

GEF Supported Projects
for
Advancing Ecosystem Based Management
of Large Marine Ecosystems
with the 2014 to 2018 Replenishment



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IW: LEARN

International Waters Learning Exchange & Resource Network

GEF Supported Projects for Advancing Ecosystem Based Management of Large Marine Ecosystems with the 2014 to 2018 Replenishment

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Introduction

The world's Large Marine Ecosystems (LMEs) are regions of coastal water on the order of 200,000 km² or greater, along the margins of the continents, defined by ecological criteria including bathymetry, hydrography, productivity, and trophically linked populations (Sherman 1991, Sherman and Alexander 1994). On a global scale, 66 Large Marine Ecosystems (LMEs) (figure 1) produce 80% of the world's annual marine fisheries biomass yield (Pauly et al. 2008). LMEs encompass coastal areas that contribute an estimated \$12.6 trillion annually in goods and services to the global economy (Costanza et al. 1997). The LMEs are subjected to stress and degradation from overfishing, habitat loss, pollution, nutrient over enrichment, acidification, biodiversity loss, and climate change. Since 1995 a global movement has been underway to reduce stress on LMEs along the coasts of developing countries through unified actions that are financially supported by the Global Environment Facility (GEF) and its many partners. The actions support an ecosystem based management (EBM) approach to recover depleted fisheries, restore degraded habitat (e.g. mangroves, sea grasses, corals), control pollution and nutrient over enrichment, conserve biodiversity, establish and manage marine protected areas, implement coastal zone management, and conduct marine spatial planning (Sherman et al. 2005, Duda 2009, Hume and Duda 2012, Sherman 2014b). **The actions support quantifiable measures implemented by LME governance mechanisms that can help to advance the proposed UN sustainable development goals for coastal ocean goods and services**

LME Ecosystem Based Management and Assessment Approach

Between 1995 and 2014, the LME EBM movement and its network of LME project practitioners, extended GEF supported LME-EBM projects to 110 developing countries in Africa, Asia, Latin America, the Pacific, Arctic, and eastern Europe. The GEF, along with partnering World Bank, UN system and national contributions from OECD countries, catalyzed a total of \$3.15 billion to the LME-EBM movement forward through application of the five module EBM support strategy (Sherman 2014b) within 22 LMEs (figure 2). This GEF strategy assesses changing ecosystem conditions through analyses of LME (i) productivity, (ii) fish and fisheries, (iii) pollution and ecosystem health, (iv) socioeconomics, and (v) governance (Sherman 2014a). A depiction of the five module LME assessment system and selected indicators of ecosystem change is depicted in figure 3. Introduction of the EBM strategy has been achieved through partnerships among the GEF, UN agencies (e.g. UNDP, UNEP, UNIDO, FAO, IOC-UNESCO), donor countries, institutes in Germany (ZMT), Norway (IMS), NGOs (e.g. IUCN, WWF, CI), and the USA (NOAA).

The five modules have been a successful framework for the development of both the Transboundary Diagnostic Analysis (TDA) and the Strategic Action Program (SAP), two important planning instruments employed in GEF supported projects to facilitate multi-country strategic ocean planning and implementation (Hudson and Vandeweerd 2013, Duda 2014). The TDA is an objective scientific analysis undertaken by countries within an LME to identify, prioritize, and determine the root causes of major transboundary ecosystem issues (Wang 2004). Integrating the five module approach into the TDA is relatively straight forward for the three natural science modules (productivity, pollution and ecosystem health, fish and fisheries). The socioeconomics and governance modules are often unique to each LME depending on the level of development of the participating countries. The socioeconomic module identifies and describes the ecosystem services provided by the LME and the relative threats to each. It also identifies the various industries that rely upon LME resources and quantifies their economic contributions to the countries (Carlisle 2014). The governance module profiles the legal, policy and regulatory framework that impacts the use or health of LME goods and services. This module also identifies major stakeholder groups and cultural values, norms or market incentives that influence the use of LME resources (Carlisle 2014). The SAP is a country-driven, negotiated policy document which identifies policy, legal and institutional reforms, and investments needed to address the ecosystem issues identified in the TDA (Duda 2009). Within the five modules framework, the SAP outlines the actions needed to resolve the ecosystem challenges. Indicators are developed around the 5 modules. Those indicators can then be monitored and evaluated to track the status of the LME.

Successful examples of how the LME Ecosystem-based assessment approach, including the TDA/SAP planning instrument, has been applied can be found with the GEF funded project being implemented jointly by the People's Republic of China and the Republic of Korea in the Yellow Sea LME (YSLME). The YSLME is characterized by significant influence of human development where marine resources are important for food, economic development, recreation, and tourism in both China and Republic of Korea. The YSLME has been negatively impacted by industrial and agricultural wastes from these activities. As a first step in the YSLME project, China and Republic of Korea conducted a TDA to identify key ecosystem challenges (UNDP/GEF 2007). Using the five module EBM approach, the TDA identified five broad categories that contributed to the ecosystem deterioration: (i) unsustainable fisheries, (ii) pollution, (iii) habitat modification, (iv) climate change and (v) unsustainable mariculture. Important social and economic causes identified included waste management practices, demand and supply market patterns, demographic pressure on the coastal area, undervaluation of the environment, and gaps in information (UNDP/GEF 2007). The productivity module of the LME analysis found trends in declining commercially important fish landings and an increase of algal and jellyfish blooms due to excessive nutrient loading and the

increase in oxygen depletion events. The fish and fisheries module specifically identified a climate change induced decline in the landings of traditionally important fish species like Pacific Herring and an increase in landings of low-value species (Tang 2009). The TDA also identified an overcapacity of fishers, a lack of alternative livelihoods, an increasing demand for seafood and unsustainable fishing practices as other key factors impacting fishing activities. Under the pollution and ecosystem health module, increased eutrophication, in the form of dissolved nitrogen from riverine and wastewater discharge, was singled out as the primary source of pollution in the YSLME. The reclamation of tidal mudflats for mariculture, industrial development, salt pans, agriculture and tourism has resulted in a reduction of habitat for waterfowl and birds. These changes in land use have also contributed to eutrophication, toxic pollution and the introduction of non-indigenous species through shipping ballast water release. The socioeconomic module identified economic impacts of increases in pollution and declines in fisheries. The governance module of the TDA cited the need for a comprehensive and coherent legislative framework in both countries to address the transboundary problems.

Through the development of a SAP based on the findings of the TDA, both countries agreed to develop a comprehensive approach to address land and sea sources of pollution, over fishing and the degradation of marine habitats. Key goals of the SAP were: 1) to improve the carrying capacity of the Yellow Sea to provide ecosystem goods and services, 2) to improve sewage treatment, water quality regulation, and control disease, and 3) to sustain YSLME cultural services for improved aesthetic values and attractiveness for recreation and ecotourism, by reducing marine litter and contaminants around bathing beaches and other recreational waters, and establishing national standards for reducing levels of pollution (Sherman 2014a). The SAP outlined twelve targets for countries to work towards achieving these goals (UNDP/GEF 2009). Under the productivity module the TDA identified changes in phytoplankton and zooplankton community structure as a result of increased eutrophication that contributed to reduced fish landings. Two of the SAP targets for YSLME productivity were to monitor and assess ecosystem structure and productivity and to better predict ecosystem change. After identifying a climate change induced decline in the landings of traditionally important fish species in the TDA, the countries agreed to set two targets under the fish and fisheries module. The first target included a 25-30% reduction in fishing effort and a reduction in the number of fishing boats. The second was to rebuild over-exploited fish stocks. The pollution and ecosystem health module had six targets to address; the TDA identified eutrophication from riverine and waste water discharge and the introduction of non-native species through aquaculture and mariculture practices. Additionally, another SAP goal was to establish new Marine Protected Areas and improve the effectiveness of existing nature reserves. The socioeconomic module addressed the 33% reduction of fishing effort and the rebuilding of fish stocks with the scaling up of advanced technological methods of coastal mariculture. The

governance module set a target to meet international contaminant requirements through a combination of legislation and enforcement with improved regional coordination and cooperation within national government agencies. In addition to implementing the SAP, the 2 countries recognized the importance of investing in long-term coordination and management of the YSLME and they have committed to the formation of a commission to monitor management progress.

The Way Forward: 2014 to 2018

As discussed in the GEF 6 International Waters Focal Area Strategy, the long-term success of the GEF International Waters (IW) focal area has been attributed to an overall strategic approach. That approach, since the approval of GEF Operational Strategy of 1995, has included “joint fact-finding, multi-country strategic planning, and implementation of governance reforms and investments.”(GEF 1995) This GEF Operational Strategy continues to serve as the basic building block for the GEF 6 IW strategic directions. The LME approach in support of UN Sustainable Development objectives is included in the GEF 5 and 6 IW strategy. The 5-module EBM approach to the assessment and management of LMEs has proven to be a successful approach to ecosystem based management of transboundary water resources by integrating science into management in a practical way. The approach also allows a framework for establishing appropriate governance regimes to change human behavior in different sectors. By applying the EBM 5-modules framework to develop TDA and SAP instruments, IW-LME projects serve as important demonstrations towards the achievement of IW strategic goals. The GEF 6 Strategy continues to support the LME-EMB approach as a major organizing principal for the SAP implementation in marine and coastal areas.

In addition to continued support of LMEs, the GEF 6 strategy also aims to “Catalyze investments to balance competing water-uses in the management of transboundary surface and groundwater and to enhance multi-state cooperation.”(GEF 2014) Under this goal, the GEF 6 plans to support program investments to address the Water/Food/Energy/Ecosystem Nexus. The IW-LME program can serve as a model for achieving a balanced transboundary management of water systems, particularly within the “ridge-to-reef” or ‘source-to-sea” approaches that facilitate the Water/Food/Energy/Ecosystem Nexus. The YSLME project serves as an example of the integration between national GEF projects, to upgrade waste water treatment and reduce pollution, and regional efforts to improve the water quality of the YSLME. Other LMEs, including the Benguela Current, Guinea Current, and Black Sea, have had similar successful projects (Hudson 2012, Hamukuaya and Willemse 2013, Honey and Elvin 2013). The IW GEF 6 Strategy notes “The LME approach represents an opportunity to support

coordinated response towards reducing land based sources of marine pollution, habitat protection as well as sustainable fisheries management across all programs.” (GEF 2014)

For the GEF 6th financial replenishment (2014 to 2018) a sum of \$2.86 billion in LME EBM projects has been targeted as a means to significantly advance the global movement towards recovery and sustainable development of LMEs along the coasts of developing countries. A description of projects is included in this assessment of relevance to the global LME-EBM movement, along with information on project identification code, title, designation of implementing and executing agencies, GEF focal area, start date and complete date, GEF grant amount and total project cost. Included also is the type of project in relation to ecosystem-based approach or sector-by-sector approach, including fisheries, pollution, habitat, coastal zone management, marine spatial planning, socioeconomics, and governance that can be integrated into an EBM long-term program for sustainable development of LME goods and services.

The GEF grant funding of LME-EBM projects has a significant multiplier effect in catalyzing sources of financial support from the public and private sector for implementing the projects and providing the baseline for long-term self-funding, country-owned, LME sustainable development programs. Examples of catalytic financing for the Yellow Sea and Black Sea LME projects are given in tables 1 and 2 from the recent UNDP/GEF publication Catalysing Ocean Finance wherein the authors demonstrate how incremental investments in scaling up EBM practices in LME and linked river basin projects can catalyze billions of dollars in new public and private finance towards sustaining the trillions of dollars in goods and services contributed annually to the global economy (Hudson and Vandeweerd 2013).

This assessment is intended for use by the LME-IOC-UNESCO network of practitioners, the GEF, World Bank, UN, and national partnering agencies, and non-Governmental Organizations engaged in LME projects. The goal of the assessment is to engage the LME network of practitioners in advancing the global LME movement through coordination and integration of GEF supported projects with stated potential for moving single-sector and single-disciplinary projects into multi-disciplinary and multi-sectoral ecosystem based long-term self-funded LME Programs similar to the presently operational Benguela Current LME and the Yellow Sea LME projects(UNDP/GEF 2009). The GEF projects in the present assessment constitute a forward movement for increasing the date cumulative \$3.15 billion baseline of LME project support with an additional \$2.8 billion by 2018 (table 3).

Methods

Information presented here on each current project is summarized from project documents obtained from <http://www.thegef.org> or <http://iwlearn.net/> during the period of September 2013 to December 2014. Each project is listed in Table 3 by Sector Type and GEF ID #. Included for each project is the LME, project title, the implementing and executing agencies, other agency id numbers, country or countries involved, the GEF focal area, start & end date, Council approval date, the GEF funding amount (in USD \$ millions), and Total project cost (in USD \$ millions). In some cases the Council approval date follows the start date due to a lag caused by GEF procedural delays.

EBM Assessment of Single Sector Projects in LMEs

Fisheries Sector Projects in Africa, Caribbean, and Asia

The GEF currently has 6 projects that are focused on fisheries in 9 LMEs: In Africa, fisheries projects are being planned or implemented in the Agulhas Coastal Current, Somali Current, Benguela Current, Canary Current, and Guinea Current LMEs; The Caribbean Sea LME; and in Asia the Indonesia Sea, Gulf of Thailand, Sulu-Celebes, and South China Sea LMEs.

African LMEs

Strategic Partnership for a Sustainable Fisheries Investment Fund in the Large Marine Ecosystems of Sub-Saharan Africa (Tranche 1, Installment 2)

Somali Coastal Current; Agulhas Current; Benguela Current; Canary Current; and Guinea Current LMEs

(GEF ID # 3559, GEF ID 4487; Mar-09 to 2015)

The objective of this project is to promote the sustainable management of fisheries resources in the LMEs of Sub-Saharan Africa in order to assist coastal countries to make concrete progress towards achieving the fisheries and poverty reduction targets set by the World Summit of Sustainable Development (WSSD). Expected outcomes of this project are: 1) country-level long term investments and actions in the fisheries consistent with and the priorities of the GEF-sponsored LME Programs, in order to promote the necessary governance (i.e. policy, legal, and institutional) reforms and sector adjustments to sustainably manage fisheries; 2) individual coastal countries have built their capacity to participate in the ongoing GEF-sponsored LME Programs and

other regional and sub-regional initiatives; 3) countries implement management measures that are more appropriate at the sub-regional scale (e.g. sub regional monitoring, control and surveillance systems, management of fishing capacity, sub-regional research initiatives, networks of MPAs); 4) levels of illegal fishing are reduced by 50% in participating countries; 5) increased local value added from fisheries in each participating country; 6) learning, information exchange and capacity building are promoted at the regional level, to ensure that the lessons from successes and failures of country and LME level investments are adequately disseminated; 7) direct financial support to the fisheries sector to promote sustainability and to reduce poverty is encouraged; and 8) systems of fisheries monitoring strengthened.

West Africa Regional Fisheries Program

Canary Current, Guinea Current

(GEF ID # 3558; 23-Apr-08 to 23-Nov-14)

The development objective/global objective of the West Africa Regional Fisheries Program is to sustainably increase the overall wealth generated by the exploitation of the marine fisheries resources of West Africa. The project looks to strengthen the capacity of Cape Verde, Liberia, Senegal and Sierra Leone to govern and manage targeted fisheries, reduce illegal fishing and increase local value added to fish products. There are 4 components to this project.

This involves good governance and sustainable management of the fisheries. This component will produce a summary of the state of the fisheries and fish stocks in each country, development of a standardized tool to gather current data and information in one format on the health of the key fish stocks in each country. It will also include current data on the key socio-economic contributions of the sector, define trade-offs for the sector, and will present each country's objectives in the fisheries sector and a report card for each country's fisheries and fish stocks. It will produce a summary of the state of fisheries governance in each country and identification of key capacity strengthening needs to define national policies, including an ecosystem-based approach for fisheries management, development of a fisheries governance scorecard that would standardize some of the key governance measures in each country, and score countries' progress towards their implementation. This would serve as a baseline for governance, and as a key tool for peer review and transparency. A public expenditure review will be conducted in the fisheries sector in selected countries including the Guinea-Bissau, Guinea, Mauritania and Gambia, and a study conducted on mechanisms for adjustment

of fishing effort and capacity in relation to the fisheries resources in each country, and for the allocation of fishing rights.

The second component looks to reduce illegal fishing and study the scale and costs of illegal fishing in West Africa. This will involve a study to identify actions needed to implement FAO port state measures to reduce illegal fishing in two key ports (Nouadhibou, Mauritania and Dakar, Senegal). A technical study will also be conducted to identify needs for capacity strengthening for tackling illegal, unregulated and unreported fishing in West Africa, and subsequent activities needed to improve surveillance systems.

Component 3 looks to increase the contribution of the marine fish resources to the local economy. This involves value chain analyses (constraints and opportunities) for key fisheries in the region, including market surveys and demand/supply estimates, and potential for each country to move up the value chain for the selected fisheries, and key investments needed. A marketing study will be conducted that involves the identification of national, regional and international marketing opportunities, key constraints and required investments, and a discussion document on an economic approach to sustainable management of the fisheries sector.

Finally, Component 4 is the coordination, monitoring and evaluation and financial management of the project. This involves the preparation of a project document and implementation manual, and preparation of monitoring and evaluation framework. An update on the project status as of 25 February 2015 indicated this project is delayed due to the Ebola outbreak:

“Overall, the West Africa Regional Fisheries Project SOP-A1 has been progressing well toward meeting its development objectives, with transformative results. Component 1 "Good Governance and Sustainable Management of the Fisheries" is on track to achieve its end project target with the one year extension. Senegal has a new Fisheries Code with provisions favorable to co-management, which has been approved by the Minister of Fisheries and Maritime Economy. Liberia also has a fisheries and aquaculture policy awaiting for cabinet approval, and the draft new fisheries act has been developed. When the consultants are able to travel again after the Ebola outbreak, this draft will be discussed among the stakeholders. Component 2 "Reduction of Illegal Fishing" has reached results beyond the end-project targets. Component 3 "Increasing the Contribution of the Marine Fish Resources to the Local Economies" has been progressing but the

construction of landing sites is behind schedule as the subcontractors evacuated after the Ebola emergency situation arose.” -WB Implementation Status & Results Report - West Africa Regional Fisheries Program (P106063, P108941)

West Africa Regional Fisheries Program in Ghana

(GEF ID # 4528; 13-Jun-11 to 31-Dec-17)

The Guinea Current LME is characterized by a tropical climate and is bordered by Angola, Benin, Cameroon, Congo, Democratic Republic of the Congo, Côte d'Ivoire, Gabon, Ghana, Equatorial Guinea, Guinea-Bissau, Liberia, Nigeria, São Tomé and Príncipe, Sierra Leone, and Togo. This LME is influenced by both the North Equatorial Countercurrent and the Canary Current. Both currents exhibit seasonal instabilities which result in high seasonal variability of the Guinea Current. The Guinea Current LME is an upwelling system with high biological productivity. However, unlike other upwelling systems, this LME does not exhibit correlations between sea surface temperature and wind patterns that vary by season (Longhurst 1962, Bakun 1978). Twelve major estuaries and river systems feed into this LME including the Cameroon, Lagos Lagoon, Volta, Niger-Benoue, Sanaga, Ogooué, and Congo rivers.

This project is a national project to support the West Africa Regional Fisheries Program in Ghana. The development objective of the First Phase of this project is to support the sustainable management of Ghana's fish and aquatic resources by strengthening the country's capacity to sustainably govern and manage the fisheries. The project also aims to reduce illegal fishing, increase the value and profitability generated by the fish resources and the proportion of that value captured by the country, and develop aquaculture. There are five components of the project to help achieve these goals:

- 1) Establish good governance and sustainable management of the fisheries by building the capacity of government and stakeholders to develop and implement policies through a shared approach. That approach would ensure that fish resources are used in a manner that is environmentally sustainable, socially equitable and economically profitable while building on results from the TDA and SAP.

Reduce illegal fishing activities threatening the sustainable management fish resources by 40%.

Increase the contribution of the fish resources to the national economy by identifying and implementing measures to increase the benefits to Ghana from fish resources through a shared value-added capture in the country.

Set the framework for increased investment in inland aquaculture.

Support project implementation and regional coordination with the project, ensuring that regular monitoring and evaluation is conducted. Monitoring results will be used in decision-making and project management.

Caribbean Sea LME

Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries (REBYC-II LAC)

(GEF ID # 5304; 13-May-13 to 30-Apr-18)

The Caribbean Sea LME is bordered by 38 countries and territories on the continents of North America, Central and South America, as well as the Antilles chain of islands. The North Equatorial Current is a strong influence of the region and enters the Caribbean Sea through the Lesser Antilles channels bringing with it nutrient-poor waters. The Caribbean current continues in a northwestern direction via the Yucatan channel into the Gulf of Mexico. This LME is also heavily influenced by run off from the world's largest rivers, the Amazon and the Orinoco, on the northern end of South America. This LME comprises 7.09% of the world's coral reefs and 1.35% of the world's sea mounts (SAUP 2007).

This project recently completed their revision of the project document. Below is an excerpt from the executive summary:

Tropical and subtropical shrimp/bottom trawl fishing is highly multispecies and the quantity of bycatch amounts up to 10-15 times more than the quantity of the targeted (shrimp) catch (in quantity). This bycatch is composed mainly of juveniles of targeted species of other fisheries and non-targeted species, small-sized fish species and incidentally caught turtles. Furthermore, the shrimp trawling may cause destruction of sensitive seabed habitats which is a concern. In general, shrimp and other key target species in the project countries are overexploited. Because of generally decreasing catches and increasing costs of operation, many fishers find it difficult to maintain the profitability of their operations. The root causes of these problems include the

economic reality of the private fisheries sector and global drivers such as growing demand for fishery products.

While the project cannot easily change the macroeconomic context, it can address the barriers to better management of bycatch and in this way support the sustainable development of the trawling sector and the people who depend on and are influenced by it, including also other fisheries. This includes: (i) ensuring that enabling institutional and regulatory frameworks are in place; (ii) encouraging effective management of bycatch through improved information, participatory approaches and appropriate incentives; and (iii) supporting enhanced and equitable livelihoods.

The project will facilitate regional collaboration by seeking institutional, technological and development solutions that are appropriate at the local level, and which will contribute at the same time to the creation of global environmental benefits in the region. The full involvement of the private fishing sector in the Project is the key to its successful implementation and fishers and fish workers are key stakeholders and partners at the local level where the project will promote co-management of fisheries resources with an ecosystem approach by these stakeholders, strengthening of value chain related to bycatch and non-fish related livelihoods. The project will promote regional collaboration through existing regional fishery bodies (RFBs) such as the Western Central Atlantic Fishery Commission (WECAFC). Bycatch management is a key part in the ecosystem approach to fisheries (EAF). The project will support the implementation of the *International Guidelines on Bycatch Management and Reduction Discards* and the *Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines)*, another recent international instrument with high relevance to the trawl fisheries in the LAC region.

The Global Environment Objective of the project is to reduce the negative ecosystem impact and achieve more sustainable shrimp/bottom trawl fisheries in the Latin American and Caribbean (LAC) region through implementation of an ecosystem approach to fisheries (EAF), including bycatch and habitat impact management. The Development Objective of the project is to strengthen resilience of coastal communities through promotion of responsible fishing practices and livelihoods enhancement and diversification contributing to food security and poverty eradication.

FAO is the GEF agency responsible for supervision, provision of technical guidance and financial execution and operation of the project. The project's executing partners are WECAFC and the national fisheries authorities. The project will be implemented in close

collaboration with other RFBs and project partners including the National Oceanic and Atmospheric Administration (NOAA) and private fisheries sector. The project will also collaborate with other relevant regional initiatives such as the Caribbean Large Marine Ecosystem project (CLME+), in particular with its shrimp and groundfish component. Small and large-scale fishers and relevant stakeholders in both harvesting and post harvesting, processing and marketing, constitute also a key group of partners as they are directly concerned by the project and its goals and achievements. The private sector is expected to take a lead role in project activities, including their participation in gear trials which will play a particular critical role in regards to the adoption and scaling up approaches developed by the project.

East Asian LMEs

CTI Strategies for Fisheries Bycatch Management

Indonesian Sea; South China Sea; Gulf of Thailand; Sulu-Celebes Sea LMEs
(GEF ID # 3619; 20-Apr-09 to 30-Dec-14)

This project will contribute to the more sustainable use of fisheries resources and healthier marine ecosystems in the Coral Triangle and Southeast Asia waters by reducing bycatch, discards and fishing impact by trawl fisheries. It will be executed by the Southeast Asian Fisheries Development Center (SEAFDEC), based in Bangkok, Thailand, and the governments in the participating countries Indonesia, Papua New Guinea, Philippines, Thailand and Viet Nam in partnership with the private sector and relevant national, regional and international organizations. By engaging the private sector (e.g. fish harvesters, vessel owners, and processors) through commitment of resources and private-public partnerships to develop and adopt best practice guidelines, this project aims to address the challenges of bycatch in shrimp trawling activities. Sustainable development in fishing will be promoted to minimize the footprint of fishing activities and reduce the impact on sensitive species. Specific technological practices will be identified and management plans developed in partnership with the private sector at national and regional levels. This project will also create the basis for extending sound practices to transboundary waters and intentional fleet operations. Based on the principles of the FAO Code of Conduct for Responsible Fisheries (1995) and the Ecosystem Approach to Fisheries (EAF), the project will build on the successes of the 2002-2008 FAO/UNEP1/GEF global project "Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of Bycatch Reduction Technologies and Change of Management". It intends to focus on multispecies bottom trawling, where bycatch issues are amongst the most serious, with potentially significant effects

on ecosystems and livelihoods. The project aims to address these challenges by promoting sustainable fishing practices and improved trawl management. The project will implement activities and produce tangible results in project areas in the participating countries at the same time as working at the national and regional levels to improve policy and strategic frameworks and create best practices. The project will also promote the implementation of the “International Guidelines on Bycatch Management and Reduction of Discards”, currently under development by FAO, and its results will inform related global initiatives on responsible fishing. This will contribute to a more sustainable use of existing fishery resources, protection of marine habitats and ecosystems, and more secure livelihoods. The key challenges in this project will be to

- 1) Translate initial demonstrations of technical potential into practical and workable strategies which can be adopted fishery-wide. This would be through co-operation between public agencies and fishing communities, and applied progressively throughout the region
- 2) Development and broad adoption of best practice bycatch management and fishing operation guidelines
- 3) Translation of positive behavioral changes by fishing vessel operators and processors into market opportunities.

Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand

South China Sea and Gulf of Thailand LMEs

(GEF ID # 5401; 13-May-13 to 30-Apr-17)

This project aims to expand the network of fisheries refugia in the South China Sea and Gulf of Thailand LMEs for the improved management of fisheries and critical marine habitats. Based on the draft SAP and NAPs developed under the South China Sea Project, six participating countries have included establishment and management of fisheries refugia in national fisheries policies and plans (Cambodia, Indonesia, Philippines, Thailand, Malaysia and Viet Nam). All countries have expressed the need for further scientific research, cross sectoral coordination, guidelines regarding the process of establishing and managing fisheries refugia, and establishment of mechanisms for regional exchange of information and lessons learned. Key activities described in the project will focus on ensuring adequate cross sectoral consultation between fisheries and environment departments in the designation and management of fisheries refugia. This is particularly important in relation to the designation of MPAs by concerned Ministries in each participating country to ensure that such areas are congruent with

habitat areas of critical significance to fish stocks. The project will also involve the establishment of institutional mechanisms to integrate habitat and marine biodiversity conservation considerations into fisheries management.

The project is composed of three main components:

- 1) the establishment and management of 14 fisheries refugia
- 2) enhancement of the scientific understanding of the linkages between fish stock and habitat and, policy and regulatory frameworks governing the fisheries sector
- 3) information management and dissemination to ensure the uptake of good practices in integrating fisheries management and biodiversity conservation in the design and implementation of regional and national fisheries management systems.

Fishing is a contributing factor to the loss and degradation of seagrass and coral reef habitats. The expected outcomes of this project are the reduction in loss of globally significant habitats and biodiversity in fisheries refugia.

Knowledge Management Projects

Applying Knowledge Management to Scale up Partnership Investments for Sustainable Development of Large Marine Ecosystems of East Asia and their Coasts

East China Sea LME

(GEF ID # 5110; 24-Apr-13 to present)

The objective of the project is to enhance the capacity and performance of investments in sustainable development of LMEs in the East Asian Seas region through knowledge and experience sharing, portfolio learning, and networking. This project was CEO Approved but there are no supporting documents online yet.

Strengthening Global Governance of Large Marine Ecosystems and their Coasts through Enhanced Sharing and Application of LME/ICM/MPA Knowledge and Information Tools (LME:LEARN)

Global

(GEF # 5278; 10-Mar-13 to 29-Apr-16)

This project is a Global Governance endeavor for learning and generating knowledge among LME projects and practitioners and related coastal and marine initiatives (LME/ICM-Governance). The LME/ICM-governance project will establish a dynamic global support network for the GEF LME and ICM projects for practitioners needed to increase the capacity of nation States to realize adaptive ecosystem-based management and governance and to deliver on the requirements of GEF-5. Components include:

- 1) The establishment of a coordination unit or Secretariat with the scientific and technical capacity to interact with UN and non-UN entities at global and regional scales, to coordinate the network and learning partners and to provide oversight in the delivery of coherent development assistance to nation States. Key knowledge needs will be identified, relevant information synthesized, user-friendly materials developed and shared through interactive discussions with policy-makers. In order to provide strategic guidance, a Technical and Policy-level LME Governance Steering Committee will be established to oversee the project. The Intergovernmental Oceanographic Commission of UNESCO has a core mandate in science in all of the world's oceans. It serves as liaison within the UN system between the marine scientific community and the governments of its 142 Member States. Since the early nineties, together with NOAA and IUCN, IOC has promoted the LME approach from a conceptual and scientific point of view as well as on the ground by contributing to the formulation of GEF-LME projects in various regions. The LME approach provides tools for enabling ecosystem-based management and a collaborative approach to management of marine resources within ecologically-bounded transnational areas. There are a number of IOC programmes that contribute scientific and technical inputs to the LME programme and more specifically that could be aligned with the objectives of the LME/ICM Governance project. This would in the long-term strengthen the sustainability of the project by integrating the project inputs within a durable, recognized, programmatic and institutional framework. IOC is also leading the Open Ocean and LME components of the GEF Transboundary Waters Assessment Programme project in cooperation with the other GEF agencies.
- 2) Through the Secretariat, the project will generate harmonized knowledge products drawing on existing science for inclusion in a new LME/ICM toolkit, by harvesting and codifying experiences and best practices from the existing GEF LME/ICM projects, project stakeholders and learning partners including ICES and other non-GEF marine and coastal initiatives (e.g. Seascapes), to include tools to address climate variability and change, MPAs and ICM.

- 3) Regional and global partnership learning opportunities will be created through project twinning, and personnel exchanges, training development workshops to encourage South-to-South, South-to-North and North-to-South learning. The outputs will include a comprehensive set of training and educational course materials based upon the experience of GEF LME/ICM portfolio, ICES working groups and learning partners and harmonized for delivery within the LME regions. The education and training strategy, developed during the PPG, will be implemented using these materials to train new practitioners.
- 4) Clear guidance and criterion for what defines an LME/ICM practitioner will be developed during the PPG. The LME/ICM-Governance Project will harness the network of partners to enhance LME/ICM/MPA portfolio presence and visualization and to communicate to stakeholders and create a significant global impact on international marine policy.

GEF International Waters Learning Exchange and Resources Network (IW:LEARN)

(GEF # 5729; Mar-2014 to Mar-2018)

To strengthen knowledge management capacity and promote scaled-up learning of disseminated experiences, tools and methodologies for transboundary waters management across and beyond the GEF IW portfolio, together with a global network of partners in order to improve the effectiveness of GEF IW and partner projects to deliver tangible results and scaled-up investments. This project has five components:

- 1) Support the harvesting ,standardization, dissemination and replication of portfolio & partner results, data, and experience
- 2) Share knowledge across projects and partners (through dialogue processes and face-to-face capacity building) to advance transboundary water management
- 3) Expand global freshwater communities of practice to advance conjunctive management of surface, ground & marine waters and partner with new enterprises on initiatives to better manage international waters
- 4) Promote GEF IW portfolio results, tools & best practice to the non-GEF community to increase awareness, replication, scalability, and sustainability of GEF IW investments

- 5) Launch programmatic tools to improve portfolio performance and sustain project interventions

Coordination of the Global Sustainable Fisheries Management and Biodiversity Conservation in the Areas Beyond National Jurisdiction ABNJ Program

(GEF # 5827; Council Approval 5-Jun-2014)

This project seeks to ensure coordination across a broad spectrum of activities related to formulation, co-financing and implementation, reporting, monitoring and evaluation of the "Global sustainable fisheries management and biodiversity conservation in the Areas Beyond National Jurisdiction (ABNJ) Program". It was council approved but there are no further documents online yet.

Habitat Conservation and Marine Spatial Planning Projects

LME-EA Coral Triangle Initiative Project (COREMAPIII-CTI)

Sulu-Celebes Sea LME; Indonesian Sea LME

(GEF ID # 5622; started 23-Dec-13)

To manage coral reef resources, associated ecosystems and biodiversity in a sustainable manner for the welfare of coastal communities. This project was CEO endorsed but there are no supporting documents online yet.

Albania-Improving Coverage and Management Effectiveness of Marine and Coastal Protected Areas

Mediterranean

(GEF ID # 3997; 24-Sep-09 to 29-Apr-16)

Albania supports a wide spectrum of flora and fauna, many of which are endemic or sub-endemic. The relatively high ecosystem diversity in the region is due to its geographical location between the Adriatic and Ionian seas where the Otranto Channel remains a strategic migratory route for many avian and marine species. Many of the rare species of the coastal areas are threatened by human population increase and migration leading to exploitation of natural resources through unsustainable agriculture and industrial activities. Much of the sand and gravel from dunes and the coastal area have been extracted for construction materials and along with large-scale erosion

events, has led to significant degradation of coastal habitats. Overfishing and poaching has reduced stocks of marine and avian life, while industrial effluents have clouded the waters, particularly in the hotspot areas near factories. Currently the Ministry of Environment, Forestry and Water Administration through UNDP is implementing a project that incorporates recommendations from Albania's participation in the Program of Work on Protected Areas (PoWPA). The recommendations include undertaking a comprehensive ecological gap assessment for the protected area system and fostering a constructive policy environment which will help preserve these marine protected areas. The PoWPA project is limited in time, funding, and scope and is hindered by poor bio-geographical representation (with only several coastal and no marine protected areas selected) and a weak institutional framework for policy enforcement. This project intends to expand on the PoWPA project and overcome barriers. The project seeks to improve bio-geographical representation of marine protected areas by creating a strategic plan for expansion, policy creation, enforcement, and improved management arrangements. The project seeks to clarify institutional settings and capacity building through the creation of a Cross-Sectoral Forum for marine and coastal protected area governance. The Forum will serve as the mechanism of streamlining interactions, roles, and responsibilities of all its stakeholders.

Mainstreaming the Application of Marine Spatial Planning Strategies, Biodiversity Conservation and Sustainable Use

Gulf of Thailand and South China Sea LMEs

(GEF ID # 4659; 1-Feb-13 to 31-Jan-18)

The objective of the project is to improve the management of coastal resources in support of sustainable fisheries in selected coastal provinces of Vietnam. By including 7 provinces (Nghe An, Thanh Hoa, Binh Dinh, Phu Yen, Khanh Hoa, Soc Trang, and Ca Mau) that are major players in Vietnam's capture fisheries and aquaculture sub-sectors, the project will contribute to the goals of supporting coastal livelihoods as well as the viability and competitiveness of the fisheries sector at the national level. The project looks to contributing to longer term national sustainable socio-economic development goals. The baseline project's objectives will be met through four interrelated components: (i) the first component will be aimed at institutional capacity strengthening for sustainable resources management in support of fisheries. This component is intended to contribute to the further translation of national policies into effective implementation and transformative changes, and to improved resource and sector wide planning. The main activities will be mapping and economic analytical work, applying integrating spatial planning and resource mapping to fisheries planning and

protected area establishment, the development and implementation of selected policies and plans, and database development for environmental and natural resources management. By providing the necessary planning and mapping tools for comprehensive assessment and protection, these activities will provide the initial key phase of a long-term sustainable investment project; (ii) the second component will promote sustainable aquaculture practices through upgrading and scaling up of good practices, related infrastructure, and management of risks and diseases; (iii) the third component will promote sustainable near-shore capture fisheries by strengthening enforcement and monitoring capacity, promoting community right-based management and key sites, addressing pollution, facilitating alternative livelihoods outside capture fisheries, and developing infrastructure to reduce vulnerability to natural disasters; (iv) the fourth component will be project management activities to support implementation of the activities described above.

Pollution Sector Projects

The GEF currently has 7 projects that are focused on pollution in 3 LMEs: East China Sea, Mediterranean Sea, and the Somali coastal current and other LMEs in the Indian Ocean region. The GEF has also funded one Global project to assess the global nitrogen cycle.

LME-EA Scaling Up Partnership Investments for Sustainable Development of the Large Marine Ecosystems of East Asia and their Coasts

(GEF ID # 4635; 8-Nov-11 to 29-Nov-17)

The goal of the program is to promote sustainable development of large marine ecosystems of the East Asia and Pacific Region and improve livelihoods of local populations by reducing pollution of and promoting sustainable marine fisheries, ICM and ecosystem based management. Pollution reduction and sustainable management of marine and coastal resources will be measured by the expected 13 outcomes of:

- 1) nutrients and pollution to East Asia seas reduced
- 2) informed decision-making and improved public awareness of non-point pollution issues
- 3) increase in sustainably managed seascapes that integrate biodiversity conservation (area protected under management mechanisms such as integrated coastal management, marine spatial planning, marine protected areas)

- 4) national and local development plans that integrate biodiversity conservation, climate resilience, integrated coastal management and ecosystem-based management (number of national, local, and/or sector policies incorporating management mechanisms)
- 5) recovered (or increased) fish stocks
- 6) improved use of fish gear/techniques (% vessels applying improved gear/techniques)
- 7) improved awareness of all stakeholders for sustainable marine and coastal resources management
- 8) alternative livelihoods introduced (number of people provided alternative livelihoods)
- 9) new projects to incorporate new knowledge and innovation in capturing value of coral reef and mangrove ecosystem services
- 10) enhanced capacity and performance
- 11) improved cost-benefit analysis for development actions, and national wealth accounting
- 12) stakeholders' ownership of program/project activities increased
- 13) synergy of taking program approach reported.

Huai River Basin Marine Pollution Reduction

Yellow Sea LME

(GEF ID #4092; 1-Jan-12 to 31-Dec-15)

The objective of the project is to demonstrate innovative and cost-effective pollution reduction practices in Dongying City in order to reduce discharge of land-based nutrients and pollution loads to the Bohai Sea. Dongying City is located in the southwestern bank of the Bohai Sea and established on one of China's major oil fields. Dongying has been the central city of the Yellow River delta with an area of 7,923 km², a coastline of over 350 kilometers, and a population of about 1.8 million. Major pollution in Dongying is derived from urban and rural areas and point and non-point sources such as industries, household wastes, livestock wastes, chemical fertilizers and farm pesticides. Shandong Province, with the longest coastlines along the Bohai Sea and the Yellow Sea within the Huai River Basin, is contributing more nutrients and pollutants to these seas than any of the three other provinces within the basin. There are 5 components of the project:

- 1) Wetland construction, which will include

- a) Construction of a wetland as a secondary treatment of the existing Shaying Waste Water Plant
 - b) Construction of a wetland in Dongbalu as a reinforced tertiary treatment for nutrient and pollution reduction
 - c) Construction of a Huai River Basin environmental education and training center located in the Guangli River Watershed.
- 2) Innovative nutrient and pollution control practice demonstration, which will support
 - a) Optimization of operations of five key water gates in the Guangli River Watershed including support to three key existing water gates and construction of two water gates at the intake and discharge points of the new Dongbalu wetland
 - b) Establishment of Farmer Environmental Protection Associates in 11 townships with rural residents and agricultural activities within Guangli River Watershed as a vehicle to reduce rural pollution from household wastes, livestock wastes, wastes from chemical fertilizers and pesticides
 - c) Support construction of the Xichengnan waste wastewater treatment plant as part of the urban point-source pollution treatment network.
- 3) Project development, which supports
 - a) Preparation of an action plan for integrated water system management and pollution control in Guangli River Watershed
 - b) Development of a Huai River Basin-wide replication strategy for comprehensive pollution control
- 4) Project monitoring and capacity building, which supports
 - a) Establishment of a monitoring and evaluation system for implementation of project activities
 - b) Capacity building and institutional development for key implementing agencies involved in project implementation and for project beneficiaries
 - c) Workshops for replication strategy development
 - d) Close collaboration with PEMSEA, who is responsible for the regional component of the strategic partnership project management. This supports project management of government agencies involved in project implementation at Dongying City, Shandong Province and Huai River Basin Commission.

Indian Ocean; Somali Coastal Current LME; Agulhas Current LME

The Agulhas and Somali Coastal current LMEs project developers are working together after their TDAs of 2009 and 2012 identified connected ecosystems with similar environmental challenges. In 2013 the SAPs joined under the Western Indian Ocean Strategic Action Programme Policy Harmonisation and Institutional Reforms Project (WIO-SAPPHIRE). Countries bordering these two LMEs are jointly receiving GEF funds, through UNEP and UNDP, to address the implementation of SAPs in both LMEs concerning land-based pollution and ocean-based activities that impacts the western Indian Ocean.

Implementation of the Strategic Action Programme for the Protection of the Western Indian Ocean from Land-based Sources and Activities

Indian Ocean; Somali Coastal Current LME; Agulhas Current LME
(GEF ID # 4940; 10-Mar-13 to 29-Apr-17)

The outputs and outcomes of the project will contribute substantially in realizing the Western Indian Ocean (WIO) SAP's 29 targets under its four environmental quality objectives: 1) critical coastal habitats protected, restored and managed for sustainable use; 2) water quality meets international standards by the year 2035, 3) river flows are wisely and sustainably managed; and 4) stakeholders will collaborate effectively in addressing transboundary challenges. The project consists of four components:

- 1) Sustainable management of critical habitats which involves the development of tools and methodologies to support hotspot areas identified in the TDA including economic valuation, guidelines for spatial planning and vulnerability assessment, livelihood strategies on extractive use activities, GIS and a regionally agreed monitoring framework with indicators. The development and implementation of these tools and methodologies will provide an important foundation for transboundary collaboration and harmonized management within the region.
- 2) Improved water quality through the development of a harmonized regulatory framework for monitoring pollutant loads, effluents and water quality standards of receiving coastal waters for the WIO region and the consultation processes for this framework. The GEF increment, along with national and other co-finance, will support demonstrations of appropriate, cost-effective technologies (such as algal ponds, constructed wetlands) for wastewater management and effluent treatment as well as human and regulatory capacity building for monitoring, replication and up scaling of these demonstrations. A number of demonstration sites are currently under consideration amongst the sites listed in the SAP. These will be prioritized

according to their contributions to stress reduction, their replicability, and their potential linkages, in a ridge to reef approach.

- 3) Sustainable management of river flows will involve flow assessment demonstrations in two key basins where there are links between river flows and coastal resources. Key criteria in considering candidate basins for flow assessments include: direct linkages between river flows and coastal ecosystem goods and services, the contributions that these riverine and coastal ecosystem goods and services make to local livelihoods and national economies, ability of the site to connect to and complement demonstrations on coastal habitat management and water quality, extent of degradation and pressure on resources, national priorities and ready partners, among others. A number of these candidate basins present a myriad of competing water demands, such as: nationally important hydropower generation, irrigation and/or municipal water supply, coupled with the sustainability of: local farming and fishing livelihoods; regionally important fisheries; MPAs, Ramsar sites and internationally Important Bird Areas; and tsunami protection. Flow assessments will develop and explore scenarios depicting the environmental, economic and social trade-offs amongst these competing water demands. These assessments and scenarios will be subject to participatory stakeholder consultations. The information arising from the assessments and the consultation processes will assist resource managers in understanding the environmental, economic, and social implications and trade-offs of their water investments. The information will also serve as a basis for negotiating an equitable trade-off between development and protection of river and coastal resources.
- 4) ICM and IRBM governance, learning and exchange is needed to address inadequacies in governance frameworks since they result in negative impacts on the people and the economies of countries. Key governance issues identified in the TDA include: poor coordination, lack of awareness amongst policy makers, inappropriate and weak legislation and a lack of adequate institutional frameworks and capacities for managing development pressures. The WIO-SAP implementation project will address these challenges through model laws, policy briefs, implementation guides and training for legal practitioners. WIO SAP implementation involves numerous partners working across a large geographic area and efforts will be made to ensure satisfactory programme coordination, regular steering committee meetings and quality technical assistance to the project. The project will participate in relevant regional and international fora for learning and exchange including IW:Learn events.

Mediterranean Sea

The Mediterranean sea LME is a semi-enclosed sea with seasonal timing and local areas of upwelling, wind-driven currents, and high water temperatures. This LME experiences extended periods of calm seas and freshwater inflows which results in a stratification of temperature with warmer and less saline water at the surface. Nutrient-poor and oxygenated waters enter this LME from the Atlantic Ocean through the Strait of Gibraltar, which results in oxygen rich bottom waters. As a result, autumnal algal blooms and extended periods of hypoxia and anoxia occur in this LME. This LME is also characterized by a temperate climate with an unusually high amount of biodiversity (Garibaldi and Limongelli 2003). In 1999, and then updated in 2004, (GEF project # 2601 and 3229) the MEDLME has a working TDA and two SAPs. The first SAP (SAP-MED) is to address pollution from land-based activities. The second SAP (SAP-BIO) is focused on the conservation of biodiversity in the Mediterranean Sea LME and aims to establish a logical base to implement the 1995 SPA Protocol. The following projects are a result of the 2008 GEF approved (#2600) project “Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem – Regional Component: Implementation of agreed actions for the protection of the environmental resources of the Mediterranean Sea and its coastal areas”. These projects are regional capacity building efforts to implement the 2004 SAPs.

Alexandria Coastal Zone Management Project

(GEF ID # 2602; 13-Jun-07 to 31-Jan-15)

The proposed project is consistent with and will contribute to the implementation of the SAP for the Mediterranean Sea LME in Egypt. The pollution discharge from land-based sources in the hot spot areas of Alexandria and El-Mex Bay, Egypt, will be addressed through targeted investments for pollution reduction, new financing mechanisms for local coastal management bodies, and technology transfers. Experiences from the demonstration project in Alexandria will be extrapolated to the national level to mainstream pollution reduction strategies. Integrated coastal zone management will be applied to sectoral and national planning in other similarly degraded lagoon systems in Egypt. The project is blended with the Egypt Pollution Abatement Project 2, which will address industrial pollution in the Alexandria area. Together, this project and Egypt Pollution Abatement Project 2 will promote environmental integration with the Lake Mariout component of the City Development Strategy. The project is also closely linked to the potential World Bank Water Supply and Sanitation Project which has received approval from the Ministry of Housing to address the sewage problems in Alexandria with the new holding company. The project’s development objectives are: a) to reduce

the load of land-based sources of pollution (industrial and domestic) entering the Mediterranean Sea in the hot spots of El-Mex Bay and Alexandria; and b) to protect/restore globally significant coastal heritage and ecosystem processes by supporting the Government of Egypt's efforts to develop and implement a National Coastal Zone Management Plan. The project's global environment objectives are to implement the SAP with targets set for discharge of municipal and industrial wastewater.

MED Enhanced Water Resources Management

(GEF ID # 3991; 31-Aug-12 to 29-Jun-15)

This project proposes specific in-country investments, technical assistance, and knowledge generation that will be carried out under the umbrella of the proposed Mediterranean Environmental Sustainable Development Program (SUSTAINABLE MED). SUSTAINABLE MED represents a continuation and further expansion of the Investment Fund of the GEF/IWs Mediterranean Sea Large Marine Ecosystem Strategic Partnership. Key objectives of the Investment Fund regarding pollution reduction and biodiversity conservation will be maintained. In addition, SUSTAINABLE MED will deepen the work on governance, capacity building, and technical assistance. This project will assist the Government of Egypt in achieving more sustainable water resource management of both surface and groundwater. Specifically, the project will:

- 1) Invest in innovative cost-effective technologies to improve water quality and reduce losses through reuse of drainage water and treated wastewater, and strengthen monitoring capacity of surface water and groundwater aquifers, some of which are international water bodies
- 2) Develop strategies and action plans and / or improve governance mechanisms for sustainable management of surface and renewable and non-renewable groundwater resources
- 3) Influence existing projects/policies and carry out specific pilot projects. These pilot projects include integrated irrigation improvements and sewage treatment projects. These pilots will be supported through national programs aimed at improving water quality in drains and water use efficiency through use of best available practices and technology, reuse of drainage water and treated wastewater in the Lake Nasser region.

The project also looks to develop action plans, improved governance mechanisms and management structures of renewable and non-renewable groundwater and surface water. These latter activities will achieve the sustainable use of water resources. The

project will contribute to achieving the objectives of accelerating transboundary pollution reduction and biodiversity conservation measures in priority hotspots and sensitive areas. The work will optimize the water supply through reduction of losses and managing the demand for water. This will lead to a reduction of overexploitation of water resources, improvements in water quality, and reduction of pollution loads that reach the Mediterranean Sea and coastal regions.

Integrated Coastal Zone Management-Mediterranean Coast

(GEF ID # 4198; 15-Mar-10 to 29-Mar-16)

The proposed project will strengthen the capacity for and support the Government of Morocco in pilot implementation of integrated coastal zone management in Lake Nador, river-mouth Moulouya, and other selected sites. The focus of the project is on strengthening the institutional coordination, policy, planning, knowledge management and implementation capacities, and supporting critical and pilot investments addressing the priorities of the SAPs. The project will seek to address critical issues related to sustainable fisheries, improved management and conservation of coastal zone ecosystems including marine and inland biodiversity, pollution reduction, and eco-tourism promotion in the Lake Nador area, and Moulouya. The project will also help local coastal communities strengthen their vulnerability to climate variability through knowledge management and natural resources conservation. This is consistent with the priorities of the SAP-MED which has identified hotspots in the environmental plan and identifies these actions as key to ensuring the viability of ecosystems and biodiversity.

Adriatic Sea Environmental Pollution Control Project (I)

(GEF ID # 5269; 13-May-13 to 30-Apr-16)

The project's region is characterized by two major causes of transboundary pollution in the project area: (a) nutrient discharges from municipal sewage point-sources and agriculture non-point sources along the coast and the main rivers in the Adriatic basin; and (b) solid waste and the associated discharge of leachates from unsanitary waste dumping in cities and towns at the coast and/or transported via rivers and karsts in the wider catchment areas discharging into the sea. These issues are aggravated by tourism which increases the coastal population significantly during the summer months. Tourism activities place unique technical and financial challenges to solid waste disposal management. Much remains to be done to address the growing needs of urban areas and to restore the ecosystems of the project area, particularly on water treatment

facilities in coastal towns and in solid waste management. This project has two main components:

- 1) Demonstrative investments to reduce nutrient discharges and improve water quality monitoring capacity (e.g. construction of treatment plant, rehabilitation of landfill site)
- 2) Technical assistance to finance consultant services for an assessment of nutrient discharges, and accelerate SAP and NAP implementation.

Targeted Research for Improving Understanding of the Global Nitrogen Cycle towards the establishment of an International Nutrient Management System INMS
(GEF # 5400; 14-Jan-14 to 14-Jan-18)

This project addresses a critical global problem of excess reactive nitrogen in the aquatic environment that has been long recognized by the GEF. This project is designed to better understand the global cycle of reactive nitrogen and represents the first collaborative activity to deliver an International Nitrogen Management System (INMS) that will combine multiple sets of information from different sectors and integrate reactive nitrogen across the environmental compartments. The project responds to recommendations made by the STAP (Hypoxia and Nutrient Reduction in the Coastal Zone, 2011) and reflects the concerns raised at the June 2013 GEF Council by Prof. Rockstrom in his presentations on Planetary Boundaries. Recent publications (November 2013) by UNEP9 highlighting impacts of differing agricultural approaches (specifically tilling) to the releases of N₂O from fertilizers and manures, and by WMO10 on the contribution of reactive nitrogen on climate change emphasize the current interest and importance of the global nitrogen debate. Through this proposed project, the GEF is in a good position to both develop a better understanding of the regional and global nitrogen cycles and to assist in implementing a management system that would, through the GPA for example, work to combat the negative impacts of reactive nitrogen.

Socioeconomic Projects

Global Sustainable Supply Chains for Marine Commodities

Central America, South America, South-Eastern Asia
(GEF # 5271; 10-Mar-13 to 29-Apr-18)

The project looks to catalyze multi-state cooperation to rebuild marine fisheries and better manage fisheries in LMEs while considering climatic variability and change. It will implement innovative solutions to rebuild and protect fish stocks by harnessing the incentives from international trade. The project will engage fisheries that cannot currently earn sustainability certification, and help them improve so they can enter a credible certification and labeling program. Fishery Improvement Projects enable this process, and are applied in situations where the involvement of the supply chain can generate progress in fisheries management where existing processes are inadequate or have failed. The project will support efforts of partner countries toward sustainable fisheries as follows:

- 1) In Ecuador, it will contribute to the implementation of national development policies related to supporting artisanal fishermen by providing technical support, product development, and conserving fisheries reserves. It will also help towards obtaining sustainable certification of its mahi mahi fishery
- 2) In Costa Rica, it will help to implement the national development policy on establishing responsible fisheries marine areas. It will support the Inter-institutional Commission for the governance of the seas in its efforts to improve governance of marine resources. It will strengthen the regulatory framework for marine commodity supply chains in the country
- 3) In Indonesia, the project will strengthen the institutional and human resource capacity, promote sustainable fishery management, improve productivity and competitiveness, and expand access to both domestic and foreign markets
- 4) In the Philippines, the project will support national development policies aimed at developing markets and sharpen regulatory competence by providing effective market assistance, marketing support and information systems, product development, market intelligence, and encouraging product promotion activities in domestic and international markets. It will also help the Bureau of Fisheries and Aquatic Resources with its recently adopted blue swimming crab National Management Plan which will be the framework of all management efforts for the species.

Fishery Management and Sustainable Coastal Environment Development Project

Somali Coastal Current LME

(GEF ID # 3313; CEO Approved 27-May-10)

This is a multi-sectoral development project being implemented by government institutions based on the Kenyan coast. The project looks to strengthen existing and build new human capacity to enhance the capabilities of partner institutions, staff and the community to address short and long term priorities. The capacity building strategy acknowledges the existing capacity and strengths of government agencies and communities. However, to ensure high quality performance of the project, gaps and specific training needs will be identified. Targeted training that will enhance effective implementation of the project will be subsequently organized. The project is structured into four components which include:

- 1) sustainable management of fisheries resources
- 2) sound management of natural resources
- 3) support for alternative livelihoods
- 4) capacity building, monitoring & evaluation system, project management, communication and development fund for the coast.

This project was CEO approved in 2010 but there have been no other project documents since then.

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Tables and Figures

Table 1. Catalytic Ocean Finance Summary for the Danube Basin and Black Sea LME project

Catalytic Ocean Finance Summary for the Danube Basin and Black Sea LME project—Amount (US \$)	
Total GEF Grant Financing	\$51.89 million
Total Programme Co-financing	\$91.988 million
Catalysed Public and Private Sector Financing	\$2.983 billion
Catalytic Finance Ratio (Total Catalysed Finance: UNDP-GEF Finance)	57:1

Table 2. Catalytic Ocean Finance Summary for YSLME

Catalytic Ocean Finance Summary for Yellow Sea LME —Amount (US \$)	
Total GEF Grant Financing	\$14,744 million
Total Programme Co-financing	\$10.302 million
Catalysed Public and Private Sector Financing	\$10.863 billion
Catalytic Finance Ratio (Total Catalysed Finance: UNDP-GEF Finance)	737:1

Table 3. GEF 6th Replenishment Funds for Advancing EBM practice in LMEs: 2014-2018

GEF ID #	LME	PROJECT TITLE	IMPLEMEN -TING AGENCY	EXECUTING AGENCY	OTHER AGENCY ID#	COUNTRY / COUNTRIES	GEF FOCAL AREA	START - END DATE	Council approval Date	GEF AMOUNT (in USD \$ Millions)	TOTAL PROJECT COST (in USD \$ Millions)	SECTOR TYPE
5753	Benguela Current	Realizing the Inclusive and Sustainable Development in the BCLME Region through the Improved Ocean Governance and the Integrated Management of Ocean Use and Marine Resources	UNDP	Benguela Current Commission	N/A	Angola, Namibia, South Africa	IW	3/1/2014 - 3/1/2019	27-May-14	10.9	174.34	Ecosystem-based
5765	Caribbean Sea	Integrated Transboundary Ridges-to-Reef Management of the Mesoamerican Reef	WWF-US	Central American Commission on Environment and Development	G0003	Belize, Guatemala, Honduras, Mexico	IW	5/1/2014 - 11/1/2016	27-May-14	9.02	78.63	Ecosystem-based
5768	Indonesian Sea	Enabling Transboundary Cooperation for Sustainable Management of the Indonesian Seas	FAO	Ministry of Marine Affairs and Fisheries of Indonesia; Ministry of Agriculture and Fisheries of Timor Leste	628979	Indonesia, Timor-Leste	IW	4/1/2014 - 4/1/2016	27-May-14	9.17	78.63	Ecosystem-based

GEF ID #	LME	PROJECT TITLE	IMPLEMEN -TING AGENCY	EXECUTING AGENCY	OTHER AGENCY ID#	COUNTRY / COUNTRIES	GEF FOCAL AREA	START - END DATE	Council approval Date	GEF AMOUNT (in USD \$ Millions)	TOTAL PROJECT COST (in USD \$ Millions)	SECTOR TYPE
5542	Caribbean Sea; North Brazil Shelf	Catalyzing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems	UNDP	United Nations Office for Project Services	N/A	Antigua and Barbuda; Barbados; Belize; Brazil; Colombia; Costa Rica; Dominica; Dominican Republic; Guatemala; Grenada; Guyana; Haiti; Honduras; Jamaica; Mexico; Panama; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Suriname; Trinidad and Tobago	IW	9/23/2013 - 9/30/2018	7-Nov-13	12.8	123.65	Ecosystem-based
5513	Agulhas and Somali Current System	Western Indian Ocean LMEs Strategic Action Programme Policy Harmonization and Institutional Reforms SAPPHIRE Project	UNDP	Government	N/A	Comoros; Kenya; Madagascar; Mauritius; Mozambique ; Seychelles; Somalia; South Africa; Tanzania	IW	9/23/2013 - 9/30/2018	7-Nov-13	11.27	80.07	Ecosystem-based
5538	South China Sea	Implementing the Strategic Action Programme for the South China Sea	UNEP	Secretariat for the Coordinating Body of the Seas of East Asia	UNEP 00830	Cambodia, China, Indonesia, Philippines, and Viet Nam	IW	3/24/2014 - 3/1/2019	27-May-14	15	56.06	Ecosystem-based

GEF ID #	LME	PROJECT TITLE	IMPLEMEN- TING AGENCY	EXECUTING AGENCY	OTHER AGENCY ID#	COUNTRY / COUNTRIES	GEF FOCAL AREA	START - END DATE	Council approval Date	GEF AMOUNT (in USD \$ Millions)	TOTAL PROJECT COST (in USD \$ Millions)	SECTOR TYPE
4658	West Bering Sea	Integrated Adaptive Management of the West Bering Sea Large Marine Ecosystem in a Changing Climate	UNDP	United Nations Office for Project Services	N/A	Russian Federation	IW	11/9/2011 - 11/9/2015	10-Nov-11	3.21	13.01	Ecosystem-based
6920	Regional: Asia and the Pacific	Implementation of the Arafura and Timor Seas Regional and National Strategic Action Programs	UNDP	Ministry of Marine Affairs and Fisheries (Indonesia); Ministry of Agriculture and Fisheries (Timor Leste)	FP	Indonesia, Timor Leste	Multi Focal Area	10/30/2014 - 10/30/2019	30-Oct-14	9.75	101.55	Ecosystem-based
4343	Yellow Sea	EAS Implementation of the Yellow Sea LME Strategic Action Programme for Adaptive Ecosystem-Based Management	UNDP	UNOPS	N/A	China; Korea Republic of	IW	2/27/2013 - N/A	12-Apr-13	7.56	233.44	Ecosystem-based
6952	Gulf of Mexico	Implementation of the Strategic Action Program of the Gulf of Mexico Large Marine Ecosystem	UNIDO	UNIDO	FP	Mexico	IW	10/30/2014 - 10/30/2019	30-Oct-14	12.90	124.00	Ecosystem-based

GEF ID #	LME	PROJECT TITLE	IMPLEMEN -TING AGENCY	EXECUTING AGENCY	OTHER AGENCY ID#	COUNTRY / COUNTRIES	GEF FOCAL AREA	START - END DATE	Council approval Date	GEF AMOUNT (in USD \$ Millions)	TOTAL PROJECT COST (in USD \$ Millions)	SECTOR TYPE
5561	Yellow Sea	GEF Mainstreaming Integrated Water and Environment Management Project	WB	Ministry of Environmental Protection; Ministry of Water Resources; Supported by Ministry of Agriculture; State Oceanic Administration	N/A	China	IW	8/8/2013 - 2/8/2016	27-May-14	17	170	Ecosystem-based
Total for Ecosystem-based Projects (USD Millions)										118.58	1,233.38	
9060	Global	Coastal Fisheries Initiative (PROGRAM)	FAO	CI UNDP, UNEP, WB, WWF	635626	Global	Multi Focal Area	TBD-60 months	4-Jun-15	33.7	235	Fisheries
4487	Agulhas Current; Benguela Current; Canary Current; Guinea Current; Somali Coastal Current	LME-AF Strategic Partnership for Sustainable Fisheries Management in the Large Marine Ecosystems in Africa	WB	African Union - Union Africaine; World Wildlife Fund; Food and Agricultural Organization	IBRD 125797	Mauritania; Tanzania United Republic of; Mozambique ; Comoros	IW	11/8/2011 - 9/29/2016	9-Nov-11	25	44	Fisheries

GEF ID #	LME	PROJECT TITLE	IMPLEMEN -TING AGENCY	EXECUTING AGENCY	OTHER AGENCY ID#	COUNTRY / COUNTRIES	GEF FOCAL AREA	START - END DATE	Council approval Date	GEF AMOUNT (in USD \$ Millions)	TOTAL PROJECT COST (in USD \$ Millions)	SECTOR TYPE
3558	Canary Current, Guinea Current	West Africa Regional Fisheries Program	WB	CSRP, Ministry of Fisheries & Maritime Economy (Mauritania), Ministry of Maritime Economy (Senegal); Dep. of Fisheries, Ministry of Fisheries & Maritime Economy (Guinea-Bissau), Ministry of Fisheries & Aquaculture (Guinea), Ministry of Marine Resources	IBRD 108941	Cape Verde, Liberia, Senegal, Sierra Leone	IW	4/23/2008 - 11/23/2014	24-Apr-08	10	56	Fisheries
5304	Caribbean Sea	Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries (REBYC-II LAC).	FAO	Autoridad Nacional de Acuicultura y Pesca, Colombia Instituto de Investigaciones Marinas y Costeras, Secretaria de Agricultura, Ganaderia, Desarrollo Rural, Pesca u Alimentacion	N/A	Brazil, Colombia, Costa Rica, Mexico, Suriname, Trinidad and Tobago	IW	5/13/2013 - 4/30/2018	20-Jun-13	6	23.06	Fisheries

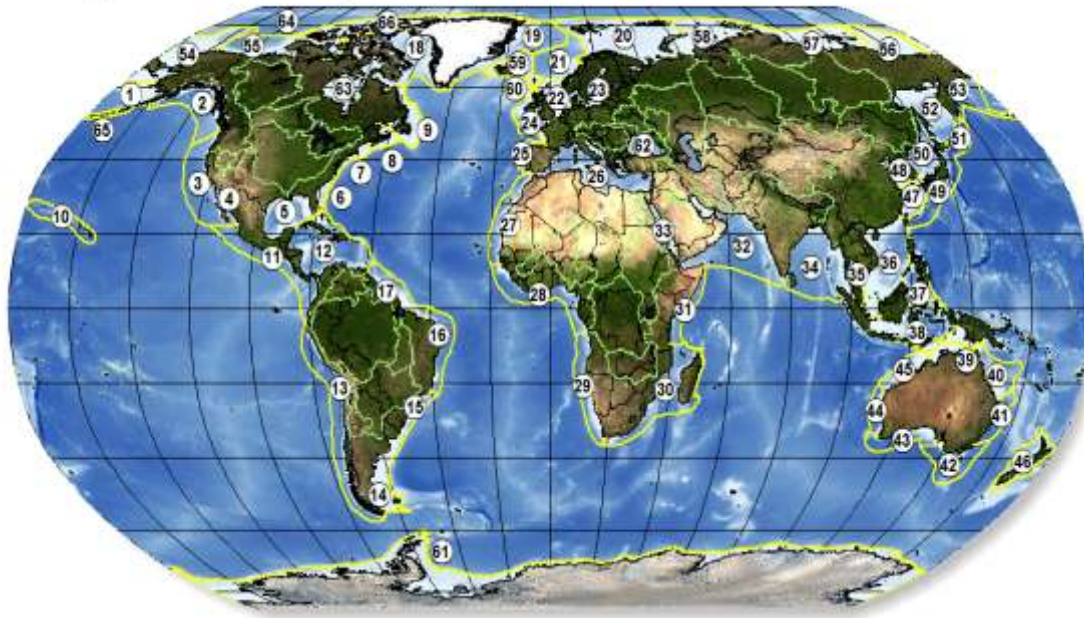
GEF ID #	LME	PROJECT TITLE	IMPLEMEN- TING AGENCY	EXECUTING AGENCY	OTHER AGENCY ID#	COUNTRY / COUNTRIES	GEF FOCAL AREA	START - END DATE	Council approval Date	GEF AMOUNT (in USD \$ Millions)	TOTAL PROJECT COST (in USD \$ Millions)	SECTOR TYPE
3619	Indonesian Sea; South China Sea; Gulf of Thailand; Sulu-Celebes Sea	CTI Strategies for Fisheries Bycatch Management	FAO	Southeast Asian Fisheries Development Centre	FAO 611342	Indonesia; Papua New Guinea; Philippines; Thailand; Viet Nam	IW	4/20/2009 - 12/30/2014	21-Apr-09	3.2	9.9	Fisheries
5401	South China Sea; Gulf of Thailand	Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand	UNEP	Southeast Asian Fisheries Development Centre	N/A	Cambodia; Indonesia; Malaysia; Philippines; Thailand; Viet Nam	IW	5/13/2013 - 4/30/2017	20-Jun-13	3.1	15.1	Fisheries
5110	East China Sea	Applying Knowledge Management to Scale up Partnership Investments for Sustainable Development of Large Marine Ecosystems of East Asia and their Coasts	WB	Partnerships in Environmental Management for the Seas of East Asia	N/A	N/A	IW	4/24/2013 - N/A	24-Apr-13	1	2.24	Governance
5278	Global	Strengthening Global Governance of Large Marine Ecosystems and their Coasts through Enhanced Sharing and Application of LME/ICM/MPA Knowledge and Information Tools	UNDP	UNESCO; Intergovernmental Oceanographic Commission	UNDP 4481	Global	IW	3/10/2013 - 4/29/2016	9-Nov-11	2.57	17.39	Governance

GEF ID #	LME	PROJECT TITLE	IMPLEMEN- TING AGENCY	EXECUTING AGENCY	OTHER AGENCY ID#	COUNTRY / COUNTRIES	GEF FOCAL AREA	START - END DATE	Council approval Date	GEF AMOUNT (in USD \$ Millions)	TOTAL PROJECT COST (in USD \$ Millions)	SECTOR TYPE
5827	Global	Coordination of the Global Sustainable Fisheries Management and Biodiversity Conservation in the Areas Beyond National Jurisdiction ABNJ Program	FAO	ABNJ	MSP	Global	IW	6/5/2014	12-Apr-13	0.46	0.95	Governance
5622	Suu-Celebes Sea; Indonesian Sea	LME-EA Coral Triangle Initiative Project (COREMAPIII-CTI)	WB	Ministry of Marine Affairs and Fisheries; LIPI	IBRD 130389	Indonesia	Multi	12/23/2013 - N/A	9-Nov-11	10	56.18	Habitat
3997	Mediterranean Sea	Albania-Improving Coverage and Management Effectiveness of Marine and Coastal Protected Areas	UNDP	Ministry of Environment-Albania	N/A	Albania	BD	9/24/2009 - 4/29/2016	9-Jun-10	1	2.92	Marine Protected Area
4659	Gulf of Thailand; South China Sea	Mainstreaming the Application of Marine Spatial Planning Strategies, Biodiversity Conservation and Sustainable Use	WB	Vietnam Ministry of Agriculture and Rural Development	IBRD 124702	Viet Nam	Multi	2/1/2013 - 1/31/2018	9-Nov-11	6.5	124.4	Marine spatial planning
9054	Benguela Current	Support to the Orange-Senqu River Strategic Action Programme Implementation	UNDP	Orange-Senqu River Commission (ORASECOM); Government of Lesotho		Africa Regional	IW	6/4/15-12/31/20	4-Jun-15	11	132	Pollution

GEF ID #	LME	PROJECT TITLE	IMPLEMEN- TING AGENCY	EXECUTING AGENCY	OTHER AGENCY ID#	COUNTRY / COUNTRIES	GEF FOCAL AREA	START - END DATE	Council approval Date	GEF AMOUNT (in USD \$ Millions)	TOTAL PROJECT COST (in USD \$ Millions)	SECTOR TYPE
5400	Global	Targeted Research for Improving Understanding of the Global Nitrogen Cycle towards the Establishment of an International Nutrient Management System INMS	UNEP	UNEP	1142	Global	IW	3/21/2014 - 3/21/2016	21-Mar-14	6.00	47.62	Pollution
4940	Indian Ocean; Somali Coastal Current	Implementation of the Strategic Action Programme for the Protection of the Western Indian Ocean from Land-based Sources and Activities	UNEP	Secretariat of the Nairobi Convention; World Conservation Union; World Wildlife Fund; CORDIO-Coral Reef Degradation in the Indian Ocean; WIOMSA; BirdLife International	N/A	Comoros; Kenya; Madagascar; Mauritius; Mozambique; Seychelles; South Africa; Tanzania United Republic of	IW	3/10/2013 - 4/29/2017	12-Apr-13	10.86	77.57	Pollution
2602	Mediterranean Sea	Alexandria Coastal Zone Management Project	WB	Egypt Environmental Affairs Agency	IBRD 95925	Egypt	IW	6/13/2007 - 1/31/2015	14-Jun-07	7.5	654.5	Pollution
3991	Mediterranean Sea	MED Enhanced Water Resources Management	WB	Egypt; Environmental Affairs Agency	N/A	Egypt	IW	8/31/2012 - 6/29/2015	24-Jun-09	6.68	34.8	Pollution
4198	Mediterranean Sea	Integrated Coastal Zone Management-Mediterranean Coast	WB	N/A	N/A	Morocco	IW	3/15/2010 - 3/29/2016	17-Mar-10	5.18	25.18	Pollution

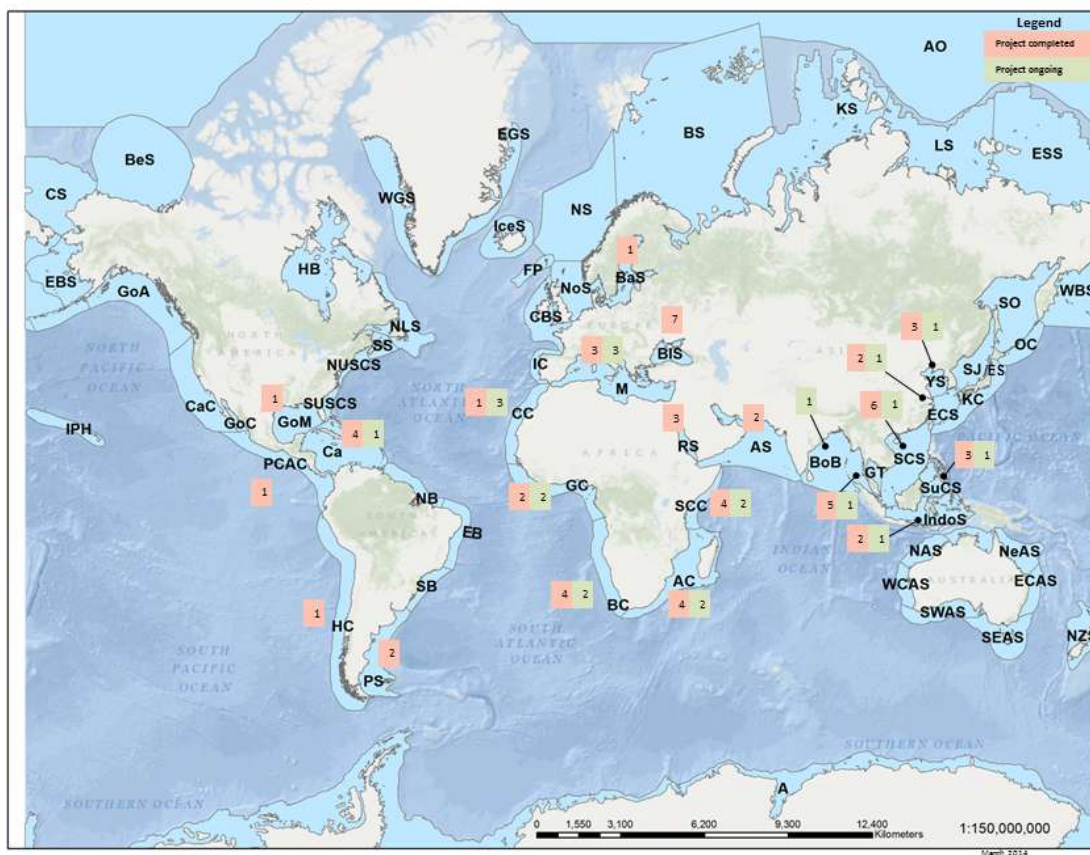
GEF ID #	LME	PROJECT TITLE	IMPLEMENTING AGENCY	EXECUTING AGENCY	OTHER AGENCY ID#	COUNTRY / COUNTRIES	GEF FOCAL AREA	START - END DATE	Council approval Date	GEF AMOUNT (in USD \$ Millions)	TOTAL PROJECT COST (in USD \$ Millions)	SECTOR TYPE
5269	Mediterranean Sea	Adriatic Sea Environmental Pollution Control Project (I)	WB	Hrvatske Vode	IBRD 143921	Bosnia and Herzegovina; Croatia	IW	5/13/2013 - 4/30/2016	20-Jun-13	6.77	30	Pollution
5271	Global	Global Sustainable Supply Chains for Marine Commodities	UNDP	National Government Agencies in four countries; Sustainable Fisheries Partnership Foundation	UNDP 4754	Indonesia; Philippines; Costa Rica; Ecuador	IW	3/10/2013 - 4/29/2018	12-Apr-13	5.65	40.24	Socio-economic
Total for Single Sector Projects (USD Millions)										182.17	1,629.06	
Total for ALL Projects (USD Millions)										260.74	2,862.44	

Large Marine Ecosystems of the World and Linked Watersheds



- | | | |
|--|-----------------------------------|--|
| 1. East Bering Sea | 22. North Sea | 46. New Zealand Shelf |
| 2. Gulf of Alaska | 23. Baltic Sea | 47. East China Sea |
| 3. California Current | 24. Celtic-Biscay Shelf | 48. Yellow Sea |
| 4. Gulf of California | 25. Iberian Coastal | 49. Kuroshio Current |
| 5. Gulf of Mexico | 26. Mediterranean | 50. Sea of Japan/East Sea |
| 6. Southeast U.S. Continental Shelf | 27. Canary Current | 51. Oyashio Current |
| 7. Northeast U.S. Continental Shelf | 28. Guinea Current | 52. Sea of Okhotsk |
| 8. Scotian Shelf | 29. Benguela Current | 53. West Bering Sea |
| 9. Newfoundland-Labrador Shelf | 30. Agulhas Current | 54. Northern Bering-Chukchi Seas |
| 10. Insular Pacific-Hawaiian | 31. Somali Coastal Current | 55. Beaufort Sea |
| 11. Pacific Central-American | 32. Arabian Sea | 56. East Siberian Sea |
| 12. Caribbean Sea | 33. Red Sea | 57. Laptev Sea |
| 13. Humboldt Current | 34. Bay of Bengal | 58. Kara Sea |
| 14. Patagonian Shelf | 35. Gulf of Thailand | 59. Iceland Shelf and Sea |
| 15. South Brazil Shelf | 36. South China Sea | 60. Faroe Plateau |
| 16. East Brazil Shelf | 37. Sulu-Celebes Sea | 61. Antarctic |
| 17. North Brazil Shelf | 38. Indonesian Sea | 62. Black Sea |
| 18. Canadian Eastern Arctic-West Greenland | 39. North Australian Shelf | 63. Hudson Bay Complex |
| 19. Greenland Sea | 40. Northeast Australian Shelf | 64. Central Arctic Ocean |
| 20. Barents Sea | 41. East-Central Australian Shelf | 65. Aleutian Islands |
| 21. Norwegian Sea | 42. Southeast Australian Shelf | 66. Canadian High Arctic-North Greenland |
| | 43. Southwest Australian Shelf | |
| | 44. West-Central Australian Shelf | |
| | 45. Northwest Australian Shelf | |

Figure 1 – Map of 66 World LMEs



Red italics are LMEs with projects:

EBS: East Bering Sea

GoA: Gulf of Alaska

CaC : California Current

GoM: Gulf of Mexico

SUSCS: Southeast US Continental Shelf

NUSCS: Northeast US Continental Shelf

SS: Scotian Shelf

NLS: Newfoundland–Labrador Shelf

IPH: Insular Pacific-Hawaiian

PCAC: Pacific Central-American Coastal

CbS: Caribbean Sea

HC: Humboldt Current

PS: Patagonian Shelf

SB: South Brazil Shelf

EB: East Brazil Shelf

NB: North Brazil Shelf

WGS: West Greenland Shelf

EGS: East Greenland Shelf

BS: Barents Sea

NS: Norwegian Sea

NoS: North Sea

BaS: Baltic Sea

CBC: Celtic-Biscay Shelf

IC: Iberian Coastal

M: Mediterranean

CC: Canary Current

GC: Guinea Current

BC: Benguela Current

AC: Agulhas Current

SCC: Somali Coastal Current

AS: Arabian Sea

RS: Red Sea

BoB: Bay of Bengal

GT: Gulf of Thailand

SC: South China Sea

SuCS: Sulu-Celebes Sea

IndoS: Indonesian Sea

NA: North Australian Shelf

NeA: Northeast Australian Shelf

ECAS: East-Central Australian Shelf

SEAS: Southeast Australian Shelf

SWAS: Southwest Australian Shelf

WCS: West-Central Australian Shelf

NAS: Northwest Australian Shelf

NZS: New Zealand Shelf

ECS: East China Sea

YS: Yellow Sea

KC: Kuroshio Current

SJ: Sea of Japan / East Sea

OC: Oyashio Current

SO: Sea of Okhotsk

WBS: West Bering Sea

CS: Chukchi Seas

BeS: Beaufort Sea

ESS: East Siberian Sea

LS: Laptev Sea

KS: Kara Sea

IceS: Iceland Shelf

FP: Faroe Plateau

A: Antarctica

B: Black Sea

HB: Hudson Bay

AO: Arctic Ocean

Figure 2 - GEF funded projects since 1994 in 22 LMEs totaling \$3.15 billion USD in project financial support. The LMEs with funded projects are listed in red font in the legend.

Modular Assessments for Sustainable Development

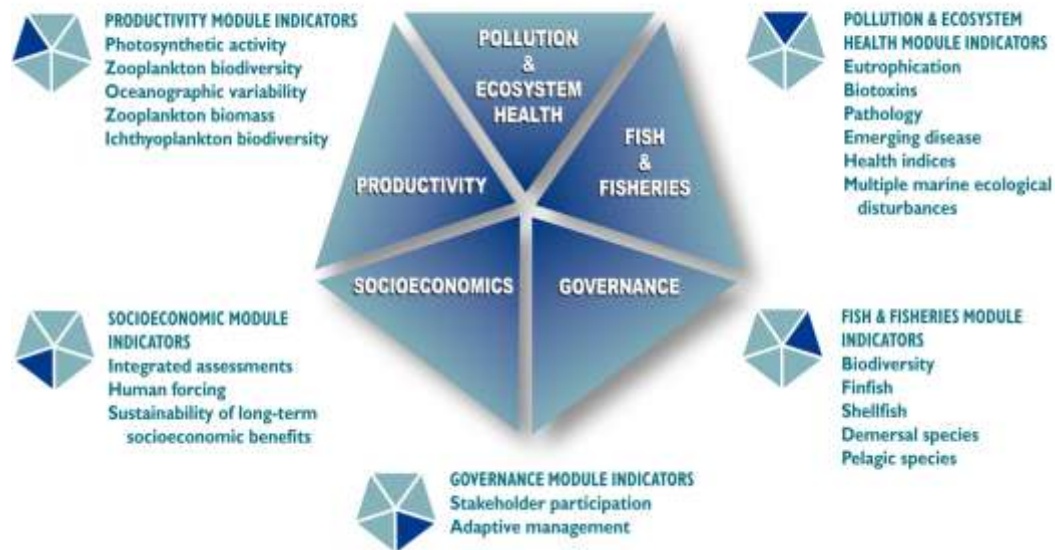


Figure 3 - Five LME modules with examples of suites of indicators relative to changing ecosystem conditions for each module.