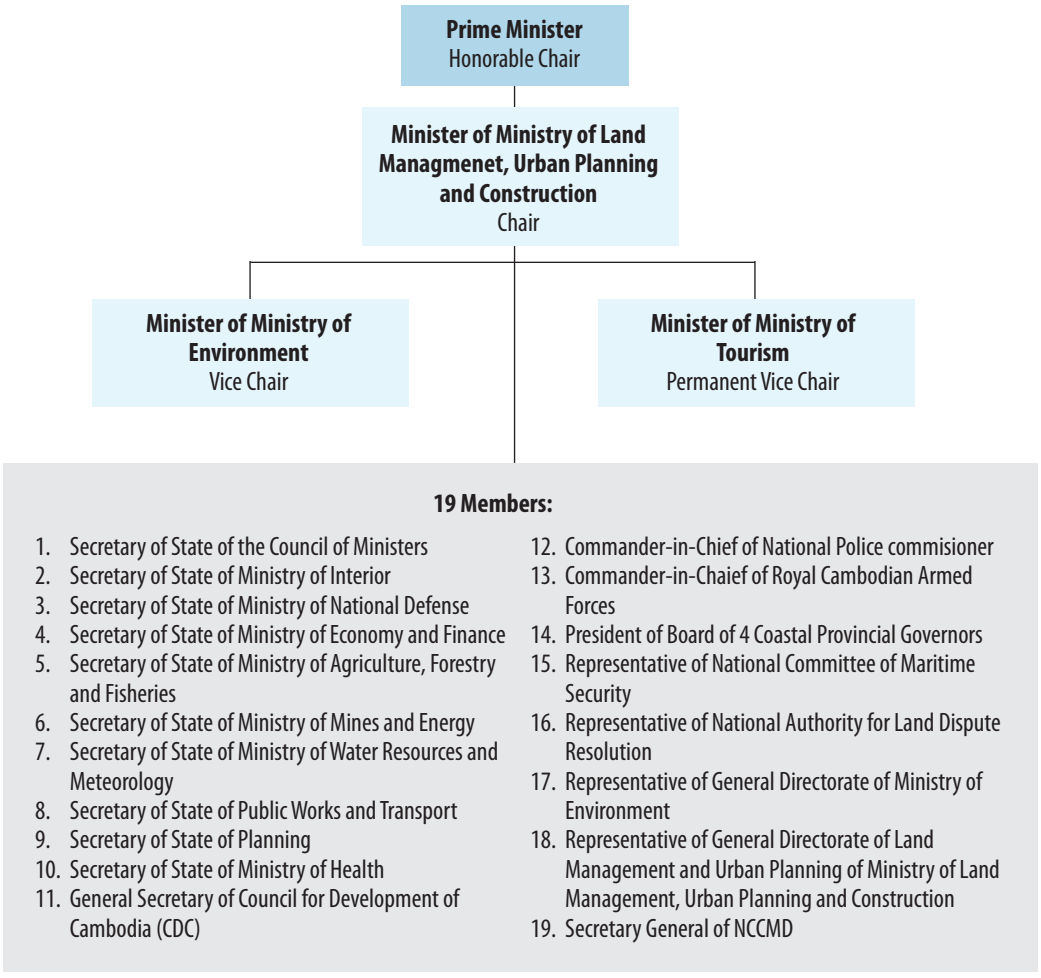

Figure 3.1 Organizational chart of the National Committee for Coastal Management and Development (NCCMD).

[115] Based on Article 2 of Sub-Decree No 171 on Organization and Functioning of General Secretariat of National Committee for Coastal Management and Development, the General Secretariat of the NCCMD is the subordinate of the NCCMD. Similarly, PCCMD is based on Article 2 of Decision No 154 (For Kep province), 152 (For Preah Sihanouk province), 153 (For Kampot province) and 155 (For Koh Kong province) on Nomination, Roles and Responsibilities of Provincial Committee for Coastal Management and Development.

The main functions and duties of the NCCMD are to examine public and private investment proposals for coastal development. The mandate includes examining, monitoring, and facilitating any ongoing and future activity planning of ministries, institutions, sub-national administration, national and international organizations, non-governmental organizations (NGOs), and civil societies and private sectors located along the coastal areas in order to hasten the work effectively and sustainably. One challenge lies in that the current scope of the NCCMD does not cover its jurisdiction over marine spaces and is strictly limited to terrestrial environments. However, referring to Circular 01 on Development of Cambodia Coastal Areas (February 2012), the NCCMD is preparing a draft sub-decree on coastal and marine management and development in Cambodia to expand its mandate and jurisdiction over the whole of Cambodia's marine waters as a coordinator with key stakeholders, particularly the National Committee for Maritime Security (NCMS), which is responsible for enhancing maritime sovereignty and strengthening the enforcement of maritime laws at sea.

The NCCMD is required in some cases to seek advice, approval, decision-making and resolution from the Prime Minister for key coastal issues beyond the NCCMD's capacity. This reduces the effectiveness of the NCCMD to vet coastal investment projects, as often for politically significant projects, the actual decision-making capacity is elevated to the Prime Minister level. The NCCMD will follow the final government notification (Sor. Chor. Nor.). The NCCMD through its general secretariat, which was established under the Sub-decree 171 ANK issued on the 7th October 2012 as a direct subordinate to the NCCMD, liaises and works closely with the four provincial committees (PCCMDs) for coastal management planning, development and monitoring for all coastal areas of Cambodia. This mandates the NCCMD to examine and approve draft policy, legal instruments and necessary principles, strategic plans, master plans, action plans, other programs and projects regarding the management, conservation, and development of Cambodia's coastal areas. The General Secretariat has seven divisions with different functions and duties.

At the provincial level, the PCCMD is chaired by the provincial governors for each of the four coastal provinces. The provincial committee should play a key role as a subordinate to the national-level General Secretariat and the NCCMD to monitor and evaluate all development activities, protect the environment and natural resources in the coastal zones, and coordinate between national and sub-national institutions and donors on coastal issues and address coastal environmental issues. Challenges lie in that the PCCMD does not have a clear annual work plan or budget allocation from the national government and carries out its responsibilities with available resources from line departments, relying on the commitment and willingness from its members to plan, implement and address all coastal issues. This could be improved through increased funding allocation, coupled with quarterly workplans coordinated with PCCMD, NCCMD and the national-level General Secretariat, to enhance coordination and communication between provincial and district levels.

During the decade since its establishment, the NCCMD has formulated some key guidance for the governance of coastal development; however, there are important areas for improvement. Notwithstanding the important strides the NCCMD has taken in the development of ICM in Cambodia, several areas for improvement have been identified. Currently, the governance of the NCCMD General Secretariat involves only three main ministries directly (MLMUPC, MoE and MoT) and does not include

MAFF, a key agency in coastal planning, implementation, and monitoring. Furthermore, decision-making capacity currently lies with the Prime Minister in some cases, limiting the effectiveness of the NCCMD to vet coastal projects in a timely manner. In addition, meetings between the seven sectoral working groups of the NCCMD are rare due to a lack of budget allocation and annual work plans. Channels for NCCMD coordination and communication with sub-national committees and line agencies have likewise been constrained. Finally given that NCCMD/PCCMD do not have full jurisdiction over marine areas (see section 3.4 Legal and Policy Frameworks), there is a need for stronger coordination between the NCCMD and the NCMS.

3.4 Legal and Policy Frameworks

Cambodia's legal and regulatory framework for environmental and resource management has been progressively developed, though no specific law on coastal and marine management or sustainable development exists yet. For example, while Cambodia had a Land Law passed in July 2001, this law does not specifically detail how coastal landscapes should be managed. Complementing this law, Cambodia issued Circular 01 on Management and Development of Coastal Areas.[116] However, the circular only indicates the basic principles that relevant institutions are expected to follow without teeth or a strong enforcement mechanism.

This dearth in dedicated legal instruments to support sustainable coastal development has left a gap in resolution pathways for coastal tenure disputes, exacerbating existing issues and gaps related to Cambodia's broader legal framework on land tenure. As evidenced by the experience of master planning in Preah Sihanouk, coastal land transfer is occurring in the absence of ICM principles being applied. This creates detrimental impacts on coastal biodiversity, and on local communities that are dependent on those ecosystems for their livelihoods and food security (see Spotlight: Opportunistic coastal development and land transfer).

A consistent, overarching policy for integrated coastal and marine management is yet to be developed. This has resulted in overlapping mandates and responsibilities between ministries – especially the MoE and MAFF – which challenges the effective implementation of integrated coastal and marine management. The Environment and Natural Resources Code of Cambodia has been developed and approved, which is expected to provide a clearer mandate for coastal and marine management and protection. Furthermore, a new sub-decree on Development of Cambodia's Coastal Areas is being developed based on Circular 01 (February 2012) and is expected to strengthen management in response to recent development activities. Of particular importance is that the sub-decree will include a penalty regime for enforcement of coastal and marine management.

A dedicated legislation on coastal management and development is critically needed as opposed to a chapter within an overarching land management law. However, a stand-alone law on coastal

[116] https://ibccambodia.com/wp-content/uploads/2019/09/Circular-on-Development-of-Cambodia-Coastal-Areas-IBC.pdf

management and development is not being considered, despite the general perception (based on practical experience in other Southeast Asian countries) that a dedicated law on coastal management provides the best legal foundation for ensuring effective, consistent, and integrated planning in coastal areas. Currently, it is planned that a chapter on coastal management and development will be integrated into the draft Law on Land Management and Urban Planning, under the MLMUPC and facilitated by NCCMD. While MLMUPC plays a critical role in mitigating issues, effective coastal and marine management requires coordination and collaboration from other key stakeholders in planning, enforcement, and monitoring. For example, MAFF has a key role to play in conserving and managing marine fisheries and coastal and marine ecosystems including mangroves, seagrass, and corals, yet would have very little engagement or influence in implementing the MLMUPC law. Relegating sustainable coastal and marine management to a sub-section of the draft law on land management and urban planning, and not formulating a separate, stand-alone law on coastal and marine management, may not be very effective and could be counterproductive.

The preparation of key pieces of legislation on coastal management and development should be expedited. Aside from the Environment and Natural Resources Code of Cambodia that has been approved in 2023, high priority legal instruments include the Law on Land Management, the Urban Planning Sub-decree on Coastal Management and Development, and other potential standalone laws on coastal management and development. Currently, there are unclear timelines for the enactment of these legislations, and it is of utmost importance that these come into force as soon as possible.

The application of MSP has been recently recognized by the RGC as a useful approach for regulating human activities in achieving mutual ecological, economic, and social objectives (*See Chapter 4*). Acknowledging the significance and urgency of implementing MSP, the MoE is cooperating with the National Ocean Technology Center (China) to develop a national-level MSP for Cambodia. The 5-year MSP initiative aims to establish higher-level zoning for the entire coast and set clear economic, ecological, and human capacity indicators, reducing impacts and improving conservation of key habitats.

The ensuing implementation of a national-level MSP in Cambodia presents an important opportunity to streamline decision-making related to ICM. National MSP implementation is also an opportunity to build capacity among stakeholders to understand the trade-offs, and for local communities and management agencies to bring important data and values to the planning table and to meaningfully engage in participatory decision-making. However, further inputs, refinements and applications are required for effective endorsement, stakeholder support and implementation of MSP. The draft MSP does not include a clear baseline against which change can be assessed and measured between planning cycles. Moreover, in the absence of an overarching marine master plan and given the legal gaps and overlaps characteristic of current planning and management of the coast, it is unclear how the MSP outputs will relate to current decision-making around land use planning in coastal area. Finally, the absence of cross-departmental and multi-stakeholder consultation significantly weakens the MSP process adopted so far.

3.5 Overlapping Ministerial Mandates

The RGC has endorsed the following sectoral laws to directly and indirectly manage and conserve natural resources for sustainable development: Law on Protected Areas (2006), Law on Forestry (2002), Law on Fisheries (2006, under revision 2020), Land Law (2001), and Law on Water Resources Management. These laws provide valuable direction on managing coastal resources, and yet each has partial overlaps in responsibility for the management of protected areas, as described below, which creates confusion related to scope of responsibility (Table 3.1). Overlapping jurisdictions among key ministries has led to ambiguity as to which ministry has top-level authority for the management of certain resources.

Table 3.1 Partial Overlaps in Responsibility for the Management of Cambodia's Protected Areas.

Policy	Institution	Overlapping Responsibility
Protected Area Law	MoE	Management, conservation and development of protected areas to ensure the management and conservation of biodiversity and natural resources for sustainable use.
Law of Forestry	MAFF	Management, harvesting, use, development and conservation of the forests to ensure the sustainable management of forests for social, economic and environmental benefits, including conservation of biological diversity and cultural heritage.
Law on Fisheries	MAFF	To ensure fisheries and fishery resource management, enhance aquaculture development, the management of production and processing, and to promote the livelihoods of people in local communities for the socioeconomic and environmental benefits, including the sustainability of the conservation of biodiversity and natural culture heritages.

Ambiguities exist in the management authorities over protected areas (marine and terrestrial) and the fisheries sector, between MoE and MAFF. Moreover, the Law on Forestry emphasizes that the areas of Forest Protection and all kinds of wildlife species are under the management, research, and conservation of the Forestry Administration, except for fish and animals that breed in water. Overlapping jurisdictions among key ministries have often led to ambiguity as to which ministry has the key role in managing which resources. For example, there is no clear definition of mandates and responsibilities between the MoE and MAFF when it comes terms of mangrove forest management. The fisheries law stipulates that the FiA is responsible for the management of mangroves and other inundated forest. However, the MoE also claims the management of mangrove forests within protected areas, in particular, the Peam Krasop Wildlife Sanctuary, which encompasses about 62,000 ha of mangrove forests under the management of the MoE.

Since policy reforms were introduced in 2016,[117] the MoE has more than doubled the size of the protected area estate and biodiversity conservation corridor from 3.2 million ha to 7.5 million ha in 2016 (about 41% of the country's total land area).[118] However, the size of the central government budget allocation towards managing protected areas has not increased in line with the growing area under management, leaving large funding shortfalls. For example, while the size of protected areas within Koh Kong has grown, the budget allocation for management remains the same. Additionally, law enforcement on illegal fishing activities (largely related to illegal fishing gear) within the MoE's Peam Krasop Wildlife Sanctuary creates a clear challenge (i.e., when the FiA is responsible for handling this issue).

3.6 Sustainable Financing

In 2017, the RGC released its first National Protected Area Strategic Management Plan (NPASMP) for 2017-2031.[119] Implementation of the plan was estimated to cost US$46.8 million in the first five years. Despite the high proportion of protected areas in Cambodia, government spending for biodiversity represents only ~0.18% of the central budget; therefore, protected area managers rely on foreign aid, Non-Governmental Organizations (NGOs) and other sources to cover almost all expenses.[120] Globally, long-term security is frequently flagged as a budget adequacy issue in Management Effectiveness Tracking Tool (METT) surveys,[121] particularly for countries with a high proportion of finance stemming from foreign aid.

Under MAFF, the Department of Fisheries Conservation (DFC) is directly involved in coastal and marine conservation and protection. As of 2020, this Department currently receives US$440,000 in annual government budget which is allocated to cover per diem for field activities (20%) and activity costs (80%), for both freshwater and marine fisheries conservation and protection activities. This department budget has increased significantly from US$150,000 in 2013 to US$440,000 in 2020. A large portion (85%) of the activity budget goes to freshwater fisheries conservation (US$300,000) and focuses on the demarcation of conservation areas and the conservation of threatened species, particularly the freshwater Irrawaddy dolphin species in the Mekong, while only 15% goes to coastal and marine conservation and protection. The FiA plan remains to prioritize its investment in freshwater fisheries conservation in line with the fisheries sector reform. However, the FiA through the Department of Fisheries (DoF) has sought to mobilize other financial support from conservation

117 Sub-decree No. 69 on transfer of protected forests, conservation forest areas, productive forest areas and economic land concessions between the Ministry of Environment and Ministry of Agriculture, Forestry and Fisheries (28 April 2016) https://drive.google.com/file/d/0B3kkBprEzhDoa2U5S25zSXJmbEE/view?pli=1

118 Souter et al. 2016. Editorial — Will the recent changes in protected area management and the creation of five new protected areas improve biodiversity conservation in Cambodia? Cambodia Journal of Natural History (1) 1-5.

119 Ministry of Environment, 2017. National Protected Area Strategic Management Plan 2017-2031, Royal Government of Cambodia.

120 International Center for Environmental Management (ICEM), 2003. Cambodia National Report on Protected Areas and Development. Review of Protected Areas and Development in the Lower Mekong River Region, Indooroopilly, Queensland, Australia. 148 pp.

121 METT is a commonly used rapid assessment tool for monitoring and evaluating protected area effectiveness.

partners, especially FFI, IUCN, SEAFDEC (Southeast Asian Fisheries Development Center), and others for coastal and marine conservation activities and establishment of new MFMAs and additional fisheries refugia.

A lack of funding and sustainable Investment for coastal and marine management – including limited investments from the private sector – reflects institutional gaps and low priority and support for integrated planning and management approaches. While there are a few sources of funding for ICM implementation at the sub-national and local levels, particularly through ODA (official development assistance) support (e.g., PEMSEA), the national government budget allocation for direct ICM implementation is inadequate. Similar shortfalls in state budget allocations are encountered in the MPA space. In and around MPAs, there is no overall mechanism to direct external funding or revenues collected from fees (i.e., revenue from boat tickets), fines and taxes back into the MPA system to cover operational costs, infrastructure investments, or habitat restoration efforts. Although management authorities are increasingly cognizant of the critical importance of domestic revenue and resource mobilization in order to achieve effective ICM implementation, a sustainable financing mechanism for integrated coastal and marine management is yet to be operationalized.

Private sector investments (and engagement) into coastal and marine management and planning are relatively low, and financing of sustainable, climate-smart development along coasts is particularly limited. A likely impediment is that ICM (and MPA) investments in Cambodia have not yielded short-term visible benefits for the private sector (nor are their intended benefits fully understood by stakeholders or widely advocated by government). Although a payment for ecosystem services (PES) scheme is being piloted for two protected areas, approaches such as PES, ecosystem-based adaptation projects and/or conservation concessions are generally absent in coastal areas.

Sustainable financing for ICM and MPAs will rely on improved access to and use of existing and emerging budget through public financing, and resources leveraged from the private sector, development partners and global funds through the national coastal and marine programs. This will largely depend on the arrangements and program designs from the central government, including using development finance as a catalyst to crowd-in private sector investment in sustainable coastal development.

3.7 Capacity Building

Human and institutional capacity building has been identified as one of the priorities for effectively implementing ICM and improving the performance of government managers in controlling the impacts of land-based activities on the coastal and marine environment, and coastal resource use conflicts more broadly. Linked to lack of financial resources, there is an opportunity to improve and build capacity at the central and local levels within a wide range of coastal and marine natural resource and environmental management issues. Capacity building – both institutional and technical – has been consistently raised as one of the priority activities to improve the effectiveness of ICM implementation. In addition, there is an apparent strong interest among

relevant national and sub-national staff to generate additional knowledge through strengthened local research capacity, training, and direct research. While capacity building activities have been included in annual institutional work plans, implementation has been limited due to inadequate budget allocation from the central government. Capacity building opportunities largely continue to depend on financial support from donors and partner conservation organizations. A list of priority training courses to build capacity of relevant key government stakeholders at the central and sub-national levels, including the Secretariat for Sustainable Development, directors of relevant departments, and the General Secretariat for the NCCMD, has been identified and ranked by priority (Table 3.2).

Table 3.2 Priority Capacity-building Needs Across Central (NCCMD) and Provincial (PCCMD) Government Stakeholders.

Priority Rank	Training Needs
1	Management of municipal wastewater + water quality monitoring and solid waste and Analysis Monitoring and Evaluation mechanism for coastal planning and development
2	Economic valuation for flagship coastal ecosystems including mangroves, seagrasses and coral reefs
3	Remote sensing and GIS-drone-based mapping
4	SCUBA-diving-based marine biodiversity assessments and monitoring
5	Coastal and marine resource use conflict resolution and communication

Capacity development opportunities are also present at the community level. Community leaders can help form and implement a management plan, and thus identification and training of champions in communities and local committees should be prioritized. Research has shown that strong leadership also leads to MPAs with greater benefits to ecosystems and livelihoods.[122,123] Therefore, when strong leaders are identified at a local level, policy makers should work closely with them during the development process, particularly when gaining support during the early stages of ICM planning, while being mindful of the potential for elite capture.

[122] Crawford, B., M. Kasmidi, F. Korompis, and R. B. Pollnac. 2006. Factors influencing progress in establishing community-based marine protected areas in Indonesia. Coastal Management 34 (1):39–64. doi:10.1080/08920750500379300

[123] Gutierrez, N. L., R. Hilborn, and O. Defeo. 2011. Leadership, social capital and incentives promote successful fisheries. Nature 470 (7334):386–389. doi:10.1038/nature09689

SPOTLIGHT Major Recent Coastal Development and Land Transfer

Recent coastal development in Cambodia is characterized as "opportunistic" by various public and private stakeholders.[124] Large-scale land-use decisions and investments in coastal areas, including those associated with gambling and land concessions, are typically undertaken without adequate planning, stakeholder consultation or due consideration of long-term environmental and socioeconomic consequences. What follows highlights some of the most prominent cases of opportunistic coastal land development in recent years, which reinforces the critical importance of the series of legal, policy and institutional reforms outlined in this chapter.

In Sihanoukville, large capital investments from China since 2017 transformed the city from a budget tourism destination into a gambling hub. Home to Cambodia's only deep-water port (part of a vital trade route for China's Belt and Road Initiative), the city became a focal point for Chinese investment, including a US$4.2 billion infrastructure development project consisting of power plants, offshore oil exploration, casinos, condominiums, hotels, and restaurants.[125] In 2019, up to 150 licensed casinos were recorded. The construction of new infrastructure, coupled with the attraction of hotels and casinos, has resulted in approximately 120,000 Chinese nationals visiting, and 78,000 residing in Sihanoukville in 2019.[126] While such investments could have potential benefits (e.g., job creation, improved infrastructure, and increased tax revenue[127]), the shifting socioeconomic dynamic of the city resulted in locals being forced out of the city, no longer able to afford the rising rent and cost of living. Public security also became a serious concern, including increased incidences of money-laundering, illegal gambling, kidnapping, and human trafficking, allegedly associated with the casino boom. In August 2019, the Royal Government of Cambodia (RGC) unexpectedly announced a moratorium on all online gambling activities (linked to physical casinos), starting from January 1, 2020. As a result, Sihanoukville suspended operations, leaving numerous abandoned construction sites and casinos throughout the city. Since the ban, the General Department of Immigration reports more than 200,000 Chinese nationals have left Cambodia, leaving nearly 10,000 local workers jobless.[128] Following these recent experiences, RGC embarked on the development of a master plan to turn Sihanoukville into a multi-purpose special economic zone in 2021, which is expected to ensure more integrated and sustainable development planning.

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124 Information presented in this box is partly based on in-country stakeholder consultations undertaken as part of the WB Integrated Coastal Zone Management and Blue Economy Development Project Identification Mission conducted from March-April, 2022.

125 Prasso, S.,"Chinese Influx Stirs Resentment in Once-Sleepy Cambodian Resort: How the Belt and Road Initiative has helped turn a quiet resort town into a gambling hotspot," Bloomberg, June 21, 2018, accessed February 21, 2019, https://www.bloomberg.com/news/features/2018-06-20/chinese-casinos-stir-resentment-on-cambodia-s-coast-of-dystopia.

126 Supra note 26, Ng and Phang, "China brings casino boom."

127 Po, S., & Heng, K., (2019). Assessing the Impacts of Chinese Investments in Cambodia: The Case of Preah Sihanoukville Province ISSUES & INSIGHTS A Working Paper on China-Cambodia Relations Pacific Forum. Vol 19, WP4, May 2019, Pacific Forum.

128 Following the suspension of online casinos and resultant exodus of foreign nationals, continued infrastructure investments have also yielded positive outcomes in Sihanoukville, including improved environmental and solid waste management.

The RGC has undertaken different forms of land transfer over the past two decades; the land policy framework has been strengthened following rounds of land reforms implemented partly in response to negative social ramifications manifested during the early years. It is noteworthy that private land ownership was abolished during the Khmer Rouge rule from 1975-1979, which was followed by decades of turbulent internal politics. A contemporary land reform was subsequently initiated with the 2001 Land Law that introduced a new property rights system, including state public land (mostly forests) and state private land (which can be converted into private concessions). However, despite strict legal requirements for granting economic land concessions (ELCs) such as environmental and social impact assessments, prohibition of involuntary resettlement and mandatory stakeholder consultations, a total of 2.6 million hectares of ELCs (representing 14% of the total land area) were granted to concessionaires by 2012 in a manner often not compliant with the requirements, displacing approximately 700,000 farmers and causing numerous land disputes.[129] In due recognition of such adverse impacts, the RGC undertook further land reforms consisting of 1) a moratorium on the issuance of ELCs and review of the existing ELCs; and 2) the granting of land titles and social land concessions to farmers and landless households from 2012. In this context, the current protected areas system was established in 2016, comprising over 7.4 million hectares – a whopping 41% of the country – with significant implications for farmers and indigenous people who are reliant on natural resources for their livelihoods within the protected areas.[130]

Partly due to their respective sizes, ELCs and protected areas often overlap, including in coastal areas – a prominent example is the Dara Sakor development project, which is mostly located in the Botum Sakor National Park in Koh Kong Province. Granted in 2008 to a Chinese state-owned entity, Union Development Group Co., Ltd. (UDG), Dara Sakor is a 99-year ELC covering 36,000 ha. The US$3.8 billion Dara Sakor project is labeled an "ecotourism" project that comprises an international airport with a 3km runway, a mega-resort hotel with a casino, and three 18-hole golf courses.[131] Owing to the sheer size of development, significant environmental and social impacts have been reported within the national park, including a spike in deforestation rates in recent years and forced resettlement of local villagers.[132] Consequently, UDG has been subject to US government sanctions pursuant to the Global Magnitsky Human Rights Accountability Act since 2020.[133] This Dara Sakor case highlights the importance of due diligence, impact assessment and transparent decision making prior to granting ELCs.

129 Oldenburg & Neef, A. (2014). Reversing Land Grabs or Aggravating Tenure Insecurity? Competing Perspectives on Economic Land Concessions and Land Titling in Cambodia. *Law and Development Review (Berkeley, Calif.)*, 7(1), 49–77. https://doi.org/10.1515/ldr-2014-0014

130 Loughlin, & Milne, S. (2021). After the Grab? Land Control and Regime Survival in Cambodia since 2012. *Journal of Contemporary Asia*, 51(3), 375–397. https://doi.org/10.1080/00472336.2020.1740295

131 5. Reed, J. (2019). China construction points to military foothold in Cambodia. Financial Times. https://www.ft.com/content/861d20ce-ad39-11e9-8030-530adfa879c2. It is apparent that the size of the ELC is not compliant with the 2001 Land Law that stipulates the maximum size of an ELC to be 10,000 hectares (Art. 59).

132 Morgan Erickson-Davis. (2021). Carving up the Cardamoms: Conservationists fear massive land grab in Cambodia. In *Mongabay News* [BLOG]. Newstex. https://news.mongabay.com/2021/07/carving-up-the-cardamoms-conservationists-fear-massive-land-grab-in-cambodia/

133 US Department of Treasury. (2020). Press Releases: Treasury Sanctions Chinese Entity in Cambodia Under Global Magnitsky Authority. September 15. https://home.treasury.gov/news/press-releases/sm1121

Another significant land transfer is the 99-year ELC granted on the island of Koh Rong–Cambodia's second largest island, first large-scale MPA and premier beach tourism destination. Issued in 2008, Sub-decree 118 granted the ELC to Royal Group – one of the largest Cambodian conglomerates – to transform the island into "Asia's most attractive tourist destination." Royal Group's 25-year master plan for Koh Rong involves developing roughly two-thirds of the 7,800 ha-island into a luxury tourism complex comprising a US$300 million international airport and 5-star resorts with golf courses and casinos.[134] In partnership with a Chinese state-owned company, Sinohydro Corporation Limited, Royal Group has built approximately 70% of the planned 70km road network, significantly improving connectivity between the villages on the island.[135] However, the ELC was controversial to local communities and exacerbated land title disputes.[136] Furthermore, following the 99-year lease the entire island and surrounding waters were incorporated into Cambodia's first large-scale MPA – MFMA in 2016, upgraded to MNP in 2018 (*see Chapter 4 for more details*). With Royal Group's master plan and the MFMA zoning scheme being entirely at odds, it remains to be seen how the luxury tourism development plan will be implemented without undermining the MPA's ecological and social objectives.

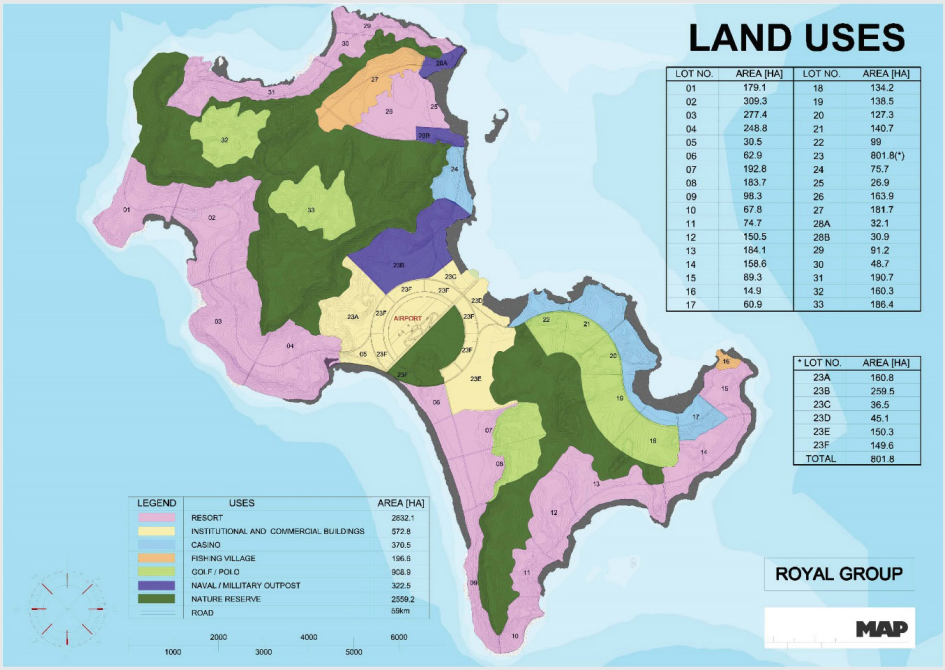

Figure 3.2 Royal Group's Master Plan for Koh Rong Island.[137]

The latest episode of land transfer is unfolding following Sub-decree 30 issued in March 2021, which transferred ownership of approximately 127,000 ha of land belonging to eight protected areas from the MoE to the Provincial Government of Koh Kong. The areas reallocated are in and around the Cardamom Mountains – widely considered among the most

134 Clark, J. 2022. Future Koh Rong. Future Southeast Asia. https://futuresoutheastasia.com/future-koh-rong/

135 Information obtained from a meeting with the Koh Rong Municipal Administration in April 2022 as part of the WB mission

136 Realestate.com.kh. (2017). Koh Rong Land Hard Titles Released Today to Fasttrack Island Development Plan. https://www.realestate.com.kh/news/Koh-Rong-Land-Hard-Titles-Released-Today-to-Fasttrack-Island-Development-Plan/

137 Source: Royal Group

pristine and biologically diverse rainforests in the region, directly connected to the Peam Krasop Wildlife Sanctuary on the coast, comprising the largest remaining mangrove forests in the Gulf of Thailand. One key difference of this latest development from the earlier examples above is that the reallocated areas are intended to be converted to social land concessions, not ELCs, by Koh Kong Province. This land transfer may therefore represent an attempt to redress the tensions between nature conservation and the traditional livelihoods of local communities inherent in the 2016 protected area system. However, while the land transfer concerns mostly degraded forest areas, some good forest land with a high integrity index has also been affected, and environmental and social impacts may consequently arise.

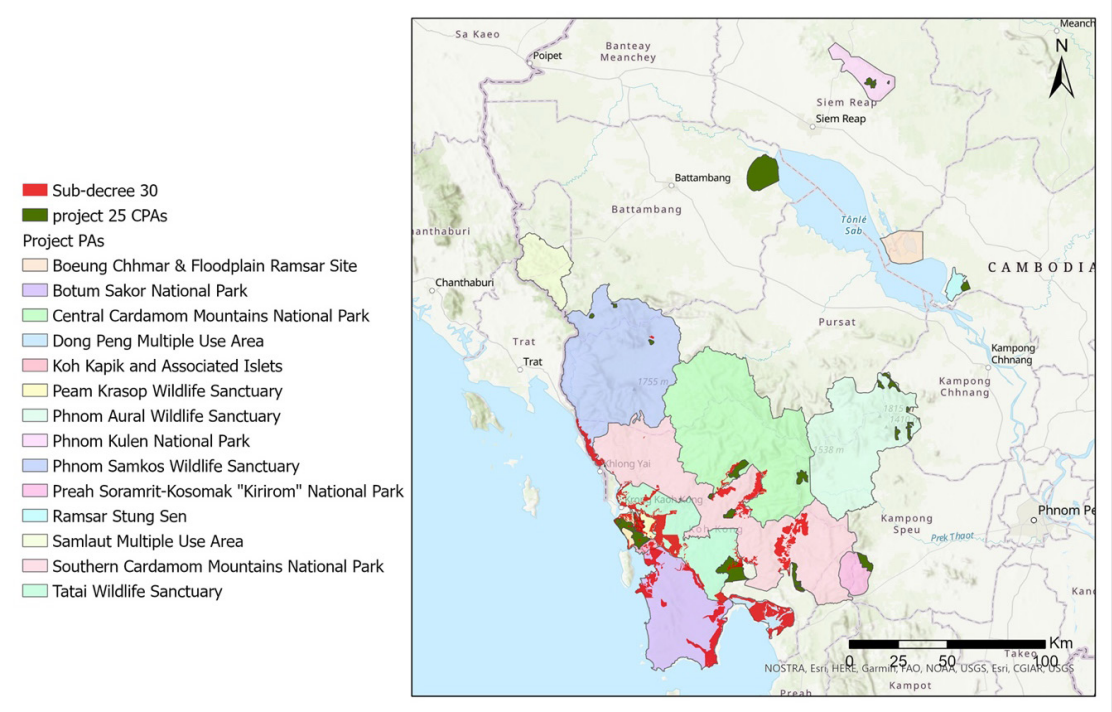

Figure 3.3 Aerial Overlaps between Existing Protected Areas and Sub-decree 30.

Recurrent patterns are observed across the cases of opportunistic coastal land development outlined above, which include (i) non-transparent and opaque decision making processes determining mega-scale land-uses often in favor of certain stakeholder groups; (ii) insufficient evidence of compliance with key legal requirements on due processes, including environmental and social impact assessments, prohibition of involuntary resettlement and mandatory stakeholder consultations; (iii) areal overlaps between conservation areas and return-seeking private investments with manifested and/or potential environmental and social repercussions. This highlights that Cambodia's Blue Economy development is at a crossroads, where the country can either continue toward uncoordinated, opaque, and opportunistic development or an alternative path that is more integrated, inclusive and maximizes sustainable investments and triple bottom line outcomes. While the overall trajectory to date resembles the former, this report argues that Cambodia has a significant opportunity to shift gears toward the latter. Such a sustainable transition must be supported by well-functioning institutions and backed by an enhanced legal and policy framework. A series of specific recommendations to strengthen governance and coordination is outlined in this chapter.

CHAPTER 4

Marine Spatial Planning and Marine Protected Area Development

CHAPTER 4

Marine Spatial Planning and Marine Protected Area Development

4.1 Marine Spatial Planning Background

MSP is a globally accepted, spatially oriented approach that maps the activities, needs and values of multiple users (and uses) of marine resources (e.g. industry, transport, energy, tourism, fisheries, aquaculture) to support informed and coordinated decisions related to natural resource management.[138] According to the United Nations Educational Scientific and Cultural Organization (UNESCO), MSP is a "public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a political process".[139] Increasing global demand for maritime and coastal areas by various users requires an integrated approach to support the development of a sustainable Blue Economy. An ecosystem-based approach to ocean management through MSP further promotes development of marine and coastal economies through the sustainable use of resources, and other spatial management tools such as Marine Protected Areas (MPAs).

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138 Ehler, C. and F. Douvere, *Marine spatial planning: a step-by-step approach toward ecosystem-based management: Intergovernmental Oceanographic Commission and Man and the Biosphere Programme*. 2009, UNESCO.

139 UNESCO. (2021). Marine Spatial Planning. Retrieved 17th March, 2021, from http://msp.ioc-unesco.org/about/marine-spatial-planning/

An MSP approach avoids single-sector elite capture by applying a more inclusive, equitable and coordinated process within a framework that requires balancing development and conservation goals and objectives.[140] It can help to mitigate conflict between user (or 'stakeholder') groups by ensuring varying stakeholders are acknowledged and thus support management pathways towards meeting various stakeholder objectives. Stakeholder engagement is a central component for achieving equitable and inclusive MSP, particularly for the development of MPAs. Research has shown that stakeholder engagement is the most significant factor influencing MPA success, and that its absence strongly influences failure.[141,142] Inadequate stakeholder consultation in MPA planning adversely impacts resource users and can result in a negative feedback loop, thereby increasing the risk of failure due to non-compliance. When stakeholder engagement is meaningful and thorough, it can also help to resolve user disputes and foster greater awareness about the need for marine conservation, fisheries management, and sustainable practices. Conversely, when rushed and tokenistic, stakeholder engagement will not realize these benefits and can have a negative impact on compliance and success.

While MSP focuses primarily on coastal and marine environments, it can greatly benefit from incorporating adjacent terrestrial zones into the planning process. An integrated land-sea approach recognizes the connection between land- and sea-use areas, and how land-use change can affect coastal and marine areas. For example, one major threat to nearshore ecosystems is the development of land that detrimentally impacts nearshore ecosystems such as coral reefs and seagrass meadows, through runoff of sediments, nutrients, and pollutants.[143] Coral reefs are particularly vulnerable, with more than one quarter of the world's reefs threatened by watershed runoff.[144]

MSP has gained momentum globally, and marine spatial plans are currently under development in around 70 countries.[145] Approximately 50% of all coastal countries, equating to more than half of the world's EEZ surface area, have marine spatial plans that are, at minimum, government approved. Most Southeast Asian countries, including Cambodia, have marine spatial plans that are 'under development'. However, examples of more localised approaches to MSP exist from across the region, offering opportunities to learn from different approaches (e.g., co-management approaches in Myanmar[146]).

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140 Frazão Santos, C., Ehler, C. N., Agardy, T., Andrade, F., Orbach, M. K., & Crowder, L. B. (2018). Marine spatial planning. World Seas: An Environmental Evaluation Volume III: Ecological Issues and Environmental Impacts, January, 571–592. https://doi.org/10.1016/B978-0-12-805052-1.00033-4

141 Giakoumi, S., McGowan, J., Mills, M., Beger, M., Bustamante, R. H., Charles, A., Possingham, H. P. (2018). Revisiting "Success" and "Failure" of Marine Protected Areas: A Conservation Scientist Perspective. *Frontiers in Marine Science*, 5. doi:10.3389/fmars.2018.00223.

142 Mizrahi, M., Diedrich, A., Weeks, R., & Pressey, R. L. (2018). A Systematic Review of the Socioeconomic Factors that Influence How Marine Protected Areas Impact on Ecosystems and Livelihoods. *Society & Natural Resources*, 1-17. doi:10.1080/08941920.2018.1489568

143 Halpern, B. S., et al. (2008). A Global Map of Human Impact on Marine Ecosystems. *Science*, 319(5865), 948-952. doi:10.1126/science.1149345

144 Burke, L., K. Reytar, M. Spalding, and A. Perry., UNEP Report - "*Reefs at risk revisited*". Management of environmental quality, 2011. 22(4).

145 Frazão Santos, C. et al. in World Seas: *An Environmental Evaluation, Volume III: Ecological Issues and Environmental Impacts* 2nd edn (ed. Sheppard, C.) Ch. 30 (Academic Press, 2019).

146 Wildlife Conservation Society, Myanmar.

4.2 MSP in Cambodia

Over the past decade and a half, MSP has been applied in various scenarios in Cambodia to support sustainable development of coastal areas, protect key marine and coastal ecosystems, and safeguard the livelihoods of local marine resource users. MSP was first piloted in Cambodia in 2007 by the JICA, who worked with the MPWT to develop a Master Plan study for Maritime and Port Sectors in Cambodia. During 2009 and 2010, JICA collaborated with the MLMUPC to conduct an Integrated Coastal Strategy and Master Plan for sustainable development.[147,148] Since then, the RGC has continued to incorporate MSP elements into their planning documents and processes, including spatial zoning of MPAs, ecosystem mapping through GIS,[149] and developing responses to pollution and climate change issues.

In 2015, the MoE initiated the first Integrated Ecosystem Mapping Initiative to consolidate existing spatial data and to build capacity for staff in spatial planning techniques for marine and terrestrial environments.[150] The MoE subsequently developed a National Protected Area Strategic Management Plan (NPASMP) in 2017, to help guide future planning and management of individual protected areas, in which spatial planning or integrated ecosystem mapping is one of the key activities.[151] In the NPASMP, an integrated ecosystem mapping approach was used to identify and prioritise specific zones, including areas of critical ecosystem and biodiversity importance, within an existing protected area system. In addition, a participatory framework for planning has been established and used to develop Physical Framework Plans (PFPs) and identify specific Coastal Zone Action Plans for each Province/Municipality.[152]

In 2018, the MoE worked in collaboration with the NOTC to develop a draft marine spatial plan for Cambodia's EEZ. This process centered on consolidating available spatial datasets into overlaying maps, and zoning these areas based on their functional uses. Outputs from stakeholder consultations across the coastal provinces, coupled with national-level, cross-sectoral workshops in Phnom Penh resulted in the identification of nine functional types and 33 marine functional zones (Table 4.1). This document is the most contemporary framework underpinning ongoing MSP implementation by the RGC and partners. Based on an aggregation of these best international standards[153,154,155], the MSP exercise conducted by the MoE and NOTC has been assessed against seven categories (Table 4.2).

147 Matsuoka, K. (2007). The Study on the Master Plan for Maritime and Port Sectors in the Kingdom of Cambodia. August 2007.

148 Yamada, K. (2010). The Study on National Integrated Strategy of Coastal Area and Master Plan of Sihanoukville for Sustainable Development-MLMUPC&JICA.

149 Nakornchai, P., Bordt, M., Pitaksereekul, N., & Praphotjanaporn, T. (2019). Asia-Pacific Marine Spatial Planning Snapshot. 2, 1–20.

150 UNDP. (2019). Human Development Report Cambodia 2019. Journal of Government Information, 28(3), 348–351. https://doi.org/10.1016/s1352-0237(01)00307-0.

151 MoE (2017). National Protected Area Strategic Management Plan-2017-2031.

152 Lyngby, J., Jeppesen, G., & Vann, M. (2017). Integrated Coastal Zone Management and Planning Principles In Cambodia. South-East Asia Water Forum 2005, Kuala Lumpur, Malaysia, October.

153 Pressey, Robert & McKinnon, Madeleine. (2009). Approaches to landscape- and seascape-scale conservation planning: Convergence, contrasts and challenges. Oryx. 43.

154 Beck, M.W, Z. Ferdaña, J. Kachmar, K. K., Morrison, P. Taylor et al. (2009). Best Practices for Marine Spatial Planning. The Nature Conservancy, Arlington, VA.

155 Ehler, C., and Douvere, F., (2009). Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. Intergovernmental Oceanographic.

Given the increasing scale and intensity of marine resource extraction and maritime area usage in Cambodia, coupled with the complexity of balancing the needs of different stakeholders, ongoing adaptation of existing MSP frameworks is of urgent importance.[156]

Table 4.1 Marine Functional Groups as identified in the MSP Draft for Cambodia's Entire Exclusive Economic Zone.

Functional Group (or Zone)	Number	Area (km²)	Occupied Mainland Coastline (km)
Fishery Zone	6	457.41	55.35
Port and Navigation Zone	5	88.14	9.71
Industrial Zone (including Special Economic Zone (SEZ))	4	233.27	15.93
Salt Pan Zone	3	85.57	24.03
Oil and Gas Zone	1	1,251.16	-
Community and Ecotourism Zone	6	2,864.63	193.55
Marine Protected Zone	3	2,278.73	57.25
Special Zone	2	112.22	40.71
Multi-purpose Zone	3	14,624.15	102.28
Total	**33**	**21,995.28**	**498.81**

Table 4.2 Review of the MoE/NOTC MSP Document against International MSP Best Practice Standards.

International Best Practice Requirement	Status in MoE NOTC MSP Document	Key Gaps Between existing MSP and International Best Practice Requirements	Recommendations
Identifying need, and responsible authority	The purpose of planning has been defined, as has the legal basis and the scope of the planning in spatial terms (page 3). The MoE is acting as the responsible authority.	While the MSP document outlines a list of underlying legal/policy documents, there is no clear legal basis identified for MSP. This should be defined and included.	N/A
Stakeholder identification and participation	Multiple consultations and cross-sectoral stakeholder workshops have been conducted, between specific groups identified as "national and local authorities", "Cambodia provincial level management departments and other stakeholders" and "institutions, universities, and various marine-related industries".	A full list of participating stakeholders has not been provided in the document. There is also no reference to the participation of the FiA, a key stakeholder for fisheries and MPA management, such as MFMAs (e.g. Kep existing MPA, Koh Sdach planned MPA) rather than MNPs.	The MSP document should be updated to include a comprehensive stakeholder list, with descriptions of inputs by those stakeholders and methods used to collect information.

156 MoE & China National Ocean Technology Center. (2018) Initial Cambodia Marine Spatial Planning (2018-2023). In Journal of Chemical Information and Modeling (Vol. 53, Issue 9).

Table 4.2 Review of the MoE/NOTC MSP Document against International MSP Best Practice Standards. (cont.)

International Best Practice Requirement	Status in MoE NOTC MSP Document	Key Gaps Between existing MSP and International Best Practice Requirements	Recommendations
Stakeholder identification and participation (cont.)	Aside from government, specific stakeholders referred to within the MSP document include the Royal University of Phnom Penh (RUPP), and Dara Sakor Tourism and Holiday Company.	There has been no reference to participation of international or local NGOs, or relevant civil society actors. Therefore, inputs from this sector cannot be reviewed or assessed.[157] There has been no reference to the participation CFis or Community Protected Areas (CPAs), which are critical institutions at the community/village level, and likely to be significantly impacted by MSP measures, as local rights-holders for marine resources, particularly fishers.	Other relevant government authorities (e.g., FiA) and key international and national NGO actors should participate in subsequent MSP adaptation processes. Stakeholder consultations with community members should be thoroughly recorded, and repeated if necessary to ensure that local institutions, particularly CFis and CPAs, have the opportunity to provide input to MSP and are acknowledged as coastal rights holders.
Analysis of the current situation, including socioeconomic and biological factors	The socioeconomic and biological context is described in detail, including substantial references to quantitative data across biological and socio-economic variables (page 8). Key environmental threats are also identified for each of the four coastal provinces (page 10).	Many of the key data sources used to inform the draft MSP are outdated, including data on coral reefs, protected areas, populations and marine fisheries catch volume.	Datasets should be updated and incorporated into future MSP iterations when the current document expires in 2023. Priority examples include: - Hard coral, fish biomass and seagrass cover data from Koh Rong & Koh Sdach (2012-present); - SMART patrol data from Koh Rong and Koh Sdach (2015-present); - Coral reef and seagrass data from Kep (2019); - Satellite mapping of fishing activities at MPA sites (2015 & 2018).

[157] Fauna & Flora International was invited to provide technical advice during the original MSP workshop with NOTC in December 2018, but the report does not allude to this.

Table 4.2 Review of the MoE/NOTC MSP Document against International MSP Best Practice Standards. (cont.)

International Best Practice Requirement	Status in MoE NOTC MSP Document	Key Gaps Between existing MSP and International Best Practice Requirements	Recommendations
Prediction of probable future conditions, including socio-economic and biological factors	The document states that MSP should take "future development trends" into account. Cambodia's vulnerability to future climate change-associated impacts, such as sea level rise and soil salinization, are acknowledged.	An assessment of vulnerability to climate change has not been comprehensively included in the MSP document, and climate adaptation/ mitigation are not systemically included in the management actions of the listed functional zones.	National and site-specific climate vulnerability assessments should be incorporated in order to help predict and plan responses to probable future conditions. Examples include: - Climate Vulnerability Reduction Assessment from the Koh Rong Archipelago.[158] - Koh Kong climate impact modelling and vulnerability assessment.[159] - - Cambodia Climate Change Alliance (2012) climate vulnerability risk assessment.
Designation of MSP objectives	The vision and goals of the MSP process are clearly stated in the document (page 17), followed by "action plans" containing specific objectives for each sub-category of economy, ecology, laws and regulations related to marine protection, technical training, and capacity building. The objectives are generally timebound to take place between 2020 to 2025 (page 18-19). For example, the following objective aligns with Sustainable Development Goal 14.5: *By 2020, conserve at least 10 percent of coastal and marine areas based on the best available scientific information, so as to ensure the MPAs percentage is consistent with national and international law.*	A number of the specific objectives under the "action plans" section are not sufficiently defined for progress to be tracked/ quantified. For example: *"By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts."* In this example, "significant adverse impacts" is a subjective statement which has not been defined.	MSP specific objectives should be reviewed to ensure that all are clearly defined, quantifiable and measurable against indicators, with provisions for assessing progress against each objective.

158 Chea, P., & West, K. (2017). Knowledge and perception of local community on climate change in Koh Rong Archipelago: applying vulnerability reduction assessment tools. Coastal and Marine Conservation Programme, Fauna & Flora International, in partnership with FiA.

159 ADB. (2014). Supplementary Appendix M - CAM GMS BCC-PPCR Climate Change Impact Modeling and Vulnerability Assessments for Koh Kong and Mondulkiri Provinces in Cambodia Part 1 : Climate Change Impact Modelling Part 2 : Climate Change Vulnerability Assessment. March.

Table 4.2 Review of the MoE/NOTC MSP Document against International MSP Best Practice Standards. (cont.)

International Best Practice Requirement	Status in MoE NOTC MSP Document	Key Gaps Between existing MSP and International Best Practice Requirements	Recommendations
Designation of MSP objectives (cont.)	These objectives are also underpinned by elaborated principles of sustainable development, diversification of marine resource utilization, space management and regulation, and coordination and inclusiveness. Nine functional use zone types are defined and described, specifically: Fishery Zone, Port and Navigation Zone, Industrial zone, Salt Pan Zone, Oil and Gas Zone, Community and Ecotourism Zone, Marine Protected Zone, Special Zone and Multi-purpose Zone.		
Implementation of agreed management plan	The document acknowledges the urgency of implementing MSP and obtaining for national-level approval to implement the designed marine spatial plan is identified as a key step in the zoning process (p.13).	The MSP remains a draft as of 2023. Its implementation planning is also unclear. This implies that there has been no implementation of the document as of 2023.	A full review of the implementation progress against the agreed marine spatial plan should be conducted and published, in order to assess achievements to date, identify gaps, and inform the final two years of the MSP document until its renewal in 2023.
Monitoring and adaptation of management plan	Long-term monitoring is recommended as a measure under the "management actions" of certain MSP zoning types, e.g. the Marine Protected Zone (page 29) and Fishery Zone (page 21), and the report also acknowledges that monitoring of marine resources requires long-term investigation and requires international support.	A comprehensive monitoring plan for assessing progress for implementing the marine spatial plan is not described in the document. No provision has been made in the document for review or subsequent adaptation of the MSP, and no further information has been provided to indicate that the MSP has been finalized since its creation in collaboration with NOTC in 2018.	Indicators should be identified for measuring MSP progress and included in a supplementary monitoring plan.

Table 4.2 Review of the MoE/NOTC MSP Document against International MSP Best Practice Standards. (cont.)

International Best Practice Requirement	Status in MoE NOTC MSP Document	Key Gaps Between existing MSP and International Best Practice Requirements	Recommendations
Incorporating ideals of gender, equity and inclusion into MSP	The document focuses largely on the biophysical and economic components in MSP, and lacks a social perspective that highlights stakeholder engagement. Bringing together marine stakeholders, including women and marginalized groups is essential for ensuring the MSP process is inclusive and representative of all stakeholders. Stakeholder engagement is a vital component in MSP to ensure that management measures are responsive to stakeholder interests and values, mitigate user conflict, build trust between different users, and to educate the public about how MSP will affect them.	The document does not apply a social safeguard mechanisms for MSP, nor a clear process for non-government stakeholder engagement.	The MSP process would benefit from developing a Stakeholder Engagement Plan, in line with WB's Environmental and Social Framework (ESF). This should be formulated to include a stakeholder analysis, a plan for free, prior and informed consent (FPIC), and a grievance redress mechanism.

4.3 Marine Protected Areas

Cambodia's marine, area-based management systems encompass a variety of different management styles and objectives, including Wildlife Sanctuaries, MNPs, Ramsar sites and MFMAs. For the purpose of this document, we refer to these collectively as MPAs.[160] MPAs can be described as marine or coastal areas in which human activities are managed and regulated primarily to achieve the long-term conservation of biodiversity. According to the IUCN, MPAs should aim "to achieve the long-term conservation of nature with associated ecosystem services and cultural values".[161] This highlights that MPAs should not only conserve biodiversity, but also to protect associated livelihoods and cultural values. Thus, as well as enhancing biodiversity, MPAs can complement fisheries management and support alternative livelihoods such as tourism.[162,163,164]

[160] Conversely, we do not include mostly terrestrial protected areas that also encompass marine zones, such as the Ream National Park in Sihanoukville Province.

[161] J., D. N., Hockings M., Holmes G., Laffoley D., Stolton S. & S. Wells. (2012). *Guidelines for applying the IUCN Protected Area Management Categories to Marine Protected Areas*. Retrieved from Gland, Switzerland.

[162] Garcia, S. M., Rice, J., & Charles, A. (2014). *Governance of Marine Fisheries and Biodiversity Conservation: Interaction and Co-evolution.* GB: Wiley-Blackwell.

[163] Jones, P. J. S. (2014). *Governing Marine Protected Areas: Resilience through Diversity*. Hoboken: Taylor and Francis.

[164] Roberts, C. M., Bohnsack, F., Gell, F., Hawkins, J. P., & Goodridge, R. (2001). Effects of marine reserves on adjacent fisheries. *Science*, 294, 1920-1923.

MPAs are receiving increasing attention in Cambodia, as a means to complement the existing protected area network, safeguard marine biodiversity and promote sustainable resource use. The RGC has made public commitments towards MPAs, indicating its pledge to conserve at least 10% of coastal and marine areas, in line with the Aichi Targets and SDG 14.5, which is further highlighted in the MoE/NOTC MSP document, and publicly announced during the 2016 and 2017 Our Oceans Conferences.[165] Most recently, Cambodia's MoE affirmed Cambodia's commitment to the principles of marine sustainability, equality, and resilience in socioeconomic development of marine environments at the East Asian Sea Congress led by the PEMSEA, held on 1-2 December 2021, in Preah Sihanouk province. While these commitments indicate government intent towards safeguarding marine and coastal environments, capacity for coastal management remains limited and investments into marine conservation and sustainability initiatives have been disjointed.[166] In addition, these commitments are centered on area-based targets, which incentivizes countries to protect areas based on area quantity, not conservation quality, thus obscuring the overall impact of the MPAs.

Cambodia's early attempts to apply area-based management to marine and coastal areas were undertaken between 1993 and 1999 under the authority of the MoE, and include Peam Krasop Wildlife Sanctuary, Ream National Park, Botum Sakor National Park, and the Koh Kapik Ramsar Site.[167] Until recently, these sites have experienced limited management, with no zoning, monitoring or active protection of marine habitats, and are focused predominantly on terrestrial and wetland habitats.[168,169]

Underpinned by a robust legal framework, a community-based management approach has played a central role in Cambodia's coastal management. MFMAs are co-managed by Community Fisheries (CFis), comprising elected village members responsible for local fisheries management measures and representatives from the Fisheries Administration (FiA) under the Ministry of Agriculture, Forestry and Fisheries (MAFF). Membership of CFi is free for committee members and funded through the support of government and Non-Government Organizations (NGOs). There are currently 45 CFis in Cambodia's coastal provinces, the majority of which are located on the mainland. Island-based CFis are on Koh Sdach in Koh Kong, and Prek Svay, Koh Rong Sanloem, and Daem Thkov in Preah Sihanouk. The Sihanouk CFis were established in 2003, 2008, and 2010, respectively to manage fisheries resources around the Koh Rong Archipelago. In 2016, Koh Rong Archipelago became the site of Cambodia's first large-scale MPA, known under national law as the Koh Rong Archipelago MFMA. This was established by a consortium led by FiA and FFI and subsequently upgraded to a Marine National Park in 2018. In

165 Our Ocean, Commitments, (2022). Retrieved from https://ourocean2022.pw/commitments/

166 Teoh, M., Sour, K., Glue, M., & Chea, P. (2020). Marine protected areas in Cambodia: a call for collaborative action. *Coastal & Marine conservation Programme, Cambodia.*

167 Teoh, M., Sour, K., Glue, M., & Chea, P. (2020). Marine protected areas in Cambodia: a call for collaborative action. *Coastal & Marine conservation Programme, Cambodia.*

168 Ministry of Environment (2017) *National Protected Area Strategic Management Plan 2017–2031*. Royal Government of Cambodia, Phnom Penh, Cambodia.

169 Ministry of Environment (2018) *Management Plan for Peam Krasop Wildlife Sanctuary 2018–2022 Koh Kong*. Royal Government of Cambodia, Phnom Penh, Cambodia.

2018, the FiA and Marine Conservation Cambodia (MCC) helped establish Cambodia's second MFMA covering 11,354 ha in Kep province. This MFMA was approved by the MAFF and the FiA Department of Fisheries Conservation (DFC), and with support from the Kep Provincial Administration Cantonment.[170]

4.4 Status of MPAs in Cambodia

Approximately 3.5% of Cambodia's EEZ (or 150,000 ha) is currently designated or proposed as a form of MPA (1.44% currently designated). Cambodia's two existing MPAs in Koh Rong (47,137 ha) and Kep (11,307 ha) cover nearly 60,000 ha across three provinces. Additional MPAs are at various stages of the planning process. All current and proposed MPAs in Cambodia are identified in Figure 4.1, and details summarized in Table 4.3 The following section provides a brief description of each of Cambodia's MPAs (existing and proposed).

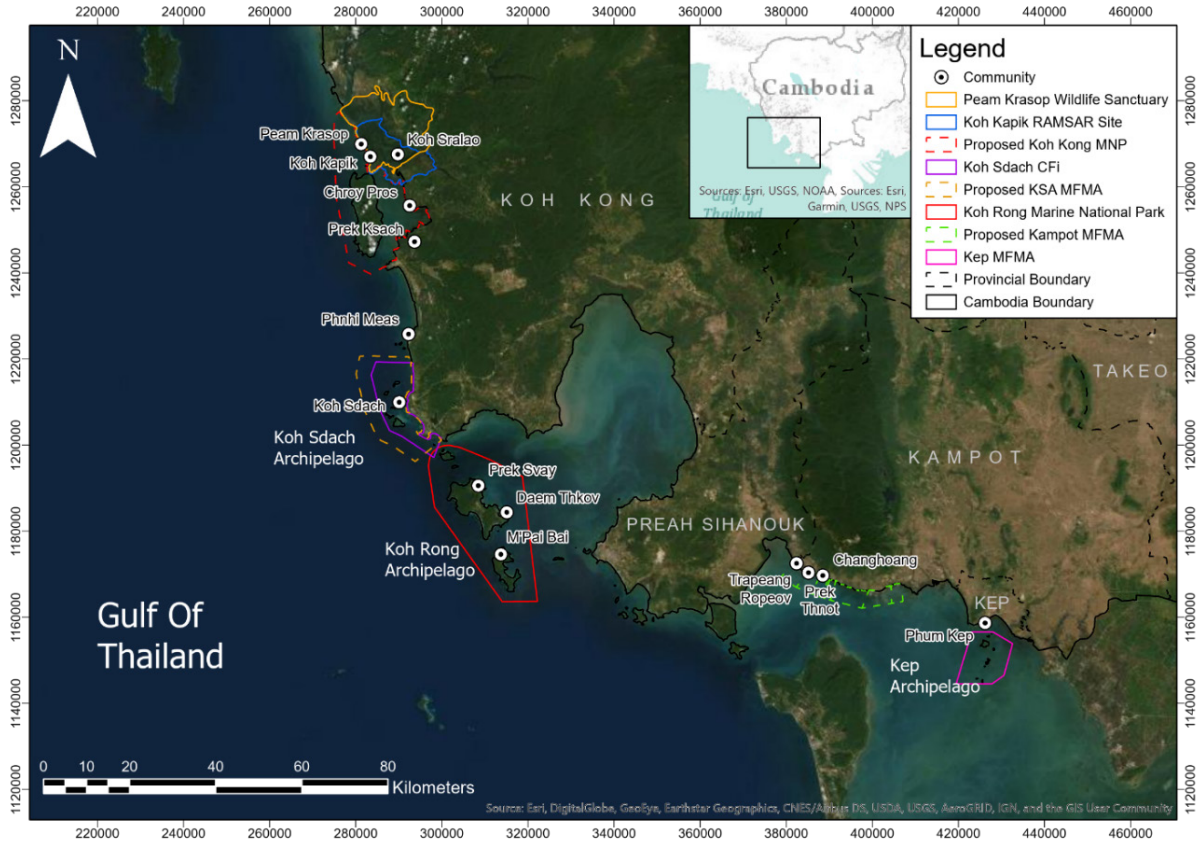

Figure 4.1 Five Key Sites within the Existing and Proposed Cambodian MPA Network. Moving from North to South: 1) Northern Koh Kong Sites, including Peam Krasop Wildlife Sanctuary, Koh Kapik Ramsar Site and Koh Kong Krao Island; 2) the proposed Koh Sdach MFMA; 3) the Koh Rong MNP (formerly MFMA); 4) Kampot proposed MFMA and 5) Kep MFMA.

170 Reid, A., Haissoune, A & Ferber, P. (2017). Koh Seh Environmental Assessment (Vol. 44, Issue 8). https://doi.org/10.1088/1751-8113/44/8/085201.

Table 4.3 Summary of Existing and Proposed MPAs in Cambodia.

Coastal Province	Site	IUCN Category	Marine Protection Status	Protected Marine Area (Ha)	Coastal Landscape and Coastal Population
PREAH SIHANOUK	Koh Rong Archipelago MNP	**Existing MPA** IUCN category VI + 1a zones	Marine Fisheries Management Area (MFMA) in 2016 Upgraded to Marine National Park (MNP) in 2018	40,500 ha in 2016, expanded to 47,137 ha as an MNP	7 islands 3 CFis (Koh Rong Sanloem, Prek Svay, Daem Thkov)
KOH KONG	Koh Sdach Archipelago MFMA	**New MPA** IUCN category VI + 1a zones	Community Fishery with some community-led marine management (no MPA designation) Planned as MFMA under FiA	16,158 ha Community Fishery Area (potential) ~30,902 ha proposed	9 islands in Kiri Sakor district 1 CFi (Koh Sdach) on island 1 coastal CFi (Prek Ksach) on mainland
KOH KONG	Koh Kong Krao MNP	**New MPA** IUCN category II	No marine protection Waters around Koh Kong Krao (large island) Planned as priority MNP for MoE	~30,000 ha estimated	1 large island and coastal wetlands 1 CFi (Chroy Pros)
KOH KONG	Peam Krasop Wildlife Sanctuary and Koh Kapik Ramsar site	**Existing Protected Area** IUCN category IV	Connected coastal protected areas with terrestrial, mangrove and wetland protection but limited active marine management or zonation	25,897 ha	Complex network of islets and coastal wetlands 3 coastal villages 3 CPAs (Koh Kapik, Koh Sralao, Peam Krasop) 1 CFi (Peam Krasop)
KEP	Kep MFMA	**Existing MPA** IUCN category VI + 1a zones	Zoned multiple-use MPA known as Marine Fisheries Management Area (MFMA) in 2018	11,348 ha	Archipelago of 12 small islands. No registered community 2 CFis adjacent to MFMA boundary (Phum Kep and Angkoal)
KAMPOT	Kampot MFMA	**New MPA** IUCN category VI + 1a zones	Kampot MFMA is in development with FiA (as of 2019) with some community-led marine management.	Undefined ~12,000 ha	Mainland coastal marine habitat with important mangrove, seagrass, and coral reef habitat. 3 CFis within proposed MFMA (Trapang Ropov, Prek Thnot and Changhoang)

4.4.1 Koh Rong MNP (formerly MFMA)

The Koh Rong Archipelago was declared the first MFMA in Cambodia after six years of extensive planning and consultation between governmental, NGO, private sector, and community stakeholders.[171] The MFMA site covers 40,500 ha, including mangroves, fringing reefs, and seagrass beds. The MFMA aimed to *achieve sustainable use of fisheries resources while encouraging sustainable tourism, contributing to poverty reduction, and maintaining a healthy ecosystem*.[172] Socio-economic and ecological data, including mangrove, coral reef, and seagrass bed conditions as well as maps of fishing areas were used to inform the zoning of this multiple-use MPA. Local fisheries and tourism concerns were the main considerations in this process.[173] The MFMA covers the islands of Koh Rong and Koh Rong Sanloem, which host five villages and the three CFis mentioned above. The archipelago lies in Preah Sihanouk province, southwest Cambodia, approximately 20 km from the coastal city of Sihanoukville.[174] The Koh Rong Archipelago MFMA was designed with six different zone types to protect sensitive habitats, enable fishing and other usages to occur in appropriate areas, and separate incompatible activities to reduce conflict between different stakeholder groups (Figure 4.2). The six management zones are as follows:

Fisheries Conservation Area: a potential area for aquatic animals and aquatic plants to shelter, spawn, feed, and grow. Fisheries Conservation Areas have strictly prohibited any activity that harms fishery resources, except for scientific research purposes permitted by MAFF.

Fisheries Protected Area: located close to Fisheries Conservation Area, in order to secure the sustainability of the fisheries resource. Fisheries Protected Areas can be used for ecotourism activities, family-scale fishing or recreational fishing that will not harm coral reefs or other biological resources.

Community Fisheries Area: the fisheries domain of the state, handed over to the local CFi under the agreement between the Chief of Cantonment of FiA and the communities or group of citizens living inside or around the fishery domain. Those citizens are mainly dependent on fishing for their daily life and use traditional fishing gear. They manage or use the Community Fishing Areas sustainably. Fishing activity operating inside the CFi area can be operated every season if small-scale fishing gear is used.

Fisheries Refugia: specific area for one or more aquatic species in critical periods of their life cycle. Fishing and other activities inside refugia are strictly prohibited during the agreed protected period; however, family-level fishing activities and other activities which are not harmful to fisheries resources are allowed outside of the protected period. Protected periods will vary in time and catered to each Fisheries Refugia in order to reflect the species biology and habitat unique to the respective areas.

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171 Barter, L., & Hastings, J. (2018). *An investigation into Cambodia's first marine managed area: Current state, strengths and areas for improvement.* May. https://skemman.is/handle/1946/31321

172 Ouk, V., Mizrahi, M., West, K., Chea, P., & Kim, & S. (2020). *Management plan for the Koh Rong Archipelago Marine Fisheries Management Area 2016-2020*.

173 Mulligan, B., & Longhurst, K. (n.d.). *Research & Recommendations for a Proposed Marine Fisheries Management Area in the Koh Rong Archipelago*.

174 Boon Pei Ya, Mulligan, B., Benbow, S. L. P., Thorne, B. V., Phalla, L., & Longhurst, K. (2014). Zoning Cambodia's first Marine Fisheries Management Area. *Cambodian Journal of Natural History*, 2011(2), 77–90.

Recreational and Research Area: zone with important recreational function which also protects marine resources to ensure benefits to tourism. This area permits recreational diving and responsible snorkeling to view coral and other fisheries resources and to collect scientific information for monitoring resource changes/trends. All kinds of fishing activities are banned inside this area.

Multiple Use Area: identified outside conservation, protection, community fisheries, and fisheries refugia. This area allows construction or other activities if they are not harmful to fisheries resources and allows small-scale and medium-scale fishing activities, except trawling nets.[175]

Within two years of MFMA designation, the Koh Rong Archipelago MFMA was upgraded to a MNP by the MoE in 2018, expanding the site area from 40,500 ha to 54,248 ha (including 47,137 ha of ocean and 5,311 ha of land). This equates to a higher protection status under the National Protected Area Law. The Koh Rong Archipelago MNP is currently one of only two formal MPAs in Cambodia with active management, with patrols funded by the RGC and FFI. While management improvements are still needed, Management Effectiveness Tracking Tool (METT) analyses point to a steady increase in effectiveness. Moreover, biological monitoring has generated evidence of ecosystem health stabilization and improvement in the period since original designation. At the time of writing, the zonation agreed under the MFMA is still being used as the basis for the management of the new MNP, due to the management authority issue discussed in Chapter 3. The expanded MNP boundary is shown in Figure 4.2.

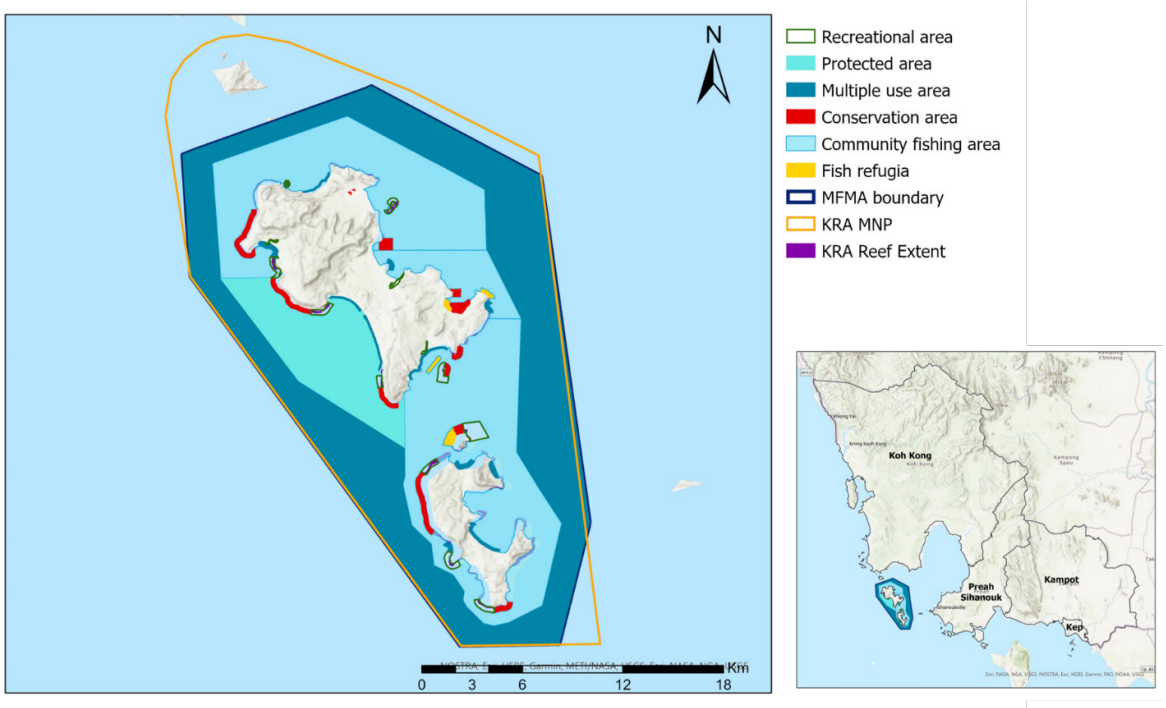

Figure 4.2 Zoning Map developed for the Koh Rong Archipelago MFMA, with MNP Boundary Overlaid.[176]

175 Ouk, V., Mizrahi, M., West, K., Chea, P., & Kim, & S. (2020). *Management plan for the Koh Rong Archipelago Marine Fisheries Management Area 2016-2020*.

176 Red: Conservation Area; Light Blue: Community Use Area; Yellow: Fisheries Refugia; Dark Blue: Multiple Use Area; Green: Protected Area; Purple: Recreational Area.

4.4.2 Koh Po and Koh Tonsay Archipelago (Kep) MFMA

In 2018, the MAFF issued a Ministerial Proclamation announcing the Koh Po and Koh Tonsay Archipelago MFMA (henceforth the Kep MFMA). This MFMA covers 11,307 ha and is separated into four different zones. It is designed to protect the habitat of threatened marine species, such as the Irrawaddy dolphin, dugong, sea turtles, seahorses, and coastal habitats such as coral reefs, seagrass meadows and mangrove forests. The MFMA also aims to prevent illegal and destructive trawling, reduce conflicts over resource use among local fishers, and ensure sustainable fishing practices and effective management of fisheries and coastal ecosystems to improve local livelihoods. The DFC worked in close collaboration with Mangroves for the Future (MFF), the IUCN, MCC and the SEAFDEC/UNEP/GEF Fisheries Refugia Project[177] to zone the MFMA (Figure 4.3). The management zones of Kep MFMA have been zoned following the Koh Rong MNP zoning regulations.

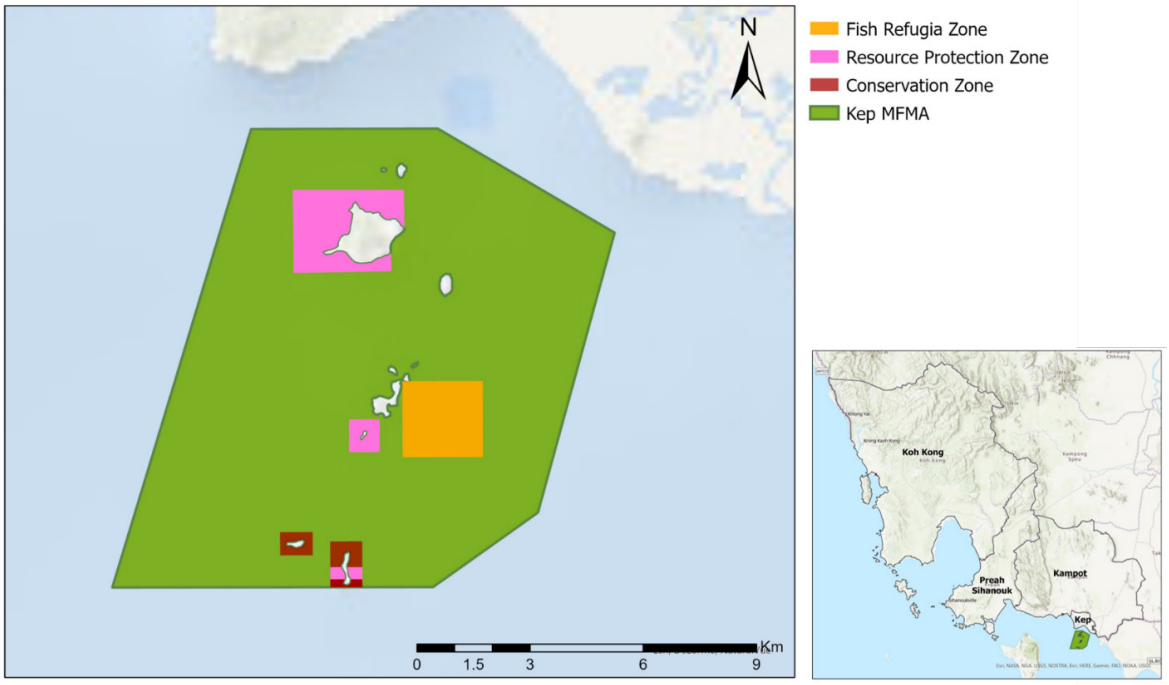

Figure 4.3 Koh Po and Koh Tonsay (Kep) Archipelago MFMA Management Zones[178]

[177] SEAFDEC. (2022). The South China Sea Fisheries Refugia Initiative. Retrieved from https://fisheries-refugia.org/?start=15

[178] Dark red for conservation zone; yellow for fisheries refugia, green for fisheries protected area, and purple for recreational and research area.

4.4.3 Peam Krasop Wildlife Sanctuary and Koh Kapik Ramsar Site

Located in Northern Koh Kong province, Peam Krasop Wildlife Sanctuary (PKWS) exists currently as a terrestrial and coastal protected area, covering 25,897 ha of Cambodia's most extensive and intact mangrove ecosystems, and supporting rare species, including hairy-nosed otter, Irrawaddy dolphin and finless porpoise. The area is also important to the fisheries-based livelihoods of local communities. Whilst PKWS has an existing management plan created by MoE and provincial authorities, with support from IUCN, this focuses primarily on the coast and mangroves rather than the wider marine area. There are plans to incorporate PKWS into an overarching Northern Koh Kong coastal complex of multiple protected areas, linking PKWS with the adjacent Koh Kapik Ramsar site and a further proposed MPA in neighboring Koh Kong Krao. Whilst these integrated marine protection plans are still at an early stage, a roadmap for development of a Marine National Park in Northern Koh Kong has been drafted in consultation with MoE. The planned Peam Krasop zoning plan is shown in Figure 4.4.

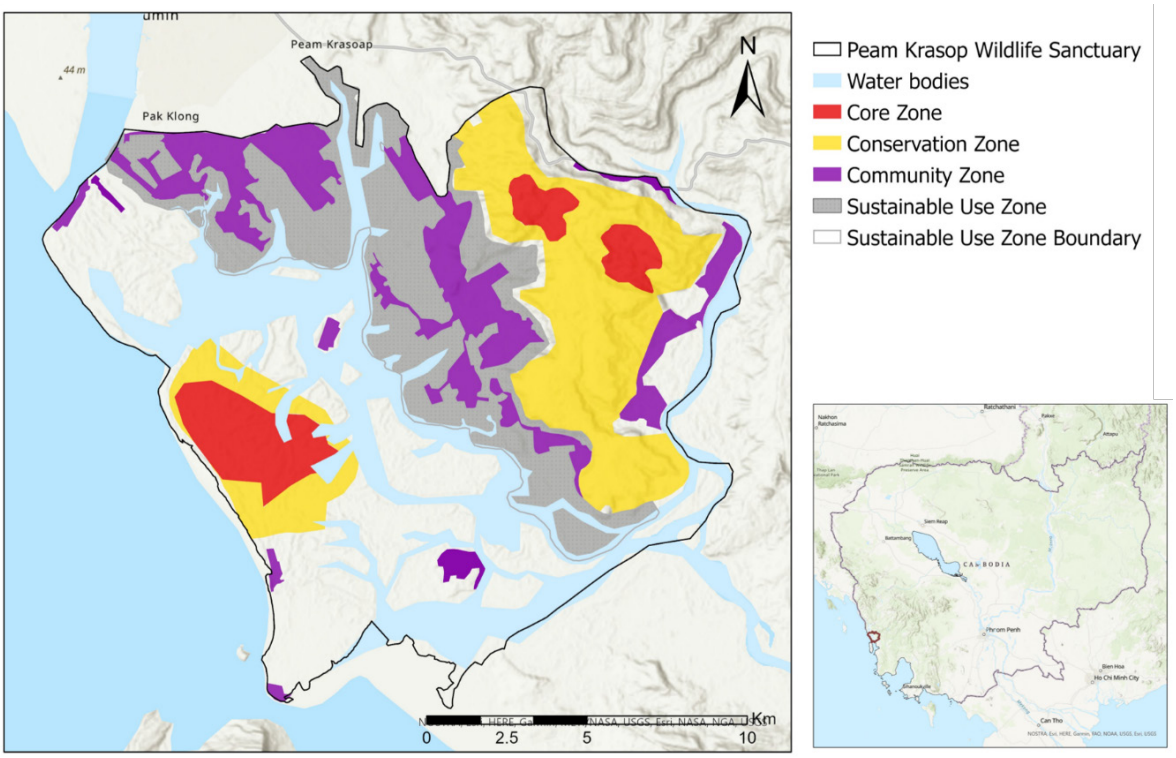

Figure 4.4 Planned MPA Zones in Peam Krasop Wildlife Sanctuary, with Zone Types (fisheries, conservation, social, economic)[179]

[179] Department of Fisheries Conservation/Cambodia. (2021). Department of Fisheries Conservation/Cambodia, 2021. Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand, Fisheries Refugia Profile and Landing Site in Kampot Province/FR/CAM-SP03, 23 p.

Koh Kapik is made up of alluvial islands situated adjacent to mainland Koh Kong province. Spanning a total of 12,000 ha, a portion of which is located within PKWS, the area was designated as a Ramsar site in mid-1999 (Figure 4.5). The area is characterized by vast areas of relatively intact mangrove forest and thus contributes significantly to the stabilization of the coast against coastal erosion. These mangrove systems also play a critical role as a nursery ground for coastal fish populations, supporting small-scale fisheries.

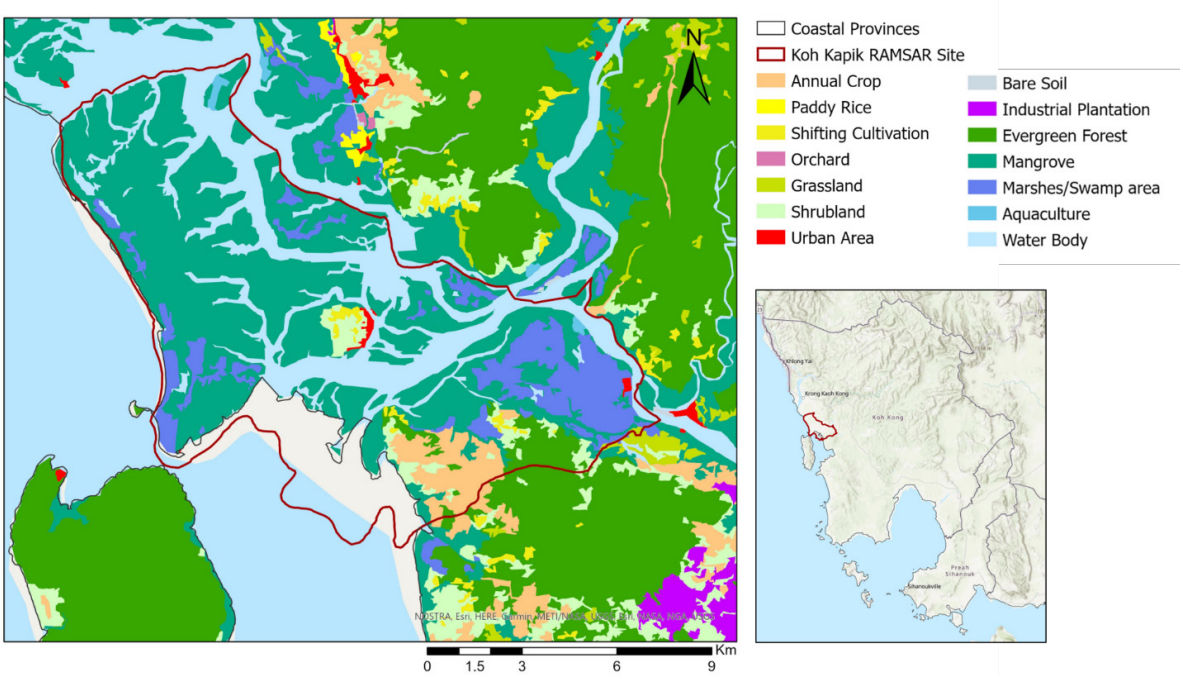

Figure 4.5 Map Showing Outer Boundary and Habitat Types within Koh Kapik Ramsar Site.

4.4.4 Proposed Kampot MFMA

Kampot Province, in southern Cambodia, has a total coastline of 66.5 km and a sea area of 55,800 ha, supporting a large seagrass area that contains about 78% (25,241 ha) of the total seagrass known in Cambodia.[180] Currently, the NGO Wild Earth Allies (WEA) cooperates with FiA, MCC and Prek Thnot CFi to propose creating an MFMA in Kampot province, where seagrass, coral reefs and marine mammals are threatened by industrial development, land reclamation and illegal fishing. The size of the proposed MFMA is approximately 8,486 ha, including conservation zones and fish refugia areas. In Prek Thnot and Trapang Ropov CFi area, permanent and seasonal no-take zones are proposed within the broader MFMA. The aim of this proposed MFMA is to reduce illegal fishing activities, protect and regenerate marine life, and ensure the sustainability of local fisher livelihoods and associated communities.[181] The draft zoning plan for the Kampot MFMA is shown in Figure 4.6.

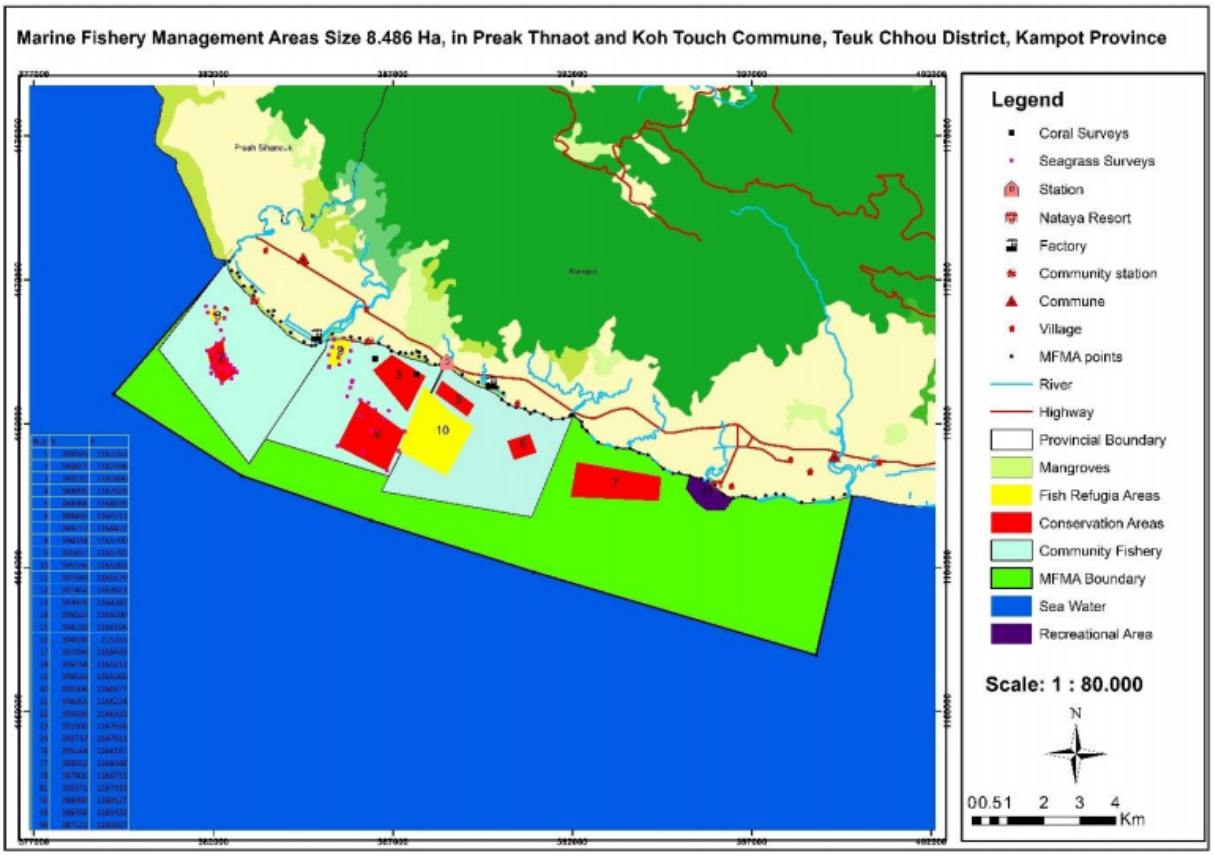

Figure 4.6 Draft of Zoning Map of Proposed MFMA in Kampot province, including Proposed Management Zone Types.

180 MoE & China National Ocean Technology Center. (2018) Initial Cambodia Marine Spatial Planning (2018-2023). In Journal of Chemical Information and Modeling (Vol. 53, Issue 9).

181 WEA, & MCC. (2020). Marine Biodiversity Assessment (Issue September). Ya, B. P. (2011). A Review of Marine Protected Area Monitoring Programmes. Fauna & Flora International

4.4.5 Proposed Koh Sdach MFMA

The FiA and Koh Kong provincial authorities, with support from FFI, are currently working to designate the Koh Sdach Archipelago as an MFMA, covering 16,158 ha of significant marine biodiversity and valuable fishing grounds. Creating the MFMA will protect Cambodia's healthiest coral reefs yet surveyed (Ouk et al, 2020), strengthen marine resource management and secure sustainable livelihoods that support community well-being. The local authorities and the Koh Sdach community also strongly support action to improve waste management and prevent plastic from entering the ocean, thus creating the opportunity to integrate marine plastic pollution reduction measures into MPA management frameworks for the first time in Cambodia. The archipelago is managed as a Locally Managed Marine Area (LMMA) under the active Koh Sdach CFi, and MPA zoning consultations and management planning are ongoing (Figure 4.7).

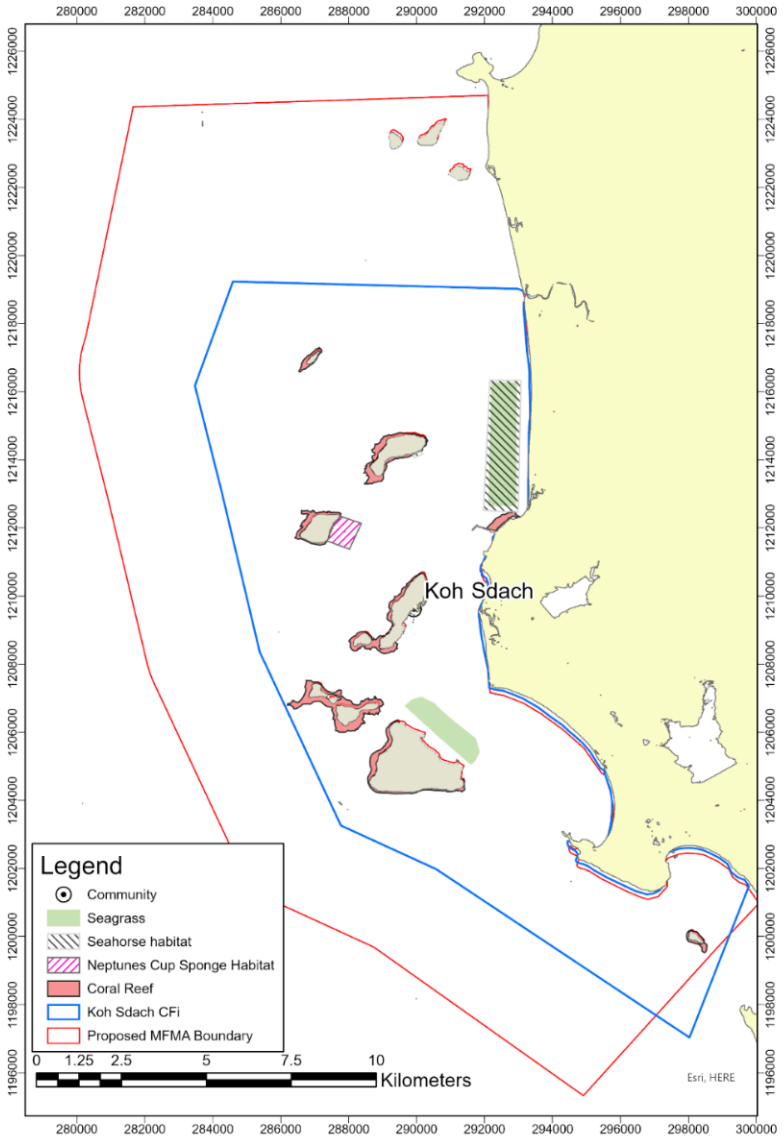

Figure 4.7 Map of Proposed Koh Sdach Archipelago MFMA, including Key Habitats and Outer Boundaries. Zoning Types are still to be confirmed by Stakeholder Consultations.

4.4.6 Proposed Koh Kong Krao MNP

Koh Kong Krao is located in Koh Kapik commune, Koh Kong district, Koh Kong province. The MoE is working to conserve the environment in the Koh Kong Krao area and has hired experts to study documents and data related to this island. Moreover, the MoE plans to list the island as a Marine National Park (MNP) after baseline studies are completed. The area is rich in natural resources and marine biodiversity, and Cambodian environmentalists have demanded action to formally protect the Koh Kong Krao protected area. MoE will collaborate with FFI to designate Koh Kong Krao as a MNP and a connected part of the wider Northern Koh Kong coastal complex of protected areas.

CHAPTER 5

Roadmap for the Development of Key Blue Sectors

CHAPTER 5

Roadmap for the Development of Key Blue Sectors

5.1 Background on Blue Economy Sectors

Cambodia's coastal provinces are faced with a multitude of challenges related to the sustainable use of marine and coastal resources to support economic growth and improved livelihoods, whilst simultaneously safeguarding their health for the future. Balancing multiple social, economic development and environmental objectives for current and future uses, and under uncertainty (e.g. global pandemics, extreme climatic events), requires coordinated planning efforts with integration across sectors. Within Cambodia's current ocean-based economy, there is significant potential to make sustainable improvements in fisheries, tourism, and shipping and ports, as well as explore emerging blue growth areas, such as blue carbon. The following chapter provides a sector-by-sector analysis of key Blue Economy sectors and concludes with a summary framework of opportunities for coordination between sectors, to support a sustainable Blue Economy for Cambodia.

5.1.1 Fisheries

The sustainable management of fisheries is essential to underpin a Blue Economy roadmap for Cambodia, due to the importance of fisheries for food security, health and as a source of livelihood for coastal communities. Fisheries (marine and freshwater), including aquaculture, generated US$1.1 billion in economic revenue in 2015 and accounted for 5% of the national gross domestic product in 2019. The *National State of Oceans and Coasts of Cambodia* report notes that the fisheries sector is the dominant source of income for coastal populations.[182] Of this, sources claim that

[182] PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia.* Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Quezon City, Philippines.

10,000 people are employed in marine fisheries.[183] Cambodia's marine fishery domain is divided into: 1) inshore fishing area, which extends from the coastline at high tide, to the 20-meter-deep line; and 2) offshore fishing area, which extends from the 20-meter-deep line to the outer limits of the EEZ.

Marine fisheries account for a relatively small share of Cambodia's total fisheries production, though actual numbers are likely to be seriously underestimated. In 2016, Cambodia's fishery production was reported to be 801,000 tons, comprising 509,000 tons (64%) from inland fisheries, 120,000 tons (15%) from marine fisheries and about 172,000 tons from aquaculture (21%).[184] Total fisheries production grew at an average rate of 5.2% per annum between 2000 and 2015.[185] Actual fisheries production is likely to be seriously underestimated due to the large volume of family-scale fisheries and illegal fishing activities, both of which are not recorded. Targeted marine fish include sweetlips (family *Haemulidae*, genus *Plectorhinchus*), snapper (family Lutjanidae), barramundi cod (*Chromileptes altivelis*), grouper (family *Serranidae*), wrasse (family *Labridae*, and parrotfish (family *Scaridae*), mackerel, and anchovy. Targeted invertebrates include crabs, cuttlefish, mollusks, shrimp mussels, oysters, and squid. Almost half of the marine fishing fleet is composed of bottom-trawler vessels, operating in territorial waters. The number and size of Cambodia's marine fishing fleet is presented in Table 5.1.

Table 5.1 Number of Boats in Cambodia's Marine Fishing Fleet.[186]

No engine	Engine (horsepower)				Total
	<10 (HP)	10-30 (HP)	30-50 (HP)	>50 (HP)	
Number of boats 550	3,792	2,131	162	381	**7,016**

As populations increase across the coast, so does pressure on marine resources such as fisheries. The long-term sustainability of marine fisheries is threatened by overfishing,[187] illegal, unreported, and unregulated (IUU) fishing, significant post-harvest losses, and limited opportunities for growth in small enterprises. Underpinning these threats are inadequate legislation, ineffective law enforcement, and lack of regional coordination between neighboring provinces and countries. As a result of the high volume and persistence of destructive IUU fishing accounts in Cambodia, the European Union (EU) has red-carded Cambodia.[188] A revised Law on Fisheries (2006) is a requirement for future EU support.[189] In addition, a lack of appropriate post-harvest infrastructure and technologies,[190] and limited opportunities for micro, small, and medium-sized enterprises (MSMEs) to access finance[191] hinder opportunities for improved livelihoods.

183 World Fish. Cambodia Profile. https://www.worldfishcenter.org/where-we-work/asia/cambodia
184 Annual Report from the Ministry of Agriculture, Forestry and Fisheries (MAFF) 2017.
185 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.
186 FiA. 2014
187 PEMSEA. (2019). *National State of Oceans and Coasts of Cambodia*. Quezon City, Philippines.
188 EU Red-Card status places Cambodia on the list of 'non-cooperating' countries, from which capture fishery exports to the EU market are prohibited.
189 https://www.pewtrusts.org/en/research-and-analysis/articles/2018/08/01/eu-fights-illegal-fishing-one-card-at-a-time
190 Food and Agriculture Organization and World Health Organization. 2020. Code of Practice for Fish and Fishery Products. Rome.
191 International Finance Corporation. 2019. Exploring the Opportunities for Women-owned SMEs in Cambodia. Washington, DC.

Solutions to underpin a competitive fishing industry are broadly centered on addressing the above challenges. Reforms cover improvements in infrastructure, accessibility, hygiene, storage facilities, finance, administration, and capacity development. For example, specific recommendations to improve the sanitation and hygiene at major ports and other landing centers include improving access to electricity for powered ice plants, chilled-storage units, clean amenities, and fresh drinking water.[192] These improvements would maximize post-harvest supply and reduce costs, and improve Cambodia's standing in the international markets. Establishing and improving the services provided by major training centers is important for skilling-up of small-scale enterprises, which is crucial for increasing opportunities for access to financial credit.

To address these challenges, Cambodia requires a strong and sound legal framework for the fisheries sector, and institutional mechanisms for overseeing sanitary control at all stages of production, including capture, handling, processing, and marketing. In addition, it is recommended (*in Chapter 4*) that the NCCMD and the National Committee for Maritime Security (NCMS) work closely with MAFF, local authorities, and community fisheries to strengthen district-level efforts to eliminate IUU fishing in coastal areas. This requires maintenance of registration of national and foreign ships authorized to fish in Cambodia. With the European Union's 2019 decision to partially ban duty-free exports from Cambodia,[193] a priority should therefore be to establish a sound Competent Authority with legal support to account for the entire fisheries value chain. The FiA is the key institutional body responsible for overseeing the fisheries sector under MAFF.

Several projects have been proposed or approved for funding to address constraints in the marine fisheries sector. Firstly, a project was funded by the European Union targeting capture and post-harvest fisheries development in inland, marine and aquaculture fisheries, under the "Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector", planned to run from 2019-2024. The 'CAPFISH Capture - Post Harvest Fisheries Development' project aims to support sustainable development of post-harvest fisheries through upgrades to the regulatory and institutional system. Secondly, the Asian Development Bank (ADB) is implementing a project[194] that aims to achieve the following outputs: (i) enhanced coastal and marine ecosystem management; (ii) improved climate resilient post-harvest infrastructure; (iii) promote investment in safe and sustainable fisheries value chain; and (iv) establish and pilot a Marine Finance Facility. The project is proposed to be executed between 2023–2030 by MAFF.

Specific activities recommended in the CAPFISH project include strengthening the institutional capacity of the Competent Authority, investing in up-skilling and capacity building within MSMEs, and enhancing investment and business support mechanisms from the private sector. Intended outcomes of the project include providing credit options to promote MSMEs investments, establishing business partnerships between the MSMEs, cooperatives, and fishers, improving food

192 United Nations Industrial Development Organisation (UNIDO), Fisheries Administration (FiA), & MAFF (2015). Final Report: Value Chain Assessment of Marine Fisheries Sector and Roadmap for Development. Vienna, Austria.

193 https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1469

194 Asian Development Bank (2021). Concept Paper: 'Kingdom of Cambodia: Sustainable Coastal and Marine Fisheries Project'

quality and access to national, regional, and niche markets, digitizing seafood catch, storage, and sale through a traceable system, and modernizing the fishing fleet for more sustainable nearshore fishing practices.

In 2015, an assessment was conducted that aimed to identify where improvements could be made across the fisheries supply chain, with key findings detailed in a Value Chain Assessment Report.[195] In the report, major constraints in fisheries post-harvest and trade were identified, and approaches for reform were recommended, across multiple levels of the value chain in terms of capacity building, value addition, market development and compliance. The constraints noted include the following: the current regulatory requirements are not recognized regionally and globally; marine fishery resources are not adequately managed; and the harvest and post-harvest technology standards are not meeting global quality and food safety standards. The results of the assessment highlight opportunities to further develop the fisheries sector through increasing productivity, better management of resources, upgrading of the infrastructure and strengthening the institutional climate. The proposal published a roadmap for marine fisheries value chain development which notes opportunities for improvements at several entry points in the fisheries value chain, as detailed in Box 5.1.

Box 5.1 A Road Map for Marine Fisheries Value Chain Development (by UN Industrial Development Organization (UNIDO), FiA and MAFF)[196]

1. **Manage marine fisheries resource:** The marine fisheries resource shall be effectively and sustainably utilized through proper management of fishing operations and enforcement of regulations, particularly in relation to foreign fishing vessels.

2. **Prevent illegal fishing through intensifying surveillance and regional cooperation:** Provincial governance shall be strengthened to oversee fishing operations in the deep sea and prevent illegal fishing.

3. **Develop infrastructure along the value chain:** Infrastructure along the value chain such as landing centers, ice factories, roads, public health facilities, electricity, and cold storage shall be developed to improve the post-harvest handling and reduce post-harvest losses in terms of quantity, quality and safety.

195 United Nations Industrial Development Organization (UNIDO), Fisheries Administration (FiA), & MAFF (2015). Final Report: Value Chain Assessment of Marine Fisheries Sector and Roadmap for Development. Vienna, Austria.

196 United Nations Industrial Development Organisation (UNIDO), Fisheries Administration (FiA), & MAFF (2015). Final Report: Value Chain Assessment of Marine Fisheries Sector and Roadmap for Development. Vienna, Austria.

4. **Strengthen and harmonize the regulatory framework:** The legal framework shall identify a single body or organization as Competent Authority (CA) and clarify the roles and responsibilities with sufficient authority to enforce and implement seafood safety requirements and reduce overlapping mandates.

5. **Establish and strengthen Competent Authority:** The CA shall have sufficient human, technical and financial resources to implement the food safety programs across the value chain including at the provincial level.

6. **Establish official control protocols and enforcement:** Currently, a transitional modality has been developed which is called "Quality Seal". Implementation of this on a pilot scale would develop skills among the CA personnel and create awareness among other stakeholders.

7. **Develop capacity of Competent Authority:** Capacity of the CA shall be developed in terms of guidelines, policies, protocols, checklists/tools, trainers and training resources.

8. **Strengthen provincial fisheries offices for official control and enforcement:** Provincial government offices shall have fish inspection wings supervised or controlled directly by Competent Authority to have effective control along the value chain.

9. **Implement traceability through registration of actors:** Actors along the value chain including fishing vessels, landing centers, ice factories, processing centers shall be brought under a registration process to facilitate traceability, which is essential in international markets.

10. **Improve food safety awareness and skills of producers and processors:** Food safety skills need to be developed through better communication and awareness programs. International donors and development partners may include such activities in their programs.

11. **Promote product diversification and identify new markets:** Promote enterprise development through modernization of handling and processing facilities for better productivity, value addition and product diversification which will create new markets.

12. **Improve dialogue between producers and policy makers:** Stabilizing the business enabling environment is required through dialogues between producers, policy makers and supporting institutions.

13. **Liberalize business documentation systems:** Excessive documentation to start or to run the business constitutes a barrier to moving from informal to formal business. In addition, preparation of formal business documentation is time consuming. Reforms on reduced documentation, single-window approach and reduced fees for such registrations are required.

Numerous opportunities exist to promote sustainability improvements alongside fisheries development reforms in support of a Blue Economy. Critical to building stronger, more effective, and equitably managed MPAs, a central monitoring system is recommended to support management of coastal and marine fisheries and ecosystems using remote sensing and drone mapping. Enhancing stakeholder engagement and community participation is also essential. While CFis are management systems designed to support local fishers, CFi patrol teams require adequate equipment, technology, and an operating budget. Therefore, new financing streams from diverse investors are needed to support improved management and monitoring of MFMAs. ADB is supporting the development of a Marine Finance Facility to promote the innovative use of public funds and mobilize private investment to sustain and support effective coastal and ecosystem management.[197] Another potential avenue for generating new finance for marine management is through certification schemes (e.g., Marine Stewardship Council) whereby higher market prices can be obtained on sustainably caught fish.

5.1.2 Tourism

Tourism is a growing sector for Cambodia, driving the need for a well-designed strategy for sustainable tourism. Tourism accounted for 17% of Cambodia's annual GDP on average from 2010-2019. It is estimated that Cambodia's islands received approximately 1 million tourists in 2019 with high potential for further growth. In particular, the Koh Rong Archipelago has become a very popular coastal tourism destination. Despite the 63% decline in international tourists in 2020 compared to 2019, the tourism sector is anticipated to be a key driver of economic recovery as international travel lifts post-COVID-19.[198] The COVID-19 induced tourism hiatus has exposed the reliance of some places on tourism and presents a unique opportunity to design strategies that increase the resilience of local communities by diversifying livelihoods and building more sustainable tourism practices.[199]

The increasing trends in visitors participating in nature-based tourism activities in Cambodia indicates that ecotourism is an emerging growth area. Ecotourism is recognized as a subset of tourism activities that are related to nature-based activities, such as birdwatching, fishing, snorkeling, diving, camping, hiking, kayaking and adventure tourism in natural areas. The number of tourists visiting coastal regions and participating in ecotourism activities doubled between 2014 and 2019; accounting for 16% of all tourist visits in 2019.[200] The high value of nature-based tourism has been recognized globally, generating US$344 billion to US$600 billion per year,[201,202] with coral reefs alone

197 Asian Development Bank (2021). Concept Paper: 'Kingdom of Cambodia: Sustainable Coastal and Marine Fisheries Project'

198 Rawlins, M., Kornexl, W., Baral, S., Baromey, N., Martin, N., & Ray, N. (2020). Enabling Ecotourism Development in Cambodia. World Bank: Washington, DC.

199 Reef Resilience Network: https://reefresilience.org/management-strategies/sustainable-tourism/

200 Rawlins, M., Kornexl, W., Baral, S., Baromey, N., Martin, N., & Ray, N. (2020). Enabling Ecotourism Development in Cambodia. World Bank: Washington, DC.

201 World Travel and Tourism Council. The economic impact of global wildlife tourism - Travel and tourism as an economic tool for the protection of wildlife. https://travesiasdigital.com/wp-content/uploads/2019/08/TheEconomic-Impact-of-Global-Wildlife-Tourism-Final-19.pdf (2019).

202 Waldron, A. et al. Protecting 30% of the planet for nature: Costs, benefits and economic implications. (2020).

estimated to contribute around US$36 billion/year (2013) to global economies.[203] The growing trend of ecotourism in Cambodia, suggests that economic growth from this sector could be harnessed.

Ecotourism brings far reaching potential for socioeconomic benefits, which can help ensure more sustainable management of Cambodia's natural coastal assets. Ecotourism can support livelihood diversification opportunities for Cambodia's coastal communities, stimulate growth in rural economies, and contribute to payments for ecosystem service (PES) schemes. Generating finance from ecotourism revenues (e.g., park fees) can also offer a mechanism for sustainable financing to support the management of Cambodia's MPA network. Retaining and improving the quality of the natural assets within ecotourism destinations can command higher visitor prices and enhance competitiveness. However, not all models of tourism bring positive social changes. For example, tourism can bring changes to local culture, such as increasing alcohol use, and uncontrolled development can drive widespread destruction of the environment. Therefore, the local community context needs to underpin how tourism opportunities are explored and worked into a strategic framework.

Realizing Cambodia's Blue Economy potential requires integrated ecotourism destination planning and management to identify and formulate a coordinated strategy for coastal tourism attractions. Specific recommendations for improving the enabling environment for ecotourism in Cambodia cover strategic and coordinated destination planning, management, and marketing. The Ministry of Tourism (MoT) recently launched a marketing campaign to promote Cambodia through ecotourism and Khmer cuisine. One of the particular areas of focus is to promote Cambodia's ecotourism sites within protected areas, including the islands and coasts.[204] There is further progress needed to support and scale-up efforts in ecotourism in coastal provinces (Box 5.2).

The Reef Resilience Network has developed key lessons for designing sustainable tourism plans that are locally adaptable, that benefit people's livelihoods, and generate funding for conservation. The principles cover three broad topics: (i) Identifying and managing tourism carrying capacities; (ii) Strategies for shifting tourist behavior to better meet local resilience goals; and (iii) Understanding the local tourism sector and identifying opportunities for diversifying livelihoods. Some of these principles and lessons have been applied to eco-tourism destinations, including the Rock Islands Southern Lagoon of the Palau archipelago. The key lessons for understanding and managing tourism carrying capacity are:

- Carrying capacity plans need to be implemented in conjunction with infrastructure improvements, education, and improving tourist behaviors, restoration, and enforcement.
- Appropriately price the visitor experience to control carrying capacities at sites.
- Engage stakeholders across sectors early and often.
- Encourage communication between local developers/planners and marine managers to better manage carrying capacities.
- Identify visitor hotspots and reduce impacts where possible.

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203 Spalding, M. et al. Mapping the global value and distribution of coral reef tourism. Marine Policy 82, 104-113, doi:https://doi.org/10.1016/j.marpol.2017.05.014 (2017).

204 Fauna & Flora International (2021) Koh Rong Marine National Park: Market Analysis and Demand Assessment for Sustainable Island Tourism. Fauna & Flora International, Phnom Penh, Cambodia.

- Develop a cooperative action plan instead of a Visitor Use Management plan.
- Adapt to changing circumstances.

Box 5.2 Tourism in the Koh Rong MNP

Koh Rong Marine National Park MNP is Cambodia's first marine national park, established in 2016.[205] It is frequented by tourists for its vast white sandy beaches, beautiful islands, coral reefs and a wide array of marine sports. Tourism in Koh Rong MNP presents both opportunities and challenges for the sustainable management of the marine park. Tourism has created increased environmental pollution and degradation of coral reefs. However, when managed sustainably and ethically, the marine tourism industry can play a leading role in ocean conservation education and generate much needed funds to finance protected area monitoring and management.

Koh Rong MNP reported a total of 266,858 passenger arrivals in 2019: 190,525 (71%) from international and 76,333 (~29%) from domestic tourists.[206] Since 2017, international and domestic tourist arrivals in Koh Rong MNP have declined. Tourist visits to Koh Rong MNP in 2020 declined by 57% and 21% for international and domestic tourists respectively. This downturn in tourism resulted in the closure of many businesses, and local employment dropped by 51% in 2020.

A World Bank commissioned report into sustainable tourism in Koh Rong MNP noted the following key challenges.[207] The lack of a wastewater management facility or solid waste service is problematic for tourism operators because it negatively impacts the tourist experience. Weak safety standards at sea have resulted in several boats sinking, which threatens the safety reputation of Koh Rong MNP. There is generally a poor understanding of the MPA Zoning Restrictions. The Fauna and Flora International (FFI) report noted reports of dive operators advertising the collection of protected seashells and iconic marine souvenirs, and boats anchoring on protected coral reefs.

Recommendations to develop a more inclusive and sustainable tourism industry in Koh Rong MNP involve addressing these challenges. Shortcomings related to potable water, sanitation and electricity, and solid waste management should be addressed. Though some mooring buoys have been installed, additional moorings at diving and snorkeling sites would help avoid anchoring on seagrass beds and coral reefs. Moorings can also generate revenue from user fees. A willingness-to-pay study was conducted by FFI on Koh Rong MNP (then a MFMA) in 2015 and found that respondents were willing to pay up to US$5.[208]

205 Fauna & Flora International (2021) Koh Rong Marine National Park: Market Analysis and Demand Assessment for Sustainable Island Tourism. Fauna & Flora International, Phnom Penh, Cambodia.

206 National Tourism Statistics Report (2015-2019), Ministry of Tourism

207 Fauna & Flora International (2021) Koh Rong Marine National Park: Market Analysis and Demand Assessment for Sustainable Island Tourism. Fauna & Flora International, Phnom Penh, Cambodia.

208 FFI. (2021). International tourists were willing to pay up to US$5 and domestic tourists up to US$2.50. This represents 4% of the daily expenditure of international tourists and 3% for Cambodian tourists.

Reforms proposed to strengthen the ecotourism sector in Cambodia include reducing plastic marine litter, developing an ecotourism strategy for selected coastal areas, and identifying sustainable financing options. These recommendations proposed stem from the report '*Enabling Ecotourism Development in Cambodia*'[209] that came out of discussions with government departments MoE, MoT and the Ministry of Economy and Finance (MEF), tourism operators, industry experts, NGOs, and development partners. Improving water quality through better solid waste collection systems and wastewater treatment systems are essential. Abandoned, Lost and Discarded Fishing Gear (ALDFG) is a significant component of marine litter in Cambodia. Fishing nets accounted for 66% of the marine debris recorded in Koh Rong MNP.[210] Progress has been made in marine plastic pollution management, where research has identified the top 10 plastics leaking into waterways, and new technology has been established to remotely monitor plastic waste at low resources and costs. However, the development of a plan to improve waste management in Sihanoukville is ongoing.

The report highlights the following ongoing needs:[211]

- Strengthening the capacity of community fisheries organizations in community-based eco-tourism.
- Improving coastal ecotourism development planning, such as completing infrastructure needs assessments.
- Conducting scoping studies to identify private companies that benefit from marine ecosystem services and developing a voluntary payment for ecosystem services (PES) schemes and/or impact investment models, focused initially on MPAs.
- Designing a benefit sharing system (i.e., from tourism visitor fees) for MPAs to enhance conservation value and designing a systematic entry fee or boat ticket system as a core revenue generation mechanism for management.

5.1.3 Shipping and Ports

Over 80% of all global trade in goods is transported by sea, and the volume of goods traded by sea is rising.[212] The main environmental impacts associated with maritime transport include marine and atmospheric pollution, marine litter, underwater noise, and the introduction and spread of invasive species.[213] The shipping and ports industry (marine transport, storage, and communication) is

209 Rawlins, M., Kornexl, W., Baral, S., Baromey, N., Martin, N., & Ray, N. (2020). Enabling Ecotourism Development in Cambodia. World Bank: Washington, DC.

210 Fauna & Flora International (2020) Investigating solutions to marine plastic pollution in Cambodia. Review and Research Synthesis. Fauna & Flora International, Phnom Penh, Cambodia.

211 Rawlins, M., Kornexl, W., Baral, S., Baromey, N., Martin, N., & Ray, N. (2020). Enabling Ecotourism Development in Cambodia. World Bank: Washington, DC.

212 United Nations Conference on Trade and Development (UNCTAD). (2021). Review of Maritime Transport 2021. United Nations, Geneva.

213 World Bank and United Nations Department of Economic and Social Affairs (2017). The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. Retrieved from Washington DC:

a large contributor to Cambodia's national economy, but local employment opportunities are small (*see Chapter 2*). Given that shipping is the main transportation method for food products, energy, materials and consumer goods, there is potential to implement sustainability and social improvements.

Cambodia's Blue Economy could benefit from sustainable ocean-based trade, driven by focused investment into transport infrastructure, service improvements and policy reforms. For example, new international regulations require the shipping industry to make improvements in emissions, waste, and ballast water treatment. The Pacific Islands Development Forum highlighted the need for a transition towards a sustainable marine transportation sector that reduces the reliance on imported fuels and moves to innovative low-carbon technologies in marine transportation.[214] Opportunities for improving socioeconomic impacts for local resource users include a reformed fee structure for local resource users, whereby they are charged low or no fees for use of ports and cold-storage units. Broader regional collaboration on mitigating risks arising from port construction and dredging, oil spills, and additional pollution (garbage, sewage) from ships and ports, is also a priority.

Box 5.3 Blue Carbon

Though the potential for blue carbon in Cambodia is yet to be fully explored, given that Cambodia's mangroves, tidal marshes, and seagrass meadows store and sequester carbon, a PES model could generate new funding streams to support their conservation, restoration and management. The latest Intergovernmental Panel on Climate Change (IPCC) report notes the sizable carbon sequestration potential of mangroves, salt marshes and seagrass meadows.[215] The prominence of a terrestrial carbon PES scheme (e.g., REDD+) in Cambodia[216] suggests that a marine-focused PES could gain momentum. An immediate priority is mapping the status, extent, carbon stocks and carbon flows of coastal ecosystems, incorporating blue carbon in integrated coastal management and marine spatial planning, quantifying, and reporting on emissions from the degradation and destruction of coastal ecosystems, and including blue carbon as a reporting measure in GHG national inventories and communications.[217]

214 World Bank and United Nations Department of Economic and Social Affairs (2017). The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. Retrieved from Washington DC:

215 IPCC Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA https://doi.org/10.1017/9781009157964.001.

216 REDD+ stands for Reducing Emissions from Deforestation and forest Degradation, plus the sustainable management of forests, and the conservation and enhancement of forest carbon stocks. REDD+ focuses mostly on tropical forests, and includes mangroves.

217 Crooks, S., von Unger, M., Schile, L., Allen, C. & Whisnant, R. Understanding Strategic Blue Carbon Opportunities in the Seas of East Asia. (Silvestrum Climate Associates for Partnerships in Environmental Management for the Seas of East Asia, Conservation International and The Nature Conservancy, Quezon City, Philippines, 2017).

5.2 Blue Economy Development Framework

As described in the sections above, a wide range of sector-specific opportunities exists in Cambodia's coastal provinces, yet these need to be underpinned by integrated planning and management to be fully effective and resolve any perceived intersectoral conflict. The establishment of the NCCMD, the emergence of ICM approaches, the breadth of marine policy documents published, and the progress in MSP are steps towards transitioning towards a sustainable Blue Economy. However, the application of these tools needs to be strengthened, the implementation scaled up and the tools need to be integrated within a broader cross-sector framework to achieve meaningful sustainable Blue Economy objectives.

Balancing multiple social, economic development and environmental objectives for current and future uses requires coordinated planning efforts with integration across all contributing sectors. There are five broad cross-cutting objectives for progressing a sustainable Blue Economy in Cambodia that are relevant to all sectors. The following section synthesizes the information and data requirements, identifies investment opportunities, and makes recommendations for each of the five development objectives to advance the development of Cambodia's Blue Economy framework. Recommendations cover the following five areas:

1. The institutional (legal and policy) framework.
2. Integrated planning and zonation.
3. MPAs and other area-based conservation measures.
4. Capacity building.
5. Sustainable financing.

5.2.1 The Institution (legal and policy) Framework

A transparent, inclusive, and equitable governance structure will promote strong decision making with accountability and forms a solid foundational enabling environment to support implementation. Cambodia has several policy and planning tools in place to underpin a Blue Economy, yet there are substantial overarching planning opportunities that need to be leveraged and implemented to progress intersectoral sustainability objectives along the coast. Since 2012, the NCCMD has been responsible for inter-ministerial oversight of coastal development planning. However, as discussed in Chapter Four, NCCMD's effectiveness has been limited to date; also, in many cases the ministerial mandates overlap. In particular, the MoE retains responsibility for the development and management of MPAs, while the FiA under the MAFF has jurisdiction over CFAs.

The regulatory role of the government and its constituencies needs to be strengthened to encourage allegiance to the goals and engagement from stakeholders. Stronger leadership is needed from the NCCMD and its key constituencies to proactively address the growing threats in marine and coastal areas, and harness opportunities for sustainable Blue Economy development. For example, collaboration to date has been weak between fisheries, forestry, and tourism mandates, resulting in missed opportunities to promote cohesive, strong decision making and build trust that

the regulatory environment will be accountable for sustainability outcomes. A great deal of focus has been directed at examining overlaps and gaps in the respective MPA and fisheries legislation; however, attention also needs to be paid to maritime transport and other sectors that have not been cross-examined.

The intersectoral institutional framework for coastal development needs to consider the full range of development and sustainability objectives across the ocean-related economic sectors. To advance the development of a Blue Economy roadmap, next steps should focus on drafting a whole-of-sector strategy that articulates the visions and objectives for each sector and incorporates the overarching vision into a unified strategy document. This framework should integrate the expertise of a broad range of policy makers and demonstrate commitment from regulators, which could be facilitated under the NCCMD. Across each sector, the cross-cutting themes of climate change and gender should be incorporated into all policies and strategies.

5.2.2 Integrated Planning and Zonation

Cross-sector collaboration in coastal management and planning should be improved to achieve diverse socioeconomic and sustainability targets. The implementation strategy for ICM in Cambodia to date has focused efforts on improving the livelihoods of the coastal population, addressing coastal pollution and waste management issues, alleviating poverty, and enhancing the capacity of local authorities to support community-based activities. It has also promoted good governance and participation from different stakeholders through integration of all relevant stakeholders in the management processes.

Despite these benefits, integrated planning and management in the coastal and marine realm has received relatively minor attention from Cambodian policymakers and the international community.[218] While various ICM policy and management interventions have been promoted for improving the governance of activities that influence the sustainable use of coastal and marine ecosystems, these have achieved moderate outcomes and been insufficient in delivering broad ICM benefits. In short, ICM is yet to be mainstreamed in Cambodia. Rather, the disjunct, sector-specific management approach to coastal areas is the regular approach being implemented, despite its shortcomings.

Improving access to high-quality education, trainee pathways, job opportunities and local investment opportunities in an integrated planning framework is important to address social equality and sustainability targets through cross-sector collaboration. PEMSEA is an intergovernmental, multi-sectoral partnership for environmental management and the regional coordinating mechanism for the Sustainable Development Strategy for the Seas of East Asia. In their

[218] Note that the unique hydrological and biological characteristics of the Tonle Sap Lake and the surrounding areas as well as the political and socioeconomic importance of integrated river basin management of the Mekong River historically attracted much attention in the country's sustainable development agenda, while Cambodia's coastal areas have received comparably less attention and prominence.

role, PEMSEA has endeavored to scale up ICM since 2016 and expand ICM demonstration sites including Kampot, Koh Kong and Kep. The PEMSEA program supported the formation of Cambodia's National State of Oceans and Coasts (NSOC) report, revised the White Paper, Strategy and Work Program for Coastal and Marine Sustainable Development in Cambodia, and established an ICM Learning Center at the Royal University of Phnom Penh. These are important achievements to build on.

An Integrated land-sea planning approach would benefit ICM to mitigate cross-realm threats and maintain cross-realm ecological processes, as coastal and marine environments are subject to threats originating on land as well as in the sea.[219] For example, major land development detrimentally impacts nearshore ecosystems such as coral reefs and seagrass meadows, through runoff of sediments, nutrients, and pollutants.[220] A cross-realm planning approach requires extensive engagement between scientists, resource managers, and policymakers to develop an operational framework for cross-realm planning.

Coastal livelihood and vulnerability assessments are important to building baseline information that can identify needs for training and education, and guide investment towards development and sustainability gaps. The ICM program led by PEMSEA has helped to raise awareness and strengthen the technical and human resource base at the national and provincial levels. However, integrated management needs further work to be fully institutionalized, and managers require additional support for scaling-up management and coordinating activities across various sectors. Integrated, cross-sectoral planning needs to capture longer-term pathways to impacts, such as designing pathways to access training and education, investment to boost employment in sustainable economic sectors, stronger collaboration between sectors to promote knowledge and data sharing and avenues to address social inequality gaps.

There is a current dearth in baseline information on the state of Cambodia's natural marine and coastal resources, or a standardized method for monitoring changes over time. The 2019 PEMSEA NSOC Report provides the most comprehensive synthesis of Cambodia's coastal assets. However, knowledge gaps and inconsistencies in reported figures persist. Estimates of baselines and changes in mangrove cover and seagrass beds are not up to date and vary considerably throughout the document and when compared to other sources. Due to a lack of information on the data and methods used to estimate the state of resources, it is not possible to estimate change accurately. It is essential to review the available data and identify where new knowledge needs lie, and how to improve the accuracy of available data. Publishing standardized, consistent figures through a central reporting system is rudimental to improve monitoring and aid management of coastal resources.

219 Álvarez-Romero, J. G. et al. (2015) Integrated cross-realm planning: A decision-makers' perspective. Biol. Conserv. 191, 799-808, doi:https://doi.org/10.1016/j.biocon.2015.07.003

220 Halpern, B. S., Walbridge, S., Fujita, R., Heinemann, D., Lenihan, H. S., Madin, E. M. P., ... Fox, H. E. (2008). A Global Map of Human Impact on Marine Ecosystems. Science, 319(5865), 948-952. doi:10.1126/science.1149345

Coastal vulnerability assessments have been completed in some provinces; however, these data need to be collated for all provinces and routinely integrated into coastal management. The findings from the vulnerability assessments should be incorporated into coastal management and marine spatial planning processes, based on projections of climate change, exposure, sensitivity, adaptive capacity of both human and ecological communities, ecosystems, and coastal systems more broadly. A vulnerability assessment conducted in 2015 on Kampot province found communities to be vulnerable to storms, pollution, sea level rise, and saline intrusion, which directly negatively impacts access to clean water and sanitation. The impacts of sea-level rise, floods and storms on livelihoods, ecosystems and biodiversity warrant further research.

5.2.3 MPAs and Other Area-based Conservation Measures

Increasing the coverage, ecological representativeness, and effectiveness of MPAs will better protect high value marine and coastal assets and ecosystem services, including blue carbon, and harness socioeconomic benefits. MSP in Cambodia is ongoing; however, there is no clear guiding master vision articulated for managing coastal development plans and associated environmental impacts. The lack of a coordinated MSP approach that is ecologically representative, clearly links to biodiversity outcomes, and effectively manages threats such as illegal fishing, leads to the risk of new protected areas failing to ensure the protection of biodiversity and ecosystems. The links between MSP objectives and recommendations to develop the marine fisheries value chain are clear, whereby both aim to curtail illegal fishing through proper management of fishing operations and enforcement of regulations, intensifying surveillance, and regional cooperation between provincial governments.

Effective management is dependent on adequate resourcing. Progress in effectively managing existing MPAs has stalled due to insufficient budget allocation and limited capacity. The Koh Rong MNP, established in February 2018, reported limited government budget allocations as the main challenge to effective management. Inadequate budget allocation for the management of protected areas is not limited to Koh Rong MNP; protected areas worldwide are crippled by underfunding.[221] For Cambodian protected areas (terrestrial and marine), the national budget allocation rarely covers staff salaries and other basic administration costs, leaving limited opportunity for investment in infrastructure, capacity building and training. Over the last 5 years, budget allocation for the MoE has been gradually increasing to effectively deliver on the new and expanded responsibilities assigned to the Ministry. However, Cambodian MPA management still relies almost entirely on the financing from donations from development partners and conservation NGOs.

Given the critical role MPAs fulfill in achieving long-term Sustainable Development Goals, identifying sustainable modes of funding is an immediate priority. As a cross-cutting economic activity, eco-tourism can attract new flows of finance that can promote sustainable use of ocean resources and redirect funds back towards the protection of high-value marine and coastal assets

[221] Coad, L. et al. (2019) Widespread shortfalls in protected area resourcing undermine efforts to conserve biodiversity. Front Ecol Environ 17, 259-264, doi:10.1002/fee.2042).

and ecosystem services that attract tourists. To facilitate this, an immediate need is the creation of a master strategic plan for eco-tourism for the entire coastline. Other needs within MPAs include strengthening the capacity of sustainable community fisheries organizations and community-based eco-tourism providers, conducting scoping studies to identify private companies that benefit from marine ecosystem services and developing voluntary PES schemes and/or impact investment models.

5.2.4 Capacity Building

Individual and institutional capacity building has been identified as one of the priorities for effectively implementing ICM and improving the governance of terrestrial, coastal, and marine environments. Capacity building in marine and coastal management has been included in institutional annual work plans of key departments at the national and sub-national levels, but due to inadequate budget allocation, uptake has been limited and constrained. Training programs, workshops and courses have touched on themes including integrated beach management, coastal zoning for tourism, and environmental monitoring in Preah Sihanouk; and there has been advanced training on ICM, coastal governance, marine pollution, ecosystem mapping, MPA management, climate change adaptation, and risk management. Participation of government officials in regional and national training workshops and training courses, however, continues to rely on financial support from development partners and organizers.

PEMSEA has been responsible for establishing or supporting many of these capacity building programs, such as the establishment of ICM Learning Centers. These learning centers are housed within educational institutions, such as the Royal University of Phnom Penh, and are designed to serve as venues for knowledge sharing and transfer skills relating to ICM program development, within national agencies and local governments, nongovernmental organizations, and local communities. In 2007, the Mangroves for the Future Program of the IUCN and the Asian Institute of Technology established a regional postgraduate certificate course on ICM.

Investing in building capacity, skills and knowledge within local communities to conduct research and develop new technologies, through partnerships with government and private sector investors, will strengthen the management of coastal and marine resources. Various capacity building events relating to ICM and coastal and marine ecosystem management have taken place at the national and regional levels. Additional specific technical training requirements have been identified in remote sensing, GIS-drone-based mapping, and water quality monitoring skills.

5.2.5 Sustainable Financing

The long-term development and implementation of a sustainable Blue Economy is dependent on driving sustainable investment back into the integrated management of coastal and marine resources. Identifying and building creative pathways to finance Blue Economy opportunities will be the deciding factor of whether these opportunities are realized to their full capacity over a

sustained period. The range of financing opportunities is vast. Some examples are models of Revenue Management Systems, where revenues can be generated by entry fees for MPAs, parking fees, ecotourism, and other visitor services. An important element of any of these models is the need for clear guidelines on how revenues feed back into sustainable resource management activities. Close collaboration across ministries will be needed for this to be successful.

The private sector is an important funding source for biodiversity conservation, and consequently a roadmap for resource mobilization from the private sector is important. However, enabling policies to engage the private sector in protecting coastal ecosystems do not yet exist. The MoE has completed the feasibility study for a PES scheme in Phnom Kulen National Park (Siem Reap) and Kbal Chhay Freshwater Multiple Use Area (Preah Sihanouk province); however, the PES guidelines still need to be completed. ADB[222] has outlined four key financial initiatives to assist with the transition towards a sustainable economy through the engagement of the private sector:

1. ***Blue bonds.*** Proceeds from a fixed-income debt instrument are invested in projects that meet the bond criteria. In turn, the bonds can generate jobs, economic growth, and healthy oceans by investing in fisheries, marine and coastal tourism, coastal pollution and circular economy, marine renewable energy, and green ports and shipping.
2. ***Results-based lending***, also known as sustainability-linked loans or impact loans. These are debt instruments where the financing is tied to the delivery of specific environmental, social, and governance (ESG) targets.
3. ***Ocean Risk Insurance***. Parametric insurance products, such as coral reef insurance, can address ocean risks, including loss of income in fisheries or performance shortcomings of new technologies. Subsidized insurance premiums may be used as a reward for environmental compliance.
4. ***Payments for Ecosystem Services (PES)***. By capturing and monetizing benefits from ecosystem services, PES schemes help to pay the protection and management costs of marine resources. For example, coastal mangroves often provide the service of filtering contaminated water before it enters the coastal ocean; a marine tourism provider operating in the coastal ocean could pay for this service through voluntary or regulated payments.

An immediate priority to advance sustainable financing opportunities is undertaking a thorough and rigorous assessment of the total economic value of coastal and marine ecosystem services. Data on the economic value of mangroves, seagrass meadows, coral reefs and tidal zones are extremely scarce and inconsistent. A national inventory for Cambodia that covers all aspects of Cambodia's natural coastal and marine capital is needed. This work could draw from the ecosystem service (ES) approach applied in the recent valuation of forest-related ecosystem services for Cambodia.[223]

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222 Development Asia (published 08 June 2020). Available from: https://development.asia/explainer/role-ocean-finance-transitioning-blue-economy-asia-and-pacific

223 Rawlins, M., Pagiola, S., Shaad, K., Alam, M., Portela, R., Roy, S., . . . Kornexl, W. (2020). Valuing the Ecosystem Services Provided by Forests in Pursat Basin, Cambodia. World Bank: Washington D.C.

A thorough review, followed by a comprehensive feasibility assessment of PES schemes utilizing an agreed ES framework is an immediate priority. An ES valuation method would lend itself well to valuing coastal ecosystems and their uses. However, assessments of ecosystem services and their resulting values are scarce in Cambodia, and the few that have been conducted use inconsistent methods and approaches, making it difficult to compare and synthesize information.

Agreement on a preferred approach to measuring ES would facilitate the uptake and use of ES valuation studies. There are several frameworks for identifying, understanding, and categorizing ES, such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) classification, System of Environmental-Economic Accounting for Ecosystem Services (SEEA ES), the Millennium Ecosystem Assessment (MEA) that all provide useful approaches. These approaches can be applied to marine and coastal ecosystems, thereby capturing the value of coastal zones for the commercial, cultural, economic, and social contribution of these ecosystems to people.

Ecosystem services and resulting value of inland waters, coastal zones and coral reefs have not been investigated enough to value the benefits they provide to society in terms of climate regulation, coastal protection, leisure and commercial activities, and cultural values. For example, expansion of REDD+ into Cambodia's coastal provinces is one model that warrants further consideration. REDD+ is a framework created under the UNFCCC to guide activities that reduce emissions from deforestation, forest degradation, and the sustainable management and conservation of forest carbon stocks. Already, carbon credits have been sold on the voluntary carbon market from Keo Seima Wildlife Sanctuary, Southern Cardamom National Park, Prey Lang Wildlife Sanctuary and from a community-managed conservation area in Oddar Meanchey province. There is an opportunity to attract funds for mangrove management and restoration through REDD+. Exploration into the potential for a similar blue carbon market-based scheme is needed.

CHAPTER 6

Conclusion

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Conclusion

It is clear that there is strong intent within the Royal Government of Cambodia (RGC) to transition towards a sustainable Blue Economy; one in which marine and coastal ecosystems are safeguarded, while providing economic growth, improved livelihoods, and jobs to coastal communities. This is evidenced by a growing body of work on developing tools for ICM, the creation of the NCCMD and PCCMDs to support the management of marine and coastal resources, the breadth of marine policy documents published, and the progress in MSP. In addition, this report highlights the variety of sector-specific opportunities that exist throughout Cambodia's coastal provinces, including fisheries, tourism, shipping and ports, and blue carbon.

The above achievements and sector-specific opportunities need to be underpinned by integrated planning and management to be fully effective and resolve any perceived intersectoral conflict. The application of these tools should be strengthened, the implementation scaled up, and the tools integrated within a broader cross-sector framework to achieve meaningful sustainable Blue Economy objectives. This requires coordinated planning efforts with integration across all contributing sectors, and a strong legal foundation to support it.

This report has provided a synthesis of the information and data requirements to build a framework for Blue Economy development, has identified investment opportunities, and makes recommendations for five cross-sectoral development objectives to advance the development of Cambodia's Blue Economy framework. Based on the analysis completed in this report, the following key recommendations were formulated (Table 6.1) to inform Cambodia's future Blue Economy plans.

Table 6.1 Summary of Recommendations identified within this Report to Support Cambodia to meet its Blue Economy Goals. (Priority definitions: Short-term: as soon as possible; Mid-term: up to 3 years; Long-term: up to 5 years.)

Theme	Recommendation	Priority
Chapter 2. Current State of Knowledge of Cambodia's Marine and Coastal Resources		
Data and Knowledge Gaps	• Complete baseline information on the state of Cambodia's natural marine and coastal resources, and agree on a standardized method for monitoring changes over time. • Conduct a thorough and rigorous assessment of the total economic value of coastal and marine ecosystem services. • Complete vulnerability assessments to climate change, marine pollution and other major threats for all coastal provinces, and integrate findings into coastal management.	Short-term Short-term Mid-term
Chapter 3. Policy/ Institutional Landscape		
Coordination Mechanisms	*National Level:* • Initiate reforms within NCCMD by incorporating MAFF into the NCCMD General Secretariat structure with clearly defined roles and responsibilities. • Increase the authority of NCCMD to make decisions related to coastal projects without having to elevate to the Prime Minister-level. • Improve coordination between the NCCMD, NCMS, MAFF, local authorities and community fisheries, to strengthen district-level efforts to eliminate IUU fishing, and to curtail illegal land grabbing in coastal areas. *Sub-National Level:* • Revise the PCCMD Secretariat composition to include technical staff from relevant provincial departments at senior (i.e. deputy director) levels. Representation should include additional key provincial line departments.	Short-term Short-term Short-term Short-term
Legal & Policy Frameworks	• Develop a dedicated law on coastal management as a legal foundation for ensuring effective, consistent and integrated planning in Cambodia's coastal and marine areas. • Enact the sub-decree revising Circular 01 on the Development of Coastal Areas of the Kingdom of Cambodia and the Environment and Natural Resources Code as soon as possible. • Clarify the legal basis for MSP and synergize national-level MSP with land-use master planning, investment planning and MPA development	Short-term Short-term Mid-term
Sustainable Financing	• Conduct detailed assessments to understand ICM current funding needs, actual spending, and the gap between the two, and ensure future monitoring of these funds. • Consider increasing direct budget allocation for ICM-related activities at NCCMD and PCCMD level, and relevant line departments at levels more comparable to other programs of natural resources management and protection. • Formulate a sustainable financing mechanism for coastal and marine management, under a comprehensive 3-5-year strategic planning, with clear work plans for the Secretariat and integration into the provincial budgeting process.	Short-term Mid-term Mid-term

Table 6.1 Summary of Recommendations identified within this Report to Support Cambodia to meet its Blue Economy Goals. (Priority definitions: Short-term: as soon as possible; Mid-term: up to 3 years; Long-term: up to 5 years.) (cont.)

Theme	Recommendation	Priority
Sustainable Financing	• Explore policies to enable private-sector actors operating businesses along the coast to make greater financing contribution to the protection and conservation of coastal ecosystems	Mid-term
	• Reform the benefit sharing system in MPAs (i.e. from tourism visitor fees) to be more suitably applied to conservation and sustainability based on evidenced needs.	Long-term
Chapter 4. Marine Spatial Planning and Marine Protected Area Development		
Stakeholder Engagement	• Develop a Stakeholder Engagement Plan for MSP, inclusive of a stakeholder analysis, pathway for consultation implementation, process for FPIC and grievance redress mechanism.	Short-term
	• Conduct systematic stakeholder consultations regarding the design and ongoing management process for MPAs to maximize the potential for compliance with MPA regulations.	Short-term
	• Ensure that all key government stakeholders participate in future MSP led by the MoE, particularly the FiA.	Long-term
Consistency between MSP and MPA planning and Management	• Define the management regulations associated with "multiple use" in the MoE/NOTC MSP document, to promote consistency, improve understanding of regulations, and maximize the overall potential for compliance.	Short-term
	• Include MFMAs under the "Marine Protected Zone" zoning type to ensure that the Cambodian MPA network is appropriately represented in future MSP and allow for Cambodia's MPAs to be accurately represented in meeting national-level MPA targets.	Short-term
Data Sharing	• Create a national-level central coordinating unit to support the storage and dissemination of spatial datasets. One option is to include this in the format of a web-based portal that allows for open access to Cambodia's MSP information.	Mid-term
Chapter 5. Roadmap for the development of key blue sectors		
Blue Economy Development Framework	• Conduct a thorough review of the NCCMD legal basis and mandate, and all relevant policy frameworks detailed in this report resulting in proposals to resolve intersectoral conflicts and disputes, improve efficiencies and identify gaps.	Short-term
	• Develop a law on coastal and marine management under the NCCMD, with associated guidelines and sub-decrees, establishing a stronger legal framework for integrated and sustainable coastal and marine management in Cambodia. The policies need to address marine master planning, coastal zoning, land grabbing in coastal areas and finance mechanisms for ICM. New or revised legal instruments should more clearly establish jurisdiction over marine areas.	Short-term
	• Allocate budgets for all sectors within NCCMD based on clear work plans to improve their performance in coastal planning, implementation and monitoring.	Mid-term

Table 6.1 Summary of Recommendations identified within this Report to Support Cambodia to meet its Blue Economy Goals. (Priority definitions: Short-term: as soon as possible; Mid-term: up to 3 years; Long-term: up to 5 years.) (cont.)

Theme	Recommendation	Priority
Data Sharing	• Create a national-level central coordinating unit to support the storage and dissemination of spatial datasets. One option is to include this in the format of a web-based portal that allows for open access to Cambodia's MSP information.	Mid-term
Chapter 5. Roadmap for the development of key blue sectors		
Blue Economy Development Framework	• Conduct a thorough review of the NCCMD legal basis and mandate, and all relevant policy frameworks detailed in this report resulting in proposals to resolve intersectoral conflicts and disputes, improve efficiencies and identify gaps. • Develop a law on coastal and marine management under the NCCMD, with associated guidelines and sub-decrees, establishing a stronger legal framework for integrated and sustainable coastal and marine management in Cambodia. The policies need to address marine master planning, coastal zoning, land grabbing in coastal areas and finance mechanisms for ICM. New or revised legal instruments should more clearly establish jurisdiction over marine areas. • Allocate budgets for all sectors within NCCMD based on clear work plans to improve their performance in coastal planning, implementation and monitoring.	Short-term Short-term Mid-term
Integrated planning and zonation	• Establish a baseline reference level for monitoring of coastal ecosystem extent and condition, and a standardized reporting system for monitoring changes over time that explicitly links to threats and pressures, including climate-related stressors. • Strengthen the monitoring, evaluation and reporting system (at national and provincial levels) to evaluate all coastal development proposals and to more effectively monitor coastal pollution, and spatial and temporal changes in coastal and marine biodiversity. • Formulate a sustainable financing mechanism for coastal and marine management based on identified needs of a comprehensive strategic plan with clear work plans and integration into the provincial budgeting process.	Short-term Short-term Mid-term
MPAs and other area-based conservation measures	• Collaboratively develop a unified, strategic MSP masterplan for the entire coast, including eco-tourism and MPAs, with engagement from all relevant stakeholders. • Complete MPA zoning plans and associated boundary demarcation as soon as possible for all sites, including installation of appropriate demarcation, and/or signage. • Revise budget allocation at MPA sites and increase as required to support management plans and detailed workplans. Once plans are approved, budgets should be better integrated with MPA site-level management needs. • Conduct MPA management monitoring and evaluation, every two years at all sites to support improved monitoring. These assessments will serve as a benchmark for attracting further funding into management based on needs, and clearly link inputs to impacts of increased investment and management.	Short-term Short-term Short-term Mid-term

Table 6.1 Summary of Recommendations identified within this Report to Support Cambodia to meet its Blue Economy Goals. (Priority definitions: Short-term: as soon as possible; Mid-term: up to 3 years; Long-term: up to 5 years.) (cont.)

Theme	Recommendation	Priority
MPAs and other area-based conservation measures (cont.)	• Assess the need for restoration and adaptation of critical ecosystems – coral reefs, mangroves, seagrass beds. • Prepare operational guidelines for how to develop ecotourism investment projects in MPAs, including a clear process for planning commercial ecotourism services.	Mid-term Long-term
Private financing mobilization	• Introduce a common classification approach to ES categories and their economic values by the government and its constituencies and promote consistent use. • Review potential pilot PES schemes for coastal systems and progress feasibility studies of PES schemes, such as REDD+ and blue carbon PES schemes, on national and local scales.	Short-term Mid-term


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