**GEF-6 PROGRAM FRAMEWORK DOCUMENT (pfd)**

**Type of trust fund: GEF Trust Fund**

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**PART I: Program Identification**

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| --- | --- | --- | --- |
| Program Title: | Sustainable Management of the Bay of Bengal Large Marine Ecosystem Programme | | |
| Country(ies): | Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, Thailand | GEF Program ID:[[1]](#footnote-2) | 9909 |
| Lead GEF Agency: | FAO | GEF Agency Program ID: | 645046 (FAO) |
| Other GEF Agenc(ies): | ADB | Re-Submission Date: | 25 January 2018 |
| Other Executing Partner(s): | Regional and sub regional executing partners include BOBP-IGO, SEAFDEC, IUCN/MFF, UN Environment (e.g. COBSEA, GPA), UNIDO; APFIC; National execution partners include Ministries of Fisheries and Agriculture, Ministries of Environment, and other national agencies from all 8 participating countries | Program Duration (Months) | 60 |
| GEF Focal Area (s): | International Waters; Climate Change Mitigation | Program Agency Fee ($): | 1,283,945 |
| Integrated Approach Pilot | IAP-Cities  IAP-Commodities  IAP-Food Security | | |
| Program Commitment Deadline: | | | |

**A.** [**Focal AREA STRATEGY Framework**](https://www.thegef.org/gef/sites/thegef.org/files/documents/document/GEF6%20Results%20Framework%20for%20GEFTF%20and%20LDCF.SCCF_.pdf) **and other program strategies[[2]](#footnote-3):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs) | Expected Outcomes | Trust Fund | Amount (in $) | |
| GEF Program Financing | Co-financing |
| IW-3 Program 5 | 5.1 Elimination or substantial decrease in frequency and extent of “dead zones” in sizeable part of developing countries’ LMEs |  | 4,587,156 | 66,000,000 |
| IW-3 Program 6 | 6.1 Coasts in globally most significant areas protected from further loss and degradation of coastal habitats while protecting and enhancing livelihoods |  | 2,117,149 | 13,000,000 |
| IW-3 Program 7 | 7.1 Introduction of sustainable fishing practices into xx% of globally over-exploited fisheries |  | 7,057,163 | 82,000,000 |
| CCM Objective 2: Demonstrate mitigation options with systemic impacts | Carbon stocks in forests and other land-use, and climate-smart agriculture | GEFTF | 504,587 | 4,000,000 |
| **Total Program Costs** | | | 14,266,055 | 165,000,000 |

**B. Indicative Program Results Framework**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Program Objective: to contribute to sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region for the benefit of coastal states and communities | | | | | |
| Program Components | Financing Type[[3]](#footnote-4) | Program Outcomes | Trust Fund | (in $) | |
| GEF Program Financing | Co-financing |
| Component 1: Sustainable management of fisheries  (SAP theme 1; FAO led) |  | 1.1The ecosystem approach to fisheries management (EAFM) institutionalized at national level for targeted transboundary fish stocks (e.g. Hilsa, Indian Mackerel)  *Increased abundance and biomass by 5-10% (from 2014 baseline)*  *At least 2 EAFM plans incorporating climate change vulnerability analysis of fisheries implemented in each country leading to 20% increase in landings of higher value demersal and pelagic species for geographically defined Fisheries Management Units*  *National and regional platforms established or strengthened to involve grassroots stakeholders in management decision-making*  *EAFM training embedded in national and regional training institutions and training provided to around 200 practitioners in each country*  1.2. IUU catch in the BOBLME reduced  *20% reduction in IUU of BOBLME phase 1 baseline for selected fisheries*  *BOBLME countries join and implement a Regional Plan of Action (RPOA) on IUU fishing (this will take into account existing initiatives, e.g. in Southeast Asia)*  *8 National Plans of Action (NPOAs-IUU) and national IUU Monitoring, Control and Surveillance (MCS) systems and Vessel Monitoring Systems (VMS) strengthened*  *Tools for promoting best practices, such as MCS, Port State Measures (PSM) and traceability, policies and national actions, to combat IUU fishing developed and implemented in national pilot/investment projects. Countries supported in acceding to the PSMA*  *Regional capacity development programme on port inspections, MCS and traceability implemented with 20 national fisheries staff trained in each country* |  | 4,089,950 | 70,000,000 |
| Component 2: Restoration and conservation of critical marine habitats and protection of biodiversity  (SAP theme 2; FAO led) |  | 2.1. Coastal and marine managed areas (MMAs) contribute to conservation of biodiversity and blue carbon  *At least two MMAs established or strengthened to address issues related to climate change, transboundary fisheries, Vulnerable Ecosystems (VEs), biodiversity and/or Endangered, Threatened and Protected (ETP) species (covering 2,000,000 ha of marine areas)*  *Regional capacity development programme promoting best practices in management and evaluation of MMAs and training of 200 practitioners at all levels*  2.2. National MMAs established or strengthened resulting in improved MMA management effectiveness at national level (with STAR funding; without STAR funding, mainly bilateral donor funding to be used; CCM funding for Bangladesh will be used for the Sundarbans (Reserve) Forest)  *Conservation of blue carbon (mangroves, seagrass), associated biodiversity, and ETP species (200,000 ha of habitat, approx. 2 million t CO2, of which >50% in the Sundarbans)*  *Conservation of coral reefs, associated biodiversity and ETP species (200,000 ha under more effective management, leading to improved status)*  2.3 Regional consensus and agreements on reduction of threats to marine biodiversity in coastal and open waters  *A regional plan of action for ETP species (e.g. whale sharks and sea turtles)*  *Legislative frameworks on ETP species harmonized across countries*  *Assessment of efficacy of NPOAs for sharks* |  | 2,108,041  (1,627,482 IW;  480,559 CC-M BGD) | 15,500,000 |
| Component 3: Management of coastal and marine pollution to improve ecosystem health  (SAP theme 3; ADB led) | INV | 3.1. Pollution from discharge of untreated sewage and wastewater; solid waste and marine litter[[4]](#footnote-5); and nutrient loading reduced or minimized in selected hotspots in river, coastal and marine waters; promotion of cleaner fishing ports and addressing abandoned fishing gears at 8 hotspots applying ICM approaches  Countries enabled and supported to actively participate in the Global Partnership on Nutrient Management (GPNM), addressing nutrient over-enrichment and oxygen depletion from land based pollution of coastal waters, at selected hotspots (e.g. Chilika Lake) and dissemination of best practices.  Documented practice of nutrient reduction measures, and measurable reduction of nutrient pollution in selected hotspots.  8 fishing ports covered by sewage management systems and improved waste management; 5% reduction in marine litter (solid waste / marine litter to be addressed using bilateral donor funds)  Outcome 3.2. Demonstration Investments in Eco-Waste Infrastructure Solutions: Mandalay City  *Water resources management and climate resilience integrated with urban development through inter-sectoral planning mechanism*  *Demonstration investments in freshwater ecosystems restoration / rehabilitation at project sites (e.g. Thingaza Creek, Kantawgyi Lake) contributing to reduced pollution loads in mid-basin of Ayeyarwaddy River*  *Capacity strengthened for Mandalay City Development Committee and Environmental Conservation Department(Myanmar) and other agencies, to monitor ecosystem health, water quality and water use efficiency at project sites, including Taung Tha Man Lake*  *Increased public awareness of multiple benefits from improved water resources management at project sites, as well as downstream locations*  *Good practices and models for investments in integrated water resources management, including monitoring systems, shared across the BOBLME countries* |  | 4,583,105 | 66,000,000 |
| Component 4: Improved livelihoods and enhanced resilience of the BOBLME  (SAP theme 4; FAO & ADB joint leads) |  | 4.1. Enhanced resilience of the BOBLME and reduced vulnerability to natural hazards, climate variability and change of selected coastal communities  *Resilience plans developed based on valuation of ecosystem services and threats related to livelihoods in at least one pilot coastal area per country to support decision making in the BOBLME at regional, national and local levels*  *Inclusion of coastal fisheries and aquaculture in poverty reduction and development, as well as climate change policies, strategies and planning processes promoted*  *Gender considerations mainstreamed into relevant policy and regulatory frameworks*  4.2. Enhanced sustainable livelihoods and diversification for selected coastal communities  *Alternative livelihood options, for both men and women, identified along the fisheries value chain and other blue growth opportunities, such as tourism*  *Livelihood diversification for women piloted in at least one site per country*  *Access to innovative financial services and insurance mechanisms to enhance resilience and improve livelihoods promoted*  *Regional capacity development programme on alternative livelihoods and promotion of decent work opportunities, including social protection for empowerment and enhanced participation in coastal and marine resource management and conservation* |  | 1,480,815 | 10,000,000 |
| Component 5: Regional mechanism for planning, coordination, and monitoring of the BOBLME, knowledge management and programme coordination  (SAP crosscutting theme; FAO led) |  | 5.1. Strengthened institutional mechanisms at regional and national levels for planning, coordination and monitoring of the BOBLME  *Consortium for the Conservation and restoration of the BOBLME (CCR-BOBLME) established and institutionalized to promote stakeholder participation and awareness, ecosystem assessment, and application of best practices in implementation of the SAP*  *Long-term partnership arrangements agreed for sustainable regional coordination mechanism and sustainable financing for ecosystem-based management in the BOBLME*  *8 National inter-sectoral coordination committees established to strengthen the regulatory and institutional frameworks and to develop national implementation plans in support of SAP/NAP implementation (including EAFM plans, NPOAs-IUU, ETP plans, pollution monitoring plans)*  *Stakeholder consultation mechanism established for engagement with civil society, cooperatives, and the private sector*  *Baseline data (fisheries, trends and threats of critical habitats and ETP species, pollution, oceanography, and climate change), monitoring systems, and information repository established at national and regional levels*  5.2. Adaptive results-based management and sharing of information and lessons learned  *Effective Programme and Child Project management arrangements established*  *Regional information sharing mechanism enabling broad access to best practices and lessons learned in the participating countries and among Child Projects*  *Program findings and lessons learned identified and contribute to IW Learn and LME Learn*  *Monitoring system operating and providing systematic and regular reporting on programme and child project progress, and progress towards reaching BOBLME SAP target* |  | 1,324,808 | 1,500,000 |
| Subtotal | | |  | 13,586,719 | 163,000,000 |
| Program Management Cost (PMC)[[5]](#footnote-6) | | |  | 679,336 | 2,000,000 |
| **Total Program Cost** | | |  | 14,266,055 | 165,000,000 |

PMC is the total of the Project Management Costs of all child projects. For multiple trust fund projects, please provide the total amount of PMC in Table B, and indicate the split of PMC among the different trust funds here:

**C.** [**co-financing**](http://www.thegef.org/gef/policy/co-financing) **for the program by source, by name and by Type**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sources of Co-financing** | **Name of Co-financier** | **Type of Cofinancing** | **Amount ($)** |
|  | FAO | Cash/In kind | 10,000,000 |
|  | ADB (with Agence Française de Développement) | Loan | 60,000,000 |
| Recipient Governments |  |  | 80,000,000 |
|  | Bangladesh | In kind | TBC during PPG |
|  | India | In kind | TBC during PPG |
|  | Indonesia | In kind | TBC during PPG |
|  | Malaysia | In kind | TBC during PPG |
|  | Maldives | In kind | TBC during PPG |
|  | Myanmar | In kind | TBC during PPG |
|  | Sri Lanka | In kind | TBC during PPG |
|  | Thailand | In kind | TBC during PPG |
| Donor Agencies and partners |  |  |  |
|  | Sweden | Cash/In kind | 2,000,000 |
|  | Norway | Cash/In kind | 2,000,000 |
| Donor Agency | USA (NOAA, USAID) | TBD | 500,000 |
| GEF Agency | UNE | TBD | TBC during PPG |
| GEF Agency | IUCN | TBD | 1,500,000 |
| GEF Agency | UNIDO | TBD | TBC during PPG |
| Regional Fisheries Body | SEAFDEC | TBD | TBC during PPG |
| Regional Fisheries Body | BOBP-IGO | TBD | TBC during PPG |
| Donor Agency | Japan Fund for Joint Crediting Mechanism | Grant | 5,000,000 |
| Recipient Government (2) | Bangladesh Forest Dept. (Forest Inventory and Management Plan) | In kind | 4,000,000 |
|  |  |  |  |
|  |  |  |  |
| **Total Cofinancing** | | | 165,000,000 |

**D. GEF/LDCF/SCCF RESOURCES Requested by Agency, Trust Fund, Country, Focal Area and the Programming of Funds**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **GEF Agency** | **Type of Trust Fund** | **Country Regional/Global** | **Focal Area** | **Programming**  **of Funds** | **(in $)** | | |
| **Program Amount (a)** | **Agency Fee**  **(b)\*** | **Total c=a+b** |
| FAO |  | Global |  |  | 9,174,312 | 825,688 | 10,000,000 |
| ADB |  | Global |  |  | 4,587,156 | 412,844 | 5,000,000 |
| FAO | GEF TF | Bangladesh | CC-M |  | 504,587 | 45,413 | 550,000 |
|  |  |  |  |  |  |  |  |
| **Total Grant Resources** | | | |  | 14,266,055 | 1,283,945 | 15,550,000 |

\* Please indicate fees related to this Program. Refer to the [Fee Policy for GEF Partner Agencies](http://www.thegef.org/gef/content/fee-policy-gef-partner-agencies-gefplfi04).

**E. Program’s Target Contributions to Global Environmental Benefits[[6]](#footnote-7)**

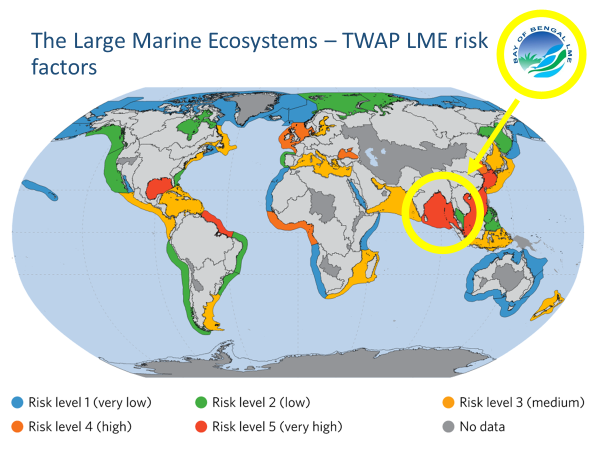
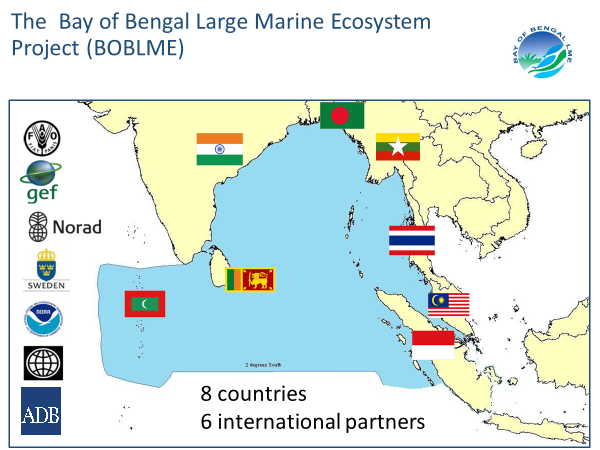
Provide the expected program targets as appropriate.

|  |  |  |
| --- | --- | --- |
| **Corporate Results** | **Replenishment Targets** | **Indicative Program Targets** |
| 1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society | Improved management of landscapes and seascapes covering 300 million hectares | *2,000,000 hectares* |
| 1. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes) | 120 million hectares under sustainable land management | *hectares* |
| 1. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services | Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins; | *number of freshwater basins* |
| 20% of globally over-exploited fisheries (by volume) moved to more sustainable levels | *1 percent of fisheries, by volume* |
| 1. 4. Support to transformational shifts towards a low-emission and resilient development path | 750 million tons of CO2e mitigated (include both direct and indirect) | *170,000 metric tons* |
| 1. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern | Disposal of 80,000 tons of POPs (PCB, obsolete pesticides) | *metric tons* |
| Reduction of 1000 tons of Mercury | *metric tons* |
| Phase-out of 303.44 tons of ODP (HCFC) | *ODP tons* |
| 1. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks | Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries | *Number of Countries:* |
| Functional environmental information systems are established to support decision-making in at least 10 countries | *Number of Countries:* |

**part ii: programMatic JustiFication**

*1.* *Program Description.* Briefly describe: a) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed; b) the baseline scenario or any associated baseline program/ projects, c) the proposed alternative scenario, GEF focal area[[7]](#footnote-8) strategies, with a brief description of expected outcomes and components of the program, d) [incremental](http://www.thegef.org/gef/policy/incremental_costs)/ [additional cost reasoning](http://www.thegef.org/gef/node/1325) and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and [co-financing](http://www.thegef.org/gef/policy/co-financing); and e) innovation, sustainability and potential for scaling up.

1. **Global environmental problems, root causes and barriers**
2. The Bay of Bengal Large Marine Ecosystem (BOBLME) is one of the largest LMEs globally and covers 6.2 million km2 with depths ranging between 2 000 and over 4 000m for most of its central area. The continental shelf around its perimeter is mostly narrow. About 66 percent of the BOBLME lies within the EEZs of BOBLME countries - Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, Thailand - the remainder being the high seas area. Thus, a large part of the BOBLME is subject to national jurisdiction. The areas of high primary production are concentrated in the coastal waters. Average sea-surface temperature is 28.6°C and has been rising slowly. The current average temperature is 0.5°C higher than it was in 1957, which makes the Bay of Bengal one of the slower warming LMEs in a changing climate.
3. Many large rivers flow into the BOBLME. These include the Ganges, Brahmaputra and Meghna in the north that drain across Bangladesh and India; the Ayeyarwaddy and Thanlwin in the east from Myanmar; and the Mahanadi, Godavari, Krishna and Cauvery in the west from India. These rivers discharge huge quantities of fresh water and large quantities of silt into the coastal environment. The Ganges-Brahmaputra-Meghna basin covers nearly 1.75 million km2, spreads across five countries and is the second largest hydrologic region in the world. Monsoonal rains and floods have a strong influence on the BOBLME dynamics, resulting in seasonal gyres and a warm, low salinity, nutrient- and oxygen-rich surface layer to a depth of 100m, and a relatively stable stratification. Tides are mainly semidiurnal with a wide range in some coasts (up to 7m at spring tide in Myanmar) and the saline intrusion can extend up to 340 km in the north-eastern estuaries of Bangladesh.

**Figure 1.** The Bay of Bengal of Bengal Large Marine Ecosystem as defined by the BOBLME project.

1. The BOBLME is rich in natural resources, including extensive mineral and energy resources; marine living resources that support major fisheries; and forest and land resources. The marine fisheries production in 2012 (BOBLME, 2015) was approximately six million tons (seven percent of the world’s brackish water and marine catch), valued at USD 4 billion (about four percent of the value of the world catch). The LME is the site of three important critical habitats – mangroves (12 percent of world mangrove resources); coral reefs (8 percent of the world’s coral reefs) and seagrass. The BOBLME is an area of high biodiversity, with a large number of endangered and vulnerable species. The LME and its natural resources are of considerable social and economic importance to the bordering countries, with activities such as fishing, shrimp farming, tourism and shipping contributing to food security, employment and national economies. The Bay of Bengal is also one of the hydrocarbon-rich areas of the world, comparable to the Gulf of Mexico, Arabian/Persian Gulf and Bohai Bay in China. Until recently it has been poorly explored due to a lack of financial support for exploration and international boundary disputes. An increasing emphasis on the exploration for, and exploitation of, oil and gas in the BOBLME presents many different opportunities and threats. There is also an increasing risk of pollution.
2. The sheer number of people is probably the most important underlying driver of all the key issues in the region. The regional human population is still growing from an already large base of about 1.78 billion, and it is expected that this figure will exceed two billion by 2020. The coastal population of 450 million is also expected to increase, both because of the general upward trend in regional population and because of urbanization and migration to the coast. With regional population densities averaging about 410 people per square kilometre – of which at least 30 percent is concentrated along the coasts – the pressure on the coastal and marine environment of the BOBLME is likely to be one of the highest in the world. The human pressure on the BOBLME will be further exacerbated by climate change that is expected to lead to ocean acidification, sea level change (rises in most areas), rising sea surface temperatures, changes in rainfall (decrease in some areas and increase in others), and possible increased frequency or intensity of storms and cyclones. These changes are expected to affect the ecology and biodiversity of the BOBLME. As a result, the Transboundary Diagnostic Analysis (TDA) conducted for the BOBLME identified three priority transboundary concerns, including their more proximate causes:
3. **Overexploitation of marine living resources:** This includes decline in overall fish resources, changes in species composition in catches, high proportion of juvenile fish in the catch, and changes in marine biodiversity, especially through loss of vulnerable and endangered species. Many of the marine living resources in the BOBLME traverse the international boundaries of adjacent, and sometimes non-adjacent countries and many of them are targeted by several BOBLME countries. Large pelagic species, such as tunas and billfishes, range over large ocean spaces and pass through the EEZs of many countries both inside and outside the BOBLME. Smaller pelagic species, such as anchovies, herrings, mackerels and shads, usually migrate through the coastal waters of at least two or more neighbouring countries. Examples include hilsa shad, which is shared by most countries but concentrated in the waters of India, Bangladesh and Myanmar; Indian mackerel, which occurs in all countries; and sharks that are of global and regional concern. Resources that appear to be more sedentary or only locally mobile – such as reef fish, lobsters, sea cucumbers and corals – often have patterns of larval dispersal that give their distribution a transboundary dimension. The proximate causes of these problems are excessive fishing effort and overcapacity; destructive fishing methods; unselective fishing practices and gear; and illegal, unregulated and unreported (IUU) fishing, both at national and international levels. These in turn are caused by the “open access” regime, government emphasis on increasing production, inappropriate subsidies, increasing fishing effort, especially by trawlers and purse seiners, high consumer demand for fish, including for seed and fishmeal for aquaculture, weak fisheries monitoring, control and surveillance (MCS) and enforcement, and strong incentives to encroach into areas with better returns.
4. **Degradation of critical habitats:** This includes especially mangroves, coral reefs and seagrasses. Mangroves have been classified as either degraded or under threat in all countries. Over 4 500 km2 of mangroves have been lost in the region over the last 30 years. The major cause of loss of mangroves has been conversion for agriculture (82 percent) and conversion for aquaculture (12 percent). Coral reefs are also classified as degraded or under threat. Coral reefs in South Asia and Southeast Asia suffered large scale bleaching in 1998, caused by high water temperatures associated with the El Nino Southern Oscillation (ENSO)/Indian Ocean Dipole (IOD) effect. Some recovery has occurred but further damage has been reported from the 2016 ENSO/IOD event and Sea Surface Temperature (SST) rise, especially from the Maldives and the Andaman Sea. The increased frequency of elevated SST inducing coral bleaching and subsequent degradation is a serious problem. Reefs considered to be at greatest risk from a combination of (i) coastal development, (ii) overexploitation and destructive fishing practices, (iii) the impact of inland pollution and erosion, and (iv) marine pollution, are the reefs around Aceh and the islands off Sumatra in Indonesia; Malaysia west coast; Myanmar; Sri Lanka and the Gulf of Mannar. There is insufficient information to assess the status of seagrass, although it is thought that many of the BOBLME region’s seagrass beds are either already degraded or threatened. The biodiversity supported by the seagrass beds will also be at risk, especially with regard to endangered species such as marine turtles, dugongs and seahorses, although little quantitative information is available. The productivity of the coastal fisheries supported by seagrass beds could also be declining as the seagrass beds degrade. Seagrass beds are mainly threatened by sedimentation and eutrophication, destructive fishing practices, such as trawling and push netting, and coastal modification, including dredging and mining for sand.
5. **Pollution and water quality:** The priority transboundary pollution issues in the BOBLME are sewage-borne pathogens, organic load from sewage and other sources, marine litter, increasing nutrient inputs, oil pollution, POPS and PTS, and mercury pollution. The effects of pathogens and high organic loads are likely to be localized except in the Ganges-Brahmaputra-Meghna system where sewage and other organic contaminants are shared by India, Bangladesh and Myanmar due to high river discharge and ocean circulation patterns. Marine litter, including plastic and discarded fishing gear, can be transported long distances in the marine environment and are clearly a major transboundary issue. Increasing nutrient inputs from rivers can lead to inner-shelf hypoxic zones that could adversely affect transboundary fish stocks. Recent reports indicate a large (approx. 60,000 km2) hypoxic or ‘dead’ zone in the northwest part of the Bay, which appears to be growing. An increase in nutrients has also resulted in Harmful Algal Blooms (HABs), also known as red tides. There is a general lack of information in the BOBLME on the distribution of PTSs and POPs, but because of the potentially serious impacts and transboundary distribution, this is a priority issue. Another emerging issue in most coastal area is pollution from plastics – specifically effects of micro plastics - and its impacts on ecosystem. The proximate causes of these issues are the widespread discharge of untreated or inadequately treated domestic, industrial and agricultural wastewater; inadequate solid waste management, including widespread discharges of solid waste into rivers and coastal waters and the open burning of solid waste which generates dioxins and furans; increasing emissions of nutrients from fertilizer use in agriculture, expanding aquaculture, and atmospheric emissions from industry and fossil fuel burning; and routine operational discharges of oil from shipping and dumping of waste oil by vessels and vehicles on land.
6. To reverse the environmental degradation of the BOBLME and its loss of resilience and sustainability, the following key barriers have to be addressed:
7. **Institutional, legal and administrative barriers:** At the regional level, the main institutional barriers affecting a country’s ability to implement change is a lack of an appropriate forum for region-wide multi-national dialogue, planning, monitoring and reporting on the progress of sustainable development. In the BOBLME there is no overarching mechanism for planning and coordination for the marine environment. However, there are a multitude of agencies and organizations with a partial mandate to coordinate some activities in the BOBLME region. In the planning phase of the first BOBLME Project, 12 existing sub-regional, regional and international institutions and their current mandates were examined. Some existing institutions are currently either too narrow in their sectoral mandate [e.g. Asia Pacific Fisheries Commission (APFIC)]; too narrow in their geographic competence with respect to the BOBLME [e.g. Association of Southeast Asian Nations (ASEAN)]; or both [e.g. Bay of Bengal Programme – Intergovernmental Organization (BOBP-IGO)]. However, all are very important partners of the BOBLME Project. BOBLME countries should recognize that the causes and solutions of priority issues extend beyond one or more national political jurisdiction. There are many benefits to be gained from addressing these issues through coordinated action at the regional level by establishing a supportive institutional and legal framework to facilitate inter-sectoral and transboundary planning and management between the BOBLME member countries.
8. The form and type of implementation agency or authority varies widely between the BOBLME countries but in each country, at least on paper, some form of authority has the mandate to conserve marine living resources, protect critical habitats and implement pollution control legislation and regulations. However, the exercising of this authority is largely ineffective, as adequate governance systems are often not in place. Achieving an effective level of compliance, and enforcement of laws and regulations, is an ongoing challenge and a major change to the social system, taxes, remuneration and incentives is required. This lack of effective governance is further complicated because national, state and local governments have sectoral responsibility and accountability that is divided between different governmental bodies. Responsibility and accountability are not always clearly assigned and the applicable legislation, being derived from multiple sources and as a function of its essentially sectoral nature, overlaps or conflicts in some cases leading to further lack of clarity with regard to responsibility and accountability.
9. **Socio-economic barriers:** The principal social factors affecting BOBLME countries are population growth and increasing migration to the coast; urban growth and coastal infrastructural, commercial, industrial and residential development for the expanding urban – and usually more affluent – coastal communities, e.g., tourist resorts, ports, airports, roads, harbours; lack of alternatives for securing food, livelihoods and shelter (space and materials) in the poor, rural coastal communities; and lack of stakeholder awareness of the issues and, in some cases, lack of commitment. The relatively low standard of living and working conditions of coastal communities and the high vulnerability to natural hazards, climate variability and change, is often related to undervaluation of small-scale fishing, inadequate social protection strategies, absence of social dialogue, and low levels of education and human capital. Moreover, national demand for foreign exchange is driving government policy and incentives that promote unsustainable practices (e.g. high chemical applications and clearing of land) and the increasing productivity of agriculture (and aquaculture). This puts unprecedented pressure also on fish resources. Manufacturing and service industries are showing a trend of relocating to countries in the region to benefit from lower production costs that may, in part, be related to lower environmental standards. The damage to the environment – and to other sectors and public health – from industrial, agricultural pollution, unsustainable fishing and degraded habitats is not added to the cost of doing business and is not reflected in prices, taxes or national financial and development plans.
10. **Lack of integration of climate change resilience in planning and management:** While various global scenarios have been predicted (rise in sea level, increase in the frequency of major storms and the intensity of the most extreme storms, etc.), it is not clear how these will manifest in the Bay of Bengal. Relative sea level rise has been advanced as possibly the greatest threat to mangroves, especially in areas where mangrove sediment surface elevation is not keeping pace with sea level rise and there is limited area for landward migration. However, more analysis is needed to investigate where this is occurring in the BOBLME e.g. in the Ganges Delta where sea level change is caused mostly by subsidence and partly by climate change. Global climate change may also have a number of deleterious effects on other critical habitats. Sea level rise may cause lack of light at deeper levels and sea temperature warming is related to coral bleaching. Acidification causes an increase in dissolved bicarbonate and a decrease in the available carbonate in seawater. It will thus become more difficult and energy consuming for coral and reef animals and plants to make skeletons, and growth and productivity may be impaired. There are also observations of a starting geographical shift in fish species distribution to higher latitudes, with accompanying physiological and phenological changes. Threats identified above need to be addressed to enhance the resilience of fisheries, critical habitats, and people’s livelihoods, as current management practices will determine the possible impacts of future climate change.
11. **Baseline scenario and associated baseline projects**
12. In the next 25 years, the coastal populations of the BOBLME are expected to increase by almost a quarter. Under the baseline scenario, it is inevitable that this will result in increased pressure on the environment and its resources, despite the fact that the BOBLME countries are already investing hundreds of millions of dollars per year on research and management of the marine environment and fisheries of the Bay of Bengal. The main ongoing baseline programmes and projects are summarized below by SAP/Project component:
13. **Fisheries:** The combined total of government investments by BOBLME countries in fisheries currently amounts to more than USD230 million per year. A large number of other actors also have baseline programmes and activities in the BOBLME to promote Blue Growth in fisheries and aquaculture, address IUU fishing, promote the Ecosystem Approach to Fisheries Management (EAFM), and ecosystem assessments that the proposed programme will build on and receive co-financing from. Key baseline initiatives are briefly described in the following:

* The Asia Pacific Fishery Commission (APFIC) is one of the longest serving regional fishery bodies, and has the mandate to support and encourage sustainable fisheries management within the Asia-Pacific region; all BOBLME countries are also APFIC member countries. The Secretariat of the Commission is provided and supported by the FAO Regional Office in Bangkok, Thailand. APFIC serves as a policy forum, organizing regular sessions, meetings and workshops, developing capacity development tools (e.g. port state measures inspection training, regional trawl fisheries management guidelines, etc.), and other regional publications to enhance the sustainability of the fisheries sector in the Asia-Pacific, including regular regional overviews of fisheries and aquaculture in Asia and the Pacific. Most recently, APFIC has held a forum on Blue Growth initiatives, which build on the Code of Conduct for Responsible Fisheries (CCRF) and EAFM, and also contribute to the Sustainable Development Goals (SDGs); it currently supports related work in Bangladesh, Indonesia and Sri Lanka. APFIC also develops a Regional Programme to support countries combat Illegal, Unregulated, and Unreported (IUU) Fishing and the accession to, or implementation of, the FAO Port State Measures Agreement (PSMA).

1. FAO has a significant portfolio of normative work with these countries through its five Strategic Objectives and regional priority areas of work (Climate Change, One Health and Blue Growth). FAO’s Committee on Fisheries (COFI), of which all BOBLME participating countries are members, implements a broad range of binding and voluntary instruments such as the Code of Conduct for Responsible Fisheries (CCRF) and International Plans of Action (IPOAs). In addition, FAO has a significant portfolio of ongoing and pipeline projects in the Bay of Bengal which are relevant to fisheries, including:

* Closing in 2017: Strategies for Trawl Fisheries Bycatch Management (e.g. in Indonesia and Thailand);
* Coming up: Community-based Climate Resilient Fisheries and Aquaculture Development in Bangladesh; Technical Support for Stock Assessment of Marine Resources in Bangladesh (TCP); Fishery legal support to Sri Lanka; Legal support to Indonesia under the FAO/WWF program on Combating of IUU Fishing that focuses on strengthening fisheries governance, reinforcement of Monitoring Control and Surveillance systems, and support to development and adoption of international market-access instruments.

1. In addition, there are GEF-funded FAO projects on climate change adaptation (“Strengthening the adaptive capacity and resilience of fisheries and aquaculture-dependent livelihoods in Myanmar”) and coastal fisheries management (“My Coast: Ecosystem-Based Conservation of Myanmar’s Southern Coastal Zone”) in Myanmar, as well as the Indonesian Seas Large Marine Ecosystem Project in Indonesia and Timor-Leste.
2. These national and sub-regional FAO activities are complemented by several global projects and programmes which are in support of BOBLME themes, e.g. the GEF-funded Areas Beyond National Jurisdiction (ABNJ) Programme (Tuna and Deepsea resources), with a component in the northern Indian Ocean, FAO capacity development programme to support the implementation of the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing and complementary instruments, the Voluntary Guidelines Small-scale Fisheries Implementation Support Project, the GEF-funded Coastal Fisheries Initiative (in particular in Indonesia), and the EAF Nansen project, which will provide opportunities for ecosystem and fish stock assessment for selected BOBLME countries in 2018.
3. The World Bank has a portfolio of fisheries and environment related projects and programmes, among them a component of the ABNJ Tuna project in Tamil Nadu (with BOBP-IGO), as part of the Ocean Partnerships for Sustainable Fisheries and Biodiversity Conservation. The focus is on South India but with regional outreach particularly in Sri Lanka and Maldives with the Indian Ocean Tuna Commission (IOTC). In Bangladesh, the “Sustainable Livelihoods from Coastal and Marine Fisheries” Project is under preparation (proposed loan of USD200,000,000), which aims to stimulate sustainable economic growth and poverty reduction through improved management of Bangladesh’s coastal and marine fishery resources. The project will contribute to improved fisheries management and fisher welfare, and also aim at an increased contribution of the marine coastal fisheries and aquaculture sector to the Bangladesh economy. The future World Bank Project in the Maldives will focus on fishery resources management, through enhancing MCS, improved data capture and reporting and kick-starting of mariculture. The “Integrated Coastal Zone Management Project” in India, which started in 2009 (e.g. in West Bengal, Orissa and Gujarat) has recently moved into a second phase. There are also several disaster risk reduction and mitigation and livelihoods support projects in several coastal states of the Bay of Bengal. In Indonesia, the Coral Reef Rehabilitation and Management Project (COREMAP-CTI; 2014-2019; currently for restructuring) covers the eastern and western regions of the country, and due to its focus on EAFM it is highly complementary to the BOBLME Programme. The World Bank has also conducted a regional study on “Blue Economy Assessment”, and country studies on Managing Coastal Wealth for Resilient Growth and Livelihoods (in Sri Lanka), and on Sundarbans Landscape-scale Joint Environmental Plan and Dialogue (in Bangladesh, with a complementary study in India). The USD 100 million Ayeyarwaddy Integrated River Basin Management Project in Myanmar can also be expected to benefit people of the Ayeyarwaddy Delta Region whose livelihoods are based on water dependent sectors like fisheries, aquaculture and agriculture. The project also aims to strengthen the government’s ability to sustainably manage the Ayeyarwaddy River by developing water resources management institutions and enabling informed decisions about future investments in developing the river.
4. The Indian Ocean Tuna Commission (IOTC) is an intergovernmental organization with the mandate of managing tuna and tuna-like species in the Indian Ocean, and has the objective of improving cooperation for the sustainable management and conservation of selected fisheries stocks. To achieve this, among other activities, the Commission gathers, analyses and disseminates fisheries information, facilitates research, technology transfer, capacity development, etc., and adopts conservation and management measures for the conservation of fish stocks, and also for biodiversity conservation, e.g. on sharks and ETP species. IOTC also assists countries to improve their fish landing data collection and fisheries statistics, and overall reporting of compliance and results; it has been a close cooperation partner of the BOBLME Project during Phase 1.
5. The Southeast Asian Fisheries Development Centre (SEAFDEC) is an inter-governmental body that has the mandate to develop and manage the potential of fisheries in the Southeast Asia region (also considered the ‘fisheries technical arm of ASEAN’). Of its 11 member countries, 4 are also BOBLME countries: Indonesia, Malaysia, Myanmar, and Thailand. SEAFDEC’s work is coordinated by the Secretariat, which channels guidance from Member Countries to address fisheries issues in the region. The BOBLME EAFM training program is being sustained through SEAFDEC in collaboration with other partners and the Governments of Malaysia and Indonesia. Moreover, the BOBLME collaboration with SEAFDEC on sharks is the essential basis for the upcoming SEAFDEC-ASEAN-regional-EU-CITES activities on sharks. SEAFDEC is also implementing regional initiatives on combating Illegal, Unreported and Unregulated (IUU) fishing in Southeast Asia and optimizing energy use in fisheries in the Southeast Asian region through fishing vessels energy audits. The project on the Promotion of Sustainable Fisheries and IUU Fishing-related Countermeasures in Southeast Asia, which is being implemented by SEAFDEC with funding support from the Japanese Trust Fund (JTF), includes the Promotion of Fishing Licenses, Boat Registrations, and Port State Measures in Southeast Asia to pave the way for the development of a regional record of fishing vessels starting with vessels measuring 24 metres in length and over during its first phase and to be expanded later with the recording of vessels measuring less than 24 metres. The USAID funded Oceans Partnership (SEAFDEC/ASEAN – USAID) in particular works in ASEAN countries including Myanmar, Thailand, Malaysia and Indonesia. The Sweden-funded SEAFDEC-SIDA on-going initiative on sub-regional collaboration in fisheries also has a component on the Andaman Sea and was highly complementary to the BOBLME Project Phase 1 with its emphasis on fisheries management and habitat conservation.
6. Network of Aquaculture Centres in Asia (NACA) is an intergovernmental organisation that promotes rural development through sustainable aquaculture. NACA seeks to improve rural income, increase food production and foreign exchange earnings and to diversify farm production. All the 8 BOBLME countries are members of NACA that conducts development assistance projects throughout the region in partnership with governments, donor foundations, development agencies, universities and a range of non-government organisations and farmers. NACA supports institutional strengthening, technical exchange and the development of policies for sustainable aquaculture and aquatic resource management. Major efforts have been devoted to nurturing an enabling institutional environment, information sharing and capacity building, technological extension among member governments, development and dissemination of Best Management Practices (BMPs) and inclusion and empowerment of small-scale farmers. NACA's partners include organisations such as FAO, UNDP, ADB, World Bank, SEAFDEC, ASEAN, a wide range of bilateral cooperation partners, the Asian Institute of Technology (AIT), Worldwide Fund for Nature (WWF), MacArthur Foundation and the Rockefeller Brothers Fund. NACA’s current work plan has a focus on livelihoods and food security for rural communities.
7. International Collective in Support of Fish Workers (ICSF) is an international non-governmental organization based in India that works towards the establishment of equitable, gender-just, self-reliant and sustainable fisheries, particularly in the small-scale, artisanal sector. The main aims of ICSF are to monitor issues that relate to the life, livelihood and living conditions of fish workers around the world; disseminate information on these issues, particularly amongst fisherfolk; prepare guidelines for policymakers that stress fisheries development and management of a just, participatory and sustainable nature; and help create the space and momentum for the development of alternatives in the small-scale fisheries sector. ICSF’s work is focused on countries of the South and it is committed to influence national, regional and international decision-making processes in fisheries so that the importance of small-scale fisheries, fishworkers and fishing communities is duly recognized. ICSF had been a key partner of FAO in the development of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (VG-SSF) and also of the BOBLME Phase I for sub-regional and national efforts on the dissemination of these guidelines. Phase II of the BOBLME will work closely with ICSF to strengthen local stakeholder involvement in SAP implementation.
8. The Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) is mandated to enhance cooperation among its member countries (Bangladesh, India, Maldives and Sri Lanka), other countries and organisations in the region and provide technical and management advisory services for sustainable coastal fisheries development and management in the Bay of Bengal region. The BOBP-IGO is focused on helping the member countries in sustaining fisheries production and ensuring livelihood security for millions of fisher folk in the region. In line with identified and felt needs, a range of activities are planned for implementation, such as the Regional Programme on Safety at Sea for Artisanal and Small-Scale Fishermen; Regional Programme for Fish Stocks Assessment in the Bay of Bengal; Capacity Building and Information Services for Fisheries Development and Management in the Bay of Bengal Region; and Taking the Code of Conduct for Responsible Fisheries to the Grassroots Level. Since 2010, the BOBP-IGO undertook a major programme of mapping fish markets in its member-countries (<http://bobpigo.org/html_site/fishmarket/index.htm>). An inventory of these markets allows better interventions to be planned for demand estimation, supply mechanism, price support and quality of food products. So far, the programme is completed in Chennai, Dhaka, Colombo and Malé. Subsequently, in association with the Ministry of Fisheries and Agriculture, Government of Maldives, BOBP-IGO developed the “Atolls of Maldives” interactive website (http://www.atollsofmaldives.egov.mv/atolls). The website provides 360 degree information on atolls and islands comprising demography; infrastructure; environment; marine protected areas; land use; etc., which is proving useful in planning many developmental and livelihood activities. In Bangladesh, a process is underway to develop a web-based application for registration and licensing of fishing crafts. The application will further strengthen the regime of the on-going MCS programme in Bangladesh. The BOBP-IGO, in association with the BOBLME Project, also digitally archived over 50 000 images dating from 1979 through 2015. This digital archive tells its own story of fisheries development in the Bay of Bengal region and also for areas outsides the bay. The BOBLME Project collaboration with BOBP-IGO also covered key topics such as hilsa and sharks conservation, and a wide range of capacity development initiatives. The latest BOBP-IGO initiative in knowledge management in the region is happening in Tamil Nadu and Puducherry, India as follow up of the Fisheries Management for Sustainable Livelihoods (FIMSUL), another project that was initiated by the World Bank and FAO. The BOBP-IGO has proposed an IT enabled hub and spoke model of Knowledge Management for Fisheries (KMF). The FIMSUL project had otherwise set a direction for fisheries co management, livelihoods planning based on stakeholder based livelihoods analysis and developing policy framework based on a toolkit. The BOBP-IGO is expected to be a key partner for sub-regional and national initiatives in South Asia and beyond, during the Phase 2 implementation.
9. Phase 1 of BOBLME has already addressed the issue of multisectoral collaboration for the sustainable management of hilsa fishery in India, Bangladesh and Myanmar, and Indian mackerel fishery in all BOBLME countries; and sustainable management of sharks and rays in all countries, through the development of National Plans of Action, or strengthening of existing ones. It has also led to improved provision of fisheries statistics to inform decision making. Strengthening of EAFM and reduction of IUU fishing will build on this baseline. While these themes are of relevance to all partner countries, they also have additional priorities based on national needs. The following sections summarize some of the fisheries baseline activities undertaken by countries, with or without donor assistance.

* Bangladesh is taking a precautionary approach to sustainable growth of marine fisheries resources in the Bay of Bengal in line with the objective of the new National Fisheries Policy, currently in the process of approval, to maintain ecological balance, conserve biodiversity; this includes conversion of existing bottom trawlers to more eco-friendly mid-water ones, and a moratorium on new trawlers for fishing below 200m depth. There is a promotion of private sector engagement in longline and purse seine offshore/deepsea fishing. Recent adjustments in maritime boundaries (with Myanmar and India) underline the need for new assessments of offshore and inshore fisheries resources. Bangladesh also has recently acquired a survey vessel and an on-going collaboration with Malaysia on strengthening its fisheries research and management capacity. WorldFish Center, through USAID-funding and with a wide network of partners, will implement support to the country’s coastal fishing communities to improve food security through research-led fisheries management initiatives. This “ECOFISH” project seeks to strengthen the ability of local communities, especially women, to extract maximum benefit from coastal environments using sustainable best practices and to mitigate the adverse effects of climate change.
* India has adopted a new National Policy on Marine Fisheries (NPMF 2017) with policy goals on fisheries management, including Monitoring, Control and Surveillance (MCS), strengthening science-policy interface and fishery product traceability; on environmental conservation and pollution, focusing on maintaining ecological integrity and ecosystem values of the resources, and also on studying impacts of climate change on fisheries and mitigation measures; on socio-economics, fisher welfare and alternative livelihoods including increased engagement of stakeholders addressing the sustainable livelihoods enhancement and diversification strategies; and on regional cooperation which includes managing shared resources and shared ecosystems in the Bay of Bengal, transboundary cooperation, and participation in regional fisheries and environment bodies. All of these policy goals are highly compatible with and complementary to, the BOBLME Phase 2 programme. The over-arching goals of the NPMF are to ensure the health and ecological integrity of the marine living resources of India through sustainable harvests for the benefit of current and future generations of the nation, and the overall strategy is based on the four pillars of sustainable development, principle of subsidiarity, inter-generational equity and precautionary approach. The policy states that the Ecosystem Approach to Fisheries Management (EAFM) will be implemented with due consideration to the well-being of all living and non-living constituents of the marine ecosystem and the social attributes of stakeholders, and it also promotes participatory management or co-management in fisheries.
* India is also implementing a Central Sector Scheme on Blue Revolution and Integrated Development and Management of Fisheries, with focus, among others, on promoting non-conventional energy (NCE) sources for environment friendly fishing practices, mariculture activities for livelihoods enhancement and management of marine fisheries. The Central Marine Fisheries Research Institute (CMFRI) is initiating a project to develop guidelines for trawl fisheries in India. In the federal system of India, the coastal state Governments along the Bay of Bengal coast have their annual or five-year plans on fisheries, where sustainable fisheries management systems, enhancement and diversification of fisher livelihoods are part of the action plans.
* In Indonesia, with a focus on sectoral growth, there is emphasis on improved law enforcement against illegal fishing. No fewer than 117 illegal foreign fishing vessels were sunk by the Ministry of Marine Affairs and Fisheries (MMAF) throughout 2015. Minister Susi Pudjiastuti also prohibited 1,132 ex-foreign vessels from operating in Indonesia; this policy has reportedly resulted in a surge of fish stocks and catches from Indonesian waters and marks a new paradigm in Indonesia’s approach to its fisheries sector. Another policy focus is on enhancing the living standards of fishers and boosting investment in the fishery sector. These policies include the opening of six sub-sectors in the fish processing industry to foreign investment, the provision of fishing equipment, storage and processing facilities such as modern ships and cold storage, and facilitating access to financing. Indonesia also has on-going initiatives and plans regarding implementation of a social safety net programme, life insurance, and support to land certification for fishers, as well as addressing human rights considerations as part of vessel registration and inspection (e-certification) for basic human rights, all of which are complementary to BOBLME Phase 2 under Theme 4 (social and economic considerations). Indonesia has partly re-centralized its fisheries management from district- to province level, and is implementing management plans on an even wider scale. For fisheries management purposes, Indonesian waters are divided into eleven Fisheries Management Areas (FMA). Two of them are located within the BOBLME area: FMA 571 (Malacca Strait and Andaman Sea) and FMA 572 (Indian Ocean – West Sumatra). The respective Fisheries Management Plans have been drafted following EAFM criteria.

1. Malaysia has been implementing various programmes and activities aimed at improving fisheries management as well as reducing ecosystem impacts to ensure sustainability. One of the important initiatives includes implementation of the EAFM in five Malaysian states, namely Sabah, Sarawak, Perak, Selangor and Kedah. Besides establishing pilot sites, Malaysia also continues to provide training and awareness on EAFM to the stakeholders. A major element of fisheries management is the enforcement of five fishing zones for different vessel sizes and fishing gear types. With regards to international commitment, Malaysia has formulated several National Plans of Action (NPOAs), i.e. NPOA for Management of Fishing Capacity in Malaysia, NPOA for the Conservation and Management of Sharks, and NPOA to Prevent, Deter, and Eliminate IUU Fishing, which are implemented to ensure proper management of fisheries resources. In combating IUU fishing, Malaysia actively cooperates at regional and international levels through information sharing, in particular under the IUU Regional Plan of Action. Moreover, Malaysia also develops capacity pertaining to the Port State Measures Agreement (PSMA) and participates in training sessions provided by other international organizations to make sure it is prepared to properly implement PSM after accession to the agreement. A collaborative project on fisheries management with Australia is under preparation.

* In the Maldives, fisheries is one of the most important economic sectors. Tuna production has shown a contraction following an all-time high in mid-2000. This may be attributed to environmental factors, but also probably over-exploitation of some of the key tuna species combined with the fisheries’ dependence on livebait for pole-and-line fishing method. Livebait is a prerequisite to pole and line fishing and availability of livebait at sufficient levels has been an issue recently. The largest component of the tuna fishery is now MSC certified. A policy objective is to increase post-harvest processing capacity and to value-add its products locally. Compared to pelagics, reef fishery has grown following expansion of tourism, but little is known about its actual scale and intensity. An overarching policy goal is sustainable fisheries productivity through improved management, development of alternate bait harvesting techniques in support of tuna pole-and-line fisheries, advancement of small scale aquaculture (mariculture) and ensuring quality of ‘Maldive fish’, a major export commodity. A Blue Growth framework is to be developed to strengthen the livelihoods of fishers, fish farmers and those whose livelihoods depend on the sector in the Maldives, and the World Bank funded project will focus on fishery resources management, through enhancing MCS, improved data capture and reporting and kick-starting of mariculture.
* In line with the national policy vision to “ensure the sufficiency of fish supplies not only for the present entire people but also for future generations”, Myanmar places emphasis on management for sustainable fisheries (EAFM / Co-management), use of relevant and timely information for planning and management of fisheries, sustainable aquaculture development, sustainable utilization and trade of fish and fishery products, and international, regional as well as bilateral cooperation for sustainable fisheries development. Informed by the results of the RV Dr Fridtjof Nansen ecosystem survey during BOBLME Phase 1, there is now a three-month ban on fishing, from June 1 to the end of August, to allow depleted fish stocks time to recover, and a total ban on foreign fishing boats. The Norwegian government is in the process of developing a bilateral programme for additional support to the fishery sector, alongside other donor-funded projects (e.g. EU, Australia, and Denmark) with focus on fisheries and aquaculture. Myanmar is also a focal country for fisheries sector collaboration through the WorldFish Center, which has implemented the “Improving Research and Development of Myanmar's Inland and Coastal Fisheries (MYFish)” Project, and work on hilsa spawning and migration, in collaboration with the Phase 1 BOBLME Project. A continuation of work also with coastal communities is expected.
* In Sri Lanka, the mission of the Ministry of Fisheries “Managing the utilization of fisheries and aquatic resources for the benefit of the present and future generation” is implemented through a range of activities covering resources assessments, infrastructure development, fisheries association empowerment, and capacity development. Fisheries management is further guided by the vision “to provide an optimum contribution to the national economy through strengthening the socio–economic status of the fisher communities while maintaining the fisheries and aquatic resources in a sustainable manner”. In order for fisheries products to re-gain access to European markets, a number of policy decisions were taken recently, new management procedures (e.g. logbooks, certification schemes) were developed to control activities of fisheries vessels at high seas to ensure that the fisheries activities are not carried out in an illegal, unreported and unregulated (IUU) manner. A Blue Growth Initiative is implemented as a means to strengthen livelihoods, food security and provide income. This is complemented by the initiative to establish 10,000 Blue Green Beautiful Lanka Villages within the 2016-2020 period as part of the INDC in partnership of the government departments and community organizations.

1. Thailand has recently adopted a new policy for marine fisheries management, the Royal Ordinance on Fisheries B.E. 2558 (2015) concerning sustainable marine fisheries, with its key principles and objectives relating to good governance, combating illegal, unregulated and unreported fishing, improving monitoring, control and surveillance (MCS) as well as traceability, and improving labour conditions in fisheries. To achieve these, the Government has drafted the Marine Fisheries Management Plan (FMP), which outlines the key principles (including EAFM) and policy priorities designed to tackle overfishing and overcapacity of the Thai fishing fleet, approved the National Plan of Action to Prevent, Deter and Eliminate IUU Fishing (NPOA-IUU), and National Plan on Control and Inspection (NPCI) and established the Command Center for Combating Illegal Fishing (CCCIF) in May 2015.
2. **Critical habitats:** The knowledge of the location and status of MPAs in the BOBLME was greatly enhanced during the first phase with the development of the on-line MPA Atlas with WorldFish Center and hosted on the ReefBase website (<http://boblme.reefbase.org/about.aspx>) and an ecosystem characterization carried out by the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Ongoing regional baseline projects supporting this component include Mangroves for the Future (MFF) Regional Programme coordinated by IUCN, which is an 11-country programme, established in 2006 and now in its third phase (2015-2018) covering all of the BOBLME countries except Malaysia (which is now an ‘outreach’ country). To date around 30-40% of the MFF small grants have focused on restoring and managing local areas of critical habitat, mainly mangroves, but also other forms of coastal wetlands and coral reefs. This trend is likely to continue. FAO and MFF collaborate on the financing for mangrove protection e.g. in Thailand. This work covers mangrove-related policy and institutional frameworks, mangrove carbon estimator and monitoring guide, and incentive allocation for mangrove protection. During Phase 1, the BOBLME Project has cooperated intensively with IUCN and MFF, in particular through the country offices in Sri Lanka (on Gulf of Mannar transboundary area), Bangladesh (on MPA work) and the Regional Office (on Myeik Archipelago), and this collaboration is expected to continue in Phase 2.

* With regard to mangrove conservation, FAO is further engaged in mangrove restoration/rehabilitation, community-based management and conservation, replanting (in coastal areas), climate adaptation (in wetlands), income generation at community level for protecting mangroves, shrimp farming and rehabilitation, integrated management (in marine and coastal areas), biodiversity conservation and sustainable use, transboundary cooperation (in marine ecosystems), and knowledge management. FAO has recently published a [review of mangrove and seagrass ecosystems and their linkage to fisheries and fisheries management](http://www.fao.org/apfic/publications/detail/en/c/419650/) and is currently taking stock of past work and assessing future priorities in strengthening mangrove restoration and integrated fisheries management. This work follows earlier (1994) Mangrove Forest Management Guidelines, and the World Atlas of Mangroves (1995, 2010), using FAO’s technical expertise in mapping, cartography and forest resource assessment. The Global Forest Resource Assessment Programme continues to help countries to monitor the status and evolution of their national mangrove resources for improved management and decision making and is currently working on an updated mangrove map. Since 2006, FAO has been supporting projects related to mangrove restoration, conservation and management in 29 countries, mainly in Asia and the Pacific with 12 projects.

1. With respect to national MMA work, several IUCN/MFF projects in Myanmar are in the pipeline. IUCN also has significant experience and networks of partners working in the key transboundary areas relevant to the BOBLME – e.g. Gulf of Mannar (e.g. the Bar Reef Marine Sanctuary, Sri Lanka), the Sundarbans, important Hilsa Fishery Management Areas (Bangladesh, India). Also, its MPA work in Myanmar has significant transboundary management interest for Thailand’s Andaman coast, and can be linked to the work conducted in the Myeik Archipelago by the first phase of BOBLME and its cruise to survey the diversity of habitats in the entire archipelago. In all BOBLME countries, there are substantial national and regional, sometimes donor-supported, initiatives for the conservation of critical habitats and marine biodiversity, in addition to IUCN efforts. These include German Technical Cooperation in India and Bangladesh, UNDP in the Maldives and Sri Lanka, UN Environment-CMS (e.g. dugong conservation in Bangladesh, India, Myanmar, Sri Lanka and Thailand), ADB and World Bank (through GEF-funding in Indonesia). Private companies or businesses are also engaged in marine biodiversity protection; e.g. Dilmah Conservation in Sri Lanka. Sanctuary, Shangri-La's Care for Nature Project in the Maldives is an example of the tourism industry commitment to biodiversity conservation.
2. The MFF/AIT Regional Integrated Coastal Management (ICM) post graduate certificate course (which integrates the BOBLME EAFM training as a component) is another baseline investment. MFF will focus over the next three years to work with national university partners in selected countries (including Myanmar) to tailor national ICM courses in countries where there is a need/ interest. The training materials are currently being professionally packaged to support this process. BOBLME invested significantly in the development and delivery of the ICM regional course in Phase 1.
3. UN Environment is supporting the South Asia Co-operative Environment Programme (SACEP) to develop the Regional Marine and Coastal Biodiversity Strategy for the South Asian Seas Region, including the five SAS countries (Bangladesh, India, Maldives and Sri Lanka, which are BOBLME countries, and Pakistan), as part of its Regional Seas Programme. The aim of the Biodiversity Strategy is to provide a framework for coordination and collaboration between countries’ National Biodiversity Strategies and Action Plans (NBSAPs), enhancing national and regional interventions for the achievement of the Aichi Biodiversity targets, particularly those addressing coastal and marine issues relevant to the region. The First Order Draft (FOD) of the Regional Marine and Coastal Biodiversity Strategy has been developed and it is now under a review process. The six main regional Targets and related actions of the Biodiversity Strategy would include: i) Ensuring Ecosystem Services and Wellbeing, ii) Prevention of Species Extinction, iii) Control of Alien Invasive Species, iv) Sustainable Fisheries and Aquaculture, v) Prevention of Marine Pollution and vi) Effective and Equitable Governance of Marine and Coastal Protected Areas. SACEP also supports the promotion of co-management approaches in coastal fisheries in its member countries. The BOBLME is also part of a second Regional Seas Programme Area, the Coordinating Body for the Seas of East Asia, which has activities on marine pollution prevention (in particular marine litter), invasive species, coral reef conservation, and marine spatial planning.

* The BOBLME countries are providing significant investments in rehabilitation and sustainable management of coastal habitats around the bay. For example, India in a bid to restore biodiversity in the Gulf of Mannar has kickstarted, through the Government of Tamil Nadu, a project under its National Adaptation Fund for Climate Change (NAFCC) to rejuvenate the coastal ecosystems. The project will rehabilitate coral reefs and seagrasses in a 4 km2 area and work with 25 village specific activities in order to build a coastal ecosystem that is resilient to climate change. This follows on the now completed GEF-funded UNDP project entitled “Conservation and Sustainable Use of the Gulf of Mannar Biosphere Reserve’s Coastal Biodiversity”. Another project is under implementation with the title GoI-UNDP–GEF Project ‘Mainstreaming Coastal and Marine Biodiversity Conservation into Production Sectors in East Godavari River Estuarine Ecosystem’, Andhra Pradesh under the umbrella programme ‘India GEF Coastal and Marine programme’ (IGCMP). The project is in its completion stage.

1. In the Maldives, the World Bank, through EU and AusAid support, is executing a Climate Change Adaptation project (CCAP). The development objective is to demonstrate climate adaptive planning and management through the adoption of a multi-sectoral approach in the South Maldives. The project comprises of five components. The first component, wetlands conservation aims to establish a protected wetland management system to protect the wetlands and biodiversity; support the development of ecotourism and other sustainable activities that can contribute to the socio-economic development of the local community; and establish a model for management of the protected wetland area. The second component, coral reef monitoring aims to strengthen the coral reef monitoring framework for improved decision making and management of coral reefs and related ecosystems. The third component, development of an island level integrated solid waste management system will help build the institutional capacity of Addu City and Gnaviyani atoll councils to plan an atoll and island level integrated solid waste management program to minimize the environmental risks to marine and terrestrial assets. The fourth component, mainstreaming climate change into island development planning aims to build awareness and strengthen local government capacity to address climate change adaptation issues relevant to island development and support tertiary level education in environmental management including climate change adaptation and mitigation. The fifth component, project management will support management functions for implementing the project, including support for staff, monitoring, equipment, operating costs, etc. Another project in the Maldives is USAID’s Project REGENERATE (implemented by IUCN). The final goal of this project is to develop a Resilience-Based Management (RBM) framework to improve the ability of policy-makers and stakeholders in the Maldives to understand and address the risks from global, regional and local-scale pressures on their environment.
2. **Waste and Waste Water Management:** To address the multiple threats to ecosystems and human health posed by weak water governance systems, inadequate and unequal access to water supply, untreated sewage and other wastes entering water bodies, ADB, in collaboration with the Agence Française de Développement (AFD), is providing a loan, under a multi-tranche financing facility (MFF), to improve urban services for the city of Mandalay. The first tranche of the loan (US$ 130 million), will give rise to the following outputs: i) rehabilitation and extension of water supply system, ii) nonrevenue water reduction, iii) wastewater collection and treatment Phase 1, iv) sludge treatment/disposal and gas to energy, v) septage management, vi) non-structural storm water management, vii) dredging drainage canals and increasing flow, viii) improved urban planning, integrating climate change resilience, ix) utility capacity building and corporatization, and x) increased public awareness. A second tranche of the MFF, for about US$ 100 million, anticipated in 2019, will build on the first tranche to: i) increase the number of households with uninterrupted piped water supply, ii) reduce BOD loading to the environment from 2018 baseline, iii) increase solid waste management from 2018 baseline, and iv) reduce traffic congestion in the city center. Part of this loan (excluding the solid waste management and traffic management components), will be used as baseline investment for the GEF co-financing under the current PFD, with more details provided in the relevant sections and associated child PIF.
3. UN Environment’s Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) has established the Global Partnership on Nutrient Management (GPNM) as a response to the ‘nutrient challenge’ – how to reduce the amount of excess nutrients in the global environment consistent with global development. The GPNM reflects a need for strategic, global advocacy to trigger governments and stakeholders in moving towards lower nitrogen and phosphorous inputs to human activities. It provides a platform for governments, UN agencies, scientists and the private sector to forge a common agenda, mainstreaming best practices and integrated assessments, so that policy making and investments are effectively ‘nutrient proofed’. The GPNM also provide a space where countries and other stakeholders can forge more co-operative work across the variety of international and regional fora and agencies dealing with nutrients, including the importance of assessment work. The proposed programme will build on experiences of the GPNM and work on marine litter (under non GEF bilateral donor funding) under the programme will also be linked to the GPA as well as FAO’s work on clean fishing ports.
4. **Livelihoods of coastal communities:** Over 50 percent of all of the world’s coastal poor live in the countries of the BOBLME. All the economies are reducing reliance on the agriculture sector (including fisheries) because growth in the industrial and service sectors has driven long-term GDP growth. The contribution to GDP by fisheries, therefore, is relatively low. However, marine living resources are extremely important for the livelihoods of millions of people and communities, in particular as a source of food. Government support for urban populations is variable, with some safety nets in place. But, because of the huge areas of coast involved, many people are not covered or even aware of some of the services that are available. All the region’s governments have set ambitious marine and freshwater fishery production targets, which in many cases do not acknowledge the biological limits to production inherent in these renewable resources. Most countries have relatively well-formulated legislation and policies to regulate the different sectors, but these are often not harmonized across sectors. Most government services are applied in a multi-layered system (national-provincial/state and local) without clear roles and responsibilities defined for the different players. Many countries now have “decentralization” policies that present new challenges for the coordination and implementation of law and order. Nevertheless, government, and especially local governments’ baselines are significant and provides a strong basis to build on in implementing the SAP and in raising co-financing for improving the livelihoods of coastal communities.
5. Regional baseline projects supporting this component include Mangroves for the Future (MFF),which has a strong gender component and focus on women’s empowerment in coastal resource dependent communities, as well as ICSF that is focusing on gender-just sustainable fisheries in the small-scale, artisanal sector. SocMon (Socio-economic Monitoring) and its initiative in South and Southeast Asia, strengthened in collaboration with the BOBLME will also contribute to this baseline. FAO’s contribution to the baseline under this component includes the (now completed) Regional Fisheries Livelihood Project (RFLP) in Cambodia, Indonesia, the Philippines, Sri Lanka, Timor-Leste and Viet Nam, which had developed tools and products to put in place mechanisms and capacity for joint management of fisheries between the fishers and government authorities, implemented measures to improve safety at sea and reduce vulnerability for fishers and other community members, addressed the loss of income from fish and fishery products due to poor handling, preservation and processing practices while improving marketing systems, strengthened existing (or introduced new) income activities and provided support for their implementation, and facilitated access to micro-finance services for fishers, processors and vendors while helping community members better understand savings and credit mechanisms. The RFLP work has generated numerous knowledge products which will be utilized, and opportunities for upscaling or replication.
6. This work was supported by the APFIC/FAO regional consultative workshop on *“Best practices for supporting and improving livelihoods of small scale fisheries and aquaculture households”* and its recommendations*.* In 2014, the COFI Members adopted the “Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication” (SSF-Guidelines, VG-SSF). The SSF Guidelines represent a global consensus on principles and guidance for small-scale fisheries governance and development. They were developed for small-scale fisheries in close collaboration with representatives of small-scale fisheries organizations in a process facilitated by FAO. They are directed at all those involved in the sector and intend to guide and encourage governments, fishing communities and other stakeholders to work together and ensure secure and sustainable small-scale fisheries for the benefit of small-scale fishers, fish workers and their communities as well as for society at large. The SSF-Guidelines, as well as the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security which promote secure tenure rights and equitable access to land, fisheries and forests as a means of eradicating hunger and poverty, supporting sustainable development and enhancing the environment. will provide valuable guidance for the BOBLME Programme, in particular for the implementation of Component 4. Finally, this component builds on an extensive baseline of support to coastal communities in the BOBLME littoral countries to poverty reduction, gender equality and human rights provided by bilateral and multilateral donors, especially to the poorest countries, such as Bangladesh and Myanmar. A detailed analysis of this baseline will be provided in the two child projects.
7. **Regional mechanism for coordination, monitoring and assessment:** Many of the partners mentioned above have supported some level of transboundary cooperation on management of shared coastal and marine resources, such as the Association of South East Asian Nations (ASEAN), the intergovernmental organization Bay of Bengal Programme (BOBP-IGO), the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), Asia-Pacific Fishery Commission (APFIC), Indian Ocean Global Ocean Observing System (IOGOOS), Indian Ocean Tuna Commission (IOTC), Network of Aquaculture Centres in Asia and Pacific (NACA), South Asia Association for Regional Cooperation (SAARC), South Asia Cooperative Environment Programme (SACEP), and Southeast Asian Fisheries Development Centre (SEAFDEC), RPOA-IUU. In addition, collaboration with the private sector has been strengthened through a new partnership with the World Ocean Council (WOC), the international business alliance for corporate ocean responsibility and its selected members with an interested or engagement in the BOBLME.
8. At national level, countries have strengthened intersectoral coordination between environment and other sectors through the IUCN-MFF National Coordination Bodies. Phase 1 of the BOBLME developed and strengthened the networks among these organizations that has already led to better regional/sub-regional coordination related to: (i) multi-sectoral collaboration; (ii) transboundary collaboration; and (iii) multi-level collaboration within national governments. This constitutes a strong baseline for forming the Consortium for the Conservation and Restoration of the BOBLME (CCR-BOBLME) and to strengthen the coordination with NGOs/CBOs in the BOBLME and with ICSF to address livelihood and empowerment issues.
9. Regarding the baseline for monitoring and assessment of the BOBLME, the Intergovernmental Oceanographic Commission of UNESCO (UNESCO-IOC), has proposed through the LME component of the UNEP-GEF Transboundary Waters Assessment Programme (TWAP) that data on LMEs be acquired through existing databases maintained by a range of institutions including NOAA (remote sensing data on primary productivity); the University of Rhode Island (data on sea surface temperature); the University of California at Santa Barbara (mapping of cumulative human impacts in LMEs); CERMES (University of the West Indies in Barbados) and Dalhousie University (governance assessment); FAO and the University of British Columbia, Canada (fisheries data); UNEP/GRID-Arendal and UNEP-WCMC (marine habitat data); IGBP (modelling of nutrient inputs using the global NEWS model); IGBP, Future Earth Coasts LOICZ and others (deltas at risk index); GCRMN, the global coral reef monitoring network; the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP; marine pollution); and the University of Miami (socio-economics), among others. Publicly available data from these partner institutions, as well as from regional and national sources provide a strong baseline for the monitoring and ecosystem-based assessment of the BOBLME.
10. **Proposed alternative scenario**
11. The programme will address the priority transboundary environmental problems identified by the BOBLME Transboundary Diagnosis Analysis (TDA). Investing in the Strategic Action Programme (SAP) based on the TDA, will help safeguarding and maintaining regulating and provisioning ecosystem services in the BOBLME worth around USD 240 billion over the next 25 years[[8]](#footnote-9) – services that will be lost if action is not taken to halt current rates of coastal and marine ecosystem degradation and biodiversity loss (Figure 2). The SAP is built around four priority themes identified in consultation with all BOBLME countries:
12. Marine living resources;
13. Critical habitats;
14. Water quality; and
15. Social and economic considerations.

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**Figure 2.** The BOBLME business as usual and the SAP implementation alternative.

1. The SAP is designed to remove the key barriers to sustainable management of the BOBLME related to institutional, legal and administrative issues at regional and national levels, including lack of an appropriate forum for region-wide multi-national dialogue, planning, monitoring and reporting, socio-economic constraints, such as lack of incentives and alternative livelihoods, as well as lack of integration of climate resilience in planning and management of the BOBLME. Through the further development of capacity, it would likewise address current unsustainable practices in resource use and management. The objective is to contribute to sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region, to reduce environmental stress and improve environmental status for the benefit of coastal states and communities. This will be achieved through four interlinked Programme components based on the SAP themes, and with an added component to strengthen the institutional arrangements for regional partnerships coordination and collaboration, ecosystem-based monitoring and assessment. The GEF support to the implementation of the SAP is expected to leverage significant amounts of investments from the BOBLME countries, from both national and sub-national levels, multilateral and bilateral development partners.
2. The theory of change of the BOBLME Programme was developed based on the orders of outcomes framework (UNEP GPA, 2006), where the first phase of BOBLME has already strengthened the enabling conditions (first tier) and enhanced the knowledge and capacity of ecosystem-based management and started to build platforms and networks for joint dialogue and planning. This Programme is expected to further strengthen the enabling environment and to bring about behavioural change (2nd tier) among fisheries stakeholders to ensure sustainable fisheries (Component 1 & 4), among local governments and communities to improve coastal biodiversity and water quality (Components 2, 3 & 4), and among regional partners in the BOBLME through continued support to platforms for ecosystem-based management (component 5). To achieve the long-term Programme impact (third tier), additional investments and continued support to the implementation of the SAP must be leveraged from the countries, other development partners, particularly the international financing institutions, and from future GEF replenishments.

**A Healthy Ecosystem and Sustainability of Living Resources for the benefit of the Coastal Populations of the Bay of Bengal Large Marine Ecosystem (BOBLME)**

***4° Tier –***

***Dynamic Balance***

**Time**

**Global Environment Benefits protected and Ecosystem Health restored**

**Human Rights respected & Local Communities and Fisheries Stakeholders’ Livelihoods secured**

**Potential Economic Value of all Ecosystem Services provided by the BOBLME realized**

***3° Tier –Achievements***

***(long-term Programme impact)***

***2° Tier –Implementation***

***(behavioral change:***

***Phase 2)***

Fishers, fishworkers & fisheries-related business & groups (fisheries stakeholders) are modifying their practices in response to market and regulatory incentives (Comp. 1 & 4)

Local governments are applying Integrated Coastal Management (ICM) principles to improve biodiversity and water quality in the BOBLME (Comps. 2, 3 & 4)

Concerned institutions are changing their structures and processes to be supportive of targets and goals developed for the BOBLME (Cross-cutting)

Partners in the BOBLME are collaborating in application of ecosystem-based management (EBM) (Comp.5)

Platforms, fora and networks for dialogue and planning in place that encourage partners in the BOBLME to collaborate

Enhanced knowledge and understanding of the BOBLME and its fisheries informs development of indicators and setting of EBM targets

***1° Tier –***

***Enabling Conditions***

***(Phase 1)***

Enabling conditions in place to encourage concerned institutions to change their structures & processes in support of EBM

Capacity in place at both the national and regional levels through increased understanding of ecosystem approach

**Figure 3. BOBLME Programme Theory of Change**

1. **Component 1: Sustainable Management of Fisheries**

The sustainability of fisheries and livelihoods in the BOBLME depends to a large extent on marine living resources. Illegal, Unreported and Unregulated (IUU) fishing has been shown to contribute to the overexploitation of fish stocks in the BOBLME and is a clear hindrance to the management and recovery of fish populations and ecosystems that are already overexploited[[9]](#footnote-10). A systematic application of the ecosystem approaches to fisheries management (EAFM) and the reduction of threats from IUU fishing, as well as application of participatory and inclusive approaches are therefore essential for the improvement of ecosystem health and livelihoods in the BOBLME. This component thus has two major outcomes:

1. Outcome 1.1. The ecosystem approach to fisheries management institutionalized at national level: There is a need to strengthen institutional arrangements, awareness and human capacity to apply EAFM, and a regional EAFM coordination unit will be established under the CCR-BOBLME (see Component 5) to ensure that at least two EAFM plans are implemented in each country in national pilot projects. The Essential EAFM training program established in the previous phase will continue to be developed and embedded in national and regional training institutions, and translated into local languages and provided to approximately 200 practitioners in each country. This also involves support to national and regional platforms and development of awareness materials to support the engagement of local government units with decentralized management authority, as well as involvement of grassroots stakeholders in management decision-making processes. The outcome will be achieved by:

* At least 2 EAFM plans implemented in each country leading to 20% increase in landings (or value of landings) of higher value demersal and pelagic species, (e.g. hilsa shad, lobster in Tamil Nadu, sea cucumber in the Gulf of Mannar; seaweed in Bangladesh)
* National and regional platforms established or strengthened to involve grassroots stakeholders in management decision-making
* EAFM training embedded in national and regional training institutions and training provided to around 200 practitioners in each country

1. Outcome 1.2. IUU catch in the BOBLME reduced: This will be achieved through implementation of a Regional Plan of Action on IUU fishing (RPOA-IUU) based on regional assessment of its nature and extent. This will be coupled with development of National Plans of Action (NPOAs-IUU) in each country, and could also involve development of MOUs between specific countries, such as Thailand and Myanmar on international IUU fishing. Strengthening of national IUU Monitoring, Control and Surveillance (MCS) systems and installation of Vessel Monitoring Systems (VMS) on trawlers will also be important in combating IUU fishing. The countries will also benefit from common tools for promoting best practices related to application of Port State Measures (PSM) and traceability, policies and national actions, and capacity development on effective port inspection, collection of forensic evidence of IUU fishing, and how to strengthen cooperation between relevant fishery enforcement institutions. The outcome will be achieved by:

* BOBLME countries join and implement a Regional Plan of Action (RPOA) on IUU fishing
* 8 national POAs-IUU and national IUU MCS systems and Vessel Monitoring System (VMS) strengthened
* Tools for promoting best practices, such as MCS, PSM and traceability, and policies and national actions to combat IUU fishing developed and implemented in national pilot/investment projects
* Regional Capacity Development Program on port inspections, MCS and traceability implemented

1. **Component 2: Restoration and conservation of critical marine habitats and conservation of biodiversity:** This component will lead to improved management and status of degraded, vulnerable and critical coastal and marine habitats and Endangered, Threatened and Protected (ETP) species in the BOBLME by integrating marine spatial management tools, such as Marine Protected Areas (MPAs), and Vulnerable Ecosystems (VEs) into fisheries and biodiversity conservation management of critical habitats, such as the Sundarbans mangroves area, the Gulf of Mannar (reefs and seagrass), and the Andaman Sea (Myeik Archipelago).
2. Outcome 2.1. Coastal and Marine Managed Areas (MMAs) contribute to conservation of biodiversity and blue carbon: This outcome focuses on marine spatial management and involves regional capacity development, including development of regional guidelines for management of MMAs and MPAs, and fisheries management (e.g. fisheries refugia) and biodiversity conservation tools that will be implemented and disseminated in each country. The guidelines will be used in the establishment of MMAs for transboundary fisheries or VEs and ETP species conservation. This will be achieved through:

* At least two MMAs established or strengthened, and contribute to conservation of transboundary biodiversity and blue carbon on 2,000,000 ha of marine areas
* Regional capacity development program promoting best practices in management and evaluation of MMAs and training of 200 practitioners at all levels

1. Outcome 2.2. National MMAs established or strengthened resulting in improved MMA management effectiveness at national level: This will involve conservation of blue carbon, associated biodiversity, and ETP species through improved management effectiveness of e.g. mangrove and seagrass beds, as well as conservation of coral reefs, associated biodiversity and ETP species at selected sites where BOBLME countries allocate STAR funding. Key outputs include:

* 200,000 ha of mangroves with improved protection/conservation, and sequestration of approx..2 million tCO2 of blue carbon (>50% from Sundarbans)
* 200,000 ha of coral reefs with improved protection/conservation
* Improved management effectiveness of existing and new MPAs according to GEF METT effectiveness score and the Management Effectiveness Assessment Tool (MEAT)

1. Using the STAR CC-M funding in Bangladesh, a contribution will be made to the creation of a robust management plan for the Sundarbans that integrates carbon storage and ecological considerations with socio-economic needs, and is founded on improved collaboration between the local and national scale, heightened awareness of the value of the ecosystem services of the forest and how to use them in a sustainable manner, and on improved understanding of the complex web of interactions between people, fauna, forest, water quality and sedimentation that is unique to the Sundarbans. The implementation of this plan will result in the protection and enhancement of the carbon stocks and other ecosystem services of the Sundarbans. The expected outputs for this National MMA are as follows:

* Avoided overexploitation through collaboration with local stakeholders and strengthened institutional collaboration
* Informed valuation of ecosystem services

1. Outcome 2.3 Regional consensus and agreements reached on reduction of threats to marine biodiversity in coastal and open waters: The outcome will be achieved through the development of 2-3 regional plans of actions as well as harmonized legislative frameworks of ETP species such as Irrawaddy Dolphins, the Indian Ocean blue whales, dugongs, whale sharks and sea turtles, in at least four countries, in line with the South Asian Seas Marine and Coastal Biodiversity Strategy. This outcome will focus on non-area based threats, such as use of inappropriate fishing gear, pollution, etc. and corresponding conservation measures. Key outputs include:

* A regional plan of action for ETP species (e.g. whale sharks and sea turtles)
* Legislative frameworks on ETP species harmonized across countries.

1. **Component 3: Management of coastal and marine pollution to improve ecosystem health:** The health of the BOBLME is threatened by wastewater and solid waste from upriver and coastal cities and settlements, industrial zones, ports and shipping, and excessive nutrient application in agriculture and high nutrient loads in rivers and water courses. The Programme will aim at changing attitudes and approaches so that wastewater and solid waste are reduced and at the same time recognized as key concerns, which translate into policy decisions and national actions to reduce their negative impacts. It also recognises that marine and coastal resources represent important natural capital assets, but increasingly are subject to negative impacts of upstream activities on land and along river systems. In this connection, steps will be taken to increase understanding of the complexities of source-to-sea management continuum – where ecosystems are degraded as an unintended consequence of economic activities that might happen far upstream or downstream in the source-to-sea system. Two expected outcomes and associated outputs are described below:
2. Outcome 3.1. Pollution from discharge of untreated sewage and wastewater; solid waste and marine litter; and nutrient loading reduced or minimized in selected hotspots in river, coastal and marine waters; promotion of cleaner fishing ports and addressing abandoned fishing gears at 8 hotspots applying ICM approaches: It is expected that there will be an increase in fishing ports covered by sewage management systems and improved waste management, and that nutrient loading is significantly reduced at coastal and marine hotspots. This will be achieved through:

* Promotion and implementation of Transfer of Environmentally Sustainable Technology (TEST) in collaboration with UNIDO (e.g. in Myanmar Industrial Zone Development). TEST is an integrated approach that provides industries and small and medium enterprises (SMEs) with a combined set of tools to initiate a cycle of continuous improvements within their business operations to manage the transition towards a sustainable production. It had initially been developed for the Danube River basin, where poorly treated industrial emissions discharged into the Danube River generated excessive pollution and considerably degraded the quality of the water and environment, and is now also applied in the SAP for the Mediterranean Sea.
* Countries will be enabled and supported to actively participate in the Global Partnership on Nutrient Management (GPNM), addressing nutrient over-enrichment and oxygen depletion from land based pollution of coastal waters, at selected hotspots (e.g. Chilika Lake) and dissemination of best practices.
* Dissemination of improved waste management practices in fishing harbours (e.g. in Sri Lanka and India east coast) contributing to improved hygiene, waste disposal and public health, sharing of the experiences and lessons from earlier projects in India and Sri Lanka of how fishing harbours may be upgraded to international standards of hygiene and fish quality assurance. This initiative will focus on the environment at fishing ports, such as water quality standards, personal hygiene, sewage treatment and waste reception facilities and disposal.
* The abandonment and discarding of commercial fishing gear is one of the most problematic types of marine debris. It can remain in the oceans for years continuing to entangle fish and marine animals in its nets and killing them – a phenomenon known as ‘ghost fishing’. Effective marking of fishing gears allows tracking and contributes also to combat illegal fishing. Promotion of marking of fishing gears and the development and dissemination of corresponding International Guidelines will further contribute to the reduction of marine litter (solid waste / marine litter to be addressed using bilateral donor funds).

1. Outcome 3.2: Demonstration Investments in Eco-Waste Infrastructure Solutions: Mandalay City. This outcome will capture some of the key recommendation of the STAP guidance on managing the source to sea continuum, as it will: i) apply source to sea principles in the context of a SAP, ii) examine pollutant flows in catchments draining into sensitive coastal environments, and flows of waste in river basins that ultimately reach the open ocean, and iii) invests in knowledge generation and sharing across the trans-boundary SAP framework of the BOBLME. It should be noted that GEF funding will not support marine litter or conventional waste water infrastructure.
2. ADB is supporting the Mandalay Urban Services Improvement loan Project (MUSIP), which addresses the problems in water supply systems, wastewater and drainage management, and Mandalay City Development Committee (MCDC) urban service management capacity. The Second Mandalay Urban Services Improvement Project (MUSIP2) (2019) will serve as the GEF baseline project, and will continue to support these three areas, and: i) increase the water production capacity of the new water treatment facility, expand distribution networks, and reduce water losses; ii) improve waste water treatment (WWT) process of the new WWT plant, expand the interceptor pipelines and sewerage networks, and introduce household sewerage connections; and iii) develop Mandalay City Development Committee (MCDC) capacity in municipal financial management, urban and spatial planning, and operation and maintenance. The loan will also address solid waste management, including expansion and improvement of the existing dump site in the north of the city to a managed landfill (**which will not be covered by the GEF project**); as well as a number of vehicular traffic management interventions (**which will not be covered under the GEF project**). The loan project will include some climate change mitigation measures such as reduction of methane emissions and energy generation through the wastewater treatment and solid waste management components as well as adaptation measures including climate proofing of facilities to protect from flooding.
3. What will the GEF funding support? In collaboration with the Mandalay City Development Committee (MCDC), Environmental Conservation Department (ECD-MONREC) and other stakeholders, the following outputs and related activities are proposed under GEF financing:

* Integrated water resources management (IWRM) and climate resilience integrated with urban development planning – will include i) stakeholder consultations to establish sector coordinating mechanisms at the township, city and regional government level, and ii) support for city level master plan development.
* Investments in freshwater ecosystems restoration and rehabilitation considered and implemented – will include i) biophysical and socio-economic profiles, and threats assessment of candidate Thingaza Creek and Kantawgyi Lake prepared, ii) priority ecosystem-based restoration / rehabilitation options assessed and costed, including possible removal of invasive alien species (i.e. water hyacinth), and replanting of indigenous species along creek banks, iii) preparation of management plan for Kantawgyi Lake, to enhance areas for public recreation, among others, and iv) related capacity development and training for MCDC.
* Capacity strengthened for Mandalay City Development Committee (MCDC) and Environmental Conservation Department (ECD), and other agencies in Myanmar for monitoring ecosystem health, water quality and water use efficiency -will include i) water balance study, using water accounting + methodology (in collaboration with the ADB/GEF project with MONREC /DZGD), ii) Water accounting will form part of a stakeholder dialogue on equitable and transparent water governance for all users of water – to assesses stocks, flows and consumption of water, and use data sets related to available water resources, evapotranspiration, agricultural and industrial services, utilized flow, surface water, ground water, ecosystems services and sustainability, iii) establishment of technical working group to assess priority pollutants, ecosystem health indicators, resilience indicators, iv) capacity building and training targeting key practitioners in MCDC and ECD (MONREC) for development and maintenance of monitoring systems at project sites, notably Thingaza Creek, Kantawgyi Lake and Taung Tha Man Lake (using UNIDO TEST methodology for pollution from industrial estates as in 3.1 above – and in consultation with proposed UNIDO/GEF project “Climate change mitigation through methane recovery and reuse from industrial wastewater treatment” GEF ID 9830), and v) audience-segmented social marketing campaigns targeting regional and city government officials, and households to raise awareness and advance behaviour change with respect to waste management practices.
* Good practices and models for investments in integrated water resources management (IWRM) shared across BOBLME region. The baseline loan project will feature a collaborative arrangement between Mandalay City and Kitakyushu city in Japan for solid waste management and waste water management. The GEF project will leverage this by: i) developing knowledge products on good practices from the collaboration, ii) encourage participation of Yangon City Development Committee to adopt good practices and identify investment needs, iii) explore potential ‘twinning’ arrangements between other BOBLME cities (including those under ADB, UNDP and other projects referenced section 6 on Coordination) using processes and institutional arrangements similar to the PEMSEA Twinning Secretariat based in Republic of Korea. Furthermore, the GEF project will support: i) knowledge sharing and networking of BOBLME local governments and related stakeholders with various regional and global 'green cities' and 'sustainable cities' initiatives, (through various channels including the BOBLME programme management unit, regional coordination mechanism / consortium etc.) and ii) investment round table meetings to mobilize financial resources for urban infrastructure programs and projects across BOBLME region.

1. **Component 4: Improved livelihoods and enhanced resilience of the BOBLME:** This component will lead to positive changes in the overall well-being of coastal people and their involvement in both fisheries management and biodiversity conservation, which is expected to lead to both enhanced ecosystem resilience of the BOBLME and of local livelihoods and food security. Vulnerability to natural hazards, and climate variability and change will be reduced and livelihoods diversified for selected coastal communities, with equal opportunities for women, men and youth. This component will also constitute a platform to support implementation of key concerns of the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication SSF-Guidelines (VG-SSF), as well as the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VG-Tenure). ADB will contribute to this component through the regional training programme under 3.2 above on waste and waste water management with identification of investment opportunities that will contribute to improved well-being of coastal communities.
2. Outcome 4.1. Enhanced resilience and reduced vulnerability to natural hazards, climate variability and change of selected coastal communities: At the regional level, valuation of the BOBLME ecosystem is further developed and reported to the Coordinating Body on the Seas of East Asia (COBSEA), SACEP and other stakeholders. At national level, baseline data and monitoring systems for social and economic information will be established, and there will be at least one valuation of ecosystem services from pilot areas for each country. Valuations of ecosystem services will form the basis for development of resilience plans in at least one pilot area per country. The Project will make use of FAO’s recent recommendations with regard to climate change vulnerability assessment in the fisheries and aquaculture sector[[10]](#footnote-11). Information on values of ecosystem services, livelihoods and economics will be used to support decision making in the BOBLME by national as well as local governments. Local communities will be engaged in development of resilience plans through local NGOs and CBOs and ICSF. Capacity needs will be identified and institutional linkages and processes strengthened for improved cross-sectoral and multi-scale coordination and integration of coastal fisheries and aquaculture, including gender considerations and small-scale fishery rights, in poverty reduction, development, and climate change policies, strategies and planning processes. To achieve this outcome, the Project will actively engage with national and local governments, civil society and the private sector. The outcome will be achieved through:

* Resilience plans developed based on valuation of ecosystem services and threats related to livelihoods in at least one pilot area per country to support decision making in the BOBLME at regional, national and local levels
* Inclusion of coastal fisheries and aquaculture in poverty reduction and development, as well as climate change policies, strategies and planning processes promoted
* Gender considerations mainstreamed into relevant policy and regulatory frameworks

1. Outcome 4.2. Enhanced sustainable livelihoods and diversification for selected coastal communities: A capacity development programme on selected alternative livelihoods and ‘decent work’ and social protection will be implemented in each country. Scaling up of sustainable and more resilient livelihood options will be promoted through enhanced access to financial services and insurance mechanisms, including micro-finance, and training on alternative livelihoods with a focus on women. There will also be a special focus on women in the piloting of livelihood diversification. This will be achieved through:

* Livelihood diversification for women piloted in at least one site per country
* Access to innovative financial services and insurance mechanisms to enhance resilience and improve livelihoods promoted
* A regional capacity development programme for selected coastal communities on alternative livelihoods, promoting decent work opportunities, including social protection for empowerment and enhanced participation in coastal and marine resource management and conservation.

1. **Component 5: Regional mechanism for planning, coordination and monitoring of the BOBLME:** The ability to implement ecosystem management at the regional level in the BOBLME depends on the capacity to undertake monitoring of the whole ecosystem and to plan and coordinate management activities at regional level. This can only be achieved through strengthened regional cooperation between countries and between government agencies within countries and the engagement of civil society and the private sector. The Programme will therefore focus on achieving the following outcomes under this component:
2. Outcome 5.1. Strengthened institutional mechanisms at regional and national levels for planning, coordination, and monitoring of the BOBLME: In 2013, the BOBLME Project Steering Committee endorsed an institutional arrangement for SAP implementation which would consist of a consortium of countries and major partners and donors working in the areas of fisheries, environment, water quality and their social and economic dimensions. This is envisaged as an intermediate arrangement, while the possibility of a permanent arrangement will be explored during the SAP implementation phase. This “Consortium for the Conservation and Restoration of the BOBLME” (CCR-BOBLME) will meet regularly (at least annually) to:

* Promote information exchange and capacity development
* Monitor BOBLME health and status
* Monitor progress of the SAP implementation activities and projects

1. The establishment of the CCR-BOBLME will involve the development of a cooperative agreement between SACEP, SEAFDEC, COBSEA, BOBP-IGO, and APFIC for monitoring ecosystems targets in the SAP. It also includes compilation, analysis, safe storage and sharing of information of historical baseline ecosystem data at national and regional levels. Cooperative arrangements will also extend to the oceanographic community: support to the scientific and monitoring programs of IOGOOS (e.g. Sustained Indian Ocean Biogeochemistry and Ecosystem Research (SIBER)), Intergovernmental Oceanic Commission (IOC) Sub-commission for the Western Pacific (WESTPAC) and to the International Indian Ocean Expedition 2 (IIOE-2) for the Bay of Bengal. The implementation of the national elements of the SAP (SAP/NAPs) and associated national plans for EAFM, IUU fishing, ETP species, Marine Managed Areas, etc. will be supported by national inter-sectoral coordination committees to strengthen coordination and regulatory and institutional frameworks at national level. NGO and civil society engagement in the SAP will be strengthened and a stakeholder consultation mechanism will be established. This will be achieved by:

* CCR-BOBLME established to promote stakeholder participation and awareness, ecosystem assessment, and application of best practices in implementation of the SAP
* Long-term partnership arrangements agreed for sustainable regional coordination mechanism and sustainable financing for ecosystem-based management in the BOBLME
* 8 National inter-sectoral coordination committees established to strengthen the regulatory and institutional frameworks and to develop national implementation plans in support of SAP/NAP implementation (including EAFM plans, NPOAs-IUU, ETP plans, marine protected area management, pollution monitoring plans)
* Stakeholder consultation mechanism established for engagement of civil society, cooperatives, and the private sector
* Baseline data (fisheries, trends and threats of critical habitats and ETP species, pollution, oceanography, and climate change), monitoring systems and information repository established at national and regional levels

1. Outcome 5.2. Adaptive results-based management and sharing of information and lessons learned: A Programme communication strategy will be developed and implemented and the existing BOBLME website will be updated and developed into a regional information sharing mechanism to support wide dissemination of Programme findings and lessons to the participating countries as well as to the GEF IWLearn and LMELearn programs. M&E will be one of the key functions of the CCR-BOBLME coordination unit that will be supporting the monitoring and evaluation of programme progress as well as progress with implementing and reaching the targets of the BOBLME SAP. The outcome will be achieved by:

* Drafting and implementation of a Communication Strategy, identifying the information to be shared, suitable media and processes, and addressees and users of the information
* Regional information sharing mechanism enabling broad access to best practices and lessons learned in the participating countries
* Programme findings and lessons learned identified and contribute to IWLearn and LME Learn
* Monitoring system operating and providing systematic and regular information updates on progress towards reaching BOBLME SAP targets

1. **Incremental cost reasoning, expected contribution from the baseline, the GEFTF, and co-financing**
2. The baseline situation is characterized by a multitude of sector-specific interventions that are not coordinated or harmonized either across national agencies or at the regional level, hampering more holistic ecosystem-based management interventions at all levels. However, there are many regional bodies, organizations and partnerships – with a range of mandates and competencies – working towards similar environmental goals in the Bay of Bengal. Therefore, there is considerable potential for them to collectively provide momentum and synergy for SAP implementation at the national, sub-regional and regional levels. Efforts will be made throughout the implementation of the programme to identify new partners, particularly with international financing institutions, and leverage new investments to support the implementation of the SAP.
3. The BOBLME Project worked with more than 20 institutions, bodies and agencies during its first phase. This has contributed to improved understanding of fisheries resources, habitat status and coastal and marine pollution and related management activities in the Bay of Bengal; fostered collaborative action and exchange of information; reduced duplication of work; and promoted the optimal use of funding and other resources. The SAP comprises a broad range of activities relating to a diverse spectrum of topics and sectoral interests that span a wide geographical area. At present, there is no single body or environmental convention that has a complete mandate to cover all aspects of the SAP across its entire geographical range. Incremental GEF support to establishing a regional mechanism for coordination and collaboration at the BOBLME level is therefore crucial in order to catalyse the implementation of the SAP and bring all baseline programmes under one umbrella.
4. Under the proposed ADB child project, technical assistance and loan funds will contribute to building up of waste management infrastructure in Mandalay City. GEF funding will not support marine litter or conventional waste water infrastructure. GEF support will be designed to provide additionality to the baseline project by supporting implementation of the recently drafted National Waste Management Strategy and Action Plan for Myanmar (2017-2030). In particular it will support, a) integrated water resources management, resilience and urban planning at the level of the city development committee, b) ecosystem-based restoration and rehabilitation investment demonstrations at candidate sites in Mandalay City, c) strengthened capacity to monitor ecosystem health and water quality, with primary focus on the Environmental Conservation Department (MONREC) and Pollution Control and Cleansing Departments, administrative branches and sub-units in MCDC. In this way, GEF support will contribute to eliminating social, financial, economic and technical barriers to effective water resources management at the city level. GEF funding will also contribute to increased awareness, knowledge, attitudes and practices related to waste management. This will be done through a well formulated social marketing / knowledge management strategy which will target key segment of the public as well as policy making bodies. Part of the strategy will also include the demonstration of good practices through knowledge sharing activities across the BOBLME. This could create additional incentives for municipalities and cities to consider waste management investments on a stand-alone basis or as part of a larger integrated water resources and capital improvement plan. Benefits would include reduced nutrient loading, soil loss and sediment fluxes into fresh and coastal waters. It will also serve as foundational work on which any GEF 7 strategy can build. GEF support will take steps to build systems resiliency for food and water security. In the public health space, reduced water borne diseases and improved ecosystem health will enhance capacity of the city to meet SDG 6 and less directly, SDGs 11 and 14.
5. Moreover, it has been estimated that halting the degradation of marine and coastal environments and maintenance of existing ecosystem services through the implementation of the SAP will generate economic benefits worth more than USD1 350 billion from BOBLME resources and habitats over the next 25 years. Conversely, under a business as usual scenario of continued ecosystem degradation and loss, economic values will decrease to around USD 110 billion. Thus, the added value and costs avoided by incremental GEF funding to implementing the SAP are substantial for local, national and even international economies, and would build on a substantial baseline of support from BOBLME countries, multilateral and bilateral institutions and programs, and the private sector as described above.
6. The Program will generate global environmental benefits in the International Water focal area with associated benefits related to biodiversity, climate change and chemicals and waste management and will include:

* Introduction of sustainable fishing practices in the BOBLME, including:
* At least 2 EAFM plans implemented in each country and introduction and adoption of EAFM among target fisher communities
* 1 RPOA-IUU and 8 NPOAs-IUU fishing implemented leading to reduction of IUU fishing in the BOBLME by 20%
* Increased abundance and biomass of selected national and transboundary fish stocks by 5%
* Restoration and conservation of critical marine habitats in the BOBLME:
* A total of 2,000,000 ha of marine areas under improved management
* RPOA-ETP (e.g. whale sharks and sea turtles) developed and implemented leading to enhanced abundance of threatened and endangered species
* 200,000 ha of mangroves protected/conserved and sequestration of 170,000 tCO2 of blue carbon
* 200,000 ha of coral reefs protected/conserved
* Improved management effectiveness of existing and new MPAs according to GEF METT effectiveness score and the Management Effectiveness Assessment Tool (MEAT).
* 8 functioning national inter-sectoral committees (one in each BOBLME country) ensure coordination of policy reform and adoption of ICM plans to:
* Reduce pollution from non-industrial and industrial sources in 8 coastal/marine hotspots in the BOBLME
* Strengthen knowledge, attitudes and practices related to integrated water resources management

1. **Innovation, sustainability and potential for scaling up**
2. The Programme promotes an innovative approach to collective action in the BOBLME to ensure sustainable management of its fisheries and critical marine habitats, and improved management of coastal and marine pollution to ensure ecosystem health. The establishment of the Consortium for the Conservation and restoration of the BOBLME (CCR-BOBLME) as a multi-stakeholder platform for interaction and engagement in assessing ecosystem status, will for the first time enable a concerted transboundary approach to ecosystem-based management of the BOBLME and removal of barriers to institutional cooperation and awareness raising across the LME.
3. Institutional strengthening at regional, national and local levels coupled with mainstreaming of SAP priorities into national development policies and frameworks and sector budgets, and improved access to innovative financing for demonstration of innovative practices will contribute to the sustainability of programme interventions. Long term sustainability (including financial) and ownership of the SAP implementation and this program are a key priority. Careful consultation and planning will be undertaken with participating countries, agencies and partners already during PPG phase and a road map developed. This will build on lessons learned during the BOBLME SAP development phase and draw on FAO’s extensive experience working with and strengthening regional cooperation and governance. In addition, the programme’s win-win approach to generating interlinked global environmental and socio-economic benefits will ensure sustained support and interest from local communities to adopt measures such as EAFM and spatial management of critical marine habitats for provision of ecosystem services important for sustainable livelihoods and ecosystem health of the BOBLME. Another long-term legacy of the programme will be the institutionalization of training programmes on EAFM, MMAs, decentralized pollution and water quality management, alternative livelihoods, ‘decent work’ and ‘social protection’.
4. The findings of the numerous studies and reviews, on resources, habitats, water quality, socio-economics and governance, some of which had only been published late during the SAP development phase, need to be more widely and more effectively disseminated during the SAP implementation phase, and their recommendations implemented. Furthermore, the second phase project will build on these works, expand and upscale. Experiences and lessons learned from the demonstration projects in the first phase of the BOBLME project will be replicated and scaled up, as appropriate, as best practices examples of how to address common concerns related to coastal and marine management in the BOBLME. This includes experiences with implementing the Ecosystem Approach to Fisheries Management (EAFM), Integrated Coastal Management (ICM), spatial management regimes and Marine Spatial Planning (MSP), as well as human rights-based approaches. Best practices for possible scaling up will be expanded by the Programme to include experiences from governance reforms supporting ecosystem-based management, establishment of MPAs, and ecosystem-based adaption to climate change in coastal areas. It is expected that positive experiences such as these will also further catalyse investments in ecosystem-based management in the BOBLME leading to improved environmental status as well as improved livelihoods of coastal communities ensuring the long-term sustainable development of the BOBLME.

[*Stakeholders*](http://www.thegef.org/gef/sites/thegef.org/files/documents/document/Public_Involvement_Policy.Dec_1_2011_rev_PB.pdf)*.* Will program design include the participation of relevant stakeholders from [civil society organizations](http://www.thegef.org/gef/csos) (yes X /no) and [indigenous peoples](http://www.thegef.org/gef/sites/thegef.org/files/publication/GEF%20IndigenousPeople_CRA_lores.pdf) (yes  /no)? If yes, identify key stakeholders and briefly describe how they will be engaged in program preparation.

1. The BOBLME SAP implementation Programme will include a wide range of stakeholders and potential and actual partners from international, regional, national and local level, with roles and responsibilities across all BOBLME themes and initiatives. All of these stakeholders will have their own respective networks of partners, thus potentially multiplying the outreach of the BOBLME Phase 2 and expanding to 2nd and 3rd tier networks.

|  |  |
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| **SAP partners** | **Roles and responsibilities** |
| *International partners* |  |
| Asian Development Bank (ADB) | Lead child project on “Demonstration Investments in Eco-Waste Infrastructure Solutions: Mandalay City”, which will support knowledge sharing and transfer of good practices across BOBLME region |
| Commonwealth Scientific and Industrial Research Organisation (CSIRO) | Science provider, ecological characterization and ecosystem-based management |
| Fauna and Flora International (FFI) | Biodiversity conservation |
| Food and Agriculture Organization (FAO) | Fisheries and aquaculture |
| Future Earth Coasts (FCE) | Integrated coastal management |
| Government of Norway | Sustainable development, human rights-based approach |
| Government of Sweden | Sustainable development, human rights-based approach |
| Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO-IOC) | Large-scale processes, climate change |
| International Collective in Support of Fishworkers (ICSF) | Small-scale fisheries, human rights-based approach |
| International Union for the Conservation of Nature (IUCN) | Environment, ICM, MPAs, biodiversity |
| International Labour Organization (ILO) | Decent work conditions |
| USA (National Oceanic and Atmospheric Administration (NOAA) of the United States and USAID) | Large-scale processes, climate change, EAFM, IUU |
| United Nations Environment Programme (UNEP) | Environment, marine spatial planning, land-based  pollution, nutrient management, biodiversity |
| United Nations Development Programme (UNDP) | Sustainable development interventions |
| United Nations Industrial Development Organization (UNIDO) | Waste and wastewater management, pollution reduction |
| World Bank (WB) | Infrastructure development |
| WorldFish | Fisheries research |
| *Regional partners* |  |
| Asia-Pacific Fishery Commission (APFIC) | FAO Regional Fisheries Body (Fisheries policy forum). Potential regional execution partner (to be considered and detailed during PPG as an executing agency) |
| Association of South East Asian Nations (ASEAN) | Policy and technical input |
| ASEAN Coordination Centre for Humanitarian Assistance (AHA) | Livelihoods and climate change |
| Bay of Bengal Initiative for Multi-Sectoral Technical and  Economic Cooperation (BIMSTEC) | Technical cooperation |
| Bay of Bengal Programme – Intergovernmental organization  (BOBP-IGO) | Regional Fisheries body, Fisheries, safety at sea; sub-regional collaboration |
| Indian Ocean Global Ocean Observing System (IOGOOS) | Large scale processes, climate change |
| Indian Ocean Tuna Commission (IOTC) | Fisheries |
| Network of Aquaculture Centres in Asia and Pacific (NACA) | Aquaculture |
| PEMSEA Resource Facility (PRF) | Sustainable development, ICM |
| South Asia Association for Regional Cooperation (SAARC) | Policy and technical input |
| South Asia Cooperative Environment Programme (SACEP) | Environment, biodiversity |
| Southeast Asian Fisheries Development Centre (SEAFDEC) | Regional Fisheries Body. Fisheries, training; sub-regional collaboration |
| *National partners* |  |
| **Bangladesh:** Ministry of Fisheries and Livestock – Department of Fisheries; Bangladesh Fisheries Research Institute; Ministry of Environment and Forests | Implementation and coordination of SAP/NAP |
| **India:** Ministry of Agriculture – Dept. of Animal Husbandry, Dairying and Fisheries; Ministry of Environment and Forests | Implementation and coordination of SAP/NAP |
| **Indonesia:** Ministry of Marine Affairs & Fisheries - Directorate General of Capture Fisheries; Ministry of Environment and Forestry – Coastal and Marine Environmental Degradation Control | Implementation and coordination of SAP/NAP |
| **Malaysia:** Ministry of Agriculture and Agro-based Industry – Dept. of Fisheries Malaysia, Fisheries Research Institute; Ministry of Natural Resources and Environment – Dept. of Marine Parks, Malaysia | Implementation and coordination of SAP/NAP |
| **Maldives:** Ministry of Fisheries and Agriculture; Ministry of Environment and Energy – Environmental Protection Agency | Implementation and coordination of SAP/NAP |
| **Myanmar:** Ministry of Natural Resources and Environmental Conservation (MONREC) – Forest Department, Environmental Conservation Department; Ministry of Agriculture Livestock and Irrigation (MOALI) – Dept. of Fisheries | Implementation and coordination of SAP/NAP; Implementation of National Waste Management Strategy and Action Plan (2017-2030) |
| **Sri Lanka:** Ministry of Fisheries and Aquatic Resources Development; State Ministry of Mahaweli Development and Environment | Implementation and coordination of SAP/NAP |
| **Thailand:** Ministry of Agriculture and Cooperatives – Dept. of Fisheries; Ministry of Natural Resources and Environment - Dept. of Marine and Coastal Resources | Implementation and coordination of SAP/NAP |
| *Sub-national/local partners* |  |
| Local Governments | Implementation of SAP pilot projects |
| Local environmental and social/cultural NGOs | Implementation of SAP pilot projects |
| Community Based Organizations | Participating in implementation of SAP pilot projects |
| *Private sector* |  |
| Fishers, small scale fishers and their community associations and federations (at national and regional level) | Participating in implementation of SAP pilot projects |
| Coastal community members and their associations | Participating in implementation of SAP pilot projects |
| Fishing vessel owners and companies | Participating in implementation of SAP pilot projects |
| Seafood processing and marketing companies | Participating in implementation of SAP pilot projects |
| Shipping companies and owners | Participating in implementation of SAP pilot projects |
| Oil and gas associations and CSR foundations | Participating in implementation of SAP pilot projects |
| VMS service providers | Participating in implementation of SAP pilot projects |
| World Ocean Council (WOC) | Participating in implementation of SAP pilot projects |
| Tourism operators (ecotourism) | Participating in implementation of SAP pilot projects |
| Waste treatment and recycling business operators | Participating in implementation of SAP pilot projects |

1. A full stakeholder analysis and an engagement strategy will be developed and implemented during PPG phase. The need for early engagement with stakeholders is a lesson learned from BOBLME Phase 1. Initial discussions have been held with a range of stakeholders listed. For work under Component 1, a private sector dialogue will be initiated around key aspects of the project, notably IUU fishing and issues of IUU fishing in the value chain and the more effective entry of small-scale fishery products into national and regional markets. With an emphasis on corporate social responsibility (CSR), engagement with national and multi-national business actors will be pursued selectively, either from the membership of the World Ocean Council (e.g. shipping company J.P. Moller-Maersk) or from those companies with a particular link to using the resources of the BOBLME, either e.g. through shipping or mineral exploration and exploitation. This is expected to unlock additional finance for biodiversity or habitat conservation work, as well as pollution reduction, under Components 2 and 3. A key part of the work under Component 4 entails exploration of value chains, and engagement with private sector and marketing stakeholders to create viable linkages. The relevant companies, and their respective marketing organizations, as well as the fisher associations will be identified during project preparation.

*Gender Equality and Women’s Empowerment.* Are issues on [gender equality and women's empowerment](http://www.thegef.org/gef/policy/gender) taken into account? (yes X/no ). If yes, briefly describe how it will be mainstreamed into program preparation (e.g. gender analysis), taking into account the differences, needs, roles and priorities of women and men.

1. The Programme is consistent with GEF’s Policy on Gender Mainstreaming and will be designed in line with FAO’s Gender Policy and contribute to four of its five objectives:

* Women participate equally with men as decision-makers in rural institutions and in shaping laws, policies and programs.
* Women and men have equal access to and control over decent employment and income, land and other productive resources
* Women and men have equal access to goods and services for agricultural development and to markets
* Women’s work burden is reduced by 20% through improved technologies, services and infrastructure

1. Entry points to mainstream gender in the BOBLME SAP were identified through a targeted study in the first phase, and included the addition of a statement in the SAP of commitment to addressing gender issues. Other gender-sensitive actions included: the addition of a section on cross-cutting issues covering gender training, communication, legislation, capacity development at field level, gender-disaggregated data collection and research on gender issues; the consideration of incentives and accounting mechanisms; the earmarking of a specific budget for gender-related activities at programme level and strategic actions; the addition of a pathway to impact, and the use of outcome mapping as a form of monitoring and evaluation.
2. In addition, key recommendations for future action by the BOBLME partner countries that will be addressed by the Programme and its child projects include:

* Commissioning of a gender-sensitive review of legislation and regulatory frameworks in the BOBLME partner countries
* Gender-disaggregated data collection
* Support to coastal women’s livelihood diversification and strengthening of resilience in pilot areas at national level
* Supporting gender training and capacity building at all levels, beyond the life of the programme

*Benefits.* Describe the socioeconomic benefits to be delivered by the program at the national and local levels. Do any of these benefits support the achievement of [global environmental benefits](http://www.thegef.org/gef/GEB) (for GEF Trust Fund), and/or adaptation to climate change?

1. The global environmental benefits will be underpinned by socio-economic benefits related to improved and diversified livelihoods and food security and nutrition, accruing from improved delivery of ecosystem services thanks to improved management of fisheries and coastal and marine habitats, as well as reduction of pollution and improved water quality at selected hotspots. Human health will be improved thanks to improved treatment of sewage and solid waste in source-to-sea systems. In fishing ports, addressing the port users, as well as port engineers and managers, the ultimate beneficiaries will be the consumers of fish and fish products.

*Risks*. Indicate risks, including climate change risks, potential social and environmental future risks that might prevent the program objectives from being achieved, and if possible, propose measures that address these risks to be further developed during the program design:

1. The risks to the successful implementation of the SAP fall into two broad categories: risks to programme and child project management (internal) and risks relating to the programme context or political environment (external).

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| **Risk** | **Level** | **Mitigation measure** |
| *Internal* |  |  |
| The SAP implementation mechanism is ineffective and inefficient (not well resourced, and technically and administratively not sufficiently competent) to implement the SAP. | M | The CCR-BOBLME consortium of countries and major partners and donors is envisaged as an intermediate arrangement, and the possibility of a permanent arrangement will be explored during the SAP implementation phase.  The baseline funding to the Program is already impressive and the SAP objectives will be further mainstreamed into relevant national sector budgets to ensure that the CCR-BOBLME will be sufficiently resourced and supported by competent national staff. |
| Limited or uneven institutional absorptive capacity in some countries may hamper timely and coordinated SAP implementation and child project progress | L | The Program is in line with the agreed SAP and country specific priorities, and other relevant strategies and priorities at regional, sub-regional and national levels and is thus strongly anchored in existing policies.  Child project implementation will employ targeted capacity building measures. Training will focus on a triple track: first, to orient and increase awareness at the level of politically elected officials; second to internalize knowledge and skills at the level of career track civil service officials to provide long term technical support services; and third to engage, uplift and deploy civil service organizations, research and academic institutions, foundations and private sector to fill financial and technical gaps and assist with service delivery efforts. Furthermore, the coordination framework outlined in Section 6 of this document, is structured such that adaptive management measures can be facilitated as needed. |
| *External* |  |  |
| Climate change impacts and/or other natural disasters exceed the adaptive capacities of countries and overwhelm a country’s capacity to cope. | L | The Program will introduce measures to enhance the resilience of costal and marine ecosystems, involving improved habitat management, and adaptive management of fish stocks through training of key technical staff in ecosystem-based management and adaptation. It will also enhance the awareness of policy and decision makers of climate change threats to the BOBLME through information dissemination and outreach. |
| Changes in the security conditions of participating countries affect SAP implementation. | L | The countries of the BOBLME have become gradually more stable during the implementation of the first phase of the BOBLME and this trend is expected to continue. |
| Pressing domestic economic and social issues prevent senior national political decision-makers from realizing the long-term need to sustainably manage the living marine resources and environment of the BOBLME. | L | Socio-economic development of coastal communities is closely tied to the resources provided by the BOBLME. Economic valuation of the ecosystem services provided by the BOBLME and their contribution to sustainable livelihood will therefore be further refined and findings will be widely disseminated to decision-makers. |

1. External risks pertaining to climate change, natural disasters, security conditions, political changes and economic conditions will be monitored using available public information sources. Any political developments that lead away from an emphasis on joint regional action towards a unilateral and national focus of actions shall be monitored and mitigated, or influenced as far as possible through effective communication and the generation of high-level political support.

*Coordination.* Outline the institutional structure of the program including [monitoring and evaluation](http://www.thegef.org/gef/sites/thegef.org/files/documents/Policies_and_Guidelines-M_and_E_Policy-english.pdf) coordination at the program level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

1. A comprehensive governance and institutional analysis, which was started in the preparation for the BOBLME Phase 1 Project, and completed during SAP development, confirmed the finding that there is no single institution or agency with a mandate wide enough in thematic and geographical coverage, to be selected as the single lead executing entity for SAP implementation. This is in part due to the fact that the Bay of Bengal covers two geopolitical regions (South and Southeast Asia), the absence of a major regional Convention covering the Bay of Bengal, and that traditionally, environmental and fisheries issues are taken care of by different actors.
2. As a result, the question of how the programme will be executed requires some innovative thinking in order to enable the achievement of the long term vision of the CCR-BOBLME (as a Consortium for the Conservation and Restoration of the BOBLME). The aim is to create more of an enabling partnership among the BOBLME countries than the development of a new Commission or similar arrangement. With this in mind, the most promising option to be explored further with stakeholders during the PPG will be to utilize existing regional and sub-regional bodies to execute the BOBLME programme. For example, the Asia Pacific Fisheries Commission (APFIC) would be the lead executing entity, coordinating the execution work of two sub-regional bodies (SEAFDEC and BOBP-IGO), which would support execution with the countries for which they have mandate. With this option APFIC could support the CCR-BOBLME partnerships, the trans-Bay coordination of   thematic workshops and meetings, and develop the trans-BOBLME norms with support from the sub-regional bodies at their level. Sub-regional coordination units would be established in the two bodies, with the overall coordination conducted through a “light” PCU at the APFIC level (\*supported with the in-kind inputs from RAP and the APFIC Secretariat). Such arrangements would require agreement and endorsement by the respective memberships of each of the respective bodies. This is the line of thinking that FAO is bringing to this question and ultimately the solution will be a country-driven execution approach to be elaborated during the PPG. The specific architecture of the execution arrangements for the program will be elaborated during the PPG.
3. FAO’s role as the lead GEF agency for the BOBLME Programme, will be to ensure close coordination with ADB, the other GEF agencies and a wide range of executing partners (both the National Ministries and regional partner agencies), and the GEF Secretariat. During PPG, and as outlined above the role of sub-regional external execution partners will be reviewed again with view to their potential to act as overall regional executing partner (these may include but are not limited to APFIC, SEAFDEC and the BOBP-IGO).
4. In the interim, the role of FAO will extend primarily to the preparation of FAO operational partnership implementation agreements (OPIM), where feasible, and suitable “Letters of Agreement” (LoA) with key national and regional actors as appropriate. Regional and national partners to implement OPIM agreements will be identified during PPG and following agreed fiduciary analysis. With the commissioning and implementation of these implementation agreements responsibility will be shifted to national and regional partners as far as possible during the life of the programme. During implementation, FAO will develop capacity of regional and national partners to have a greater role and responsibility for implementation. Furthermore, as a continuous or regular task, FAO will also be responsible for programme-level reporting, monitoring and evaluation and ensure that the Programme brings about the results that lead to the expected behavioural change among institutions, stakeholders and other partners that will in turn deliver higher-level impacts that ensure continued ecosystem functioning and provision of critical ecosystem services by the BOBLME. In order to achieve this, FAO will rely on the proper function of a Regional Programme Coordination mechanism and unit (see 91 below).
5. The institutional structure and implementation arrangements of the Programme and Child Projects will largely be developed during the child project preparation phase. For example, FAO and ADB will enter into a separate programme level agreement with respect to management of the child project under the PFD, which will, among other things, outline the roles and responsibilities of each Party. This will be executed under the ambit of a Memorandum of Understanding which guides cooperation between ADB and FAO dated 22 September 1981, which is still in force, and is in process of being updated.
6. Programme implementation will be overseen and guided by a Programme Steering Committee (PSC) whose members will include high-level representatives from the partner countries (environment and fisheries agencies), the implementing agency from the Myanmar Child Project, FAO, ADB, financing and other relevant partners. The PSC will be responsible for oversight of the Programme and for providing policy guidance and ensuring the Programme is consistent with the principles of the SAP. The chair of the PSC will rotate among the BOBLME countries. The PSC will meet annually to review annual work plans and results.
7. Steps to create and sustainably finance the Consortium for the Conservation and Restoration of the BOBLME (CCR-BOBLME) will be elaborated during the PPG and integrated into the design of the respective child projects with the goal of countries creating the CCR during the implementation of this BOBLME Programme and formally establishing the CCR-BOBLME by the end of the five-year Programme.
8. The Programme Coordinating Unit (PCU) will be established in one of the BOBLME countries to coordinate the activities of the Programme and ensure overall management of the regional child project, in particular. The PCU will be responsible for ensuring: the smooth implementation of the regional project, development of agreements with the national executing agencies and other partners; implementation of the monitoring and evaluation system, including timely reporting at the Programme and regional project levels; and knowledge management and sharing of information and best practices. From an administrative point of view, the PCU will monitor the implementation of the various Partnership Agreements and “Letters of Agreement” with their defined reporting requirements (usually inception, progress, results, and financial reporting).
9. Depending on the choice of the partner countries, the PCU will be supported in this task by the “sub-regional hubs”, expected to be hosted by two key partner institutions in South (BOBP-IGO) and Southeast Asia (SEAFDEC). These hubs, when instituted, would share in the coordination role of the PCU. Given the large area of the BOBLME, in two geo-political regions, and the wide range of technical activities to be coordinated, there appears to be ample reason for creating these. Their establishment would come with cost and human resource allocation implications and so scope for their development will be examined in detail during programme document preparation.
10. At the national level, Programme implementation will be coordinated by National Coordinators (high level government staff from planning, environment or fisheries agencies), supported by national technical and support staff, as required. Implementation at national level will be guided by National Inter-sectoral Coordination Committees which will be established to develop national SAP implementation plans (NSAPs), facilitate broad-based stakeholder consultation, and ensure effective and sufficient inter-agency representation. National Tasks Forces (NTF) may be set up on specific topics. Particular emphasis will be placed on integrating relevant industry associations and their government partner agencies (e.g. National Planning and Economic Development Boards). Beyond the industry associations, direct engagement with industries relevant to marine and coastal resource uses will be pursued. At the top end, these may be the members of the World Ocean Council, which have already recognized their Corporate Social Responsibility to engage in conservation issues, and relatively smaller players who are impacting, through their business activities, on defined resources or habitats and have the potential to contribute to their conservation and sustainable use.
11. Programme Coordination Units and separate Programme Steering Committees will be established for the Child Projects, as necessary.
12. The Table below summarizes GEF projects that are already approved or in the pipeline that will contribute to the implementation of the BOBLME SAP and/or sharing of lessons learned:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Project title/Country** | **Lead Agency** | **GEF Focal Area** | **GEF Funding (million USD)** | **BOBLME SAP Component** |
| **My-Coast: Ecosystem-Based Conservation of Myanmar’s Southern Coastal Zone** | FAO | BD, CC-M, SFM | 4.42 | 1 – Marine Living Resources  2 – Critical Habitats |
| **FishAdapt: Strengthening the adaptive capacity and resilience of fisheries and aquaculture-dependent livelihoods in Myanmar** | FAO | CC-A | 6.00 | 1 – Marine Living Resources  4 – Social and Economic Considerations |
| **Community-based Climate Resilient Fisheries and Aquaculture Development in Bangladesh** | FAO | CC-A | 5.43 | 4 – Social and Economic Considerations |
| **Ridge to Reef: Integrated Protected Area Land and Seascape Management in Tanintharyi, Myanmar** | UNDP | LD, BD | 5.25 | 2 – Critical Habitats |
| **Reducing Pollution and Preserving Environmental Flows in the East Asian Seas through the Implementation of Integrated River Basin Management in ASEAN Countries** | UNDP | IW | 8.5 | 3 – Water Quality |
| **Maldives mainstreaming of biodiversity and strengthening of MPAs** | UNEP | BD | 4 | 2 – Critical Habitats |
| **Improving Water and Food Security and Climate Resilience in Bangladesh through Protection of Wetland Eco-systems Services from Water Quality Risks** | UNEP | BD  CC  LD | 10.35 | 3 – Water Quality |
| **Rehabilitation of degraded agricultural lands in Kandy, Badulla and Nuwara Eliya Districts in the Central Highlands, Sri Lanka** | FAO | LD | 1.34 | 3 – Water Quality |
| **Rural Productivity and Ecosystems Services Enhanced in Central Dry Zone Forest Reserves, Myanmar** | ADB | MFA | GEF: 4.9  ADB loan: 45 | 3 – Water Quality |
| **Enabling Transboundary Cooperation for Sustainable Management of the Indonesian Seas** | FAO | IW | 4.0 | 1 – Marine Living Resources |
| **Coastal Fisheries Initiative (CFI)** | FAO, UNDP, UNDP, WB, WWF | IW, BD | 33.7 | 1 – Marine Living Resources |
| **Establishment and Operation of Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand** | UNEP | IW | 3.0 | 1 – Marine Living Resources |

1. ADB also funds the following projects that contribute to reduction of pollution and improvement of water quality at different hot spots around the BOBLME and that will be involved in the regional exchange of best practices under Outcome 3.2:

* **Bangladesh:** Khulna Water Supply Project (with Japan, USD 259 million). The project will develop a sustainable water supply system in Khulna city, adapting to expected climate change impacts. Khulna city relies on groundwater and the project will introduce surface water as main water source to avoid excessive groundwater abstraction. Based on a study on climate change impacts, the design of facilities will be climate-proofed, taking into consideration the increasing salinity intrusion along rivers due to sea level rise. The project will also strengthen corporate management system of Khulna water and sanitation authorities
* **Bangladesh:** City Regional Development Project (Dhaka – Khulna) (USD 120 million)

The project will increase growth potential and environmental sustainability of two city regions based on coherent regional urban planning. It will support the development of key urban infrastructure, focusing on urban environment and local economic development. It will also support government efforts to improve regional and urban planning, and to strengthen municipal management and capacity for effective and sustainable urban development - - including water supply, solid waste management and urban sanitation

* **India:** Kolkata Environmental Improvement Investment Program - Tranche 2 (USD 80 million)

Tranche 2 of a multi-tranche financing facility will continue improvements in coverage and operational sustainability of Kolkata Municipal Corporation's sewerage, drainage, and water supply services. The accompanying TA will strengthen climate resilience of Kolkata through improved planning and disaster risk management.

* **India:** Visakhapatnam-Chennai Industrial Corridor Development Program (USD 500 million)

The Visakhapatnam-Chennai Industrial Corridor Development Program (VCICDP) will complement the ongoing efforts of the Government of Andhra Pradesh (GoAP) to enhance industrial growth and create high quality jobs. The VCICDP comprises a multi-tranche financing facility (MFF), a grant, and a policy-based loan (PBL). The MFF and the grant will support priority infrastructure investments in the Visakhapatnam-Chennai Industrial Corridor (VCIC) and the PBL will support policy reforms and institutional development in the state. - including urban water supply and related infrastructure

* **Sri Lanka:** Greater Colombo Water and Wastewater Management Improvement Investment Program (Tranche 3) (USD 123 million)

The third tranche of a MFF for the Greater Colombo Water and Wastewater Management Improvement Investment Program (Tranche 3) is improving the efficiency and financial sustainability of water supply and wastewater services in the city and surround areas. This includes rehabilitating the city's water supply network and reducing the amount of water that is leaked or distributed without payment. The project is rehabilitating and expanding the city's wastewater system and constructing a wastewater treatment plant.

* **Maldives:** Kulhudhuffushi Harbor Expansion Project (USD 10 million)

The project will construct a passenger and cargo harbour in Kulhudhuffushi Island, as an expansion to the existing multi-purpose harbour. For the investment in the harbour infrastructure to be effective and sustainable, technical assistance will be provided and attached to the project to enhance the institutional capacity of the operator in harbour operation, maintenance, safety and financial management. The TA is also designed to help promote income-generating livelihood opportunities for local communities in the region.

* **Maldives:** Greater Male Environmental Improvement and Waste Management Project (USD 30 million)

This grant project will strengthen access to sustainable integrated solid waste management (SWM) services in Greater Male, benefitting the poor and women. Outputs include: a) improved climate and disaster resilient SWM system, and b) enhanced institutional capacity in solid waste management service delivery and environmental monitoring, including increased awareness of circular economy approaches.

*Knowledge Management*. Outline the knowledge management approach for the program, including plans for the program to learn from other relevant initiatives, and to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

1. The Program has a strong focus on knowledge management and will start with upgrading the existing BOBLME website and develop it into a regional information sharing mechanism to support wide dissemination of Programme findings and lessons to the participating countries as well as to the GEF IWLearn and LMELearn programmes. The Programme is also going to focus on sharing lessons with other relevant programmes and projects in the Asia-Pacific region, such as PEMSEA for pollution reduction approaches, such as ICM working with local governments, and UNEP/GEF projects on fisheries refugia as one approach to sustainable fisheries management. Finally, the BOBLME Programme will also support the institutionalization of four regional training programmes on: (i) EAFM, (ii) MMAs, (iii) decentralized pollution and water quality management, and (iv) alternative livelihoods, ‘decent work’ and ‘social protection’. Part of this effort will contribute to supporting replication and scaling up of good practices, approaches and technologies. These elements will be outlined more strategically during child project preparation, including internal and external sharing of experiences. This will include ensuring sharing with IWLEARN.

*National Priorities.* Is the program consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes  /no ). If yes, which ones and how: NAPAs, NAPs, NBSAPs, ASGM NAPs, MIAs, NCs, TNAs, NCSA, NIPs, PRSPs, NPFE, BURs, etc.

1. *Linkages to national priorities in BOBLME SAP/NAPs:* The BOBLME SAP identifies national actions under each of its components in each participating country. All eight countries commit to either continue supporting and aligning actions in support of the SAP components or initiate new actions necessary to meet the common targets under the SAP. For example, EAFM will be new to the Maldives, Myanmar and Sri Lanka, while it is already ongoing in the other countries, but in need of strengthening; development of NPOAs for ETP species will be new to Bangladesh, Maldives and Sri Lanka, but ongoing in the other countries; and introduction of new measures to improve management of nutrients will be important to most countries. The child projects under the programme will further take stock of country specific priorities in the SAP/NAPs to ensure that the suite of actions selected by each country are adequately reflected in the final programme design.
2. *Linkages to CBD NBSAPs:* The Program is fully consistent with the countries’ National Biodiversity Strategies and Action Plans (NBSAPs) that all have elements focusing of conservation of biodiversity in the coastal and marine environment. The Program will also collaborate with UNEP/SACEP Marine and Coastal Biodiversity Strategy, which aims to provide a framework for coordination and collaboration between South Asian Seas countries’ NBSAPs, enhancing national and regional interventions for the achievement of the Aichi Biodiversity targets, particularly those addressing coastal and marine issues relevant to the region.
3. *Linkages to UNFCCC NCs/INDCs and NAPAs/NAPs:* All countries have developed National Communications to the UNFCCC where forestry is a priority sector for emission reduction. Bangladesh and Myanmar have also developed National Adaptation Plans of Action (NAPAs) to protect vulnerable populations and ecosystems, including coastal areas. However, potential (negative) secondary impacts of many proposed NAPA adaptation actions on the fisheries and aquaculture sector have not been fully analysed (e.g. watershed management for irrigation, flood protection, mangrove replanting). Regional fisheries management and transboundary fisheries management issues had not been considered (for example migratory species). All BOBLME countries have submitted their Intended Nationally Determined Contributions (INDCs) to the UNFCCC. These include mitigation and adaptation targets for fisheries and aquaculture and the blue sectors. Priority actions include employing stress tolerant fish varieties, enhancing resilience to marine disasters, strengthening insurance schemes for fisherfolk and promoting adaptive aquaculture practices. Reduction of emissions from the forestry sector, including mangroves, is a high priority of the INDCs, and protection of coastal and marine resources is a key adaptation priority. The BOBLME Programme will fully support countries in achieving targets under the INDCs and it will work closely with GCF agencies and NDAs.
4. Outcomes of the proposed programme are fully consistent with the Sustainable Development Goals (SDGs) and will contribute to a range of important socio-economic and environmental SDG targets, especially SDG14 : Conserve and sustainably use the oceans, seas and marine resources, and its targets 1-5: by 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution; by 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans; minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels; by 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics; and by 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.

*Child Selection Criteria*. Outline the criteria used or to be used for child project selection and the contribution of each child projects to program impact.

1. This phase of the BOBLME will include 2 Child Projects. One FSP is led by FAO and will address issues related to sustainable management of fisheries, restoration and conservation of critical marine habitats and protection of biodiversity, improved livelihoods and enhanced resilience, and regional planning, coordination and monitoring. Another FSP is led by ADB focusing on investments in waste water management infrastructure to improve ecosystem health in the mid-basin area of Ayeyarwaddy River, around Mandalay City, and possibly two MSPs focusing on restoration and conservation of critical marine habitats in countries that are allocating STAR resources to the Programme. Summaries of Child Projects can be found in Annex B. All projects need to meet the following criteria:

* Be country driven and consistent with national priorities in the BOBLME SAP/NAPs and in other strategic frameworks, such as NAPAs, NBSAPs, etc.
* Relate to transboundary environmental concerns identified in the TDA or Hot Spot analysis
* Be cost-effective and sustainable
* Have high replication potential, i.e. can be widely replicated within the physical and socioeconomic context of the BOBLME and its member countries, achieving a substantial cumulative stress reduction.
* Catalyse funding from countries and development partners
* Take gender and equity issues into consideration.

**part iii: approval/endorsement by gef operational focal point(S) and GEF agency(ies)**

**A. Record of Endorsement of GEF Operational Focal Point (S) on Behalf of the Government(S):** (Please attach the [Operational Focal Point endorsement letter](https://www.thegef.org/gef/sites/thegef.org/files/webpage_attached/OFP%20Endorsement%20Letter-Program-Feb2015.doc) with this template).

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Position** | **Ministry** | **Date** *(MM/dd/yyyy)* |
| Bangladesh  Mr. Istiaque Ahmad | Secretary | Ministry of Environment and Forests | 08/31/2017 |
| India  Mr. Jigmet Takpa | Joint Secretary | Ministry of Environment, Forests and Climate Change | 11/30/2017 |
| Indonesia  Ms. Ibu Laksmi Dhewanthi | Senior Advisor to the Minister on Industry and International Trade | Ministry of Environment and Forestry | 08/31/2017 |
| Malaysia  Mr. Jaya Singam Rajoo | Undersecretary, Environmental Management and Climate Change Division | Ministry of Natural Resources and Environment | 10/09/2017 |
| Maldives  Ms. Miruza Mohamed | Director | Ministry of Environment and Energy | 08/10/2017 |
| Myanmar  Mr. Hla Maung Thein | Director General, Environmental Conservation Department | Ministry of Natural Resources and Environmental Conservation | 08/25/2017 |
| Sri Lanka  Mr. Anura Dissanayake | Secretary | Ministry of Mahaweli Development and Environment | 08/30/2017 |
| Thailand  Dr .Wijarn Simachaya | Permanent Secretary | Ministry of Natural Resources and Environment |  |

**B. GEF Agency(ies) Certification**

This request has been prepared in accordance with GEF policies[[11]](#footnote-12) and procedures and meets the GEF criteria for program identification and preparation.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Agency Coordinator, Agency name** | **Signature** | **Date** *(mm/dd/yyyy)* | **Program Person** | **Telephone** | **Email Address** |
| Alexander Jones, Director, Climate and Environment Division (CBC), FAO  Jeffrey Griffin,  Senior Coordinator, GEF Coordination Unit, CBC Division, FAO |  | 25 January 2018 | Sameer Karki, FAO TCI-GEF Unit  Sameer.Karki@fao.org  Aaron Becker, FAO Regional Office of Asia/Pacific  Aaron.Becker@fao.org | +390657055680 | FAOGEF@fao.org;  Jeffrey.Griffin@fao.org |
| Nessim Ahmad, Deputy Director General and Concurrent Compliance Officer, Sustainable Development and Climate Change Department, Asian Development Bank |  |  | Eri Honda, Principal Urban Development Specialist, South East Asia Department ADB | +6326324444 | ehonda@adb.org |

**c. Additional GEF Project Agency Certification** *(Applicable Only to newly accredited GEF Project Agencies)*

For newly accredited GEF Project Agencies, please download and fill up the required [**GEF Project Agency Certification of Ceiling Information Template**](https://www.thegef.org/gef/sites/thegef.org/files/webpage_attached/GEF%20Project%20Agency%20Certification%20Template.docx)to be attached as an annex to the PFD.

**ANNEX A**

**List of child Projects under the Program Framework**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Child Projects under the Programa/** | | | | | | | |
| **Country** | **Project Title** | **GEF Agency** | **GEF Amount ($)** | | | **Agency Fee ($)** | **Total ($)** |
|  |  |  | **Focal Area 1 IW** | **Focal Area 2 CCM** | **TOTAL** |  |  |
|  |  |  | Project | Project | Project |  |  |
|  | **FSPs** |  | | | | | |
| Regional | 1. Sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region for the benefit of coastal states and communities  1.1. Enhancing the role of Sundarbans ecosystem services and conservation of forest stocks in Bangladesh | FAO | 9,174,312 | 504,587 | 9,678,899 | 871,101 | 10,550,000 |
| Myanmar | 2. Demonstration Investments in Eco-Waste Infrastructure Solutions: Mandalay City | ADB | 4,587,156 |  | 4,587,156 | 412,844 | 5,000,000 |
|  | **Subtotal** |  | 13,761,468 | 504,587 | 14,266,055 | 1,283,945 | 15,550,000 |
|  | **MSPs** |  | | | | | |
|  | 1. |  |  |  | 0 |  | 0 |
|  | 2. |  |  |  | 0 |  | 0 |
|  | 3. |  |  |  | 0 |  | 0 |
|  | **Subtotal** |  | 0 | 0 | 0 | 0 | 0 |
|  | **Total** |  | 13,761,468 | 504,587 | 14,266,055 | 1,283,945 | 15,550,000 |

A/ Total amount of child project concepts should equal the GEF program financing requested and consistent with Tables A, B and D.

**Annex B: Child Project Summaries**

|  |  |
| --- | --- |
| 1. **Project Title:** Sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region for the benefit of coastal states and communities | |
| **Implementing Agency(ies)** | Food and Agriculture Organization of the United Nations (FAO)/APFIC |
| **Executing Agency(ies)** | Regional and sub regional executing partners include BOBP-IGO, SEAFDEC, IUCN/MFF, UN Environment (e.g. COBSEA, GPA), UNIDO; APFIC; National execution partners include Ministries of Fisheries and Agriculture, Ministries of Environment, and other national agencies from all 8 participating countries |
| **GEFTF Amount (USD)** | USD 9,678,899  (excluding agency fee, USD 871,101) |
| **Co-financing (USD)** | * FAO in-kind contribution – approx. 10 million * Other bilateral donors (TBC): Germany, Norway, Sweden, USA - approx. 4.5 million * Partner countries – approx. 80 million   Additional co-finance under discussion includes:   * UNEP, UNIDO, WB, IUCN – 3.5 million * Partner regional fisheries bodies (BOBP-IGO, SEAFDEC, NACA)- approx. 1.0 million * Other partners : TBD |
| **Summary Description** | The Bay of Bengal Large Marine Ecosystem (BOBLME) is one of the largest LMEs globally and covers 6.2 million km2 with depths ranging between 2 000 and over 4 000m for most of its central area. The continental shelf around its perimeter is mostly narrow. About 66 percent of the BOBLME lies within the EEZs of BOBLME countries - Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, Thailand - the remainder being the high seas area  The BOBLME is rich in natural resources, including extensive mineral and energy resources; marine living resources that support major fisheries; and forest and land resources. The fisheries production in 2012 was approximately six million tons, valued at USD 4 billion (about four percent of the value of the world catch). The LME is the site of three important critical habitats – mangroves (12 percent of world mangrove resources); coral reefs (8 percent of the world’s coral reefs) and seagrass. The BOBLME is an area of high biodiversity, with a large number of endangered and vulnerable species. The LME and its natural resources are of considerable social and economic importance to the bordering countries, with activities such as fishing, shrimp farming, tourism and shipping contributing to food security, employment and national economies. The Bay of Bengal is also one of the hydrocarbon-rich areas of the world, until recently poorly explored due to a lack of financial support for exploration and international boundary disputes.  The GEF Child Project will address the following barriers: i) Institutional, legal and administrative barriers; with incomplete regional policy cycles and weak national-regional as well as science-policy interfaces, leading to poor governance; ii) socio-economic barriers; by improving stakeholder awareness, capacity, gender equity and participation, and also reducing vulnerability and insecure livelihood status, as well as introducing valuation of ecosystem services, also including non-monetary or social and cultural values, likewise leading to improved governance; iii) reversing the lack of integration of climate change in planning and management to enhance the resilience of its fisheries, critical habitats, and people’s livelihoods, as current management practices will determine the possible impacts of future climate change. In addition, the underlying paradigm of ecosystem approach of ecosystem-based management will be a move away from the traditional sectoral approaches.  The project will address the priority transboundary environmental problems identified by the BOBLME Phase 1TDA. Investing in the Strategic Action Programme (SAP) based on the TDA, will help safeguarding and maintaining regulating and provisioning ecosystem services in the BOBLME worth around USD 240 billion over the next 25 years – services that will be lost if action is not taken to halt current rates of coastal and marine ecosystem degradation and biodiversity loss.  The objective is to contribute to sustainable management of fisheries, marine living resources and their habitats in the Bay of Bengal region, to reduce environmental stress and improve environmental status for the benefit of coastal states and communities. This will be achieved through four interlinked Project components based on the SAP themes, and with an added component to strengthen the institutional arrangements for regional partnerships coordination and collaboration, ecosystem-based monitoring and assessment. The GEF support to the implementation of the SAP is expected to leverage significant amounts of investments from the BOBLME countries, from both national and sub-national levels, multilateral and bilateral development partners. |
| **Expected Outputs** | Sustainable Management of Fisheries:   * At least 2 EAFM plans implemented in each country leading to 20% increase in landings of higher value demersal and pelagic species, (e.g. hilsa, lobster in Tamil Nadu, sea cucumber in the Gulf of Mannar; seaweed in Bangladesh) * National and regional platforms established or strengthened to involve grassroots stakeholders in management decision-making * EAFM training embedded in national and regional training institutions and training provided to around 200 practitioners in each country   Restoration and conservation of critical marine habitats and conservation of biodiversity:   * At least two MMAs contribute to conservation of transboundary biodiversity and blue carbon * Regional capacity development program promoting best practices in management and evaluation of MMAs and training of 200 practitioners at all levels * Protection and enhancement of the carbon stocks and other ecosystem services of the Sundarbans (using CC-M funds in Bangladesh; see Box 1 below) * A regional plan of action for ETP species (e.g. whale sharks and sea turtles) * Legislative frameworks on ETP species harmonized across countries.   Management of coastal and marine pollution to improve ecosystem health:   * Countries enabled and supported to actively participate in the Global Partnership on Nutrient Management (GPNM), addressing nutrient over-enrichment and oxygen depletion from land based pollution of coastal waters, at selected hotspots (e.g. Chilika Lake) * Promotion of cleaner fishing ports and addressing abandoned fishing gears at 8 hotspots applying ICM approaches   Improved livelihoods and enhanced resilience of the BOBLME:   * Resilience plans developed based on valuation of ecosystem services and threats related to livelihoods in at least two pilot areas per country to support decision making in the BOBLME at regional, national and local levels * Inclusion of coastal fisheries and aquaculture in poverty reduction and development, as well as climate change policies, strategies and planning processes promoted * Gender considerations mainstreamed into relevant policy and regulatory frameworks * Livelihood diversification for women piloted in at least one site per country * Access to innovative financial services and insurance mechanisms to enhance resilience and improve livelihoods promoted. * A regional capacity development programme for selected coastal communities on alternative livelihoods, ‘decent work’ and ‘social protection’ for empowerment and enhanced participation in coastal and marine resource management and conservation.   Regional mechanism for planning, coordination and monitoring of the BOBLME:   * CCR-BOBLME established to promote stakeholder participation and awareness, ecosystem assessment, and application of best practices in implementation of the SAP * Long-term partnership arrangements agreed for sustainable regional coordination mechanism and sustainable financing for ecosystem-based management in the BOBLME * 8 National inter-sectoral coordination committees established to strengthen the regulatory and institutional frameworks and to develop national implementation plans in support of SAP/NAP implementation (including EAFM plans, NPOAs-IUU, ETP plans, pollution monitoring plans) * Stakeholder consultation mechanism established for engagement of civil society, cooperatives, and the private sector * Baseline data (fisheries, trends and threats of critical habitats and ETP species, pollution, oceanography, and climate change), monitoring systems and information repository established at national and regional levels * Regional information sharing mechanism enabling broad access to best practices and lessons learned in the participating countries * Programme findings and lessons learned identified and contribute to IW Learn and LME Learn * Monitoring system operating and providing systematic and regular information updates on progress towards reaching BOBLME SAP targets |
| **Indicators** | * Increased abundance and biomass by 5-10% (from 2014 baseline) * 20% reduction in IUU of BOBLME phase 1 baseline for selected fisheries * At least two MMAs established or strengthened covering 2,000,000 ha of marine areas * Conservation of blue carbon (mangroves, seagrass), associated biodiversity, and ETP species (200,000 ha of habitat, approx. 2 million t CO2 – of which 50% from Sundarbans) * Conservation of coral reefs, associated biodiversity and ETP species (200,000 ha) * Documented practice of nutrient reduction measures, and measurable reduction of nutrient pollution in selected hotspots. * 8 fishing ports covered by sewage management systems and improved waste management; 5% reduction in marine litter * Inclusion of coastal fisheries and aquaculture in poverty reduction and development, as well as climate change policies, strategies and planning processes * Consortium for the Conservation and restoration of the BOBLME (CCR-BOBLME) established and institutionalized to promote stakeholder participation and awareness, ecosystem assessment, and application of best practices in implementation of the SAP * Long-term partnership arrangements agreed for sustainable regional coordination mechanism and sustainable financing for ecosystem-based management in the BOBLME * Regional information sharing mechanism enabling broad access to best practices and lessons learned in the participating countries |
| **Targets** | Bay of Bengal coastal regions and waters, partner country EEZs, transboundary ecosystems (e.g. Gulf of Mannar, Myeik Archipelago, Sundarbans) |
| **Countries** | Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, Thailand |

|  |
| --- |
| **1.a: FAO project activities in Bangladesh with CCM STAR funding:**  **Output 2.2** Enhancing the role of Sundarbans ecosystem services and conservation of forest stocks in Bangladesh (FAO with Bangladesh Forest Department, Ministry of Environment and Forests) |
| **Financing:**  GEFTF Amount (USD)  550,000 Bangladesh CC-M STAR  504,587 (excluding agency fee)  45,413 agency fee  Co-financing (USD)  Forest Inventory and Management Plan (among others): 4,000,000 |
| **Summary Description**  Sundarbans, which means “beautiful forest”, is the largest contiguous mangrove forest in the world, constituting 4% of the world’s mangrove, and unusual in being deltaic (Islam & Wahab 2005). The forest supports considerable fauna and flora, including over 300 plant species, over 400 fish species, the charismatic Bengal tiger and saltwater crocodile - in sum over a third of the total fauna of Bangladesh. The forest simultaneously supports the livelihoods of about one million people, comprising about 40% of the productive forests of Bangladesh, providing construction materials, energy, food and tourism. These mangroves are also important in protecting millions of people from the full force of tidal surges and cyclones that regularly hit the north of the Bay of Bengal, the frequency of which will increase with climate change.  The carbon stock of the Sundarbans has been estimated at 106 M tonnes, and - with the forest covering an area of 601,700 hectares - a carbon density of 257 tonnes per hectare. This equates to an estimated 387.7 M tonnes of carbon dioxide equivalents stored, which is over 7 times the annual CO2 emissions of Bangladesh from fossil fuel consumption. As a vast store of blue carbon (see the subsequent subsection), the Sundarbans is an important asset in climate change mitigation, as well as climate change adaptation by providing coastal protection to the millions-strong population of Bangladesh. However, climate change and resultant sea level rise threaten the persistence of the niche of the Sundarbans itself. Other threats pertinent to the Sundarbans that have been identified (Karim, 1994) include changes to water flow, sedimentation change, pollution, over-exploitation of wood and non-timber forest products. Urgent action is needed to ensure protection and sustainable and equitable management of the system into the future.  **Contribution to country-level programming frameworks:**  National forestry activities:The Bangladesh Forest Inventory collects data at intervals about the status of Sundarbans in terms of forest cover, tree volume and tree species, and other groups have also conducted inventories of Sundarbans in the past. The data to be collected during this project would complement BFI data.  Bay of Bengal Large Marine Ecosystem (BOBLME) Programme:This summary describes national initiatives under Sub-Component 2.2 of the BOBLME, through which Bangladesh is already benefitting, for example in the development of proposals for marine protected areas and improved management of the unique coral island of Saint Martin’s. The Transboundary Diagnostic Analysis of the BOBLME project (Phase 1) states that one of the three main issues to be addressed by the project is the “degradation of mangroves, coral reefs and seagrasses”. Bangladesh is home to 27% of the mangroves covered by the project. BOBLME’s objectives include to “protect, manage and restore mangrove habitats to increase mangrove coverage and improve biodiversity”, in-line with the objectives of this project.  National integrated management plan for the Sundarbans (2010-2020):The present proposal is intended to complement the already existing national management plan and ensure its sustainability as its end-year of 2020 approaches. Activities are foreseen to address sustainability and hand-over of management to local authorities and impart awareness and responsibility to stakeholders such as fishermen or tour guides. The project here would contribute to all five goals of the management plan and in particular to Goal 5: “Provide for ad implement appropriate climate change mitigation and adaptation options and opportunities”, Outcome: “The FD ensures the continuation of the Sundarbans as carbon sink (both for green and blue carbon) and contributes in enhancing the ecosystems resilience for improved adaptation of local communities to climate change impacts including cyclones and storms.”  7th Five Year Plan (2016-2020):The Sundarbans forest is explicitly mentioned as relevant to three sectors in Bangladesh’s 7th Five Year Plan for development, namely the services sector, agriculture and water sector, and environment and climate change sector. It is stated as a key objective of the 7th FYP to “conserve Sundarbans mangrove forest without any further deforestation or forest degradation”, with a programme of action being outlined as follows:   * “Greater efforts shall be taken for sustainable conservation of Sundarbans and its resources during the plan period. * Measures will be taken to involve local community with allocating appropriate property rights in the management of the Sundarbans * Creation of alternative livelihood opportunities for the people, depending on the Sundarbans mangrove forest, to lessen anthropogenic pressure on the Sundarbans mangrove forest * Rivers and canals will not be used for transporting goods and material and other business purposes. * Special attention will be given to the Sundarbans Reserve Forest for its biodiversity conservation. All sorts of protective measures will be taken to keep the Sundarbans’ biophysical characteristics intact.”   Sustainable Development Goals:As complementary goals for development, the UN SDGs and the 7th FYP are similar in their aims for the Sundarbans, and the mapping of the SDGs to Bangladesh’s national goals has produced the following aims:   * “conserve Sundarbans without any further deforestation and forest degradation” * “restore 20,000 acres of denuded Chokoria – Sundarbans Reserve Forest” * “Keep the Sundarbans bio-physical characteristics intact through all sorts of protection measures”   Bangladesh Climate Change Strategy and Action Plan 2009: Bangladesh’s national climate change action plan describes “the importance of thick belts of mangroves” as part of adaptation to the increased frequency of intense storms as predicted to happen with climate change (T3P6 Adaptation against future cyclones and storm surges). The serious threat posed by climate change, rising salinity and anthropic influence to the Sundarbans is explicitly mentioned under T4P4 “monitoring of ecosystem and biodiversity change and their impacts”, and T6P6 calls for “raising public awareness across the country by main-streaming climate change issues”.  **Proposed actions**  The Sundarbans needs special attention, as a unique and important ecosystem for Bangladesh and internationally, for ecological, economic and social motives, but also for climate change mitigation and adaptation. With the Sundarbans as a vast store of blue carbon, the project aims to contribute to the conservation and enhancement of this carbon store as a means of mitigating climate change by protecting the forest from degradation. The objective is to contribute to the creation of a robust management plan for the Sundarbans that integrates carbon storage and ecological considerations with socio-economic needs, and is founded on improved collaboration between the local and national scale, heightened awareness of the value of the ecosystem services of the forest and how to use them in a sustainable manner, and on improved understanding of the complex web of interactions between people, fauna, forest, water quality and sedimentation that is unique to the Sundarbans.  **Goal:** Carbon stocks and other ecosystem services of the Sundarbans are enhanced and protected.  **Outcome**: An integrated, sustainable management plan for the Sundarbans founded on collaboration and research. |
| **Expected Outputs**  **Output 1: Improved management through collaboration with local stakeholders**  **Activity 1.1:** Raise awareness of the ecosystem services provided by the Sundarbans and crucially the threats they would face due to overexploitation and climate change  **Activity 1.2:** Promote sustainable practices, such as for navigation and harvest.  **Activity 1.3:** Develop communication materials to ensure awareness of threats and sustainable practice is sustained  **Output 2: Informed valuation of ecosystem services**   * **Activity 2.1:** Collect data on abiotic and biotic factors including water quality, ecosystem interactions, human use, economics, and sedimentation of Sundarbans and Ecologically Critical Areas (ECA) around Sundarbans and calculate value of ecosystem services for Sundarbans and ECA;   **Activity 2.2:** Capacity building on data collection, management and analysis for local authority  **Activity 2.3:** Develop integrated management information system collaboratively  **Activity 2.4:** Update integrated resource management plan  **Activity 2.5:** Accurately quantify carbon stocks of Sundarbans  **Output 3: Increased institutional collaboration**  **Activity 3.1:** Support inter-ministerial coordination for collaborative ecosystem management  **Activity 3.2:** Establish institutional arrangement for information management and data sharing  **Activity 3.3:** facilitate the development of integrated natural resources policy.  **Indicators**   * Carbon stocks of Bangladeshi Sundarbans are quantified for conservation, to contribute towards BOBLME target of 2 million t CO2 eq (total amount of avoided emission from entire Sundarbans is computed as 7,546,292 tCO2eq) * Species list completed for Sundarbans * Sedimentation patterns mapped * Economic value of extracted marketable Sundarbans products known * Management plan updated and valid for at least the next five years * Investment plan made for next five-year period * Management information system operational * Mapping of resource extraction modalities completed in terms of means, methods and temporal and spatial aspects * Information made available online and also distributed among local communities about sustainable use of the forest * Ten Workshops/discussion groups held with national and local stakeholders on issue of sustainable use and value of Sundarbans * Eight trainings on information collection on ecosystem and aquatic resources; database preparation; archiving; analysis and information system management etc. * Regional information sharing mechanism enabling broad access to best practices and lessons learned in the participating countries   The carbon benefits from the project are estimated in terms of lifetime direct GHG emissions avoided over the default time horizon of 20 years under the IPCC guideline and the guidance. For this project, the durations of implementation phase and the capitalization phase are defined as 4 years and 16 years, respectively. The carbon benefits are calculated using EX-Ante Carbon Balance Tool (EX-ACT).  Direct lifetime GHG emissions avoided  In the GEF Tracking Tool for Climate Change Mitigation (CCM) projects, direct lifetime GHG emissions avoided are the emissions reductions attributable to the investments made during the project's supervised implementation period, totalled over the respective lifetime of the investments. The following variables and assumptions are used for the calculation. The EX-ACT results file is available separately:   |  |  |  |  | | --- | --- | --- | --- | | **Variable** | **Value** | **Unit** | **Data Reference/Note** | | Lifetime length for direct GHG emissions avoided | 20 | years |  | | Continent | Asia continental | - |  | | Climate, and Moisture regime | Tropical, moist | - |  | | Dominant Regional Soil Type | Wetland soil | - |  | | Area for GHG emissions calculation in EXACT | 601,700 | ha |  | | Conservation of Sundarbans | 601700 | ha |  | | Type of Vegetation for degradation | Mangrove | - |  | | Above-ground carbon stock of natural mangrove | 86.6 | tC/ha | IPCC default | | Below-ground carbon stock of natural mangrove | 42.4 | tC/ha | IPCC default | | Carbon stock in Litter, dead wood and soil of natural mangrove | 0.70; 10.7; 68.0 | tC/ha | IPCC default | | Initial state of degradation level for mangrove | None | - |  | | mangrove degradation level without project | Very low | - | (Donato 2011) and current inventory data under processing | | mangrove degradation level with project | None | - |  | | Global warming potential values (GWP) | For CH4: 25, Co2: 1 and N2O: 298 | - | Reference: official (2nd period 2013-2020) | |  | | | |   The estimated values of direct lifetime GHG emissions avoided during 20 years (4 years of implementation phase and 16 years of capitalization phase) are as follows:   |  |  |  |  | | --- | --- | --- | --- | | **Management regime** | **Area (ha)** | **Direct lifetime GHG emissions avoided (tCO2e)** | | | Conservation of Sundarbans and avoid degradation | 601700 | 7,546,292 |  | | **Total** | 601700 | 7,546,292 | |   The direct lifetime GHG emissions mitigation potential from the project is estimated as 7,546,292**tCO2e**, which is equivalent to -0.6 **tCO2e per hectare per year** in the considered biome and time frame. |

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| **2. Project Title:** DemonstrationInvestments in Eco-Waste Infrastructure Solutions: Mandalay City | |
| **Implementing Agency(ies)** | Asian Development Bank |
| **Executing Agency(ies)** | Mandalay City Development Committee (MCDC) and Environmental Conservation Department (ECD) in the Ministry of Natural Resources and Environmental Conservation (MONREC) |
| **GEFTF Amount (USD)** | 4,587,156 (excluding Agency Fee of 412,844) |
| **Co-financing (USD)** | * Asian Development Bank loan: 30 million * Other bilateral donor loan (Agence Française de Développement): 30 million * Japan Fund for Joint Crediting Mechanism grant: 5 million |
| **Summary Description** | Background and Introduction:  GEF financing will, among other things, support the implementation of the recently formulated Myanmar Waste Management Strategy and Action Plan (2017-2030), led by the Environmental Conservation Department (ECD) in MONREC. It will focus on the city development committee level as well as scaling up at the national level, to address a number of goals and targets articulated in the strategy.  Mandalay City, with a population of about 1.25 million, is the country’s second-largest city, contributes to around 8% of national GDP. In Mandalay Region, increased climate change vulnerability is observed such as shorter monsoon periods, longer pre-monsoon droughts, and higher daily rainfall depths. These changing climatic conditions, combined with urban expansion, increase the demand for reliable water resources, effective wastewater collection and treatment, and improved urban drainage.  Water quality studies of the Ayeyarwaddy River show high arsenic levels, up to 30 ppb (parts per billion) in Mandalay in dry season, with lower amounts downstream. Both WHO and US-EPA set maximum contaminant level of arsenic in drinking water at 10 ppb. In accordance with US-EPA, long term exposure to high arsenic can cause cancer of lungs, skin, prostate, kidney, and liver. Cyanide levels also reach unsafe limits. Seasonal and regional variations in arsenic and cyanide levels may suggest that natural cause is not the underlying factor, rather, linked to intensive mining activities in upper Mandalay. In addition to human health, these pose risks to the surrounding ecosystems.  Direct sewage disposal, leaching from landfills which are not properly sealed, organic wastes and manure are associated with high ammonia nitrogen concentration in waterways in Mandalay. With the practice of dumping solid wastes and of discharging raw sewage directly into the Ayeyarwaddy River and other waterways, one can expect to see high concentration of ammonia nitrogen. Furthermore, significant levels of coliforms and E. coli are observed consistently in the river. It confirms raw sewage and leachate pollutions from municipalities and shipping operations. Coliform counts in 100 mL of water range from 240 to over 2000 while E. coli counts range from 40 to 3200. These counts are very high. (Source: ADB Initial Environmental Examination 2016). This is compounded by discharges of untreated industrial waste water, with high levels of BOD and COD, from manufacturing and processing activities in the southern part of the city, which pour into nearby Taung Tha Man Lake and the Ayeyarwaddy River.  The coverage of the piped-water supply system in Mandalay is only 55% and the remaining residents use mainly private shallow wells. The piped-water supply system serves for 10 hours per day on average. It is estimated that more than half of the produced water is lost in the networks. Despite high population density and high pollution levels in receiving water, there is no piped sewerage system and wastewater is discharged to the nearest water course without any treatment, and invariably flows into the main waterway, the Ayeyarwaddy River. Sanitation provision consists of septic tanks draining largely into the roadside drains and of latrines of varying designs. Nonrevenue water is estimated at 52%. Sanitation provision consists of septic tanks draining largely into the roadside drains and of latrines of varying designs.  Although Mandalay is located in the heart of the Central Dry Zone, rainstorms can be very intense during the wet season. Seasonal floods are caused mainly by a lack of maintenance of canals and storage ponds, and insufficient capacities of the existing pumping stations  About 780 tons of domestic solid waste is collected per day, large amounts are illegally dumped or burned along roads and nearby water courses. This not only causes degradation of environment and public health, but also increases flood damages due to reduction of drainage capacity. There are two existing dumpsites without appropriate treatment. During the wet season, floods are caused mainly by a lack of maintenance of canals and storage ponds, and insufficient capacities of the existing pumping stations.  The Mandalay City Development Committee (MCDC), initiated by a law in 2015, is tasked with urban service delivery and infrastructure development. However, it is unable to effectively carry out its responsibilities because of limitations in qualified personnel, technical skills and equipment, scientific data and funding.  GEF Baseline Project: Mandalay Urban Services Improvement Project (MUSIP)  The ongoing Mandalay Urban Services Improvement Project addresses the problems in water supply systems, wastewater and drainage management, and Mandalay City Development Committee (MCDC) urban service management capacity. The loan is also co-financed by the Urban Climate Change Resilience Trust Fund (UCCRTF) administered by ADB, which will contribute to capacity development of the MCDC in climate change resilient urban planning and management, and support piloting community-based solid waste management.  The Second Mandalay Urban Services Improvement Project (MUSIP2) loan – the GEF baseline - will continue to support these three areas to: i) increase the water production capacity, expand distribution networks, and reduce water losses; ii) improve wastewater treatment process, expand the interceptor pipelines and sewerage networks, and introduce household sewerage connections; and iii) develop MCDC’s capacity in municipal financial management, urban and spatial planning, and operation and maintenance. The loan project will also cover a number of solid waste management activities and traffic management measures (which will not be considered under the GEF project).  The loan project also anticipates some climate change mitigation measures such as reduction of methane emissions and energy generation through the wastewater treatment and solid waste management components, as well as adaptation measures including climate proofing of facilities to protect them from flooding. Some of this work may also be included in the proposed GEF child project.  Barriers to be Addressed  The GEF Child Project will address the following barriers: i) Sectoral approaches: Need to foster integrated approaches to urban development, particularly to strengthen inadequate policy and regulatory frameworks, as well as promote cross-sector institutional arrangements, ii) Technical and management capacity limitations to implement waste and waste water management initiatives at the city and regional government levels, iii) Absence of long term science-based data collection systems and supporting laboratory facilities, in the water sector, iv) Lack of public understanding of health and environmental consequences of business as usual scenarios with respect to waste and water management, and v) Need for incentives and financing mechanisms to sustain operations and maintenance of waste and waste water management infrastructure.  Source to Sea Continuum  Among others, the proposed GEF child project, will aim to capture some of the key recommendation of the STAP guidance on managing the source to sea continuum, as it will: i) apply source to sea principles in the context of a SAP, ii) examine pollutant flows in catchments draining into sensitive coastal environments, and flows of waste in river basins that ultimately reach the open ocean, and iii) invest in knowledge generation and sharing across the trans-boundary SAP framework of the BOBLME. |
| **Expected Outputs** | 1. Integrated water resources management (IWRM) and climate resilience integrated with urban development through inter-sectoral planning mechanisms 2. Investments in freshwater ecosystems restoration and rehabilitation considered and demonstrated at project sites (e.g. Thingaza Creek, Kantawgyi Lake) 3. Capacity strengthened within MCDC, ECD and other agencies, for monitoring ecosystem health, water quality and water use efficiency at project sites; including application of UNIDO TEST methodology at Taung Tha Man Lake (industrial waste water undertaken in consultation with proposed UNIDO/GEF project “Climate change mitigation through methane recovery and reuse from industrial wastewater treatment” (GEF ID 9830) 4. Increased awareness of the benefits of integrated water resources management (e.g. reduced costs from water use efficiency, public health, flood resilience), and 5. Good practices and models for investments in integrated water resources management (IWRM) shared across BOBLME region. |
| **Indicators** | 1. # of policies, regulations and environmental standards related to integrated water resources management defined and adopted at regional and city level 2. Improved freshwater ecosystems services – regulating and provisioning – at project sites (e.g. movement, distribution, quality of water) 3. Ecosystem health and water quality improvements measured and systematically monitored according to key parameters at project sites, including, Thingaza Creek, Kantawgyi Lake and Taung Tha Man Lake 4. % of population reached through IWRM social marketing campaigns 5. # and type of knowledge sharing events and products developed and shared across Myanmar and BOBLME region |
| **Targets** | Possible project sites around Thingaza Creek, Kantawgyi Lake and Taung Tha Man Lake. |
| **Countries** | Myanmar |

1. Program ID number will be assigned by GEFSEC. [↑](#footnote-ref-2)
2. When completing Table A, refer to the excerpts on [*GEF 6 Results Frameworks for GETF, LDCF and SCCF*](https://www.thegef.org/gef/sites/thegef.org/files/documents/document/GEF6%20Results%20Framework%20for%20GEFTF%20and%20LDCF.SCCF_.pdf). [↑](#footnote-ref-3)
3. Financing type can be either investment or technical assistance. [↑](#footnote-ref-4)
4. Activities and targets for marine litter are not programmed using GEF funds. [↑](#footnote-ref-5)
5. For GEF Project Financing up to $2 million, PMC could be up to10% of the subtotal; above $2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.  
    [↑](#footnote-ref-6)
6. Provide those indicator values in this table to the extent applicable to your proposed program. Progress in programming against these targets for the program per the *Corporate Results Framework* in the [*GEF-6 Programming Directions*](http://www.thegef.org/gef/sites/thegef.org/files/documents/GEF.C.46.07.Rev_.01_Summary_of_the_Negotiations_of_the_Sixth_Replenishment_of_the_GEF_Trust_Fund_May_22_2014.pdf)*,* will be aggregated and reported during mid-term and at the conclusion of the replenishment period. [↑](#footnote-ref-7)
7. For biodiversity projects, in addition to explaining the project’s consistency with the biodiversity focal area strategy, objectives and programs, please also describe which [Aichi Target(s)](http://www.thegef.org/gef/content/did-you-know-%E2%80%A6-convention-biological-diversity-has-agreed-20-targets-aka-aichi-targets-achie) the project will directly contribute to achieving. [↑](#footnote-ref-8)
8. BOBLME (2014) Assessing, demonstrating and capturing the economic value of marine & coastal ecosystem services in the Bay of Bengal Large Marine Ecosystem BOBLME-2014-Socioec-02 [↑](#footnote-ref-9)
9. BOBLME (2015): Review of impacts of Illegal, Unreported and Unregulated fishing on developing countries in Asia. BOBLME-2015-Governance-15. [↑](#footnote-ref-10)
10. Brugère, C. & DeYoung C., 2015. Assessing climate change vulnerability in fisheries and aquaculture: available methodologies and their relevance for the sector. FAO Fisheries and Aquaculture Technical Paper 597, FAO. [↑](#footnote-ref-11)
11. GEF policies encompass all GEF managed trust funds, namely: GEFTF, LDCF, and SCCF [↑](#footnote-ref-12)