UNITED NATIONS ENVIRONMENT PROGRAMME

Programme des Nations Unies pour l'environnement Programa de las Naciones Unidas para el Medio Ambiente
Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة
联合国环境规划署

UNEP

PROJECT DOCUMENT

SECTION 1: PROJECT IDENTIFICATION

1.1 Project title: Enhancing The Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins (Short Title: The Dugong and Seagrass Conservation Project)

1.2 Project number: GFL/4930
PMS:

1.3 Project type: FSP

1.4 Trust Fund: GEF

1.5 Strategic objectives:
GEF strategic long-term objective: BD1 BD2
Strategic programme for GEF V:

1.6 UNEP priority : Ecosystem management

1.7 Geographical scope: Global multi-country: Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor-Leste, Vanuatu

1.8 Mode of execution: External

1.9 Project executing organization: Mohamed Bin Zayed Species Conservation Fund

1.10 Duration of project: 48 months
Commencing: 01/01/2014
Technical completion: 31/12/2018

Validity of legal instrument: 48 months

1.11 Cost of project

Total Project Costs:	**US$**	**%**
Cost to the GEF Trust Fund	**$5,884,018**	5.59
Co-financing	**$99,299,043**	94.41
Total project	**$105,183,061**	**100**
Break-down of co-financing:		
Cash co-financing		
Mohamed bin Zayed Species Conservation Fund (MbZSCF)	613,948	0.58
Directorate of Marine and Aquatic Resources Conservation, Ministry of Marine Affairs and Fisheries, Indonesia	1,534,198	1.46
Research Centre for Fisheries Resources Management and Fishery Resources, Indonesia	40,000	0.04
Research Centre for	505,887	0.48

Oceanography, Indonesian Institute of Sciences (P2O-LIPI), Indonesia		
Bintan Regional Planning Board, Indonesia	10,000	0.01
Bintan Marine Affairs and Fishery Office, Indonesia	460,500	0.44
Bintan Tourism Office, Indonesia	387,500	0.37
Bintan Environment Board, Indonesia	199,500	0.19
World Wide Fund For Nature, Indonesia	100,000	0.09
Bogor Agriculture University, Indonesia	20,000	0.02
Community Centred Conservation (C-3) Madagascar	160,000	0.15
Madagascar National Parks Sahamalaza (COSAP)	11,050	0.01
EWT (Endangered Wildlife Trust), Mozambique	70,000	0.07
La Guntza Foundation, Mozambique	9,500	0.01
UNEP/Convention on Migratory Species Office - Abu Dhabi (UNEP/CMS Office – Abu Dhabi)	634,000	0.60
Secretariat of the Pacific Regional Environment Programme (SPREP)	18,000	0.02
Sub-total cash co-financing	**4,774,083**	**4.54**
In-kind co-financing		
Research Centre for Fisheries Resources Management and Fishery Resources, Indonesia	20,000	0.02
Research Centre for Oceanography, Indonesian Institute of Sciences (P2O-LIPI), Indonesia	41,915	0.04
Land Division of Bintan Secretariat, Indonesia	150,000	0.14
Bintan Public Works Office, Indonesia	350,000	0.33
Bogor Agriculture University, Indonesia	5,500	0.01
LAMINA Foundation, Indonesia	75,000	0.07

Sea World, Indonesia	100,000	0.10
Blue Ventures (BV)	1,142,472	1.09
Community Centred Conservation (C-3) Madagascar	160,000	0.15
Madagascar National Parks Sahamalaza (COSAP)	85,500	0.08
Ministry of Environment and Forests (MEF), Madagascar	1,326,727	1.26
Wildlife Conservation Society (WCS), Madagascar	940,000	0.89
Department of Marine Park, Malaysia	413,920	0.39
Department of Fisheries Malaysia (DoFM) Turtle and Marine Ecosystem Research Centre (TUMEC), Fisheries Research Institute (FRI), Malaysia	510,600	0.48
Universiti Sains Malaysia, Center for Marine and Coastal Studies, Malaysia	197,200	0.19
The Marecet Research Organization, Malaysia	96,774	0.09
Universiti Malaya, Malaysia	92,484	0.09
Sarawak Forestry, Protected Area and Biodiversity Conservation Division (PABC), Malaysia	520,320	0.49
University of Eduardo Mondlane, Mozambique	13,500	0.01
University of Pretoria, Mammal Research Institute Whale Unit, Mozambique	10,000	0.01
Centre for Dolphin Studies, Nelson Mandela Metropolitan University, Mozambique	12,000	0.01
Endangered Wildlife Trust (EWT), Mozambique	70,000	0.07
IUCN Save Our Species (SOS), Mozambique	43,247	0.04
Ministry for the Coordination of Environmental Affairs - National Directorate for Environmental Management (MICOA – DNGA), Mozambique	32,938	0.03

Biodiversity Education And Research (BEAR), Sri Lanka	120,829	0.11
Department of Wildlife Conservation , Sri Lanka	293,096	0.28
IUCN Sri Lanka	224,100	0.21
National Aquatic Resources Research and Development Agency, Sri Lanka	89,750	0.09
Ocean Resources Conservation Association (ORCA), Sri Lanka	111,800	0.11
Turtle Conservation Project, Sri Lanka	63,820	0.06
Marine Research Foundation (MRF), Timor Leste	20,000	0.02
Department of Environmental Protection and Conservation (DEPC), Vanuatu	40,000	0.04
Fisheries Department, Vanuatu	40,000	0.04
Wan Smolbag Theatre, Vanuatu	10,000	0.01
Vanuatu Cultural Centre, Vanuatu	10,000	0.01
MRF, Malaysia	220,000	0.21
UNEP/CMS Office – Abu Dhabi	1,166,000	1.11
Sea Sense, Tanzania	394,650	0.38
Australian Government	85,000,000	80.81
SPREP	40,000	0.04
UNEP Regional Office of West Asia (ROWA)	112,000	0.11
Universiti Malaysia Terengganu, Institute of Oceanography and Environment (INOS)	158,818	0.15
Sub-total in-kind co-financing	**94,524,960**	**89.87**
FINAL SUMMARY		
Total co-financing	**$99,299,043**	**94.41**
Cost to the GEF Trust fund	***5,884,018***	***5.59***
PROJECT TOTAL	**$105,183,061**	**100**

PROJECT SUMMARY

There is a broad scientific consensus that the dugong will disappear from the majority of its range without significant and immediate conservation interventions. The combination of the dugong's life

history of being long-lived and slow breeding, its extensive geographic range and dependence on tropical seagrass habitats makes it highly vulnerable to many adverse anthropogenic impacts. Moreover, given the dugong's capacity to move across jurisdictional boundaries, coordinating management initiatives across these boundaries is crucial to its long-term survival. The Dugong and Seagrass Conservation Project will build on ongoing and planned national and international conservation efforts sustained by all participating national governments and conservation organisations involved in the project at the local, national and regional levels.

The wider conservation and development goal to which the project contributes is: "*to improve the conservation status of dugongs and their seagrass habitats across the Indian and Pacific Ocean basins*".

The Dugong and Seagrass Conservation Project objective is: "*to enhance the effectiveness of conservation of dugongs and their seagrass ecosystems across the Indian and Pacific Ocean basins*".

The project will enhance the effectiveness of conservation efforts for dugongs and their seagrass ecosystems across the Indian and Pacific Ocean basins through specific actions in eight countries and wider regional and global activities (funded by GEF and co-financing). This will be achieved through community based stewardship at key sites for dugongs; increases in sustainable fisheries practices including the use of innovative incentives and tools; increases in availability of critical knowledge for conservation action for dugongs and seagrass; and mainstreaming dugong and seagrass conservation priorities into national and regional policies and planning. This project represents the first coordinated approach across a wide range of countries towards the conservation of dugongs and their seagrass habitats. In addition, tools and lessons learned will be shared across the project stakeholders and globally through information sharing via a Clearing House Mechanism and the Dugong, Seagrass and Coastal Communities Initiative under the CMS Dugong MoU.

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ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
ATSEA	Arafura and Timor Seas Ecosystem Action
BEAR	Biodiversity Education And Research (Sri Lanka)
BOBLME	Bay of Bengal Large Marine Ecosystem
BV	Blue Ventures
C3	Community Centred Conservation (Conservation Centrée sur la Communauté)
CBD	Convention on Biological Diversity
CBO	Community-Based Organisation
CBM	Community-Based Management
CHM	Clearing House Mechanism
CI	Conservation International
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CRIOMM	Centre for Research on Indian Ocean Marine Mammals
CTI - CFF	Coral Triangle Initiative on Coral Reefs Fisheries and Food Securities
DENR - PAWB	Department of Environment and Natural Resources Protected Areas Wildlife Bureau (Philippines)
DEPC	Department of Environment Preservation & Conservation (Vanuatu)
DFP	Dugong Focal Point
DTG	Dugong Technical Group
EAD	Environment Agency – Abu Dhabi
EIA	Environmental Impact Assessment
EPSC	Executive Project Steering Committee
FAO	Food and Agriculture Organization of the United Nations
FRI	Fisheries Research Institute (Malaysia)
IBRD	The International Bank for Reconstruction and Development
IUCN	International Union for the Conservation of Nature
LDC	Least Developed Country
LMMA	Locally Managed Marine Area
MbZSCF	Mohammed bin Zayed Species Conservation Fund
MICOA	Ministry for Coordination of Environmental Affairs (Mozambique)
MPA	Marine Protected Area
NBSAP	National Biodiversity Strategy and Action Plan
NF	National Faciliator
NFC	National Facilitating Committee
NGO	Non-Governmental Organisation
ORCA	Ocean Resources Conservation Association (Sri Lanka)
PABC	Protected Area & Biodiversity Conservation Division (Malaysia)
Ramsar	The Convention on Wetlands (Ramsar, Iran, 1971)
REMMOA	Recensement des Mammifères Marins et autres Mégafaunes Pélagiques par Observation Aériennes (Census of Marine Mammals and other pelagic megafauna by aerial surveys)
SEAFDEC	Southeast Asian Fisheries Development Center
SFCSB	Sarawak Forestry Corporation Sdn Bhd (Malaysia)
SIDS	Small Island Developing States
SPREP	Secretariat of the Pacific Regional Environment Programme
TUMEC	Turtle and Marine Ecosystem Research Centre (Malaysia)
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP - ROWA	United Nations Environment Programme, Regional Office for West Asia
UNFCCC	United Nations Framework Convention on Climate Change
CMS Dugong	United Nations Convention on the Conservation of Migratory Species of Wild Animals Memorandum of

MoU	Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range
UNEP/GRID-Arendal	United Nations Environment Programme, Global Resource Information Database – Arendal
UNEP-DEPI	United Nations Environment Programme, Division of Environmental Policy Implementation
WB	World Bank
WCMC	United Nations Environment Programme, World Conservation Monitoring Centre
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund/World Wide Fund for Nature

SECTION 2: BACKGROUND AND SITUATION ANALYSIS (BASELINE COURSE OF ACTION)

2.1. Background and context

1. The Dugong and Seagrass Conservation Project will use GEF funding to enhance the conservation of the dugong (*Dugong dugon*) or "sea cow" and the seagrass ecosystems on which it depends in eight range states of the species in the Indo-Pacific region. The dugong is threatened and its populations are declining throughout its known range and seagrass ecosystems are also under threat. Levels of knowledge, capacity and existing conservation efforts across the region are very variable and insufficient to reverse these declines and achieve effective conservation. Strengthened policy and regulatory frameworks, changes in fishing practice and other destructive human behaviours and site-based actions involving local communities in improved stewardship are required. These changes will result in global environmental benefits in the eight countries and more widely within the Indian and Pacific Ocean basins because of the migratory nature of dugongs and through regional networking and policy mainstreaming under the project.
2. Coastal zones contain diverse and productive ecosystems which have been of great importance historically for human populations. They equate to only eight percent of the world's surface area but provide 25% of global productivity, and anthropogenic stresses on these ecosystems are considerable. Approximately 70% of the world's population is estimated to be within a day's walk of the coast. Two-thirds of the world's cities occur on the coast and oceans are the primary protein source for one in four people on the planet (worth US$92 billion globally[1]). Marine ecosystems are some of the most threatened on the planet, and some of the least known. Threats arising from over-use of resources, uncontrolled runoff from terrestrial activities, and a relative lack of political concern, especially when compared to terrestrial areas[2], mean that this valuable resource is increasingly vulnerable. In recent years, there has been a considerable increase in the gazettal of terrestrial protected areas, but marine protected areas are only just starting to receive similar attention[3].
3. The main anthropogenic threats to the coastal and marine environment in the Indian and Pacific Ocean basins can be grouped into four categories:
   - physical changes of the coastline caused by erosion and sedimentation resulting from human activity (changes of river courses, construction and coastal mining activity);
   - direct destruction of ecosystems and habitats from industrial and other development, leading to the degradation of mangroves, coral reefs and coastal dunes;
   - increased demand of fish products, overfishing,, wasted and poor handling practices of fish catches, which reduce the value of the fish exploited and can result in over-exploitation. FAO report that 53% of the world's fisheries are fully exploited, while 32% are overexploited, depleted, or recovering from depletion.[4] In addition, problems persist with high levels of unwanted and often unreported bycatch and discards. Apart from the mortality discarding inflicts on the commercial fishery resources (estimated at approximately seven million tonnes per year worldwide), there are also issues about the mortalities of rare, endangered or vulnerable species and socio-economic considerations about the non-utilization of discarded bycatch4;
   - coastal pollution associated with industrial activity, agriculture and domestic sewage including solid wastes and liquid effluents. Poor management of sewage is a particular

[1] http://www.oceansatlas.org/
[2] IPSO. 2008. Implementing the Global State of the Oceans Report. Available at http://www.stateoftheocean.org/
[3] http://www.bipindicators.net/pacoverage
[4] FAO. 2010. State of World Fisheries and Aquaculture 2010. FAO Rome, Italy

problem in Africa and the Indo-Pacific where up to 80-90% of waste water may be released untreated into rivers, estuaries and the ocean2.

4. Even where there is recognition of the need for appropriate management, conservation often competes with other interests in the use of the marine environment (e.g. tourism infrastructure development). Growing human populations and associated development in coastal areas, coupled with increased demand for marine resources, (including oil, gas and minerals), can result in abandonment of a precautionary approach to marine ecosystem management and no proper valuation of the ecosystem services provided.
5. An underlying issue relating to coastal and marine degradation is that, although development companies may create the degradation, the environmental and social costs of development may be met by society. This situation may arise if development companies are driven by profit and do not factor in social and environmental values into costs. This issue is addressed, in part, through the mainstreaming component of the project (i.e. Outcome 4).
6. Out of the eight countries directly involved in the project, all (apart from Malaysia) have Medium to Low Human Development Indices[5] (Table 3~~Table 3~~ in Section 2.3) and a very high percentage of their populations are rural (Table 1~~Table 1~~). Rural communities tend to be very dependent on exploitation of available natural resources for their survival and livelihoods and levels of poverty are often high. These combined effects and lack of alternatives can result in communities over-exploiting the natural resources on which they depend and using destructive harvesting practices which damage ecosystems.

Table 1. Summary of national human development and demographic status of participating countries[6].

Country	Human Development Index	Population size	Rural population
Indonesia	Medium	244,769,100	48.5%
Malaysia	High	29,321,800	26.5%
Madagascar	Low	21,928,500	66.8%
Mozambique	Low*	24,475,200	68.6%
Solomon Islands	Medium	566,500	79.1%
Sri Lanka	Medium	21,223,600	84.8%
Timor-Leste	Medium	1,187,200	71.3%
Vanuatu	Medium	251,100	74.8%

7. Fisheries play an important role as a major contributor to food security and the principal source of livelihood to many coastal communities in the Project Countries. A large number of fisher communities are in the small-scale artisanal sector, often using a diverse range of artisanal fishing gears. In some areas, the expansion of fishing effort and the over-exploitation of marine resources has had a negative impact on marine mammals. Dugongs are a preferred source of meat in some coastal communities and can be captured with fairly simple equipment in their coastal habitats. They have been hunted traditionally for thousands of years in some countries (e.g. in the Pacific Basin). Accidental by-catch in fisheries and degradation of coastal habitats have been identified

[5] UNDP Human Development Reports http://hdr.undp.org/en/
* *rank 185/ 187 in 2012*
[6] Information in Table 1 taken from: http://hdr.undp.org/en/data/profiles/ v

as major anthropogenic pressures on marine mammals including dugongs along the coastal zones in both the Indian and Pacific Ocean basins.

8. A comprehensive overview of the status of dugong populations and challenges for management was commissioned during the PPG phase (Appendix 17).
9. The dugong (*Dugong dugon*) is the only herbivorous marine mammal (together with the predominantly fresh water manatees, dugongs constitute the mammalian Order Sirenia – or 'sea cows'). A single adult dugong – which can grow up to three meters, weigh up to 500 kilograms, and live for 70 years – can eat up to 40 kilograms of seagrasses per day[7]. Despite occurring in over 40 countries in the Indian Ocean and western Pacific Ocean, and being able to move into different home ranges (they can travel hundreds of kilometers in a few days), dugong populations are considered to be declining across their range. It is estimated that populations have suffered a global decline of approximately 20% within the last century, largely as a result of a range of direct anthropogenic factors (e.g. hunting, incidental by-catch and boat strikes), or through activities which indirectly impact their seagrass habitat (e.g. sedimentation and pollutants from coastal development)[8].
10. Dugongs are seagrass community specialists and their range is broadly coincident with the distribution of seagrasses in the tropical and sub-tropical Indo-West Pacific. They have been important to human cultures in various ways for thousands of years. Their meat tastes like veal or pork and is a major source of protein and income to an indigenous hunter or impoverished fisher. Dugongs have also been a source of other products including oil, bones and teeth, often used as traditional medicines.
11. Seagrasses are a group of flowering plants adapted to exist submerged in shallow marine environments with low turbidity. Globally, there are 60 known species of seagrasses, most of which are distributed along temperate and tropical coastlines. The tropical Indo-Pacific region is the most diverse seagrass bioregion, hosting 24 known species. In many semi-tropical and tropical regions, seagrass habitats are also often closely linked to mangrove and reef ecosystems, which together are essential roles for the lifecycles of a number of reef and mangrove-dependent species.
12. Seagrasses also provide valuable ecosystem services. They sequester and store large amounts of carbon in the underlying sediment – a service that has become known as 'Blue Carbon'. Primary estimates suggest that seagrasses account for 10% of annual carbon sink capacity of the oceans. They are considered to be a low-risk storage mechanism because of the stability of the carbon stocks, which last over millennia without risk of fire, and because carbon is stored both in living biomass and sediments. It has been estimated[10] that coastal seagrass beds store up to 83,000 metric tons of carbon per square kilometre, compared to around 30,000 metric tons per square kilometre in a typical land forest. This adds to evidence[9][10][11] that seagrass meadows are strong CO_2

[7] McKenzie, L. 2008. Seagrass Educators Handbook. Seagrass-Watch, Cairns, Australia. Available at www.seagrasswatch.org/Info_centre/education/Seagrass_Educators_Handbook.pdf

[8] Marsh, H., Penrose, H., Eros, C. & Hugues, J. 2002. Dugong Status Report and Action Plans for Countries and Territories. Report Series. Early Warning and Assessment, United Nations Environment Program UNEP/DEWA/RS.02-1.

[9] Duarte, C.M., Middelburg, J. & Caraco, N. 2005. Major role of marine vegetation on the oceanic carbon cycle. Biogeosciences, 2: 1–8.

[10] Duarte, C.M., N. Marbà, N., Gacia, E., Fourqurean, J.W., Beggins, J., Barrón, C. & Apostolaki, E.T. 2011. Seagrass community metabolism: Assessing the carbon sink capacity of seagrass meadows. Global Biogeochem. Cycles, 24, GB4032, doi:10.1029/2010GB003793.

sinks, with a hectare of the most effective seagrass meadows exceeding by ten-fold the CO_2 sink capacity of the pristine Amazonian forest.[12][13] Seagrass conservation is increasingly recognised as critical for the mitigation of global climate change effects but more research is required to quantify carbon sequestration capacity and ecosystem service values.

13. Seagrasses provide other ecosystem services and critical habitat for marine biodiversity and are considered to be one of the most economically valuable habitats in the biosphere. It has been estimated that seagrass meadows provide $1.9 trillion per year in the form of nutrient cycling. Seagrasses oxygenate water and sediments, export organic carbon to adjacent ecosystems, stabilize sediments preventing their re-suspension, improve water transparency, attenuate waves, and protect shorelines from erosion. They trap and cycle nutrients, providing habitat and food for marine microbes, invertebrates and vertebrates7.
14. The seagrass ecosystems on which dugongs depend are important for the survival of the dugong and for other marine biodiversity. They provide habitat and breeding grounds for many marine species, including important fishery species that millions of people around the globe depend on for their livelihoods. They provide nursery grounds for juveniles of commercially important marine species such as shrimp, shellfish and finfish. Subsistence fisheries depend on seagrasses both as fish nurseries and as accessible and sheltered fishing grounds.
15. The dugong is one of a number of large marine vertebrates which depend on seagrass habitats and that are under pressure from human activities. The green turtle is the marine turtle species most reliant on seagrass ecosystems although all species of marine turtles are likely to spend a portion of their time in seagrass and associated mangroves and reef habitats. Threatened inshore cetacean species such as the Irrawaddy dolphin (*Orcealla brevirostri*), Australian snubfin dolphin (*Orcaella heinsohni*) and Indo-Pacific humpback dolphin (*Sousa chinensis*) as well as Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) are also reliant on seagrass and associated mangrove and inshore reef habitats.
16. Anthropogenic threats to seagrass include those caused by climate change (sea level rise, increased water temperatures and increased frequency and intensity of storms[14]); boating activities; sedimentation and smothering from dredging; reduced water quality from coastal development and construction; removal for the creation of aquaculture ponds; toxins and elevated nutrients from adjacent land-use runoff and deliberate removal of seagrass to provide clean beaches or to maintain navigation channels[15]. Natural factors also contribute to seagrass loss, including geological impacts (coastal uplifting or bed

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[11] Kennedy, H., Beggins, J., Duarte, C.M., Fourqurean, J.W., Holmer, M., Marbà, N., & Middelburg, J.J. 2011. Seagrass sediments as a global carbon sink: Isotopic constraints. Global Biogeochemical Cycles 24, doi:10.1029/2010GB003848.

[12] Nellemann, C., Corcoran, E., Duarte, C.M., Valdés, L., De Young, C., Fonseca, L., Grimsditch, G. (Eds). 2009. Blue Carbon. A Rapid Response Assessment. United Nations Environment Programme, GRID-Arendal, www.grida.no

[13] McLeod, E., Chmura, G. L., Bouillon, S., Salm, R., Björk, M., Duarte, C. M., Lovelock, C. E., Schlesinger, W. H. & Silliman, B. 2011. A Blueprint for Blue Carbon: Towards an improved understanding of the role of vegetated coastal habitats in sequestering CO_2. Frontiers in Ecology and the Environment, doi:10.1890/110004

[14] Waycott, M., McKenzie, L., Mellors, J., Ellison, J., Sheaves, M., Collier, C., Schwarz, A., Webb, A., Johnson, J. & Payri, C. 2011. Vulnerability of mangroves, seagrasses and intertidal flats in the tropical Pacific to climate change. Chapter 6 In: Bell, J. & Johnson, J. (Eds) Vulnerability of fisheries and aquaculture in the Pacific to climate change. Secretariat of the Pacific Community, Noumea, New Caledonia. pp97-168.

[15] Grech, A., Chartrand-Miller, K., Erftemeijer, P., Fonseca, M., McKenzie, L., Rasheed, M., Taylor, H. & Coles, R. 2012. A comparison of threats, vulnerabilities and management approaches in global seagrass bioregions. Environmental Research Letters 7(2): 024006 (8pp) doi:10.1088/1748-9326/7/2/024006

lowering). It is estimated that 29% of the world's seagrass habitat has already been lost largely through human impacts; remaining seagrass is disappearing at a rate of 110 km^2 per year and rates of decline have accelerated from a median of 0.9% per year before 1940 to 7% per year since 1990[16]. These rates of loss are comparable to those reported for mangroves, coral reefs, and tropical rainforests, and place seagrass meadows among the most threatened ecosystems on earth. The rate of degradation is exacerbated as the vital functions of seagrasses, such as their role in protecting biodiversity, and the threats to seagrass habitats are not widely recognised[17].

17. Dugongs are known to travel large distances to find new feeding grounds in response to the loss of their usual habitat. Often this means moving across jurisdictional boundaries. Coordinated management across national boundaries is therefore crucial for the dugong's long-term survival. The Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range (Dugong MoU), under the Convention on the Conservation of Migratory Species of Wild Animals (CMS) was adopted by the first Signatories on 31 October 2007, and is designed to facilitate national level and transboundary actions that will lead to the conservation of dugong populations and their habitats. Without such cooperative decision-making and the necessary critical mass for collective action, the future of the dugong, and of the seagrass ecosystems on which it depends, is uncertain.
18. The CMS Dugong MoU's Conservation and Management Plan[18] provides focused species and habitat-specific activities, coordinated across the dugong's migratory range in the Indian Ocean, East Asia, and the western Pacific Ocean, and has nine objectives:
    - Reduce direct and indirect causes of dugong mortality
    - Improve our understanding of dugong through research and monitoring
    - Protect, conserve and manage habitats for dugong
    - Improve our understanding of dugong habitats through research and monitoring
    - Raise awareness of dugong conservation
    - Enhance national, regional and international cooperation
    - Promote implementation of the CMS Dugong MoU
    - Improve legal protection of dugongs and their habitats
    - Enhance national, regional and international cooperation on capacity building
19. As of September 2013, there are 26 Signatory States to the MoU out of over 40 countries that are recognised to be dugong range states (see Figure 1~~Figure 1~~). Eight countries are participating with GEF STAR funding in this project: Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor-Leste and Vanuatu. This will make a significant contribution to implementing the CMS Dugong MoU CMP in 20% of the global range of the dugong. Other countries will participate through their own resources, provided as co-finance in support of the project (Australia, Papua New Guinea, Philippines, Tanzania, Seychelles) while others have provided formal written support (India, Kenya, Myanmar). The regional organisations UNEP/ROWA and SPREP[19][20], and

[16] Waycott et al. 2009. Accelerating loss of seagrasses across the globe threatens coastal ecosystems. PNAS 106(30): 12377-81.
[17] Duarte, C.M, Dennison, W.C, Orth, R.J, & Carruthers, T.J.B. 2008. The Charisma of Coastal Ecosystems: Addressing the Imbalance. Estuaries and Coasts: J. CERF 31:233-238.
[18] http://www.cms.int/species/dugong/pdf/Dugong_CMP_Eng.pdf
[19] ROWA – Dugong range states not providing GEF-STAR funding to the project: Bahrain, Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, Yemen.
[20] SPREP - Dugong range states not providing GEF-STAR funding to the project: Australia, New Caledonia, Palau, Papua New Guinea.

the CMS Dugong MoU Sectretariat are also providing co-finance to the project. These countries/organisations are collectively referred to as Supporting Partners.

20. The eight participating countries represent some of the most important range areas for the dugong. Mozambique has the most significant population of dugongs in East Africa and Madagascar contains a number of highly vulnerable small and isolated populations. The Gulf of Mannar, Sri Lanka, is an important area in South Asia, while in South East Asia Indonesia, Malaysia and East Timor (along with the Philippines) collectively hold important populations, as well as key habitats[21]. Similarly to Madagascar, the populations in Vanuatu are fragmented and these islands form the eastern extent of the species' range. The two countries holding the largest dugong populations – Australia and the United Arab Emirates – are providing significant co-finance to support the implementation of this project.

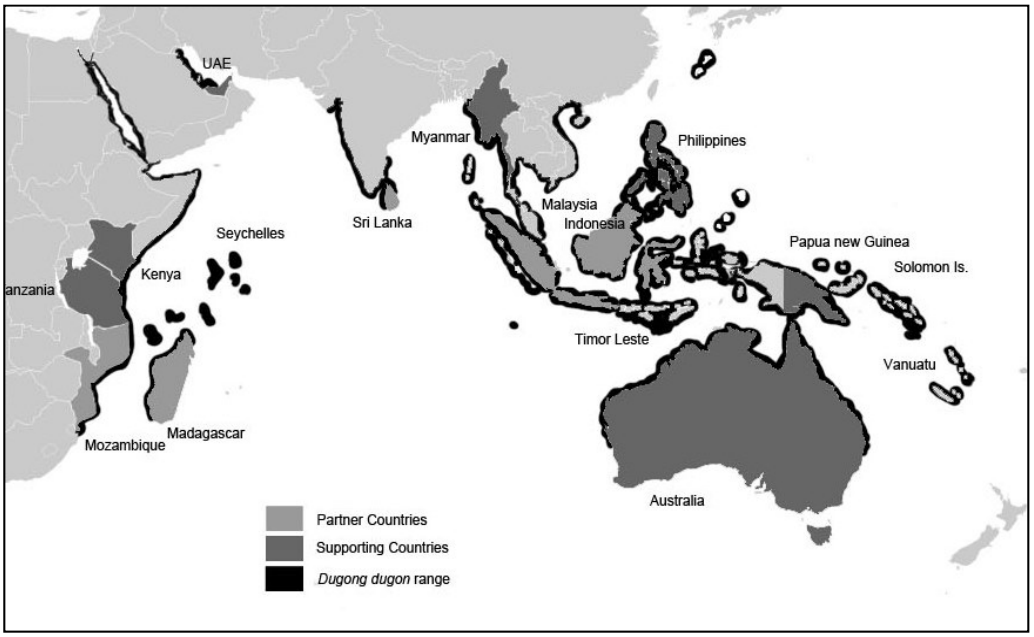


Figure 1. Map of dugong and seagrass distribution and their known status. The participating countries are highlighted.

21. This project represents an unprecedented level of investment for a coordinated approach to dugong and seagrass conservation and management which is essential because of the migratory nature of dugongs across national borders. This investment is coming at a critical time to address the chronic threats to coastal ecosystems, which are increasing and compounding with climate change, population growth and coastal development.

2.2. Global significance

22. The dugong is on the verge of disappearing from most of its range. Aspects of its life history (long-lived and slow breeding, with an extensive range and dependence on tropical seagrass habitats), make it particularly vulnerable to direct and indirect human-

[21] Marsh, H., O'Shea, T.J. & Reynolds, J.E. III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University Press, Cambridge, UK.

related coastal impacts, all of which may be exacerbated by extreme weather events and climate change.

23. Dugongs are classified as vulnerable to extinction in the 2009 IUCN Red List of Threatened Species[22], indicating a high risk of extinction in the wild in the medium-term future. The Convention on the Conservation of Migratory Species of Wild Animals (CMS) lists the dugong on Appendix II, meaning that the conservation of the species would benefit from international cooperative activities organized across its migratory range. Dugongs are also listed under Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as a species threatened with extinction.
24. Population counts of dugongs are problematic, because of the difficulty in monitoring animals, which often remain underwater for long periods in turbid habitats. There is insufficient knowledge on populations to make accurate global population assessments, particularly in developing nations. The dugong's regional conservation status has been assessed as follows[21]:
    - East Africa – Endangered
    - Red Sea and Gulf of Aden – Data Deficient
    - Arabian/Persian gulf – Data Deficient
    - Indian Subcontinent – Endangered
    - Continental East and South-east Asia – Endangered
    - East and South-east Asia/ Major archipelagos – Vulnerable to Critically Endangered
    - Australia – Critically Endangered, Vulnerable, Least Concern, Data Deficient
    - Western Pacific Islands – Data Deficient
25. It is estimated that at least one third of the world's seagrass habitat has already been lost, and yet the economic benefits to coastal communities of seagrass protection are very significant. Seagrass ecosystems provide nurseries, shelter, and food for a variety of commercially, recreationally, and ecologically important species (e.g. fin-fish, sharks and rays, marine turtles, inshore cetaceans, seahorses, crustaceans and molluscs). Additionally, seagrasses filter estuarine and coastal waters of nutrients, contaminants, and sediments (reducing algal blooms from nitrogen and phosphorous run-off) and sequester carbon7. They are closely linked to other community types in the tropics such as coral reefs and mangrove forests. Seagrass ecosystems thus provide key ecosystem services such as carbon sequestration, support for ecotourism, fisheries habitats and water filtration. The economic values of seagrass meadows as fish nurseries are enormous. Local artisanal fisheries depend on these habitats to supply protein and other products for a growing human population of hundreds of millions. FAO has estimated that 54 million fishers worldwide provide for 660 to 820 million people (including their families and the suppliers of fishing equipment) that directly or indirectly economically depend upon these fisheries[23].

2.3. Threats, root causes and barrier analysis

26. The life history characteristics of dugongs (long-lived, with low reproductive rates, long generation times and a high investment in each offspring), makes their conservation problematic in the face of a range of human threats. A simulation study indicated that, even in ideal natural conditions, without human disturbance, dugong population growth would not exceed 5% per year, making them very vulnerable to over-exploitation or

[22] http://www.iucnredlist.org/details/6909/0
[23] Maribus. 2013. World Ocean Review 2: The Future of Fish – The Fisheries of the Future. Maribus, Hamburg, Germany.

other mortality. Even a slight reduction in adult survivorship can cause a substantial population decline.

27. Changing the behaviour of those people whose current activities (e.g. fishing and hunting practices) endanger populations of dugong and their habitat, especially seagrass beds, is the underlying purpose of this project. The threats facing dugong and seagrass conservation are created by conflicts between different values placed on dugongs (and their habitats) and activities that affect those values. These values range from preservation of dugong as a species to commercial exploitation for protein. For some people dugongs have no value. The values placed on seagrass vary from high conservation value as nursery habitat for juvenile fish and crustacean species to low value as a dumping ground for solid wastes and terrestrial sediments. If high conservation and economic values for dugong and seagrass are to be maintained or recovered, these conflicts will only be solved by changing those human activities that adversely affect those values. For low income rural coastal communities, subsistence and artisanal fisheries and hunting are the main source of protein and income but often at the expense of dugongs and seagrass. Changes in behaviour of such communities will require sufficient incentives (e.g. alternate/higher income, a greater diversity of protein sources, higher prices, recovery of cultural practices, alternatives to current activities, greater awareness or rewards for changing behaviour) and/or disincentives (penalties, enforcement community pressure) to alter/replace those practices which impact dugongs and their habitats. While the initial focus is on addressing community level impacts, this important effort by itself will not be sufficient to gain lasting changes to all human activities that affect dugongs and their habitats. Much more substantive effort will also be required at other levels, for example working with governments to halt the rapid expansion of external factors which impact dugongs and their critical habitat such as unsustainable port developments, land use practices, industrial coastal development and adverse impacts of tourism. Thus, change will need to take place at other levels – international, regional, provincial, national as well sectoral. Strengthening community capacity and governmental processes will be important in this area.
28. Human-related threats vary regionally. Broadly speaking, in developing nations, major threats are incidental capture in artisanal fisheries, direct capture for consumption or sale (e.g. illegal poaching), destructive fishing techniques and habitat loss or degradation. In more developed countries, such as Australia, the main threats are from incidental catch by large-scale fisheries (chiefly gillnetting), legal hunting, habitat degradation and loss due to extensive coastal development and pollution, and vessel strikes. Most dugong range states are developing countries and the forecasted human population rises, especially in coastal areas, in some developing countries may increase the threats from fishing and increased capture to satisfy protein and income requirements.

29. **Direct and indirect threats** to dugongs include the following:[24]
30. Incidental by-catch of dugongs. Incidental by-catch can occur from the use of shark nets, gill nets or tidal traps. Although the scale of this threat is difficult to quantify, it appears to be the most serious and widespread threat and has been reported in all Project Countries. A common trend is the increasingly sophisticated and uncontrolled use of fishing gears such as monofilament nylon fishing nets. For instance, although dugong by-catch in the coastal waters of Madagascar is largely unquantified, accidental entanglements in shark gill nets, longlines and fish enclosures have been recorded numerous times. In Indonesia, the most significant accidental interactions with fisheries

[24] Information compiled from National and Regional Reviews completed at PPG stage.

have been reported from Aru Islands (80-200 and 20-40 dugongs accidentally caught in industrial shark nets in 1979 and 1989, respectively), while the incidental capture of dugongs in fishers' tidal traps is also an issue in Bintan Island. In the majority of cases, accidentally caught animals are eaten or sold (often to the same dealers who are buying the shark fins which are the actual fishing target). Although accidental, most of this capture and trade is illegal. The dugong has been described as the marine equivalent of bush meat (Appendix 17), which is available to be caught during other activities with little additional effort, and therefore highly susceptible to overharvest.

31. Destructive fishing practices in coastal waters. Fishing methods, such as use of beach seines or push nets and indiscriminate bottom trawling have a negative impact on dugongs as well as seagrass environments. The use of sodium cyanide and explosives over coral reefs is another destructive practice that harms the bottom environment. Such activities have been widely reported in target countries. In Indonesia, for instance, destructive fishing gear such as small meshed beach seine nets have been introduced by inland migrants, who have no fishing tradition. In Malaysia, dugongs may be targeted when they are in the vicinity of fishermen using homemade bombs for fishing in seagrass and reef areas.
32. Hunting of dugongs. Since dugongs occur in coastal habitats, they are accessible to hunters with relatively simple equipment. The dugong hunting culture in the Middle East and Australia is at least 6000 years old and hunting remains legal in a few countries (such as Australia, where it is a native title right for indigenous Australians). Dugongs have been taken for meat, blubber and hides, as well for traditional medicine, where the tusks and bones are used for the treatment of asthma, back pain and shock. It is also believed in Malaysia that the tears of dugongs can help attract the opposite sex. The tusks from dugongs have also been used as amulets to ward off wild boars from agricultural plots.
33. Hunting of dugongs is reported in some Project Countries, but there is evidence that the practice is less common nowadays. In Malaysia, two main reasons were given for the cessation of dugong hunting: (a) the knowledge that dugongs are a protected species under Malaysian law and (b) the severe decrease in the dugong populations over the last few decades (many older fishers in Malaysia have never seen a dugong while fishing). Declining populations was also given as a reason for the reduced hunting of dugongs in Madagascar, although the practice still occurs and accounts for 90% of known sightings. In Sri Lanka, the continuing demand for dugong meat creates a high market value which adds impetus to illegal hunting in order to supplement incomes. Similarly in the Solomon Islands, while there is not any intensive hunting taking place, many people reported that they would opportunistically kill a dugong for food or commercial gain. It was reported that 56 dugongs were caught intentionally or incidentally between 2005 and 2010: all were caught in nets. Of the 51 that were found alive, all but one was killed for food or sale.[25] Although indigenous hunting is reported from the Island of Aru in Indonesia, this practice has been abandoned since the 1980's in most areas.
34. Boat strikes on dugongs. Dugongs usually swim very slowly, and have to come to the surface to take a breath every 3-5 minutes, so it is difficult for them to avoid fast-approaching boats. The threat from boats increases in heavy boat traffic areas, usually associated with coastal development. For instance, during the last 10-15 years in Vanuatu, new coastal home developments, primarily for expatriates, have resulted in an increase in small boats and personal watercraft for fishing or recreational purposes, either personally owned or available for rent. It has also been reported that dugongs seem to

[25] Bass, D.K. 2010. Status of Dugong *Dugong dugon* and Australian Snubfin Dolphin *Orcaella heinsohni*, in the Solomon Islands. Pacific Conservation Biology, 16, 133-143.

avoid such areas due to noise and disturbances and boat strikes caused by increased boat traffic.

35. Excessive tourist interaction. Dugongs are a considerable draw for visitors, and the desire to interact with the animals can result in operators or local communities getting too close and disturbing animals. Such incidences can also lead to physical harm from propeller strikes and harassment from humans, as well as the unknown impact of these activities on the social behaviour of dugongs. In Vanuatu, communities have attempted to domesticate dugongs by capturing them and fastening a rope to their tails, tethering them in the shallows and attempting to feed them. The intention is to allow people to swim with them and thus create a tourist attraction.
36. **Direct and indirect threats** to sensitive seagrass ecosystems from human influences may also be significant but are largely overlooked by policy makers. These include:
37. Destruction / degradation of seagrass habitats: Increases in sedimentation, water turbidity and nutrient and heavy metal loads are harmful for seagrass ecosystems but appear to be widespread[26]. In Indonesia, the construction of an industrial estate in West Java wiped out 30% of the seagrass cover in the area. Giant clams, sea cucumbers, molluscs and other benthic animals have also seen dramatic population declines as a result of the loss of seagrass areas. Some fishing methods can also cause direct physical damage to seagrass meadows.
38. Pollution in coastal waters. Despite the ability of seagrasses to absorb some nutrient run-off from terrestrial areas, land-based pollution can impact seagrass growth. For example, poor treatment of sewage from domestic areas may lead to phosphate and nitrate enrichment causing eutrophication. Untreated industrial liquid and solid disposals decrease the water quality through dissolved oxygen, temperature, salinity and pH. Run-off caused by deforestation for plantation or property/industrial development produces silt that at certain levels will disrupt the photosynthetic processes of seagrasses. In some areas of the Solomon Islands, as a result of logging activities, high sedimentation and increased turbidity in coastal waters pose a major threat to seagrasses[27].
39. Natural disasters. Natural disasters such as cyclones, storm surges and tsunamis add to human impacts on seagrass habitats through increased turbidity owing to sediment entering the water column, and runoff from the land as surge water recedes. In addition, seagrass plants may be ripped from their holdings due to wave action. In Vanuatu and Sri Lanka, tectonic uplift of foreshore areas associated with earthquakes has also been recorded to impact seagrass areas. In 1965, the east coast of Malekula, Vanuatu was uplifted approximately one metre above mean high water, leading to the loss of seagrasses and mangroves, which is still visible in the Crab Bay area.
40. Climate change. Global climate change is widely acknowledged to possibly exacerabate the above impacts and challenge management approaches at all levels. While there is no consensus on the direct impacts to seagrass habitats from climate change, it is likely that the most significant effects on seagrass habitats will be potential thermal stress in

[26] Coles, R.G., Grech, A., Rasheed, M.A., McKenzie, L.J., Unsworth, R.K.F., & Short, F. 2011. Seagrass ecology and threats in the tropical Indo-Pacific bioregion. Chapter 9 In: Pirog, R.S. (Ed). Seagrass: Ecology, Uses and Threats Editors. 2010. Nova Science Publishers, Inc ISBN: 978-1-61761-987-8

[27] McKenzie, L., Campbell, S. & Lasi, F. 2006. Seagrasses and Mangroves. In: Green, A., Lokani, P., Atu, W., Ramohia, P., Thomas P. & Almany, J. (Eds). 2006. Solomon Islands Marine Assessment: Technical report of survey conducted May 13 to June 17, 2004. TNC Pacific Island Countries Report No 1/06.

intertidal areas, increased potential damage from severe storm events and loss or gain of habitat due to sea level and CO_2 rise[28].

41. Table 2~~Table 2~~ provides a summary of the most important threats reported by the participating countries, identified through national stakeholder workshops.

Table 2. Summary of national threats to dugongs and seagrass.

Threat	Indonesia	Madagascar	Malaysia	Mozambique	Solomon Islands	Sri Lanka	Timor -Leste	Vanuatu
Dugong								
Incidental by-catch	✓	✓	✓	✓	✓	✓	✓	✓
Destructive fishing practices	✓	✓	✓	✓		✓	✓	
Hunting	✓		✓		✓	✓		✓
Boat strikes	✓		✓					✓
Excessive tourist interaction								✓
Seagrass								
Destruction / degradation of seagrass habitats	✓	✓	✓	✓	✓	✓	✓	
Pollution	✓	✓	✓	✓	✓			✓
Natural disasters								✓

42. **Root causes** are the underlying factors that lead to the threats identified above and include the following:

43. Poverty and human population growth: Poverty affects most dugong range states and all the Project Countries. This makes dugong conservation more difficult because communities are more concerned with other immediate priorities (finding food and livelihoods) and may not have the socio-economic stability needed to engage in conservation actions. Dugongs tend to be caught for food or monetary gain where people have limited choices of livelihoods, which may lead them to violate the law. In Indonesia, although fishers understand that it is prohibited, the very high prices that can be obtained for dugong tusk (e.g. more than their average monthly income) drives them to hunt dugongs and sell them in the local markets (e.g. in Bangka and Tual). Increasing human populations, coupled with inadequate development and planning lead to increasing pressure on land and coastal ecosystems and demands for food and natural products.

44. More than half the Project Countries are Least Developed Countries (LDC) and most rank very low on the global Human Development Index. Mozambique ranks third lowest globally (see Table 3~~Table 3~~) and has one of the longest coastlines in Africa, stretching 2,780 km. With a population of 23.7 million, expected to reach 36.5 million by mid-

[28] Grech, A., Chartrand-Miller, K., Erftemeijer, P., Fonseca, M., McKenzie, L., Rasheed, M., Taylor, H. and Coles, R. 2012. A comparison of threats, vulnerabilities and management approaches in global seagrass bioregions. Environ. Res. Lett. 7 024006.

2025, 60% of the population of Mozambique lives in coastal areas, placing significant pressure on coastal resources and natural capital. Over 60% of Mozambique's population lives in severe poverty, surviving on less than US$1.25 per day. Issues of lack of education and awareness also occur along the coastline of Mozambique, leading to over exploitation of marine resources that are used as a source of income and animal protein. Madagascar is an LDC, has a population of almost 22 million and one of the fastest population growth rates in the world, projected to reach 31 million people by 2025. 34% of the population lives within 100 km of the coast and most coastal communities are characterized by rapid population growth (over 60% in 44 coastal districts and 13 coastal Regions from 1995 to 2011). Ninety percent of Madagascar's population survives on less than US$2 per day, and coastal communities often have limited alternative sources of employment and food supply. In such circumstances, marine resources such as dugongs and other biodiversity associated with the seagrass ecosystem are exploited, usually unsustainably.

45. In Asia, poverty is a significant issue in Indonesia and Timor-Leste, but to a lesser extent in Malaysia. In Indonesia and Timor-Leste, in some districts, there has been a trend to increasing rather than decreasing poverty levels over the last decade. Approximately 30% of Indonesians are considered "poor" based on the national classification system, living on less than RP233740 per month (BPS-Statistics Indonesia (2010)/National Socio-economic Survey), although this varies across the country. Cronic food security is a major issue in Timor-Leste, with most families practicing food rationing for one to six months of the year.[29]

46. Table 3~~Table 3~~ provides an indication of the economic status of participating countries as identified by various indices.

Table 3. Summary of economic status of the participating countries[30,31,32].

Country	**Gross National Income per capita in Purchasing Power Parity (PPP) terms**	**Multidimensional Poverty Index**	**Human Development Index rank** (1-187)	**Least Developed Country**
Indonesia	$4,154	0.095%	121	No
Malaysia	$13,676	N/A	64	No
Madagascar	$828	0.357%	151	Yes
Mozambique	$906	0.512%	185	Yes
Solomon Islands	$2,172	N/A	143	Yes
Sri Lanka	$5,170	0.021%	92	No
Timor-Leste	$5,446	0.36%	134	Yes
Vanuatu	$3,960	0.129%	124	Yes

47. Conflicting national priorities: An emphasis on economic development in many Project Countries, and a perceived conflict between environmental and development concerns, have led to policies that can be detrimental to dugong and seagrass conservation goals. The recent emergence of markets for dugong- or shark-derived products, in Asia especially, has exacerbated this issue. Similar problems occur in Africa; for instance,

[29] ATSEA 2012. Transboundary Diagnostic Analaysis for the Arafura and Timor Seas.
[30] http://hdr.undp.org/en/statistics/
[31] http://www.prb.org/pdf12/2012-population-data-sheet_eng.pdf
[32] UNDP Human Development Reports http://hdr.undp.org/en/

within the context of Madagascar's ongoing political crisis, marine conservation faces economic and financial challenges due to an absence of fully functional government institutions and severe funding gaps. In the Pacific, there is growing awareness within the Government of the Solomon Islands of the need for effective integrated coastal zone management and sustainable marine resource use, however implementation and co-ordination remains poor.

48. Negative attitude of local communities towards the environment: There is often little initial support for conserving natural resources among coastal communities, unless a direct financial benefit can be seen. For instance, dugongs and other endangered species are frequently considered more valuable dead than alive, as short-term economic gain is important to the impoverished fishing communities. However, if real economic and livelihood benefits (e.g. incentives or alternatives) linked to dugong and seagrass conservation can be developed, then local community attitudes may become more favourable to engagement and support for conservation actions or behavioural changes (e.g. in fishing practices) to benefit dugongs. For instance, within the Velondriake Locally Managed Marine Area (LMMA) in southern Madagascar, marine aquaculture initiatives have been established to farm seaweed (*Kappaphycus alvarezii*) and sea cucumbers (*Holothuria scabra*), with technical support and training from local NGO Blue Ventures. Hundreds of farmers receive regular income from selling mariculture products, reducing dependency on traditional fishing on threatened coral reef and seagrass habitats, and fishing activity has been markedly reduced.
49. Poor governance and lack of community involvement in natural resources stewardship: Poorly regulated coastal development, fisheries and other sectors and their related policies and programmes (frequently excluding local communities and key stakeholders from management of land and natural resources on which their livelihoods depend), corruption and self-interest, all contribute to weak and ineffective conservation management of dugongs and seagrasses and poor conservation outcomes. For example, in the Solomon Islands there have been recent incidents where a combination of factors, such as political instability and local community discontent, has led to the termination of conservation projects.
50. **Barriers** are the factors that impede successful conservation or development activities. Barriers identified by the participating countries include:
51. Weak law enforcement: Dugongs are protected under national law in every participating country (see Section 2.4) but the regulation and enforcement of these laws is often inadequate due to a combination of lack of financial and political commitment from central government and weak capacity for enforcement at the local level (trained and equipped staff and other resources). A further problem is that people in local communities are often completely unaware of the legal protection afforded dugongs and that capture of them is illegal. Moreover, in most cases, as for example, in the Bazaruto Archipelago National Park (BANP), a lack of awareness of the nature and severity of offences by prosecuting authorities means that illegal gill net fishing operations (which kill dugongs) persist in the knowledge that there is little risk of being caught let alone prosecuted. This situation is compounded by the limited resources and capacity for effective patrols and law enforcement which includes the lack of marking of BANP boundaries with offenders exploiting this for illegal activities.
52. Lack of alternatives for fishing communities in developing countries: Most poor fisher communities have no alternatives to continuing fishing practices, which may be destructive (directly or indirectly) to dugongs and seagrass meadows. Thus, it is critical to recognise that any restriction in the type, frequency or locality in the gear used for fishing will ultimately reduce the returns to people from fishing. Conservation laws cannot be enforced or human Behaviours changed to favor conservation without the

development of viable and sustainable (long-term) economic alternatives for these communities.

53. Lack of institutional capacity and effective policy frameworks: Even with adequate policies and strategies, if the capacity to implement is weak, effective conservation management cannot be achieved. Many national and local government agencies concerned with the environment are under-staffed and under-funded, and expected to cover a broad range of topics including water management, climate change, forestry and fisheries, as well as biodiversity. In the biodiversity arena, seagrasses and dugongs are generally low on the priority list owing to their lack of visibility and poorly recognised ecological and economic role, at national and local levels. At the regional level, the mechanisms do not yet exist to ensure regional collaboration and joint action for the conservation of migratory dugongs and their seagrass ecosystems and conservation needs are not mainstreamed into wider policy frameworks.
54. Poor local and national development planning: Poor planning and inappropriate land use practices can lead to seagrass habitat degradation both directly and indirectly (e.g. direct impacts result from dredging and reclamation from tourism infrastructure development). In Vanuatu, for example, there has been a significant increase in the coastal population and a boom in coastal land developments for housing (mostly for offshore investors) and tourist facilities since the late 1990s, which have resulted in impacts on coastal areas and dugong habitats. Environmental Impact Assessment legislation was introduced in Vanuatu in 2003, but was considered ineffective until amendments were made in 2010. In the region known as the Coral Triangle, which includes Indonesia, Malaysia, Solomon Islands and Timor-Leste, expansion of urban and agricultural activities (e.g. Malaysia) has directly and indirectly affected coastal habitats, including seagrass meadows. Seagrass meadows have been destroyed by dredging and port development. The growth of urban centres along coastlines has led to the increased influx of sewage and garbage into the sea (e.g. Malaysia, Indonesia), which has affected nutrient levels. Seagrass meadows are destroyed when water becomes too turbid or full of nutrients. Logging in Solomon Islands has increased sedimentation.
55. Lack of information/awareness: There is limited awareness of seagrass ecosystem service value – such as the value of seagrass meadows as a nursery for commercially and artisanally-important fish species. The global significance of dugongs and seagrasses is also poorly understood at local and national levels, and there is little regional information exchange or collaboration on conservation issues. Critical data on seagrass status and extent and information on the status, distribution and movements of dugongs across the region is inadequate for effective conservation action and decision-making or strengthening of policies and regional programmes. Better information delivered in culturally appropriate ways to target communities and coupled with other social and economic incentives to change behaviour, is crucial to effective conservation.

2.4. Institutional, sectoral and policy context:

56. The institutional, sectoral and policy contecxt applicable to dugong and seagrass conservation and management under this project operates at international, regional and national levels.
57. The principal international MEAs (multi-lateral environmental agreements) relevant to the project and to dugong and seagrass conservation in the region are: the Convention on Biological Diversity (CBD) concerning coastal ecosystem services and biodiversity conservation and the United Nations Framework for Climate Change Convention (UNFCCC) Cancun Agreement concerning climate change mitigation targets. The UN Convention to Combat Desertification (UNCCD), the Ramsar Convention on Wetlands and the Convention on the Conservation of Migratory Species of Wild Animals (CMS)

also promote the protection of coastal ecosystems and their services by member states. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival, and prohibits international trade of endangered species such as dugongs, which is listed in Appendix I.

58. Table 4~~Table 4~~ below shows the extent to which countries participating in the project have ratified the above agreements relevant to dugong and seagrass conservation, and the CMS Dugong MoU which is a special instrument signed by range states of the dugong under CMS (see below). While Indonesia, Malaysia and Timor Leste are yet to sign the CMS Dugong MoU, all countries confirmed their intention to sign at the Second Signatory State Meeting held on 19-20 February 2013 in Manila, Philippines. A unique feature of the CMS is that range states of MoUs do not need to be a party to the mother convention of CMS to sign an agreement such as the Dugong MoU.

Table 4. Date of ratification of MEAs by Project Countries

Country	**Conventions/ agreements and date of signature/ ratification by countries**				
	CBD (Rat.)	**CMS (Entry into force)**	**CMS Dugong MoU (Sig.)**	**Ramsar (Entry into force)**	**CITES (Entry into force)**
Indonesia	23.08.1994		Informal intention to sign given.	08.08.1992	28.03.1979
Madagascar	04.03.1996	1.01.2007	31.10 2007	25.01.1999	18.11.1975
Malaysia	24.06.1994		Informal intention to sign given.	10.03.1995	18.01.1978
Mozambique	25.08.1995	1.08.2009	18.04.2011	03.12.2004	23.06.1981
Solomon Islands	03.10.1995		09.09.2010		24.06.2007
Sri Lanka	23.03.1994	1.09.1990	31.01.2012	15.10.1990	02.08.1979
Timor-Leste	08.01.2007 (Accession)		Informal intention to sign given.		
Vanuatu	25.03.1993		04.10.2010		15.10.1989

59. The project will contribute to the achievement of the Strategic Goals of the CBD Strategic Plan for Biodiversity 2011-2020[33], under many of the Aichi Biodiversity Targets, particularly the following:
    - Target 1: people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.
    - Target 5: the rate of loss, degradation and fragmentation of all natural habitats is significantly reduced.
    - Target 6: fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches.

[33] www.cbd.int/sp

- Target 11: at least 10 percent of coastal and marine areas are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures.
- Target 12: the extinction of known threatened species has been prevented and their conservation status has been improved and sustained.
- Target 14: ecosystems that provide essential services are restored and safeguarded.
- Target 15: ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced.
- Target 18: traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected.
- Target 19: knowledge, the science base and technologies relating to the values, functioning, status and trends of biodiversity, and the consequences of its loss, are improved, widely shared and transferred, and applied.

60. The "Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range" (UNEP/CMS Dugong MoU) entered into force on 31 October 2007 after signature by an initial seven range states[34]. Dugongs are classified as vulnerable to extinction under the 2009 World Conservation Union (IUCN) Red List of Threatened Species, which indicates that they face a high-risk of extinction in the wild in the medium-term and CMS lists the dugong (*Dugong dugon*) in its Appendix II, meaning that the conservation of the species would benefit from international cooperative activities organized across its migratory range. The MoU and its accompanying Conservation and Management Plan (CMP) were established in recognition of this need and to facilitate national level and transboundary actions (focused species and habitat-specific activities, coordinated across the species' range) that will lead to the conservation of dugong populations and their habitats. The MoU and CMP are the primary platform for conservation action on behalf of the dugong in all of the waters of coastal and archipelagic States of the Indian Ocean, East Asia, and the western Pacific Ocean, as well as their adjacent seas. The CMS Dugong MoU covers over 40 range states, of which there are currently 26 Signatory States. The CMS Dugong MoU Secretariat in the UNEP/CMS Abu Dhabi Office, hosted by the Government and the Environment Agency of Abu Dhabi (EAD), services the MoU. The Secretariat actively supports regional coordination and conservation efforts in all five sub-regions of the global distribution of dugongs: the North West Indian Ocean, South West Indian Ocean, South Asia, South East Asia and Pacific Islands/Australia through the Dugong, Seagrass and Coastal Communities Initiative (see section 2.6, below and Appendix 18).
61. GEF funding for this project will add value through providing funding and resources to implement national programmes and sub-projects in eight dugong range states in the Indian and western Pacific Ocean basins and regional collaboration, networking and information exchange, supported by but not funded within the framework of the CMS Dugong MoU and the existing Dugong, Seagrass and Coastal Communities Initiative.
62. Other relevant regional policy initiatives and frameworks to provide linkages and synergies exist. Of the 25 agreements operating under the framework of the Convention on Migratory Species, those with the most potential for linkages are the Memorandum of Understanding on the Conservation and Management of Marine Turtles and Their Habitats in the Indian Ocean and South-East Asia; the Memorandum of Understanding for the Conservation of Cetaceans and Their Habitats in the Pacific Islands Region; and the Memorandum of Understanding Concerning the Conservation of the Manatee and

[34] http://www.cms.int/species/dugong/dugong_mou.htm

Small Cetaceans of Western Africa and Macronesia. The CMS Conference of the Parties Resolutions and Agreement/MoU Recommendations addressed by the GEF Dugong and Seagrass Conservation Project are listed in Table 5. At a global level, the Convention on Biological Diversity is relevant to the project. The Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the Ramsar Convention) also provides potential synergies with the project given that the definition of wetlands under that convention extends to marine coastal environments up to six meters in depth, which is well within the range of dugongs. Other relevant initiatives include the UNEP Regional Seas Programme[35], which aims to address the accelerating degradation of the world's oceans and coastal areas through the sustainable management and use of the marine and coastal environment. It encourages neighboring countries to protect their shared marine environment through regional seas programmes, conventions and action plans. With regard to regional processes, the Convention for the Protection, Management and Development of the Marine and Coastal Areas of the Eastern African Region (the Nairobi Convention) has proven an effective platform for data sharing in the subregion. In the Western Pacific, a Dugong Action Plan has been prepared (including The Solomons and Vanuatu) as part of the Secretariat of the Pacific Regional Environment Programme (SPREP) Pacific Islands Regional Marine Species Programme 2013–2017)[36]. The Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security is a multi-lateral partnership involving four Project Countries (Indonesia, Malaysia, Solomon Islands and Timor-Leste) in addition to Papua New Guinea and Philippines, formed to address urgent threats facing coastal and marine resources in South-East Asia and the Western Pacific (see 2.7, below for more details of relevant and linked projects).

Table 5. Convention on the Conservation of Migratory Species of Wild Animals (CMS) Resolutions and Recommendations relevant to the GEF Dugong and Seagrass Conservation Project.

Resolution/ Recommendation Number	Subject of the Resolution/Recommendation
Resolution 8.14, 9.18 Resolution 10.14	By-Catch Bycatch of CMS-listed Species in Gillnet Fisheries
Recommendation 6.6 (Partly in force) Recommendation 8.17	Regional Coordination for Marine Turtles of the Indian Ocean and South-East Asia Marine Turtles
Resolution 7.2	Impact Assessment and Migratory Species
Resolution 7.3	Oil Pollution and Migratory Species
Resolution 9.6	Cooperation with other Bodies and Processes
Resolution 7.10 Resolution 8.1	Implications for CMS of the World Summit on Sustainable Development Sustainable Use
Recommendation 7.3	Regional Coordination for Small Cetaceans and Sirenians of Central and West Africa
Recommendation 7.4	Regional Coordination for Small Cetaceans and Dugongs of Southeast Asia and Adjacent Waters
Recommendation 7.5	Range State Agreement for Dugong (Dugong dugon) Conservation
Resolution 8.13 Resolution 9.7 Resolution 10.19	Climate Change and Migratory Species Climate Change Impacts on Migratory Species Migratory Species Conservation in the Light of Climate Change/

[35] http://www.unep.org/regionalseas/default.asp
[36] http://www.sprep.org/attachments/Publications/Marine_Species_Programme_2013-2017.pdf

Resolution 8.18	Integration of Migratory species into National Biodiversity Strategies and Action Plan
Resolution 9.9	Migratory Marine Species
Resolution 9.12 Resolution 10.6	Capacity Building Strategy Capacity Building Strategy (2012-2014)
Resolution 10.3	The Role of Ecological Networks in the Conservation of Migratory Species
Resolution 10.8	Cooperation between the Inter-governmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and CMS
Resolution 10.25	Enhancing Engagement with the Global Environment Facility/

63. At the national level, all Project Countries have legal instruments relevant to dugong and seagrass conservation, mostly within legislation covering species protection, establishment or maintenance of protected areas, or promotion of sustainable fishing practices. The development and updating of national plans and strategies for biodiversity generally, for dugongs and seagrasses specifically, and of marine protected area networks varies widely across Project Countries (see Summary in Table 6 – below or Appendix 16).
64. Table 6 outlines key national policies, legislation and strategies/action plans which are relevant to the conservation of dugongs and seagrass ecosystems in Project Countries

Table 6. Key national policies, legislation and strategies/action plans in Project Countries[37]

Country	Legal protection and regulation of dugongs and seagrass	National Biodiversity Policy/ NBSAP	National Dugong or Seagrass Strategy/ National mandate for protection of dugong populations	Marine Protected Areas/ Network/ management mandate
Indonesia	Dugongs and seagrass protected under Government Regulation No. 7/1999 concerning the protection of Indonesian Flora and Fauna. Regulations relating to coastal zone management, including: living resources and ecosystems; spatial planning; ratification of the UN CBD; management of the living environment; management of coastal zone and small	Indonesian Biodiversity Strategy and Action Plan (IBSAP), 2003.	National Conservation Strategy and Action Plan for Dugong in Indonesia (NCSAPDI), 2009 Policy, Strategy and Action Plan for Management of Seagrass Ecosystems in Indonesia, 2003 Ministry of Marine Affairs and Fisheries/ Directorate of Marine Affairs and National Marine Parks has the mandate to protect	Marine protected areas managed by Min. of Forestry (National Marine Park; Marine Nature Recreation Park; Marine Nature Reserve; Marine Nature Wildlife Reserve). Total extent designated approx. 4.7M ha. Marine Conservation Areas managed by Min. of Marine Affairs & Fisheries (predominantly Regional Marine PAs). Total extent designated approx. 11.4M ha. Ministry of Forestry: mandate for management of marine national parks. Ministry of Marine Affairs

[37] Compiled from PPG National Reviews and other sources.

Country	Legal protection and regulation of dugongs and seagrass	National Biodiversity Policy/ NBSAP	National Dugong or Seagrass Strategy/ National mandate for protection of dugong populations	Marine Protected Areas/ Network/ management mandate
	islands. National Conservation Act (including marine and coastal habitats) Ministry of Environment aims to complete implementing regulations that will allow wider adoption of PES by the end of 2013 under Law 32/2009 on , Environmental Management National Environmental Protection Act (Min of Environment,)		and manage dugong populations in Indonesia	and Fisheries/ Directorate General for Marine, Coastal and Small Island Affairs: mandate to manage marine protected areas and marine biological resource conservation, including Regional Marine Conservation Areas established under the Fisheries (2004) and Management of Small Coastal Islands (2007) Acts.
Madagascar	Dugongs and seagrasses protected under National Environmental laws and decrees relating to listing of protected animals, regulation of marine herbal species and prohibition of killing, wounding and capturing marine mammals and other species; Fisheries and tourism legislation; Ratification of the UN CBD and Nairobi Convention; Integrated Coastal Zone Management; Sustainable Management of Biodiversity.	Madagascar National Biodiversity Strategy and Action Plan 2002	National Environmental Action Plan, including MPAs and Integrated Coastal Zone Management (ICZM). "*Mise En Compatibilité des Investissements avec l'Environnement*"-MECIE, allows the creation of environmental cells in each Ministry Department and ensures the integration of the environment in each sector.	Marine National Parks (IUCN Category II) – seven, managed under the governments' National Environmental Action Plan – integrated into the national (Marine Protected Areas System) and regional ("Réseau des Aires Marine Protégées-Commission de l'Océan Indien – RAMP-COI) networks. LMMAs (IUCN Category V or VI or not reported) – 37, managed by NGOs. Cover the dugongs known range and seagrass ecosystems.
Malaysia	The dugong is totally protected under federal legislation. Fisheries legislation	National Policy on Biological Diversity	Dugong National Plan of Action (DNPOA) 2011.	In total 50 MPAs, covering approx. 3500 km^2. None are designated MPAs for seagrass habitats and

Country	Legal protection and regulation of dugongs and seagrass	National Biodiversity Policy/ NBSAP	National Dugong or Seagrass Strategy/ National mandate for protection of dugong populations	Marine Protected Areas/ Network/ management mandate
	protects marine species and provides for establishment of Marine Protected Areas. State laws in Sarawak and Sabah protect dugongs. Member of the Coral Triangle Initiative.	1998.	Department of Fisheries Malaysia (MOA), Department of Wildlife and National Parks (NRE), and Department of Marine Parks Malaysia (NRE) has a mandate to protect and manage dugongs in Peninsula Malaysia In Sabah, it is the Department of Wildlife Sabah, Department of Fisheries Sabah. In Sarawak it is Forest Department Sarawak.	dugongs. Few proposed MPAs overlap with the dugong's range and seagrass availability (except Pulau Banggi and Lawas). MPA Management Authority: - Federal: Department of Marine Parks; - State: Sarawak and Sabah governments; - Private corporations
Mozambique	In Mozambique, dugongs are protected under legislation relating to forests and wildlife and fisheries. Seagrass habitats gain protection through regulations for protection of beaches and coastal areas; Marine Protected Areas; the Ramsar Convention; contracting party to the Nairobi Convention.	Strategy and action plan for the conservation of biological diversity in Mozambique 1998.	Final Draft Management Plan for Bazaruto Archipelago. National Directorate for Environmental Management (MICOA), Ministry of Agriculture and Ministry of Fisheries have a mandate for the protection and management of dugongs.	Five protected areas declared prior to 2011 protected only 3% if the coastline. These MPAs are Bazaruto (1430 km^2), Ilhas da Inhaca e dos Portugueses (1 km^2), Quirimbas (1522 km^2) , North Quirimbas (230 km^2) and Vilanculos (80 km^2) Lake Niassa reserve declared in mid-2011, Primeiras and Segundas archipelago Marine Protected Area covers almost 10,500 km^2 – includes the range of the dugong and its seagrass habitat.
Sri Lanka	The dugong is listed as a strictly protected animal under the Flora and Fauna Protection Ordinance of Sri	Biodiversity Conservation in Sri Lanka: A Framework	The Department of Wildlife Conservation (DWC) of Sri Lanka has a	Four MPAs: Bar Reef MPA (west of the Kalpitiya peninsula in the vicinity of Puttalam lagoon) - Total extent designated approx.

Country	Legal protection and regulation of dugongs and seagrass	National Biodiversity Policy/ NBSAP	National Dugong or Seagrass Strategy/ National mandate for protection of dugong populations	Marine Protected Areas/ Network/ management mandate
	Lanka.	for Action 1999.	mandate to protect and manage dugongs in Sri Lanka.	306.7 km^2; The Hikkaduwa marine sanctuary (southern province of Sri Lanka) - Total extent designated is approx. 45 ha. Pigeon Island National Park and Rummassala Marine Sanctuary in Galle Bay also established.
Solomon Islands	Dugongs are protected under legislation relating to threatened species or protected areas. Ratified UN CBD; Member of the Coral Triangle Initiative.	Solomon Islands National Biodiversity Strategic Action Plan 2009.	Pacific Islands Regional Marine Species Programme 2013-2017: Dugong Action Plan 2013-2017; National Environmental Development Action Plan (funded by CBD, UNFCCC and UNDP); Coral Triangle Initiative National Action Plan; The Ministry of Environment and Conservation is the lead agency mandated to protect dugongs and their habitats. The Ministry of Fisheries Resources also has a role.	Approximately 180 marine protected areas, 50 of which have known boundaries. The extent of the marine protected areas with known boundaries is approx. 450 km^2. MPA Management Authority: Locally Managed Marine Areas (LMMAs).
Timor-Leste	Dugongs and seagrass could be protected under environmental management and fisheries legislation. Ratified UN CBD, Member of the Coral Triangle Initiative	National Biodiversity Strategy and Action Plan 2011-2020.	The Ministry of Agriculture and Fisheries (MAF) and the State Secretariat for the Environment have a mandate to protect dugongs and their habitats.	Four main MPAs within its network, with an extent of approx. 1200 km^2. MPA Management Authority: Department of Protected Areas and National Parks, Ministry of Agriculture and Fisheries, Timor-Leste
Vanuatu	Dugongs protected	Vanuatu	Pacific Islands	18 protected area initiatives,

Country	Legal protection and regulation of dugongs and seagrass	National Biodiversity Policy/ NBSAP	National Dugong or Seagrass Strategy/ National mandate for protection of dugong populations	Marine Protected Areas/ Network/ management mandate
	through the establishment of a marine mammal sanctuary of Vanuatu's entire EEZ under fisheries legislation. Additional protection afforded through Foreshore Development Permits (FD Permits) and Environmental Impact Assessments (EIAs), customary marine tenure.	National Biodiversity Conservation Strategy 1999.	Regional Marine Species Programme 2013-2017: Dugong Action Plan 2013-2017; Department of Fisheries and Department of Environment Protection and Conservation have a mandate to protect and manage dugongs.	which have seagrass areas and/or dugongs resident in the area (out of 22 marine/terrestrial protected areas). MPA Management Authority: - Department of Environment Protection and Conservation; - Community management – management committee or traditional leader.

65. The Biodiversity Strategy and Action Plans (NBSAPs) for most countries are out of date (e.g. around 10 years old in Indonesia, Malaysia, Sri Lanka and Vanuatu). Most existing plans mention both dugongs and seagrasses, especially for the smaller island nations. The project will support implementation of the priorities identified for dugong and seagrass conservation in existing NBSAPs and work to strengthen plans and remove national policy and legal barriers where necessary (see 2.6 Baseline analysis and gaps by country, below and 11). Some countries have other relevant national plans, specifically for dugongs (e.g. Indonesia, Malaysia, Mozambique), and for the marine environment in the context of sustainable development (Timor-Leste). The SPREP Pacific Islands Regional Marine Species Programme 2013–2017 includes an action plan for dugongs in Solomon Islands and Vanuatu (see above and Table 11).
66. The Convention on Biological Diversity requires countries to develop national Clearing House Mechanisms. This project will develop a regional Clearing House Mechanism which can be utilised by countries in the development of their national Clearing House Mechanisms.
67. The project is also aligned at the national level with the relevant regional and national UNDAF (United Nations Development Assistance Frameworks) and specific goals for each Project Country under themes including environmental sustainability; gender equality; poverty reduction and inclusive economic growth; health and education; good governance and human rights. Specifically, it will assist Project countries to contribute to the achievement of sustainable development (see Table 12) and meet their Millennium Development Goals, particularly Goal #7 Ensure environmental sustainability; Goal #1 Eradicate extreme poverty and hunger; Goal #3 Promote gender equality and empower women.

2.5. Stakeholder mapping and analysis

68. A wide range of stakeholders in the Project Countries are involved in marine and coastal conservation, exploitation of marine resources, and activities which directly or indirectly

impact dugongs and their seagrass ecosystems, including government institutions, the private sector, civil society and research institutions. For instance, in Indonesia, the Local/District Government of Pulau Bintan (Riau Archipelago) has, through the UNEP/GEF Trismades Project (2007-2010), established a District Marine Conservation area and designated "dugong" as the flagship species of the District. Sea World Indonesia (SIW) is currently the only institution in Indonesia which has dugongs in captivity for public display. The dugongs are now kept in a big tank, the water quality is monitored, dugongs are fed seagrass Syringonium isoetifolium collected from Banten Bay with additional food supplement and dugongs' health is routinely monitored including the use of modern medical instruments, such as ECG, USG and radiology. In Malaysia, the Department of Fisheries Malaysia has developed a National Plan of Action (NPOA) for dugongs which implements at least five out of the nine Objectives of the CMS Dugong MoU Conservation and Management Plan (CMP), and is to be reviewed every five years. In 2012, in Mozambique, the Bazaruto National Park with support from the EWT (Endangered Wildlife Trust) initiated the Dugong Emergency Protection Project (EPP) with the aim to secure core dugong herds and habitat through mitigating major threats to both and strengthening existing management structures. This project represents a component of the 5-year Conservation strategy designed by the EWT's Marine and Coastal Conservation division. Stakeholder analyses were carried out in Project Countries at PPG stage and are included in national reports. A more extended summary of national stakeholders involved at the PPG phase is included in Appendix 19. Some of the national stakeholders who participated in meetings carried out during the PPG phase have become Project Partners. Section 5 and Appendix 20, respectively, contain details of the identified Project Partners and their subsequent role in the project (i.e. the project outcomes they address). Appendix 21 details the capacity of Project Partners to undertake project activities.

Governmental institutions/agencies

69. Governmental institutions and agencies fulfil a range of actions in the conservation of dugongs and their seagrass habitats across the participating countries. Responsibilities for biodiversity, protected areas, fisheries, coastal zone management and other relevant sectors such as tourism are often divided across several Ministries and levels of administration (national, district, municipal, etc.). In Mozambique, for example, there is an over-arching National Directorate for Environmental Management (NDEM) under the Ministry of Coordination of Environmental Affairs (MICOA). A Dugong and Sea turtle Task Force and a technical Centre for Sustainable Development for Coastal Zones have been set up by MICOA. Other key government stakeholders identified in Mozambique include departments, institutions and agencies under Ministries of Fisheries, Transport, Tourism, Agriculture and Conservation. Other relevant agencies and levels of administration include the Marine and Lacustrine Police, various Municipalities and District Administrations, Regional Fisheries Associations, Tourism Associations/ Forums and the Bazaruto Archipelago National Park Authority. Some countries, such as Madagasacar, have a decentralized approach to government and have established marine management platforms to ensure stakeholder coordination at different levels (national, regional and local).
70. Government stakeholders are responsible for a wide variety of mandates which will affect project activities, including the development and enforcement of legislation and regulations for the conservation of marine species, and the gazettal and management of marine protected areas. Government and local government are involved in establishment/ approval and oversight of community or co-managed protected areas (e.g. LMMAs in Madagascar). They will provide a degree of horizontal coordination for the project at the

national level, required for cross-sectoral activities (e.g. development of Integrated Coastal Zone Management plans, awareness raising materials and educational curricula, regulation of commercial fisheries and industrial activities). Government agencies and staff (e.g. Dugong Focal Points) are responsible for reporting under international conventions and agreements such as the CBD and the CMS Dugong MoU and for collaboration on regional initiatives with other national governments.

71. In some countries, government agencies also collect and hold scientific and monitoring data and information on seagrasses and other marine biodiversity (e.g. the Indonesian Institute of Sciences (LIPI); in Madagascar, the Centre National de Recherches Océanographiques (CNRO) and the Centre National de Recherches sur l'Environnement (CNRE); in Malaysia, the Department of Fisheries Malaysia, Johor National Parks Corporation, and Sabah Parks; in Mozambique, Centre for sustainable development for Coastal Zones (CDS_ZC), and Instituto de Desenvolvimento de Pesca de Pequena (IDPPE); in Sri Lanka, the National Aquatic Resources Research and Development Agency (NARA); in Timor-Leste, the National Directorate of Fisheries and Aquaculture (NDFA); in Vanuatu, the Department of Environmental Protection and Conservation (DEPC), and the Department of Fisheries (DoF)). Government agencies are important to the delivery of the project and will contribute to regional monitoring, networking and information exchange. Fourteen government agency partners will deliver projects across all four project outcomes.

Civil society organisations

72. Civil society organisations (CSOs) are the non-governmental entities involved in dugong and seagrass conservation, including national and international NGOs and local community organizations, youth, women's and other community groups. CSOs often have particular strengths in advocacy, education and awareness and local community involvement in natural resource management/ stewardship and community co-management of protected areas or individual species or habitats conservation action (e.g. Seagrass-Watch in Malaysia, Indonesia and Solomon Islands). Other interest groups represented by CSOs include artisanal and commercial fishermen in some Project Countries. CSO roles in the project will vary according to the country and different site-based community initiatives but will involve all aspects of project implementation at local, national and regional levels. Larger international NGOS such as WWF (Indonesia and Malaysia), Conservation International and Blue Ventures (Mozambique, Madagascar and Timor-Leste) will play roles in project management; other smaller CSOs will play more local site-based roles, as appropriate.

73. Some countries have existing initiatives under which civil society organisations work with local communities and government agencies to enable incentive-based environmental stewardship projects that benefit a range of marine species. Such projects include the development of or access to markets that provide for alternative livelihoods away from those that may harm dugongs or their seagrass habitats.

74. For example, the project will benefit from initiatives such as the following Locally Managed Marine Area by a key Project Partner, Blue Ventures:
    - Velondriake Locally Managed Marine Area[38]: The Velondriake locally managed marine area (LMMA), which is governed by representatives from 25 villages, is the largest community-managed marine protected area in the Indian Ocean. It seeks to protect biodiversity, improve livelihoods and increase environmental awareness

[38] Information taken from http://velondriake.org/velondriake/velondriake-locally-managed-marine-area.htm

among communities. Velondriake serves as a model to other communities for combinging conservation and economic development, using local governance and management structures.

- The LMMA spans 680-square km along the southwest coast of Madagascar and protects coral reefs, mangroves, seagrass beds, baobab forests and other threatened habitats. Over 7,000 people live within the boundaries of the LMMA and more than 10,000 people benefit from its management. The name Velondriake literally means "to live with the sea" in the local Vezo dialect.
- Velondriake's history begins with octopus, the most economically important species in the region with over 99% of the catch being sold for export. Beginning in 2004, the villages within Velondriake began experimenting with temporary three to seven month closures of octopus fishing grounds in an attempt to better manage the octopus fishery. Buoyed by success with these octopus closures, which resulted in more productive catches and increased incomes, villages within Velondriake were ready to take on more ambitious management of their marine and coastal environment, and in 2006 the first Velondriake management committee was established.
- With representatives from each of the villages, the Velondriake committee, called the Velondriake Association, began to implement and enforce local laws against destructive fishing. The committee also agreed to set aside six permanent marine protected areas and one permanent mangrove protected area.
- Since then, the Velondriake Association has received extensive training in conservation planning and resource management from partner organisation Blue Ventures. The Wildlife Conservation Society was also particularly instrumental in the initial training and orientation of the Velondriake Association. Toliara's marine research institute, the IHSM, has also been involved in the project since the beginning, providing academic support and frequently sending students to the area to conduct research projects.

Research institutes/universities

75. Research and technical institutes and universities will play key project roles in all Project Countries through the provision of data and applied research on dugongs and their seagrass habitats and marine ecosystems. The provision of such scientific information aids the gazettal of new marine protected areas, and forms the technical and scientific rationale underlying improved management. Knowledge gaps and lack of data are a major barrier to improving conservation of dugongs and seagrasses, identified in all Project Countries. Research and monitoring within the project and of the project itself will be supported by the Dugong Technical Group (DTG), established by the CMS Dugong MoU Secretariat for access to a network of specialists with different skills for the conservation and management of dugongs and their seagrass habitats, including conservation of dugong and alleviation of poverty in developing countries. Members of the DTG are drawn from a wide variety of supporting international institutions and Universities (see Section 4. Institutional Framework/ Implementing Arrangements). Additional technical expertise will be sought as required.

Multi-lateral organizations, MEAs and agencies

76. Multi-lateral and bilateral donors and organizations including UNEP, FAO and UNDP and relevant international and regional MEAs and partnerships (e.g. CMS and the CMS Dugong MoU and its Secretariat) are also stakeholders at the international level. They provide policy frameworks, networking, information exchange and financial and technical support to programmes and projects.

Other stakeholders

77. Private sector involvement in the project will be largely at the level of individual site based initiatives where stakeholders include developers, hotel owners, tour guides, commercial boat operators etc. Private sector funding underpins innovative financing and incentive-based mechanisms used to support community alternatives and improved stewardship by communities. For example, in Madgascar, as a Project Partner AQUALMA (UNIMA), an environmentally and socially responsible aquaculture operation producing tiger prawns mainly for export, is committed to long-term sustainability at its operational sites. This commitment also extends to the adjacent local communities and coastal habitats and involvement in the GEF project will enable UNIMA to significantly contribute to seagrass and dugong conservation in this particular coastal region of north-west Madagascar.

2.6. Baseline analysis and gaps

78. The most comprehensive overview of regional and national baseline information available on dugong population status was commissioned during the PPG phase and is provided in Appendix 17 (see Section 2 of the Appendix). For most countries, with the exception of the east coast of Australia, information is very limited.
79. All countries (except for Solomon Islands) also carried out a national baseline and gap analysis for dugong and seagrass conservation in National Reviews completed at PPG stage (for Solomon Islands a shorter consultant report was produced later in project preparation and will be expanded on during Inception). The national gap analysis led to the identification of national projects. Most countries have some existing and at least partially successful interventions for the conservation of dugongs and their seagrass habitats. All reported the need for better information on dugong and seagrass distribution, status and threats. The project will address this lack of critical knowledge, where needed, through initial baseline surveys in relevant areas, the establishment of databases and monitoring programmes and a project Clearing House Mechanism for dissemination and information exchange.
80. Current initiatives focus on species protection, including through the use of protected areas, and the provision of alternative livelihood options. Examples from the participating countries include a range of studies into seagrass distribution and community perceptions of dugong in Indonesia; assessments of hunting and bycatch of coastal marine mammals and LMMAs in Madagascar; and funding protected areas and testing the effectiveness of conservation education programmes in Malaysia.
81. The use of marine protected areas is increasing in all range states, in accordance with relevant international targets. However, the distribution of dugongs in relation to the marine protected area network is not clear (an issue which the project will address through surveys and information gathering). There is a widespread lack of institutional capacity for conservation, fisheries management, law enforcement, integrated coastal zone management planning and community stewardship in the countries.
82. An identified gap across the project area and the regions covered is the lack of coordinated and wide-ranging approaches to reflect the migratory nature and widespread range of dugong populations. This (GEF Dugong and Seagrass Conservation Project) will be one of the first to take such an approach (in line with the Dugong, Seagrass and Coastal Communities Initiative, which will also encompass a broad number of linked national activities in other range states of the dugong under the regional policy framework of the CMS Dugong MoU).
83. Each country (apart from Solomon Islands) carried out a national stakeholder workshop and consultation exercise at PPG stage, which identified key gaps in national information and activities needed for dugong and seagrass conservation. Poverty has been identified as

a key driver of dugong population decline and seagrass degradation and destruction in all countries, but is more prevalent in some countries than others. It must be addressed to enable successful positive behavioural change at the community level. The individual gaps identified by countries are summarized below:

Indonesia

84. A preliminary assessment for Sumatra, Java, Kalimantan, Sulawesi, Bali, Nusa Tenggara, Maluku and Papua summarising the information available on dugong and seagrass distribution and status in the different locations highlighted the lack of data and the need for additional work throughout the archipelago. In 1998 it was reported that, possibly due to poverty and limited options for livelihoods, dugongs were still being caught and sold for food in local markets, or for their tusks at a price higher than the average monthly income of a fisher. A geographic review of marine biodiversity in Indonesia stated that the Bintan area is greatly impacted by human activities, while the population status of dugongs is unknown[39]. The National Conservation Strategy and Action Plan for the Dugong in Indonesia and the associated scientific assessment report prioritised collection of baseline data as the first step toward a sustainable dugong conservation programme[40][41]. The TRISMADES project indicated that the coastal community required further information and awareness campaignes to gain a more complete understanding of the important functions of the seagrass meadows and the need for their conservation.
85. Bintan is the preferred project site of the Indonesian Government and is a useful site to implement conservation initiatives for visibility, demonstration and replication potential. The unique perspective of Bintan communities and their increased capacity for conservation initiatives, due to previous experience with the Trismades Project, will benefit the development of community initiatives by drawing on past experience to establish best practice. The refined approach will then be replicated to other priority areas within and beyond Indonesia to the wider GEF Project and on to the wider dugong range under the Dugong, Seagrass and Coastal Communities Initiative.
86. There are several planned GEF Project activities in Indonesia that will be implemented outside of Bintan, these include a national awareness campaign for dugong and seagrass conservation which encourages the Indonesian public to monitor dugong populations, seagrass habitats and threats using standard methodologies, and to report via a web portal. Additional priority sites will be identified from these actions and in future, the monitoring information may inform a proactive approach to conservation. In addition, the GEF Project will contribute to refinement and implementation of the National Strategy for Dugongs and Seagrasses, as well as mainstreaming of policy on a national scale through production of guidelines, assignment of a Project Focal Point and NGO networking events.
87. Beyond this, there are on-going discussions between the Dugong MoU Secretariat and the Indonesian Government regarding potential project locations. Resources currently

[39] Huffard, C.L., Erdman, M.V., Gunawan, T. (Eds) 2012. Geographic priorities for marine biodiversity conservation in Indonesia. Ministry of Marine Affairs and Fisheries and Marine Protected Areas Governance Program. Jakarta-Indonesia. 105.

[40] De Iongh, H., Malikusworo, H., Moraal, M., Kiswara, W. 2009. National Conservation Strategy and Action Plan for the Dugong in Indonesia Part I. Scientific Report, Institute of Environmental Sciences Leiden and Research Centre for Oceanography Jakarta.

[41] De Iongh, H., Malikusworo, H., Moraal, M., Kiswara, W. 2009. National Conservation Strategy and Action Plan for the Dugong in Indonesia Part II. Strategy Report, Institute of Environmental Sciences Leiden and Research Centre for Oceanography Jakarta.

earmarked for the Bintan Project may be reallocated to other priority sites as identified during the inception period.

88. There is limited collaboration across the government agencies responsible for dugong and seagrass conservation – largely owing to differing mandates. The problem is further exacerbated by the part-time availability of personnel to focus on these issues, as well as restricted funding. In order to address this, a National Dugong Conservation Committee has been proposed to provide a platform for more strategic collaboration.

Madagascar

89. Limited information exists on dugong populations and their habitats and comprehensive research is needed to collect baseline and critical data to inform effective conservation and management. The lack of data on the characteristics of dugong populations has resulted in ineffective conservation and management of the species in coastal waters. Since the colonial period, efforts have been deployed to implement administrative, legal and technical measures to control the degradation and destruction of habitats and to preserve biological diversity in Madagascar, including measures to protect ecosystems and species. The limited involvement of coastal communities in the management of dugongs and their seagrass habitats is considered a major factor in their declines. The value of the ecosystem services provided by seagrass ecosystems has been underestimated even though they constitute the nursery grounds of shrimp and several species of fishes exploited in coastal fisheries.
90. The "Recensement des Mammifères Marins et autres Mégafaunes Pélagiques par Observation Aériennes/ Census of Marine Mammals and other pelagic megafauna by aerial surveys" (REMMOA) in 2010 was the first methodical study to assess the abundance and distribution of marine megafauna, including dugong, along the coastal waters of Madagascar. The dugong population in Madagascar is very patchy, with dugongs mostly occurring on the west coast, particularly in the north. Numbers are likely to be too low to confirm trends in a time frame useful for management, making aerial surveys unlikely to be an effective population monitoring tool in Madagascar.

Malaysia

91. The conservation of marine biodiversity is not as advanced as conservation of terrestrial ecosystems in Malaysia, and the integration of activities related to marine conservation across related government agencies needs to be enhanced. Protected areas are gazetted under specific state or federal laws (State enactment, Forestry Act, National Park Act, etc.) and managed by various implementing agencies; governance and management could be improved and harmonised under a national guideline or policy.
92. In most parts of Malaysia, dugongs are no longer directly targeted for food or their products, this could be due to knowledge that dugongs are a protected species under Malaysian law and/or the severe decrease in the dugong populations over the last few decades. Most hunting stopped in the 1980's; however when questioned in 2008 32 respondents (11%) said they still hunted dolphins or dugong occasionally or opportunistically during fishing trips (Jaaman et al., 2008). A number of assessment needs have been identified in Malaysia's PPG phase National Review. These include the mapping of seagrass areas, monitoring of dugong feeding trails, genetic studies of stranded dead dugongs, the valuation of the seagrass meadows and their services, the identification and mapping of other habitats used by dugongs beside its critical habitats, and transboundary research and conservation on dugong population between three countries (Malaysia, Brunei, the Philippines).

Mozambique

93. A large gap in information on dugongs and seagrasses exists for the Primeiras and Segundas Archipelago, Inhambane Bay, Bartolomeu Dias, Quirimba Arquipelago and Pemba Bay, and there is little information on feeding habitats and preferred seagrass sepcies for feeding by dugongs. There is only weak and unreliable information on the biology, overall population structure and genetic diversity of the dugong population in Mozambique. Known areas of previous distribution need to be reassessed through various methods to verify dugong presence and the prevailing threats. There is an improving level of data on the extent of seagrass cover but few studies consider growth rate or the impact of beach seine fisheries on the seagrasses and systematic studies of the long term dynamics of seagrass habitats and the valuation of ecosystem services are lacking.
94. With regards to management capacity in national parks, the government does not prioritise the environment and therefore generated income, for example from park fees, does not go back into maintaining national parks and/or the communities that depend on them. The common approach is for 20% of the forestry, hunting concessions or protected area revenue to be shared with communities, unless the community can come to an agreement with the private sector (which they do not usually have the skills and capacity to achieve). Capacity for enforcement of regulations on Marine Park, land access and use/ zoning, responding to environmental threats and accounting for marine park fees, is also weak.

Solomon Islands

95. Information on the dugong population in the Solomon Islands is largely based on two rapid baseline assessments consisting of interviews with local coastal communities conducted in 2009 and 2010. Extensive seagrass surveys were conducted in 2006 and long term seagrass monitoring continues at a few select sites. Malaita province was identified to contain 54% of the area of all Solomon Islands' seagrass meadows and, along with Isabel Province, reported a large number of dugong sightings. There is limited information regarding the levels of direct take (see Bass 2010[25]). There is no current information available on the status of dugong populations, and little information on the distribution and abundance of dugongs, movement of dugongs between the islands and extent of suitable seagrass habitat.
96. It is essential that dugong population status is determined for the Solomon Islands and important seagrass areas are identified so that action may be taken to ensure the dugong's survival. Conservation success in the Solomon Islands is dependent on the local community's support, as access and utilisation of near shore areas is linked to traditional tenure systems. It is therefore critical to work with landowners and provincial governments to identify their conservation priorities. To address current knowledge gaps and increase capacity for community monitoring and effective stewardship of dugongs and seagrasses, local communities must be involved.

Sri Lanka

97. No comprehensive surveys have been carried out on the remaining dugong populations off Sri Lanka in the past three decades due to an ethnic conflict which prevailed in the north of the island, making the area inaccessible. Seagrass meadows and dugong habitats have not been mapped. The principal studies carried out so far were conducted through interviews with local fishermen. Palk Bay and the Gulf of Mannar have been identified as areas where seagrass meadows are present and similar habitats may exist in other parts of the coastal areas of the island. An urgent need exists for a comprehensive survey to assess presence/ absence and to map the extent of seagrass meadows and to determine population sizes, movements and threats to dugongs.
98. Other research priorities include a mechanism to monitor incidental capture, and an assessment of the impact of prawn trawling and other destructive fishing methods. Palk

Bay and the Gulf of Mannar, as known areas of present occurrence, should be surveyed as a priority.

Timor-Leste

99. There are substantial knowledge gaps for the distribution and abundance of dugongs in Timor-Leste. Information is required for the location of the main feeding habitats for the species and whether there are temporal changes in distribution according to environmental factors. There is no available information on the presence or distribution of dugongs for the south coast. Population size and characteristics for Timor-Leste dugongs are unknown.
100. Dugong mortality has not been reported in Timor-Leste in recent years although the use of gillnets in nearshore waters by coastal fishers is increasing.
101. Gaps in baseline data and information are mainly due to severe constraints including limited human resources, institutional capacity and infrastructure of both Ministry of Agriculture and Fisheries and the Ministry of Economy and Development. The proposed activities in Timor-Leste will address existing knowledge barriers through the identification of priority areas for conservation of dugongs and seagrasses. Proposed activities will strengthen and operationalize a national inter-ministerial mechanism to ensure a coordinated approach to national level coastal zone planning and decision-making.

Vanuatu

102. The main information gap relates to seagrass and dugong distribution data, which require updating from information collated from a 1987/1988 survey. There have been large increases in human populations living along the coast since this previous survey, and other changes may include an increase in the use of monofilament nets and coastal developments occurring around Efate and Santo, along with increases in small boat traffic. There is also limited awareness in more remote areas of the legislation covering dugongs, life-cycle information and the ecological services provided by seagrasses.

2.7. Linkages with other GEF and non-GEF interventions

103. The project will build upon and collaborate with ongoing and planned national, regional and international conservation efforts. Project linkages to ongoing and proposed GEF and non-GEF interventions are described in Table 7~~Table 7~~ (see Appendix 22 for more detail of related GEF and non-GEF projects).
104. The CMS Dugong MoU Secretariat will play a key role in ensuring that close linkages are established and maintained between the project and all the relevant initiatives.

Table 7. Project linkages to ongoing and proposed GEF interventions and non-GEF interventions.[42]

GEF project name	Executing agency	Geographic extent	Project description	Linkages with GEF Dugong and Seagrass Conservation Project
GEF Arafura and Timor Seas Ecosystem Action Programme (ATSEA) - under the Coral	UNDP	Regional (Indonesia, Timor-Leste)	To ensure the integrated, cooperative, sustainable, ecosystem-based management and use of the living coastal and marine resources, including fisheries and	This Project will contribute to the following SAP's objectives: - Restoring degraded habitats for sustainable provision of ecosystem services; - Protecting key marine species; - To strengthen the regional

[42] N.B.: The proposed list of projects is non-exhaustive.

Triangle Initiative			biodiversity, of the Arafura and Timor Seas (ATS) region, through the formulation, inter-governmental adoption and initial implementation of a Regional Strategic Action Programme (SAP) and National Action Programmes (NAPs)	governance of the ATS region; and - To strengthen stakeholder participation in ATS governance and management.
Standardized Methodologies for Carbon Accounting and Ecosystem Services Valuation of Blue Forests (UNEP GEF Blue Forests project)	UNEP	Global (Indonesia, Madagascar, Mozambique)	To develop methodologies for carbon accounting and ecosystem services valuation in blue forests to be recognized and used by the international community and the GEF	The potential for this project to support and complement the GEF International Waters (GEF IW) project interventions and the anticipated synergies with regards to seagrasses will be more fully explored during the inception period. However initial discussions with the Project Coordination Unit (GRID-Arendal) have highlighted potential areas of collaboration in small scale interventions to use application of blue forests methodologies and approaches for valuing carbon and other ecosystem services in common partner countries including Mozambique, Indonesia and Madagascar and will be continued during the inception phase; there may also be opportunities to collaborate in the United Arab Emirates. In consultation with the EA of the UNEP GEF Blue Forests project, every effort will be made to align and coordinate the strategy on research questions, approaches, science and research and development of incentive mechanisms of the two projects. This will include specific reference in the TORs of each project's steering committee and/or advisory groups for each respective project to be represented.
Capturing Coral Reef & Related Ecosystem Services		Regional (Indonesia, Philippines and Pacific	To demonstrate the fundamental relationships between the ecological value of intact	The potential for the GEF dugong and Seagrass Conservation Project to explore the market potential of ecosystem services of seagrass

(CCRES; Proposed GEF IW project)		Islands Countries)	coral reef, seagrass and mangrove ecosystems and the economic value and market potential of their ecosystem services, how these are tied to healthy, resilient systems and the routine distribution of economic benefits that can bring transformational change in sustaining the welfare of coastal communities.	ecosystems will be further explored during the inception period.
Bay of Bengal Large Marine Ecosystem (BOBLME) Project	FAO Departments of Fisheries and national auhtorities in the participating countries	Regional (Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, and Thailand)	To collaborate to lay the foundations for a coordinated programme of action designed to improve the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.	This Project aligns with the BOBLME project by: *Improving livelihoods of communities *Managing fisheries *Addressing critical threats to the coastal and marine environment *Promoting ecosystem-based management of coastal and marine resources *Harmonising policies, strategies and principles for sustainable fisheries and marine resources utilisation at national and regional levels
Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand	UNEP Southeast Asian Fisheries Development Center (SEAFDEC) Departments of Fisheries in the participating countries	Regional (Cambodia, Indonesia, Malaysia, Philippines, Thailand and Viet Nam)	To operate and expand the network of fisheries refugia in the South China Sea and Gulf of Thailand for the improved management of fisheries and critical marine habitats linkages in order to achieve the medium and longer-term goals of the fisheries component of the Strategic Action Programme for the South China Sea.	This Project contributes to establishing sustainable fisheries and promoting conservation and sustainable use of the marine and coastal environment.
CTI Strategies for Fisheries Bycatch Management (REBYC-II CTI)	FAO Southeast Asian Fisheries Development Center (SEAFDEC) National fisheries	Regional (Indonesia, Papua New Guinea, Philippines, Thailand and Viet Nam)	To establish effective public and private sector partnership for improved trawl and bycatch management and practices that support fishery dependent incomes and sustainable livelihoods.	This Project will complement REBYC-II CTI by: *Addressing trawl and bycatch management at the global level *Enhancing fisheries information *Amending national policies and legislation

	authorities			
Non-GEF project name	**Executing agency**	**Geographic extent**	**Project description**	**Linkages with GEF Dugong and Seagrass Conservation Project**
Coral Triangle Initiative on Coral Reefs Fisheries and Food Securities (CTI-CFF)	USAID	Regional: Indonesia, Malaysia, Solomon Islands, Timor-Leste, Papua New Guinea and Philippines.	A multilateral partnership between six governments (known as the CT6 countries) to conserve the extraordinary marine life in the 'Coral Triangle" region. Regional Action Plan has five overall goals covering priority seascapes, ecosystem approach to management of fisheries and other marine resources, marine protected areas, climate change adaptation and threatened marine species; National Action Plan for each country.	In Indonesia, Malaysia, Solomon Islands and Timor-Leste the project witll contribute to the five goals of the CTI-CFF Regional Action Plan and relevant National Action Plans, particularly in relation to marine protected areas, and threatened marine species. • Seascapes • Ecosystems Approach to Fisheries Management • Marine Protected Areas • Climate Change Adaptation • Threatened Species • Capacity Development At the site level, overlaps with the CTI will be identified for streamlinging and coordination during the inception phase. In some countries sites have not been identified or finalised yet for this project.
Coral Reef Rehabilitation and Management-Coral Triangle Initiative Project (COREMAP-CTI)	Asian Developm ent Bank (ADB)	Indonesia	COREMAP-CTI will enable coastal communities, and the institutions that support them, to manage coral reef resources, and associated ecosystems and biodiversity in a sustainable manner for increasing the economic and social welfare of coastal communities. The project will also support the government sector development plan and national targets for establishing effective MPAs.	This Project's synergies with the COREMAP-CTI are as follows: *Developing capacity *Contributing to economic growth *Contributing to environmental sustainability *Considering climate change * Improving the management, sustainability and resilience of marine protected areas (MPAs) *Further complementing work carried out at the targeted Bintan MPA and other MPAs to be further considered during the Inception Phase of this Project
Secretariat of the Pacific Regional Environment Programme (SPREP)	SPREP	Pacific Islands, including Solomon Islands and Vanuatu	The Pacific Islands Regional Marine Species Programme 2013–2017)[43] includes a *Dugong Action Plan* (including The Solomon	Activities in projects in the Solomon Islands and Vanuatu align with actions in the SPREP Dugong Action Plan 2013-2017, particularly those relating to community based management,

[43] http://www.sprep.org/attachments/Publications/Marine_Species_Programme_2013-2017.pdf

Pacific Islands Regional Marine Species Programme 2013–2017.			Islands and Vanuatu) which aims to maintain and improve the status of dugong populations and their habitats, in keeping with the traditions of the people of the Pacific Islands range states	research and monitoring of dugongs and their seagrass habitats, protection of dugongs and their habitats, and sustainable fishing practices. The SPREP Action Plan aligns directly with the CMS Dugong MoU Conservation and Management Plan and implements the plan at a regional level in the Pacific.
UNEP Regional Seas Programmes	UNEP	Eastern Africa, East Asian Seas, Pacific, South Asian Seas and South-East Pacific	Aims to address the accelerating degradation of the world's oceans and coastal areas through the sustainable management and use of the marine and coastal environment, by engaging neighbouring countries in comprehensive and specific actions to protect their shared marine environment.	Supports the commitments of countries to meet their obligations meet their obligations with regards to conservation of biodiversity and coastal ecosystems under the UNEP Regional Seas conventions, and activities under the programmes, regional coordinating units and regional activity centres.
The Regional Fisheries Livelihood Programme for South and Southeast Asia (RFLP)	FAO National authorities in participating countries	Regional (Cambodia, Indonesia, the Philippines, Sri Lanka, Timor-Leste and Viet Nam)	To take an integrated approach to achieving the RFLP's goal of improving livelihoods and reducing the vulnerability of small-scale fishing communities in the countries in which it operates.	This Project fits in the RFLP by improving livelihoods of communities and informing decision-making (national policies and legislation).
Regional Plan of Action of Sea Turtles Foraging Habitats in Southeast Asian Waters	Southeast Asian Fisheries Development Center (SEAFDEC)	Regional (Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Viet Nam)	There are six objectives of the Regional Action Plan for the conservation of marine turtles and their habitats: 1. Protect and Conserve Sea Turtle Foraging Habitats 2. Reduce Direct and Indirect Causes of Sea Turtle Mortality in Foraging Habitats 3. Strengthen Research and Monitoring in Foraging Habitats 4. Increase Community Participation Through Information Dissemination and Education 5. Strengthen Integrated	This Project complements the Regional Action Plan's objectives by: *Protecting and conserving seagrass ecosystems (one of the main sea turtles' foraging habitats) *Reducing direct and indirect causes of dugong mortality *Enhancing community-based stewardship *Improving decision-making through amended national policies and legislation

			Management of Sea Turtles 6. Secure Funding for Sea Turtle Conservation	
Coral Reef Targeted Research and Capacity Building for Management Project (CRTR) - Phases Two and Three	World Bank (WB) University of Queensland	Regional (East Asia and Pacific, including Solomon Islands)	Main four components of the Project are: 1. Addressing knowledge and technology gaps 2. Promoting Scientific Learning and Capacity Building 3. Linking scientific knowledge to management and policy 4. Project administration	This Project will complement Phases Two (2010-2014) and Three (2015-2020) of the CRTR Project by: *Informing policies and management interventions on behalf of the habitats and the communities that depend on them * Enhancing and building scientific and communication capacity *Replicating gain of acceptance of restoration projects and ownership *Improving livelihoods *Defending the coastal environment * Improving the integration of biodiversity and tourism
CMS Dugong MoU - Dugong, Seagrass and Coastal Communities Initiative	UNEP/ CMS	Global (dugong range states)	An international programme of conservation measures aimed at increasing protection of dugong populations and their seagrass habitats through tailored plans which promote local environmental stewardship through trialling alternative livelihood, sustainable development assistance in potentially accessing wider trade markets. With the dugong as a flagship species, the Initiative aims to return broad ecological and financial benefits in areas where both dugongs and local communities are in most need of assistance. Projects will be located across range states, primarily in the South West Indian Ocean, North West Indian Ocean, Western Pacific Islands, South and South East Asia. Educational	While the GEF investment will support eight countries, additional funds are being sought to involve as many dugong range states as possible in the Initiative. An indicative budget of USD $10 million for the Initiative is currently being sourced. This Project will draw on lessons learnt from the pilot projects in India, Thailand, Myanmar and the Philippines, which are envisaged to start during 2013-2018 (including development stages).

			and knowledge transfer tools will be used to increase awareness and facilitate access to vital information on dugong populations and seagrass habitats. Pilot projects have been developed in Mozambique, Papua New Guinea, India and Sri Lanka. The projects in Mozambique and Sri Lanka have become part of the GEF Dugong and Seagrass Conservation Project. Under the Initiative, pilot projects are currently being initiated in India, Thailand, Myanmar and the Philippines and funding is being sought for projects in Papua New Guinea, Bahrain, Qatar, Saudi Arabia, and the United Arab Emirates. Preliminary baseline data collection in the form of dugong catch surveys taken by local fishers is also ongoing and will provide vital information for identifying priority sites.	

SECTION 3: INTERVENTION STRATEGY (ALTERNATIVE)

3.1. Project rationale, policy conformity and expected global environmental benefits

3.1.1 Project rationale and policy conformity

105. Coastal areas around the Indo-Pacific Ocean Basin are some of the most threatened on the planet, as a result of demands for space and resources from increasing local and urban human populations. Dugongs are migratory and depend heavily on their coastal seagrass habitats, which provide ecosystem services and support wider biodiversity and habitats including economically vital fish nurseries. These benefits are undervalued by policy makers as well as local communities, who frequently have no alternatives and continue to over-exploit and degrade the natural resource base on which they depend. Dugongs have been over-exploited and killed accidentally as by-catch from other fishing activity throughout the region for decades and populations are declining and threatened across their range. They are an effective flagship species which can support biodiversity conservation and ecosystem based management of coastal seagrass habitats, while promoting protection for the sources of livelihoods of millions of families.

106. The GEF Dugong and Seagrass Conservation Project will remove barriers to achieving this enhanced stewardship approach in eight range states of the dugong and contribute to wider regional conservation and management initiatives under the framework of the CMS Dugong MoU and its Dugong, Seagrass and Coastal Communities Initiative. The Project will support the implementation and achievement of biodiversity conservation and poverty reduction targets at national and regional levels by contributing to targets in national (e.g. NBSAPs, national strategic development plans and National Dugong Strategies and Action Plans) and regional (e.g. CBD Strategic Plan for Biodiversity, CMS Dugong MoU Conservation and Management Plan, UNEP Regional Seas Programmes) plans. This will result in global environmental benefits in the eight countries and more widely within the Indian and Pacific Ocean basins because of the migratory nature of dugongs and through regional networking and policy mainstreaming under the project.

107. The main barriers which the project will address are:
    - Lack of coordinated approach across national boundaries;
    - Weak law enforcement (absence of or weak enforcement of existing laws and regulations for the protection and management of dugongs and seagrass meadows (in protected and non-protected areas);
    - Lack of alternatives or incentives for poor fishing communities to change behaviours to less destructive practices and to engage in enhanced stewardship of dugongs and seagrass areas;
    - Lack of awareness in many fishing communities of the legal protection afforded dugongs and of the highly vulnerable/endangered status of many dugong populations;
    - Lack of information and awareness needed for decision-making for effective conservation of dugongs and their seagrass ecosystems;
    - Lack of institutional capacity and effective policy and planning frameworks (local, national and regional) to implement effective conservation of dugongs and their seagrass ecosystems. This is reflected by the lack of awareness of the importance of seagrass ecosystems and the ecological services they provide (including supporting dugongs) and thus political willfor their better protection.

108. The project will address these barriers under the four project components, which are described in detail in 3.3 below. The Project Components are:
    - Improved site-level management at globally important sites for dugongs and seagrasses
    - Development of incentive mechanisms and tools to promote conservation and sustainable use of dugongs and seagrass ecosystems

- Removal of knowledge barriers for all stakeholders, from local communities to national policymakers
- Mainstreaming of dugong and seagrass conservation priorities into national and regional policies and plans.

109. The project is the first of its kind and scale aimed at an internationally coordinated approach to enhance effectiveness of conservation of dugongs and their seagrass ecosystems across the Indian and Pacific Ocean basins.

3.1.2 Global environmental benefits

110. Among the expected global environmental benefits are:
    - Conservation of globally significant species and habitats. By addressing the loss of seagrass habitat, in particular by emphasising its role in dugong survival, the project will help achieve global targets on biodiversity loss and climate change mitigation and support the well-being of millions of local, often impoverished, coastal dwellers;
    - Dugong and seagrass data and approaches incorporated into local, national and regional conservation planning as well as providing enhanced awareness/educational resources in fishing and coastal communities. Lack of information can hinder the development of adequate conservation planning, in particular in under-valued coastal habitats. The project will address this through targeted research and the collaborative involvement of a range of stakeholders at all levels, especially local communities;
    - Identification of good practice and lessons learned for a global strengthening of dugong and seagrass conservation. Through work in eight countries across two continents, the project will draw on and promote exchange of best practice and lessons learned in a range of social, economic and cultural conditions. The results will be disseminated regionally through the project and globally under the framework of the CMS Dugong MoU primarily via a Clearing House mechanism.
111. The project will enhance marine and coastal conservation through activities to build the capacity of national Project Partners. This includes capacity to manage established marine protected areas (MPAs) more effectively – specifically regarding seagrass meadows, (monitoring) dugong populations, building community incentives for conservation, conflict management etc , including National Parks/ Reserves and Locally Managed Marine Protected Areas (LMMAs) and to support the establishment of new forms of community stewardship of protected areas, with a focus on the development of sustainable economic activities to finance long-term management. Forty-five percent of projects (i.e. 18 projects in total and at least one project in each country) involve establishing a Locally Managed Marine Protected Area (LMMA) or Marine Protected Area (see Appendix 23).
112. The overarching objective of the project is enhanced conservation of dugongs and their seagrass habitats across the dugongs range, which spans two ocean basins (Indian and Pacific). The considerable Australian investment as demonstrated by $85million co-finance provided to the project, contributes to the conservation of dugongs and their seagrasses at the global and regional level. The Australian population of dugongs is the largest in the world and Australia has the largest area of seagrass supporting this population. The Australian population is shared with Papua New Guinea to the north – it is not known whether this population is shared with Indonesia to the north-west. Thus the Australian funding is securing the most important dugong population by funding activities within Australia, including the Torres Strait region, which also benefits the Papua New Guinean population. Australian funding has also contributed to dugong and seagrass conservation activities in the Pacific through the Secretariat of the Pacific Regional Environment Programme.
113. The level of Australian co-fianance to the GEF project will allow access to some of the best dugong and seagrass expertise in the world – particularly with respect to dugong

research, conservation and management as well as marine protected areas and community based management of marine areas. Four of the eight members of Dugong Technical Group are Australian scientists and the project will also involve the team at Seagrass-Watch HQ based at the James Cook University, Australia. The role of these Seagrass-Watch scientists is to develop scientifically rigorous assessment of seagrass resources, provide training, manage/validate/interpret the data, coordinate between communities and scientists, facilitate the establishment of networks across participating countries. Experience in Australia will provide a basis for transfer of methods and lessons learned (e.g. community-based management, particularly in Torres Strait and other indigenous communities; small-scale fisheries interactions; impacts of coastal development on seagrass meadows; impacts of climate change/adverse weather conditions affecting seagrass meadows). There is a broad scientific consensus that the dugong will disappear from the majority of its range without significant and immediate conservation interventions. The dugong populations of Australia are relatively well studied and the Australian co-funding demonstrates that funds exist for their conservation and management. The situation in parts of the Arabian region and New Caledonia are approaching that of Australia. In addition, dugongs in these areas are relatively abundant, compared with dugongs in most other parts of their range. The critical and pressing conservation issues for dugongs globally exist for the 'other' populations for which information and funds are sparse, numbers are small, and threats are severe and unmitigated. The GEF project will provide for more effective dugong conservation measures in eight range states across the Indian and Pacific Ocean basins, which contain these 'other' dugong populations. Without GEF funding, projects to conserve and manage these 'other' dugong populations would not be realized.

114. Building on and supporting the national priorities for action and capacity building identified at PPG stage, the project will catalyse the conditions for more effective dugong conservation measures in eight range states and across the Indian and Pacific Ocean basins. This will be coordinated with the UNEP/CMS Dugong MoU Secretariat's "Dugong, Seagrass and Coastal Communities Initiative" which provides a vehicle for wider global replication of the effective tools and approaches developed under the project.

115. The dugong is the "Flagship Species" of conservation concern within this project and the focus is on conservation of the dugong and its seagrass ecosystems. However, it will also benefit other globally important species and associated ecosystems such as mangroves and coral reefs. Seagrass ecosystems provide nurseries, shelter, and food for a variety of commercially, recreationally, and ecologically important species (e.g. fin-fish, sharks and rays, marine turtles, inshore cetaceans, seahorses, crustaceans and molluscs). Additionally, seagrasses filter estuarine and coastal waters of nutrients, contaminants, and sediments and are closely linked to other community types in the tropics such as coral reefs and mangrove forests. Seagrass ecosystems thus provide key ecosystem services such carbon sequestration, supporting ecotourism, providing fisheries habitats, preventing coastal erosion through retaining and stabilising sediments and filtering water of sediments and pollutants.

116. Coastal communities are closely tied to seagrass ecosystems through cultural heritage, their need for food security and through the opportunity for coastal development. However, the value of seagrasses as foundation species crucial for many others needs to be more widely recognised[44]. The project will adopt an ecosystems approach to protection and management, which supports and conserves these linked values and services.

[44] Duarte, C.M, Dennison, W.C, Orth, R.J, & Carruthers, T.J.B. 2008. The Charisma of Coastal Ecosystems: Addressing the Imbalance. Estuaries and Coasts: J. CERF 31:233-238.

117. While dugong population and distribution data will be collected throughout the Project, changes over such a short period of four years will not be reflective of long term trends in dugong population status. Therefore, proxies to indicate impact of the project and subsequent contributions to achieving GEBs will be developed during the Inception period. These will include quantifiable changes such as measurement of behavioural change in fishing practices that will reduce dugong mortality and destruction of seagrass meadows. Examples include percentage of gill net fishers, time of day of gill net use, soak time of gill nets, location of gill net fishing.
118. Preliminary information regarding socioeconomic data was gathered in some countries. However, the limited PPG period and funding available will necessitate the full development of methodologies to collect the relevant socioeconomic data as required by projects in the eight countries during the extended Inception Period.
119. Where existing relevant socioeconomic data is available, it will be incorporated into incentive-based programmes being undertaken under Outcome 2. Where there is no baseline or there are data gaps, socioeconomic information will be collected using standard methodologies used by partners such as Blue Ventures, as a precursor activity for these incentive-based projects.

3.2. Project goal and objective

120. The wider conservation and development goal to which the project contributes is: "*to improve the conservation status of dugongs and their seagrass habitats across the Indian and Pacific Ocean basins*".

121. The Dugong and Seagrass Conservation Project objective is:
"*to enhance the effectiveness of conservation of dugongs and their seagrass ecosystems across the Indian and Pacific Ocean basins*".

3.3. Project components and expected results[45]

122. The project is organized into four components. Achievement of the planned outcomes of the four components will collectively contribute to achievement of the project objective.
123. Table 8~~Table 8~~ below details expected results by Outcome and associates Components and Outcomes of the project with the relevant objectives of the CMS Dugong MoU Conservation and Management Plan (CMP).

Table 8. Project components, outcomes, outputs and alignment with objectives of the CMS Dugong MoU Conservation and Management Plan (CMP)
(Note – Output wording here shortened for ease of reading in a table. Full statements of Outputs contributing to each Outcome in text 3.3, below)

Project Component	Project Outcome (& Outputs)	CMS Dugong MoU CMP Objective
COMPONENT 1. Improved site-level management at globally important sites for dugongs and seagrasses	**Outcome 1: Community-based stewardship** of dugongs and their seagrass ecosystems at selected globally important Indo-Pacific sites enhanced **Output 1.1** Governance structures for community involvement in conservation and monitoring of dugong and seagrass ecosystems established or	**Objective 1** – Reduce direct and indirect causes of dugong mortality **Objective 3** – Protect, conserve and manage habitats for dugong

[45] See also Appendix 4 (Project Results Framework) and Appendix 20 (National Projects Summaries).

	strengthened in target areas **Output 1.2** Capacity developed for community-based stewardship (conservation and monitoring of dugongs & seagrass) **Output 1.3** Integrated community management plans (conservation and monitoring of dugong and seagrass ecosystems) developed and piloted	**Objective 4** – Improve our understanding of dugong habitats through research and monitoring **Objective 5** – Raise awareness of dugong conservation
COMPONENT 2. Development of incentive mechanisms and tools to promote conservation and sustainable use of dugongs and seagrass ecosystems	**Outcome 2: Sustainable fisheries practices** that reduce damage to dugongs and their seagrass ecosystems widely adopted through uptake of innovative incentive mechanisms and management tools **Output 2.1** Management and incentive mechanisms and tools for sustainable fisheries – pilots and capacity building (local community and government) **Output 2.2** Awareness raising and social marketing programmes contributing to more sustainable practices (subsistence and small-scale artisanal fishers) in target areas	
COMPONENT 3. Removal of knowledge barriers	**Outcome 3: Increased availability and access to critical knowledge needed for decision-making** for effective conservation of dugongs and their seagrass ecosystems in Indian and Pacific Ocean basins **Output 3.1** Critical knowledge gaps (dugongs and seagrass ecosystems) identified and surveys initiated/ completed **Output 3.2** Good practice guidelines for dugongs and seagrass ecosystems conservation developed from project experience **Output 3.3** Conservation-relevant information and guidance (dugongs and seagrass ecosystems) collated and disseminated	**Objective 2** – Improve our understanding of dugong through research and monitoring **Objective 4** – Improve our understanding of dugong habitats through research and monitoring **Objective 5** – Raise awareness of dugong conservation **Objective 6** –Enhance national, regional and international cooperation **Objective 8** – Improve legal protection of dugongs and their habitats **Objective 9** – Enhance national, regional and international cooperation on capacity building
COMPONENT 4. Mainstreaming of dugong and seagrass conservation priorities into national and regional policies and plans	**Outcome 4: Conservation priorities and measures** for dugongs and their seagrass ecosystems incorporated into relevant policy, planning and regulatory frameworks across the Indian and Pacific Ocean basins **Output 4.1** Policy, planning and regulatory gaps reviewed (conservation of dugongs and seagrass ecosystems) and recommendations developed **Output 4.2** Advocacy programmes and advocacy capacity for improved conservation management of dugongs and their seagrass ecosystems developed and implemented	

	Output 4.3 Capacity for national and regional networking and contribution to global policy for effective dugong and seagrass conservation in Indian and Pacific Ocean basins	

124. The project will implement necessary conservation actions, community stewardship and sustainable fisheries, information gathering and exchange, policy reform and capacity building in three principal regions (South and South East Asia, Indian Ocean, and Western Pacific) and eight countries (Indonesia, Malaysia, Madagascar, Mozambique, Solomon Islands, Sri Lanka, Timor-Leste and Vanuatu) within the global range of dugongs. Under the framework of the CMS Dugong MoU and its Conservation and Management Plan and through collaboration with the regional Dugong, Seagrass and Coastal Communities Initiative in other dugong range states, the project will achieve wide regional impacts, contributing to networking, exchange of ideas and good practice, data sharing and regional policy and programmes.
125. National stakeholder workshops, held in seven of the eight Project Countries during the PPG phase (all partners except Solomon Islands), identified an initial set of 31 projects (addressing national priorities and activities not covered by other initiatives) and designed to contribute to the achievement of the four project outcomes. Further projects were identified during the PPG phase, including for Solomon Islands, bringing the total set of projects to 40. A summary Table 9~~Table 9~~ (below) shows broadly how the suite of national projects addresses each of the four project outcomes. More detail of individual projects and proposed activities is given in Appendix 20 (National Projects Summaries).
126. With the support of the appropriate technical advisors, individual projects will be reviewed and revised during the project Inception Phase to ensure coherence and coordination between national programmes and to look for opportunities for enhanced collaboration and lesson learning. At that stage, more detailed logical frameworks, indicators and work plans will be developed for individual projects as the basis for implementation and monitoring. The design of projects will be reviewed by appropriate technical advisors for scientific rigour.
127. A strategic planning workshop will be held during the first 6 months of the project, with key technical advisors and the Project Coordination Team to ensure that, collectively across the Project Countries, the individual projects and national programmes will contribute to and achieve the proposed four project outcomes. Indicators and targets for overall project objectives and outcomes are included in the project Results Framework (Appendix 4). These will also be reviewed and refined during the Inception Phase, alongside the development of the detailed Project M&E Plan, to ensure that targets and indicators are compatible with those in national programmes and form a good framework for overall project monitoring and adaptive management. Collectively, the successful implementation of the suite of national programmes and individual projects, coordinated and collaborating regionally, will contribute to the achievement of the four project outcomes detailed below and the project objective of enhanced effectiveness of conservation of dugongs and their seagrass ecosystems across the Indian and Pacific Ocean basins.

128. ***Outcome 1.*** ***Community-based stewardship of dugongs and their seagrass ecosystems at selected globally important Indo-Pacific sites enhanced.*** Activities contributing to outputs under Outcome 1 are designed to enhance dugong and seagrass conservation at community level by providing the opportunities for community-based management and through building capacity for effective stewardship at this level. Increasing awareness and greater levels of engagement, responsibility and good governance at local level will

encourage improved management of the shared coastal resources. This should in turn lead to better conservation outcomes for both seagrasses and dugongs in the target sites and potentially on a wider scale through replication of models and best practice developed at target sites (see Outcome 3). All countries have proposed projects or project components designed to deliver the three Outputs (listed below) under Outcome 1. Examples of activities are listed by Output here and more detail of specific activities in national projects is given in Appendix 20. Target sites have been identified in national reviews at PPG stage but will also be reviewed again at Inception. Target sites vary widely in nature, including any protected status or existing conservation management and the level of engagement of communities in conservation activities of any kind. Some are existing LMMAs, MPAs or component parts of protected sites; others have no recognition as protected or management areas (see Appendix 23).

129. Target sites have been identified because they are potentially important seagrass meadows that support dugongs. Specific criteria will be applied during the project Inception Phase to determine final target sites. The emphasis will be on seagrass habitat with the potential to support dugongs rather than dugong occurrence *per se* because of the difficulty in obtaining evidence of dugong occurrence within the inception phase. In most countries where dugongs are not regularly sighted, information on dugong occurrence is limited to anecdotal reports or historical references.

130. Projects are therefore tailored to the individual site and community circumstances and to the national context. For example, community co-management or engagement in protected areas is established in some countries but legal or institutional barriers to community involvement may need to be addressed at local or national level to allow for its development in other countries. At some sites there are already existing local management and governance committees which may need strengthening and support; in others there is a need for awareness raising and stakeholder consultation to initiate some kind of conservation action. In all cases there is a need to raise awareness and strengthen capacity (among communities and local regulatory and management authorities) for enhanced dugong and seagrass management and monitoring. The emphasis and detail of individual activities will be further refined and tailored to individual project objectives during the project Inception Phase.

131. **Output 1.1: Governance structures for improved community involvement in conservation and monitoring of dugong and seagrass ecosystems established or strengthened in target areas.** Activities to achieve this Output (appropriate to the individual target area) include local and national awareness surveys; community and stakeholder meetings, workshops and training; identification of leaders; the establishment and support to functioning of consultative and management committees, councils or forums (community and community/ government/ other stakeholder co-management). If legal, policy or regulatory barriers exist, relating to individual sites and effective stewardship, these will be addressed at the appropriate (local, national, regional) level through national programmes under Outcome 4 (policy/ advocacy and mainstreaming).

132. **Output 1.2: Capacity for community-based stewardship developed through increased awareness and active participation of local communities and relevant government structures in conservation and monitoring of dugong and their seagrass habitats in target areas**. Activities to achieve this Output include awareness surveys and awareness and education campaigns and materials; community and stakeholder meetings, workshops and training (e.g. dugong and seagrass conservation management and monitoring); establishment and functioning of dugong protection and monitoring units (e.g. wildlife rangers, ecoguards).

133. **Output 1.3: Integrated community management plans for conservation management and monitoring of dugong and seagrass ecosystems developed and piloted in target areas.** Activities to achieve this Output include stakeholder consultation (e.g. fishers' groups and organizations); survey, zonation and participatory preparation of community management and monitoring plans for target sites; management plan finalization and approval; support to implementation of dugong and seagrass management and monitoring plans; exchange visits to other relevant regional sites; assessment, publication and dissemination of pilot project experience.

134. ***Outcome 2.*** ***Sustainable fisheries practices that reduce damage to dugongs and their seagrass ecosystems widely adopted through uptake of innovative incentive mechanisms and management tools.*** Activities contributing to outputs under Outcome 2 are designed to encourage local resource users to change behaviours (for example, to stop using fishing methods such as baited gill nets and beach seines which damage dugongs and seagrass meadows) and to assist with the active conservation of dugongs and their ecosystems. All national programmes will have one or more projects or project components which contribute to this Outcome. Individual initiatives will vary in their detail and be developed through community engagement at the local level. The overall project approach is to enhance the willingness to change through social marketing campaigns as well as to develop and use financial or other incentive tools and mechanisms, which offer communities alternative or improved livelihood opportunities linked to a reduction or cessation of current destructive practices. A major challenge in the use of economic instruments to reduce the impacts on dugongs is monitoring of actual impacts on dugong populations. However monitoring changes in fishing practices such as the use of gill nets will provide potentially useful proxies instead. Furthermore, tools to monitor the economic and social benefits that these interventions provide will also be developed and applied. This project component will draw on successful examples from elsewhere and particularly through experience from a key partner (Blue Ventures) in the Indian Ocean (see Section 4. Implementation Arrangements) and the existing *Dugong, Seagrass and Coastal Communities Toolbox*[46] (Appendix 24). Examples of tools and mechanisms include incentives resulting in changes to fishing methods or locations, to avoid incidental bycatch of dugongs or damage to seagrass meadows; development of alternative incomes (e.g. through ecotourism or employment in conservation management); marketing of sustainably harvested seafood; exploration of the potential for innovative financing based on "Blue Carbon" in seagrass and other marine ecosystems. In collaboration with the EA of the UNEP GEF Blue Forest project, through representation on each projects respective effort respective global Steering Committee and Technical Group, effort will be made to align and coordinate to define scientific research questions, develop methodologies, as well as the undertake research and development of incentive mechanisms.

135. This project component will apply a range of management techniques and financing mechanisms designed to allow local communities to appreciate the benefits of protecting seagrass ecosystems. It will pilot new ways of safeguarding marine biodiversity and livelihoods that can benefit coastal people by pioneering and scaling market-based solutions that work for local communities. The tools developed will be shared and support broader adoption by other partners in other coastal regions through the *Dugong Seagrass and Coastal Communities Initiative*, as well as allow monitoring and evaluation of the effectiveness and sustainability of these approaches. The two Outputs contributing to

[46] http://www.cms.int/publications/pdf/dugong_seagrass_coastalcommunities.pdf

Outcome 2 are described here and there is more detail of proposed activities in individual national projects in Appendix 20.

136. **Output 2.1: A range of management and incentive mechanisms and tools for sustainable fisheries developed, tested and piloted in target areas and capacity built within local community and government for effective implementation.** This Output incorporates the development and testing of incentive tools and mechanisms (including those already available from the *Dugong, Seagrass and Coastal Communities Toolbox*). Incentives which have been applied in other contexts and may be appropriate include compensation (e.g. for net damage on releasing by-caught animals or for release of a live animal), rewards for reporting illegal hunting within the community, or for recovery and reporting of carcasses for data collection and preservation purposes. Activities will include the establishment and testing of pilot initiatives; support to development of business and marketing plans; appropriate skills training (use of tools, marketing, accounting, income-generation); evaluation and publication of pilot projects; publication and replication of successful tools and models.

137. **Output 2.2: Awareness raising and social marketing programmes developed, implemented and contributing to the adoption of more sustainable practices among subsistence and small-scale artisanal net fishers in target areas.** Activities to achieve this Output are social marketing initiatives targeting change with key stakeholder groups involving awareness raising and the promotion of opportunities and successful initiatives which provide alternative livelihoods for the targeted communities. Specific activities (tailored to individual sites and target groups) will include environmental awareness raising and promotion of successful pilot initiatives through appropriate media; community skills development and training; economic valuation of ecosystem goods and services; exploration and development of long-term sustainable finance mechanisms (and appropriate training) for the target communities, based on the pilot initiatives tested under Output 2.1 and other relevant experience (e.g. from wider application and evaluation of the *Dugong, Seagrass and Coastal Communities Toolbox* and exchange of experience – see Outcome 3 and the project Clearing House Mechanism).

138. ***Outcome 3. Increased availability and access to critical knowledge needed for decision-making for effective conservation of dugongs and their seagrass ecosystems in Indian and Pacific Ocean basins.*** Activities under outputs in Outcome 3 are intended to help remove one of the major barriers to effective conservation of dugongs and their seagrass ecosystems throughout the project area; that is, critical knowledge gaps and lack of availability of information for effective decision-making and conservation management. All participating countries identified knowledge gaps as a barrier in the national reviews prepared during the PPG phase.

139. Thirty-four of 40 projects will conduct data collection, analysis and increase the accessibility of information to policy and decision-makers as part of their project activities under outcomes 1 and 3. Dugong Catch/Incidental Catch surveys were conducted in six of the eight Project Countries, Madagascar, Malaysia, Mozambique, Solomon Islands, Timor-Leste and Vanuatu. Data analysis from these surveys is expected to be available prior to or during the Inception period of the project. This data and other data generated from the project will contribute to updated assessments of dugong conservation status at the national and regional level, if possible.

140. Under Outcome 3, targeted and strategic information gathering exercises will be implemented, and the results shared through a Clearing House Mechanism to be developed under the project, which will support all Project Countries and all other range

states of the CMS Dugong MoU. Additional communication tools will be developed to support awareness raising at all levels (e.g. through theatre groups and road shows) and best practice guidance will be prepared and disseminated to practitioners and decision-makers. Broad activities are detailed under Outputs 3.1 to 3.3 below and detailed activities in national projects are listed in Appendix 20.

141. **Output 3.1: Critical gaps in knowledge of dugong and seagrass status, distribution, threat and conservation identified and survey programmes initiated or supported in priority areas**. Under this Output, national programmes will identify the critical gaps in knowledge and the priority areas and issues for survey and information gathering. This information will assist in the assessment of the conservation status of dugongs at a national level, and also at a regional level, if possible. in some national programmes and target areas this requires first-time surveys and interviews (using established UNEP-CMS and Seagrass-Watch[47] rapid survey techniques) to establish baseline data on dugong populations, seagrass habitats, levels of threat (from legal (e.g. by-catch) and illegal activities, fishing methods employed, pollution, etc.). Other activities in national projects include follow-up surveys to update existing information; the identification of hotspots and priority areas for conservation intervention; setting up and support of seagrass and dugong web sites and databases linked to ongoing monitoring; preparation and dissemination of maps showing distribution, status and threats to dugongs; development and testing of new survey methodologies and establishment of monitoring systems; socio-economic and awareness studies and monitoring; research relating to "Blue Carbon" and ecosystem services valuation in collaboration with UNEP GEF Blue Forest project (see details in Table 7).

142. **Output 3.2: Good practice guidelines developed for dugong and seagrass ecosystem conservation (including incentive-based approaches), based on assessment of project results and experiences**. Activities under this Output include the evaluation of scientific and socio-economic research (Output 3.1) and the effectiveness of conservation interventions (including project experience in the use of incentive-based mechanisms for sustainable fisheries management and social marketing campaigns: Outputs 2.1 and 2.2); workshops and meetings to review and develop best practice guidelines; consultation and publication of guidelines.

143. **Output 3.3: Conservation-relevant information and guidance on dugong and seagrass ecosystems collated, shared across partner network and disseminated through dedicated web-based platforms and other channels.** Activities under this Output include the preparation and implementation of a Project Communication Strategy and communication materials; establishment of and support to national data collation centres, and communication/ dissemination programmes; exchange visits and lesson learning; dugong/ seagrass information gathering/ awareness sessions at national/ international conferences/ meetings; establishment and maintenance of a project Clearing House Mechanism for dissemination and sharing of information and best practice.

144. The Clearing House Mechanism will be an open electronic format data and publication repository, which will be supported by data sharing agreements and long-term maintenance/ development plans and finance structures. The Clearing House Mechanism will also include a global database structure which can feed into the WCMC databases, OBIS Seamap, and other global data repositories.

[47] http://www.seagrasswatch.org/manuals.html

145. Outputs of the project will be stored in an online digital library using the DELOS Digital Library Reference Model framework and ISO/IEC 11179 metadata standard. The Clearing House Mechanism will have a tiered access level where public information is available to all, and restricted information is available via password protection and where users need to seek permission before accessing the database. Partnership agreements between this project and communities will be established which stipulate data access constraints.

146. ***Outcome 4. Conservation priorities and measures for dugongs and their seagrass ecosystems incorporated into relevant policy, planning and regulatory frameworks across the Indian and Pacific Ocean basins.*** Under Outcome 4, national programmes will identify policy, planning and regulatory gaps which hinder the effective conservation management of dugongs and their seagrass habitats in Project Countries. Activities under this Outcome will raise awareness among local, national and regional target audiences and develop advocacy programmes, networks and capacity to achieve effective mainstreaming of dugong and seagrass conservation priorities into local, national and regional policy, planning and regulatory frameworks.

147. **Output 4.1: Policy, planning and regulatory gaps in conservation of dugongs and their seagrass ecosystems identified, and recommendations to address these developed, in all Project Countries.** Activities under this Output include national legislative, policy and regulatory review of gaps and barriers; national workshops and consultation; development and publication of legal, policy, regulatory and enforcement recommendations (including new/ revised protected areas and the recognition and adoption of CBM (community-based management) at national & local levels); preparation and adoption or revision and strengthening of dugong and seagrass National Strategies/ action plans.

148. **Output 4.2: Advocacy programmes developed and implemented and capacity built within advocacy groups in target areas to advocate for improved conservation policy, planning, regulation and management of dugongs and their seagrass ecosystems**. Activities under Output 4.2 include the establishment of national and local (community) advocacy networks, advocacy programmes and campaigns; local and national level advocacy training; establishment of local and national stakeholder structures (e.g. National Dugong Protection Forum, local protection units); production and submission of policy briefs and Cabinet papers relating to dugong and seagrass conservation; engagement of advocates/ stakeholders and recommendations submitted to national/ regional decision-making committees (e.g. fisheries committees; inter-Ministerial committees); documentation publication and analysis of key decisions.

149. **Output 4.3: Capacity for national and regional networking and contribution to global policy processes for effective dugong and seagrass conservation in the Indian and Pacific Ocean basins**. Activities under Output 4.3 include the establishment and management of national programmes and National Facilitating Committees (NFC) for the Dugong and Seagrass Conservation Project in all eight countries and for sustainability of impacts and actions post-project; establishment and support to networking and communication mechanisms between countries and regions; training and capacity building for project management and to ensure effective national contributions to global policy processes and programmes of the CMS Dugong MoU Secretariat and Convention on Migratory Species.

Table 9. National Projects – Summary of contributions to Project Outcomes (see more detail of National Projects and Activities in Appendix 20)

Country	Ref #	Project Proponent/ National Lead Partner	National Project Title	Overall Project Outcome (PO)				Indicative Project Budget (USD in thousands, rounded up)
				PO1	PO2	PO3	PO4	
Indonesia	ID1	*Dir. Gen. of Marine, Coast and Small Islands Affairs, Ministry of Marine Affairs & Fisheries*	Strengthen and operationalize national policy strategy and action plan for dugongs and seagrass conservation				X	$119
	ID2	*Dir. Gen. of Marine, Coast and Small Islands Affairs, Ministry of Marine Affairs & Fisheries*	Improving National Awareness and Research of Dugong and Seagrass in Indonesia	X		X	X	$344
	ID3	*Dir. Gen. of Marine, Coast and Small Islands Affairs, Ministry of Marine Affairs & Fisheries*	Community based conservation and management of dugong and seagrass habitat Bintan Island, Riau Archipelago Province, Indonesia	X	X	X	X	$274
	ID4	*Dir. Gen. of Marine, Coast and Small Islands Affairs, Ministry of Marine Affairs & Fisheries*	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project				X	$93
Madagascar	MG1	*Blue Ventures (NGO)*	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Madagascar	X	X	X		$153
	MG2	*Blue Ventures (NGO)*	Fisher knowledge, awareness and behaviour change for the conservation of dugongs and seagrass using the Mihari network of Locally Managed Marine Areas in Madagascar	X	X	X		$89
	MG3	*Conservation Centrée sur la Communauté Madagascar*	Using incentivized Environmental Stewardship to conserve dugongs and seagrass habitat at an identified national hotspot	X	X		X	$94
	MG4	*COSAP: Sahamalaza Community Based Conservation (Stakeholder Platform*	Integrated approaches to enhance the conservation of dugongs and seagrass ecosystems in Sahamalaza areas	X	X	X		$130
	MG5	*Ministry of Environment and Forests (Government agency)*	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project				X	$153
	MG6	*Wildlife Conservation Society (NGO)*	Dugong and seagrass conservation in North West Madagascar	X		X		$216
Malaysia	MY1	*Ministry of Natural Resources and Environment (Federal Government Agency)*	Operationalizing the Malaysian National Plan of Action for Dugong in Pulau Sibu and Pulau Tinggi, Johor, Peninsular Malaysia	X		X	X	$74
	MY2	*Turtle and Marine Ecosystem Research Centre (TUMEC), Fisheries Research Institute (FRI) (Government agency)*	Establishment of the National Working Committee for Conserving Dugongs and their Habitats through Involvement of Various Stakeholders	X		X	X	$43
	MY3	*Universiti Sains Malaysia (University)*	Community understanding and management of dugong and seagrass	X		X		$74

Country	Ref #	Project Proponent/ National Lead Partner	National Project Title	Overall Project Outcome (PO)				Indicative Project Budget (USD in thousands, rounded up)
				PO1	PO2	PO3	PO4	
			resources in Johor, Malaysia					
	MY4	*MareCet Research Organization (NGO) & University Malaya (University)*	A Two-Pronged Approach for Overcoming Knowledge Barriers On The Ecology And Status Of Dugongs In Johor, Malaysia – Towards Critical Habitat Protection			X	X	$74
	MY5	*Protected Area & Biodiversity Conservation Division (PABC) Sarawak Forestry Corporation Sdn Bhd (SFCSB). Government Link Company (Wholly owned by the Sarawak State Government)*	Overcoming the Knowledge Gaps and Involvement of Local Community to Establish a Marine Protected Area (MPA) for the Conservation of Dugong and Seagrass in Bay of Brunei, Lawas, Sarawak, East Malaysia	X		X	X	$151
Mozambique	MZ1	*Blue Ventures (NGO)*	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Mozambique	X	X	X	X	$91
	MZ2	*DUGONGOS.ORG (NGO)*	The distribution of dugongs in the coastal waters of Mozambique			X		$59
	MZ3	*DUGONGOS.ORG (NGO)*	Developing an Education and Awareness Campaign to Conserve Dugongs in the Bazaruto Archipelago and Mozambique.	X		X		$81
	MZ4	*Endangered Wildlife Trust (NGO)*	The Dugong Emergency Protection Project	X	X	X	X	$91
	MZ5	*MICOA (Min. for the Coordination Environment Affairs), National Directorate of Environmental Management (Government agency)*	Participatory Research of Additional Methods to reduce the Impact of the beach seine fisheries on seagrass beds at Vilanculos and Inhassoro	X		X	X	$12
	MZ6	*Min. for the Coordination Environt. Affairs (Government Agency)*	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project	X			X	$81
Solomon Islands	SB1	Ministry of Environment	Consultation on the development and implementation of a national dugong and seagrass conservation strategy in the Solomon Islands	X		X	X	$17
	SB2	Environment & Conservation Division (E&CD),Ministry of Environment	National-level awareness raising campaign to champion dugong and seagrass conservation	X		X	X	$229
	SB3	Seagrass-Watch	Identification of priority sites for conservation of dugongs and seagrassess in the Solomon Islands	X		X	X	$119
	SB4	The Nature Conservancy (TNC)	Development of seagrass and dugong Locally Managed Marine Areas	X	X	X	X	$280
	SB5	Ministry of Environment	Building national-level expertise in dugong and seagrass conservation and mainstreaming dugongs and their seagrass habitats into national coastal				X	$39

Country	Ref #	Project Proponent/ National Lead Partner	National Project Title	Overall Project Outcome (PO)				Indicative Project Budget (USD in thousands, rounded up)
				PO 1	PO 2	PO 3	PO 4	
			zone planning and decision-making					
Sri Lanka	LK1	*BEAR (Biodiversity Education And Research) (NGO)*	A Community Based Approach for Conserving the Globally Threatened *Dugong dugon* in Sri Lanka	X		X		$33
	LK2	*Department of Wildlife Conservation (Government agency)*	Improving communication and collaboration amongst all relevant stakeholders in Sri Lanka to enhance seagrass and dugong conservation			X	X	$110
	LK3	*Centre for Research on Indian Ocean Marine Mammals (CRIOMM) (Government agency)*	Contributions to the long term conservation of seagrasses and dugongs in Sri Lanka	X		X	X	$33
	LK4	*IUCN Sri Lanka*	Development of a multiple-community-based marine resource management plan in the Gulf of Mannar	X	X	X	X	$106
	LK5	*National Aquatic Resources Research and Development Agency (Government agency)*	Ensuring seagrass ecosystem values are incorporated into coastal area planning in Sri Lanka.			X		$57
	LK6	*ORCA (Ocean Resources Conservation Association) (NGO)*	Increasing knowledge on sea grass habitats and dugong distribution at selected sites in North Western Sri Lanka			X		$65
	LK7	*Sri Lanka Turtle Conservation Project (NGO)*	Providing incentives to local communities in return for wise stewardship of coastal habitats	X	X	X		$122
	LK8	*Department of Wildlife Conservation (Government agency)*	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project				X	$98
Timor-Leste	TL1	*Marine Research Foundation (NGO), Ministry of Environment, Ministry of Fisheries and Agriculture (Nick to confirm this!)*	Identification of priority sites for conservation of dugongs and seagrasses in Timor-Leste.	X	X	X	X	$56
	TL2	*Blue Ventures Conservation (NGO), Move Forward (NGO)*	Development of seagrass and dugong LMMAs.	X	X	X	X	$484
	TL3	*Ministry of Agriculture and Fisheries, Ministry of Environment*	Building national-level expertise in dugong and seagrass conservation and Mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making.				X	$89
	TL4	*Haburas Foundation (NGO), Ministry of Agriculture and Fisheries, Move Forward (NGO), Blue Ventures Conservation (NGO)*	National-level awareness raising campaign to champion dugong and seagrass conservation.	X		X	X	$200
Vanuatu	VU1	*Department of Environment Preservation & Conservation (DEPC) (Government agency)*	Implementing a Vanuatu National Plan of Action for Dugong in Maskelynes Islands, Efate Islands and other selected areas	X			X	$151

Country	Ref #	Project Proponent/ National Lead Partner	National Project Title	Overall Project Outcome (PO)				Indicative Project Budget (USD in thousands, rounded up)
				PO 1	PO 2	PO 3	PO 4	
	VU2	*Department of Environment Preservation & Conservation (DEPC) (Government agency)*	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project				X	$15

3.4. Intervention logic and key assumptions

150. The project will enhance the effectiveness of conservation efforts for dugongs and their seagrass ecosystems across the Indian and Pacific Ocean basins through specific actions in eight countries and wider regional and global activities (funded by GEF and co-financing). This will be achieved through greatly enhanced communications, facilitation and partnership building (both at regional, national and site levels); community based stewardship at key sites for dugongs; increases in sustainable fisheries practices by artisanal/small-scale fishers, including the use of innovative incentives and tools; increase in availability of critical knowledge for conservation action for dugongs and seagrass ecosystems; and mainstreaming dugong and seagrass conservation priorities into national and regional policies and planning. Capacity building is an integral part of most project outputs. This project represents the first coordinated approach across a wide range of countries towards the conservation of dugongs and their seagrass habitats. In addition, tools and lessons learned will be shared across the project stakeholders and globally through information sharing via a Clearing House Mechanism and the Dugong, Seagrass and Coastal Communities Initiative under the CMS Dugong MoU.

151. Beyond supporting conservation practitioners and policymakers, the CHM will also provide a space for public communications and outreach, maximising the global reach of project outputs and social marketing activities, and enabling the global public to take part in participatory research and monitoring of dugong distributions. In doing so the platform will provide an engaging forum to raise the visibility of the project as well as build global awareness of the importance of dugong and seagrass conservation.

152. The external dimension of the CHM will serve as a public portal that will house project outputs and provide a forum for advocacy and discussion amongst project participants, their constituents, public authorities, NGOs, private sector stakeholders and the wider conservation community. The portal will provide a dynamic and engaging platform for partners to disseminate dugong and seagrass conservation solutions and will be key to building greater public awareness of the conservation issues, thus further enhancing the project's impact.

153. A challenge for the project is to engage with the appropriate authorities (especially government ministries) and local stakeholders to ensure proper targeting of the project activities and effective uptake and use of tools and resources provided. The project will catalyse effective communications through the Clearing House mechanism as described above. By strengthening community-based approaches to managing important seagrass habitats (Outcome 1), and providing for stronger associated policy and legislative frameworks (Outcome 4), the project will provide an enabling environment for community-based conservation and livelihood strategies. It will target behavioural change, particularly among fishers groups, to reduce practices which are damaging to dugongs and seagrass habitats and to support the identification and implementation of financial and other incentive mechanisms that support communities and promote dugong and seagrass conservation (Outcome 2). The project will also target increases in availability and use of

critical knowledge needed for conservation decision-making and action across the participating countries and wider sub-regions (Outcome 3).

Key assumptions

154. An overarching assumption is that stakeholders (including local communities, governments, agencies, decision-makers and the private sector) will be willing to engage with the project, and adopt and use the recommended tools for dugong and seagrass conservation. Achievement of the project objective will require this political and social willingness to engage and support project initiatives, coupled with behavioural change among fishers' groups in particular, to reduce or eliminate fishing practices and behaviours which currently threaten dugongs and seagrass meadows. There is also an overall assumption that protection and effective conservation management of dugong habitats (seagrass ecosystems) at key sites will lead to better conservation outcomes and improved status of regional dugong populations.

155. Assumptions for each of the project outcomes are outlined in Table Table 10. Assumptions of the project outcomes~~Table 10. Assumptions of the project outcomes~~

Table 10. Assumptions of the project outcomes

Outcomes	Assumptions
Outcome 1. Community-based stewardship of dugongs and their seagrass ecosystems at selected globally important Indo-Pacific sites enhanced	• By stabilizing/increasing the income base, establishing social representative community organization, enhancing understanding & willingness with stewards, as well as clarifying resource titles, community-based management is achievable and effective for dugong and seagrass conservation in target areas (all eight countries); • Legal and policy reforms will and can be made within the project timeframe if needed (political will exists) to facilitate community-based management (CBM); • Community engagement & stewardship will result in better conservation outcomes for dugongs and seagrass ecosystems; • Effectiveness/ conservation outcomes can be achieved & assessed in 4 years in CBM target areas; • Community interest in dugongs and seagrass monitoring exists and can be harnessed; • Training and engagement of communities results in positive changes in awareness and behaviour.
Outcome 2. Sustainable fisheries practices that reduce damage to dugongs and their seagrass ecosystems widely adopted through uptake of innovative incentive mechanisms and management tools	• Changes in behaviour (to dugong &/or seagrass-"friendly" practices) can be linked to improved livelihoods or direct benefits from conservation management/ ecotourism; • Existing models can be replicated (e.g. aquaculture/ ecotourism (MG); sustainable seafood (MZ); D&SG CCI Toolbox); • Successful tools and mechanisms will be replicated more widely through community uptake and other projects; • Fishers/ boatmen who adopt best practices do not also continue unsustainable practices; • Long-term, sustainable community incomes and livelihoods can be established, based on sustainable fisheries and dugong/ seagrass conservation management.
Outcome 3. Increased availability and access to critical knowledge needed	• Basic data on dugongs and seagrass habitats (for digitisation and mapping) exist or will be obtained during inception and project implementation (additional surveys);

for decision-making for effective conservation of dugongs and their seagrass ecosystems in Indian and Pacific Ocean basins	• CHM will be maintained and function post-project through appropriate forum; • Regional networks will continue to function post-project (CMS Dugong MoU Secretariat/ CMP); • Decision-makers will make use of conservation information; • Private sector will be interested in potential of ecosystem services (e.g. Blue Carbon opportunities) for sustainable development.
Outcome 4. Conservation priorities and measures for dugongs and their seagrass ecosystems incorporated into relevant policy, planning and regulatory frameworks across the Indian and Pacific Ocean basins	• Policy and decision makers continue to assign appropriate priority to dugong and seagrass conservation, and act accordingly (use conservation information/ support implementation of Strategies/ Plans); • Political will and resources exist at national level to develop and implement Strategies & Plans; • Project duration adequate to conduct gaps analysis, draft modifications or new legislation, as well as obtain support through parliamentary processes • Project advocacy and awareness programmes raise profile of dugong and seagrass conservation in other sectors; • Political will exists and project and national advocacy and policy programme can influence other sectors to support dugong and seagrass conservation nationally and regionally.

156. A central assumption for project Component 4 (mainstreaming) is that dugong and seagrass conservation will be considered as an important component of development strategies in the participating countries and that national policy and legislative bodies will be willing to receive inputs to strengthen the enabling environment for dugong and seagrass conservation.
157. In terms of replication, there is a broad assumption that project experience and lessons learned (dugong and seagrass conservation action, research, advocacy and mainstreaming) will be of interest and value to other countries in the region and to relevant international actors and institutions, including conservationists, marine biodiversity managers and development cooperation agencies. Replication will be achieved through the Project CHM and communication programme, through co-financed elements of the project (wider regional actions) and under the wider CMS Dugong MoU network and Dugong, Seagrass and Coastal Communities Initiative.
158. The conservation and sustainable management of dugongs and their seagrass ecosystems are facing critical challenges in the region. An underlying theme of the proposed activities in all four project Components and involving all stakeholders, is capacity development and "learning by doing", to support sustainability of project activities and impacts in the longer-term.
159. The project will set up a Clearing House Mechanism for dugong and seagrass habitat sustainable management that will disseminate lessons learned and good practices. In this regard, the project is anchored in the assumption that effective regional networking and communications (national and international) will result in recognition and uptake/ use of effective tools and approaches and lessons learned by the project, with a positive effect on dugong and seagrass conservation in the regions targetted.

3.5. Risk analysis and risk management measures

160. Multi-country projects are inherently complex and present their own potential risks and challenges with respect to implementation. Table 11, below highlights specific risks that could affect successful implementation of project activities and the corresponding risk mitigation measures built into the project design.

Table 11. Risks and mitigation measures

Risk	Risk level	Mitigation measure
Complexity of management and execution arrangements, given the number of countries and number of sub-projects and partners involved	High	Well-designed, robust and workable execution arrangement, bringing together the strengths of key partners and experts at global, regional and national levels, a good communication strategy and adaptive management. Countries and many of the project partners work and meet regularly already under the Dugong MoU mechanism, greatly enabling good management interactions, feedback and oversight.
Currency fluctuations reduces or increases the actual national level of funds available	Medium	Funds will be held in a US dollar account, and distributed to the appropriate Project Partners in an efficient manner. Management of Project Partners will include advising on planned expenditure in light of recent exchange rate fluctuations. The high level of co-financing, in particular in-kind support, is expected to allow for continued project activities despite any loss in income owing to currency fluctuations.
Ecosystem management knowledge is not applied or integrated into policy frameworks	Medium	At local levels, participatory approaches and innovative financial mechanisms will ensure buy-in of stakeholders, generation of local knowledge and self-esteem. The project will assess the most likely successful approaches – country specific, to engage and get involved with local economic development planning. For Indonesia e.g. this may involve engagement with the provincial and district spatial planning processes or economic development plans – both formal government mechanisms. Close involvement of and training for decision-makers from a variety of departments and sectors will increase the likelihood of ecosystem management approaches being internalised into national planning and policy making. This will include government planning departments and developers who may pose a threat to seagrass habitats from such practices as land reclamation and coastal construction.
Weak coordination among ministerial bodies and lack of support from national governments	Medium	Building on the lessons of other projects on migratory species, it will be critical to foster both national (for international transboundary issues as well as local government ownership from the onset. Practical measures will include establishment of a National Facilitating Committee within each country, comprised of both civil society and government personnel (Output 4.3). Government staff will also be involved at the strategic level on relevant National Facilitating Committees and governance structures. In addition, all Signatory States to the CMS Dugong MoU have a National Focal Point who is responsible for facilitating with other government agencies with regards to their obligations under this MoU. The National Focal Point will be present on the National Facilitating Committee for this project.
Political changes leading to less supportive governments	Low	To counter this risk it is essential to demonstrate how the project benefits national interests. Particular attention will be devoted to sustaining government engagement through a combination of social marketing as well as high level, public, and working level meetings to engage maximum political commitment. All major agreements and key discussion will be documented and signed off by any relevant government agencies. In this context it is also important that a sense of continued ownership is established at all levels. The signature of the CMS Dugong MoU is a demonstrable step in showing political commitment.
Communities resident in areas surrounding target	Medium	This is a risk that can only be mitigated through continued, focused and well-targeted communications, consultation, education and fair

Risk	Risk level	Mitigation measure
PAs are not supportive of conservation plans		and representative involvement of local communities. Many of the Project Partners at the national and international levels already work at project target sites and have an established relationship with local communities and groups. The project will place emphasis on the generation of socio-economic benefits associated with the establishment of incentive schemes and sustainable management and conservation of biodiversity at target areas, including PAs. Where applicable, priority in job creation and capacity building will be given to disadvantaged social groups, including women's groups, from local communities. A comprehensive communication plan (Output 3.3) will be developed during YR1 and will include steps to engage local residents in the initiatives and mitigate any risks of misunderstanding or conflict.
The needs and priorities of the more disadvantaged groups of society, including indigenous and women's groups are not adequately taken into account by development plans	Low	This risk is fully acknowledged on the basis of the review of the lessons learned in previous UN and GEF global projects. The project's design, implementation strategy and monitoring and evaluation process have been designed to address this risk, including the extensive stakeholder consultation during the PPG process. Further detailed consultation, community engagement and identification/ involvement of a representative sample of stakeholders – including youth, women, production groups as well any indigenous people, will take place in relation to all targeted sites (national sub-projects) at the onset of any community programs or local project intervention.
Climate Change Risks	Medium	The impacts of climate change on seagrass habitats, and consequently on dugongs, are yet to be determined. Possible positive and negative scenarios include: ➢ An increase in seagrass due to rising CO_2 and sea temperatures, providing a greater range for dugongs in some areas; ➢ Decline in quality of seagrass due to higher storm frequency resulting in perturbation from physical damage and land run-off leading to increased occurrence of harmful algal blooms, disease organisms, and a shift from seagrass to algal dominance. There is also a higher risk of dugong stranding following unusual tidal activity during severe storms. If climate change has a negative impact on fish stocks, particularly in dugong range states where subsistence and artisanal fisheries are prevalent, detrimental impact on dugongs may result through increased fishing effort resulting in increased risk of dugong by-catch and/or damage. The project will provide greater monitoring and assessment of dugong populations and seagrass habitats to better identify changes, as well as providing alternative livelihoods to fishing communities to alleviate reliance on fisheries and capture of dugongs as a protein source.

3.6. Consistency with national priorities or plans

161. All participating countries have legal instruments relevant to dugong and seagrass conservation, mostly within legislation covering species protection or establishment or maintenance of protected areas, or promotion of sustainable fishing practices. The project will support the conservation priorities identified in National Biodiversity Strategies and Action Plans (NBSAPs) and other relevant national plans, where available (see Table 12~~Table 12~~).

Table 12. National Biodiversity Strategies and Action Plan (NBSAP) objectives and other National Plans supported by the GEF Dugong and Seagrass Conservation Project.

Country	**NBSAP Objectives/Strategies relevant to Project Outcomes**				**Other plans**
	Outcome 1. Community-based stewardship of dugongs and their seagrass ecosystems at selected globally important Indo-Pacific sites enhanced.	**Outcome 2: Sustainable fisheries practices that reduce damage to dugongs and their seagrass ecosystems widely adopted through uptake of innovative incentive mechanisms and management tools.**	**Outcome 3: Increased availability and access to critical knowledge needed for decision-making for effective conservation of dugongs and their seagrass ecosystems in Indian and Pacific Ocean basins.**	**Outcome 4: Conservation priorities and measures for dugongs and their seagrass ecosystems incorporated into relevant policy, planning and regulatory frameworks across the Indian and Pacific Ocean basins.**	
ID	NBSAP Objective 1: To develop the quality of Indonesian individuals and society who are concerned with the conservation and sustainable use of biodiversity.	NBSAP Objective 3: To reduce and stop the rate of biodiversity degradation and extinction at the national, regional and local levels within the 2003- 2020 period, along with rehabilitation and sustainable use efforts.	NBSAP Objective 2: To strengthen resources for supporting the development of science, technology and the application of local wisdom for the conservation and sustainable use of biodiversity.	NBSAP Objective 4: To empower institutional, policy and law enforcement arrangements at the national, regional, local, as well as at customary level so as to be effective and conducive for the management of biodiversity in a synergic, responsible, accountable, fair, balanced and sustainable manner. NBSAP Objective 5: To achieve fair and balance of	UNDAF: Outcome 5: Climate Change and Environment - Strengthened climate change mitigation and adaptation and environmental sustainability measures in targeted vulnerable provinces, sectors and communities. National Dugong Conservation Strategy and Action Plan

				roles and interests of Indonesian society, as well as to reduce conflict potentials among all relevant sectors in a conducive, synergic, responsible, accountable manner in the sustainable use and conservation of biodiversity.	
MG	NBSAP Strategic measure 1: Implementation of management plans local, regional and municipal (protected resource or not protected). NBSAP Strategic measure 3: Decentralization of management of biodiversity resources.	NBSAP Strategic measure 8: Funding mechanism.	NBSAP Strategic measure 3: Improved capacity for human resources. NBSAP Strategic measure 3: Strengthen measures to monitor and check.	NBSAP Strategic measure 6: Adapting legislation to national strategy for sustainable management of biodiversity. NBSAP Strategic measure 7: Partnership development.	UNDAF Objective 1: Enjoyment of social, economic, civil and political wellbeing by the population, especially the poorest and most vulnerable groups is improved through a participatory and inclusive governance; UNDAF Objective 4: Productivity and living conditions of people in targeted areas are improved. Strategic plan 2012-2016: Madagascar & western Indian Ocean Programme Office (WWF/2011) (http://ks3295147.kimsufi.com/projets/hayzara/srcs/index.php?option=com_content&view=article&id=748%3Astrategic-plan-2012-2016-madagascar-a-western-indian-ocean-programme-office-wwf2011&catid=78%3Aguiding-doc&Itemid=111&lang=en)
MY	NBSAP Strategy VII: Enhance skill, capabilities and	NPSAP Strategy II: Enhance sustainable utilization of the components	NBSAP Strategy I: Improve the scientific knowledge base.	NBSAP Strategy IV: Strengthen the institutional framework for biological diversity	The Tenth Malaysia Plan 2011-2015 http://www.pmo.gov.my/dokumenattached/RMK/RMK10_Eds.pdf • Moving towards inclusive socio-economic development;

	competence. NBSAP Strategy VIII: Encourage private sector participation.	of biodiversity. NBSAP Strategy X: Minimise impacts of human activities on biological diversity. NBSAP Strategy XV: Establish funding mechanisms.		management. NBSAP Strategy V: Stengthen and integrate conservation programmes. NBSAP Strategy VI: Integrate biological diversity considerations into sectoral planning strategies. NBSAP Strategy IX: Review legislation to reflect biological diversity needs. NBSAP Strategy XII: Enhance institutional and public awareness. NBSAP Strategy XIII: Promote international cooperation and collaboration. NBSAP Strategy XIV: Exchange of information.	• Building an environment that enhances quality of life. National Plan of Action for Management and Conservation of Dugong in Malaysia.
MZ	NBSAP Strategic objective 1.5: To establish and manage a representative	NBSAP Strategic objective 2.4: To promote the sustainable use of fisheries resources for	NBSAP Strategic objective 1.1: To identify and analyse the components of biodiversity		UNDAF Outcome 1: Vulnerable groups (with a particular focus on women) demand and ensure production and productivity in the primary sector in order to increase their own food security. UNDAF Outcome 2: Vulnerable groups access new opportunities for improved income and livelihoods, with a special focus

	system of protected areas.	the benefit of the population, economic prosperity, conservation of resources and maintenance of biodiversity.	and their relationships within ecosystems, as well as the processes and activities that can have an adverse impact on them. NBSAP Strategic objective 1.2: To determine the state of conservation of species in Mozambique and to identify and implement appropriate conservation measures for threatened and endemic species. NBSAP Strategic objective 1.4: To determine the state of conservation of ecosystems and habitats in Mozambique, identifying and implementing appropriate conservation and ecosystem management measures with an		on decent employment UNDAF Outcome 3: Sustainable and effective management of natural resources and disaster risk reduction benefit all people in Mozambique, particularly the most vulnerable UNDAF Outcome 8: Government and civil society provide coordinated, equitable and integrated services at decentralized level Final draft management Plan for the Bazaruto Archipelago in Attwell, C. (Ed.) Conservation Ecology of Dugongs in Mozambique, Workshop Report, Maputo 2009. Republic of Mozambique PARP 2011-2014 Approved at the 15th Regular Session Of The Council Of Ministers May 3, 2011 Poverty Reduction Action Plan (PARP) 2011-2014 Poverty alleviation: Sustainable use and management of natural resources; strengthen fishery administration; reduce conflicts between humans and wildlife; and address such problems as the over-harvesting of marine resources, which poses a grave threat to development of the fisheries sector.

			emphasis on the most fragile. NBSAP Strategic objective 1.7: To recover and rehabilitate degraded ecosystems and, where applicable, to develop species recovery plans.		
LK	NBSAP Objective 1: To promote the conservation of coastal and marine habitats of the country such as the coral reefs, sea grass beds, mangroves, lagoons, estuaries, salt marshes. NBSAP Objective 2: To promote the conservation of threatened marine species (e.g. marine mammals	NBSP Objective 3: To promote sustainability in the use of coastal and marine bio-resources in the fisheries and tourist industries.	NBSAP Objective 5: To increase collaborative participation among stakeholders with regard to policies and programmes that affect coastal and marine biodiversity and initiatives that support conservation, such as research.	NBSAP Objective 4: To strengthen current government initiatives to increase stakeholder participation in the conservation of coastal and marine resources.	UNDAF Pillar 1: Equitable Economic Growth and Sustainable Livelihoods UNDAF Pillar 4: Environmental Sustainability, Climate Change and Disaster Risk Reduction National Policy and Strategy for Cleaner Production for Fisheries Sector 2008. Ministry of Fisheries and Aquatic Resources, in collaboration with Ministry of Environment and Natural Resources. Promotes the use of fisheries and aquaculture resources in an ecologically and socio-economically sustainable manner, e.g.: • Increase employment opportunities in fisheries sector and improve the socio-economic status of fisher communities while maintaining the stability of the ecosystem. • Take necessary measures to conserve the endangered species by creating awareness among fishermen and relevant stakeholders. http://www.environmentmin.gov.lk National Policy and Strategy for Cleaner Production for Tourism Sector 2008. Ministry of Tourism, in collaboration with Ministry of Environment and Natural Resources. Vision: Ecologically sustainable tourism for sustainable development.

	) as well as other species which are subject to exploitation for food, for the aquarium trade, etc.				http://www.environmentmin.gov.lk
SB	NBSAP Theme 3: Protected area system; Strategy goal: Solomon Islands is fully committed to a national PA system by developing appropriate legislation and PA design.	NBSAP Theme 6: Financial resources; Strategy goal: Sustainable financial mechanisms are in place so that biodiversity is effectively managed for long-term sustainability of the environment.	NBSAP Theme 2: Species conservation; Strategy goal: Unique plant and animal species are given appropriate levels of protection and are managed sustainably with a better informed public of the significance of the species. NBSAP Theme 8: Research, monitoring and information sharing; Strategy goal: To ensure that people, resource owners and the public are better informed of the importance and values of biodiversity through	NBSAP Theme 1: Mainstreaming biodiversity; Strategy Goal – To ensure biodiversity conservation and management are properly legislated at the national and provincial governmental levels and integrated into sectoral plans, policies and programmes.	Pacific Regional UNDAF Objective 2: National and regional governance systems exercise the principles of inclusive good governance, respecting and upholding human rights; and resilient Pacific island communities participate in decision-making at all levels. Pacific Regional UNDAF Objective 4: The mainstreaming of environmental sustainability and sustainable energy into regional and national policies, planning frameworks and programmes; and Pacific communities sustainably using their environment, natural resources and cultural heritage. SPREP Dugong Action Plan 2013-2017

			research, with improved monitoring systems for information sharing.		
TL	NBSAP Priority Strategy 3: Building climate-resilient ecosystems through effectively managing protected areas and reducing threats to biodiversity.	NBSAP Priority Strategy 2: Protecting biodiversity and promoting sustainable use.		NBSAP Priority Strategy 1: Mainstreaming biodiversity into sectoral plans and programmes to address the underlying causes of biodiversity loss. NBSAP Priority Strategy 5: Enhancing implementation of the NBSAP through participatory planning, knowledge management and capacity building, including district and sub-district and community levels.	UNDAF Outcome 2: Poverty Reduction and Sustainable Livelihoods Timor-Leste Strategic Development Plan 2011-2030: • Assess threats to marine biodiversity and idenfity possible incentives to conserve them; • Focus on preventing biodiversity loss and ensuring biological resources are sustainably managed; • Address areas such as marine and coastal areas and protected areas in the NBSAP. • A Wildlife Conservation Law will be developed to protect and conserve wildlife in Timor-Leste.
VU	NBSAP Objective 1: Protection and wise use of biodiversity. Objective 5: Participation of local communities in the		NBSAP Objective 3: Research, assessment and monitoring of biodiversity NBSAP Objective 5: Environmental education, awareness and	NBSAP Objective 2: Application of policy, planning and legal mechanisms to enable sustainable management of biodiversity. NBSAP Objective 4:	Pacific Regional UNDAF Objective 2: National and regional governance systems exercise the principles of inclusive good governance, respecting and upholding human rights; and resilient Pacific island communities participate in decision-making at all levels. Pacific Regional UNDAF Objective 4: The mainstreaming of environmental sustainability and sustainable energy into regional and national policies, planning frameworks and programmes; and Pacific communities sustainably using their environment, natural resources and cultural

	management of biodiversity.		information sharing	Capacity building for environmental management.	heritage. SPREP Dugong Action Plan 2013-2017.

3.7. Incremental cost reasoning

Table 13. Key outcomes of the GEF Dugong and Seagrass Conservation Project in comparison to current baseline.

Baseline Scenario (Business As Usual) **B**	**GEF Incremental Contribution** (what the GEF Project will contribute) **A**	**Key Outcomes expected with the Alternative Scenario** (BAU+GEF Increment) **A+B**
Component 1 – Community-based stewardship: Limited experience and implementation of community-based management (CBM) or co-management of protected sites across the project regions. Government awareness or experience of the potential benefits very low. Linked initiatives (LMMAs) in some regions within Madagascar (BV supported models, will be replicated through project). Limited experience and models developed in four Project Countries (ID, MG, MY, MZ); planned community managed areas in LK, TL and a small-scale project specifically to engage local communities in dugong and seagrass conservation at one site in Malaysia, due to finish in 2014. Lack of awareness of the benefits of CBM, legal/ institutional barriers and/ or lack of capacity hinder adoption of CBM in all Project Countries.	National programmes in all Project Countries will target priority dugong and seagrass sites (existing protected areas and non PAs) in which CBM and stewardship can be an effective mechanism for improved dugong and seagrass conservation and stewardship. Site-based projects, tailored to specific local threats and needs, will develop good governance structures (e.g. consultative/ stakeholder committees); capacity (training in dugong and seagrass conservation management and monitoring, establishment of dugong protection and monitoring units/ ecoguards); educate and raise awareness of effective CBM; remove barriers; develop and implement effective CBM management and monitoring plans. Management planning will incorporate stakeholder consultation (e.g. fishers' groups and organizations); survey, zonation and participatory preparation of community management and monitoring plans; finalization and approval; support to implementation; exchange visits to other relevant regional sites; assessment, publication and dissemination of pilot project experience (see Component 3).	Increased and widespread adoption of CBM as a dugong and seagrass conservation and management tool in appropriate priority Indo-Pacific sites – resulting in improved conservation status of dugongs and seagrass ecosystems in target areas. Increased levels of awareness and capacity leading to enhanced community engagement, responsibility and good governance at local level, which in turn encourages improved management of shared coastal resources and better conservation outcomes for both seagrasses and dugong populations in the target sites. Wider replication of successful models and best practice developed at target sites leading to broader regional impacts.
Component 2 – Sustainable fisheries practices: A few existing (livelihoods/ financial incentive initiatives) underway (e.g. MZ (ecotourism, "dugong-friendly seafood", handicrafts, "dugong-friendly" fishing practices), MG, TL, LK but limited in scope. No monitoring,	A range of management and incentive mechanisms and tools for sustainable fisheries will be developed, tested and piloted in target areas and (local community and government) capacity built for effective implementation. Awareness raising and social marketing programmes will contribute	Pilot examples at key sites of successful local initiatives promoting behavioural change (e.g. more "dugong-friendly" fishing practices and active community involvement in dugong and seagrass conservation efforts) linked to livelihoods and other

Baseline Scenario (Business As Usual) **B**	**GEF Incremental Contribution** (what the GEF Project will contribute) **A**	**Key Outcomes expected with the Alternative Scenario** (BAU+GEF Increment) **A+B**
evaluation of economic incentives, tools, levels of benefit and replication of best practice. In the Bazaruto region of Mozambique, the 'Dugong Emergency Protection Project', which is expected to run from 2011 to 2016, includes an initiative to identify sustainable alternative livelihood opportunities for those fishing communities which currently pose a threat to dugongs and seagrasses. In Timor-Leste there are plans for a project entitled 'Promoting Livelihoods through Marine Conservation' to be implemented in the Nino Konis Santana National Park. Without GEF intervention current unsustainable practices, damaging and destructive to dugongs and seagrasses will continue to threaten dugong extinction in range states.	to the adoption of more sustainable practices among subsistence and small-scale artisanal net fishers in target areas. Initiatives (tailored to individual sites and target groups) will include environmental awareness raising, promotion of successful pilot initiatives through appropriate media; community skills development and training; economic valuation of ecosystem goods and services; exploration and development of long-term sustainable finance mechanisms (and appropriate training) for the target communities.	community benefits. Successful examples documented and quantified (with economic and socio-economic as well as conservation indicators) and replicated through the project networks/ Clearing House Mechanism and wider global CMS Dugong MoU Secretariat programmes. Improved monitoring of impacts to underpin economic valuation and demonstrate benefits for people and for dugongs. Development of long-term sustainable finance mechanisms for target communities linked to dugong and seagrass conservation management.
Component 3 – Critical knowledge for decision-making: Baseline surveys using the CMS Dugong MoU "Dugong Catch/ Incidental Catch Survey Tool" (status of artisanal fisheries and dugong conservation in priority dugong sites) carried out in MY, SB, VU, MG, MZ, LK. Other limited dugong and seagrass survey and research initiatives in ID, MY, MG, VU. Large knowledge gaps exist in all Project Countries; data on distribution/ status/ threats to dugongs and extent/ status/ threats to seagrass ecosystems very poor. Global Dugong Genetic Project aims to build a network across the global range of the dugong. Dugong and seagrass specific monitoring in two Provinces in Malaysia: in 2012, Sarawak Forestry Corporation established 11 permanent transects for long-term seagrass and dugong monitoring at	Critical gaps in knowledge of dugong and seagrass status, distribution, threat and conservation will be identified and targeted and strategic information gathering exercises and survey programmes initiated or supported in priority areas in all eight Project Countries. This will include significantly wider application of the Standardised Dugong Catch/ Incidental Catch Survey Tool (additional 5,000+ surveys) to contribute to an updated global picture of dugong populations, habitats, and key threats; preparation and dissemination of maps, identification of priority hotspots for conservation intervention. Results will be disseminated through a Clearing House Mechanism to be developed under the project, which will support all Project Countries and all other range states of the CMS Dugong MoU. Additional web-based and other communication tools will support awareness raising; best practice	Significantly increased levels and availability of information and guidance for regional dugong and seagrass ecosystem conservation – collated and shared across partner network, practitioners and decision-makers. New information and maps will be available showing distribution, status and threats to dugongs; new survey methodologies will be tested and monitoring systems established for dugongs and seagrass ecosystems and for socio-economic and awareness studies and monitoring; research results relating to "Blue Carbon" and ecosystem services valuation available to underpin improved conservation management and financing across Indian and Pacific Ocean basins.

Baseline Scenario (Business As Usual) **B**	**GEF Incremental Contribution** (what the GEF Project will contribute) **A**	**Key Outcomes expected with the Alternative Scenario** (BAU+GEF Increment) **A+B**
seagrass meadows at Lawas, while in Johor, scientific surveys on dugongs and their seagrass habitats are planned to specifically inform marine reserve planning. Seagrass monitoring as part of broader marine ecosystem and species protection in two countries: Indonesia, under research plans for the development of an MPA in Alor-Solor, and Madagascar, as part of monitoring carried out at LMMAs at Velondirake and Barren Isles, and the Kirindy-Mitea marine park. Observation of dugong mortality as part of a broader effort to assess hunting, bycatch and conservation of coastal marine mammals on the west coast of Madagascar, due to finish in 2014. Without GEF intervention to improve the knowledge base and capacity to use information, effective regional dugong and seagrass conservation planning and management cannot be achieved.	guidance will be prepared for dugong and seagrass ecosystem conservation (including incentive-based approaches), based on assessment of project results and disseminated to practitioners and decision-makers.	Availability of information and capacity developed among managers and communities to implement better informed and coordinated national and regional conservation will lead to better conservation outcomes for dugongs and their seagrass ecosystems. Clearing House Mechanism and other communication and networking mechanisms will continue to support enhanced conservation action across Project Countries and other range states of the CMS Dugong MoU during and post-Project.
Component 4 – Mainstreaming of conservation priorities and measures: National Dugong Conservation Strategy and/ or Action Plan exist in five Project Countries (Indonesia, Malaysia, Mozambique (for Bazaruto), and Solomons and Vanuatu (in SPREP Dugong Action Plan)) but very limited capacity or resources to implement. National Dugong Focal Points in five out of seven Project Countries but no national dugong/ seagrass programmes actively under implementation; very limited recognition of the priority and conservation needs of globally threatened dugongs and seagrass ecosystems in national and regional policy and regulation (biodiversity, fisheries and other sectors).	National programmes in all eight countries will identify policy, planning and regulatory gaps in conservation of dugongs and their seagrass ecosystems, develop recommendations and address these through awareness and advocacy programmes targeting needed policy and regulatory reforms (at local – site and community – and national and regional levels). National Dugong Facilitating Committees will be established in all eight countries and supported under the CMS Dugong MoU partnership and wider global programme. Implementation of local and national advocacy and training programmes will build capacity within advocacy groups in target areas to advocate for improved conservation policy, planning, regulation and management of dugongs and their seagrass ecosystems.	Raised awareness of the global conservation importance and priority of dugongs and their seagrass habitats and the local and national benefits to be derived from their improved conservation management in eight countries, coupled with enhanced capacity for advocacy will support required policy reform at local, national and regional levels to mainstream dugong and seagrass conservation needs into appropriate biodiversity/ environmental and fisheries policies, planning and regulatory frameworks, for improved dugong and seagrass conservation outcomes in the Indian and Pacific Ocean basins.

Baseline Scenario (Business As Usual) **B**	**GEF Incremental Contribution** (what the GEF Project will contribute) **A**	**Key Outcomes expected with the Alternative Scenario** (BAU+GEF Increment) **A+B**
Dugong populations and seagrasses constitute a very small component of marine and coastal resources identified for safeguarding in the Coral Triangle Initiative, which was launched in 2009 in Indonesia, Malaysia, Timor-Leste and Solomon Islands. Malaysia has been implementing its 5-year National Plan of Action for Dugongs (see above) since 2011 and it is due to be reviewed in 2015. Expenditure on this plan is $30,000. Barriers in all eight countries to effective advocacy and policy reform (lack of awareness, information and local and national capacity for advocacy); without GEF intervention, no national programmes are likely to proceed and there are likely to be no national or regional policy mainstreamimg for effective conservation of dugongs and seagrasses.	National and regional networking and contribution to global policy processes, supported regionally and globally by the CMS Dugong MoU partnership and Secretariat will raise awareness and support policy reform at appropriate levels for effective dugong and seagrass conservation in the Indian and Pacific Ocean basins.	
Monitoring&Evaluation: no impact monitoring systems in place to assess effectiveness of management measures implemented in the target areas, nor regarding national seagrass and Dugong survey and monitroing.	Capacity building and implementation of ongoing coordinated monitoring mechanisms across eight countries in three regions. Development of indicators of change (social/economic/conservation) in all project locations. Building databases and storage systems in each country. Establishing networks to share data and information between countries.	Ongoing monitoring mechanisms implemented across global dugong range. Central storage and clearing house for monitoring data and metadata. Regular reporting on monitoring results. Qualitative and quantitative assessment of monitoring outcomes. Development of State of Dugong reports at periodic intervals. Publications in peer-reviewed journals. Improved understanding by decision-makers. Data included as key input to developmental decision-making.

Baseline Scenario (Business As Usual) **B**	**GEF Incremental Contribution** (what the GEF Project will contribute) **A**	**Key Outcomes expected with the Alternative Scenario** (BAU+GEF Increment) **A+B**

3.8. Sustainability

162. The project is designed to initiate, develop and promote the long-term sustainability of all its outcomes through a combination of policy, institutional and financing mechanisms including: integration of project outcomes into existing policy and institutional frameworks; establishment of practical arrangements and local mechanisms for sustainable financing of community stewardship of sites (protected and non-protected areas); involvement of relevant institutions, agencies and stakeholders at national and local levels in project development and execution; and capacity building for relevant stakeholders for marine and coastal biodiversity in the participating countries. A sustainability strategy and plan will be developed mid-term of the project to ensure project results and outcomes are sustained.

163. In each of the project countries, training will be provided to a range of stakeholders. However, indicative numbers of people trained in each category of stakeholder cannot be provided at this time because of the large number of individual projects (32) which were not able to be fully developed (e.g. specific sites selected) because of the short time period, remote locations and limited funding provided in the project preparation grant phase. Full development of projects will be done during the extended inception phase. A summary of capacity building activities, including training derived from the project, is provided below.

164. In Indonesia, capacity will be built through training and community involvement in conservation actions (ID1). A national workshop will be held to discuss and adopt a draft revised National Strategy and Action Plan. Capacity will be built in the NGO community by establishing a national NGO network on dugong and seagrass conservation. The preparation of best-practice guidelines on dugong rescue will build capacity of local fisheries, authorities, veternarians and other personel to rescue dugongs which are incidentally caught in fishing gear and struck by boats, as well as to inform key fishing communities who to contact and what to do in such situations, as appropriate to the site specific circumstances. To improve the education and awareness of dugong and seagrass conservation in communities, training will be provided in the use of a standard survey method for seagrass mapping, seagrass monitoring, questionnaire surveys for dugongs, and community-based seagrass management (ID2). In the coastal area of Bintan Island in Riau Archipelago Province, community-based stewardship of dugongs and seagrasses will be strengthened, awareness and capacity of communities and stakeholders regarding dugong and seagrass management will be improved and the management of local MPAs will be harmonized and integrated (ID3). The community will be involved through the establishment of a dugong and seagrass community conservation group and preparation of a community-based dugong and seagrass conservation and management plan. Capacity building will also be provided in terms of facilitating the active participation of community members in the design and implementation of the conservation plan. The preparation of sustainable fisheries best practice guidelines will assist fishers in avoiding incidentally catching dugongs. In addition, an incentive financial mechanism will be developed and provided to local fishers participating in the sustainable fisheries best practice guidelines scheme. Training workshops for local staff and local communities will be provided to assist them in the use of standardized questionnaires on dugongs. A spatial plan for environmentally friendly ecotourism will be prepared to assist communities in

developing such initiatives. Nationally a national facilitation committee will be established and operated (ID4).

165. In Madagascar, capacity will be built through training and other capacity building activities. In north-west Madagascar between Mahajanga and Sahamalaza (MG1), training will be provided to local community members to undertake monitoring of dugongs and seagrasses. At least five members of each selected community will be trained with a focus on fishers/ gleaners. Training in participatory mapping of seagrasses will also be provided to local community members at selected LMMAs in the Mihari network of LMMAs (MG2). In the Nosy Hara Marine Park, Marine National Park rangers will be trained to monitor gillnet use (MG3). Fishers will be trained in the release of bycaught dugongs, and in the importance of the species in seagrass conservation and fisheries production. In addition, both Marine Park Rangers and local community members will be trained in scientific and community-based dugong and seagrass surveys (e.g. Seagrass-Watch, fisher sighting record programme, stranding recovery programme). Also in Nosy Hara Marine Park, at least 50 junior ecoguards will be appointed and trained to produce environmental awareness materials and conduct village events to disseminate messages. In the Sahamalaza area along the northwestern Madagascar, participatory mapping of seagrass habitats will be undertaken (MG4). In north-west Madagascar, capacity building will be provided for MPA management committees (MG6). At a national level, capacity building for the National Steering Committee will include training for key government stakeholders in the importance of seagrass ecosystems (MG5).

166. In Malaysia, capacity will be built through training and involving local community members and other stakeholders in conservation actions. In Pulau Sibu and Pulau Tinggi Marine Parks in Johor, Peninsular Malaysia, capacity will be developed through the establishment and meetings of a Community Consultative Committee (MY1). Also in the Sibu and Tinggi Island area, capacity will be built through a training programme to educate fishermen, school children, and dive and boat operators on best practices in relation to dugong and seagrass conservation (MY3). The community will also be involved in a consultative process to develop a community-based dugong and seagrass conservation plan and in a dugong monitoring programme in the Sibu Island and Tinggi Island area. Capacity will be built within government agencies such as the DMPM and DOFM, to make better informed decisions for marine protected area planning, by providing critical input from research undertaken in the area (MY4). In the Bay of Brunei, Lawas, Sarawak East Malaysia, capacity will be built to develop a MPA (MY5). Local researchers will be trained in dugong and seagrass survey methods. The local community will carry out their own community development activities through the Honorary Wild Life Ranger Program (HWLR). Candidates of the honorary wildlife ranger programme will undergo training to educate and prepare them. This training will include lectures on biodiversity and wildlife conservation in Sarawak, and roles and responsibilities of honorary wildlife rangers. Community awareness activities for school children will be undertaken through the Nature ‘n U programme, involving annual environmental education camps organized by SFCSB. Nationally, a National Task Force/ Working Committee will be established and knowledge-sharing and capacity building will be conducted amongst the various members on conserving dugongs and their habitats (MY2).

167. In Mozambique, capacity will be built through training and other capacity building activities. In the Bartolomeu Dias Point area, Inhassoro, capacity will be built through the establishment and operation of a community based management committee (MZ1). In addition, local community members will be trained in dugong and seagrass monitoring techniques (10 members of each community, focusing on fishers/ gleaners) and participative monitoring and surveillance for effective management (to help enforce agreed community based management plans; 20 members of each community focusing on

fishers/ gleaners). An Environmental Education and Awareness programme will be provided to 75% of each community's population (90% of fishers and school children). A trial of viable alternative livelihoods/ market-based mechanisms will be piloted with local communities in 1 or 2 communities (if a viable option is identified through community discussions) and operated in communities if the trial is successful. In the Bazaruto Archepelago, a public awareness, education and social marketing campaign will involve the appointment of 'community monitors' to gather fisheries catch and bycatch information and thereby build capacity of communities to manage their resources through better information on fisheries in the area, including an important threat to dugongs (MZ3). Also in the Bazaruto Archipelago area, a Dugong Protection Forum will be established and operated to build capacity and coach local authorities, operators and community fishing associations to undertake sustainable dugong protection in the long term (MZ4). Teacher training workshps will be undertaken quarterly to facilitate delivery of a local marine-themed environmental education curriculum at the Vilanculos, Inhassoro and island schools to foster greater awareness of threatened marine species and habitats. At Vilanculos and Inhassoro, at least three participatory workshops will be undertaken with each of the approximately 18 CCPs (Community Fisheries Committees) to discuss management gaps, identify and rank socially acceptable additional management measures and agree with the fishers on these management measures (MZ5). Nationally, a national project steering committee will be established and operated and training will be provided to committee members and key government stakeholders in the importance of sustainable management of seagrass ecosystems (MZ6).

168. In Solomon Islands, while only preliminary details on projects are available due to their late participation to the FSP, a dedicated project will provide support and capacity to the project partners capacity to fully develop national projects (SB1). National spokesperson(s) will be trained for advocary for seagrass and dugong conservation through campaign messaging (SB2). Community, government and other stakeholders will have their capacity built to establish two community based marine protected areas targeting seagrass habitats and dugongs (SB4). SB5 is a dedicated project aimed, in part, at building national level expertise in seagrass and dugong conservation.

169. In Sri Lanka, in the Gulf of Mannar area, an education and awareness and social marketing campaign will be developed and implemented to help community members make better informed decisions and change practices detrimental to dugongs and seagrasses as appropriate (LK1). In Kalpitiya in the north-western region of Sri Lanka, capacity will be built by strengthening the legal and administrative capability for wildlife resources management and conservation, with participation from a wide range of stakeholders including local communities (LK2). A pilot coastal conservation coordination centre will be established to collate natural resource data from different sources and monitor the implementation of relevant laws and regulations. Staff members from the Department of Wildlife Conservation will be trained to collect, collate and communicate findings related to strandings, illegal activities, sightings and community issues. Training may include boating, diving, scientific observation, communication regarding data collection and working with communities. From Kalpitiya to Jaffna, targeted awareness workshops will be conducted with relevant enforcement agencies (e.g. Fisheries, Navy, Coast Guard) in Colombo and in coastal regions such as Kalpitiya, Mannar and Jaffna, as well as field stations along the coast. The training workshops will be expanded to include local communities in target areas to help facilitate social levers to aid in enforcement (LK3). In the Gulf of Mannar, collaborative workshops will be held among a range of stakeholders to draft a community-based plan that spans multiple communities (LK4). Opportunities for alternative employment or incentives will be investigate to enhance buy-in amongst fishers. In Palk Bay, Gulf of Mannar and Kalpitiya,

increased knowledge on the value, distribution and productivity of seagrass ecosystems will build capacity for decision-makers by informing decision-making and coastal area planning (LK5). In addition, at selected locations between Kalpitya, Mannar and Jaffna, knowledge on seagrass and dugong importance, distribution and abundance will be incorporated into government decision-making (LK6). In Kalpitiya, income-generation opportunities will be provided to local communities in return for their commitment to wise habitat and natural resource management use (LK7). Training will be provided in batik making, fish breeding, coir mats and tourism (as appropriate by community) as supplemental income generation opportunities. Capacity will also be raised in branding, marketing, accounting and quality assurance through specialized training. Training will also be provided to improve the quality of community products with the aim of finding export markets. Nationally, a National Facilitating Committee will be established and operated (LK8).

170. In Timor Leste, national-level partners will be trained in standard seagrass and dugong research techniques to overcome existing knowledge barriers regarding the distribution, status and ecology of seagrass ecosystems and dugong populations (TL1). Capacity will be built among community members by involving them in the establishment of at least one LMMA through the dissemination of education and social marketing materials documenting the importance of seagrass habitats and dugongs, establishment of a local steering committee(s) for conservation efforts and development of an eco-volunteering marine tourism initiative(s) (TL2). In the development and implementation of social marketing and innovative environmental education campaigns, a national spokesperson who will become an icon and advocate for seagrass and dugong conservation through campaign messaging will be identified and trained (TL4). Nationally, a national inter-ministerial mechanism (such as the national inter-ministeral committee established by the GEF ATSEA project) will be established to ensure a coordinated approach to national level coastal zone planning and decision-making which effectively addresses dugong and seagrass conservation (TL3).

171. In the Maskelyne Islands, Efate Island and other selected areas in Vanuatu, capacity will be built through developing community-based stewardship of segrass dependent biodiversity (VU1). Nationwide workshops will be held and training will be provided to communities and advocates. Innovative, market-based incentive mechanisms (inclusive of but not limited to environmental mortgages, environmental loan facilities and valuation of ecosystem services) will be explored which promote and sustain responsible fisheries and other practices that reduce damage to dugong and seagrass ecosystems. Nationally, a National Facilitating Committee will be established and operated (VU2).

3.8.1. Institutional sustainability

172. National Facilitating Committees in the participating countries, encompassing government agencies, NGOs and other stakeholders, will oversee the project. It will be implemented at national level by existing institutions and strengthened partnerships, not the creation of new structures. The establishment of National Facilitating Committees will lead to enhanced understanding and professional capacity among partners and strengthen the role of the Dugong National Focal Point to communicate and coordinate with stakeholders. This in turn will facilitate the active involvement by stakeholders in conservation management of dugongs and seagrasses and those activities which need to continue after the end of the project to ensure sustainability of project impacts. An additional contribution of the project will be to facilitate the finalisation and endorsement of existing or development of new national dugong conservation plans based on enhanced knowledge base generated from this project. The adoption of National dugong action plans by national governments will better ensure core funding is provided for implementation. The

project will promote sustainable economic activities and financial mechanisms to support livelihoods and community stewardship of marine resources at local levels and disseminate successful models widely within the project and more widely across dugong range states through the CMS Dugong MoU and its current and future conservation plans and initiatives. Through strengthening community based mechanism such as local by-laws relevant to dugong and seagrass management, local sustainability will be enhanced. At wider regional and global levels, the CMS Dugong MoU provides the policy and networking framework for sustained actions and impacts. Governments of dugong range states who sign up to the CMS Dugong MoU commit to take action to conserve dugongs and their seagrass ecosystems and to support implementation of the Conservation and Management Plan. The CMS Dugong MoU Secretariat and network of range state signatories provides the long-term global institutional framework and support for continued action, advocacy, improved knowledge base and dissemination of best practice, and fundraising for conservation management.

3.8.2. Financial sustainability

173. The project will promote sustainable marine biodiversity conservation arrangements at a variety of levels. It is designed to ensure the effectiveness of national policies and regulations for dugong and seagrass conservation and to raise awareness among policy makers and the general public regarding the value of marine ecosystem services and the need for coordinated conservation management. Policy mainstreaming will ensure that dugong and biodiversity management priorities and measures find entry into other sectoral policies (Outcome 4). This supports financial sustainability by increasing access to financial resources in other sectors (resources used to incorporate the conservation and management needs of dugongs and seagrass in other development sectors, as opposed to their destruction or degradation). For example, the development of sustainable fisheries incorporating “dugong-friendly” practices or exploration of potential payment for ecosystem services approaches (Outcome 2). Development and adoption of policies informed by this project may lead to additional resources under core government funding mechanisms, if these are formally enacted.

174. At site level (protected and non-protected areas) the project will promote the development and creation of financing mechanisms by developing and highlighting the benefits of alternative management systems and livelihood options. These include the adoption of LMMAs and dugong and seagrass-friendly fishing practices. Blue Ventures, has a core business in developing sustainable resource management schemes and implementing large projects using a collaborative, partnership-based approach. Building on this expertise, local site management initiatives and management plans will be developed in close partnership with relevant local stakeholders (Outcome 1). A key theme will be a focus on long-term sustainable financing options at local level, providing alternative livelihoods and a basis for future for long-term implementation through economically viable community stewardship. Innovative tools and mechanisms for achieving this will be piloted, tested and implemented by the project and good practice disseminated widely via social marketing approaches (Outcome 2).

3.8.3. Technical sustainability

175. The proposed interventions will overcome the barriers of critical knowledge (Outcome 3). The improved information base will then support advocacy for the development and strengthening of policy frameworks to mainstream conservation activities for dugong and seagrass habitats into other relevant policy sectors and their activities, e.g. tourism, coastal land management (Outcome 4). Capacity for research, management and advocacy for

dugong and seagrass conservation management will be developed at all levels (local, national and regional) through project implementation.

176. The development of an improved knowledge base and capacity at local and national levels, through local community and stakeholder engagement in project activities, provides a solid base for future action beyond the life of this project and for replication through other initiatives. The development of a Clearing House Mechanism will support dissemination and sharing of knowledge which will continue to be maintained and supported post-project and into the future.
177. The sustainability of the project's impacts will be favoured by the establishment of a solid policy framework for the protection of dugong populations and seagrasses in the Indo-Pacific region. The existence of programmes and initiatives at the global level, such as the Dugong, Seagrass and Coastal Communities Initiative under the CMS Dugong MoU, supports the continuity of the initiatives in the long term.

3.9. Replication

178. The first and most effective replication mechanism is the fact that all project countries are included in the CMS Dugong MoU, and CMS is and will continue supporting the objectives of the MoU and the project beyond the timeline of this GEF project.
179. The project will ensure dissemination of new knowledge, project experiences and lessons learned through a comprehensive communication and outreach strategy and the proposed web-based Clearing House Mechanism (these are Outputs under project Outcome 3). Sharing of experience and replication of best practice will be promoted within the Project Countries through these same mechanisms and more widely across the range states of the dugong under the CMS Dugong MoU and through links with other relevant initiatives (notably the CMS Dugong MoU "Dugong, Seagrass and Coastal Communities Initiative"). Project experience and pilot activities will be reviewed, and best practice guidance prepared and disseminated. This will include experiences in innovative finance mechanisms and tools for community stewardship and alternative livelihoods at site level (Outcome 1 and 2); research and monitoring (Outcome 3); advocacy and policy mainstreaming (Outcome 4).
180. The CMS Dugong MoU Secretariat coordinates the Dugong, Seagrass and Coastal Communities Initiative and will utilise the Clearing House Mechanism during implementation and after project completion. Existing toolboxes developed by the CMS CMS Dugong MoU Secretariat (Mitigation and Management Toolbox; Appendix 24) and the Dugong, Seagrass and Coastal Communities Initiative Toolbox (incentive mechanisms and financial tools; Appendix 24) will provide initial resources for project implementation. The project will, in turn, pilot, test and develop new tools to strengthen and add to these toolboxes and promote their wider uptake and replication as appropriate across all range states of the dugong.
181. This will promote communications and the exchange of experiences between national programmes and allow for the systematic gathering and documenting of good practice and lessons learned during the project. Through the Clearing House Mechanism, the most important and relevant lessons of the project (e.g. on mainstreaming biodiversity and ecosystem services conservation approaches) will influence the international biodiversity agenda and be readily available for application by other initiatives beyond the pilots of the project. This will allow for systematically gathering and documenting good practices and lessons learned during the project and will facilitate replication in the participating countries and the wider regions.
182. Project lessons, tools and best practice will also be promoted through project and other regional and global meetings and fora and through links with other GEF and non-GEF projects in the region. The project will undertake a specific lesson-learning exercise,

probably as part of the final Steering Committee meeting, as well as publication of project results in peer-reviewed scientific journals and other articles. Presentations made at key national and international events, especially those relating to marine and coastal conservation, will also be made widely available through the Clearing House Mechanism.

3.10. Public awareness, communications and mainstreaming strategy

183. Communication, information sharing and mainstreaming, are key building blocks for the success of this project. A detailed communication and outreach strategy for the project will be developed during the inception phase, with a dedicated Communications Officer identified within the project team. The strategy, which will purposely be built on a social marketing approaches, will contain elements including tailor made communications for 'change' with key policy and decision makers and local stakeholder groups, key project messages; design of a project logo and proper reflection of the role of all partners and donors; key information about the project's implementation and operation arrangements, media messages, and impact monitoring against baseline. It will identify those responsible for various national and international communication channels, an appropriate timeline, and detailed budget.
184. Communication, coordination with and engagement of key stakeholders in project activities will be essential to ensure uptake and effective use by local communities and other users of tools and other resources developed by the project. This will be achieved through working closely with and supporting national institutions and stakeholders through direct contacts, consultations and workshops.
185. Communication for information sharing and exchange of best practices and lessons learned will also be established by networking with other GEF and non-GEF projects tackling issues related to marine and coastal biodiversity in the participating countries and wider regions.
186. Communication activities will support capacity building and training in conservation and management of marine and coastal biodiversity in the participating countries and more widely throughout the range states of dugongs, under the CMS Dugong MoU and through links with other e.g. UNEP-GEF initiatives. Project results, information, reports, maps and awareness materials will be disseminated through the web-based Clearing House Mechanism.
187. In addition, the project will use other communication channels including: the internet (national and international partner websites, the GEF global project database); publications and national and international media in the project region. Presentations will be given at appropriate national and international meetings, and scientific conferences.
188. For internal communications, all partners will be regularly apprised of progress via reports and regular meetings, email etc. In the inception phase partners will be consulted regarding other possible communication tools.
189. Of key importance for the project's mainstreaming strategy is engagement and collaboration with a broad range of stakeholders and institutions. Project Component 4 will create enabling environments for the promotion of conservation and sustainable use through policy reforms. Strengthened policies and regulations for dugongs, seagrass and coastal biodiversity conservation will be developed with governments, integrated into national legal frameworks and advocated for incorporation in national development planning and budgeting procedures.
190. Government and civil society organisations will work closely with other stakeholders to provide training, capacity development and information sharing on sustainable management of marine and coastal biodiversity, tools and concepts, etc. Awareness raising will promote understanding, knowledge of and interest in dugongs, seagrass and

coastal biodiversity issues at governmental/ decision-making level, as well as among local communities.

3.11. Environmental and social safeguards

191. The project is expected to generate positive and long-term environmental and social impacts (see Results Framework objective and outcomes, Appendix 4). Progress towards these will be measured through the GEF Tracking Tools including the Toolbox for capacity development, and indicators specified in the Results Framework (Appendix 4), as well as under the project monitoring and evaluation plan.

Environmental safeguards

192. The project aims to produce positive environmental and social impacts under all four components. It will develop and improve the institutional capacity of government institutions responsible for the environment, and enhance the role of communities in the conservation and stewardship of dugongs and their seagrass habitats in the participating countries. The project seeks to improve seagrass habitat conditions within and outside protected areas, and will positively address the current trend of habitat and species loss. Furthermore, the project will create opportunities for conservation action through increased awareness, capacity building and the identification of alternative livelihood options linked to enhanced stewardship and conservation management.
193. The project is expected to cause indirect environmental benefits through improved ecosystem management, and the potential for enhanced carbon sequestration in better protected and managed seagrass ecosystems.
194. Table 14 provides a list of potential harmful environmental impacts that are of concern to the GEF, and summary responses to each as relevant to this project.

Table 14. Checklist for environmental issues

Issue	Response	Comment/explanation
- Are ecosystems related to project fragile or degraded?	Yes	Yes and the project will seek to improve seagrass habitat conditions within and outside PAs in the target areas
- Will project cause any loss of precious ecology, ecological, and economic functions due to construction of infrastructure?	No	On the contrary, the project is expected to contribute to positively addressing this issue. However, there may be some need for infracture to support eco-tourism and other income generating activities. There may also be some minor ecological impact in order to provide boundary markers for protected areas.
- Will project cause impairment of ecological opportunities?	No	On the contrary, the project is expected to contribute to positively addressing this issue
- Will project cause increase in peak and flood flows? (including from temporary or permanent waste waters)	No	not applicable
- Will project cause air, soil or water pollution?	No	On the contrary, the project is expected to contribute to positively addressing this issue
- Will project cause soil erosion and siltation?	No	On the contrary, the project is expected to contribute to positively addressing this issue
- Will project cause increased waste production?	No	On the contrary, the project is expected to contribute to positively addressing this issue
- Will project cause Hazardous Waste production?	No	not applicable
- Will project cause threat to local	No	Any habitat rehabilitation efforts or introduction of

Issue	Response	Comment/explanation
ecosystems due to invasive species?		aquaculture development programs will screen species on their invasive properties (literature review).
- Will project cause Greenhouse Gas Emissions?	No	On the contrary, the project is expected to contribute to positively addressing this issue and especially in view of its links with the parallel UNEP/GEF Blue Forests project
- Other environmental issues, e.g. noise and traffic	No	Only some coastal marine navigation routes may be marginally affected

Social safeguards

195. The project respects internationally proclaimed human rights including dignity, cultural property and uniqueness and rights of indigenous people living within the target regions. The rights of local communities and indigenous people, including existing land tenure recognized by the existing laws, will be maintained in the design of any protected area and its establishment. Full stakeholder identification and consultation has occurred during the PPG phase, and a communication and outreach strategy will be developed during the project Inception Phase.
196. The project is expected to significantly improve the capacity of targeted national institutions, and is expected to enhance employment and other benefits arising from resource use in the target areas in the long term. It is not anticipated for the project to cause dislocation or involuntary resettlement of people, or any forced or child labour. Recreational opportunities, indigenous people's livelihoods or belief systems, and critical cultural heritage will all be maintained during the implementation of this project. These will be ensured by conducting full EIA incuding its social dimension in any project sponsored investments such as eco-tourism, new fishing gear, area demarcation, support facilities etc.
197. In order to ensure that there are no disproportionate impacts to women or other disadvantaged or vulnerable groups, appropriate involvement of all social groups was ensured during PPG phase, and will be continued throughout the project's implementation phase. Robust financial monitoring procedures will be implemented by the Executing Agency in order to provide for anticorruption measures.
198. In each of the project countries, socio-economic benefits are a measurable target of the project sponsored activities. However, quantified specifics cannot be provided at this time because the projects have not yet been fully developed (e.g. specific sites selected) because of the short time period and limited funding provided in the project preparation grant phase. Full development of projects will be done during the extended inception phase. It is also important to have a careful facilitation process in approaching communities to avoid false expectations, distorted gender representation, as well as 'top-down' project approaches – and that will be initiated during the project inception and remain an integral part of the project during implementation. Nevertheless, a summary of socio-economic benefits derived from the project and how they will support the sustainability of outcomes post-project is provided below. Women, production groups (e.g. fish processing), informal conservation groups, as well as youth will be involved in a range of project activities which include alternative livelihoods, management of LMMAs and implementation of incentive mechanisms. Many of the project partners have experience in ensuring women are involved in and benefit from conservation actions and will incorporate this experience into their projects. Examples of the types of actions include when women are the primary resource users, empowering women to be more involved in organization and decision-making processes; and establishing women's groups

and fully incorporating them into the existing village-level management associations to ensure that gender-specific challenges are taken into account (e.g. arranging fisheries opening days to coincide with the lowest spring tide so that women can fully participate and benefit); and utilising women's groups to provide a forum for discussion of community wellbeing issues.

199. There are twelve projects addressing outcomes under Component 2 which will be implemented by Partners experienced in alternative livelihood development; three such Partners are Blue Ventures, C-3 and Endangered Wildlife Trust. Four of the twelve projects will be implemented by Blue Ventures, who have over ten years' experience working with coastal communities and private sector partners in Madagascar to develop environmentally sustainable and economically and socially viable alternatives to fishing. Through community consultation, Blue Ventures have enabled fishing communities in Madagascar to establish sea cucumber and seaweed farming practices; these activities now involve over 700 people in Blue Ventures' project areas. Blue Ventures will be implementing two projects in Madagascar, one in Mozambique and one in Timor Leste. Blue Ventures has not previously operated in Mozambique or Timor Leste, but will bring their vast experience in working with communities to develop situation-specific solutions to the problems associated with environmental conservation to these Project Countries. In Timor Leste, Blue Ventures will partner with Move Forward, a locally active NGO: this project will benefit from both Move Forward's experience and local knowledge of the project area as well as Blue Ventures' working models of economically successful alternative livelihood programme development and implementation. In addition, Blue Ventures' representatives will be on the National Facilitating Committees in each of the three countries in which they are operating, which will increase the capacity of these Committees to facilitate alternative livelihood solutions in all the projects within those countries.

200. Also in Madagascar, , the internationally active NGO Community Centred Conservation (C-3) will build upon their existing operations in Madagascar to create alternative long-term sources of income to communities which currently operate fisheries with adverse effects on seagrass ecosystems. C-3's previous work in Madagascar aimed to reduced pressure on marine resources, particularly sharks, through involving shark-fishers in ecotourism enterprises and enabled entry to fishing industry areas such as fish farming, preservation and transport of catches to urban markets which provide long term incomes.

201. The Endangered Wildlife Trust's (EWT) project will build upon their existing efforts in Bazaruto, Mozambique. Since 2011 EWT has been developing sustainable alternative livelihoods for the Bazaruto island communities in the eco-tourism and responsible seafood consumer choices industries and is currently trialling these initiatives in a one year project running from July 2013.

202. The projects addressing Component 2 will build upon existing initiatives or bring vast experience to new project areas which will help local communities develop economic activities that provide an alternative means of meeting needs that were previously met by exploitation of marine environments. In addition, the experience and lessons learnt and shared across Project Partners, Countries and the entire global dugong range via the project's Clearing House Mechanism will provide the basis for on-going future alternative livelihood programmes in at least another ten countries (25% of the dugong's global range) under the UNEP CMS Dugong MoU Secretariat's Dugong, Seagrass and Coastal Communities Initiative.

203. In Indonesia, local fishers will derive socio-economic benefits through the development and provision of appropriate incentive financial mechanisms to participate in the implementation of sustainable fisheries best practice guidelines (ID3. In addition, in the villages of Berakit and Pengudang, communities, which have already been organised and

empowered through the concluded UNEP/GEF South China Seas demonstration project, will benefit from the preparation of village detailed spatial plans for environmentally friendly ecotourism to ensure the sustainability of coastal environments so that amenities for marine tourism can be maintained. Such incentives should increase the commitment of communities to voluntarily protect the coastal environment including dugong populations and seagrass ecosystems, as well as their associated biota.

204. In north-west Madagascar, between Mahajanga and Sahamalaza, communities will derive socio-economic benefits through the establishment of an LMMA financed through a market-based mechanism, which will be trialed and developed in 1 or 2 communities (MG1). Blue Ventures will transfer skills and experience from other projects elsewhere in Madagascar and other countries to facilitate long-term support for continued management of the LMMA, which will be developed through an innovative private-public partnership.Outcomes will be sustained because of the private company's long-standing presence in Madagascar and commitment to long-term sustainability at its operational sites. Similarly, at selected sites in the Mihari network of Locally Managed Marine Areas, Blue Ventures will apply their extensive prior experience in establishing and maintaining LMMAs and long-term funding will be sought to sustain behavioural changes and support community-based management through exploring a number of sustainable finance mechanisms, including for example, dugong based ecotourism, a payment for environmental services scheme where external donors provide small financial contributions to the community in return for verifiable improvements in dugong populations and seagrass habitats and examining the feasibility of a dugong/seagrass trust fund (MG2). In the Nosy Hara Marine Park, C3 will build on its Environmental Stewardship Project and the sustainable livelihoods and services provided by the current project will provide support and incentivize the communities of Nosy Hara Marine Park to continue the behaviours initiated by the current project (MG3). Community services to be provided include improved wells, maternal heathcare and enhanced schooling facilities and promotion of sustainable livelihoods. The current project is considered essential to consolidate and build on the work from the previous C3 project in the Park. In the Sahamalaza area, the components of the project will contribute to tie together financial and ecological systems through the implementation of policies which will allow new payment for ecosystem services (MG4). In addition, the project will focus on areas which hold promise for securing local livelihoods (e.g. through the development of ecotourism) within marine ecosystems. The COSAP stakeholder platform will build on existing networks to increase accountability of leaders, transparency of governance structures and support of technical partners to achieve these outcomes. In north-west Madagascar, Wildlife Conservation Society (WCS) will build on geographically extensive assessments of marine mammals in north-west Madagascar, which have led to development of community driven conservaton efforts and the current project represents an extension of these long-term efforts. Communities will benefit from actions within existing MPAs and identification of at least three local hotspots for dugongs currently not within an MPA for future community work and proposed MPA development (MG6). Strengthened partnerships between local communities, local authorities, and the private sector, along with capacity building of MPA local management committees, will also help ensure the viability and durability of project results.

205. In the Bartolomeu Dias Point area, Inhassoro, Mozambique, with the support of Blue Ventures, communities will benefit from the piloting and development of incentive market-based tools being used for the first time, in this area that will reduce the dependence of local fishers on coastal resources. Potential mechanism to be examined include setting up a community-based arts and crafts endeavor for local fishers in one or more communities in the Bartolomeu Dias region, and setting up a locally-sourced fish

supply operation to provide fish directly from the fishing communities to the local tourism sector (e.g. eco-lodges). The incentive-based market mechanism will generate alternative income for local fishing families and ensure their reliance on marine resources is reduced over the long term. In addition the development of a community or stakeholder-based management structure will ensure the continued management of the Bartolomeu Dias region for dugong and seagrass conservation through the use of LMMAs (MZ1). In the Bazaruto Archipelago, Endangered Wildlife Trust will progress their established sustainable seafood initiative which facilitates the transition from netting to hand-line fisheries in order to reduce the use of gill and seine nets by way of incentives and a link to exclusive markets. The outcomes will be sustained through securing markets for South African Sustainable Seafood Initiative (SASSI) endorsed products and ensuring lodges and hotels continue supporting endorsed fishers (MZ4).

206. In Solomon Islands, socio-economic benefits will be derived through the endorsement of local and national-level community based conservation efforts, secured through legislative protection of LMMA(s) (SB4).
207. In Sri Lanka, socio-economic benefits will be derived from participation in protected area management and the implementation of market-based incentive mechanisms. In Kalpitiya, local communities will be involved in strengthening the administrative capability for wildlife resource management and conservation (LK2). This programme will be maintained by the Department of Wildlife Conservation, which manages protected areas and other conservation actions. In the Gulf of Mannar, with the support of IUCN Sri Lanka, communities will benefit from improved fisheries resource management, through the development, adoption and formal recognition of a community-based management plan, involving multiple communities within a declared Fisheries Management Area (LK4). IUCN Sri Lanka will build on its extensive experience working in the Gulf of Mannar in recent years (e.g. BOBLME, Mangroves for the Furture). The total amount of seagrass protected under marine protected areas will be increased by identifying seagrass hotspots within the Fisheries Management Area and affording them additional protection, with up to 10,000 ha of Marine Protected Area being added. Local fishers will also benefit from opportunities for alternative employment or incentives to enhance their buy-in with respect to the expansion of Marine Protected Areas. Once the declaration has been completed the management of the MPAs and fisheries activities will be done by the two departments; Department of Wildlife Conservation and the Department of Fisheries and Aquatic Resources Development. The national funding available for the management of the MPAs and fisheries management would be utilised for sustainability. However, additional funds may be sought in the future through other projects that have similar goals to enhance the management capacity. In Kalpitiya, Turtle Conservation Project will build on its more than 20 years experience undertaking community based conservation/livelihoods initiatives in southern Sri Lanka to work to provide income generation opportunities to local communities in return for their commitments to wise habitat and natural resource management use (LK7).
208. In Timor-Leste, Blue Ventures will establish at least one community-based marine protected area targeting seagrasses and dugongs with community, government and tourism stakeholders, supported by revenues from marine ecotourism activities (TL2).
209. Table 15 provides a list of potential harmful social impacts that are of concern to the GEF, and summary responses to each as relevant to this project.

Table 15. Checklist for social issues

Issue	Response	Comment/explanation

Issue	Response	Comment/explanation
- Does the project respect internationally proclaimed human rights including dignity, cultural property and uniqueness and rights of indigenous people?	Yes	Special attention will be given to Indigenous Peoples living within the target regions and where necessary IP experts may be enlisted in the Inception Phase.
- Are property rights on resources such as land tenure recognized by the existing laws in affected countries?	Yes	Independent of the existence or non-existance of relevant laws, these land and property rights will be carefully assessed to ensure they are duly taken into account during consultation for PA design, development of alternative livelihood options.
- Will the project cause social problems and conflicts related to land tenure and access to resources?	No	The rights of resident and indigenous peoples in the Target Areas will be carefully assessed to ensure they are taken into account during consultation for PA design and establishment, and development of alternative livelihood options
- Does the project incorporate measures to allow affected stakeholders' information and consultation?	Yes	A full stakeholder identification and consultation plan was carried out during the PPG phase, and a communication and outreach strategy will be developed during the implementation phase
- Will the project affect the state of the targeted country's (-ies') institutional context?	No	Although the project will target policy aspects related to Dugong/seagras and improve the capacity of targeted national institutions, it will not affect countries' national instutional context.
- Will the project cause change to beneficial uses of land or resources? (incl. loss of downstream beneficial uses (water supply or fisheries)?	No	On the contrary, the project is expected to contribute to positively addressing this issue
- Will the project cause technology or land use modification that may change present social and economic activities?	Yes	The project is expected to contribute to positively change to present social and economic activities around and within the selected target areas in the long term
- Will the project cause dislocation or involuntary resettlement of people?	No	Not anticipated
- Will the project cause uncontrolled in-migration (short- and long-term) with opening of roads to areas and possible overloading of social infrastructure?	No	Not anticipated
- Will the project cause increased local or regional unemployment?	No	On the contrary it may generate some employment in the target areas
- Does the project include measures to avoid forced or child labour?	No	Not foreseen as an issue – however if necessary these may be included during Inception Phase
- Does the project include measures to ensure a safe and healthy working environment for workers employed as part of the project?	Yes	Rules and regulations of the host government will apply
- Will the project cause impairment of recreational opportunities?	Yes	But only in the few cases where e.g. boat recreation affects targeted seagrass and dugong populations
- Will the project cause impairment of indigenous people's livelihoods or belief systems?	No	Appropriate involvement of all social groups will be ensured throughout the project's implementation phase

Issue	Response	Comment/explanation
- Will the project cause disproportionate impact to women or other disadvantaged or vulnerable groups?	No	Appropriate involvement of all social groups will be ensured throughout the project's implementation phase
- Will the project involve and or be complicit in the alteration, damage or removal of any critical cultural heritage?	No	
- Does the project include measures to avoid corruption?	No	This issue will be addressed by including specific and tight financial monitoring procedures, and anticorruption measures as part of the project execution set-up

SECTION 4: INSTITUTIONAL FRAMEWORK AND IMPLEMENTATION ARRANGEMENTS

210. This is a large and complex project involving eight countries across the tropical Indo-Pacific region, from coastal east Africa through the south-east Asian archipelagoes to the southwest Pacific. The project brings together diverse stakeholders including government agencies, international and local NGOs, CBOs, local communities, research institutions and private companies. Effective implementation and delivery of the project will require a high degree of technical oversight, as well as administrative and operational coordination at global, regional, national and local levels. The complexity and scope of the project thus required commiting adequate funds to support adequate project management, coordination and provision of technical support. This required funds to be contributed from national budgets (7% of their contribution) to supplement funds secured from the Regional Set Aside allocations. The proportion requested from national budgets was deemed necessary to be increased from 5% reported in the PIF to 7.1% to enable a satisfactory level of management, coordination and technical support.
211. The arrangements presented below has benefited from the unique and innovative execution of the PPG phase with MbZSCF and the CMS Dugong MoU Secretariat working in partnership and represents the most cost-effective implementation framework for execution. The execution arrangements draw on the key strengths of organisations which provide the requisite experience, expertise and networks, within a structure designed to provide the appropriate level of support to all partner countries and organizations. The executing arrangement will enable effective support to the partner countries which cover a broad geo-political range from Least Developed Countries with limited or poor implementation capacity (notably Madagascar, Mozambique, Solomon Islands, Timor-Leste and Vanuatu) to developing and middle income states with moderate capacity (Indonesia, Malaysia and Sri Lanka). Alongside partner countries, a number of other range states and agencies of the CMS Dugong MoU will provide substantial co-financing as supporting partners (see Section 2).
212. UNEP is the GEF Implementing Agency for this project (through the UNEP-DEPI/GEF BD-LD Team, Nairobi) fulfilling a supervision and oversight role, ensuring that the project progresses appropriately and in line with UNEP and GEF policies. In addition, UNEP GEF will administer the mid- and full-term evaluations (see Appendix 7).
213. MbZSCF is the Executing Agency and will be responsible to the GEF Implementing Agency (UNEP) for the financial administration and technical execution of the project in all Project Countries.
214. This project will be executed by a Project Coordination Team (PCT) engaged by MbZSCF. The PCT will consist of a Project Coordinator, Regional Manager, Project Associate, Communications Manager and a Financial Manager. The terms of reference for each member of the Project Coordination Team are found in Appendix 11.The Project Coordinator and the Regional Manager will be recruited through a transparent and competitive process overseen by MbZSCF in close consultation with UNEP and the CMS Dugong MoU Secretariat. The Communications Manager and Financial Manager will be co-financed in part by MbZSCF; and the Project Associate will be co-financed in part by the CMS Dugong MoU Secretariat. The Project Coordinator and Project Associate will be co-located with the CMS Dugong MoU Secretariat in Abu Dhabi; the Regional Manager will be co-located with Marine Research Foundation, Malaysia (MRF). The Communications Manager and Financial Manager will be co-located with MbZSCF. Additional regional technical and 'trouble-shooting' support would be provided on as needed basis by a range of supporting partners and consultants, including the regionally-based BV and MRF in Africa (Mozambique and Madagascar), Asia (Indonesia, Malaysia,

Sri Lanka and Timor-Leste) and Western Pacific (Solomon Islands and Vanuatu) plus the regional office staff of UNEP in Bangkok (ROAP), Nairobi (ROA) and ROWA.

215. The CMS Dugong MoU Secretariat, administered by the United Nations Environment Programmes Convention on the Conservation of Migratory Species of Wild Animals Office in Abu Dhabi (CMS Office Abu Dhabi), will provide advice to the MbZSCF, the Project Coordination Team and Executive Project Steering Committee on project coordination, including strategic oversight, guidance and technical expertise.
216. This project will contribute to the implementation of the global Conservation and Management Plan of the CMS Dugong MoU in eight of 40 Range States, and is part of a wider programme under the Dugong, Seagrass and Coastal Communities Initiative.
217. In summary, the execution of the project will be the responsibility of MbZSCF with the support of a range of regional support partners and consultants (e.g. MRF and BV) at the global level. At the national level the project will be implemented by Project Partners who make up National Facilitating Committees. Executive oversight will be provided by an Executive Project Steering Committee, which includes the CMS Dugong MoU Secretariat in an advisory role (more details below). All partners involved in project implementation have been selected on account of their experience and track record in project implementation. The main roles and responsibilities of the execution partners are described below and summarised in Appendix 10
218. Initial preparations are already underway to prepare reporting and contracting templates and systems that will underpin project execution. This will combine EA capacity and practice with guidance and templates provided by UNEP based on the experience of other successful regional projects. In addition the Dugong MoU Secretariat will provide assistance and guidance directly and also via the cost-sharing project associate position.
219. In order to align and coordinate the linkages with the UNEP GEF Blue Forests Project, with respet to the development of incentive mechanisms for the two projects, in consultation with the EA of the Blue Forests Project, it will be specifically suggested that project representatives from each project sit on the other project's steering committee and/or advisory group.

Executing Agency

220. The MbZSCF is providing the Executing Agency function because it is consistent with the organisation's mission to support in-situ species conservation by providing grants to grass-roots initiatives, as well as to increase awareness of conservation and to attract further contributions towards global species conservation work. The MbZSCF is a not-for-profit fund set up by the Crown Prince of Abu Dhabi to support species conservation worldwide. The organization was launched in 2008 with an initial endowment of 25 million Euros and has since supported to date over eight hundred projects worldwide with a total of $9,247,398.
221. Through its experience in handling the international disbursal of funds and related reporting procedures, the MbZSCF was ideally placed as Executing Agency with the support of the CMS Dugong MoU Secretariat during the PPG phase of the project. The successful execution of the PPG phase under MbZSCF in partnership with the CMS Dugong MoU Secretariat has enabled the proposed executing arrangements for the full project to be further explored and developed to meet the specific needs of the project at all levels. Building on the success of the PPG arrangement, MbZSCF will continue to provide the executing agency role during the project implementation. This includes to facilitate the coordination of the Project at the regional, transboundary and cross-component levels, ensure Project Country government participation and provide support to the PCT as required by the Project.The execution arrangement for the project is fully supported by the MbZSCF Board of Directors, which includes members of the Executive Management of

EAD, CMS Office Abu Dhabi's host agency in the UAE (H.E. Mohamed Al Bowardi, Environment Agency – Abu Dhabi Executive Committee Chair; H.E. Majid Al Mansouri, EAD Executive Committee Member; H.E. Razan Khalifa Al Mubarak, Secretary General of EAD; Dr Frédéric Launay, Senior Advisor to Secretary General of EAD). More information is available at: http://www.mbzspeciesconservation.org/.

Regional Supporting Partners and Consultants

222. At the regional level, Project Partners and NFC will have access to regional coordination for technical advice, particularly in terms of trouble shooting, logistics, coordination and regional project oversight. Regional coordination will be provided by a range of regional support partners, including MRF, BV, and the Dugong Technical Group (DTG).

Marine Research Foundation (MRF)

223. The Regional Manager will be co-located with MRF in Malaysia. The Regional Manager will monitor, evaluate and report project progress for the Project Parners in the four Asian and two Pacific Project Countries to the Project Coordinator against specific project component benchmarks. MRF, in close collaboration with BV and the CMS Dugong MoU Secretariat, will also provide technical and ad hoc support to countries in Asia and the Western Pacific. The Regional Manager will be co-located with MRF based in Malaysia to benefit from the existing infrastructure for travel to all of the countries being supported (six of the eight project countries) and to benefit from the financial and technical advantages of locating with a pre-existing key technical partner.
224. MRF is a non-profit research foundation based in Kota Kinabalu, Malaysia and incorporated under the Trustees Act of 1951. Established to further the understanding of marine ecosystems and their associated diverse flora and fauna in Southeast Asia and other Indo-Pacific sites, MRF carries out a number of projects related to biodiversity assessment and conservation, and seeks to provide management-oriented solutions to government administrations and conservationists. MRF has provided technical support to the CMS Dugong MoU Secretariat since 2010.

Blue Ventures Conservation (BV)

225. BV is a social enterprise that works with local communities to conserve threatened marine and coastal environments, both protecting biodiversity and alleviating poverty. BV has over a decade of experience developing integrated incentive-based marine conservation programmes in the western Indian Ocean, Caribbean and southwest Pacific regions. BV's conservation programmes include ecotourism, sustainable fisheries management, blue carbon, aquaculture, and fisheries eco-certification. The foundation of Blue Ventures' work is the creation of Locally Managed Marine Areas (LMMAs) and Blue Ventures has worked with coastal communities to pioneer some of the largest and most successful LMMAs of the Indian Ocean. Blue Ventures Conservation is a registered charity in England and Wales, number 1098893, and constituted as a company limited by guarantee, registered number 4660959 (England and Wales). The charity's head office and registered address is Omnibus Business Centre, 39-41 North Road, London, N7 9DP, United Kingdom. Blue Ventures has working in close partnership with the CMS Office Abu Dhabi since 2011.
226. The expertise and experience of BV in the development of successful incentive based community marine conservation initiatives will provide critical technical expertise and conservation experience to the project. In addition to implementing projects in four countries (Madagascar, Mozambique, Timor-Leste and possibly Solomon Islands), BV will be able to provide technical support at a strategic, regional and project base level.

Dugong Technical Group

227. The Dugong Technical Group (DTG) was established by the CMS Dugong MoU Secretariat to provide access to a network of specialists with diverse skills relevant to the conservation and management of dugongs and their seagrass habitats.
228. Project Partners and NFCs will have access to the DTG's expertise in developing overall work strategies, implementing projects, troubleshooting, sourcing tools, ideas and expert knowledge in their subject area. As such the DTG will be a critical resource for the GEF Dugong and Seagrass Conservation Project.

Secretariat to the CMS Dugong MoU

229. The CMS Dugong MoU Secretariat will provide support to the project's Executing Agency (and Executive Project Steering Committee) on project coordination, including strategic oversight, guidance and technical expertise. The CMS Dugong MoU Secretariat will play an advisory role in the execution of the project; the Project Coordination Team will be co-located with the CMS Dugong MoU Secretariat to strengthen synergies between the project and other activities implemented by the Secretariat.

Executive Project Steering Committee

230. An Executive Project Steering Committee (EPSC) will be established to provide the Executing Agency with guidance to project implementation and to ensure Project Country participation. Secretariat support will be provided to the EPSC by the Project Coordination Team (PCT). The EPSC will consist of the CMS Dugong MoU Focal Points (DFP), who are also the Chairs of National Facilitating Committees of each Project Country, the UNEP/GEF Task Manager, key members of the Dugong Technical Group (DTG) and the CMS Dugong MoU Programme Officer. The EPSC will ensure coordination of the GEF Dugong and Seagrass Conservation Project at the regional level and facilitate the related national coordination of activities. The committee may be supported by Regional/International Technical Advisors.
231. Meetings: The EPSC will meet annually. The chair will rotate between representatives of the participating countries, the PCT will act as technical secretary to the EPSC, responsible for convening meetings, preparing the agenda, providing supporting materials, and ensuring close cooperation with the CMS Dugong MoU Secretariat and National Facilitating Committees.
232. Functions: The EPSC will:
    - Review and advise the PCT on project implementation
    - Provide the PCT with policy guidance and experience on issues related to the project
    - Review and make recommendations on the Annual Work Plans and Budgets
    - Evaluate project impact and performance against set Project M&E Plan

National Facilitating Committee

233. In all implementing countries, project execution at the national level will be overseen by a National Facilitating Committee (NFC) chaired by the respective country's Dugong Focal Point (or their delegate) and comprising members of national Project Partners. Each NFC, supported by a National Facilitator (NF) (employed part-time by the project), will lead and provide guidance to the in-country Project Partners, which include appropriate local technical experts, government and non-government partner organizations and local community groups. Under guidance from the Executive Project Steering Committee and supported by the NF and Regional/International Technical Advisors, the NFC will oversee and ensure an active participatory approach in the development and implementation of the various project activities. The NFC will have three primary objectives:

- To advise on the specific activities to be carried out on the project, taking into account the country's specific national project proposals
- To meet and regularly review project progress on the ground
- To communicate progress and key issues to the EPSC and the National Dugong Focal Points.

The National Facilitators

234. In each partner country a part-time NF will be contracted by the project, to support the NFC and to follow up on all project activities in the country (see Appendix 11). As such, the NF will facilitate and support activities at the local level, coordinate and support national stakeholders and activities, and act as the primary day-to-day in-country liaison with the Executing Agency. The NF's primary focus will be to build national level capacity, especially within the government, which could include education, awareness and training. The NF will be a senior specialist with experience in project implementation, with a career history of being actively engaged in the project area. In some cases the NF may be a public official, whose time will be considered part of the national in-kind contribution from the partner institution.

The CMS Dugong MoU Focal Point

235. In Signatory States of the CMS Dugong MoU, Dugong Focal Points play a crucial role by acting as a link between the Secretariat and the responsible institutions in the country that they represent. Dugong Focal Points ensure and maintain a timely and constant two-way flow of information, which is used in coordination and implementation of the CMS Dugong MoU.

SECTION 5: STAKEHOLDER PARTICIPATION

Stakeholder participation during PPG phase

236. A series of national meetings were held in seven of the partner countries throughout October 2012 and February 2013:
    - Malaysia (Putrajaya, 3-4 October 2012)
    - Sri Lanka (Colombo, 9-10 October 2012)
    - Mozambique (Maputo, 26-27 October 2012)
    - Madagascar (Antananarivo, 30-31 October 2012)
    - Indonesia (Jakarta, 6-7 November 2012)
    - Timor-Leste (Bali, 14-15 January 2013 and Dili, 23-38 February 2013)
    - Vanuatu (Port Vila, 05-10 February 2013)
237. The objectives of the national meetings were to brief Project Partners on GEF process and development of the Project Document and CEO Endorsement Request, to discuss budget, management and incentive tools, and possible execution arrangements, and to analyse possible threats and needs for project development.
238. The main outcomes of these meetings were:
    - Project Countries were briefed on project development
    - Identification of project outcomes and outputs which are aligned with national priorities
    - Agreement of a selection of project activities for national and site-level projects
    - Identification (and confirmation) of stakeholders and potential development and implementation partners
    - Recommendation (and appointment) of a National Coordinator
    - Recommendation (and selection) of a consultant to compile the National Review for input in the ProDoc
    - Agreement of the design process for national and site-level projects
    - Identification of background (political, economic, social) information necessary for project development
    - Distribution of responsibilities for provision of information
    - Identification of threats to dugongs and their habitats on a site-level, national and regional scale
    - Agreement and commitment by all Project Partners to meet the deadlines set to achieve all site-level and national project information needs.
239. In addition to national meetings, site visits to meet with stakeholders and view potential project sites were conducted in:
    - Vilanculos, Inhassoro, Bazaruto Archipelago, Mozambique
    - Madagascar
    - Atauro Island, Dili, Timor-Leste
    - Mannar, Kalpitiya, Sri Lanka
240. On 21st and 22nd February 2013, in cooperation with the Department of Environment and Natural Resources (DENR)–Protected Areas and Wildlife Bureau (PAWB), Philippines, the CMS Dugong MoU Secretariat organised the first GEF International Workshop back to back with Second Signatory State Meeting of the CMS Dugong MoU. The Workshop brought together representatives from all Project Countries to discuss threats to dugongs, conservation priorities, project activities and objectives.

Stakeholder participation during project implementation phase

241. Following the national meetings and ensuing consultation within the partner countries, the following organizations and agencies have been identified to facilitate national activities

during the GEF project's implementation phase. These Project Partners will conduct project activities that they have prior experience in undertaking. Potential project target areas were identified according to analysis of the following criteria:

Conservation targets
Population status
Habitat status and viability
Threats

Community management capacity and project longevity
Community management structure
Community management activities
Community management capacity
Long term presence
Complementary actions and support
Financial viability

External risks
Socio-political context
Stakeholder engagement

242. The project development process was to ask potential project partners to submit concept notes against the four complementary outcomes; however it was not mandatory to address all four outcomes. Six out of eight Project Countries will address outcomes 1 through 4 of the project. As Malaysia and Vanuatu had lower project budgets for the activities, to ensure value for money and increase the likelihood of success of their conservation activities, the project partners in these two countries prioritised the outcomes most relevant to address threats to dugongs and seagrasses in their respective locations. Malaysia will therefore address outcomes 1, 3 and 4; and Vanuatu will focus on outcomes 1 and 4. These GEF Projects will encourage community stewardship, including on-going monitoring, inform and improve policy and will provide key insight for future projects, including those under the Dugong, Seagrass and Coastal Communities Initiative, which may include the additional outcomes. The National Facilitating Committee (NFC) established within each Project Country will include representatives from the Project Partners named in Table 16.

Table 16. Potential Project Partners

National Project Partners**Country**	**Potential Project Partners**
Indonesia	• Director General of Marine, Coast and Small Islands Affairs (Government agency)Marine Affairs and Fisheries Research and Development Agency (Ministry of Marine Affairs and Fisheries) (Government agency) • Ministry of Forestry _(PHKA) • Ministry of Environment (Government agency) • National development Planning Board (Government agency) • Indonesian Marine Police (Government agency) • Indonesian Navy (Government agency) • Raja Ali Haji Maritime University (UMRAH) (University) • Research Centre for Oceano-graphy, Indonesian Institute of Sciences (P2O-

National Project Partners**Country**	**Potential Project Partners**
	LIPI), Indonesia (Government) • Research Centre for Fisheries Resources Management and Fishery Resources, Indonesia (Government) • Public Works Office, Indonesia (Government agency) • World Wide Fund For Nature (NGO) • Bogor Agriculture University (University) • LAMINA Foundation (NGO) • Southeast Maluku District Government (Government agency) • Regional Development Planning Board Bintan District (BAPPEDA KABUPATEN BINTAN), Indonesia (Government agency) • Marine Affair and Fisheries Service (Bintan) (Government agency) • Land Division of Bintan Secretariat (Government agency) • Bintan Tourism Office (Government agency) • Bintan Environment Board (Government agency) • Fishers Association (HNSI) • Radio Republic of Indonesia, Station Tanjung Pinang (Government)
Madagascar	• Blue Ventures (NGO) • Conservation Centrée sur la Communauté Madagascar • COSAP: Sahamalaza Community Based Conservation (Stakeholder Platform) • Ministry of Environment and Forests (Government agency) • Wildlife Conservation Society (NGO)
Malaysia	• Ministry of Natural Resources and Environment (Federal Government Agency) • Turtle and Marine Ecosystem Research Centre (TUMEC) • Fisheries Research Institute (FRI) (Government agency) • Universiti Sains Malaysia (University) • University Malaya (University) • MareCet Research Organization (NGO) • Protected Area & Biodiversity Conservation Division (PABC) • Sarawak Forestry Corporation Sdn Bhd (SFCSB). (Government Link Company wholly owned by the Sarawak State Government)
Mozambique	• Blue Ventures (NGO) • DUGONGOS.ORG (NGO) • Endangered Wildlife Trust (NGO) • National Directorate of Environmental Management (Government agency) • Ministry for the Coordination Environmental Affairs (MICOA) (Government Agency)
Solomon Islands	• Ministry of Environment, Climate Change, Disaster Management and Meteorology (potential) • TNC (The Nature Conservancy) (potential) • Tetepare Descendants' Association (potential) • World Fish Center (WFC) (potential) • WWF (World Wildlife Fund) (potential)
Sri Lanka	• BEAR (Biodiversity Education And Research) (NGO) • Department of Wildlife Conservation (Government agency) • Centre for Research on Indian Ocean Marine Mammals (CRIOMM) (Government agency) • IUCN Sri Lanka

National Project Partners**Country**	**Potential Project Partners**
	• National Aquatic Resources Research and Development Agency (Government agency) • ORCA (Ocean Resources Conservation Association) (NGO) Sri Lanka Turtle Conservation Project (NGO)
Timor-Leste	• Blue Ventures (NGO) • Marine Research Foundation (NGO) • Ministry of Environment, • Move Forward (NGO) • Haburas Foundation (NGO), • Ministry of Agriculture and Fisheries (Government agency)
Vanuatu	• Department of Environment Preservation & Conservation (DEPC) (Government agency) • Fisheries Department (Government agency) • Wan Smolbag (NGO) • Vanuatu Kaljoral Senta (Government)

243. In addition, National Facilitating Committees will be constituted for the duration of the project that will draw on representatives from other government sectors, academia, the private sector and community groups to ensure input is sought from all relevant stakeholders.
244. The mainstreaming of women in fisheries management is a key element of the GEF Dugong and Seagrass Conservation Project. In order to ensure that there are no disproportionate impacts to women or other disadvantaged or vulnerable groups, appropriate involvement of all social groups has been ensured during PPG phase, and will be continued throughout the project's implementation phase.

SECTION 6: MONITORING AND EVALUATION PLAN

245. The project will follow the UNEP standard monitoring, reporting and evaluation processes and procedures. Substantive and financial project reporting requirements are summarized in Appendix 7. Reporting requirements and templates are an integral part of the UNEP legal instrument to be signed by the executing agency and UNEP.
246. The project M&E plan is consistent with the GEF Monitoring and Evaluation policy. The Project Results Framework presented in Appendix 4 includes SMART indicators for each expected outcome as well as mid-term and end-of-project targets. These indicators along with the key deliverables and benchmarks included in Appendix 6 will be the main tools for assessing project implementation progress and whether project results are being achieved. The means of verification and the costs associated with obtaining the information to track the indicators are summarized in Appendix 7. Other M&E related costs are also presented in the Costed M&E Plan and are fully integrated in the overall project budget.
247. The M&E plan will be reviewed and revised as necessary during the project inception workshop to ensure project stakeholders understand their roles and responsibilities vis-à-vis project monitoring and evaluation. Indicators and their means of verification may also be fine-tuned at the inception workshop (see 6. below).
248. Day-to-day project monitoring is the responsibility of the Project Coordination Team but other Project Partners will have responsibilities to collect specific information to track the indicators. It is the responsibility of the Project Coordinator to inform UNEP of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely fashion.
249. The Executive Project Steering Committee will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project meets UNEP and GEF policies and procedures is the responsibility of the Task Manager in UNEP-GEF. The Task Manager will also review the quality of draft project outputs, provide feedback to the Project Partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.
250. At the time of project approval an estimated 50 percent of baseline data is available. Baseline data gaps will be addressed during the first year of project implementation, particularly for site-level data. An extended Inception Phase of eight months is proposed to allow sufficient time for establishing field operations and conducting initial gap-filling surveys, as a basis for the review and development of specific indicators and targets. More baseline information will be available for Malaysia, Madagascar, Mozambique, Solomon Island, Sri Lanka and Vanuatu from standardised survey data currently being analysed. However, the collection of baseline data using the standardised survey will need to be conducted in Indonesia and Timor Leste. The extended Inception Phase will address the complicated nature of this multi-country regional project at site, national and overall project levels, with overall project outcomes and objective to be achieved through the cumulative impacts of coordinated project management and monitoring across all eight countries and national programmes and the two ocean basins.
251. Project supervision will take an adaptive management approach. The Task Manager will develop a project supervision plan at the inception of the project which will be communicated to the Project Partners during the inception workshop. The emphasis of the Task Manager supervision will be on outcome monitoring but without neglecting project financial management and implementation monitoring. Progress vis-à-vis delivering the agreed project global environmental benefits will be assessed with the Executive Project Steering Committee at agreed intervals. Project risks and assumptions will be regularly

monitored both by Project Partners and UNEP. Risk assessment and rating is an integral part of the Project Implementation Review (PIR). The quality of project monitoring and evaluation will also be reviewed and rated as part of the PIR. Key financial parameters will be monitored quarterly to ensure cost-effective use of financial resources.

252. A mid-term review (MTR), if necessary, will take place on or about month 24 of project implementation as indicated in the project milestones. The review will include all parameters recommended by the GEF Evaluation Office for terminal evaluations and will verify information gathered through the GEF tracking tools, as relevant. The review will be carried out using a participatory approach whereby parties that may benefit or be affected by the project will be consulted. Such parties were identified during the stakeholder analysis (see section 2.5 of the project document). The Project Executive Steering Committee will participate in the mid-term review and formally review and approve the findings and recommendations of the midterm review, which are the responsibility of the lead and National EAs. It is the responsibility of the lead EA and UNEP Task Manager to monitor whether the agreed recommendations are being implemented. An independent terminal evaluation by the UNEP Evaluation and Oversight Unit (EOU) will take place at the end of project implementation.
253. The EOU will manage the terminal evaluation process. A review of the quality of the evaluation report will be done by EOU and submitted along with the report to the GEF Evaluation Office not later than 6 months after the completion of the evaluation. The standard terms of reference for the terminal evaluation are included in Appendix 9. These will be adjusted to the special needs of the project.
254. The GEF tracking tools are attached as Appendix 15. These will be updated at mid-term and at the end of the project and will be made available to the GEF Secretariat along with the project PIR report. The mid-term review and terminal evaluation will verify the information of the tracking tools.

SECTION 7: PROJECT FINANCING AND BUDGET

7.1. Overall Project budget

In addition to the table below, please see appendices 1, 2 and 7 (budgets for Project, Co-finance and Monitoring and Evaluation)

	Project preparation	Project	Total
GEF financing	$170,000	$5,884,018	$6,054,018
Co-financing	$780,635	$ 99,299,043	$ 100,079,678
Total	**$950,635**	**$105,183,061**	**$106,133,696**

7.2. Project co-financing

Break-down of co-financing:	**US$**	**%**
Cash co-financing		
Mohamed bin Zayed Species Conservation Fund (MbZSCF)	613,948	0.58
Directorate of Marine and Aquatic Resources Conservation, Ministry of Marine Affairs and Fisheries, Indonesia	1,534,198	1.46
Research Centre for Fisheries Resources Management and Fishery Resources, Indonesia	40,000	0.04
Research Centre for Oceanography, Indonesian Institute of Sciences (P2O-LIPI), Indonesia	505,887	0.48
Bintan Regional Planning Board, Indonesia	10,000	0.01
Bintan Marine Affairs and Fishery Office, Indonesia	460,500	0.44
Bintan Tourism Office, Indonesia	387,500	0.37
Bintan Environment Board, Indonesia	199,500	0.19
World Wide Fund For Nature, Indonesia	100,000	0.09
Bogor Agriculture University, Indonesia	20,000	0.02
Community Centred Conservation (C-3) Madagascar	160,000	0.15
Madagascar National Parks Sahamalaza (COSAP)	11,050	0.01
EWT (Endangered Wildlife Trust), Mozambique	70,000	0.07
La Guntza Foundation, Mozambique	9,500	0.01
UNEP/Convention on Migratory Species Office - Abu Dhabi (UNEP/CMS Office – Abu Dhabi)	634,000	0.60

Secretariat of the Pacific Regional Environment Programme (SPREP)	18,000	0.02
Sub-total cash co-financing	**4,774,083**	**4.54**
In-kind co-financing		
Research Centre for Fisheries Resources Management and Fishery Resources, Indonesia	20,000	0.02
Research Centre for Oceanography, Indonesian Institute of Sciences (P2O-LIPI), Indonesia	41,915	0.04
Land Division of Bintan Secretariat, Indonesia	150,000	0.14
Bintan Public Works Office, Indonesia	350,000	0.33
Bogor Agriculture University, Indonesia	5,500	0.01
LAMINA Foundation, Indonesia	75,000	0.07
Sea World, Indonesia	100,000	0.10
Blue Ventures (BV)	1,142,472	1.09
Community Centred Conservation (C-3) Madagascar	160,000	0.15
Madagascar National Parks Sahamalaza (COSAP)	85,500	0.08
Ministry of Environment and Forests (MEF), Madagascar	1,326,727	1.26
Wildlife Conservation Society (WCS), Madagascar	940,000	0.89
Department of Marine Park, Malaysia	413,920	0.39
Department of Fisheries Malaysia (DoFM) Turtle and Marine Ecosystem Research Centre (TUMEC), Fisheries Research Institute (FRI), Malaysia	510,600	0.48
Universiti Sains Malaysia, Center for Marine and Coastal Studies, Malaysia	197,200	0.19
The Marecet Research Organization, Malaysia	96,774	0.09
Universiti Malaya, Malaysia	92,484	0.09
Sarawak Forestry, Protected Area and Biodiversity Conservation Division (PABC), Malaysia	520,320	0.49
University of Eduardo Mondlane, Mozambique	13,500	0.01
University of Pretoria, Mammal Research Institute Whale Unit, Mozambique	10,000	0.01
Centre for Dolphin Studies, Nelson Mandela Metropolitan University, Mozambique	12,000	0.01
Endangered Wildlife Trust (EWT),	70,000	0.07

Mozambique		
IUCN Save Our Species (SOS), Mozambique	43,247	0.04
Ministry for the Coordination of Environmental Affairs - National Directorate for Environmental Management (MICOA – DNGA), Mozambique	32,938	0.03
Biodiversity Education And Research (BEAR), Sri Lanka	120,829	0.11
Department of Wildlife Conservation , Sri Lanka	293,096	0.28
IUCN Sri Lanka	224,100	0.21
National Aquatic Resources Research and Development Agency, Sri Lanka	89,750	0.09
Ocean Resources Conservation Association (ORCA), Sri Lanka	111,800	0.11
Turtle Conservation Project, Sri Lanka	63,820	0.06
Marine Research Foundation (MRF), Timor Leste	20,000	0.02
Department of Environmental Protection and Conservation (DEPC), Vanuatu	40,000	0.04
Fisheries Department, Vanuatu	40,000	0.04
Wan Smolbag Theatre, Vanuatu	10,000	0.01
Vanuatu Cultural Centre, Vanuatu	10,000	0.01
MRF, Malaysia	220,000	0.21
UNEP/CMS Office – Abu Dhabi	1,166,000	1.11
Sea Sense, Tanzania	394,650	0.38
Australian Government	85,000,000	80.81
SPREP	40,000	0.04
UNEP Regional Office of West Asia (ROWA)	112,000	0.11
Universiti Malaysia Terengganu, Institute of Oceanography and Environment (INOS)	158,818	0.15
Sub-total in-kind co-financing	**94,524,960**	**89.87**
FINAL SUMMARY		
Total co-financing	**$ 99,299,043**	**94.41**
Cost to the GEF Trust fund	***5,884,018***	***5.59***
PROJECT TOTAL	**$ 105,183,061**	**100**

7.3. Project cost-effectiveness

255. The Project Coordination Team (PCT) will work closely with existing government structures, national organisations and local stakeholders to enhance community based

stewardship of seagrass-dependent biodiversity; promote the adoption of innovative financial incentive mechanisms to encourage the uptake of sustainable fisheries and other practices; address barriers to critical knowledge about effective conservation of seagrass-dependent biodiversity; and to jointly develop more efficient policy responses and networking between stakeholders in order to address these challenges. The project will also link up with and build upon ongoing and relevant global initiatives. This approach is adopted to generate greatest possible synergies at the national and global level, and therefore maximise cost-effectiveness. This approach will generate global benefits in terms of (a) positively contributing to the enhanced conservation status of dugong populations and seagrass ecosystems and (b) positively contributing to the ongoing international dialogue on the uptake of community based management approaches in relation to natural resources, including threatened species and marine protected area governance. The coordinated approach among project activities at the national and global level, facilitated by the UNEP/DEPI and Executive Project Steering Committee, will avoid duplication of activities and investment, maximise synergies with other relevant initiatives and improve cost-effectiveness.

256. Cost-effectiveness measures include:

- Building on existing programmes and grassroots efforts at the national and international level;
- Building on prior experience and data;
- Using the Clearing House Mechanism to (a) contribute to the enhanced conservation status of global dugong populations and seagrass ecosystems, and (b) provide feedback and technical advice;
- Harmonising activities and creating synergies with the Dugong, Seagrass and Coastal Communities Initiative of the CMS Dugong MoU Secretariat;
- Targeting a broad range of stakeholders through existing national and global networks, so as to develop national capacity and maximise the impact of the project at various governmental and societal levels.

APPENDICES

Appendix 1: Budget by Project Components and UNEP Budget Lines

See attached Excel Workbook: Appendices 1 and 2 Budgets.xls, tab Appendix 1 project budget.

See Appendix 25 for comparison between PIF projected budget outcomes and PPG budget and outcomes.

Appendix 2: Co-financing by Source and UNEP Budget Lines

See attached Excel Workbook: Appendices 1 and 2 Budgets.xls, tab Appendix 2 co-finance budget.

Appendix 3: Incremental Cost Analysis

The incremental costs and benefits of the proposed project are summarised in the following incremental cost matrix. The baseline expenditures amount to US $4,797,602, while the alternative has been estimated at US $109,980,663. The incremental cost of the project, US $105,183,061, is required to achieve the project's global environmental objectives of which the amount of US $5,884,018 is requested from GEF (excluding the agency's fee and PPG funds). This amounts to 5.59% of the total cost of the increment. The remaining amount of the total incremental cost, US $99,299,043 (94.41%), will be provided as co-financing by the national and international partners and other donors. The figure includes in-kind and cash contributions.

Cost/Benefit	Baseline[48] (B)	Alternative (A)	Increment (A-B)
Global Benefits	• Limited experience and implementation of community based management (CBM) or co-management of protected sites across the project regions • Dugong and seagrasses constitute a very small component of marine and coastal resources identified for safeguarding in global and regional initiatives	• Replication of successful community based management (CBM) models and best practice developed at target sites • Successful examples of CBM documented, quantified (with conservation, economic and socio-economic indicators) and replicated through the project networks/ Clearing House Mechanism and wider global CMS Dugong MoU Secretariat programmes • Clearing House Mechanism and other communication and networking mechanisms will continue to support enhanced conservation action across Project Countries and other range states of the CMS Dugong MoU during and post-project • New survey methodologies will be tested and monitoring systems established for dugongs and seagrass ecosystems and for socio-economic and awareness studies and monitoring	

[48] Baseline figures do not include regional project Coral Triangle Initiative as cost of effort which includes seagrass ecosystems as a minor component is unknown. The total baseline may be incomplete as information regarding expenditure on seagrass ecosystems in some countries was not available; the major global conservation efforts for dugongs and their seagrass habitats are accounted for.

Cost/Benefit	Baseline[48] (B)	Alternative (A)	Increment (A-B)
		• Raised awareness of the global conservation importance and priority of dugongs and their seagrass habitats	
Domestic Benefits	• No national dugong/ seagrass programmes actively under implementation • Government awareness or experience of the potential benefits very low • No monitoring, evaluation of economic incentives, tools, levels of benefit and replication of best practice	• Improved conservation status of dugongs and seagrass ecosystems • Improved management of shared coastal resources and better conservation outcomes for both seagrasses and dugongs • Availability of information and capacity developed among managers and communities to implement better informed and coordinated national and regional conservation • Enhanced capacity for advocacy • Policy reform at local, national and regional levels to mainstream D&SG conservation needs into appropriate policies, planning and regulatory frameworks	
Component 1: Community-based stewardship	• Limited experience and implementation of community based management (CBM) of protected sites • Lack of awareness of the benefits of CBM, legal/ institutional barriers • Lack of capacity hinders adoption of CBM ***Component cost***[49] ***US $1,207,275***	• Increased adoption of CBM as a dugong and seagrass conservation and management tool • Increased levels of awareness and capacity leading to enhanced community engagement, responsibility and good governance at local level • Good governance structures developed through site-based projects, tailored to specific local threats and needs ***Component cost*** ***US $11,542,916***	*Indonesia* *$1,725,583* *Madagascar* *$1,486,423* *Malaysia* *$1,277,508* *Mozambique* *$817,206* *Solomon Islands* *$798,732* *Sri Lanka* *$836,425* *Timor-Leste* *$1,023,814* *Vanuatu* *$737,380* *Global* *$1,632,570* ***Co-financing*** ***$8,960,558*** ***Cost to GEF*** ***$1,375,083*** ***Component cost*** ***US $10,335,641***
Component 2:	• Few existing incentive and alternative	• Pilot examples at key sites of successful	*Indonesia* *$1,070,111*

[49] Figures of global co-finance provided in Letters of Support from Australian Government, Sea Sense, SPREP, UNEP ROWA and Universiti Malaysia Terengganu have been divided equally between and added onto the baseline figure for each of the four outcomes

Cost/Benefit	Baseline[48] (B)	Alternative (A)	Increment (A-B)
Sustainable fisheries practices	livelihood programmes in place at some sites, but limited in scope • No monitoring, evaluation of economic incentives, tools, levels of benefit and replication of best practice • Current unsustainable practices damage and destroy seagrasses and threaten dugong extinction ***Component cost[49] US $554,804***	local initiatives promoting behavioural change • Improved monitoring of impacts to underpin economic valuation and demonstrate benefits for people and for dugongs • Development of long-term sustainable finance mechanisms for target communities linked to dugong and seagrass conservation management. ***Component cost US $8,926,706***	*Madagascar $993,034* *Malaysia $665,102* *Mozambique $766,146* *Solomon Islands $730,086* *Sri Lanka $799,374* *Timor-Leste $1,006,037* *Vanuatu $665,102* *Global $1,676,910* ***Co-financing $7,670,721*** ***Cost to GEF $701,181*** ***Component cost US $8,371,902***
Component 3: Increased availability and access to critical knowledge needed for decision-making	• Limited dugong and seagrass survey and research initiatives in some countries • Large knowledge gaps exist in all Project Countries; data on distribution/ status/ threats to dugongs and extent/ status/ threats to seagrass ecosystems very poor • No effective regional dugong and seagrass conservation planning and management ***Component cost[49] US $2,412,303***	• New information and maps will be available showing distribution, status and threats to dugongs • Information and guidance collated and shared across partner network, practitioners and decision-makers • Capacity developed among managers and communities will lead to better conservation outcomes for dugongs and their seagrass ecosystems ***Component cost US $53,452,226***	*Indonesia $6,203,935* *Madagascar $5,836,410* *Malaysia $5,878,069* *Mozambique $5,329,248* *Solomon Islands $5,277,084* *Sri Lanka $5,802,976* *Timor-Leste $5,502,166* *Vanuatu $5,099,113* *Global $6,110,922* ***Co-financing $49,548,342*** ***Cost to GEF $1,491,581*** ***Component cost US $51,039,923***
Component 4: Conservation priorities and measures	• Very limited capacity or resources to implement National Dugong Conservation Strategy and/ or Action Plans, which exist in six of the eight countries • No national dugong/ seagrass programmes actively under implementation • Very limited recognition of the priority and conservation needs of globally threatened dugongs and seagrass ecosystems in national and regional policy and regulation ***Component cost[49] US $623,220***	• Increased capacity within advocacy groups in target areas through implementation of local and national advocacy and training programmes • Raised awareness and support for policy reform for effective dugong and seagrass conservation through networking and contribution to global policy processes ***Component cost US $34,556,481***	*Indonesia $4,936,114* *Madagascar $4,563,566* *Malaysia $3,712,522* *Mozambique $3,216,196* *Solomon Islands $3,273,830* *Sri Lanka $3,424,302* *Timor-Leste $3,545,345* *Vanuatu $3,190,109* *Global $4,071,277* ***Co-financing $32,250,751*** ***Cost to GEF $1,682,510***

Cost/Benefit	Baseline[48] (B)	Alternative (A)	Increment (A-B)
			Component cost ***US $33,933,261***
Monitoring and Evaluation	• No impact monitoring systems in place to assess effectiveness of management measures implemented in the target areas ***Component Cost*** ***US$0***	• Ongoing monitoring mechanisms implemented across global dugong range ***Component cost*** ***US $462,788***	*Indonesia* *$96,587* *Madagascar* *$73,871* *Malaysia* *$44,919* *Mozambique* *$14,717* *Solomon Islands* *$13,662* *Sri Lanka* *$30,508* *Timor-Leste* *$35,117* *Vanuatu* *$5,317* *Global* *$148,090* ***Co-financing*** ***$248,192*** ***Cost to GEF*** ***$214,596*** ***Component cost*** ***US $462,788***
Project Management	• No Project Management of coordinated global dugong and seagrass conservation projects ***Component Cost*** ***US$0***	• Coordinated management of international dugong and seagrass conservation using established standards of monitoring, evaluation and active participation of stakeholders at local, national and regional levels ***Component cost*** ***US $1,039,546***	*Indonesia* *$241,468* *Madagascar* *$184,677* *Malaysia* *$112,299* *Mozambique* *$36,793* *Solomon Islands* *$34,155* *Sri Lanka* *$76,270* *Timor-Leste* *$87,791* *Vanuatu* *$13,294* *Global* *$252,799* ***Co-financing*** ***$620,479*** ***Cost to GEF*** ***$419,067*** ***Component cost*** ***US $1,039,546***
TOTAL COST	***US $4,797,602***	**US $109,980,663**	*Indonesia* *$14,273,798* *Madagascar* *$13,137,981* *Malaysia* *$11,690,419* *Mozambique* *$10,180,306* *Solomon Islands* *$10,127,549* *Sri Lanka* *$10,969,855* *Timor-Leste* *$11,200,270* *Vanuatu* *$9,710,315* *Global* *$13,892,568* ***Co-financing*** ***$99,299,043***

Cost/Benefit	Baseline[48] (B)	Alternative (A)	Increment (A-B)
			Cost to GEF ***$5,884,018*** ***TOTAL project cost*** ***US $105,183,061***

Appendix 4: Results Framework

Note: these are "whole project" objectives, outcomes and indicators (across all eight Project Countries & three sub-regions). Contributions to each Outcome (activity groups and outputs) will vary across countries and national programmes (according to national priorities and starting points). Individual Log Frames and other project planning and monitoring tools will be developed at Inception for all eight national programmes and sub-projects. (See App. 6 for overall Project Deliverables at output level and App. 20 for detail of proposed national sub-projects in all countries).

Project objective	**Objective level indicators**	**Baseline**	**Targets and monitoring milestones**	**Means of verification**	**Assumptions and risks**	**UNEP MTS reference** (ref. to MTS 2013-2017 and PoW 2014-2015)
To enhance the effectiveness of conservation of dugongs and their seagrass ecosystems across the Indian and Pacific Ocean basins	1. Total area of seagrass (key areas for dugongs) under improved conservation management	*To be defined at Inception* (ha. of key seagrass habitat across eight countries under effective conservation management at start of project) [Total seagrass area in baseline METT at PPG: 524,368 ha (eight sites: ID, LK, MG, MY, MZ)]	Increases in area of effectively conserved seagrass habitat across eight countries *(% targets, milestones to be defined at Inception*)	Surveys and monitoring programmes/ reports; National programme reports (eight countries); National reports to CBD; CMS/ Dugong MoU reporting	Conservation management of seagrass meadows will lead to increased extent and quality of habitat/ ecosystems Protection of key dugong habitat will result in dugong conservation benefits	Ecosystem Management
	2. METT scores in targeted protected areas (MPAs, LMMAs, others) in national programmes	Provisional target list of 11 existing, 16 proposed new/ extended MPAs/ LMMAs (eight countries); METT scores available for eight targeted MPAs/ LMMAs (five countries): App.15. *(Target sites & details of*	Increase in METT score (and/ or decreases in threat), as appropriate, in targeted MPAs/ LMMAs by MT and EOP (existing and new/ extended protected areas supported by project)	National & project monitoring reports; National reports to CBD; Individual sub-project (MPA/ LMMA) site monitoring (including community engagement, community based monitoring)	METT scores reflect real increases in management effectiveness and conservation outcomes at sites; Improved management effectiveness in MPAs/ LMMAs leads to conservation benefits for dugongs and seagrass ecosystems; All countries will adopt & implement effective community-based management	Ecosystem Management

		sub-projects (all countries) to be finalized during Inception Phase, including completion of baseline METTs)	*Baselines and targets to be established for all sites during Inception Phase*		(CBM – e.g. LMMAs) and/ or community co-management alongside traditional Protected Areas management	
	3. Use of gill nets (beach seines), fixed fishtraps and other damaging methods) by fishermen (which result in incidental dugong mortality)	Dugong Catch/Incidental Catch surveys conducted in six out of eight countries during PPG *Additional surveys, analyses to be carried out and baselines derived for all countries and targeted sites during Inception*	Significant and measurable reductions in use of gill nets, beach seines and other damaging fishing practices in all eight countries by end YR 3	Repeat surveys in key target sites – at least at MT, EOP; Project reports; Project (national) communication strategies & national liaison (e.g. with fishers and communities); Individual sub-project monitoring & reports; National Reports to CBD, CMS/ Dugong MoU	Levels of gill net use/ reduction in gill net use provide a proxy measure of the risk (or actual levels) of incidental dugong mortality; Local fishers and communities will be prepared to adopt new methods and consider incentives or other (financial/ support) mechanisms (see Component 2) – which reduce accidental by-catch of dugongs in fishing nets and other gear; That destructive fishing practices are not simply displaced to other areas;	Ecosystem Management
Project Outcome	**Outcome indicators**	**Baseline**	**Targets and monitoring milestones**	**Means of verification**	**Assumptions and risks**	**MTS Expected Accomplishment**
COMPONENT 1: Improved site-level management at globally important sites for dugongs and seagrasses						
Outcome 1. Community-based stewardship of dugongs and their seagrass ecosystems at selected globally important Indo-Pacific	4. Community engagement in management (CBM) for dugong conservation in selected priority target areas (LMMAs, other seagrass protection zones,	*Baselines (community engagement/ awareness; socio-economic & conservation indicators) to be established under national sub-projects for target sites/ communities*	Increased levels of engagement/ awareness of communities in target areas by YR2; At least 2 effective new initiatives (CBM/ co-management) in each (of eight)	Published/ implemented site management plans & reporting (LMMAs, seagrass protection zones, MPAs); Community stakeholder forums/ co-management committees: Minutes of meetings;	Community-based management achievable and effective for dugong and seagrass conservation in target areas in all eight countries (political will & community interest) Community engagement & stewardship will result in better conservation outcomes for dugongs and seagrass	Ecosystem Management Expected Accomplishment B (in 2014-2015 PoW)

sites enhanced	co-management of MPAs)	*during Inception*	Project Countries by YR3; All community-based initiatives produce measurable socio-economic & conservation outcomes (individual project monitoring targets) by EOP	Awareness surveys; Project reports/ monitoring; National programme reports/ publications; National reports to CBD, CMS	ecosystems Effectiveness/ conservation outcomes can be achieved & assessed in four years in CBM target areas (behavioural change (people) and socio-economic impacts; impacts on dugong populations and/ or seagrass habitat)	
	5.Number of community-based conservation/ monitoring systems established and functioning for dugong and seagrass) in priority target areas	*Baselines to be established under national sub-projects for target sites/ communities during Inception*	At least two effective new initiatives (community-based protection and monitoring) in each (of eight) Project Countries by YR3; Monitoring/ surveillance programmes established and functioning in all eight countries by YR2	Community stakeholder forums/ monitoring committees: reports, minutes of meetings; Monitoring reports, data, publications (Project CHM); Training feedback & reports (community familiarization and training of dugong monitors)	Community interest in dugongs and seagrass monitoring exists and can be harnessed Training and engagement of communities results in positive changes in awareness and behaviour	Ecosystem Management Expected Accomplishment B (in 2014-2015 PoW)
COMPONENT 2: Development of incentive mechanisms and tools to promote conservation and sustainable use of dugongs and seagrass ecosystems						
Outcome 2. Sustainable fisheries practices that reduce damage to dugongs and their seagrass ecosystems	6. Number and uptake of incentive mechanisms (ie. market-based, social, cultural, religious) and management tools linking	Two or three existing models in Project Countries (MG, MZ) *Baselines to be established under national sub-projects for target*	At least four new pilot initiatives developed and tested (incentive-based mechanisms or management tools) by YR2; four pilots evaluated and	Individual national projects - monitoring and reports; Pilot evaluation reports and publications (e.g. socio-economic/ behavioural & ecological) (CHM);	Changes in behaviour (to dugong &/or seagrass-"friendly" practices) can be linked to improved livelihoods or direct benefits from conservation - e.g. community employment in conservation management/ ecotourism); Existing models (e.g.	Ecosystem Management Expected Accomplishment B (in 2014-2015 PoW)

widely adopted through uptake of innovative incentive mechanisms and management tools	sustainable fishing practices and adoption of best practice (see also Indicator 3)	*sites/ communities during Inception*	results disseminated (for replication) by YR3; Demonstrable benefits recorded (e.g. incomes/ alternative livelihoods/ conservation benefits) by YR3; Measurable reductions in destructive fishing practices in target areas by YR3 (see Indicator 3)	National programme monitoring and reports; Project reports and monitoring; Updated Project Toolbox and requests for resources/ tools	aquaculture/ ecotourism (MG); sustainable seafood (MZ); Dugong and Seagrass Coastal Communities Initiative Toolbox) can be replicated successfully; Successful tools and mechanisms will be replicated more widely through community uptake and other projects; That fishers/ boatmen who adopt best practices do not also continue unsustainable practices; Long-term, sustainable community incomes and livelihoods can be established, based on sustainable fisheries and dugong/ seagrass conservation management	
COMPONENT 3: Removal of knowledge barriers						
Outcome 3. Increased availability and access to critical knowledge needed for decision-making for effective conservation of dugongs and their seagrass ecosystems in Indian and	7. Availability and uptake of conservation management information (digital maps of dugong and seagrass distribution & status; ecosystem services valuation data; pilot studies – e.g. assessment of Blue Carbon potential)	Dugong Catch/Incidental Catch surveys conducted in six out of eight countries (all except ID and TL). *Additional surveys and analyses to be carried out and baselines derived for all countries during Inception* Note: No published	Data and digitized 1: 50,000 maps available through Project CHM for all identified priority dugong/ seagrass areas in four countries by end YR2 and all eight countries by end YR 3; Regional databases and dugong/ seagrass surveys/ monitoring	National programme monitoring and reports; Project reports and monitoring; CHM and hits/ requests for information; Networks established and functioning for regional data sharing; Study reports and scientific publications; Communication strategy outputs; National reports to	Basic data on dugongs and seagrass habitats (for digitisation and mapping) or will be obtained during inception and project implementation (additional surveys); CHM will be maintained and function post-project through appropriate forum; Regional networks will continue to function post-project (CMS Dugong MoU Secretariat/ CMP); Decision-makers will make use of conservation information;	Ecosystem Management Expected Accomplishment B (in 2014-2015 PoW)

Pacific Ocean basins		full ecosystem services valuation for seagrass ecosystems in any Project Country exists.	programmes in all countries by end YR2 (contributing data and reports to CHM)	CBD, CMS; State of Dugong reports (periodic); Private sector requests for ecosystem services valuations/ data	Private sector will be interested in potential of ecosystem services (e.g. Blue Carbon opportunities) for sustainable development	
COMPONENT 4: Mainstreaming of dugong and seagrass conservation priorities into national and regional policies and plans						
Outcome 4. Conservation priorities and measures for dugongs and their seagrass ecosystems incorporated into relevant policy, planning and regulatory frameworks across the Indian and Pacific Ocean basins	8. Progress on implementation of national and regional Strategies/ Action Plans for dugong and seagrass conservation	Five out of eight countries signatories to CMS Dugong MoU; Three out of eight countries have published national dugong strategy/ action plan, plus two (VU, SB) under regional SPREP Pacific Islands Regional Marine Species Programme)[50].	Eight out of eight countries signatory to CMS Dugong MoU by YR2; Preparation and adoption of national Strategy/ Plan in all eight countries by YR2; Implementation of Plans in all eight countries by YR3 onwards	Published, adopted national/ regional strategies and plans; National reports to CBD, CMS (Dugong MoU); CMS Dugong MoU meeting reports; Regional (SPREP) publications, meeting reports; Project/ national reports, minutes, CHM	Political will and resources exist at national level to develop and implement Strategies & Plans; Decision-makers will make use of conservation information and support implementation of Strategies/ Plans;	Ecosystem Management Expected Accomplishment B (in 2014-2015 PoW)
	9. Incorporation of dugong protection and dugong/ seagrass conservation in other sectors (e.g. fisheries, coastal zone management & regulations)	*Baselines to be established during Inception using Mainstreaming Biodiversity Conservation in Production Landscapes/ Seascapes and Sectors (MBDCPLSS) Tracking Tool*	*Targets to be established for all eight countries during Inception using MBDCPLSS Tracking Tool*	MBDCPLSS: Tracking Tool; National government legal gazette/ publication; Publication of instrument (e.g. EIA, fisheries regulation) National project reports, CHM; National reports to CBD, CMS (Dugong MoU)	Project advocacy and awareness programmes raise profile of dugong and seagrass conservation in other sectors; Political will exists and project and national advocacy and policy programme can influence other sectors to support dugong and seagrass conservation nationally and regionally	Ecosystem Management Expected Accomplishment B (in 2014-2015 PoW)

[50] http://www.sprep.org/attachments/Publications/Marine_Species_Programme_2013-2017.pdf

Project Outputs	Output Indicators	Baseline	Targets and monitoring milestones	Means of verification	Assumptions and risks	PoW Output Reference Number
NB Project outputs and activities are tabled in Appendix 6 "Deliverables and benchmarks". Output indicators are statement of activity completed or output produced/ published (e.g. Training course/ workshop run; trainees trained; report published; web site built). Achievement of Outputs is monitored through project and financial monitoring ("The achievement of Outputs is largely assumed…. Outputs reflect where and for what project funds were used")[51].						

ACTIVITIES PER COUNTRY – SEE APPENDIX 20

	Indonesia	Madagascar	Malaysia	Mozambique	Sri Lanka	Solomon Is.	Timor-Leste	Vanuatu

[51] UNEP Standard Terminal Evaluation TOR. Annex 8. Introduction to Theory of Change / Impact pathways, the ROtI Method and the ROtI Results Score sheet

Appendix 5: Workplan and Timetable

Note: the following timetable is indicative of the overall project execution and will be reviewed and refined at the activity level for each project during the inception period.

Dugong		YEAR 1				YEAR 2				YEAR 3				YEAR 4			
	Output and Activities Description	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5	Quarter 6	Quarter 7	Quarter 8	Quarter 9	Quarter 10	Quarter 11	Quarter 12	Quarter 13	Quarter 14	Quarter 15	Quarter 16
PROJECT INCEPTION AND PROJECT GOVERNANCE PHASE																	
	Recruitment of PCT																
	Essential Procurement																
	Legal Instrument with partners and sub-contractors established																
	Technical activities (finalization of logical frameworks and, baseline assessments for selected sub-projects)																
	Recruitment of National Facilitating Committees																
	Project Inception Workshop and 1st Executive Steering																

	Committee Meeting																
	National Facilitating Committee Meetings																
	Executive Project Steering Committee Meetings																
COMPONENT 1: Improved site-level management at globally important sites for dugongs and seagrasses																	
1.1	**Governance structures for community involvement in conservation and monitoring of dugong and seagrass ecosystems established or strengthened in target areas**																
1.1.1	National and local awareness surveys; awareness/ education campaigns																
1.1.2	Community meetings/ workshops																
1.1.3	Selection of sites for community-based stewardship																
1.1.4	Local (e.g. community/ government/ co-management, Fishing Association) structures established & functioning																

1.1.5	Consultative committees/ management councils, Dugong Protection Forum (MZ)																
1.2	**Capacity developed for community-based stewardship (conservation and monitoring of dugongs & seagrass)**																
1.2.1	Awareness/ education campaigns (media, social media)																
1.2.2	Training in dugong and seagrass community-based management (CBM)																
1.2.3	Training in dugong and seagrass monitoring																
1.3	**Integrated community management plans (conservation and monitoring**																

	of dugong and seagrass ecosystems) developed and piloted																
1.3.1	Baseline information gathering & consultations																
1.3.2	Participatory mapping, zonation																
1.3.3.	Pilot site management plan preparation																
COMPONENT 2: Development of incentive mechanisms and tools to promote conservation and sustainable use of dugongs and seagrass ecosystems																	
2.1	**Management and incentive mechanisms and tools for sustainable fisheries – pilots and capacity building (local community and government)**																
2.1.1	Tools developed and tested at pilot sites																
2.1.2	Pilots established; seed funding provided – community business plans																
2.1.3	Alternative income-generation models developed																

	and tested with communities (from *Coastal Communities Toolbox* & others)																
2.1.4.	Communities trained in use of tools/ new income-generating skills																
2.2	**Awareness raising and social marketing programmes contributing to more sustainable practices (subsistence and small-scale artisanal fishers) in target areas**																
2.2.1	Awareness raised; social marketing pilot initiatives providing alternative finance																
2.2.2	Economic valuation of ecosystem goods and services																
2.2.3	Investigation of long-term sustainable finance mechanisms																
Component 3: Removal of knowledge barriers																	

3.1	**Critical knowledge gaps (dugongs and seagrass ecosystems) identified & surveys initiated/ completed**																
3.3.1	Information and guidance (dugongs and seagrass ecosystems) collated and disseminated; best practice and experience shared																
3.3.2	Preparation and implementation of a Project Communication strategy and materials and national communications strategies																
Component 4: Mainstreaming of dugong and seagrass conservation priorities into national and regional policies and plans																	
4.1	**Policy, planning and regulatory gaps reviewed (conservation of dugongs and seagrass ecosystems) and recommendations developed**																
4.1.1	National																

	legislative, policy and regulatory review of gaps/ barriers																
4.1.2	National workshops and consultation on legal, policy, regulatory gaps and recommendations																
4.1.3	Draft National Strategies/ action plans (dugong and seagrass conservation) developed																
4.2	**Advocacy programmes and advocacy capacity for improved conservation management of dugongs and their seagrass ecosystems developed and implemented**																
4.2.1	National and local (community) advocacy networks established and capacity developed																

4.2.2	Advocacy programmes and campaigns																
4.3	**Capacity for national and regional networking and contribution to global policy for effective dugong and seagrass conservation in Indian and Pacific Ocean basins**																
4.3.1	Initiation and implementation of national programmes and component projects																
4.3.2	Functioning regional programme and networks (information, advocacy/ policy)																
Monitoring and Evaluation																	
	Collection of baselines																
	Mid-Term Evaluation																
	Terminal																

	Evaluation																

Note: The following table outlines the timeline at the project level.

Country	Project Ref	Output and activities descriptions/Project title (and ref. to relevant project components/outcomes)[52]		Year 1				Year 2				Year 3				Year 4			
				1st quarter	2nd quarter	3rd quarter	4th quarter	5th quarter	6th quarter	7th quarter	8th quarter	9th quarter	10th quarter	11th quarter	12th quarter	13th quarter	14th quarter	15th quarter	16th quarter
		Inception Period																	
		Recruitment of Project Team																	
		Inception Strategic Planning Meeting (Management)																	
		Inception Strategic Planning Meeting (Technical)																	
		Inception Regional Planning Meeting																	
		Mid Term Review/Evaluation																	
		Terminal Evaluation																	
Indonesia	ID1	Strengthen and operationalize national policy strategy and action plan for dugongs and seagrass conservation	3, 4																
	ID2	Improving National Awareness and Research of Dugong and Seagrass in Indonesia	1, 3, 4																
	ID3	Community based conservation and management of dugong and seagrass habitat Bintan Island, Riau Archipelago Province, Indonesia	1, 2, 3, 4																
	ID4	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project	4																
Sri Lanka	LK1	A Community Based Approach for Conserving the Globally Threatened *Dugong dugon* in Sri Lanka	1, 3																
	LK2	Improving communication and collaboration amongst all relevant stakeholders in Sri Lanka to enhance seagrass and dugong conservation	3, 4																

[52] This is a preliminary project structure. When country project logframes are developed during the inception phase, after detailed planning, they will be fully integrated into the overall project structure.

Country	Project Ref	Output and activities descriptions/Project title (and ref. to relevant project components/outcomes)[52]		Year 1				Year 2				Year 3				Year 4			
				1st quarter	2nd quarter	3rd quarter	4th quarter	5th quarter	6th quarter	7th quarter	8th quarter	9th quarter	10th quarter	11th quarter	12th quarter	13th quarter	14th quarter	15th quarter	16th quarter
	LK3	Contributions to the long term conservation of seagrasses and dugongs in Sri Lanka	1, 3, 4																
	LK4	Development of a multiple-community-based marine resource management plan in the Gulf of Mannar	3, 4																
	LK5	Ensuring seagrass ecosystem values are incorporated into coastal area planning in Sri Lanka.	3, 4																
	LK6	Increasing knowledge on sea grass habitats and dugong distribution at selected sites in North Western Sri Lanka	3, 4																
	LK7	Providing incentives to local communities in return for wise stewardship of coastal habitats	1, 2, 3																
	LK8	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project	4																
Madagascar	MG1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Madagascar	1, 2, 3, 4																
	MG2	Fisher knowledge, awareness and behaviour change for the conservation of dugongs and seagrass using the Mihari network of Locally Managed Marine Areas in Madagascar	1, 2, 3																
	MG3	Using incentivized Environmental Stewardship to conserve dugongs and seagrass habitat at an identified national hotspot	1, 2, 3, 4																
	MG4	Integrated approaches to enhance the conservation of dugongs and seagrass ecosystems in Sahamalaza areas	1, 2, 3																
	MG5	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project	4																
	MG6	Dugong and seagrass conservation in North West	1, 3																

Country	Project Ref	Output and activities descriptions/Project title (and ref. to relevant project components/outcomes)[52]		Year 1				Year 2				Year 3				Year 4			
				1st quarter	2nd quarter	3rd quarter	4th quarter	5th quarter	6th quarter	7th quarter	8th quarter	9th quarter	10th quarter	11th quarter	12th quarter	13th quarter	14th quarter	15th quarter	16th quarter
		Madagascar																	
Malaysia	MY1	Operationalizing the Malaysian National Plan of Action for Dugong in Pulau Sibu and Pulau Tinggi, Johor, Peninsular Malaysia	1, 3, 4																
	MY2	Establishment of the National Working Committee for Conserving Dugongs and their Habitats through Involvement of Various Stakeholders	1, 3, 4																
	MY3	Community understanding and management of dugong and seagrass resources in Johor, Malaysia	1, 3																
	MY4	A Two-Pronged Approach for Overcoming Knowledge Barriers On The Ecology And Status Of Dugongs In Johor, Malaysia – Towards Critical Habitat Protection	3, 4																
	MY5	Overcoming the Knowledge Gaps and Involvement of Local Community to Establish a Marine Protected Area (MPA) for the Conservation of Dugong and Seagrass in Bay of Brunei, Lawas, Sarawak, East Malaysia	1, 3, 4																
Mozambique	MZ1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Mozambique	1, 2, 3, 4																
	MZ2	The distribution of dugongs in the coastal waters of Mozambique	3																
	MZ3	Developing an Education and Awareness Campaign to Conserve Dugongs in the Bazaruto Archipelago and Mozambique.	1, 3																
	MZ4	The Dugong Emergency Protection Project	1, 2, 3, 4																
	MZ5	Participatory Research of Additional Methods to reduce the Impact of the beach seine fisheries on	1, 3, 4																

Country	Project Ref	Output and activities descriptions/Project title (and ref. to relevant project components/outcomes)[52]		Year 1				Year 2				Year 3				Year 4			
				1st quarter	2nd quarter	3rd quarter	4th quarter	5th quarter	6th quarter	7th quarter	8th quarter	9th quarter	10th quarter	11th quarter	12th quarter	13th quarter	14th quarter	15th quarter	16th quarter
		seagrass beds at Vilanculos and Inhassoro																	
	MZ6	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project	1																
Solomon Islands	SB1	Consultation on the development and implementation of a national dugong and seagrass conservation strategy in the Solomon Islands	1																
	SB2	National-level awareness raising campaign to champion dugong and seagrass conservation	3, 4																
	SB3	Identification of priority sites for conservation of dugongs and seagrassess in the Solomon Islands	3																
	SB4	Development of seagrass and dugong Locally Managed Marine Areas	1																
	SB5	Building national-level expertise in dugong and seagrass conservation and mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making	4																
Timor-Leste	TL1	Identification of priority sites for conservation of dugongs and seagrasses in Timor-Leste	1, 2, 3, 4,																
	TL2	Development of seagrass and dugong LMMAs	1, 2, 3, 4																
	TL3	Building national-level expertise in dugong and seagrass conservation and mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making	4																
	TL4	National-level awareness raising campaign to champion dugong and seagrass conservation	1, 2, 3, 4																
Vanuatu	VU1	Implementing a Vanuatu National Plan of Action for Dugong in Maskelynes Islands, Efate Islands and other	1, 4																

Country	Project Ref	Output and activities descriptions/Project title (and ref. to relevant project components/outcomes)[52]		Year 1				Year 2				Year 3				Year 4			
				1st quarter	2nd quarter	3rd quarter	4th quarter	5th quarter	6th quarter	7th quarter	8th quarter	9th quarter	10th quarter	11th quarter	12th quarter	13th quarter	14th quarter	15th quarter	16th quarter
		selected areas																	
	VU2	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project	4																

Appendix 6: Key Deliverables and Benchmarks

Note: these are "whole project" outputs, activity groups and deliverables (across all eight Project Countries and three sub-regions). Activity groups and outputs will vary in priority and emphasis by country and national programme (according to national priorities and starting points). Individual Log Frames and other project planning and monitoring tools will be developed at Inception for all eight national programmes and sub-projects. (See 3.3, Table 9~~Table 9~~ and Appendix 20 for detail of proposed national sub-projects).

Overall Project Output / activity		Expected result	Deliverables	Benchmark	Timeframe
Output 1.1	**Governance structures for improved community involvement in conservation and monitoring of dugong and seagrass ecosystems established or strengthened in target areas**				
1.1.1	National and local awareness surveys; awareness/ education campaigns	Raised awareness (dugongs and seagrasses)	Survey reports, campaign/ education materials and reports Local level monitoring (repeat surveys)	Survey reports published & circulated; Monitoring reports Materials/ campaigns used & evaluated	Some during Inception (local, for sites targeted in sub-projects); On-going through project (different timescales for each national programme)
1.1.2	Community meetings/ workshops	Communities/ stakeholders engaged	Workshops/ meetings held Leaders identified Legal/ policy barriers identified	Meetings reports; proposals & recommendations documented/ circulated	Inception (first eight months) & on-going through project (sub-projects)
1.1.3	Selection of sites for community-based stewardship	2 or 3 priority sites per country identified	Site-based proposals (community stewardship)	Proposals (site-based) circulated for consultation and approval	Inception (first eight months of project)
1.1.4	Local (e.g. community/ government/ co-management, Fishing Association) structures established & functioning	Local stakeholder/ stewardship committees formed	Functioning local/ site committees with relevant stakeholder involvement	Committees meeting, taking decisions, minutes of meetings	First three months after Inception & on-going through project (for each community-based sub-project)
1.1.5	Consultative committees/ management councils, Dugong Protection Forum (MZ)	Wider stakeholder forums established	Functioning district/ regional committees/ forums with stakeholder involvement	Committees/ forums meeting, taking decisions, minutes of meetings	Inception/ YR1 for establishment (under each national programme); on-going through project
Output 1.2	**Capacity for community-based stewardship developed through increased awareness and active participation of local communities and relevant government structures in conservation and monitoring of dugongs and their seagrass habitats in target areas**				
1.2.1	Awareness/ education campaigns (media, social media)	Raised awareness (dugongs, seagrass conservation needs)	Survey reports, campaign/ education materials and reports	Survey reports published & circulated Materials/ campaigns used &	On-going through project (different timescales for national programme/

Overall Project Output / activity		Expected result	Deliverables	Benchmark	Timeframe
				evaluated	individual sub-project)
1.2.2	Training in dugong and seagrass community-based management (CBM)	Trained community members and government staff	Training reports; staff/ community members employed and active	Effective involvement of trainees in CBM implementation	On-going through project (different timescales for national programme/ individual sub-project)
1.2.3	Training in dugong and seagrass monitoring	Trained Wildlife Rangers, ecoguards etc.; Protection Unit (MZ)	Protection and monitoring programmes staffed and run effectively	Effective involvement of trainees in CBM implementation (monitoring)	On-going through project (different timescales for national programme/ individual sub-project)
Output 1.3	**Integrated community management plans for conservation management and monitoring of dugong and seagrass ecosystems developed and piloted in target areas**				
1.3.1	Baseline information gathering & consultations	Site and community surveys, stakeholder consultations completed	Survey/ research reports & stakeholder analyses	Survey reports published & circulated/ approved; Monitoring programmes set-up using baselines	During Inception – first eight months (includes finalization of sites to be targeted in sub-projects); On-going through project (different timescales for each sub-project)
1.3.2	Participatory mapping, zonation	Consultation (e.g. fishermen's groups), agreement of site boundaries & zonation	Agreed community-based maps/ zonation for priority sites	Agreed community-based maps/ zonation for priority sites published & approved	First four to six months after Inception (different timescales for each sub-project)
1.3.3	Pilot site management plan preparation	Plans approved & implemented for priority sites (CBM)	Published CBM/ co-management plans for priority pilot sites	CBM Plans approved, implemented; Dissemination of pilot project experience	YRS. 2-4
Output 2.1	**A range of management and incentive mechanisms and tools for sustainable fisheries developed, tested and piloted in target areas and capacity built within local community and government for effective implementation**				
2.1.1	Tools developed and tested at pilot sites	Suite of suitable tools and mechanisms tested and evaluated	Reports and evaluations of tools and mechanisms/ pilots	Reports and evaluations of tools and mechanisms/ pilots published	YRS 1-3 (different timescales for individual sub-projects)
2.1.2	Pilots established; seed funding provided – community business plans	Business plans developed; communities trained to use tools	Community business plans; pilot project evaluations	Published experience, plans, training & evaluation reports	YRS 1-3 (different timescales for individual sub-projects)

Overall Project Output / activity		Expected result	Deliverables	Benchmark	Timeframe
2.1.3	Alternative income-generation models developed and tested with communities (from *Coastal Communities Toolbox* & others)	New methods of income-generation producing community benefits	Alternative income-generation examples/ models published and evaluated	Published reports; replication (e.g. MZ existing Sustainable Seafood Initiative; ecotourism; eco-volunteering)	YRS 2-4 (different timescales for individual sub-projects)
2.1.4	Communities trained in use of tools/ new income-generating skills	Communities trained (marketing, business planning etc.)	Trained community groups obtaining new income though initiatives	Published reports/ project finances; replication/ use of tools & skills	YRS 2-4 (different timescales for individual sub-projects)
Output 2.2	**Awareness raising and social marketing programmes developed, implemented and contributing to the adoption of more sustainable practices among subsistence and small-scale artisanal net fishers in target areas**				
2.2.1	Awareness raised; social marketing pilot initiatives providing alternative finance	Communities involved in pilot initiatives and seeing benefits	Alternative income-generation examples/ models published and evaluated	Published reports; replication of successful pilots through social media	YRS 2-4 (different timescales for individual sub-projects)
2.2.2	Economic valuation of ecosystem goods and services	Awareness raised; potential for income-generation (e.g. "Blue Carbon") investigated	Alternative income-generation examples/ models published and evaluated	Published reports; replication of successful pilots through social media	YRS 2-4 (different timescales for individual sub-projects/ research studies)
2.2.3	Investigation of long-term sustainable finance mechanisms	Potential for long-term finance investigated and communities trained	Communities trained (e.g. marketing, accounting, quality assurance)	Published models/ reports; replication	YRS 3-4 (different timescales for individual sub-projects/ research studies)
Output 3.1	**Critical gaps in knowledge of dugong and seagrass status, distribution, threat and conservation identified and survey programmes initiated or supported in priority areas**				
3.1.1	Research/ survey methodologies developed & tested (ecological: status, distribution, threats; socio-economic: behaviour/ economics of fishers & fisheries; ecosystem services valuation)	Improved methodologies/ increased data collection, analysis and availability. Identification of hotspots, pressure points, priorities for conservation management projects	Survey results, analyses and maps (dugong and seagrass). Recommendations for site action. Web sites and databases	Survey results, analyses and maps collated, published, replicated	During Inception – first eight months (includes finalization of sites to be targeted in sub-projects); On-going through project (different timescales for each sub-project/ national programme)
3.1.2	Training in R&M methods, collaborative/ participatory surveys	Increased community capacity for R&M	Trained community and institution survey teams	Teams trained, participating in survey work; submitting results to databases	YRS 2-4
	Monitoring & evaluation systems	Established M&E systems in place	Web sites and databases	M&E reports published; data	YRS 2-4

Overall Project Output / activity		Expected result	Deliverables	Benchmark	Timeframe
	established (e.g. "COSAP" model, MG)	and functioning	M&E reports and maps	available on web based systems	
Output 3.2	**Good practice guidelines developed for dugong and seagrass ecosystem conservation (including incentive-based approaches), based on assessment of project results and experiences**				
3.2.1	Evaluation of project research (scientific and socio-economic), experience and use of models	Best practice guidance (for research, use of incentive-based conservation mechanisms)	Recommended (draft) guidance on best practice and models	Guidance available for consultation	YRS 3-4
3.2.2	Guidelines developed, consulted on (Project Partners, communities, technical experts)	Draft guidelines for approval – widely endorsed and adopted	Workshops/ meetings held; other forms of consultation and feedback (e.g. web-based)	Approved, published best practice guidance for dugong and seagrass conservation in project regions	YRS 3-4
Output 3.3	**Conservation-relevant information and guidance on dugong and seagrass ecosystems collated, shared across partner network and disseminated through dedicated web-based platforms and other channels**				
3.3.1	Information and guidance (dugongs and seagrass ecosystems) collated and disseminated; best practice and experience shared	Collated and reviewed information available to all dugong and seagrass conservation and management practitioners	Web sites and databases; Project Clearing House Mechanism (CHM) established Exchange visits between sites and with other projects	Established web based CHM, widely consulted and linked to other initiatives, sharing information and knowledge throughout the region	YRS 2-4
3.3.2	Preparation and implementation of a Project Communication strategy and materials and national communication strategies	Effective and widely influential communication strategy in place; project information widely disseminated and used;	Project & National Communication strategies (eight Project Countries); Dugong/ seagrass information gathering/ awareness sessions at national/ international fora/ meetings; peer-reviewed publications	Project and national Communication strategies published, implemented, linked to other relevant regional initiatives. Wide uptake and sharing of information via Project CHM, other mechanisms, meetings, publications	Inception & on-going YRS 1-4
Output 4.1	**Policy, planning and regulatory gaps in conservation of dugongs and their seagrass ecosystems identified, and recommendations to address these developed, in all Project Countries**				
4.1.1	National legislative, policy and regulatory	Legal, policy, regulatory gaps identified	National reviews at PPG stage – baseline	Published National Reviews – PPG (all	Some completed PPG; Additional data and baseline

Overall Project Output / activity		Expected result	Deliverables	Benchmark	Timeframe
	review of gaps/ barriers		More detailed reviews: Inception	countries except Solomons)	collection: Inception (1st eight months)
4.1.2	National workshops and consultation on legal, policy, regulatory gaps and recommendations	Raised awareness Recognition/ adoption of CBM (community-based management) at national & local level	Policy/ advocacy recommendations for mainstreaming dugong/ seagrass conservation into national policy, legislation, regulation	Legal, policy, regulatory/ enforcement recommendations published (including new/ revised MPA or other e.g. CBM recommendations)	YRS 2-3 (different timescales for each national programme)
4.1.3	Draft National Strategies/ action plans (dugong and seagrass conservation) developed	Dugong/ seagrass conservation needs incorporated in national policy and planning	National Dugong and Seagrass Strategies and action plans for all countries	Agreed/ adopted National Strategies/ action plans Implementation started	YRS 2-4 (different timescales for each national programme)
Output 4.2	**Advocacy programmes developed and implemented and capacity built within advocacy groups in target areas to advocate for improved conservation policy, planning, regulation and management of dugongs and their seagrass ecosystems**				
4.2.1	National and local (community) advocacy networks established and capacity developed	Engagement of advocates/ stakeholders; Recommendations in national/ regional decision-making; Capacity built through "doing"	Active local and national stakeholder/ advocacy groups (e.g. National Dugong Protection Forum, local Dugong Protection Units)	Groups and networks established/ recognized and functioning effectively Advocacy outputs: see 4.2.2 below	YRS 2-4 (different timescales for local and national programmes)
4.2.2	Advocacy programmes and campaigns	Engagement & effective participation of advocates/ stakeholders in local/ national/ regional decision-making	Recommendations (in local/ national/ regional advocacy programmes); Local and national engagement (e.g. with fisheries committees; inter-Ministerial committees)	Policy briefs/ Cabinet papers produced & submitted; Documentation, publication of key decisions	YRS 2-4 (different timescales for local and national programmes)
Output 4.3	**Capacity for national and regional networking and contribution to global policy processes for effective dugong and seagrass conservation in the Indian and Pacific Ocean basins**				
4.3.1	Initiation and implementation of national programmes and component projects	Effective national programmes coordinated, supported and collaborating across regions	Establishment and effective functioning of National Facilitating Committees (NFC) and national programmes (suite of national sub-projects in all countries)	NFC established/ approved, managing & reporting on national programme (all countries); Indicators/ targets met (national programme and individual project	Inception (establishment) and YRS 1-4 (programme implementation)

Overall Project Output / activity		Expected result	Deliverables	Benchmark	Timeframe
				Log Frames) National/project reporting	
4.3.2	Functioning regional programme and networks (information, advocacy/ policy)	eight functioning national programmes contributing to regional and global networks and CMS Dugong MoU/ CMP	Regional collaboration and networks (information, advocacy/ policy)	Functioning (used) CHM. Regional advocacy programme & products Contribution to CMS Dugong MoU/ CMP in Indo-Pacific	Inception (establishment) and YRS 1-4 (programme implementation: national programmes & sub-projects with individual timescales & targets)
Project management; M&E	Project management established and implementation and monitoring proceed effectively towards achievement of Outcomes	Effective, efficient, timely project management/ coordination and reporting (global, regional, national); project outputs produced and outcomes achieved; lessons learned & disseminated	Implementation arrangements set-up and functioning (global-regional-national); Inception stage and project launch; M&E Plan developed; National programmes (National Focal Pt & NFC) established; national start-up & coordination; training/ capacity bldg. (NFC); Project reporting	Inception Report, M&E Plan published; Communication strategy published; 6mth/ annual PIR reports; Executive Project Steering Committee meetings/ minutes (x3); NFC meetings & reports Project MTR report & recommendations; Lessons learned published; End of project evaluation report	Inception – 1st eight months. Project start Semi-annual progress/ PIR (x7) Annual audit MTR: YR2 EOP evaluation: YR4

Appendix 7: Monitoring and Evaluation Budget and Workplan

Costed monitoring and evaluation workplan

Type of M&E activity	Responsible Parties	Budget from GEF (US$)	Budget co-finance	Time Frame
Measurement of project indicators (outcome, progress and performance indicators, GEF tracking tools) at national and global level	- Project Coordination Team	$22,750	Unknown but expect Project Partners to contribute staff time as co-financing	Outcome indicators: start, mid and end of project Progress/perform. Indicators: annually
Meetings, including Inception Strategic Planning: Management and Technical, and Inception Regional Planning Meetings	- Project Coordinator - MbZSCF as Executing Agency	$44,632	MbZSCF, CMS, Partner and Technical Expert staff time to participate in meetings. Partner meeting space, where appropriate. Meetings will be co-financed and cost-shared with other project meetings where appropriate	Within 4 months of project start-up
Inception National Planning Meetings	National Facilitators	$1,140	Partner staff time to participate in meeting	Within 4 months of project start-up – as necessary.
Inception post-meeting follow-up/start-ups	Project Coordinator National Facilitators	$1,140		Within 4 months after inception regional planning meeting
Inception Report	- Project Coordination Team - MbZSCF as executing agency - UNEP TM	Electronic copies only	Partner staff time to review report	1 month after project inception period (i.e. eight months after project start-up).
Semi-annual Progress/ Operational Reports to UNEP	- Project Coordinator will compile reports with information from Project Partners	None	Partner staff time to review draft reports	Within 1 month of the end of reporting period i.e. on or before 31 January and 31 July
Executive Project Steering Committee meetings, National Facilitating Committee meetings and Meeting Reports	- Project Coordinator will organise project's EPSC meetings with support of MbZSCF and act as Secretary to EPSC	$4,205	Partner staff time to participate in meetings and to review reports. Partner meeting space, where appropriate. ESPC meetings will be co-financed and/or cost shared with	Once a year minimum

Type of M&E activity	Responsible Parties	Budget from GEF (US$)	Budget co-finance	Time Frame
			other project meetings where appropriate	
National Facilitating Committee meetings and Meeting Reports	- National Facilitator will organize NFC meetings and act as Secretary to NFC	$9,115	Partner staff time to participate in meetings and produce reports. Partner meeting space, where appropriate.	
PIR	- Project Coordinator - UNEP TM -Steering Committee members	None	Partner staff time to review draft report	Annually, part of reporting routine
Monitoring visits to field sites (UNEP staff travel costs to be charged to IA fees)	- Project Coordinator - Project Partners - UNEP TM on annual visits	$10,205	Partner staff time to participate in field visits	As appropriate
Mid Term Review/Evaluation	- UNEP with MbZSCF - Project Coordinator - Project Partners - UNEP TM - Independent external consultant (i.e. evaluation team)	$45,055	Partner staff time to participate in interviews and field visits	At mid-point of project implementation
Terminal Evaluation	- UNEP EOU - Project Coordinator - Project Partners - UNEP TM - Independent external consultant (i.e. evaluation team)	$55,055	Partner staff time to participate in interviews and field visits	Within 6 months of end of project implementation
Audit	- Independent auditors - Project Coordinator - MbZSCF as executing agency - UNEP DEPI (finance department)	16,000 (4,000 per year)	None	Annually
Project Final Report	- Project Coordinator - UNEP TM - External Consultant	Electronic copies only	Partner staff time to review and/or input into draft report	Within 2 months of the project completion date
Co-financing report	- Project co-financiers - Project Coordinator	Electronic copies only	Partner staff time to provide information	Within 1 month of the PIR reporting period, i.e. on or before 31 July
Publication of Lessons Learned and other project documents	- Project Coordinator - UNEP EOU (advice on design and quality) - Independent consultant (guidance on formats for document best practices) - Project Partners	$5,300	Partner staff time to provide information, review draft documents and publish via existing channels.MbZSCF to draft and	Annually, part of Semi-annual reports & Project Final Report

Type of M&E activity	Responsible Parties	Budget from GEF (US$)	Budget co-finance	Time Frame
			publish communications	
Total M&E Plan Budget		**$214,597**		

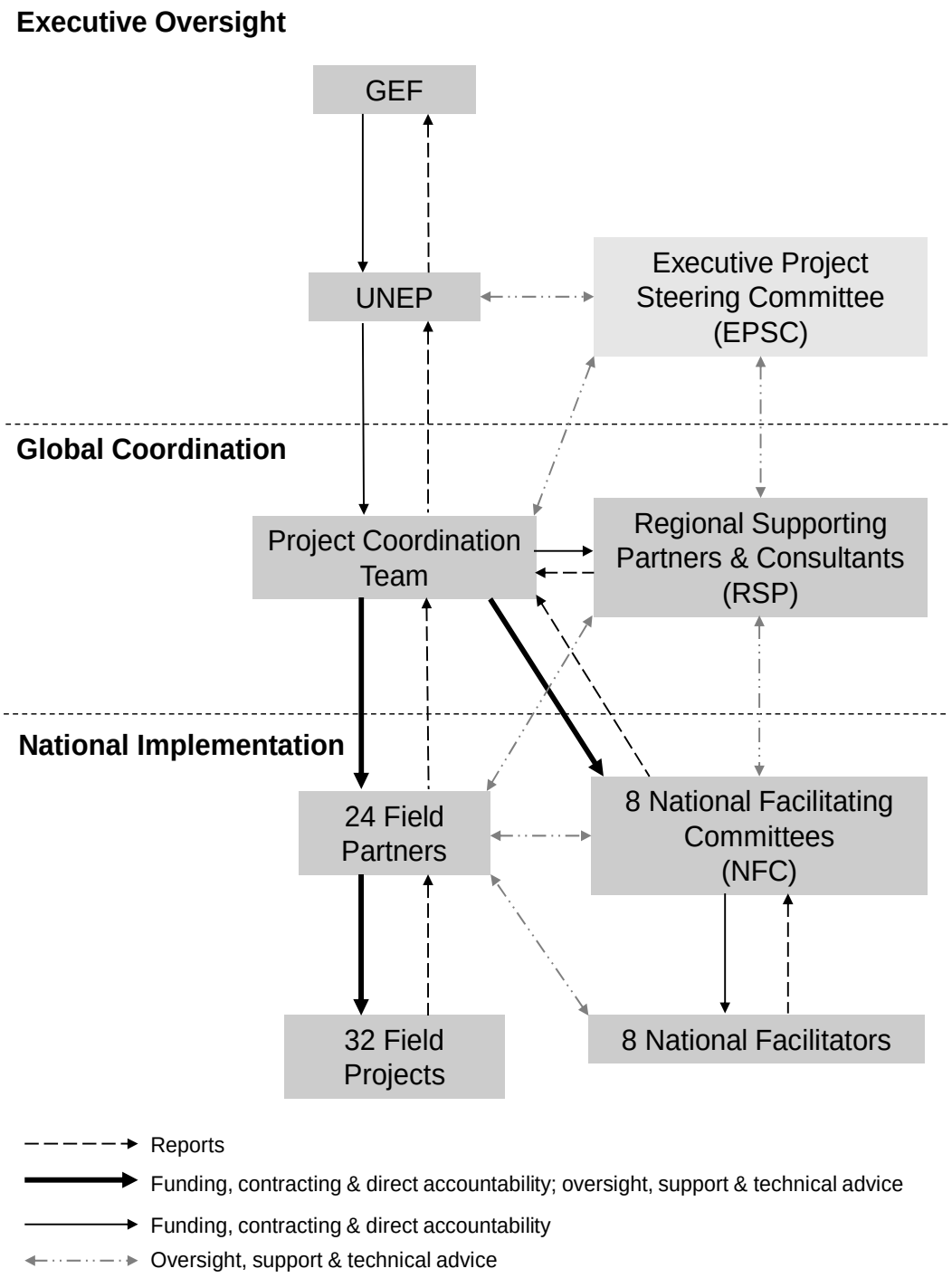
Appendix 8: Summary of Reporting Requirements and Responsibilities

Reporting requirements	Due date	Format appended to legal instrument as	Responsibility of
Procurement plan (goods and services)	2 weeks before project inception meeting	N/A	Project Coordinator
Inception Report (including workshop report and updated workplan, budget and logframe as revised at inception workshop)	1 month after project inception meeting	N/A	Project Coordinator
Expenditure report (consolidating inputs/reports from all countries and global component) accompanied by explanatory notes	Half yearly	**Annex 11**	Project Coordinator
Cash Advance request and details of anticipated disbursements	Half yearly or when required	**Annex 7B**	Project Coordinator
Progress report (consolidating inputs/reports from all countries and global component)	Half-yearly on or before 31 January and 31 July	**Annex 8**	Project Coordinator
Audited report for expenditures for year ending 31 December	Annually by June of each year. Each in-country project to be externally audited at least once during the project life	N/A	MbZSCF & Project Partners in-country to contract firms
Updated inventory of non-expendable equipment	Annually (as part of progress report)	**Annex 6**	Project Coordinator
Co-financing report (consolidating inputs/reports from all countries and global component)	Annually, but advised to prepare half-yearly (as part of progress report)	**Annex 12**	Project Coordinator
Project implementation review (PIR) report	Yearly on or before 31 August	**Annex 9**	Project Coordinator, TM, FMO
Minutes of steering committee meetings	Yearly (or as relevant)	N/A	Project Coordinator
Mission reports and "aide memoire" for executing agency	Within 2 weeks of return	N/A	Project staff, consultants, TM
Terminal Report (consolidating inputs/reports from all countries and global component)	2 months of project completion date	**Annex 10**	Project Coordinator
Final inventory of non-expendable equipment		**Annex 9**	Project Coordinator
Equipment transfer letter		**Annex 10**	Project Coordinator, FMO
Final expenditure statement (consolidating inputs/reports from all countries and global component)	3 months of project completion date	**Annex 11**	Project Coordinator, FMO
Mid-term review or Mid-term evaluation	Midway through project	N/A	TM or EOU (as relevant)
Final audited report for expenditures of project	6 months of project completion date	N/A	MbZSCF to contract firm
Independent terminal evaluation report	6 months of project completion date	Appendix 9 to Annex 1	UNEP EOU

Appendix 9: Standard Terminal Evaluation TOR

The latest version of Evaluation Terms of Reference to be provided by UNEP EOU Office once finalised.

Appendix 10: Decision-making Flowchart and Organizational Chart



The various stakeholder groups named in the decision-making flowchart and organisational chart are described below.

Project Coordination Team (PCT) (MbZSCF)

Project Coordinator
Regional Manager (Asia)

Communications Manager
Finance Manager
Project Associate

National Facilitating Committee (NFC)

Chair:
DFP

Members:
1 Representative from each Project Partner

Secretary:
National Facilitator

Executive Project Steering Committee (EPSC)

Members:
UNEP, DFPs, Dugong MoU Secretariat, Technical Consultants

Secretary:
PCT

Observers:
MbZSCF, BV, MRF

Regional Supporting Partners & Consultants (RSP)

Dugong MoU Secretariat, MbZSCF, BV, MRF, International Consultants, National Consultants

Appendix 11: Terms of Reference

Terms of Reference
Job Description

Project: Enhancing the Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins
(Short title: The Dugong and Seagrass Conservation Project)

Post title: Project Coordinator……..…….....

Duration: 4 years…….

Date Required: 1st March 2014……..

Duty station: Abu Dhabi, United Arab Emirates …….…….

Counterpart:……..

Background

The Dugong and Seagrass Conservation Project will use GEF funding to enhance the conservation of the dugong (*Dugong dugon*) and its associated seagrass ecosystems in eight countries in the Indo-Pacific region, namely Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu.

The Project Coordinator will be employed by the Project Executing Agency (Mohamed bin Zayed Species Conservation Fund, MbZSCF) in Abu Dhabi, United Arab Emirates, to lead a Project Coordination Team (PCT). The Project Coordinator will be responsible for all aspects of project management and coordination including provision of technical support, and will work in close collaboration with the National Facilitators (NFs), a Regional Manager (Asia) and 32 Project Partners to implement 40 projects across eight countries. The role will require frequent travel.

The Project Coordinator will ensure in-country and global activities are aligned and synergistic with ongoing frameworks and resolutions of the GEF (Global Environment Facility), UNEP (GEF Implementing Agency), the Convention on Migratory Species (CMS), and other relevant international processes focusing on conservation and management of dugongs and their seagrass habitats.

Expected Outcomes and Deliverables

The Project Coordinators main duties and responsibilities are to:

- Act as the main point of contact for UNEP
- Establish the PCT, including staff recruitment
- Supervise and coordinate all aspects of the day-to-day work of the PCT and Project Partners as necessary
- Coordinate and put systems in place for all aspects of Project implementation to streamline administrative, financial and technical requirements and support efficient project implementation, timely and consistent technical and financial reporting to the PCT from all Project Partners and sub-contractors, including the 40 projects
- Prepare periodical consolidated progress reports and annual PIRs (Programme Implementation Reports) for UNEP and the GEF

- Select experts and consultants as necessary for the Project
- Receive guidance from the Executive Project Steering Committee (EPSC)
- Work and communicate regularly with National Facilitators and NFCs to resolve any Project issues
- Coordinate resources (including technical support) for Project Partners
- Provide technical and administrative support to the Project Partners
- Act as the Project focal point for interaction with UNEP
- Liaise regularly with supporting organisations as necessary, including the CMS Dugong MoU Secretariat
- Provide secretariat support to the EPSC, including organisation, communication and preparation of all meeting documentation
- Support the Chair of the EPSC
- Provide strategic guidance to the EPSC
- Liaise, consult and network with national and regional partner agencies
- Establish an effective outreach and engagement strategy, including training and communication activities, promotion of Project visibility and effective collection of documentation and dissemination of Project results and lessons learned
- Actively promote the Project and its components in all relevant media and fora
- Coordinate the implementation of the project Monitoring and Evaluation plan, as outlined in the Project Document
- Perform any other duty relevant to the assignment

Reporting structure

The Project Coordinator will report to the Director General of MbZSCF on a day-to -day basis and provide project reports (progress reports, financial reports, etc.) to the GEF Implementing Agency (UNEP).

Qualifications

Education

- Postgraduate degree (Masters or PhD) in environmental management, environmental sciences, natural resources management, biodiversity conservation, or a related field.

Required Skills

- Strong leadership, negotiation and communication skills
- Solid background in project management including finance
- Sensitive to different cultural backgrounds
- Aware of and sensitive to government and civil society interactions/politics
- Attention to detail and strong organisational skills
- Able to establish priorities and to plan and coordinate work between 8 diverse countries
- Able to manage a complex workload and work within tight deadlines
- Able to lead, manage and motivate all project teams as well as international and local consultants and other stakeholders to achieve results
- Able to build strong relationships at all levels with conservation partners, media contacts, potential project sponsors and other stakeholders
- Well-developed knowledge about biodiversity funding opportunities
- Able to react to project adjustments and/or alterations (if any) in an efficient and prompt manner
- Able to work in a multicultural and multifunctional environment
- Excellent oral, written, mass and interpersonal communication skills

- Fully computer literate
- Specific knowledge of dugong biology and seagrass ecosystems is desirable.

Experience

- At least 10 years' experience in cross-cultural project management (design and implementation), with a proven track record of achieving results
- Hands-on experience in managing national and international natural resources projects, in particular concerning biodiversity conservation, marine and costal habitat conservation, natural resources management, community based conservation, capacity development etc.
- Prior UN Projects management experience, and particularly UN/GEF project experience and knowledge of UN and GEF procedures and guidelines
- Extensive experience in managing multiple grants and manifold project components, entailing complex reporting requirements (technical and financial)
- Extensive experience in financial management (overseeing financial procedures, budget management, accounting, procurement, disbursement)
- Extensive experience in managing a diverse and multi-cultural team, and in personnel management (contracting, recruitment, performance monitoring)
- Demonstrated understanding of sustainable development, including financial and institutional sustainability
- A diverse and all-round managerial background, including monitoring and evaluation, communication, outreach and stakeholder involvement

Languages

- Fluency in English (oral and written) a strict requirement
- Knowledge of any of the other languages in the project target region beneficial.

Terms of Reference
Job Description

Project: Enhancing the Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins
(Short title: The Dugong and Seagrass Conservation Project)

Post title: Regional Manager…….…….…….....

Duration: 4 years…….…...……

Date Required: 1st March 2014……..

Duty station: Kota Kinabalu, Sabah, Malaysia…….……

Counterpart:…….…….

Background

The Dugong and Seagrass Conservation Project will use GEF funding to enhance the conservation of the dugong (*Dugong dugon*) and its associated seagrass ecosystems in eight countries in the Indo-Pacific region, namely Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu.

The Regional Manager will be based in Kota Kinabalu, Sabah, Malaysia and will be part of the Project Coordination Team based in Abu Dhabi, United Arab Emirates. The Regional Manager will support the Project Coordinator (PC) in coordination and management of all aspects of Project implementation in the Asia-Pacific region (Indonesia, Malaysia, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu).

The Regional Manager will ensure in-country and global activities are aligned and synergistic with ongoing frameworks and resolutions of the GEF (Global Environment Facility), UNEP (GEF Implementing Agency), the Convention on Migratory Species (CMS), and other relevant international processes focusing on conservation and management of dugongs and their seagrass habitats.

Expected Outcomes and Deliverables

The Regional Managers main duties and responsibilities will be to:

- Coordinate daily duties with the PC
- Support the PC
- Work closely with the PCT and Project Partners to coordinate financial, communications and progress reports
- Provide strategic guidance to the PC
- Actively promote the GEF Dugong and Seagrass Conservation Project and its components in all relevant media and fora
- Perform any other duty relevant to the assignment

The Regional Manager will support the PC's role in the Asia-Pacific Sub Region, specifically to:

- Coordinate all aspects of Project implementation to streamline administrative, financial and technical requirements and support efficient project implementation, timely and consistent technical and financial reporting

- Coordinate and put systems in place for the timely and accurate technical and financial reporting to the PCT from all Project Partners and sub-contractors, including the 40 projects
- Prepare periodical consolidated progress reports and annual PIRs (Programme Implementation Reports) for UNEP and the GEF
- Select experts and consultants as necessary for the Project
- Provide technical and administrative support to the Project Partners
- Receive guidance from the Executive Project Steering Committee (EPSC)
- Work and communicate regularly with National Facilitators and NFCs to resolve any Project issues
- Coordinate resources (including technical support) for Project Partners
- Provide technical and administrative support to the Project Partners
- Act as the Project focal point for interaction with UNEP
- Liaise regularly with supporting organisations as necessary, including the CMS Dugong MoU Secretariat
- Provide secretariat support to the EPSC, including organisation, communication and preparation of all meeting documentation
- Liaise, consult and network with national and regional partner agencies
- Implement an outreach and engagement strategy, including training and communication activities, promotion of Project visibility and effective collection of documentation and dissemination of Project results and lessons learned
- Actively promote the Project and its components in all relevant media and fora
- Assist with coordination and implementation of the project Monitoring and Evaluation plan, as outlined in the project document

Reporting structure

The Regional Manager will report to the PC on a day-to-day basis and submit standard project reports (progress reports, financial reports, etc.) to the PC within set deadlines.

Qualifications and Competencies

Education
Postgraduate degree (Masters or PhD) in environmental/natural resource management, conservation, or a related field.

Required Skills
- Leadership, negotiation, communication and trouble-shooting
- Project management including finance
- Self-motivated and able to work remotely with minimum supervision
- Sensitive to different cultural backgrounds
- Aware of and sensitive to government and civil society interactions/politics
- Able to prioritize, plan and coordinate work remotely and with various partners
- Able to lead, manage, support and motivate diverse teams of stakeholders to achieve results
- Able to build strong relationships at all levels with conservation partners, media contacts, potential project sponsors and other stakeholders
- Able to work as part of a team
- Aware of biodiversity conservation funding opportunities
- Able to work in diverse and multicultural environments
- Demonstrable sound work ethics
- Excellent oral, written, mass and interpersonal communication skills
- Fully computer literate

- Specific knowledge of dugong biology and seagrass ecosystems is desirable

Experience

- Minimum of five years' experience in project management, with a proven track record of achieving results
- Extensive experience in economics and financial management, including overseeing financial procedures, budget management, accounting, procurement and disbursement
- Strong managerial and administrative background, especially in monitoring and evaluation
- Knowledge and experience with national and international natural resources projects advantageous, in particular concerning biodiversity conservation, sustainable land management and/or climate change adaptation or mitigation
- Fluency in English (oral and written) is a strict requirement, and knowledge of any of the other languages in the project target region is an additional asset.

Languages

- Fluency in English (oral and written) a strict requirement
- Knowledge of any of the other languages in the project target region beneficial.

Terms of Reference
Job Description

Project: Enhancing the Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins
(Short Title: The Dugong and Seagrass Conservation Project)

Post title: Finance Manager…….……..

Duration: 4 Years…….…….

Date Required: 1st March 2014……..

Duty station: Abu Dhabi, United Arab Emirates …….…….

Counterpart…….….……

Background

The Dugong and Seagrass Conservation Project will use GEF funding to enhance the conservation of the dugong (*Dugong dugon*) and its associated seagrass ecosystems in eight countries in the Indo-Pacific region, namely Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu.

The Finance Manager will be employed by the Project Executing Agency (Mohamed bin Zayed Species Conservation Fund, MbZSCF) in Abu Dhabi, United Arab Emirates and will work as part of the Project Coordination Team (PCT).

The Finance Manager will work closely with the Project Coordinator (PC) and will be responsible for financial, accounting and administrative services to the Project, including reporting in accordance with standard procedures of the GEF (Global Environment Facility) and UNEP (GEF Implementing Agency).

Expected Outcomes and deliverables

The Finance Manager's main duties and responsibilities will be to:

- Maintain control of the Project funds
- Administer, prepare and monitor the budget and financial cycles of the project
- Disburse funds to Field Project Partners, National Facilitating Committees and Supporting Partners and Consultants in a timely manner
- Obtain financial statements and reports from Project Partners
- Establish cost control systems to monitor expenditure and manage discrepancies throughout Project cycles
- Notify the PC immediately of any discrepancies or cash shortfalls
- Work with the PCT to create tenders for procurement, evaluate bids and provide recommendations
- Maintain accurate financial and administrative records, including for PCT personnel
- Communicate with the PC and Project Partners on a regular basis
- Ensure Project funds are spent in-line with the formally approved Project Documents and budgets
- Respond to enquiries from Project Partners related to budget and similar issues

- Act as the liaison point on financial matters to the PC, Field Project Partners and National Facilitating Committees
- Maintain confidentiality of PCT staff files
- Issue work permits, visas and other legal requirements to the PCT staff where applicable
- Establish and manage a payroll system and ensure timely payment of staff
- Assist with fundraising initiatives for the Project
- Perform any other duty relevant to the assignment.

Reporting structure

The Finance Manager will report to the PC on a day-to -day basis and submit financial and administrative reports to the PC within set deadlines.

Qualifications and Competencies

Education

- Postgraduate degree (Masters or PhD) in economics, finance, accounting, administration or related field

Required Skills

- Project management including finance
- Sensitive to different cultural backgrounds
- Aware of and sensitive to government and civil society interactions/politics
- Able to prioritize, plan and coordinate work with various partners
- Able to manage a large and complex workload to deadlines
- Able to build strong relationships at all levels with conservation partners, media contacts, potential project sponsors and other stakeholders
- Committed to working collegially with staff, conservation groups, and governmental organisations in a professional and diplomatic manner
- Able to react to project adjustments and/or alterations (if any) in an efficient and prompt manner
- Excellent presentation, oral, written and interpersonal communication skills
- Attention to detail, highly organized and proactive
- Knowledge of fundraising and biodiversity funding opportunities
- Demonstrable sound work ethics
- Flexibility to travel as and when required; and
- Strong optimism and passion for conservation.
- Knowledge of the financial, cultural and political systems in Indo-Pacific region advantageous

Experience

- Five years' experience in fund accounting, project finance management, human resources, office administration, or related field
- Extensive experience in collecting, manipulating, analysing/interpreting and aggregating financial data in useful and interesting formats
- Experience of cross-cultural project management
- Experience of managing multiple grants and project components
- Strong background in fields related to economics, finance and accounting
- Background in environmental/natural resource management, conservation, or a related field advantageous

Languages

- Fluency in English (oral and written) a strict requirement
- Knowledge of any of the other languages in the project target region beneficial.

Terms of Reference
Job Description

Project: Enhancing the Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins
(Short Title: The Dugong and Seagrass Conservation Project)

Post title: Communications Manager……

Duration: 4 Years……

Date Required: 1 March 2014……

Duty station: Abu Dhabi, United Arab Emirates ……
Counterpart……

Background

The Dugong and Seagrass Conservation Project will use GEF funding to enhance the conservation of the dugong (*Dugong dugon*) and its associated seagrass ecosystems in eight countries in the Indo-Pacific region, namely Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu.

The Communications Manager will be employed by the Project Executing Agency (Mohamed bin Zayed Species Conservation Fund, MbZSCF) in Abu Dhabi, United Arab Emirates and will work as part of the Project Coordination Team (PCT).

The Communications Manager will be responsible for the development and implementation of an effective outreach and engagement strategy, including the Clearing House Mechanism (CHM), an online forum for information exchange.

The Communications Manager will ensure in-country and global activities are aligned and synergistic with ongoing frameworks and resolutions of the GEF (Global Environment Facility), UNEP (GEF Implementing Agency), the Convention on Migratory Species (CMS), and other relevant international processes focusing on conservation and management of dugongs and their seagrass habitats.

Expected Outcomes and Deliverables

The Communications Manager's main duties and responsibilities will be to:

- Coordinate daily duties with the Project Coordinator (PC)
- Support the PC
- Work closely with the PCT and Project Partners to coordinate communications reports
- Liaise with the National Facilitators on a regular basis
- Actively promote the GEF Dugong and Seagrass Conservation Project and its components in all relevant media and fora
- Perform any other duty relevant to the assignment

The Communications Manager will be required to perform the following tasks:

Business Support

- Support at least two fundraising project concept notes per year;

- Develop a communications strategy; and
- Develop a communications capacity-building strategy.

Promotion and Partner Support

- Lead promotion of national projects and the global Project through dedicated websites, promotional documents, events and media activities
- Work with raw information materials sent by Project Partners to create innovative and engaging communications materials
- Create images and messages that are lively, interesting and engaging for communities, stakeholders and potential sponsors
- Document and make accessible news and/or updates regarding developments and experiences of the Project
- Document and make accessible the target outputs via the CHM, print-outs, newsletters, blogs, press releases, web-based social networks, peer-reviewed journals and other media
- Produce periodic activity reports and/or presentations for the attention of partner organizations and local/regional authorities
- Draft and contribute to progress reports and papers
- Build and cultivate media interest in partner stories from third parties
- Develop partnerships and networks to promote the Project activities
- Assist in leveraging additional funds from external sources
- Assist Project Partners to develop and create new tools/mechanisms, other than the CHM (such as theatre productions, roadshows), to communicate Project activities and achievements in areas where web-based media may not be an easily accessible source of information
- Consult regularly with Project Partners to gather details and results of ongoing project activities
- Liaise regularly with Project Partners and other stakeholders to develop project communication materials, engage communities and share project information
- Provide or arrange for a high degree of communications support and training for Project Partners
- Develop the role of participatory video, video-documenting at least a quarter of all projects (ten projects)

The Clearing House Mechanism (CHM)

- Develop the structure and establish the CHM, an interactive web-based information sharing platform, including design and use-ability in collaboration other key Partner organizations including Blue Ventures
- Assist in defining internal communications architecture, including various audiences, backgrounds, information needs, messages, media, forums, channels, techniques and tools
- Liaise with MbZSCF regarding permissions for use of the existing MbZSCF web-systems for the latter's CHM
- Work closely with MbZSCF to ensure functional requirements are integrated into portal application development
- Develop the process of planning, prioritization, development and implementation of new content, to existing and new audiences
- Manage and monitor the CHM regularly
- Develop relevant content to generate global interest in national project activities and the global Project, including meeting fixed targets of at least 2 features/stories/videos per project per year;
- Solicit third party content and contributions to the CHM through CMS programmes external to the GEF Project, as well as other partners, and setting targets thereof

- Ensure the CHM remains a legacy of the Project after completion of Project implementation (legacy planning).
- Integrate participatory data collection through mobile applications e.g. Open Data Kit (ODK) to:
    - Build data collection forms/surveys
    - Collect data on a mobile device
    - Transmit collected data to a server
    - Compile the collected data on a server to enable extraction of useful data in relevant formats, based on CMS dugong survey
- Provide ongoing development of relations with key stakeholders and local communities
- Ensure that adequate training is provided to all partners for contributions to the CHM website.

Reporting structure

The Communications Manager will report to the PC on a day-to -day basis and submit communication reports to the PC within set deadlines.

Qualifications and Competencies

Education

- Postgraduate degree (Masters or PhD) in communications, public relations or marketing

Required Skills

- Sensitive to different cultural backgrounds
- Aware of and sensitive to government and civil society interactions/politics
- Able to build strong relationships at all levels with conservation partners, media contacts, potential project sponsors and other stakeholders
- Able to foster an environment of creativity and professional growth
- Committed to working collegially with staff, conservation groups, and governmental organisations in a professional and diplomatic manner
- Attention to detail, highly organized and proactive
- Excellent presentation, oral, written, mass, interpersonal and networking communication skills
- Influential high level media and public relations skills
- Demonstrable sound work ethics
- Flexible to travel as and when required
- Strong optimism and passion for conservation
- Familiarity with dugong biology, seagrass ecosystems advantageous
- Knowledge of the Indo-Pacific region advantageous

Experience

- Minimum 5 years' experience in leading, developing and managing communications programmes, ideally for conservation projects
- Strong background in communications, social media, public relations and marketing
- Background in environmental/natural resource management, conservation, or a related field
- Extensive experience in developing web-based communications portals for conservation projects
- Extensive experience in collecting, manipulating, analysing/interpreting and aggregating data in useful and interesting formats for the audience
- Extensive knowledge of fundraising and biodiversity funding opportunities

- Experience in cross-cultural communications

Languages

- Fluency in English (oral and written) a strict requirement
- Knowledge of any of the other languages in the project target region beneficial.

Terms of Reference
Job Description

Project: Enhancing the Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins
(Short title: The Dugong and Seagrass Conservation Project)

Post title: Project Associate…….……

Duration: 1 year..……..…….….…..

Date Required: 1st March 2014……..……...

Duty station: Abu Dhabi, United Arab Emirates…….…….……..…

Counterpart:…….……...

Background

The Dugong and Seagrass Conservation Project will use GEF funding to enhance the conservation of the dugong (*Dugong dugon*) and its associated seagrass ecosystems in eight countries in the Indo-Pacific region, namely Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu.

The Project Associate will work on a part time basis with the Project Executing Agency (Mohamed bin Zayed Species Conservation Fund, MbZSCF) in Abu Dhabi, United Arab Emirates, as part of the Project Coordination Team (PCT). The Project Associate will provide administrative support to the Project Coordinator (PC) who oversees the coordination, progress and reporting of the 32 project partners implementing 40 diverse projects in eight countries. The post is for 12 months.

The Project Associate will support the PC to develop systems to ensure projects are implemented efficiently, successfully, and within the agreed terms of the project.

Expected Outcomes and Deliverables

The Project Associate main duties and responsibilities will be to

- Assist with the daily duties of the PC
- Work closely with the PCT
- Actively promote the GEF Dugong and Seagrass Conservation Project and its components in all relevant media and fora
- Perform any other duty relevant to the assignment
- Act as point of contact of the Project for the Project Coordination Team (PCT) and external contacts

The Project Associate will provide administrative and financial support to:

- Assist in the development of systems to streamline administrative, financial and technical requirements and support efficient project implementation, timely and consistent technical and financial reporting to the PCT from all Project Partners and sub-contractors, including the 40 projects
- Liaise and coordinate with the Regional Manager, Project Partners and National Facilitators

- Organise field visits, missions and conferences; and participate if applicable

Reporting structure

The Project Associate will report to the PC on a day-to -day basis and submit draft reports to the PC within set deadlines.

Qualifications and Competencies

Education

- Postgraduate degree (Masters degree or equivalent) in environmental sciences, communications, international relations, public administration, political science, business administration or related field.
- A first-level university degree in combination with qualifying experience may be accepted in lieu of the advanced university degree.

Required Skills

- Sensitive to different cultural backgrounds
- Aware of and sensitive to government and civil society interactions/politics
- Able to prioritize, plan and coordinate work remotely and with various partners
- Good oral, written and interpersonal communication skills
- Committed and able to work efficiently
- Critical and creative thinking
- Practical and performance driven
- Flexibility to travel as and when required
- Demonstrable sound work ethics
- Able to work both independently and as part of a team
- Fully Computer literate, including MS Office Applications
- Knowledge of dugong biology and seagrass ecosystems advantageous
- Familiarity with the procedures of international organizations advantageous

Experience

- Minimum 2 years experience in environmental management, communication, international relations, public administration, political science, business administration or a related field
- Experience of cross-cultural communications

Languages

- Fluency in English (oral and written) a strict requirement
- Knowledge of any of the other languages in the project target region beneficial.

Terms of Reference
Job Description

Project: Enhancing the Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs across the Indian and Pacific Ocean Basins
(Short title: Dugong and Seagrass Conservation Project)

Post title: National Facilitator (Part-Time)……..……

Duration: 4 years……..…….….…..

Date Required: 1st March 2014……..……...

Duty station: ……..…….…….

Counterpart:…….

Background

The Dugong and Seagrass Conservation Project will use GEF funding to enhance the conservation of the dugong (Dugong dugon) and its associated seagrass ecosystems in eight countries in the Indo-Pacific region, namely Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu.

Each Country Partner requires a National Facilitator to support and execute the decisions and functions of the National Facilitating Committee (NFC) in providing leadership and guidance to the in-country Project Partners.

The National Facilitator will be a senior specialist with experience in project implementation and an active history in the project country. In some cases, the National Facilitator may be a public official, whose time will be considered part of the national in-kind contribution from the partner institution.

Expected Outcomes and Deliverables

The National Facilitators main duties and responsibilities will be to:

- Build national level capacity in dugong and seagrass conservation
- Facilitate, coordinate and support Project Partners to implement project activities efficiently and effectively
- Coordinate national level meetings
- Function as Secretary to the NFC
- Deliver timely meeting reports in the required format
- Liaise regularly with the PCT on progress and requirements of Field Projects and the NFC
- Assist the PCT to coordinate technical and other support to Project Partners as necessary
- Liaise with Project Partners, community, and government representatives
- Work and communicate regularly with Project Partners and NFCs to resolve any Project issues
- Assist Project Partners to provide timely delivery of financial, technical and other reports
- Prepare monthly reports and presentations on the status of the Field Projects
- Facilitate dialogue between Project Partners and between Project Countries
- Receive NFC budgets and disburse as directed by the NFC
- Advocate conservation of dugongs and their seagrass habitats at local, national and international levels, including policy reviews and recommendations

- Perform any other duty relevant to the assignment

Reporting structure

The National Facilitator will report on a day to day basis to the PCT and the NFC. The National Facilitator will also report NFC decisions, directions and meeting minutes to the PCT.

Qualifications and Competencies

Education

- Advanced university degree (Masters or Bachelor degree) with qualifying experience in environmental economics, environmental/natural resource management, conservation or related field.

Required Skills

- Negotiation and problem-solving
- Analytical
- Networking
- Able to manage expectations in a diplomatic and efficient manner
- Able to establish priorities, plan and coordinate own workload as well as others'
- Excellent oral, written, mass and interpersonal communication skills
- Knowledge of financial management principles and budget management
- Fully computer literate, including standard PC software (MS Packages, Internet browsers)
- Knowledge of dugong biology and seagrass ecosystems would be an advantage

Experience

- At least 2 years of relevant experience in marine conservation, including project management and financial management: budget planning, accounting, disbursement
- Knowledge and experience with national and international natural resources projects
- Prior UNEP National Execution experience, UNEP/GEF project experience and knowledge of UNEP and GEF procedures and guidelines advantageous
- Experience of projects in biodiversity conservation, sustainable land management and/or climate change adaptation or mitigation advantageous

Languages

- Fluency in English (oral and written)
- Fluency in local languages (oral and written)

Terms of Reference
Job Description

Project: Enhancing the Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins (Short title: Dugong and Seagrass Conservation Project)

Post title: National Facilitating Committee……

Duration: 4 years……

Date Required: 1st March 2014……

Background

The Dugong and Seagrass Conservation Project will use GEF funding to enhance the conservation of the dugong (*Dugong dugon*) and its associated seagrass ecosystems in eight countries in the Indo-Pacific region, namely Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu

The National Facilitating Committee (NFC) will be established during the Inception Phase of the Project to lead and provide guidance to the in-country Project Partners and report progress to the Project Coordination Team (PCT) based in Abu Dhabi. The NFC will have three primary objectives:

The NFC will consist of:
The National Dugong Focal Point (DFP)
One representative from each Project Partner
The National Facilitator

The NFC will be chaired by the DFP.

Expected Outcomes and Deliverables

The NFCs main duties and responsibilities will be to:
Advise on country-specific Project activities as outlined in Project Partner proposals
Meet and review Field Project progress
Communicate progress and key issues to the PCT and DFP
Lead and provide guidance to Project Partners
Oversee the development and implementation of national project activities
Advocate dugong and seagrass conservation at the local and national level
Conduct policy reviews and make recommendations to incorporate conservation priorities
Advocate conservation of dugongs and their seagrass habitats at local, national and international levels
Perform any other duty relevant to the assignment.

Reporting structure

The NFC will hold regular communications with the PCT and, where appropriate, with the Executive Project Steering Committee (EPSC).

Terms of Reference
Job Description

Project: Enhancing the Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins
(Short title: The Dugong and Seagrass Conservation Project)

Post title: Executive Project Steering Committee…….……

Duration: 4 years……

Date Required: 1st March 2014……..

Background

The Dugong and Seagrass Conservation Project will use GEF funding to enhance the conservation of the dugong (*Dugong dugon*) and its associated seagrass ecosystems in eight countries in the Indo-Pacific region, namely Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu.

The Executive Project Steering Committee (EPSC) will be established during the Inception Phase of the Project to provide guidance to the Project Coordination Team (PCT) on the implementation of the Project. A Chair will be elected by the EPSC at the first meeting.

The EPSC will consist of:

1. The CMS Dugong MoU Focal Points (DFPs), who are also the Chairs of the National Facilitating Committees (NFCs) of each Project Country
2. The UNEP/GEF Task Manager
3. Key members of the Dugong Technical Group (DTG)
4. The CMS Dugong MoU Programme Officer
5. Representative from the UNEP GEF Blue Forests PSC (as appropriate)

The EPSC will receive secretariat support from the PCT.

Expected Outcomes and Deliverables:

The EPSCs main duties and responsibilities will be to:

- Review project progress and impacts as against the agreed project M&E Plan, workplan and budget;
- Review and approve annual worksplans and budgets
- Maintain focus on the Project's overall goal and objective
- Advise the PCT regarding Project progress, direction, concerns and policy decisions
- Meet at least annually, but convene *ad-hoc* meetings at the request of the Project Coordinator and/or the majority of the Committee members
- Review and assess the risks of failure and advise of action required
- Facilitate in securing funding, acting as a liaison point for potential sponsors/donors
- Participate in annual committee meetings during the life of the Project
- Advise on alignment with other relevant international projects

- Discuss, as appropriate, alignment with UNEP GEF Blue Forests project (with respect to strategy on research questions, approaches, science and research and development of incentive mechanisms)
-

Reporting structure

The EPSC holds regular communications with UNEP through the UNEP/GEF Task Manager and with the Executing Agency through the Director General of MbZSCF as well as via the PCTs function of EPSC Secretary.

GEF Dugong and Seagrass Conservation Project: The Dugong Focal Points' Role

The CMS Dugong MoU Focal Points (DFPs) play a crucial role as the link between the CMS Dugong MoU Secretariat and the appropriate institutions in their country, ensuring an efficient and effective two-way flow of information (see DFP Terms of Reference below).

The DFP's role in the GEF Dugong and Seagrass Project will be to:

- Chair the National Facilitating Committee (NFC)
- Participate as a member of the Executive Project Steering Committee (EPSC)
- Liaise with the Project Coordination Team (PCT), where appropriate
- Share information relevant to the Project with the NFC, the PCT and the EPSC
- Ensure provision of support to national Project Partners

The standard Terms of Reference for a DFP are outlined below.

Terms of Reference for Signatory State Focal Points

of the *Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range (Dugong MOU)*

Introduction

Recalling Point 8 of the Dugong MOU, each Signatory State has agreed to: *"Designate a competent national authority to serve as a focal point for communication among Signatory States and for implementing activities under this Memorandum of Understanding, and communicate the complete contact details of this authority (and any changes thereto) to the Secretariat."*

These Terms of Reference have been developed to provide advice for current and future Focal Points (FPs) of the Dugong MOU. The document sets out the function of Focal Points, as well as providing information about the role of the Secretariat. The Terms of Reference are designed to promote efficient and effective contributions by Focal Points to the operation of the MOU, and also to facilitate smooth and timely interactions between Signatories through their Focal Points and the Secretariat.

Language

The working language of the UNEP/CMS Dugong MOU is English, and therefore it is necessary that the Focal Point is able to communicate in English.

Role of the Secretariat

The Dugong MOU Secretariat operates from the CMS Office in Abu Dhabi, United Arab Emirates, hosted by the Environment Agency - Abu Dhabi, on behalf of the Government of the United Arab Emirates. The Programme Officer for Dugongs leads the Secretariat, which comprises a small team of support staff. The Secretariat acts as the liaison for all matters relating to the UNEP/CMS Dugong MOU, and is the central coordinating body for all MOU-related activities.

A key aim of the Secretariat is to develop a mutually beneficial relationship between FPs and the Secretariat. In support of this goal, it commits to:

- Providing regular updates to FPs on developments within the Dugong MOU;
- Forwarding CMS Notifications considered of particular interest to Signatories and/or Range States of the Dugong MOU (e.g. upcoming workshops, calls for CMS grant applications, etc.);
- Circulating and/or publishing news stories or other relevant items (e.g. national workshops, training courses, new publications, etc.) submitted by FPs on the Dugong MOU website;

- Acting as a liaison for Signatories to assist communication, encourage reporting and facilitate activities between and among Signatories and other Range States and interested organisations;
- Providing technical advice or assisting in locating an appropriate source of specialist expertise;
- Listening to the views of FPs and responding or sharing such information, as appropriate;
- Being available, on request, to offer advice and clarification on any aspect of the Dugong MOU;
- Arranging Signatory State Meetings, and other meetings or workshops on an ad-hoc basis;
- Compiling and making available to all Signatories and other Range States the national and international progress reports provided for in Paragraph 17 of the MOU.

Functions of Focal Points

Focal Points play a crucial role by acting as a link between the Secretariat and the responsible institutions in the country that they represent, by ensuring and maintaining a timely constant two-way flow of information. Ideally, the appointed FP should be based within the relevant Ministry or responsible agency dealing with nature conservation in their country. The following non-exhaustive list details some appropriate functions for the FP.

Ongoing functions:

1. Arrange formal confirmation of the appointment by obtaining and submitting to the Secretariat an official communication from the Minister or appropriately authorized Government official, including full contact details. A Focal Point Designation Form can be obtained from the Secretariat on request. Any change of FP or contact details should be communicated to the Secretariat as soon as possible after it takes place;

2. Inform the Secretariat as soon as possible about any changes in the key personnel responsible for specific matters relating to dugongs and their habitats, so that the Secretariat can ensure that all relevant communications are targeted appropriately;

3. Consider establishing a national dugong committee, network or an alternative means of regularly exchanging information to bring together representatives of relevant Government Ministries, Departments, Agencies, and other relevant stakeholders, including research and academic institutions, non-governmental organizations and the private sector (such as tourism authorities). This will help to promote synergies and strengthen national liaison as well as avoid unnecessary duplication of efforts in terms of dugong conservation and the implementation of the Dugong MOU.

4. Check the CMS (www.cms.int) and the Dugong MOU (http://www.cms.int/species/dugong/) websites regularly to keep informed of developments and updates, and share with the Secretariat key national achievements and actions towards the implementation of the Dugong MOU, as well as any other activities related to the conservation of dugongs and their habitats

5. Transmit and share information relating to the Dugong MOU as widely as possible within the Signatory country, via an established network of contacts (see paragraph 3 – above);

6. Respond to requests for information from the Secretariat in a timely manner, including by seeking and coordinating contributions from relevant specialists within the established network of contacts.

Functions related to Meetings and Workshops:

7. Work to ensure that the country is represented at official meetings of the Dugong MOU, such as the Signatory State Meetings (SS) or workshops, by: coordinating in a timely manner the nomination of the delegation; securing and submitting credentials; and, applying for funding, if applicable and needed;

8. Hold consultations with relevant institutions and individuals in advance of meetings to discuss the Provisional Agenda and any other documents which may be circulated by the Secretariat in advance;

9. Coordinate the country's inputs for meetings, which may include developing a policy stance, drafting implementation reports including information on dugong conservation and management actions, results of scientific research, threats encountered, etc.;

10. Upon request, give presentations at meetings describing recent national activities at the strategic, tactical and/or practical levels, and/or other relevant updates;

11. Finalise a National Report at least 90 days prior to a Signatory State meeting to enable the Secretariat to prepare an overall synthesis of the implementation progress of the Dugong MOU;

12. Ensure that any proposed draft Resolutions or amendments to existing MOU documents are submitted to the Secretariat at least 60 days prior to a Signatory State meeting. FPs are expected to consult widely with interested parties, including via their established network of contacts (see paragraph 3 – above), when preparing or commenting on such documents;

13. Where possible, hold internal discussions prior to a Signatory State meeting, *inter alia*, in order to explore possible sources of funding that their Government or outside organisations may be able to offer for the MOU;

14. Follow-up on requests made at the Signatory State meeting (e.g. commenting on meeting minutes, promoting revision of meeting reports, provision of inputs on proposed Resolutions, etc.) within the designated time-frame;

15. Ensure that the outcomes of meetings are shared with your national network, and discuss and initiate the implementation at national level of any decisions taken, if appropriate;

16. Initiate the internal process required to secure any financial or in-kind contributions volunteered at meetings;

17. Continue dialogue with regional and/or other partners after meetings with a view to implementing any projects and collaborative activities agreed upon during, for example, regional discussions;

18. Any other relevant function that the Signatory State may authorize the FP to undertake.

GEF Dugong and Seagrass Conservation Project: The Dugong Technical Group

The Dugong Technical Group (DTG) was formally endorsed at the Second Signatory State Meeting of the Dugong MoU in February, 2013 in Manila, Philippines. The role of the DTG is to provide technical and scientific support for the effective implementation of the Dugong MoU Conservation and Management Plan (CMP) (see DTG Terms of Reference below).

The DTG's role in the GEF Dugong and Seagrass Project will be to provide expertise, for example in planning, implementing, troubleshooting, sourcing tools, generating ideas and imparting knowledge of their subject areas.

Selected members may also participate in the Project as members of the Executive Project Steering Committee (EPSC).

The Terms of Reference for the DTG are outlined below.

Terms of Reference for the Dugong Technical Group (DTG) to the Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range (Dugong MOU)

Preamble

These Terms of Reference have been established to guide the appointment, engagement and remuneration of specialist advisors to the Dugong MOU.

Purpose

1. The purpose of the Dugong Technical Group (DTG) is to serve and assist the Signatory States and the Dugong MOU Secretariat in the effective implementation of the Dugong MOU and the associated Conservation and Management Plan (CMP) through the provision of expert advice on request.

2. The Secretariat of the Dugong MOU will serve to receive and transmit requests from the Signatories for advice from the DTG and communicate responses of the DTG to the Signatories.

Role of the DTG

3. The main tasks of the DTG will be to:

   a) Provide expert advice and information, and make recommendations on the implementation of the Dugong MOU to the Signatory States and the Secretariat, as requested;
   b) Analyse, as necessary, scientific data and status assessments and provide recommendations on actions needed;
   c) Provide comments on any proposals to amend the MOU text or CMS which have a technical content;
   d) Carry out any other tasks referred to it through the Secretariat by the Signatory State Meeting.

4. The Secretariat may request the DTG to give priority to certain activities and tasks, which may include, but are not limited to:

a) Evaluating and providing advice on any conservation and management programme proposed or implemented within Range States;
b) Assisting the Secretariat in the development of projects and initiatives so that regional, sub-regional and local concerns and interests are taken into account;
c) Providing advice to the meetings of Signatory States on the adoption of additional conservation and management actions and on revisions to the CMP;
d) Evaluating, at the request of the Secretariat, the efficiency of different measures proposed or implemented to reduce the capture and incidental mortality of dugongs in fishing operations;
e) Promoting the use of standardised dugong research techniques, monitoring programmes, data collection, data storage and reporting;
f) Reviewing scientific reports, annual reports of the Signatory and Range States, and other appropriate documents to assist the Secretariat in assessing progress in the implementation of the MOU and its associated CMP;
g) Bringing to the attention of the Secretariat significant new information relating to the conservation and management of dugongs and their habitats;
h) Seeking input from other individuals and bodies, as appropriate, in responding to requests for advice; and
i) Making recommendations regarding other fields of expertise needed within the Secretariat to assist with its work.

Membership

5. Members of the DTG serve in their capacity as specialist individuals rather than as representatives of Governments or organisations with which they also may be affiliated.

Meetings and Remuneration

6. Where possible, the provision of advice will be sought on a pro-bono or in-kind basis.

7. Where possible, advice will be sought through electronic forms of communication.

8. To minimise costs, the DTG will conduct as many of its activities as possible through electronic forms of communication. Meetings of the DTG will be held periodically, where possible and as funds permit, for example prior to the regular meetings of Signatory States or other key meetings and workshops.

9. Members of the DTG may be invited to participate in Signatory State meetings, and may also be requested to participate in the meetings of related and associated projects and organisations that the Secretariat deems relevant to the work of the MOU.

10. Where a meeting of the DTG is considered essential, for example prior to the regular meetings of Signatory States or other key meetings and workshops, the travel (economy class) and accommodation for members attending will be arranged and provided by the CMS Secretariat.

11. The cost of supporting DTG members' work will be borne by the Dugong MOU Secretariat and will be reported at the following Signatory State Meeting.

Size and Composition

12. The size of the DTG may fluctuate and the composition of the DTG will strike a balance among the areas of expertise set forth in the Memorandum of Understanding, which include dugong

biology and ecology, marine resource management, fisheries bycatch mitigation, socio-economics, sustainable development and other relevant disciplines. Additional experts may be invited to participate on an *ad hoc* basis, at the request of the Secretariat.

13. Members of DTG will have widely recognized experience and expertise in one or more aspects of dugong research, conservation and/or management of species and their habitats; and experience of working with relevant experts at local, national and international levels. Members of the DTG will also have full access to electronic mail and web-based information and communication systems, through which the intercessional work of the DTG will take place.

14. Any additional expertise identified by the Signatories will be sought through a "Call for expressions of interest" process organised by the Secretariat. The Secretariat will report any appointments to the Signatories.

Conditions of Membership

15. Membership of the DTG is voluntary.

16. Membership of the DTG is for three years and may be ended at any time by either party by written notice. Members may be re-appointed by mutual consent.

17. Membership of the DTG will not preclude an individual from being recruited as a paid consultant. These tasks will be of a substantial nature outside of the remit of the general Terms of Reference for DTG members. Selection of, and remuneration for, consultants will be in line with current United Nations established practice.

Appendix 12: Co-financing Commitment Letters from Project Partners

See attached PDF Files:
App 12_1 Co-finance_Project Partners_ID_MG - 1 of 3.pdf
App 12_1 Co-finance_Project Partners_MY_MZ - 2 of 3.pdf
App 12_1 Co-finance_Project Partners_LK_TL_VU - 3 of 3.pdf
App 12_2 Project Co-finance Letters.pdf
MbZSCF_Confirmation Letter of currency conversion

Appendix 13: Endorsement Letters of GEF National Focal Points

See attached PDF File: App 13_Letters of Endorsement.pdf

Appendix 14: Draft Procurement Plan

UNEP/GEF Dugong and Seagrass Conservation Project
Project Procurement Plan

Project title and number: Enhancing The Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins (Short Title: The Dugong and Seagrass Conservation Project)
Project number: - GFL/4930
Project executing partner: Mohammed bin Zayed Species Conservation Fund

UNEP Budget Line		List of Goods and Services required (to be purchased with GEF funds)	Budget	Year {Note 1}	Brief description of anticipated procurement process {Note 2}
1200	**Consultants**				
1201	Technical support	Technical advisory services required for development of full project proposals during Inception phase and advice on specific sub-projects throughout the life of the project.	85,000	1-4	Procurement effected by MbZSCF according to existing procurement guidelines.
2200	**Sub-contracts (MoUs/LOAs for cooperating organisations)**				
2299	CHM subcontract	TOTAL Value of contract: 126,000 USD 1. Construction of Clearing House Mechanism (CHM) 2. Maintenance and development of CHM 3. Associated expenses: - Video and filming - Graphic design - Printing	 18,000 $18,000 40,000 30,000 20,000 TOTAL **126,000**	 1 1-4 1-4 1-4 1-4	Procured according to MbZSCF established procurement procedures Programme defined in collaboration with MbZSCF and CMS Dugong MoU Secretariat.
4200	**Non-expendable equipment**				
4299	office equipment, computers & software	Essential office equipment, computers and software for the MbZSCF Project Coordinator and support staff	14,900	1-4	Procurement effected by the MbZSCF according to existing procurement guidelines (public tendering) – inventory maintained as project property and handed over to MbZSCF upon project completion
4300	**Premises rent**				
4399	Office Rental and Operation Costs (Asia)	Rental of office space for support staff based in Asia	24,000	1-4	Procurement effected by the MbZSCF according to existing

					procurement guidelines
	GRAND TOTAL		**-**		

Note 1 - Year when goods/services will be procured
Note 2 - Based on your organisation's procurement procedures, and in compliance with UNEP rules and procedures, briefly explain how the service provider/consultant/vendor will be selected

Appendix 15: Tracking Tools

See attached Excel Files in folder Appendix 15 Tracking Tools. Some project sites will be identified during the inception phase; as it is not possible to complete Tracking Tools prior to site selection, thoseTracking Tools will be completed during inception phase. Summary of presence/absence and status of / plan for completing GEF Tracking Tools for each project site is provided below.

Country	Project Ref	Site With PA	Reference to Tracking Tools	Site Outside of PA	Reference to Tracking Tools
Indonesia	ID1	No	N/A	Yes	Appendix 15_TT_ID.xlsx *To be completed during inception phase*
	ID2	No	N/A		
	ID3	Yes	Appendix 15_TT_ID.xlsx		
	ID4	No	N/A		
Madagascar	MG1	No	N/A	Yes	Appendix 15_TT_MG.xlsx *To be completed during inception phase*
	MG2	No	Appendix 15_TT_MG.xlsx *To be completed during inception phase*		
	MG3	Yes	Appendix 15_TT_MG.xlsx *To be completed during inception phase*		
	MG4	Yes	Appendix 15_TT_MG.xlsx *To be completed during inception phase*		
	MG5	No	N/A		
	MG6	No	Appendix 15_TT_MG.xlsx *To be completed during inception phase*		
Malaysia	MY1	Yes	Appendix 15_TT_MY.xlsx *To be completed during inception phase*	Yes	Appendix 15_TT_MY.xlsx *To be completed during inception phase*
	MY2	No	N/A		
	MY3	No	N/A		
	MY4	No	N/A		
	MY5	No	N/A		
Mozambique	MZ1	No	N/A	Yes	Appendix 15_TT_MZ.xlsx *To be completed during inception phase*
	MZ2	No	N/A		
	MZ3	No	N/A		
	MZ4	Yes	Appendix 15_TT_MZ.xlsx *To be completed during inception phase*		
	MZ5	No	N/A		
	MZ6	No	N/A		
Solomon Islands	SB1	No	N/A	Yes	Appendix 15_TT_SB.xlsx *To be completed during inception phase*
	SB2	No	N/A		
	SB3	No	N/A		
	SB4	No	N/A		
	SB5	No	N/A		
La nk	LK1	No	N/A	Yes	Appendix 15_TT_LK.xlsx *To be completed during inception phase*
	LKS	No	N/A		

	LK3	Yes	Appendix 15_TT_LK.xlsx *To be completed during inception phase*		
	LK4	Yes	Appendix 15_TT_LK.xlsx *To be completed during inception phase*		
	LK5	No	N/A		
	LK6	No	N/A		
	LK7	No	N/A		
	LK8	No	N/A		
Timor Leste	TL1	No	N/A	Yes	Appendix 15_TT_TL.xlsx *To be completed during inception phase*
	TL2	No	N/A		
	TL3	No	N/A		
	TL4	No	N/A		
Vanuatu	VU1	No	N/A	Yes	Appendix 15_TT_VU.xlsx *To be completed during inception phase*
	VU2	No	N/A		

Country	Objective 1: Catalyzing Sustainability of Protected Area Systems Section I	Objective 1: SECTION II: Management Effectiveness Tracking Tool for Protected Areas	Objective: 1: SECTION III: Financial Sustainability Scorecard	Objective 2: Mainstreaming Biodiversity Conservation in Production Landscapes/Seascapes and Sectors	Filename
INDONESIA	ID3 Project: Community based conservation and management of dugong and seagrass habitat Bintan Island, Riau Archipelago Province, Indonesia **Kawasan Konservasi Padang Lamun Kabupaten Bintan (Seagrass Conservation Area of Bintan District)** **Local Marine PA** 3,000 ha seagrass bed	Kawasan Konservasi Padang Lamun Kabupaten Bintan 3,000 ha Established 03/06/10 Seagrass and dugong conservations **METT completed for Kawasan (13-15/03/13)** **Score: 42**	Yes for national and Kawasan K. (budgets) Overall score (national Protected Area system): 102/ 220	ID 3 Partial – 05/04/13, *to be completed during inception phase*. Production sectors targeted: fisheries; tourism; environment Landscape/ seascape Area covered (start; MT; EOP) by project: Directly: (figures. for start only): 3,000 ha Indirectly (figures for start only): 1,000 ha PES: Carbon Sink, Sediment Trap, Water quality purification, Coastal protection, Nursery and feeding ground, Fisheries resources, Biodiversity protection – 3,000 ha Management practices: Management of Dugong and Seagrass Habitat – 3,000ha Market transformation: Sustainable fisheries (markets) Mentions policy/ legislation/ regulation/ monitoring, varies by sector (fisheries, forestry, tourism, environment).	Appendix 15_TT_ID.xlsx

	MG3 Project: Using incentivized Environmental Stewardship to conserve dugongs and seagrass habitat at an identified national hotspot **Nosy Hara Marine Park**	Nosy Hara Marine Park 183,100 ha Established 15/10/07 marine BD **METT (08/03/13) score 48**	No data: to be completed during inception phase	*To be completed during inception phase.* Production sectors targeted: agriculture; fisheries; tourism; environment. Landscape/ seascape Area covered by project – directly, all (start; MT; EOP) – start only: 195,796 ha PES: stewardship of dugongs and seagrass. Market transformation: sustainably caught fish market. Mentioned policy/ legislation and monitoring, but no regulations enforced and varies by sector /	Appendix 15_TT_MG.xlsx
MADAGASCAR	MG4 Integrated approaches to enhance the conservation dugongs and seagrass ecosystems in Sahamalaza areas **Sahamalaza - Ile Radama Coastal and Marine Biosphere (MAB) Reserve/ National Park**	Sahamalaza - Ile Radama Coastal and Marine Biosphere Reserve and National Park 18,492 ha Established 19/07/07 Conservation (endemic species, intact marine ecosystems, failure of conservation approach initiated in 1990s **METT (no date): 52**	No data: to be completed during inception phase		
	MG6 Dugong and seagrass conservation in North West Madagascar. MG2 Fisher knowledge, awareness and behaviour change for the conservation of dugongs and seagrass using the Mihari network of Locally Managed Marine Areas in Madagascar **Ankarea LMMA**	Ankarea LMMA 173,690 ha Established December 2010 Conservation, sustainable use of natural resources **METT (no date) 26**	No data: to be completed during inception phase		

	MG6 Dugong and seagrass conservation in North West Madagascar. MG2 Fisher knowledge, awareness and behaviour change for the conservation of dugongs and seagrass using the Mihari network of Locally Managed Marine Areas in Madagascar **Ankivonjy LMMA**	Ankivonjy LMMA 196,695 ha Established December 2010 Conservation, sustainable use of natural resources **METT (no date) 26**	No data: to be completed during inception phase		
MALAYSIA	MY1 Project: Operationalizing the Malaysian National Plan of Action for Dugong in Pulau Sibu and Pulau Tinggi, Johor, Peninsular Malaysia (National Parks): **Pulau Sibu Marine Park** 4,260 ha **Pulau Tinggi Marine Park** 10,180 ha	Pulau Sibu Marine Park 4260 ha Established 20/10/94 Coral Reefs, Fisheries, Dugong, Sea Turtles and Seagrasses **METT (08/05/13): 69** Pulau Tinggi Marine Park 10,180 ha Established 20/10/94 Coral Reefs, Fisheries, Dugong, Sea Turtles and Seagrasses **METT (08/05/13): 69**	Partially completed *Baselines and targets to be established for all sites during Inception Phase* No score: to be completed during inception phase	*To be completed during inception phase* Production sectors targeted: Agriculture, Fisheries, Tourism, Environmental Mentions biodiversity considerations in policy/ legislation (varies by sector).	Appendix 15_TT_MY.xlsx

MOZAMBIQUE	MZ4 The Dugong Emergency Protection Project **Bazaruto Archipelago National Park** 143,000 ha	143,000 ha, shallow sandy bay and seagrass meadow Endangered Species protection (including Dugongs and marine turtles **METT (27/03/13): 57**	To be completed during inception phase	*To be completed during inception phase* Production sectors targeted: Fisheries, Tourism, Environment Management practices: LMMAs Mentions biodiversity considerations in Policy/Legislation/Regulation, but not enforcement or monitoring.	Appendix 15_TT_MZ.xlsx
SRI LANKA	LK3 Project: Contributions to the long term conservation of seagrasses and dugongs in Sri Lanka **Wilpattu National Park** and Ramsar site	Wilpattu National Park Buffer zone (Western boundary coast) 131,667 ha. Established 1938 Biodiversity, Water catchment, Unique aquatic ecosystem **METT score: 54 (27/05/13)**	Partially completed *Baselines and targets to be established for all sites during Inception Phase*	To be completed at inception phase Production sectors targeted: fisheries; tourism Total area of Marine Parks: 162,336 ha Landscape/ seascape Area covered (start; MT; EOP) by project: Directly: start only: (33669 ha;); indirectly: start only: (38669 – to be verified) Biodiversity conservation mentioned policy/ legislation and regulations enforced and some monitoring (varies by sector: agriculture, fisheries, forestry; tourism, wildlife).	Appendix 15_TT_LK.xlsx
SRI LANKA	LK4 Project: Development of a multiple-community-based marine resource management plan in the Gulf of Mannar **Bar Reef Sanctuary**	Bar Reef Sanctuary 30669 ha Conservation of coral reef and associated marine fauna **METT score 25 (no date)**	Partially completed *Baselines and targets to be established for all sites during Inception Phase*		

Appendix 16: Legislation Relating to Dugong Conservation in the Project Countries

Key legislation	Content
Indonesia	
National Conservation, Strategy and Action Plan for Dugong in Indonesia (2009, NCSAPDI)	A conservation strategy which will be a viable basis for the long term conservation and management of dugong population in Indonesia. Recommendations of the NCSAPDI which align with the outcomes of this GEF Project include mid-term community based conservation projects (Project 1), ground surveys to identify dugong locations (Project 2) and education and awareness programmes (Project 2).
Government Regulation No. 7 of 1999	Protection of Indonesian Flora and Fauna. The only legislation which protects Indonesian dugongs and seagrasses directly
Republic of Indonesia Act No. 5 of 1990	Conservation of living resources and their ecosystems
Law No. 26/2008	Spatial planning
Republic of Indonesia Act No. 5 of 1994	Ratification of the United Nations Convention on Biological Diversity
Republic of Indonesia Act No. 23 of 1997	Management of the living environment
Republic of Indonesia Act No. 27 of 2007	Management of coastal zones and small islands, including Integrated Coastal Zone Management
Madagascar	
Law No. 90-033 of 1990 (modified by the Law No. 97-012 of 1997 and No. 2004-015 of 2004)	National Environment Charter and the National Environmental Policy. Gave legal recognition to the 15-year three-phase National Environmental Action Plan (NEAP). Policies include Integrated Coastal Zone Management (ICZM)
Decree No 2003-984 of 2003	National Strategy for Sustainable Management of Biodiversity
Decree No. 2746 of 1995	Ratification of the Convention on Biological Diversity
Decree No. 99-954 of 1994 (modified by the Decree No. 2004-167 of 2004)	Mise En Compatibilité des Investissements avec l'Environnement (MECIE) Allows the creation of environmental cells in each Ministry Departments and granting the integration of environment dimension in each sector.
Malaysia	
Constitution of Malaysia	Empowers those at the Federal and State levels to establish laws regarding wildlife resources
Fisheries Act 1985	Part VI Section 27 – aquatic mammals or turtles in Malaysian fisheries waters. Applies to Malaysia's 200-nautical mile Exclusive Economic Zone (EEZ) Part IX, Act 4(1) and (2) – allows for the establishment marine parks or reserves in Malaysian waters
Fisheries Regulations 1999	Control of Endangered Species of Fish in the whole country
Protection of Wildlife Act 1972	Applies to Peninsular Malaysia. Lists *Dugong dugon* as a totally protected species.
Wild Life Protection Ordinance 1998	Applies to Sarawak. Lists *Dugong dugon* as a totally protected species.
Wildlife Conservation Enactment 1997	Applies to Sabah. Lists *Dugong dugon* as a totally protected species.
Mozambique	
Decree 40/040 of 20 January 1955	Entitled the Veterinary Services (Now Wildlife and Forest protection services) to be responsible for dugong protection and urged the fisheries administration services to collaborate to in the dugong protection through creation of sanctuaries and by enforcement of the decree among fishers
Solomon Islands	

Key legislation	Content
Environment Act (No. 8 of 1998).	Makes provision for and establishes integrated systems of development control, environment impact assessment and pollution control. It shall also prevent, control and monitor pollution. This Act caters for national and regional environmental concerns
Wildlife Management and Protection Act (No. 10 of 1998),	Provides protection, conservation and management for wild life.
Fisheries Act (No. 6 of 1998)	The objective of Fisheries management and development in Solomon Island shall be to ensure the long-term conservation and the sustainable utilisation of the fishery resources of Solomon Islands for the benefit of the people of Solomon Islands; has provisions for by-catch.
Protected Areas Act 2010.	The objects of the Act include establishing systems of protected areas and to rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, such as, through the development and implementation of plans or other management strategies.
Sri Lanka	
Wildlife Policy of Sri Lanka	Provides provision for the protection and conservation of the fauna and flora of Sri Lanka and their habitats for the prevention from commercial and other misuse of them
Fisheries and Aquatic resources Act (1996)	Provides provisions to protect marine mammals and Turtles in Sri Lankan waters. It also provides provisions to manage regulate fishing activities.
Marine pollution prevention act No 59 of 1981	It is an act to provide for the prevention, reduction control of pollution in Sri Lanka waters; to give effect to international conventions for the prevention of pollution of the sea.
Coast conservation act No 57 of 1981 and Amendment act No 64 of 1988	Any development activity within the coastal Zone of Sri Lanka requires a permit issued for that. Though this is not directly related to the conservation of dugong, marine environment is protected under this law. Especially coral mining is totally prohibited.
The National Environmental Act No 48 of 1980 (amended by act No 56 of 12988, No 53 of 2000)	The Central environmental Authority, The environment Council, District Environmental Committee is found under this statute. General clauses which are necessary to implement the act contain in part V of the act. Environmental Impact Assessment Procedure comes to the power under this act.
Timor-Leste	
UNTAET Regulation No. 19/2000> on Protected Places Government Decree No. 5/2004	General Regulation on fishing
Ministerial Diploma No. 04/115/G [M]/Iv/2005 >	List of Protected Aquatic Species
Ministerial Diploma No. 06/42/GM/I/2005	Fisheries crimes
Government Resolution No. 8/2007	Establishment of the Nino Konis Santa National Park
Constitution of the Democratic Republic of Timor-Leste (2002):	Fundamental Principles, Objectives of the State; Sections 61, 96, 139 relating to environmental and natural resource protection, preservation, and sustainable use.
Vanuatu	
Fisheries Act No. 55 of 2005	Establishes Vanuatu's entire EEZ as a marine mammal sanctuary Regulates international trade in marine mammals
Foreshore Development Act of 1976	Regulates the development on the foreshore of the coast of any island in Vanuatu. In 2010, the Foreshore Development purpose was linked to the Environmental Impact Assessment (EIA) legislation, making the issuance of permits conditional of satisfactory EIA reporting.
Environmental Protection and	Sets out the requirements for EIAs

Key legislation	Content
Conservation Act (EPCA) of 2010 (formerly Environmental Management and Conservation Act (EMCA) of 2003)	
Constitution of Vanuatu	Enshrines traditional land tenure as "all land in the Republic belongs to the indigenous customary owners and their descendants"
Land Reform Act	Defines "land" to include "land extending to the seaside of any offshore reef but no further."

Appendix 17: Global Overview of Dugong Conservation

DUGONG[53]

INTRODUCTION

The dugong and the Amazonian, West African and West Indian manatees are the only extant members of the mammalian order Sirenia (or sea cows). The three species of manatee are grouped in the family Trichechidae; the dugong is the only surviving member of the family Dugongidae.

Dugongs have whale-like flukes with a median notch and look like a cross between a walrus and a dolphin—or like a manatee that goes to the gym. The flippers are short and lack nails. Externally the head of the dugong is small with no discernible neck, reminiscent of the head of a walrus without the protruding tusks. The eyes are small and the external ears are tiny holes in the sides of the head. The two nostrils, located dorsally and at the cranial end of the snout, enable a dugong to surface discreetly with only its nostrils out of the water, making the animals hard to see and census. The most striking feature of the face is the fleshy oral disk, the greatly expanded region between the mouth and nose, which is covered with vibrissae. This oral disk is an elaborate sensory-muscular complex that enables dugongs to find and manipulate food even in dark or murky environments. Dugongs have very sparse, short, fine, sensory body hairs that constitute a tactile array equivalent to the lateral line systems of fishes (Reep *et al.* 2002), which may be an important aid to navigation at night and in shallow, turbid environments where visual acuity is of little value and acoustic communication limited to short distances.

The dugong is strictly marine and occurs in the Indo-West Pacific Ocean where its huge range spans the coastal and island waters from East Africa to the Solomon Islands and Vanuatu across at least 38, and up to 44, countries and territories ((Figure 1; Table 1), a mix of developing and developed countries.

[53] This paper is largely based on a series of edited and updated extracts from Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University Press. 521pp.

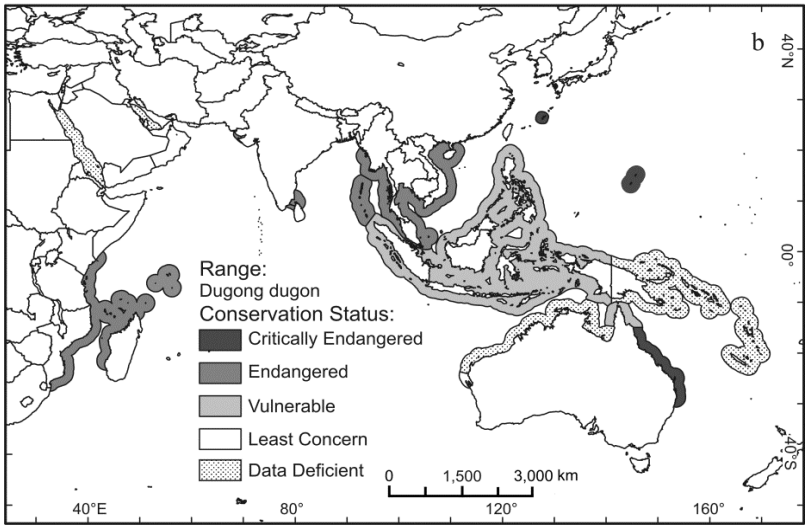


Figure 1. The global range and conservation status of *Dugong dugon* as assessed by Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. *The ecology and conservation of Sirenia: dugongs and manatees.* Cambridge University Press.

Table 1. Definite and possible range states of the dugong showing their Human Development Index and whether or not they are parties to some of the international conventions, important to the conservation of sirenians. All the confirmed dugong range states are signatory to the Convention on International Trade in Endangered Species except Timor-Leste. From Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University Press.

Human Development Index	**#**	**Range States including Territories[1] showing parties to the Convention on Migratory Species and Dugong Memorandum of Understanding as of October 2010**
Confirmed range states and territories		
Very High	8	Australia [2.3] (including Cocos Keeling); Bahrain[2,3]; Brunei Darussalam; France (Mayotte; New Caledonia) [2,3]; Japan (Ryukyus); Qatar; Singapore; United Arab Emirates[3]
High	3	Iran[2]; Malaysia; Saudi Arabia[2];
Medium	11	Cambodia; China; Egypt[2]; India[2.3] (including Andaman Is., Laccadive Is., Nicobar Is.); Indonesia; Philippines[2,3]; Solomon Islands[3]; Sri Lanka[2,3]; Thailand[3]; Timor-Leste; Viet Nam
Low	10	Comoros (Union of)[3]; Djibouti[2]; Kenya[2,3] ; Madagascar[2,3]; Mozambique[2,3]; Myanamar[3] ; Papua New Guinea[3]; Sudan; Tanzania(United Republic of)[2,3]; Yemen (Socotra)[2,3]
Not available	5	Eritrea[2,3;] Palau[2, 3]; Seychelles[2,3]; Somalia[2]; Vanuatu[3]
	37	Confirmed range states and territories
Possible range states and territories		
Very High	1	Israel[2]
High	2	Jordan[2]; Kuwait
Low	1	Bangladesh[2]
N/A	2	Iraq; Oman
	6	Possible range states and territories
TOTAL	43	Confirmed and possible ranges states and territories

[1]Updated from IUCN (2009)

[2]Party to Convention on Migratory Species
[3] Party to Dugong Memorandum of Understanding

Dugongs are seagrass community specialists and the range of the dugong is broadly coincident with the distribution of seagrasses in the tropical and sub-tropical Indo-West Pacific. Nonetheless, not all the seagrasses in this area are accessible to dugongs. Some seagrass meadows occur at depths beyond the dugong's known diving range (~36.5m) and may be permanently inaccessible. Other seagrass meadows are inaccessible on a seasonal or daily basis. At the high latitude limits of the dugong's range (such as the Arabian Gulf or Shark Bay in southwestern Australia), some seagrass meadows are not used in winter, presumably because the water is too cold (see Marsh *et al.* 2011 for references). Tides restrict dugong foraging on intertidal seagrass meadows on a daily basis (Anderson and Birtles 1978; Nietschmann and Nietschmann 1981; Sheppard *et al.* 2009). In areas where the tidal range is large, such as tropical Australia, the area of intertidal seagrass meadows to which dugongs have limited access is vast. For example, Roelofs *et al.* (2005) estimated a total area of 70 000 hectares (700 km^2) of intertidal seagrass meadows in the Gulf of Carpentaria, northern Australia.

Seagrasses are anchored in the sediment by their roots and rhizomes. The below-ground biomass (roots and rhizomes) is typically greater than the above-ground biomass (leaves) in the seagrass species eaten by dugongs (de Iongh *et al.* 1995, 2007; Lanyon and Marsh 1995; Aragones and Marsh 2000; Masini *et al.* 2001). Dugongs employ two different feeding modes: excavating (feeding on both the aboveground and belowground parts of plants by disturbing the sediment) and cropping (feeding on the above ground parts only). Dugongs mostly use excavating when feeding on seagrasses with accessible rhizomes; cropping when feeding on other plants.

Although several researchers have concluded that dugongs preferentially feed on pioneer genera such as *Halophila* and *Halodule*, Marsh *et al.*'s (2011) meta-analysis indicates that within their relatively specialized habitats of intertidal and subtidal tropical and subtropical seagrass meadows, dugongs are capable of exploiting a relatively wide diet including macro-invertebrates and algae, a capacity which probably explains their large range.

Dugongs have been important to human cultures for thousands of years, although their cultural values have been remoulded by the changing nature of their interactions with people. Dugongs are very good eating. Their muscle tastes like veal or pork and represents a windfall of meat to an Indigenous hunter or impoverished fisher. Dugongs have also been a source of other products including oil, bones and teeth, often used as medicines and love potions and hides. The coverings of the biblical Tabernacle and Ark of the Covenant are believed to have been made from dugong skin (Cansdale 1970).

Because dugongs occur in coastal habitats, they are accessible to hunters with relatively simple equipment. The dugong hunting culture in the Middle East is at least 6000 years old (Méry *et al.* 2009). Hunters did not only rely on their physical prowess and technical skills to catch dugongs. They also used magic and rituals to boost their performance (e.g. McNiven and Feldman 2003; McNiven 2010). These practices have undoubtedly enhanced their cultural values.

In places where dugongs were abundant, European colonisation tended to be followed by commercial exploitation, especially in Australia (Daley *et al.* 2008). Western-style commercial exploitation has ceased, except as by-catch in other enterprises such as gill-netting for sharks as part of the shark-fin trade, in which case the dugong meat and/or tusks may be sold often to the same dealers as the shark fins. Nonetheless, although hunting dugongs is banned in most countries, poaching is still a major source of mortality and the meat of dugongs and manatees is the aquatic equivalent of bush meat. In many developing countries, hunting with harpoons has been wholly or partially replaced by catching animals in fishing nets, often monofilament nylon gill nets provided by Western aid to address issues

of food security . Hunting of dugongs is still legal in a few countries, most notably Australia, where it is a Native Title right (Marsh *et al.* 2011).

Dugong movements have been extensively studied using satellite and GPS technology (Marsh *et al.* 2011). In the most comprehensive study, Sheppard *et al.* (2006), studied 70 dugongs in Queensland and the Northern Territory of Australia for periods of 15 to 551 days between 1986 and 2004. Travelling dugongs remained in coastal waters generally within the ranges of seagrass beds. The scales of movement were heterogeneous. Twenty-six dugongs (37%) moved < 15 km, 28 (40%) moved 15–100 km (mesoscale movements), and 14 (20%) moved 100–560 km (macroscale movements; Sheppard *et al.* 2006). Travel of the dugongs that moved > 15 km (considered large-scale movements) was rapid and directed, averaging about 180 hours for a mean distance of 244 km. Mean daily distances travelled in these directed moves varied from about six to 72 km. There was no evidence that dugongs stopped to feed during these directed movements, even when seagrass resources were available. Males, females, and females with calves all made large-scale movements; dugongs that failed to move > 15 km also encompassed these age and sex categories. Some movements were documented to be return movements, suggesting ranging rather than dispersal movements. Thus it can be expected that dugongs often move between contiguous range states, which is why they are listed under the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

1. STATUS

The IUCN (2009) lists the dugong as Vulnerable at a global scale. The dugong is also listed on Appendix I of CITES and under the Convention on the Conservation of Migratory Species of Wild Animals (CMS). All of the dugong's 38 confirmed range states are parties to CITES, except Timor-Leste; more than half the range states are also parties to the CMS. The Memorandum of Understanding (MoU) developed to protect the dugong under the auspices of the CMS has been signed by 26 range states.

A crude estimate of the dugong's potential range (Extent of Occurrence) is ~860 000 km² (see Figure 1). This estimate is based on potential habitat (waters <10 m deep in its known range). This spans approximately 128 000 km of coastline[54]. Although the dugong still occurs at the extremes of its range, Husar (1978) and IUCN (2009) list the dugong as extinct in the waters of several islands including: the Maldives, the Lakshadweep Islands, Mascarene Islands of Mauritius and Rodrigues, and Taiwan (Husar 1978). The dugong may only have occurred as a vagrant at some of these islands (e.g. Taiwan, Hirasaka 1932). However, there is historical evidence of substantial dugong populations off Mauritius and Rodrigues Islands; these populations were harvested in the eighteenth century (Cheke 1987). Cheke quotes historical accounts of a dugong fishery on Rodrigues in the 1730s.

Because of the dugong's huge and fragmented range and the geographic variation in its status, Marsh *et al*. (2011) made eight regional assessments of its status (below). They also made sub-regional assessments in two very extensive regions: 1) East and South-east Asia: major archipelagoes, and 2) Australia. In the absence of robust genetic information, the regions have been chosen based on the apparent fragmentation of the range and geopolitical boundaries and thus function as 'designatable units' *sensu* Green (2005).

East Africa

[54] Coastline length estimates vary with the method and datasets used. All the estimates quoted here used a standard GIS technique, the same projected coordinate system (Cylindrical Equal Area World) from the same global bathymetry shape file and excluded small islands. The estimates are more appropriately used for comparisons rather than as absolute estimates.

The known range of the East African dugong population extends south from at least southern Somalia through Mozambique and includes several offshore islands such as Madagascar and parts of the Comoros Archipelago (see Figure 2 for key habitats). Occasionally vagrants are recorded in South African waters (V Cockroft, personal communication, 2010). This region (including Somalia) comprises some 11 000 km of coastline (~8.5% of the dugong's global Extent of Occurrence based on length of coastline and 4% of the dugong's potential habitat <10 m deep). There are no data on the connectivity of the East African dugong population with that in the Red Sea. Connectivity is likely to be low: the known Somalian population occurs about 100 km north of Kenya, and 1600 km from the entrance to the Red Sea (Figure 2).

Population size and trends

Estimates of the size of the dugong population in the East African region are largely anecdotal, apart from uncorrected aerial counts in Kenya, Mayotte and parts of Madagascar, and much more sophisticated aerial survey estimates from the Greater Bazaruto Archipelago area in Mozambique (Cockcroft *et al.* 2008; Provancha and Stolen 2008). This information suggests dugong numbers in the hundreds in Mozambique and perhaps north-western Madagascar (where J Kiszka, personal communication, saw six animals in 2010 but none in west-central and south-west Madagascar), and in the tens in Kenya, Mayotte, the Seychelles and Tanzania.

Anecdotal information on population trends suggests major declines since the 1960s and 1970s in Kenya and Tanzania; with more recent declines in Madagascar, Mayotte and Mozambique (Muir and Kiszka 2012). No information is available for Somalia. Declines seem to coincide with the introduction of monofilament nylon gill nets (Muir and Kiszka 2012). In most of these countries, dugong numbers are likely to be too low to confirm trends in a time frame useful to management.

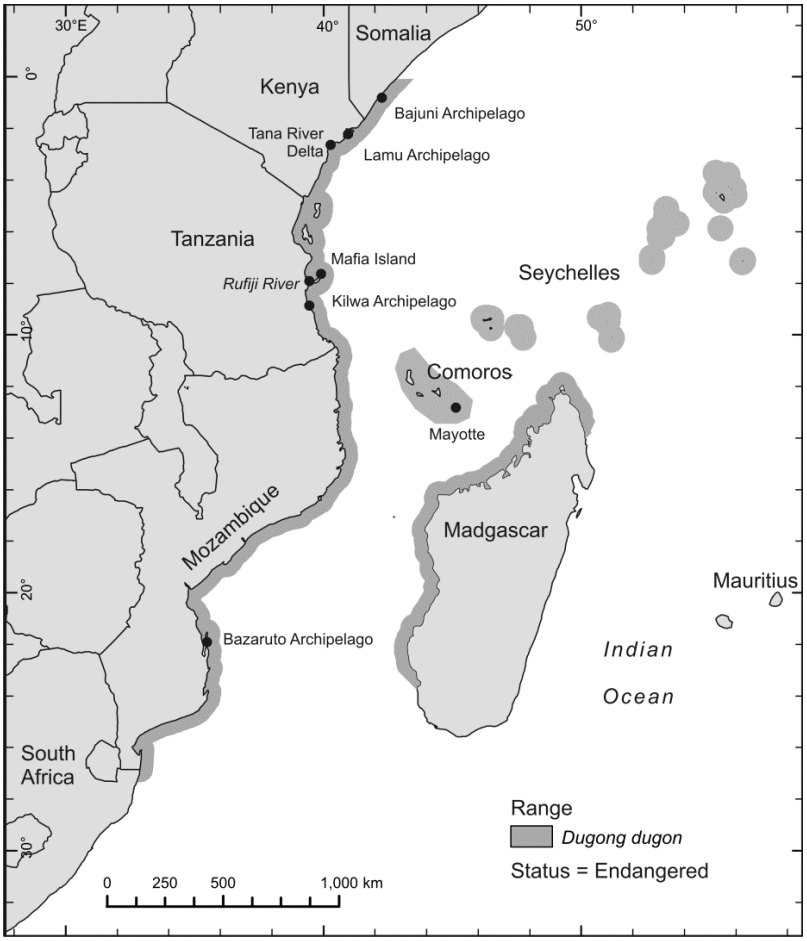


Figure 2. The range of the dugong in East Africa where Marsh et al. (2011) assessed its conservation status as Endangered. Key habitats include the Bajjuni Archipelago in Somalia; the Tana River delta and Lamu Archipelago in Kenya; the Rufiji River, Mafia Island and Kilwa Archipelago in Tanzania; Mayotte in Comoros; and the Bazaruto Archipelago in Mozambique. Northern Madagascar is also likely to be important but to date survey effort has been limited. From Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. *The ecology and conservation of Sirenia: dugongs and manatees.* Cambridge University Press.

Threats

The most commonly cited contemporary threat is incidental capture in fishing gear, especially gill nets. Moore *et al.* (2010) used interview surveys to conduct a rapid assessment of the incidental capture of marine wildlife in parts of Tanzania and the Comoros. They found that dugong bycatch was rare, presumably reflecting the species' low density. Much of the gill-netting in parts of East Africa targets sharks; fine mesh nets are also used in some areas and catch dugongs, especially in tidal channels (V Cockroft, personal communication, 2010). Shark fins are one of the world's most valuable fish products because they are the main ingredient in shark fin soup, a prestige dish in China. The value of shark fin increases the incentive for illegal gill-netting in East Africa (Attwell 2011). When dugongs are caught incidentally by fishers they are usually killed and sold for meat. Dugongs are now so rare that direct hunting is no longer considered a problem. Human settlement on coasts, agricultural pollution and destructive fishing are all processes that can damage dugong habitats (see details for Tanzania in Ochieng and Erftemeijer 2003, Mozambique in Bandeira and Gell 2003 and

Madagascar in Parent and Poonian 2009). Halpern *et al.* (2008) provide a global context for the severity of human impacts on dugong habitats in East Africa. They conducted a spatial analysis of the cumulative anthropogenic impacts on the world's oceans at a scale of one square kilometre and list the status of the coastal seas of this region as mainly medium and medium high impact, indicating that threats to dugong habitats are significant.

Conservation actions

Dugongs are protected by national legislation in most countries in the region (WWF Eastern African Marine Ecoregion 2004). Protected area initiatives aim to protect dugongs in Kenya, Mozambique, Seychelles and Tanzania. Effective enforcement of regulations is a problem because of limited personnel and resources.

Assessment

Marsh *et al.* (2011) concluded that the East African dugong population is likely to be isolated from other dugong populations. They consider this population to be Endangered (ENC1 *sensu* IUCN) on the basis of: (1) a population size less than 2500 mature individuals; and (2) an estimated continuing decline of at least 20% within two generations (~44–50 years) without effective conservation actions, as a result of current and projected future anthropogenic threats. There is high likelihood of this decline continuing because of high poverty, especially in Mozambique, which apparently supports the highest numbers of dugongs in the region.

Red Sea and Gulf of Aden

The Red Sea is a long, deep, narrow, semi-enclosed sea. Much of the coast has a narrow fringing reef (Preen *et al.* 2012). This entire region including the adjoining Gulf of Aden encompasses some 7000 km of coastline (~6% of the dugong's global Extent of Occurrence; ~4% of the potential habitat <10 m deep). Dugongs in the Red Sea are isolated. They are some 1600 km from known dugong habitats in southern Somalia and about the same distance from known dugong habitats in the Arabian/Persian Gulf.

Aerial surveys conducted in 1986 by Preen (1989) indicated that dugongs occur in three core areas along the Saudi Arabian coast of the Red Sea (Figure 3). Dugongs have been reported in the coastal waters of Egypt, Sudan, Djibouti (Marsh *et al.* 2002) and Eritrea (Marsh *et al.* 2002; Mahmud 2010). Dugongs have not been recorded in the Gulf of Aden, although Phillips (2003) reports isolated seagrass beds in this region. Preen worked on the Saudi Arabian and Yemen coasts of the Red Sea, and thus little information is available for its African coastline. There have been no follow-up surveys of dugongs along the Arabian coast since 1987.

Population size and trends

Preen (1989) estimated the size of the dugong population of the Red Sea coast of Saudi Arabia to be 1820 $\pm$ SE 380 in 1986, on the basis of aerial surveys using the method of Marsh and Sinclair (1989). Dugong numbers in Yemen were thought to be in the low hundreds (200) based on fishers' comments, gill net mortality, habitat and bathymetry; the African coast of the Red Sea could potentially support a dugong population similar in size to that along the Arabian coast (Preen 1989). If these estimates are correct, the Red Sea supported several thousand dugongs in 1986. There is no trend information.

Threats

The threats reflect the importance of the Red Sea for artisanal fishing, coastal development and as a globally important shipping route (Gladstone *et al.* 1999; Gerges 2002). Gladstone *et al.* (1999) and Preen *et al.* (2012) report that incidental catches of dugongs in gill nets are widespread and considered a moderate to severe problem. The Red Sea is a major sea route for oil tankers; oil refinery capacity, loading capacity and exports are increasing. Extensive construction and habitat alteration have

occurred along the coastline, especially in Egypt and Saudi Arabia (Preen *et al.* 2012). Serious environmental threats to seagrass in the region include untreated sewage disposal, coastal dredging and reclamation, inshore commercial trawling (including illegal trawling from foreign vessels), and agricultural pollution, especially from shrimp farms (Gladstone *et al.* 1999). Boat traffic is believed to cause disturbance and mortality to dugongs. Halpern *et al.* (2008) consider the anthropogenic impacts on the Red Sea as medium and medium high, and impacts on the Gulf of Aden as medium high.

Figure 3. The range of the dugong in the Red Sea, Gulf of Aden and Arabian/Persian Gulf . Marsh et al. (2011) assessed its conservation status as Data Deficient throughout this region. Key habitats along the west coast of Saudi Arabia are centred around Sharm Munaibira, which is south of Al-Wajh; around Qishran Island and Al Lith; and extend along the coast from just north of Jizan to Al Hudaydah in Yemen. In the Arabian Gulf, the Marawah Marine Protected Area is a key conservation initiative in the United Arab Emirates, and should make a significant contribution to dugong and habitat conservation in the southern Arabian/Persian Gulf. From Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University Press.

Conservation actions

The dugong is protected by legislation in most countries in the Red Sea region. Most of the marine protected areas in the region with the potential to protect dugongs are 'paper parks' where laws and regulations exist but are not implemented. A Strategic Action Programme for the Red Sea and Gulf of Aden (Gerges 2002) was developed by countries of this region and is coordinated by PERSGA (the Regional Organisation for the Conservation of the Environment of the Red Sea and Gulf of Aden), with funding provided by the Global Environment Facility and implementation support from the UN Development Programme, UN Environment Programme and the World Bank. The Strategic Action Programme aims to develop a regional framework for protection of the environment and sustainable development of coastal and marine resources. The proposed framework includes increasing public understanding of the threats to the environment, introducing and strengthening environmental legislation and enforcement, and improving information systems about the health of the marine and coastal environment.

Assessment
Marsh *et al.'s* (2011) regional assessment of the Red Sea and Gulf of Aden dugong population is that it is Data Deficient.

Arabian/Persian Gulf
The Arabian/Persian Gulf (Figure 3) is a shallow (average 35 m) semi-enclosed sea about 1000 km long and 200–300 km wide (Phillips 2003), supporting vast areas of seagrass in waters less than 15 m deep on its western and southern shores. Only three species of seagrasses (*Halodule uninervis, Halophila ovalis* and *Halophila stipulacea*) occur in the region because of harsh natural conditions: inshore sea temperatures range seasonally from 10 ^{o}C to 39 ^{o}C, offshore temperatures from 19 ^{o}C to 33 ^{o}C, and salinities from 38 psu to 70 psu (Phillips 2003). The connectivity (if any) between the dugong populations in the Arabian/Persian Gulf with those in the Red Sea (>2000 km away) and the Gulf of Kachchh in India is unknown.

Dugongs mainly occur along the southern and western coastal waters of the Gulf (Preen *et al.* 2012; Figure 3) over a coastline of some 2000 km ($\leq$2% of dugong's global range based on both length of coastline and potential habitat <10 m). The core area of dugong habitat is from the central coast of Saudi Arabia to east of Abu Dhabi in the United Arab Emirates (Figure 3) (Preen *et al.* 2012). Small numbers of dugongs occur east of this region to the Omani border (Figure 3). The bathymetry and latitude along the southern Iranian coasts suggest that some of this region is potential dugong habitat. The dugong's presence has been recently confirmed in Iran but there are few details (Braulik *et al.* 2010). Cold water prevents dugongs from using the seagrass areas of northern Saudi Arabia and Kuwait in winter.

Population size and trends
In the summer of 1986, Preen (1989) conducted an aerial survey of virtually all the dugong habitat in the Arabian/Persian Gulf using the strip transect technique of Marsh and Sinclair (1989), yielding a regional population estimate of approximately 6000 dugongs. Between 1999 and 2006, at least six strip transect aerial surveys were conducted over key parts of the Arabian/Persian Gulf. The resultant estimates confirm that the Arabian/Persian Gulf supports several thousand dugongs (see Preen *et al.* 2012), the largest known population outside Australian waters.

Comparison of the various aerial surveys conducted for dugongs in the Arabian/Persian Gulf does not provide robust trend information. Surveys covered different parts of the dugong's range in the Arabian/Persian Gulf and in some cases used different analytical techniques. Nonetheless, there is no evidence that numbers have declined in the United Arab Emirates or Bahrain, but this assessment must be treated with caution.

Threats
The most serious chronic threats to dugongs in the Arabian/ Persian Gulf are incidental and deliberate capture in mesh nets and habitat loss (Preen *et al.* 2012). Considerable areas of seagrass have been dredged or reclaimed along the Gulf coastline and development is continuing rapidly. Trawling is common in dugong habitat and is likely to cause disturbance to seagrass beds as well as mortality of dugongs. In addition, a massive bridge/causeway being planned to link Bahrain and Qatar will pass along the edge of one of the premier dugong habitats and may affect current flows, salinity gradients and turbidity (Preen *et al.* 2012).

The Arabian region is a globally important centre of oil production. Oil extraction, treatment and transfer are common activities undertaken throughout much of the dugong habitat in the Arabian/ Persian Gulf. Although dugongs and seagrasses can be relatively resilient to chronic, low-level oil pollution (Preen *et al.* 2012), the risk of a catastrophic spill is more serious. At least three die-offs of dugongs have occurred in the western Arabian/ Persian Gulf. One was associated with the Nowruz oil

spill. The other two die-offs may have been the result of an epizootic, possibly a morbillivirus (Preen *et al.* 2012).

Given the harsh environment of the Arabian/Persian Gulf, its habitats are particularly vulnerable in a warming world. Halpern *et al.* (2008) rate the threats to the seas in the region as variable, ranging from low to very high impact.

Conservation actions

The dugong is protected by national legislation in Bahrain and the United Arab Emirates (Preen *et al.* 2012). The Marawah Marine Protected Area was declared in 2001, covering 4255 km^2 of core dugong habitat in the United Arab Emirates (Figure 3). This marine protected area is professionally managed and should make a significant contribution to the conservation of dugongs and their habitats in the southern Gulf (Preen *et al.* 2012). Attitudes toward dugongs are improving in the region under the leadership of the United Arab Emirates, which hosts the Dugong Memorandum of Understanding under the Convention on Migratory Species.

Assessment

Marsh *et al.* (2011) concluded that the information to assess the dugong's risk of extinction in this region is inadequate and classified its status in the Arabian/ Persian Gulf as Data Deficient. The Human Development Index is very high for several countries in the region and there is increased interest in obtaining the knowledge base required to underpin such initiatives, encouraging confidence that they will be informed by science.

Indian subcontinent and Andaman and Nicobar islands

The dugong's contemporary Extent of Occurrence on the Indian subcontinent is limited to the Gulf of Kachchh in the state of Gujarat and the coastal waters of Tamil Nadu and Sri Lanka between Colombo and Jaffna. Small numbers of dugongs also occur in the coastal wasters of the Andaman and Nicobar islands (see Das and Dey 1999; Hines *et al.* 2012a). Collectively, these regions encompass some 3000 km of coastline ($\leq$3% of the dugong's global Extent of Occurrence based on both the length of coastline and potential habitat <10 m deep) (Figure 4).

The dugong (sub)populations of the Indian region are fragmented and isolated. The Iranian border is more than 1000 kilometers to the west of the Gulf of Kachchh, and the Gulf of Mannar lies about 3100 km to the west and south. Dugongs are not known from Pakistan. There are no records from the east coast of India or the Sundarban region of India and Bangladesh (in total some 4000 km of coast). It is unknown if dugongs still occur in other parts of Bangladesh, but there are old records from the Chittagong coast (O'Malley 1908 in Jones 1981). Dugongs are apparently extinct in the Maldives and the Lakshadweep Islands (Husar 1978), but may have only occurred there as vagrants.

Population size and trends

Anecdotal information suggests that dugong numbers are now very low in the Indian region. Information on trends is also anecdotal, but strongly suggests that the range in the Indian region has contracted over the last hundred years. Frazier and Mundkur (1991) report that dugongs once occurred along the west coast of India where seagrasses are patchily distributed (Jagtap *et al.* 2003). There have been no records of dugongs in this region since the early twentieth century outside the Gulf of Kachchh (where dugong feeding trails were photographed in 2009, K Tatu, personal communication, 2010; and where the carcass of a dugong was recovered in 2013, Indian Express Jan 2013 http://www.indianexpress.com/news/dugong-carcass-recovered-in-gulf-of-kutch/1056075). Reports suggest a major decline since the 1950s in the Gulf of Mannar – Palk Strait region, and continuing decline in the Andaman and Nicobar islands (Das and Dey 1999). The population appears too low to confirm trends in a useful time frame.

Threats

The most commonly cited contemporary threats are illegal hunting and incidental capture in fishing gear, particularly gill and shark nets (Ilangakoon *et al.* 2008; Hines *et al.* 2012a). When dugongs are caught incidentally, they are usually killed and sold. Some traditional hunting continues in the Andaman and Nicobar islands (Hines *et al.* 2012a). Seagrass habitats were badly damaged in the Nicobars by the 2004 tsumani. Destructive fishing (push nets), cyclones and coastal development damage dugong habitats. In India, the construction of the Sethu Samudran shipping canal off the coast of Tamil Nadu will not only cause habitat destruction by bisecting the seagrass beds in the Gulf of Mannar, but will also increase the risk of ship strikes (Ilangakoon *et al.* 2008). Halpern *et al.* (2008) list the status of the coastal seas of this region as mainly medium and medium high impact, indicating that the anthropogenic impacts on the dugong's seagrass habitats are relatively high.

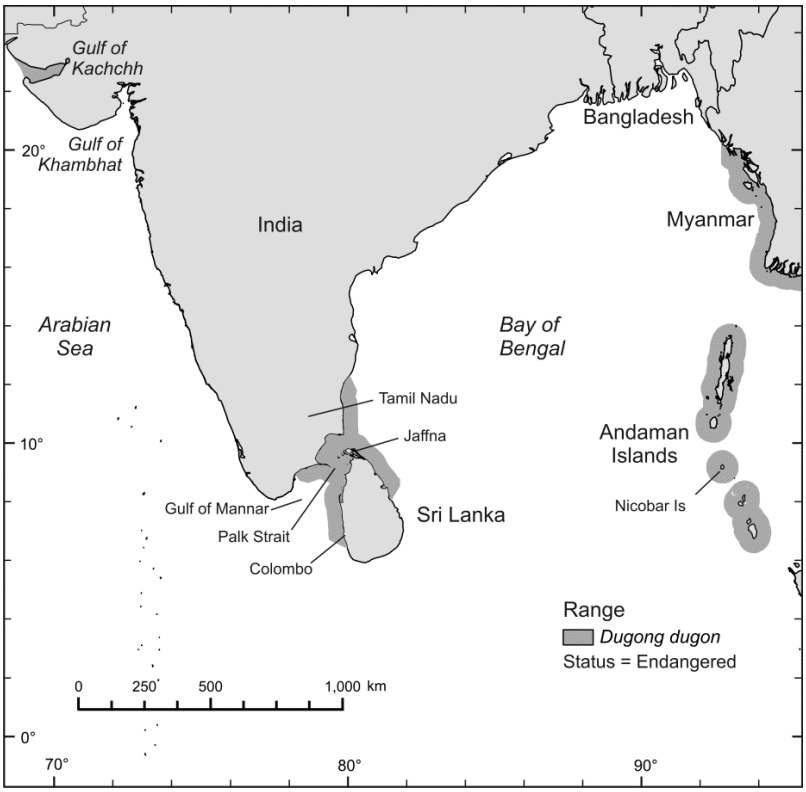


Figure 4. Range of the dugong (*Dugong dugon*) in the Indian subcontinent, and the Andaman and Nicobar Islands. We have assessed the dugong as Endangered in this region. Note the isolation of the Gulf of Kachchh subpopulation from other populations in the region. Part of the range of the dugong in Myanmar is also shown. From Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University Press.

Conservation actions

The dugong is protected by national legislation in both India and Sri Lanka. Protected area initiatives for dugongs exist in the Gulf of Kachchh and in small parts of their known range in both Indian and Sri Lankan waters in the Gulf of Mannar-Palk Bay region. However, enforcement is not effective (especially in Sri Lanka), because of limited personnel and resources. The most pressing need is for incentives to promote alternative livelihoods for fishers using gill nets and destructive fishing gear.

Assessment

Marsh *et al.* (2011) considered that the Indian dugong population is isolated and classified it as Endangered (ENC1 *sensu* IUCN) on the basis of: (1) estimated size less than 2500 mature individuals;

and (2) an estimated continuing decline of at least 20% within two generations (~44–50 years) without effective conservation actions, as a result of current and projected future anthropogenic threats. There is a strong likelihood of this situation continuing because of high level of rural poverty in the region.

Continental East and South-East Asia including the coastal islands

Dugongs are believed to occur in small fragmented populations in the inshore waters of all coastal countries from Myanmar east and north to the southern coast of mainland China, south of Hong Kong (Figure 5). The entire region encompasses more than 11 000 km of coastline (~9% of the dugong's global Extent of Occurrence based on length of coastline; 13% of the potential habitat <10 m deep). The level of connectivity among the fragmented dugong populations in this region and between the continental and archipelagic regions of South-East Asia is unknown.

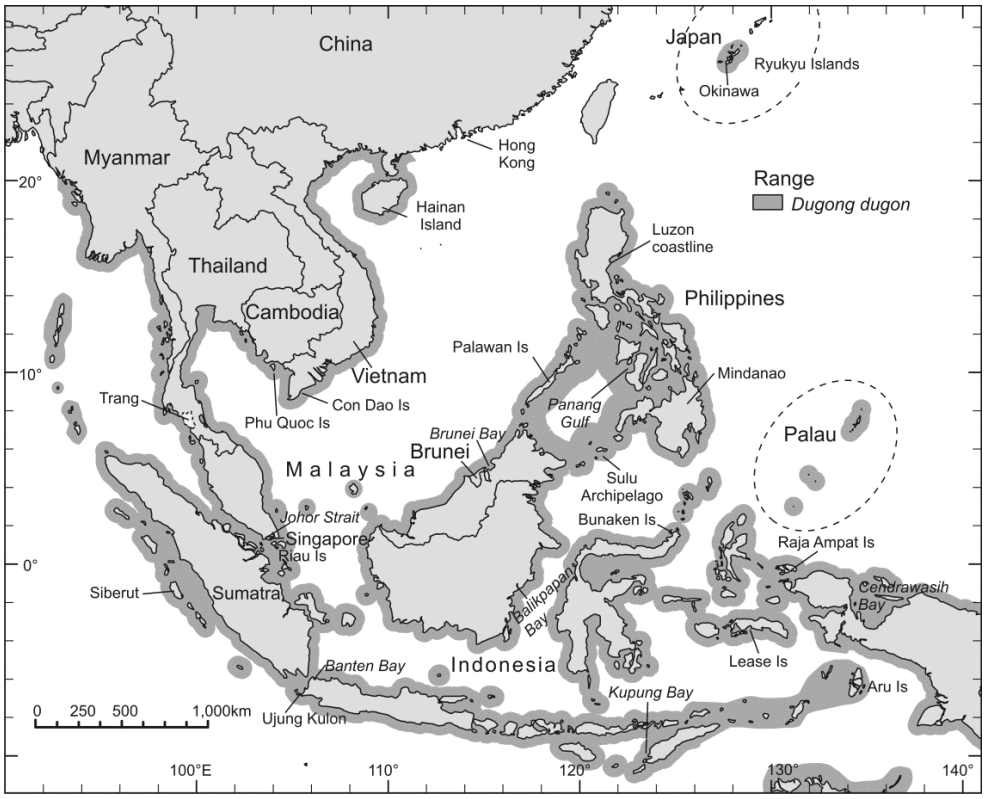


Figure 5. The range and conservation status of the dugong (*Dugong dugon*) in South-East Asia as assessed in this chapter. Marsh *et al.* (2011) assessed the conservation status of the dugong in Continental South-East Asia and adjacent coastal islands as Endangered; the conservation status for the major archipelagoes in the region as Vulnerable, with the exception of Japan and Palau where the dugong is considered Critically Endangered. Key habitats include: Thailand: Trang Province; Vietnam: Phu Quoc Island and Con Dao Islands; Malaysia/Singapore: Johor Strait and islands of the south east coast of Peninsula Malaysia; Malaysia/Brunei Darussalam: Brunei Bay; Indonesia: Ujung Kulon and Banten Bay (Java), Riau Islands, Balikpapan Bay (East .Kalimatan); Siberut (West Sumatra); Lease Islands (Malaku Province); Aru Islands; Bunaken Island (North Sulawesi); Cendrawasih Bay and Raja Ampat (West Papua); Philippines: Palawan Island, Panang Gulf, Luzon coastline (Quezon-Isabela-Aurora area), coast of Mindanao and the Sulu Archiplelago. Part of the range of the dugong in northern Australia is also shown. From Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University Press.

Population size and trends

Estimates of dugong numbers in the region are largely anecdotal but suggest that most populations are patchy at a local scale and very small (tens of dugongs; Marsh *et al.* 2002; Hines *et al.* 2005a and b, 2008, 2012a; Tun and Ilangakoon 2007, 2008). The exception is Trang Province on the Andaman coast of Thailand, which supports that country's largest documented area of seagrass (Supanwanid and Lewmanomont 2003). The latest estimates, obtained after the December 2004 tsunami, suggest that the region supports more than 100 dugongs (Adulyanukosol and Thongsukdee 2005; Hines *et al.* 2012a).

Information on trends is based predominantly on interview surveys and suggests that dugongs are declining, except in Trang Province, Thailand (Hines *et al.* 2012a). At local scales throughout this region, dugong populations are mostly too small to confirm trends, even with dedicated monitoring programmes. The only monitoring of which we are aware is in Trang Province, where aerial and interview surveys have been conducted intermittently since 1991 (see Marsh *et al.* 2002; Adulyanukosol and Thongsukdee 2005; Hines *et al.* 2005a and b, 2012a).

Threats

The most serious contemporary threat for dugongs of this region is incidental capture in fishing gear (gill and mesh nets, fish traps and fish weirs) or through dynamite and cyanide fishing (Marsh *et al.* 2002; Perrin *et al.* 2005; Hines *et al.* 2012a). Dugongs caught incidentally are unlikely to be released alive because of the high value of their body parts: their meat and tusks represent a windfall for poor fishers. Dugong habitat loss and damage is widespread due to coastal development, agricultural expansion (especially shrimp farms) and destructive fishing such as push netting (Marsh *et al.* 2002; Hines *et al.* 2012a). According to Halpern *et al.* (2008), the cumulative human impacts on the coastal seas of this region range from low to very high, suggesting a variable status of dugong seagrass habitats which are under threat from illegal fisheries, fishing practices, unmanaged development, reclamation and land-based pollution, particularly from mining (Supanwanid and Lewmanomont 2003; Bujang and Zakaria 2003).

Conservation actions

The dugong is protected by legislation in all countries in this region (Marsh *et al.* 2002; Hines *et al.* 2012a) and by some marine protected areas. The Hepu National Reserve was established to protect dugongs in China (Hines *et al.* 2012a). Important dugong areas in Trang Province in Thailand are protected by Had Chao Mai Marine National Park and Talibong Island non-hunting area, also designated as a Ramsar wetland site. Effective enforcement of conservation rules is a problem throughout most of the region because of poverty, lack of resources and personnel. The most pressing need is for alternative sustainable livelihoods that address poverty and provide incentives for conservation.

Assessment

Marsh *et al.* (2011) classified dugongs in this region as Endangered (ENC2a(i) *sensu* IUCN) because the available data suggest that: (1) the population size is less than 2500 mature individuals, (2) the decline in the number of mature individuals throughout the region will almost certainly continue as a result of high levels of rural poverty, and (3) no subpopulation contains more than 250 mature dugongs. They acknowledge that a more evidentiary assessment might classify dugongs as 'data deficient' in this region.

East and South-East Asia: major archipelagoes

The distinction between the 'archipelagic' and 'continental' populations of dugongs in East and South-East Asia is arbitrary and influenced by geopolitical as well as natural boundaries. This distinction can be justified on the basis of the size of the East and South-East Asian region and the vulnerability of fragmented archipelagic populations.

Dugongs are believed to occur in small fragmented populations in the inshore waters of all island groups considered here (Figure 5). The entire region encompasses more than 50 000 km of coastline (40% of the dugong's global Extent of Occurrence based on coastline length; ~50% of its potential habitat <10 m deep). Connectivity between the various island populations of dugongs with those in Australia and continental South-East Asia is unknown, but dugongs have been tracked moving more than 100 km in the Moluccas (de Iongh *et al.* 2009 a and b). The Palau population is very isolated: the closest dugongs are 800 km to the south in Papua Barat and 850 km to the west in the Philippines.

Population size and trends

Estimates of population size in the region are largely anecdotal and based on interviews and/ or limited aerial surveys of Palau, Sabah (Malaysia) and parts of Indonesia, especially the Rajah Empat Islands and the Lease Islands (Marsh *et al.* 2002; Perrin *et al.* 2005; Rajamani *et al.* 2006; Shirakihara *et al.* 2007; de Iongh *et al.* 2009a and b; Rajamani 2008; Hines *et al.* 2012a; Ikeda and Mukai 2012). All the evidence suggests that local population sizes are small (tens of dugongs) and patchy, especially in areas where the continental shelf is narrow. Information on trends is anecdotal. The distribution and abundance of dugongs are now believed to be vastly reduced throughout the region and so low that monitoring will be of limited value. The only monitoring of which we are aware is in Palau where there have been intermittent aerial surveys since the 1970s (see Marsh *et al.* 1995, 2002), consistently counting low numbers of dugongs (tens), almost certainly an underestimate. There is a strong likelihood of continuing decline because of the high poverty in some countries in the region, especially in rural coastal areas.

Threats

Incidental capture in fishing gear is the most commonly cited contemporary threat (Marsh *et al.* 2002; Perrin *et al.* 2005; Rajamani *et al.* 2006; Shirakihara *et al.* 2007; de Iongh *et al.* 2009a and b; Jaaman *et al.* 2008; Rajamani 2008; Hines *et al.* 2012a). Rajamani *et al.* (2006) and Rajamani (2008) consider that dugongs caught incidentally are unlikely to be released alive because of the high value of their body parts. The deliberate harpooning of dugongs for local use is reported from the Aru Islands and mortality of dugongs from vessel strike has also been reported both in Balikpapan Bay and in Ambon (de Iongh *et al.* 2009 a and b). Coastal development and destructive fishing damage dugong habitats in many areas (Bujang and Zakaria 2003; Kuriandewa *et al.* 2003). In Okinawa, the proposed construction of an offshore landing facility for a military base has been extremely controversial, in part because of the projected loss of critical dugong habitat (Shirakihara *et al.* 2007). Halpern *et al.* (2008) list the status of the coastal seas of this region as mainly medium to high impact but there are regions of very high impact around Malaysia and off the coast of China, and regions of very low impact such as coastal waters south of Borneo, suggesting variable status of seagrass habitats.

Conservation actions

Dugongs are protected by national legislation throughout this region (Marsh *et al.* 2002). In addition, Indonesia (de Iongh *et al.* 2009b) has developed action plans for dugong conservation. Indonesia, the Philippines, Malaysia, Papua New Guinea, the Solomon Islands and Timor-Leste all endorsed the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security. This initiative is a multilateral partnership to safeguard the rich marine resources of the Indo-Pacific region (including threatened species such as dugongs) and may provide a vehicle for coordinated dugong conservation efforts throughout the region (Coral Triangle Initiative 2009).

Effective enforcement of management regulations is a problem, because of lack of resources and personnel. The most pressing need is for incentives to promote alternative livelihoods for fishers using gill nets and destructive fishing methods.

Assessment

Marsh *et al.* (2011) considered the small isolated dugong populations in Japan and Palau to be Critically Endangered, and the (sub)populations in the remainder of the region Vulnerable. It is

acknowledged that a more evidentiary assessment might classify the dugong populations of Indonesia, East Malaysia, Brunei and Timor-Leste and the Philippines as Data Deficient. This assessment assumes limited movement among the various parts of the region and between eastern Indonesia and Australia. The latter conclusion is supported by limited genetic evidence (Blair *et al.* in press).

Australia

Dugongs occur from Shark Bay in Western Australia (25°S) across the northern coastline of the continent to Moreton Bay in Queensland (27°S) (Marsh *et al.* 2002; Figure 6). Archaeological analyses and contemporary records indicate stranded dugongs as far south as ~36.5°S on the east coast, with occasional sightings south to 32–33.5°S in summer (Allen *et al.* 2004). The winter range, which extends to 25–27°S on the east coast, encompasses some 24 000 km of coastline (24% of the dugong's global Extent of Occurrence based on coastline; 16% of the potential habitat <10 m deep).

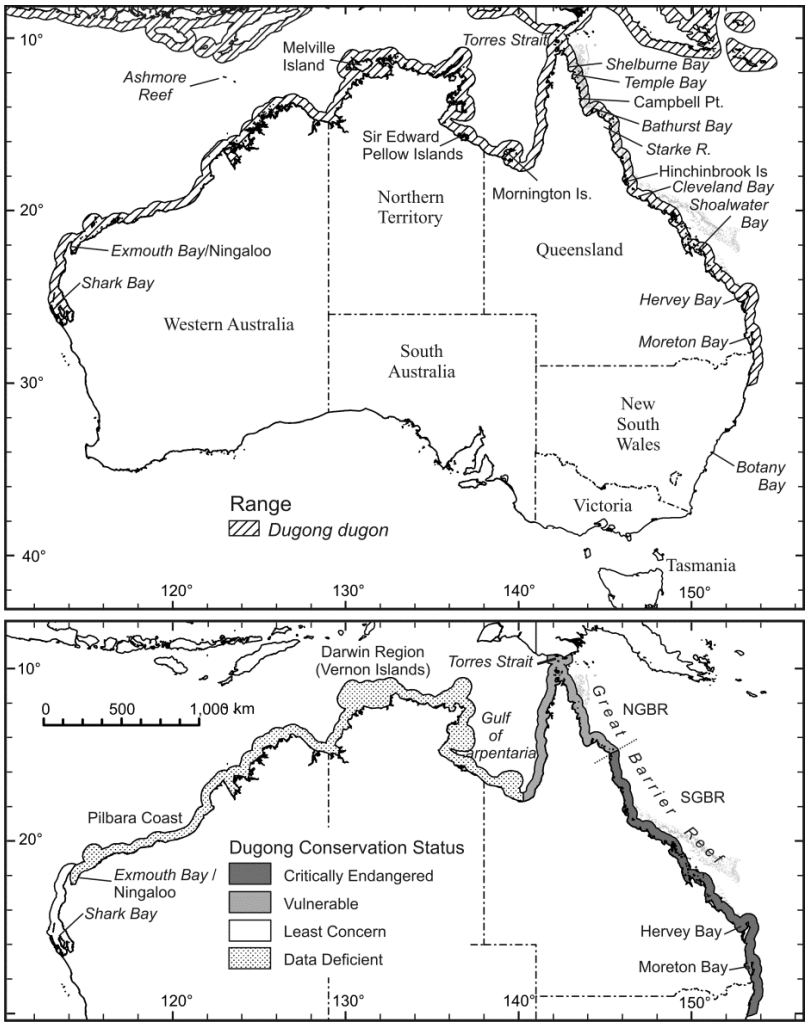


Figure 6. Range and key habitats (upper figure) and conservation status of the dugong in Australia as assessed by Marsh *et al.* (2011) (lower figure). Key habitats include: Shark Bay, Exmouth Bay and Ningaloo (Western Australia); Melville Island and Sir Edward Pellew Islands (Northern Territory); Mornington Island, Torres Strait, Shelburne Bay, Temple Bay, Campbell Point, Bathurst Bay, Starke River, Hinchinbrook Island, Cleveland Bay, Shoalwater Bay, Hervey Bay, and Moreton Bay (Queensland). Part of the range of the dugong in Papua New Guinea and Indonesia is also shown. From Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs

and manatees. Cambridge University Press.

Connectivity between Australian populations and those in South-East Asia is unknown (see above). Dugongs genetically similar to both Australian and South-East Asian dugongs (which are genetically distinct) have been sampled at Ashmore Reef on the edge of the north-west Australian continental shelf, suggesting some intermingling of different stocks (Blair 2012; Blair *et al.* in press;). A dugong (probably a vagrant) has recently been recorded at Cocos (Keeling) Islands (Hobbs *et al.* 2007).

Population size and trends

Dugongs in Australian waters exhibit high levels of genetic diversity and population structure at large spatial scales (hundreds of kilometres; Blair *et al.* in press). Estimates of population size (Marsh *et al.* 2011) are based on quantitative aerial surveys that correct for the sampling fraction and various visibility biases (Marsh and Sinclair 1989; Pollock *et al.* 2006). Thus the population estimates are not comparable with estimates from most other areas in the dugong's range (except Bazaruto Bay in East Africa, the Arabian region and New Caledonia). These surveys indicate that the dugong is the most abundant marine mammal in the coastal waters of northern Australia, with estimates from the more than 120 000 km^2 area surveyed since 2005 totalling almost 70 000 dugongs. Estimates are unavailable or outdated for large regions of Australia including the Western Australian coast north of Exmouth Gulf, most of the Northern Territory coast outside of the Gulf of Carpentaria, much of the Dugong Sanctuary in Torres Strait, Ashmore Reef and offshore territories such as Cocos (Keeling) Islands.

These population estimates are almost certainly underestimates. For example, the 2005 estimate for Moreton Bay reported by Marsh *et al.* (2006) is 421 $\pm$ SE 60 dugongs. Lanyon has marked approximately 650 dugongs in Moreton Bay since 2001 for her mark-recapture study (Lanyon *et al.* 2010). As pointed out above, survey and mark-recapture studies are not strictly comparable unless the population is closed (not the case in Moreton Bay). Nonetheless, the discrepancy between the aerial survey results and the estimate of the minimum number known to be alive (Lanyon *et al.* 2010) reinforce that the surveys underestimate dugong numbers, despite the attempts to correct for visibility biases.

The catch per unit effort data collected by the Queensland Shark Control Program indicate that the dugong population on the urban coast of Queensland declined precipitously between the 1960s and early 1980s (Marsh *et al.* 2005). In contrast, aerial surveys since the mid-1980s suggest that populations are now stable in Shark Bay, the Exmouth/ Ningaloo Reef region of Western Australia, the Gulf of Carpentaria, the northern Great Barrier Reef and the southern Great Barrier Reef (Marsh *et al.* 2006, 2007a, 2008; Hodgson *et al.* 2008). However, as discussed above, the power of these surveys to detect declines is weak unless the declines are very large.

The surveys suggest that dugong numbers in Moreton Bay, Hervey Bay and Torres Strait fluctuate over time (Marsh *et al.* 2006, 2007a; Stobzick et al. 2012). The fluctuations in estimates for Hervey Bay and Moreton Bay are attributable to dugongs moving between the two bays or from shallow to deeper water within bays, especially after 1000 km^2 of seagrass were lost from Hervey Bay following two floods and a cyclone in 1992 (Preen and Marsh 1995; Marsh *et al.* 2006). Movements of dugongs from shallow to deeper water within the survey region and between that region and the unsurveyed areas to the west may contribute to the population fluctuations observed in Torres Strait (Marsh *et al.* 2004, 2007a). The fluctuations may also reflect overharvest as indicated by modelling using both Potential Biological Removal and Population Viability Analysis (Heinsohn *et al.* 2004; Marsh *et al.* 2004).

Threats

Throughout much of the remote parts of northern Australia, the greatest source of dugong mortality is legal indigenous hunting. In contrast, threats to dugongs on the urban coast of Queensland are similar

to those in most other parts of their range. Dugongs are also killed by illegal poaching and incidental capture in nets. However, the sale of dugong meat is illegal and the imperative to sell incidental catch is much less than in countries where food security is a problem.

The remote tropical waters of much of northern Australia are subject to very low levels of human impact (Halpern *et al.* 2008) and threats to dugong habitats are low. Grech (2009) used expert opinion to evaluate the relative impact of hazards to seagrass habitats in the Great Barrier Reef region, the southern two-thirds of which is more urbanised than the remainder of the dugong's Australian range. The following threats to habitat were identified by Marsh *et al.* (2011): agricultural, urban and industrial runoff; urban and port infrastructure development; dredging; shipping accidents; trawling; recreational and commercial boat damage; and commercial fishing other than trawling (see Marsh *et al.* 2011 for details).

Conservation actions

As a developed country, Australia has been able to implement significant measures to protect dugongs. Conservation is occurring at national, state/ territory and local levels. The responses to the various threats are summarised in Marsh *et al.* (2011).

Assessment

Marsh *et al.* (2011) subdivided this region for assessment because of the size of the dugong's range and the spatial variability of impacts. Their assessment follows (see Figure 8.6): (1) urban coast of Queensland: Critically Endangered; (2) northern Great Barrier Reef and Torres Strait: Vulnerable; (3) the northern tip of Cape York west to the Northern Territory border: Data Deficient; (4) north-west Cape to Shark Bay in Western Australia: Least Concern. They acknowledged that a more evidentiary assessment might classify the northern Great Barrier Reef and Torres Strait as Data Deficient.

Western Pacific islands

Dugongs are widely distributed in the tropical and subtropical island waters of the Western Pacific Region, mostly in scattered subpopulations (Marsh *et al.* 2002; Garrigue *et al.* 2008; Kinch 2008; Bass 2009; Figure 7). Vanuatu is the eastern limit of the range. This entire region encompasses more than 11 000 km of coastline (9% of the dugong's global Extent of Occurrence; 6% of the potential habitat <10 m deep). Connectivity between the Western Pacific island populations and populations in Australia and South-East Asia is unknown, although Australia and Papua New Guinea certainly share the Torres Strait dugong (sub)population.

Population size and trends

Estimates of dugong numbers in the region are anecdotal, apart from New Caledonia where a quantitative aerial survey in 2003 using the methodology outlined in Pollock *et al.* (2006) resulted in an estimated population of about 2000 dugongs (Garrigue *et al.* 2008). Thus the regional population is likely to be in the thousands, an assessment that is being further investigated by subsequent surveys the result of which are not yet published (C. Cleguer per comm. 2013). There is no reliable information on trends, although a majority of the fishers interviewed by Kinch (2008) in the autonomous region of Bougainville (part of Papua New Guinea) claimed that the numbers were increasing, a conclusion supported by Yen (2006) and Bass (2009) who interviewed fishers in the Samarai region of Milne Bay and on the islands of Bougainville and Manus (all in Papua New Guinea), respectively.

Threats

Dugongs have high cultural value and legal traditional hunting is widespread and probably the main source of dugong mortality in this region. In some regions there has been a technology switch from harpoons to gill nets. For example, in Bougainville, Kinch (2008) reports that consumed dugongs were all captured in gill nets. The dugong harvest of the Papua New Guinea villagers along the northern

coast of Torres Strait is significant; many animals are now caught using nets (H Marsh unpublished information from a 2009 workshop in Daru, Papua New Guinea). Other concerns include 'swim with dugong' tourism in Vanuatu (Marsh *et al.* 2002). Marine mammal swim-with activities are banned in many parts of the world because of concern about the risks to the target animals and swimmers. Halpern *et al.* (2008) assess the status of the coastal seas of this region as low impact in the Gulf of Papua and New Caledonia, medium high off northern Papua New Guinea, and high in the waters off Vanuatu, presumably because of the offshore fishing impacts. Coles *et al.* (2003) provide information on the threats to seagrasses of this region including coastal reclamation, tourist development, port developments and small boat marinas.

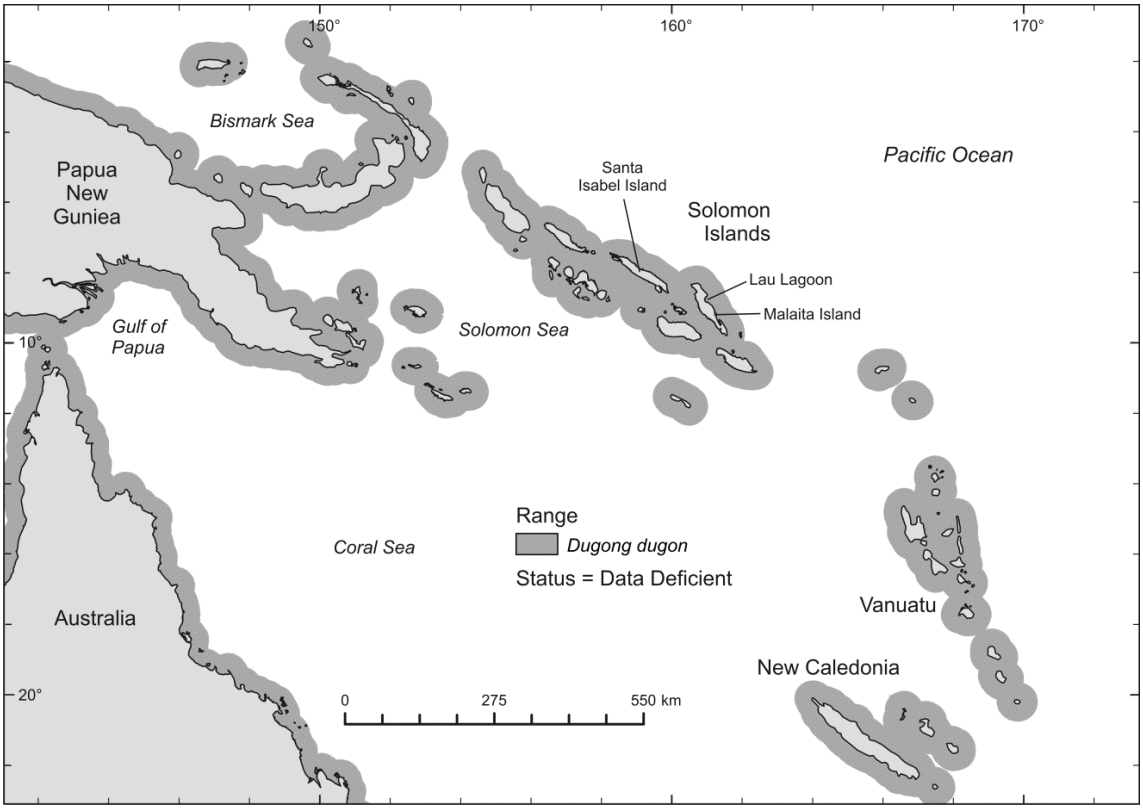


Figure 7. Range and key habitats of *Dugong dugon* in the western Pacific where we have assessed its conservation status as Data Deficient. Key habitats include the Papua New Guinea waters of Torres Strait , the southern coast of Santa Isabel Island, and Lau Lagoon on Malaita in the Solomon Islands; coastline of New Caledonia - particularly the centre and southern parts of the west coast. Part of the range of the dugong in northern Australia is also shown. From Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University Press.

Conservation actions

The dugong is protected by legislation in New Caledonia, Papua New Guinea, Solomon Islands and Vanuatu, although the capacity to implement protection is limited. A regional *Action Plan for Dugongs* has been developed by the Secretariat of the Pacific Regional Environmental Programme (SPREP) (Gillespie 2005). The Australian and Papua New Guinea governments are working bilaterally to attempt to address the issue of the dugong harvest by the Papua New Guinea villages along the northern coast of Torres Strait.

Assessment

Marsh *et al.*(2011) considered the Western Pacific islands dugong population to be Data Deficient.

2. ADDRESSING THE PROBLEM OF DUGONG CAPTURE IN FISHING GEAR

As can be seen from the regional assessments of threats above, the incidental and deliberate capture of dugongs, in both artisanal and commercial fisheries, is one of the largest and most widespread threats to their survival. Although dugongs are caught in purse seine nets, bay nets, trap nets, beach seine nets, shark nets, trawl nets, fish traps, bag nets, longlines and fish weirs (Marsh *et al.* 2002) and killed as a result of cyanide and dynamite fishing (fish bombing) (e.g. see Marsh *et al.* 2002 and Rajamani *et al.* 2006), capture in gill nets is the most significant problem. In developing countries, most dugongs caught in fisheries are retained for sale for food and by products helping to perpetuate the market.

In most of the developing countries in its range, dugongs are worth much more dead than alive, because the sale of their products represents several months' income to a low-income artisanal fisher and enforcement is non-existent or ineffective. Thus the incentive for an artisanal fisher to kill a dugong caught in his fishing gear and to sell the products is considerable. This problem is exacerbated when the target product of gill netting is also extremely valuable. For example, Mozambique is one of the poorest countries in the world, ranking 184 out of 187 countries on the Human Development ***Index (***Human Development Report ***2009).*** In the Bazaruto National Park, gill netters target shark fin which can be worth up to US$200 per kg; dugong meat is worth US$2 per kg in the local market (information provided to H Marsh and J Reynolds at the Dugong Workshop, Maputo, Mozambique, May 2009). The link between the capture of dugongs in nets and the illegal, unreported and unregulated shark fin trade is unlikely to be limited to Mozambique, given the widespread concerns about dugongs being caught in shark nets (Marsh *et al.* 2002) and the Asian focus of the shark fin trade (Lack and Sant 2008).

At the scale of the individual fisher, the incidental catch of dugongs is generally rare, with many fishermen claiming that capturing a dugong is a once in a lifetime event. This result is likely to reflect the low densities of dugongs in most range states. However, The population biology of dugongs renders them particularly vulnerable to mortality as adults (Marsh *et al.* 2011). Thus even the relatively low number of dugongs captured in nets in most areas is a very serious threat to the population. This combination of low numbers of captures from small populations means that it is impossible be able to prove statistically with appropriate power whether gear modifications reduce dugong bycatch or not. Thus operational measures such as modifications to nets must be regarded as secondary measures not primary measures to protect dugongs.

Three very different approaches have been proposed to mitigate interactions between marine megafauna such as dugongs and fishing operations (Dawson *et al.* 2013): (1) changing the behaviour of the fishers; (2) changing the nature of the interaction between the fishers and species of conservation concern by modifying the netting gear; (3) modifying the behaviour of the species of conservation concern, causing the animals to move away from the fishing gear. Examples of these approaches include: (1) the implementation of no netting areas to change fishers' utilisation of habitats and resources; (2) fishing gear modifications and technological solutions that change the way animals and fishers interact (Werner *et al.* 2006); and (3) acoustic alarms (hereafter referred to as pingers) attached to nets to reduce the likelihood of entanglement by alerting animals away from the gear (Kraus *et al.* 1997).

Hodgson *et al.* (2007) conducted experiments to test the behavioural responses of dugongs to 4 and 10 kHz pingers in an array simulating a net. Each experiment comprised three sequential 10-min treatments in which two pingers were: (1) inactive, (2) active, (3) inactive. They concluded that pingers are unlikely to alienate dugongs from critical habitats or reduce dugong mortalities in fishing nets. Ongoing research on the effectiveness of pingers on dugong populations is unlikely to be cost-effective. A comprehensive study would require a significant number of pinger types to be tested in a range of different inshore habitats (Baldwin 2002). Hodgson's research took several months of fieldwork to test two pinger types. Assuming 10 types of acoustic alarms, the cost to test them would be prohibitive. In addition technological solutions such as acoustic alarms are not practical to use in

the developing countries that comprise most of the dugong's range; the pingers are too expensive to purchase and service.

A series of gear modifications have been developed with the purpose of changing the nature of the interactions between marine mammals and fisheries. A recent study identified about 55 different techniques, including metal oxide nets (with acoustical detection features), pyrotechnic devices, glow ropes, flashing lightsticks, electromagnetic deterrents, and weighted lines (Werner *et al.* 2006). Gill nets in Queensland are being experimentally modified with a view to reducing the capture of marine mammals particularly dugongs (David Welch pers comm). The problems with all such approaches is that because of the low (but still serious) number of dugong captured in nets, it will be impossible to be able to prove statistically with appropriate power whether such gear modifications reduce dugong bycatch or not. Thus operational measures such as modifications to nets or acoustic alarms must be regarded as secondary measures rather than primary measures to protect dugongs.

To change the behaviour of fishers to reduce the bycatch of dugongs, management agencies must understand and incorporate their opinions, knowledge and beliefs, into any future mitigation plan. For fishers to engage and follow any bycatch solution strategy, they must first be convinced that the approach selected is legitimate. Thus, (1) fishers must be involved in the research efforts to test a particular approach to confirm its effectiveness; (2) fisher's knowledge must be considered and incorporated in the proposed solutions; and (3) mitigation measures must be cost-effective, or subsided by the government or NGOs (Berg-Soto 2012).

It is likely that several solutions will have to be used in concert to address the problem of dugongs being caught in fishing gear in most parts of the dugong's range. The effectiveness of any solution will be hard to test, as the power to detect changes in dugong numbers from any mitigation measure will always be weak within a management time frame because: (1) most dugong populations are small, (2) the absolute number of dugongs caught is low, and (3) mortality in fishing gear is unlikely to be the sole source of anthropogenic mortality.

To achieve the most effective protection, several mitigation approaches should be combined in a comprehensive system to reduce bycatch (Berg-Soto 2011). Such combinations have been successfully used in other fisheries (Barlow & Cameron 2003, Palka *et al.* 2008). The manner in which these approaches are combined to: (1) provide a level of protection that ensures the number of animals that can be removed without causing a serious decline in a population is never exceeded, (2) address the unavoidable uncertainty in evaluating the effectiveness of mitigation measures, and (3) build the legitimacy required to achieve maximum compliance by stakeholders and fishers (Berg-Soto 2011).

Thus an effective system must implement 'no-netting' areas in important dugong habitats at its core to secure populations combined with other operational approaches as complementary measures aimed at allowing populations to recover. These no-netting areas will need to be based on knowledge of the distribution and abundance of dugongs, their ecological requirements, and a set of biophysical operational principals (Fernandes *et al.* 2005) designed to prevent population decline. The use of additional operational procedures aimed at reducing catch in parts of the range where netting is allowed should be designed to ensure the legitimacy of the catch reduction system through fisher engagement. This complementary layer of operational procedures would be aimed at increasing the chance of recovery of the population secured through no-netting area closures, to a level agreed among different stakeholders and decision-making agencies. Because it will be impossible to measure the effectiveness of this approach by monitoring changes in the dugong population, proxies will have to be monitored e.g. number of gill nets used in an area per unit time, number of breaches of netting closure per unit time etc.

3. GOOD PRACTICES FOR MANAGEMENT, RESEARCH AND MONITORING

The life history parameters of dugongs dictate that the best management prescriptions will target actions that decrease human-caused mortality of adults, such as careful control of harvesting and restricting likelihoods of entanglement in nets, collisions with boats and crushing in flood gates (Marsh *et al*. 2011). Such actions also may have a positive influence on other vital parameters; calf survival is dependent on survival of mothers up until weaning, and good habitat management that reduces human influences such as scouring of the substrate and increased turbidity detrimental to plant growth may also increase habitat quality and the nutritional plane of breeding adults. In addition, management of dugongs should not neglect reproductive success and the survival of calves and subadults.

The tools and processes for conserving dugongs considered here are divided two non-exclusive categories: (1) regulatory, and (2) enabling in an attempt to describe practical tools and processes that will establish an elevated value for conservation and promote a reversal of past destruction. Poverty represents an enormous challenge to the conservation of natural resources in most dugong range states, especially in view of recent human population growth and the growth projected over the next 30–40 years (United Nations 2012). When the costs of economic activity are borne by the poor, as is the case for artisanal fishers and hunters of dugongs in developing countries, the incentive to correct threats to biodiversity are likely to be weak (Arrow *et al.* 1995).

Regulatory Tools

Legal protection

Almost all dugong populations are legally protected in their range states as well as by several international treaties and agreements. It seems likely (e.g. UNEP 2010) that many people who harvest or incidentally take a dugong are aware that this action is against the law. Thus, the primary issue is not a matter of creating appropriately protective legislation; nor in many cases is it a matter of making people aware of the laws. Rather, the challenge is to ensure that consequences of other needs do not outweigh consequences of ignoring or breaking the law.

Enforcement

In virtually all dugong range states, there is a need for adequate funding and staffing to ensure that existing laws are enforced. Situational crime prevention (Clarke 1997) analyses the circumstances giving rise to particular types of crime to reduce the opportunity for those crimes to occur, focusing on the settings for crime rather than on those committing criminal acts. This approach seeks to make criminal action less attractive to offenders. Situational crime prevention identifies opportunity reduction measures that have been developed for particular crimes by making them more difficult and risky, or less rewarding and excusable. Many of the enabling tools and processes for conserving dugong outlined below are consistent with this approach. The challenge is to optimise these tools for specific dugong populations and to rationalise control measures to be in line with local capacity without surrendering key conservation outcomes.

Marine protected areas

The IUCN (1994) declares that protected areas are ‘especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means’. Marine protected areas have proliferated worldwide, although the extent to which they are designed to protect resources varies from strict reserves to areas for management and sustainability of particular resources (IUCN 1994). A growing body of literature (e.g. Salm *et al.* 2000; Hooker and Gerber 2004; Fernandes *et al.* 2005) documents the establishment, successes and shortcomings of marine protected areas. Most dugong range states have agreed to international commitments on extent of Marine Protected Areas under the Convention on Biological Diversity Aichi Targets which state that ‘10 percent of coastal and marine areas, especially areas of

particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes' by 2020 (http://www.cbd.int/sp/targets).

Marsh and Morales-Vela (2012) provided an overview of protected areas as a tool for sirenian conservation and their potential importance. They also noted that for a variety of reasons (e.g. lack of explicit goals, enforcement, funding or assessment) marine protected areas often fail to accomplish what their creators intended. Marsh *et al.* (2002 and 2011) and UNEP (2010) documented that dozens of protected areas exist specifically to protect dugongs, but note that many are 'paper parks' that exist only as documents and functionally contribute little to conservation. Marine protected areas can be powerful tools for conserving dugongs and seagrasses. The Great Barrier Reef World Heritage Area, for example, contains a network of ecosystem-scale marine protected areas and utilises other management approaches that protect a high proportion of habitats that receive high use by dugongs (Grech *et al.* 2008).

Participants in a 2009 workshop at the International Marine Conservation Conference (Washington, DC) discussed attributes of protected areas that would help to ensure their success for conserving sirenians. The primary recommendations of that group included many of the points that are raised here with regard to stakeholder involvement and communication, as summarised in Box 1. and in Marsh and Morales-Vela (2012).

Box 1. Desirable attributes of aquatic protected areas for sirenians as identified by the participants at the 2009 workshop at the International Marine Conservation Conference (Washington, DC).

- Ensure community involvement that incorporates local knowledge
- Develop management planning that reflects the regional legal framework and includes goals that are specific to sirenians
- Encourage legal frameworks and the political will to make them work
- Develop strong education and awareness programmes
- Create protected areas that are sufficiently large to (a) include a high percentage of the sirenian population throughout the year, and (b) protect ecological processes
- Ensure long-term funding to implement management plans
- Develop co-management involving government agencies, non-government organisations, local communities and scientists
- Ensure effective enforcement
- Build capacity, including succession planning, for all co-management partners
- Maintain active research programmes to inform management
- Develop alternative livelihoods for community members affected by the implementation of the protected area plan.

From Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University Press.

Thus, the creation of an effective protected area, as opposed to a 'paper park', requires considerable (a) information with regard to the species or ecosystems being conserved; (b) communication and feedback among stakeholders; (c) knowledge of and attention to mitigation of threats; and (d) commitments of funding for research, management and enforcement. Reserve design software is available (*e.g.* Ball and Possingham 2000; Possingham *et al.* 2000) to allow multiple datasets, objectives and social costs to be assessed to provide several alternative reserve designs. However, reserve design software does not reduce the need for effective face-to-face communication between managers and stakeholders (see Nursey-Bray *et al.* 2010) or for funding for research, management and enforcement.

Once a plan for a protected area is implemented, it is important to evaluate whether that process promotes achievement of the goals of the plan. Pomeroy *et al.* (2004) developed a practical guidebook for evaluating effectiveness based on carefully selected social and ecological indicators. Managers of protected areas should endeavour to practice 'Adaptive management' (see below), an iterative process in which new initiatives are attempted, their success evaluated, and refinements in practices implemented based on results of the evaluation (Pomeroy *et al.* 2004).

Creation of effective protected areas can be extremely useful for conserving dugongs in both developed and less developed countries. The challenges and 'ingredients' of management plans will naturally vary as a function of stakeholder needs and perceptions, but the end result can help achieve species conservation goals and provide alternative livelihoods for some community members as enforcement rangers, guides and conservation educators.

Working with local communities to enlist their support of effective measures to conserve dugongs, and by extension other species as well, is essential. Setting aside areas where hunting and/or netting currently do not occur because of problems of access may be one of the tools that will be effective (Nasi *et al.* 2008), provided that such areas can be enforced. Naturally, if there is interest in creating such off-limits areas, the local people should be heavily involved in discussions and negotiations; without their involvement and support, the efforts will likely fail. Experience in Australia suggest that local people will only be interested in this approach if their long-term right to have a significant voice in the management of the areas in question is secure.

Enabling Tools

Education and awareness

It has become cliché that conservation must involve education. Unfortunately, managers often ignore the important step of assessing the effectiveness of education programmes to ensure that they truly facilitate achieving conservation goals. In designing an education programme, it is vital that processes and materials be developed to reach a particular audience with a particular message or set of messages. Children respond to different materials and messages than adults; adults whose literacy is limited require different forms of communication than adults who read well; and poor, subsistence users in coastal communities in developing countries have vastly different perspectives than bureaucrats in large, prosperous cities.

The awareness that education and communication must be tailored to an audience is an important step. Even more important is finding the proper individuals to develop education and awareness materials. In developing countries, the best people to develop culturally appropriate materials and activities are the teachers, students and key stakeholders of the local communities, such as former hunters. Traditionally structured 'Western' approaches to education simply do not work in other settings (and may not even be optimal in the settings for which they were designed).

Aragones *et al.* (2012) have noted a range of educational tools that have been found to work well in *developing countries.* The development, assessment and improvement of effective education and awareness programmes is a community-wide activity, involving continuous communication, feedback and adjustment. Such programmes provide long-term benefits because they have the potential to affect local perceptions, values and behaviours in fundamental ways. However, they also require a long-term commitment, not just an occasional site visit; for this reason, if no other, the careful development and nurturing of education programmes is ideally suited to the missions and long-term funding capacities of non-governmental environmental organisations. However, it is important to garner long-term funding and to consider succession planning. Too often, successful programmes collapse when their champion leaves. For example, arguably the most effective and innovative dugong conservation effort in the late 1970s and early 1980s was the Dugong Conservation, Management and Public Education Programme in the Western Province of Papua New Guinea (Hudson 1981). The programme collapsed

when international funding ceased and its champion, Brydget Hudson, left Papua New Guinea indicating the need to gain the commitment of local policy makers as well as international non-government organizations.

Community partnerships

Without the support of local communities, conservation of any resource is unlikely to succeed. This assertion is exemplified by specific case studies of declining dugong populations for which community involvement was deficient, as well as in situations for which conservation prospects improved in the wake of appropriate team-building (Aragones *et al.* 2012).

Community partnerships for dugong conservation are becoming more prevalent (e.g. Phuket, Thailand; Myanmar; parts of Australia, such as Torres Strait Islands; see 'Reinforcement of cultural protocols' below). Although such efforts are relatively new and have not been described in primary publications to any great extent, efforts by Ilangakoon and Tun (2007) and Hines *et al.* (2005b) for the dugong are instructive. Aragones *et al.* (2012) note that a successful programme to integrate local communities in dugong conservation activities needs to be tailored to the perceptions, needs and culture of the local people. Thus, every programme will be, in some critical ways, unique. Nonetheless, there are general categories of factors to consider in developing community-based conservation programmes as summarised in Box 2.

Box 2. Factors to consider in developing community-based conservation programmes:

- respect for and integration of local knowledge of species and habitats
- open communication
- identifying stakeholder interests, especially those that may conflict with goals of the programme or project
- developing education programmes specifically for particular community audiences; and regular feedback to and interaction with the community
- the availability of long-term funding.

From Marsh, H, O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University Press.

Cross species initiatives and flagship species

Dugongs share their seagrass habitats with other megafauna such as coastal dolphins, sea turtles and sharks. Single species conservation initiatives are too often developed at the expense of more cost-effective and potentially influential synergies. Dugong conservation can be effectively embedded in ecosystem conservation or a desire to encourage regional biodiversity (Simberloff 1998). In such circumstances dugongs may be used as 'flagship species' to represent the environmental cause and engender public support. The rationale is that concern for the dugong will benefit not only the species itself, but improving prospects for the other species that also share its habitat or are subject to the same threatening processes. Laws such as the US Marine Mammal Protection Act of 1972 and its subsequent amendments note that the primary goal of marine mammal conservation is to maintain the health and stability of marine ecosystems on which these animals depend, overtly supporting the idea that conservation of marine mammals is linked tightly to conservation of whole ecosystems.

The selection of the dugongs as a flagship species has already facilitated establishment of protected areas or other conservation actions in a number of countries (e.g. see Marsh *et al.* 2002, 2011). This process is likely to continue as a result of their cultural or iconic importance and charismatic nature as well as the fact that effective conservation of dugongs simultaneously preserves habitat for species of importance for subsistence or commercial harvest, ecologically vital nursery grounds for many species, and resources of great aesthetic importance.

Reinforcement of cultural protocols

Dugong hunting dates back at least 4000 years in northern Australia (Crouch *et al.* 2007). The right of traditional inhabitants to hunt (but not to sell the catch) has been established by decisions of Australia's highest court and the traditional fishery for dugongs is authorised by an international treaty, the 1984 Torres Strait Treaty, between Australia and Papua New Guinea. In recent years, both Traditional Owners and scientists have expressed concern about the sustainability of the contemporary harvest (Heinsohn *et al.* 2004; Marsh *et al.* 2004). The Statutory Management Regulations associated with the Torres Strait Fisheries Act of 1984 place some controls on the dugong fishery in addition to the exclusivity of the hunting rights of Traditional Owners: (1) dugongs may only be taken by traditional inhabitants; (2) dugongs must be caught with a traditional harpoon with a detachable head or *wap*; (3) dugongs must only be caught from a vessel less than six metres long; (4) dugongs must not be caught in the Dugong Sanctuary, a large area in western Torres Strait distant from the Sea Countries of most communities; and (5) the sale of dugong meat is prohibited. To date, enforcement of these restrictions has been limited.

The peoples of Torres Strait value the dugong for many reasons and it can be regarded as cultural-keystone species *sensu* Garibaldi and Turner (2004) that together with the green turtle has catalyzed cross-cultural natural resource governance in that region (Butler *et al.* 2012). The cultural values of the dugong and dugong hunting are extremely high and dugongs feature prominently in the artwork of Torres Strait Islanders. Delisle (2012) used semi-structured interviews followed by rating and ranking exercises to determine the relative importance of the benefits and costs associated with traditional dugong and turtle hunting to members of two important dugong hunting communities in western Torres Strait. Community members identified a range of social, cultural and financial benefits and costs associated with hunting—cultural benefits and costs were rated as the most important.

Project officers employed by the Torres Strait Regional Authority (TSRA) have worked with 15 Indigenous communities to develop community-based Turtle and Dugong Management Plans with funding from the Australian Government. These plans are now being implemented with substantial funding from the Australian Government to the TSRA to support a community-based ranger programme.

The Islanders see community-based management of their dugong and marine turtle fisheries as an important means of revitalising their culture. Each of the plans sets out objectives and management arrangements that aim to achieve sustainable use of dugong and turtle resources through implementing cultural practices and protocols. In addition, all the plans reinforce the expectations that Islander rangers will be provided with opportunities for training and joint patrols with State and Commonwealth fisheries enforcement agencies with a view to eventually taking on fisheries enforcement roles and responsibilities. The plans also make explicit the aspirations of the Islanders to be involved in comprehensive ranger training programmes, community education, monitoring and research in partnership with relevant agencies and research institutions.

This approach includes some of the features identified by Nasi *et al.* (2008) as important for the sustainable harvest of bushmeat, especially the need to increase the capacity for local people to manage their own resources in association with exclusive use rights. Naturally, such an emphasis on reinforcing cultural values will only be relevant in places where the cultural values of dugongs remain strong although the opportunity for such programmes to provide jobs for members of the local community will be relevant to many areas. However, a programme such as the one implemented in Torres Strait is very expensive and may be beyond the reach of governments and non-governmental organisations in most dugong range states.

Research

Science can and does play a crucial role in conservation by providing information to decision makers. However, the presence of scientific information of high quality does not ensure that it will have a

positive effect. Ensuring that science is of high quality and addresses the critical uncertainties to provide clear answers to conservation questions seems like an obvious approach. However, shortcomings exist, and Ragen *et al.* (2005) recommended that scientific research programmes take several actions to promote their value for conservation (Box 3).

There are several issues regarding scientific input to decision making. First, biological or ecological monitoring often takes place for years or decades, without the data being used to solve relevant conservation issues, conservation efforts for dugongs can and should proceed even when knowledge is incomplete, especially when data for related species may be applicable. However important scientific information may be, integration of the social, economic and other factors noted by Meffe *et al.* (1999, quoted above) is essential for success. This involves social scientists in projects and programmes at an early stage.

Natural scientists have an important role to play in dugong conservation efforts. However, even in the face of inadequate scientific knowledge, conservation must proceed with an emphasis on including and empowering communities and regional organisations. Conservation should not be stalled by a perceived lack of scientific information.

Box 3. Suggested actions to promote the value of scientific research programmes for conservation (Ragen *et al.* 2005):

- develop long-term, multidisciplinary research and management programmes suitably scaled to ecosystem complexity
- ensure that population and ecosystem assessment programmes are sufficient to inform management decisions regarding current and future threats
- develop and validate specific, measurable and robust management standards to achieve conservation goals
- identify marine mammal conservation units essential to ecosystem health and function
- increase international cooperation in studying and addressing human-related threats
- properly assess and communicate the strengths and limitations of the scientific process, including measures of uncertainty that are an essential element of high quality science
- address ultimate as well as proximate causes of environmental problems.

From Marsh, H**,** O'Shea, TJ, Reynolds, JE III. 2011. The ecology and conservation of Sirenia: dugongs and manatees. Cambridge University

Managing for multiple threats

In all range states, the impediments to dugong conservation are much more immediate than the lack of scientifically robust data. Even data on the local distribution and relative abundance of dugongs and their habitats at the spatial scales required for effective conservation planning are unavailable for at least some locations. Collecting such information is expensive, logistically difficult (and beyond the capacity of most dugong range states). In addition, constraints of time, expertise and cost often mean that monitoring programmes cannot be conducted at spatial scales that are large enough, or over time frames that are long enough, to determine whether management interventions are working. These problems exist even in developed countries such as Australia, including high profile regions such as the Great Barrier Reef World Heritage Area.

Alana Grech and her collaborators used a novel approach to address the challenges associated with informing the management of dugongs and their habitats in the Great Barrier Reef World Heritage Area using spatial models and risk assessments in geographical information systems (GIS). They developed spatial models using coastal seagrass mapping and dugong distribution and abundance data at the scale of the coastal waters of the entire World Heritage Area (approximately 22 600 km^2) and overlaid information on the spatial distributions of threats such as gill-netting, hunting, vessel strike and low-quality terrestrial runoff in the GIS (Grech and Marsh 2007, 2008; Grech *et al.* 2008; Grech

2009; Grech and Coles 2010; A Grech personal communication 2010). Grech *et al.* (2008) then used expert knowledge to evaluate the relative risks of various threats to the dugongs and their seagrass habitats. They used expert opinion, spatial information on the distribution of threats, and the spatial model of seagrass and dugongs to identify areas where human impacts posed low, medium and high relative risks to dugongs and their habitats. This technique allowed the researchers to explore methodically the ways in which the systematic removal of various threats would likely affect dugong status. The approach identified sites where gill–netting was still occurring in areas of high dugong density (see Grech *et al.* 2008), despite the 2003 rezoning of the Great Barrier Reef Marine Park (McCook *et al.* 2010). Information concerning these sites has been provided to a review of the inshore gill net fishery. The risk assessment has also been used to identify areas in the community management areas of indigenous peoples where hunting does not occur at present because the areas are difficult to access in small boats. Several workshops have been held with local indigenous peoples, who have native title rights to hunt to discuss the possibility of declaring these regions 'no hunting areas' to pre-empt hunting expanding with improved technology.

The data used to develop the spatial models of threats, seagrass distributions (Grech 2009) and dugong distribution and abundance (Grech and Marsh 2007) were collected over many years using expensive and extensive vessel surveys (seagrasses) and aerial surveys and government records of threats. The modelling was done using sophisticated techniques. However, similar but less robust information could be collected using less elaborate techniques, such as interviews with local fishers (Moore *et al.* 2010; Ortega-Argueta *et al.* 2012), provided the data were collected consistently and at ecologically appropriate spatial scales. Threats can be ranked using existing information, including information from other dugongs. We know, for example, from life history modeling that the greatest risks to all sirenians are from anthropogenic activities that kill adult animals, such as hunting, capture in gill nets and vessel strike (Marsh *et al.* 2011).

The prospect of conserving the dugong throughout its range is daunting. However, the relative severity of threats is not consistent across the ranges, and if one were able to identify the 'hotspots', conservation (including but not limited to science, capacity building and stakeholder involvement) can be focused in ways that could have a disproportionate effect on the wellbeing of the entire species. The locations of hotspots would depend on factors such as number of animals present, type and severity of threats, and extent to which those threats are being addressed and mitigated. The dugong project being implemented under the Convention on Migratory Species Dugong Memorandum of Understanding has refined the survey instrument of Moore *et al.* (2010) and is using it across the range of the dugong to identify locations where species or population vulnerability is highest to enable the limited human and financial resources to be used most effectively (N.Pilcher, personal communication, 2013). Such an interview-based system will not provide all the information one needs for effective conservation. However, it can allow managers and scientists to focus their resources to either learn more about the situation or to take rapid steps to mitigate threats.

The 'hotspot' concept may also be applied to people as well. As has been documented more generally by studies of the bushmeat crisis (Nasi *et al.* 2008), the deliberate hunting or incidental killing of dugongs is typically done by relatively few people within subsistence communities. Not only do such people have direct and measurable impacts on dugong populations in particular areas, but they can be valuable to efforts to identify threats to dugongs and their habitat because of their expert knowledge, acquired over a lifetime of hunting or fishing. It seems prudent, therefore, to develop a community-based programme that includes all stakeholders (as described above) but to take special pains to involve the hunters/ experts. This is the approach that Kendall used so successfully in her manatee conservation efforts in Colombia (described in Marsh *et al.* 2011).

Adaptive Management and Monitoring

Adaptive management is learning by doing. Adaptive management provides an explicit structure that optimises the chances that conservation actions will be effective by engaging key stakeholders in

critical processes such as goal setting, planning, management, enforcement and evaluation (Buck *et al.* 2001). Adaptive management requires effective monitoring, which can be challenging for small populations of dugongs as discussed below.

Adaptive management requires monitoring to determine whether the approach adopted is successful. Determining trends for small dugong populations in time frames useful to management is usually impossible and so proxy indicators have to be developed to inform adaptive management. A technical workshop in Townsville, Australia in 2010 critically evaluated a series of tools for monitoring the status of dugong populations in the Great Barrier Reef World Heritage Area including: (1) large-scale aerial surveys; (2) spatial models and risk assessments; (3) broad-scale seagrass surveys and Seagrass-Watch (see below); (4) catch per unit effort data; and (5) the Queensland Marine Strandings Database. The major outcome of the workshop (Grech and Marsh 2010) was the recognition of the applicability and validity of all of these monitoring tools. It was acknowledged that there is not a 'one size fits all' monitoring solution; a combination of monitoring tools is required to inform management. The workshop agreed that a report card would provide an integrated assessment of the performance of management actions by taking into consideration the outputs of multiple monitoring tools. Such a dugong report card would need to be linked to report cards associated with water quality and seagrass to: (1) inform the status of the dugong's habitats, and (2) provide for assessments on the status of the relevant ecosystems. This situation is likely to be typical and that different suites of monitoring tools will need to be tailored for different populations or dugongs and the resources available.

Seagrass-Watch (2010) is a global, scientific, non-destructive, community-based seagrass assessment and monitoring programme that is important to the conservation of dugong and manatee habitats. Since its genesis in 1998 in Australia, Seagrass-Watch has expanded internationally with participants in other dugong range states including Papua New Guinea, Solomon Islands, New Caledonia, Palau, Japan, China, Vietnam, Philippines, Thailand, Malaysia, Indonesia, Myanmar, India, Eritrea, Comoros Islands, Maldives and Singapore. Monitoring is now occurring at approximately 259 sites across 17 countries; an additional nine countries participate but are currently at the resource identification stage.

Seagrass-Watch aims to raise awareness of the condition and trend of nearshore seagrass ecosystems and provide an early warning of major coastal environment changes (Seagrass-Watch 2010). The Seagrass-Watch programme involves collaboration/ partnerships among the community, qualified scientists and the data users (environment management agencies). People involved in the programme develop a deep sense of custodianship and understanding of their local marine environments that reaches throughout the wider community. Coastal communities work in partnership with government agencies to play a primary information-gathering role. Participants are from a wide variety of backgrounds who all share a common interest in marine conservation. Most participants are associated with universities and research institutions, government (local and state) or non-governmental organisations, established local community groups and schools.

The level of involvement depends on local resources, local coordination, local support, available capital and scientific expertise (Seagrass-Watch 2010). Seagrass-Watch also integrates with existing education, government, non-government and scientific programmes to raise awareness and conserve seagrass ecosystems for the benefit of all. Participants collect quantitative data on seagrasses and their associated fauna using simple yet scientifically rigorous monitoring techniques.

The programme has a strong scientific underpinning with an emphasis on consistent data collection, recording and reporting. Scientific, statistical, data management, data interpretation and logistic support underpins all monitoring efforts. Seagrass-Watch identifies areas important for seagrass species diversity and conservation and the information collected is used to assist the management of coastal environments and to prevent significant areas and species being lost.

Seagrass-Watch is a model for habitat monitoring programmes that could be developed for dugongs and illustrates the need for dugong conservation scientists and managers to partner with overlapping initiatives in seagrass conservation.

Economic tools

Perhaps the greatest challenge in dugong conservation is to provide incentives to reduce the likelihood of: (1) low-income hunters killing dugongs deliberately, (2) low-income fishers killing the dugongs that they catch incidentally rather than releasing them alive, and (3) destruction of seagrass habitats though destructive fishing practices.

In many developing countries, dugong conservation is inextricably linked to poverty alleviation and the provision of alternative livelihoods for fishers and hunters. Efforts to alleviate poverty in low-income nations may produce incentives to degrade the local environment. For example, increasing local incomes adjacent to ecologically valuable areas often increases land clearing for agriculture (Wűnder 2001). Conversely, efforts to protect biodiversity though ecotourism ventures may not result in improvement in local livelihoods (Kiss 2004). Although Integrated Conservation and Development projects were touted as a solution to biodiversity conservation in developing countries, they have had mixed success and alternatives and modifications to the original concept are being investigated (Wells *et al.* 2004).

Economic approaches to environmental protection can be positive or negative, direct or indirect, and be designed as incentives or deterrents. Indirect, positive incentives include support for alternative livelihoods that value environmental assets, such as ecotourism. For example, dugongs have proved to be tourism drawcards at clear-water sites in several developing countries e.g. Vanuatu and the Philippines (Marsh *et al.* 2002). Nonetheless, dugong tourism is likely to have limited appeal in most developing countries, except as part of the overall wildlife attractions of an area. Dugongs often occur in areas of high water turbidity and generally only the nose or back of the animal is visible very briefly as it surfaces to breathe. Especially in areas where they are hunted, dugongs are generally cautious and tend to avoid humans. In addition, indirect approaches such as ecotourism often fail to protect biodiversity and ecosystems to the extent needed (Mandel *et al.* 2009) or to provide alternative livelihoods for local people (Kiss 2004) as noted above.

Direct incentive payment approaches to conserve biodiversity have been advocated and explored; these include payment for ecosystem services, restricted land easements and direct performance-based payments (Ferraro and Kiss 2002; Mandel *et al.* 2009). Performance based payments to engage local peoples in sea turtle and dugong conservation have been successfully used in Tanzania (Marsh *et al.* 2011). However, incentive payments do not necessarily result in improved livelihoods (Mandel *et al.* 2009). Rather, they tend to be short-term payments that rely on a long-term funding stream and can result in ephemeral incentives. A lump or one-time payment does not guarantee a lasting incentive for protection of an environmental asset. Direct payment schemes can also be complicated by: limited or no enforceable property rights such as fishing permits and contractual laws, restrictions on or regulations controlling foreign ownership, and ethical issues resulting from the difference in purchasing power between the 'buyer' and 'seller' (Mandel *et al.* 2009).

Microfinance seeks to eliminate poverty by providing fair, safe and ethical financial services for people who, because of their circumstances, are not able to access mainstream financial services. Microfinance institutions have had considerable success in alleviating poverty over the past two decades, particularly in Bangladesh (Davis and Kosla 2007). This approach is being extended to use debt as a finance mechanism for conserving biodiversity by combining microfinance lending approaches with a performance-based incentive structure for environmental stewardship (Mandel *et al.* 2009). Although this approach—termed environmental mortgages—has not poreviously been applied to dugong conservation, it is a promising approach for conserving dugong habitats and reducing mortality from incidental capture in fishing gear.

Conditional cash transfers are another alternative worth investigating. Cash payments could be made (*e.g.* for school fees and the opportunity cost of sending the fisher's children to school; conditional on the fisher stopping the fishing practice that reduced habitat quality or killed or dugongs. The programme could combine conditional cash transfers (immediate incentive) with environmental mortgages (longer-term incentive). The loans could be used for a range of ventures that reflected community needs, aspirations, or economic possibilities.

For example, a community could agree to close an environmental asset such as a seagrass bed that was locally important dugong habitat to fishing practices that reduce the habitat quality of the area such as push netting, in exchange for a reduced interest loan. A pool of capital would be raised based on a combination of the international conservation community's willingness to pay for seagrass and dugong conservation and the amount the local community would need to receive to forgo benefits associated with degradation of the habitat such as the income earned from the push net fishery. This pool of capital would then be placed in a financial trust, under the partial control of the community, with the express purpose of making loans to the stakeholders in the community-held area (Mandel *et al.* 2009).

The status of the seagrass bed closed to fishing would be monitored at agreed intervals and the terms of the loan revised accordingly, including loan termination if necessary. The community could be involved in Seagrass-Watch (see above) and provided with the capacity to monitor changes in the extent of: (1) fishing damage to the seagrass bed, and (2) dugong feeding trails. The credibility of the programme would be reliant on the robustness of the monitoring scheme and its capacity to distinguish the effects of long-term change from the noise of environmental perturbations. From that perspective, monitoring damage to the seagrass bed from fishing would be the more reliable indicator. The density of dugong feeding trails could change for natural reasons unrelated to the closure such as severe storms (see Marsh *et al.* 2011).

A similar approach could be used to reduce the impact of hunting or the capture of dugongs or in gill nets. In such cases, it would probably be necessary to couple economic incentives with increased enforcement to combat illegal practices. Again it would be important to consider what could realistically be monitored. Any dugong population will almost certainly be too small for visual or acoustic monitoring to have the statistical power to detect change in abundance at a local level (Marsh *et al.* 2011), and attempts to monitor sales of dugong meat would be likely to drive that activity underground. However, it should be possible to monitor changes in fishing practices, such as the use of gill nets.

Mandel *et al.* (2009) identified challenges associated with these economic approaches and noted that careful biological and socio-political assessments of potential scenarios will be required to determine when they are appropriate. For example, to repay a loan, the fisher or his family would need to earn more from the alternative livelihood than the livelihood that threatens dugongs or their habitats. The approach would also be likely to be more successful in communities with robust social networks where social pressures to repay loans are strong. Nonetheless, given the success of microfinance institutions on poverty alleviation over the past two decades, environmental mortgages seem a promising approach for linking sustainable development and dugong conservation. If challenges in design and implementation can be overcome, environmental mortgages could provide monetary values for the conservation of dugongs and provide not only the incentive but also the means for low-impact livelihoods and economic development.

Blue Carbon

It is increasingly recognized that coastal and marine ecosystems store large amounts of carbon in soil sediments and vegetation (Murray *et al.* 2012). The burgeoning interest in coastal and marine ecosystems as carbon sinks has led to the use of the term 'blue carbon' defined as 'the carbon stored, sequestered or released from coastal ecosystems of tidal marshes, mangroves and seagrass meadows' (Herr *et al*. 2012). Disturbing these systems through conversion or degradation, emits carbon dioxide,

a greenhouse gas the growing atmospheric concentration of which is believed to be altering the climate system (Murray *et al.* 2012).

Seagrass ecosystems are recognised as globally significant carbon stock. In a recent synthesis, Forquerean *et al*. (2012) estimate that, although seagrass meadows occupy less than 0.2 % of the world's oceans, they are responsible for more than 10 % of all carbon buried annually in the sea. Incentives to retain rather than emit blue carbon should preserve biodiversity as well as a variety of other ecosystem services at local and regional scales.

The burgeoning interest in blue carbon is relevant to dugong conservation because dugongs are seagrass community specialists (Marsh *et al.* 2011) and the ongoing loss of seagrass communities (Orth et al. 2006; Waycott *et al*. 2009) is a threat to effective dugong conservation. Nonetheless, the carbon stock potential per unit area of Indo-Pacific seagrass beds that form the habitats of dugongs, is likely much less than that of other areas. Forquerean *et al*. (2012) summarised the regional data for organic carbon storage in seagrass ecosystems. The limited data suggest that the seagrass beds of the dugong's range in the Indo-Pacific have a relatively low carbon stock (living seagrass biomass at 47 sites in the Indo-Pacific = 0.61 ± 0.26 MgC ha^{-1} cf global average 2.51 ± 0.49 MgC ha^{-1} n=251; soil C_{org} at eight sites in the Indo-Pacific 23.6 ± 8.3 MgC ha^{-1} , global average 194.2 ± 20.2 MgC ha^{-1}).

Carbon crediting systems require sinks to be permanent and sustainable for ~100 years (Grimsditich *et al.* 2012). As in all natural ecosystems, risk factors in coastal and marine ecosystems can also be classified as natural or anthropogenic. Natural risk factors include storms, earthquakes, and disease, while anthropogenic factors include pollution, land-use change, aquaculture, and other means of habitat destruction. Experience in the dugong's range in Australia shows that extreme weather events and climate fluctuations can lead to serious seagrass loss (Preen *et al.* 1995, Rasheed *et al*. 2011; McKenzie *et al*. 2012). The permanence of the soil carbon in such situations needs urgent investigation.

The United Nations Framework Convention on Climate Change (UNFCCC) promotes the sustainable management, conservation, and enhancement of sinks and reservoirs of all greenhouse gases including those in coastal marine ecosystems, but as yet there are no specific mechanisms within the UNFCCC that focus on blue carbon (Murray *et al*. 2012). Policy research at Duke University's Nicholas Institute for Environmental Policy Solutions (Murray and Vegh 2012) examines the economic and scientific challenges that need to be addressed in order to determine whether payments for blue carbon may one day help conserve mangroves, seagrass meadows, and salt marshes. For blue carbon reservoirs to be included in policy mechanisms, they must be measured, reported, and verified (Murray and Vegh 2012), baseline carbon stocks (or reference emissions levels) must be established (which will be challenging for the seagrass beds used by dugongs because most of them are not detectable by remote sensing from space) and risks of non-permanence of carbon storage assessed. The possibility of emission leakage from activity targeted to reduce blue carbon emissions or enhance blue carbon storage in one place leading to enhanced emissions in another location also need to be considered.

As Lau (2012) points out seagrass beds variously provide a range of ecosystem services in addition to carbon sequestration including providing shoreline protection (absorb wave energy) and nursery habitats, refugia and feeding grounds for many marine fish and invertebrates including commercially – important species; enhancing biodiversity (sustain filter feeding invertebrates and marine species of conservation concern including the dugong) and water quality (filter sediment from water column, reduce turbidity). International carbon markets are currently more developed than payment for ecosystem service schemes (Lau, 2012; Ullman et al. 2012). Nonetheless, schemes for the payment of ecosystem services could potentially be monetized to generate market scales payments and to create incentives for behavioural change, reverse the loss of biodiversity and the capture of non-market values as explained above (see *Economic tools* above). Another option might be to design projects that

could address the combined ecosystem services and carbon markets and thus increase the value of carbon credits (Grimsditch *et al*. 2012).

4. CONCLUSIONS

If dugong conservation were easy, people would already be doing it effectively. The fact is that the presence of multiple goals, values and perceptions among stakeholder groups has led to more divisiveness than unity in terms of appropriate human behaviours and approaches consistent with sound species conservation (Reynolds and Wells 2003).

The dugong populations of Australia are relatively well studied and funds exist for their conservation and management (although that does not mean that conservation and management are optimal). The situation in parts of the Arabian region and New Caledonia increasingly approaches that in Australia. In addition, dugongs in these areas are relatively abundant, compared with dugongs in most other parts of their range The critical and pressing conservation issues for dugongs globally exist for the 'other' populations for which information and funds are sparse, numbers are small, and threats are severe and unmitigated.

Other components that may be useful to employ with communities include: using local people as 'rangers' to promote awareness and enforcement (see' Reinforcement of cultural protocols' above), using local teachers to develop culturally relevant education and awareness programmes, and using economic instruments (see above) to protect key habitats and provide fishing gear alternatives to gill nets. In addition, authorities can enforce bans on sale of dugong products and valuable products associated with shark finning or other fishing that is driving the demise of species such as dugongs.

The specifics of a successful approach to conservation will vary from place to place, and they will depend in part on developing an open dialogue among scientists, managers and the communities. An explicit goal must be the creation of alternative livelihoods for members of the affected communities. That takes time and dedication. It is important to note that involvement of local stakeholders in developing countries, especially fishers, hunters and their families, as well as local scientists is vital to that process, despite the success of some international teams in regional capacity development and the creation of balanced solutions for conservation. The key is to ensure that the local scientists and others from the developing countries are neither marginalized nor taken advantage of, as has unfortunately happened at times in the past, and that the carefully blended team works toward goals that include the welfare of the local communities, as well as dugongs and other wildlife.

Compared to many species of large mammals, dugongs are able to exist near humans and are not wilderness-requiring animals. If people can adjust their values and processes, there is a 'ray of hope — and a respite from apocalyptic headlines' (Holloway 2010, page 28). But the time for such adjustments is now. For dugong range states in developing countries, making conservation laws work as intended is a socio-economic issue, further complicated at times by weak governance and high levels of corruption (Laurance 2004). In summary, what is needed most in the most dugong range states is not only legal protection or commendable intentions on the part of lawmakers. What is needed are mechanisms (dependent on cultures, economics, etc.) to allow the laws to work as intended. Artisanal fishers and hunters must have alternative livelihoods if they are to cease the practices that are causing dugongs to be extirpated from the waters of developing countries.

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Appendix 18: The UNEP/CMS Dugong MoU

The UNEP/ CMS Office – Abu Dhabi has been actively supporting the implementation of the provisions of the UNEP/ CMS Dugong MoU since 2009. The CMS Dugong MoU covers over 40 range states, of which there are currently 26 Signatory States. However, the Secretariat has been actively supporting conservation efforts in all five sub-regions of the global distribution of dugongs: the North West Indian Ocean, South West Indian Ocean, South Asia, South East Asia and Pacific Islands/ Australia. The primary platform for implementation of the CMS Dugong MoU is the Conservation and Management Plan. The CMS Dugong MoU Secretariat has developed the Dugong, Seagrass and Coastal Communities Initiative as a mechanism to implement focussed actions under the Conservation and Management Plan (Table 8~~Table 8~~). The Initiative, which includes the GEF Dugong and Seagrass Conservation Project, is an international programme of conservation measures aimed at increasing protection of dugong populations and their seagrass habitats through tailored plans which promote local environmental stewardship through trialling alternative livelihood, sustainable development assistance in potentially accessing wider trade markets. While the GEF investment will support eight countries, additional funds are being sought to involve as many dugong range states as possible in the Initiative.

Since the Secretariat came into operation, to achieve effective implementation of the CMS Dugong MoU, the Secretariat has focused on a number of regional initiatives which has included supporting various dugong conservation meetings and training workshops held in Phuket (Thailand), Goa (India), Antananarivo (Madagascar), Abu Dhabi (UAE), Tuticorin (India) and Lawas (Malaysia) from 2010 to 2012. These meetings helped shape the ideas for the GEF project, and the project was built on the recommendations coming out of these initiatives. These meetings have facilitated information sharing on dugong and seagrass conservation initiatives at a regional level through reports and presentations. Most CMS Dugong MoU range states have participated in the sub-regional meetings which have been the primary stimuli for regional cooperation.

With the help of a team of specialists on marine megafauna bycatch, a standardised Dugong Catch/ Incidental Catch Survey Tool was developed and used as a means of rapidly obtaining data from fishermen to assess the status of artisanal fisheries and dugong conservation in places where data are deficient, and where threats to dugong survival may be high. Over 2,500 surveys have now been conducted in partnership with a wide range of partners which include national government agencies and research institutions, universities, international NGOs (i.e. IUCN, WWF, CI, WCS), local NGOs and community fisher associations in 17 countries: Cambodia, Thailand, Vietnam, Myanmar, Malaysia, Palau, Papua New Guinea (PNG), Solomon Islands, Vanuatu, New Caledonia, India, Pakistan, Bangladesh, Madagascar, Mozambique, Tanzania, UAE.

The Secretariat has also committed seed funding to develop pilot projects to trial financial incentive tools in PNG and Mozambique in recognition of the threatened status of these globally significant dugong populations. In Daru (Western Province, PNG), the Secretariat has partnered with SPREP, the PNG Department of Environment and Conservation (DEC), the National Fisheries Authority, the PNG Sustainable Development Program Ltd and EcoSEEDS, a local NGO. The project is also supported by the Australian Government Department of Sustainability, Environment, Water, Populations and Communities, the Torres Strait Regional Authority, the Australian Fisheries Management Authority, James Cook University and Commonwealth Science and Industry Research Organisation. This pilot is designed to reduce pressure on marine resources by providing livelihoods with a specific focus on artisanal aquaculture to provide steady incomes and stable protein supplies. The project will provide the Daru communities with microfinance or other financial incentive tools, information and technical assistance with access to wider markets. The resulting community benefits will drive better outcomes for dugongs and seagrass ecosystems. Funding for full implementation is currently being sought in cooperation with DEC for this project.

The second pilot project is based in Bazaruto Archipelago in Mozambique, which is the last remaining stronghold for dugongs in the South West Indian Ocean. It is rapidly growing as a tourist destination because of the Archipelago's beautiful beaches, surfing and fishing. The Project Partners include the Ministry for Coordination of Environmental Affairs, the Natural History Museum, Eduardo Mondlane University and WWF Mozambique on a programme to certify 'dugong-friendly' seafood, harvested in ways that protect dugongs and seagrass habitat. The project will also investigate other market-based livelihood opportunities such as handicrafts. The initial targets are developed world tourists willing to pay a premium for dugong friendly produce in tourist restaurants serving the growing industry. The project is designed so that part of the premium flows as a direct economic benefit to local fishing communities that take up 'dugong-friendly' practices. The projects larger objective is to encourage the spillover of 'dugong-friendly' practices to other fisheries in the region. This project will be included as part of the GEF Dugong and Seagrass Conservation Project in Mozambique.

Another project which the CMS Dugong MoU Secretariat is implementing across the global range of the dugong is the Global Dugong Genetic Project. The project aims at building a network across the dugongs' range, interested in collaborating in a study of dugong genetics. The network would include participants that can help provide already collected or new samples for genetic analysis. The genetic analyses can be done in Australia or in any of the range states where appropriate facilities and expertise exist. This approach will provide valuable information to provide an estimate of the genetic diversity remaining in different parts of the range, estimates of gene flow and population size.

In summary, the Secretariat has taken a regional approach to address the need for more information and to identify solutions to address the impact of dugongs being caught incidentally by fishers, learnings which will be incorporated into this GEF Dugong and Seagrass Conservation Project. In addition the other components of the GEF Dugong and Seagrass Conservation Project will provide a most crucial contribution to the following initiatives being taken by the Secretariat in the eight Partner Countries:

- Supporting Range States of the CMS Dugong MoU in decision making and priority-setting based on the most appropriate and best available information, methods and solutions to address the key threats to dugongs.
- Building and enhancing regional cooperation amongst the range states of the CMS Dugong MoU to address key threats to a threatened migratory species.
- Addressing shared conservation synergies with other threatened marine megafauna including turtles, inshore cetaceans and sharks including incidental catch in fisheries gear as this poses the single largest threat.
- Supporting the application of the Standardised Dugong Catch/Incidental Catch Survey Tool to help build an updated global picture of dugong populations, dugong habitats, and key dugong threats to inform the challenges and opportunities to progress their conservation and management.
- Spatial Risk Assessment: the data obtained from the standardised survey questionnaire will be used to conduct regional/global spatial risks assessment.
- Implementation of the Mitigation/Management Toolbox: A multi-disciplinary expert panel was convened to provide advice and guidance on innovative and novel approaches to progress favourable conservation outcomes for dugong. The tools most frequently adopted in the past, such as legal protection and marine protected areas, need to be supported by market-based mechanisms that assist with the social and economic wellbeing of the affected communities. The Mitigation and Management Toolbox (see Appendix 24) developed for dugong will include a range of current approaches, including gear modification, spatial and temporal management as well as bio-economic approaches.

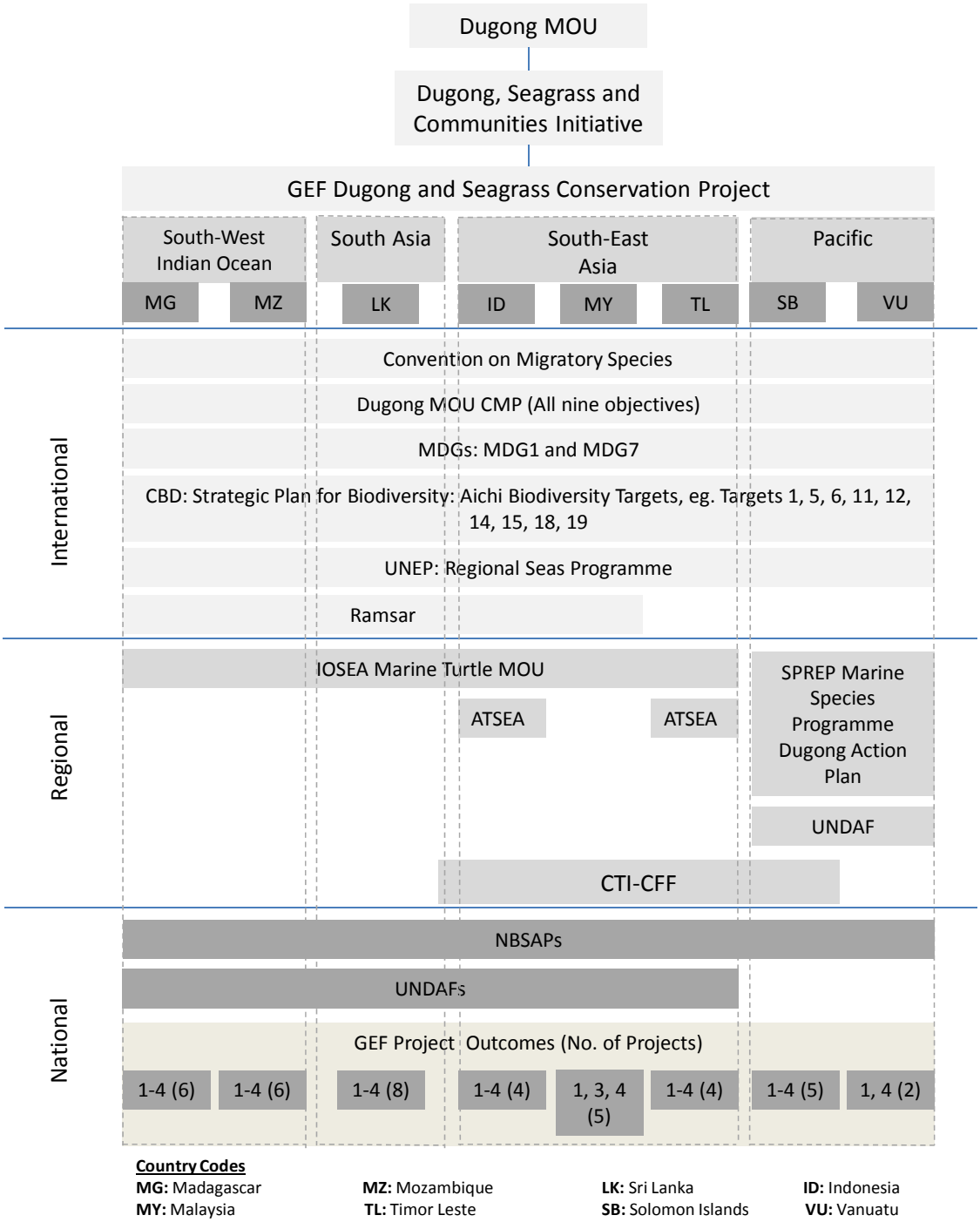

Figure 1. CMS Dugong MoU implementation of the Dugong, Seagrass and Coastal Communities Initiative in eight countries across four regions through the GEF Dugong and Seagrass Conservation Project, and synergies with international, regional and national strategic frameworks.

Appendix 19: Stakeholders in each Project Country Identified During the PPG Phase

Country	Governmental institutions / agencies	Civil society organisations	Research institutes / universities
Indonesia	• Ministry of Marine Affairs and Fisheries • Ministry of Forestry • Indonesian Institute of Sciences (LIPI) • Ministry of Security and Defence • Indonesian Police • Ministry of Environment • Ministry of Tourism • Ministry of Internal Affairs • Ministry of Education • Ministry of Public Works • Ministry of Energy and Mineral Resources • Ministry of Transportation • Ministry of Finance • National Planning Board (BAPPENAS) • National Geospatial Agency	• WWF Indonesia • The Nature Conservancy • Conservation International • Walhi • Yayasan Terangi • Yayasan Lamina • Yayasan Mangrove • Community groups in local areas	• State and non-government universities
Madagascar	• Madagascar National Parks (MNP) • Directions Régionales de l'Environnement et des Forêts (DREF)	• Blue Ventures Conservation • Cétamada • Conservation International (CI) • C-3 Madagascar and Indian Ocean Programme • ReefDoctor • Service d'Appui à la Gestion de l'Environnement (SAGE) • Wildlife Conservation Society (WCS) • World Wide Fund for Nature in Madagascar and the Indian Ocean (WWF) • Groupement des Armateurs de la Pêche Crevettière de Madagascar (GAPCM)	• Centre National de Recherches Océanographiques (CNRO) • Centre de Surveillance de Pêche (CSP • Institut Halieutique et des Sciences Marines (IHSM) • Département de la Biologie Animale de l'Université d'Antananarivo (DBA)
Malaysia	• Malaysian Government at large • Department of Marine Parks Malaysia • Department of Fisheries Malaysia • Economic Planning Unit (EPU) • Johor National Parks Corporation • Sarawak Forestry Corporation • Sabah Parks	• WWF Malaysia • The MareCet Research Organization • SeagrassNet • Seagrass-Watch • SOS • Commercial fishermen • Artisanal fishermen • Tour/ferry operators • School community	• University of Malaya • Universiti Sains Malaysia • Universiti Malaysia Terengganu • Universiti Putra Malaysia
Mozambique	• MICOA-National Directorate for Environmental Management	• WWF- Mozambique • Mozambique Association	• Eduardo Mondlane University (UEM)

Country	Governmental institutions / agencies	Civil society organisations	Research institutes / universities
	(DNGA) • Centre for sustainable development for Coastal Zones (CDS_ZC) • Ministry of Fisheries – National Fisheries Administration • Ministry of Transport – National Maritime Institute • Ministry of Tourism – National Directorate for Conservation Areas • Ministry of Agriculture - National Directorate of Land and Forests – Department of Fauna • National Conservation Authority (ANAC) • DPPE • Marine and Lacustrine Police • Municipalities of Vilanculos • The District Administrations of Inhassoro and Vilanculos and Govuro • The fisheries Associations of Vilanculos and Inhassoro • The Bazaruto Archipelago National Park • Vilanculos wildlife sanctuary • The Vilanculos Tourism Association • The Tourism Forum of Inhassoro	for Scientific Research (AICM) • Centro Terra Viva • Care • Centre for Dolphin Studies • Endangered National Trust (EWT) • Dugong Trust • The Batteleurs • Mozambican Association for Protection of Dugongs • Association Friends of Environment of Vilanculos • Professional School of Inhassoro • The Machilla Magic	• Natural History Museum of Maputo • Superior School of Rural Development
Solomon Islands	• Ministry of Environment • Environment & Conservation Division (E&CD), Ministry of Environment	• Seagrass-Watch • The Nature Conservancy (TNC)	
Sri Lanka	• Department of Wildlife Conservation • The Fisheries Department • Coastguard and Navy • Local authorities and Development agencies	• Turtle Conservation Project (TCP) • CRIOMM • The Centre for Environmental Justice (CEJ) • Environmental Foundation Ltd (EFL) • IUCN • Commercial fishermen, artisanal fishermen, tour operators, school communities and local leaders	• Universities and other higher education institutions • NARA
Timor-Leste	• Ministry of Environment, Ministry of Fisheries and Agriculture (Nick to confirm this!) • Ministry of Agriculture and Fisheries, Ministry of Environment	• Marine Research Foundation (NGO) • Blue Ventures Conservation (NGO), • Move Forward (NGO)	

Country	Governmental institutions / agencies	Civil society organisations	Research institutes / universities
	• Ministry of Agriculture and Fisheries,	• Haburas Foundation (NGO),	
Vanuatu	• Department of Environmental Protection and Conservation (DEPC) • Department of Fisheries (DoF), Ministry of Agriculture, Forestry, Fisheries and Livestock • The Vanuatu Cultural Centre (VKS)	• The WSB Vanua-tai Network	

Appendix 20: National Projects Summaries

National Project activities and contributions to Overall Project Component (Outcome) and Outputs

Overall Project Component 1
Outcome 1: Community-based stewardship of dugongs and their seagrass ecosystems at selected globally important Indo-Pacific sites enhanced

Country	Project Ref. #	National Project title	Overall Project Output 1.1: Governance structures for improved community involvement in conservation and monitoring of dugong and seagrass ecosystems established or strengthened in target areas	Overall Project Output 1.2: Capacity for community-based stewardship developed through increased awareness and active participation of local communities and relevant government structures in conservation and monitoring of dugong and their seagrass habitats in target areas	Overall Project Output 1.3: Integrated community management plans for conservation management and monitoring of dugong and seagrass ecosystems developed and piloted in target areas
Indonesia	ID1	Strengthen and operationalize national policy strategy and action plan for dugongs and seagrass conservation;			
	ID2	Improving National Awareness and Research of Dugong and Seagrass in Indonesia;	Conduct national awareness level surveys; distribute awareness materials; and promote dugong and seagrass conservation at national events.	Training on community based seagrass management at locations which are identified as important for dugongs during the project.	
	ID3	Community based conservation and management of dugong and seagrass habitat Bintan Island, Riau Archipelago Province, Indonesia;	Establish new and strengthen existing community-based dugong and seagrass management programmes; establish sustainable fishing practices which avoid incidental catch of dugongs.	Implement a local awareness campaign and provide training on dugong conservation for stakeholders and the local community.	Harmonisation and integration of KKLD (local MPAs).
	ID4	National Facilitating Committee for the GEF Dugong and Seagrass			

		Conservation Project;			
Madagascar	MG 1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Madagascar	Formation of community management committee.	Train local community members in dugong and seagrass monitoring techniques; EEA programme for local communities, targeting fishers and school children.	Formation of community-based management plan involving zoning, fishing restrictions, monitoring of fishing activity, dugong sightings.
	MG 2	Fisher knowledge, awareness and behaviour change for the conservation of dugongs and seagrass using the Mihari network of Locally Managed Marine Areas in Madagascar		Organisation of dugong/ seagrass awareness and information gathering session at the Mihari fora in 2014 and 2015; Production of dugong/ seagrass environmental awareness/ social marketing campaign for LMMA sites; Selection of key LMMA sites for further community-based awareness work based on information gathered at Mihari forum; Delivery of social marketing campaign for dugong/ seagrass conservation at selected LMMA sites; Training in participatory mapping of priority seagrass habitat areas at selected LMMA sites; Preliminary technical support to selected communities in setting up dugong/ seagrass LMMAs.	
	MG 3	Using incentivized Environmental Stewardship to conserve dugongs and seagrass habitat at an identified national hotspot	Local high school students educated about marine environmental issues including dugong ecology, threats and conservation and able to effectively communicate these issues to the wider community (by M12).	Training of Madagascar National Park rangers and local community in scientific and community-based dugong and seagrass surveys (e.g. Seagrass-Watch, fisher sighting record programme, stranding recovery programme); Appoint and train at least 50 Junior ecoguards; Local high school students educated about marine	

				environmental issues including dugong ecology, threats and conservation and able to effectively communicate these issues to the wider community.	
	MG 4	Integrated approaches to enhance the conservation of dugongs and seagrass ecosystems in Sahamalaza areas	Developing initiatives based on seagrass dependent biodiversity.	Developing initiatives based on seagrass dependent biodiversity.	Developing initiatives based on seagrass dependent biodiversity.
	MG 5	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project			
	MG 6	Dugong and seagrass conservation in North West Madagascar	Conduct community surveys to gather information regarding status, distribution, threat and conservation (see output 3.1); organise regional workshop(s) to help MPA managers identify relevant management strategies and integrate relevant information.	Produce materials to increase the awareness of marine resource users and authorities of the status and threats to dugong populations and relevant conservation strategies.	Identify areas for future community work for the conservation of dugongs and their seagrass habitats in north-west Madagascar, and develop plans and proposals to secure funding to undertake such work.
Malaysia	MY 1	Operationalizing the Malaysian National Plan of Action for Dugong in Pulau Sibu and Pulau Tinggi, Johor, Peninsular Malaysia	Community Consultative Committee establishment and meetings organised.	Communication, education and awareness programme (CEPA).	
	MY 2	Establishment of the National Working Committee for Conserving Dugongs and their Habitats through Involvement of Various Stakeholders		Knowledge-sharing and capacity-building amongst and across the various stakeholders on conserving and protecting the dugong and their habitats.	
	MY	Community		Increase capacity of	Interview surveys and

	3	understanding and management of dugong and seagrass resources in Johor, Malaysia		communities to undertake dugong and seagrass ecosystem management by visiting a relevant field site in the Philippines where efforts have been made to manage dugongs and seagrasses; and establishing dialogue with key community members regarding management and conservation, including the village head, key community members, fishermen, and Marine Park staff; engage local communities in dugong and seagrass conservation on Sibu Island and Tinggi Island by involving communities in quarterly dugong monitoring programmes; and providing training programmes to educate fishermen, school children, dive and boat operators on best practice in the environment in relation to dugongs and seagrasses.	dialogue with key community members on potential management plans for dugong and seagrass (pre-test); implementation of management initiatives based on discussion and agreement by the local community (fishermen, resort workers etc), evaluation of the implementation of management initiatives by a post test.
	MY 4	A Two-Pronged Approach for Overcoming Knowledge Barriers On The Ecology And Status Of Dugongs In Johor, Malaysia – Towards Critical Habitat Protection			
	MY 5	Overcoming the Knowledge Gaps and Involvement of Local Community to Establish a Marine Protected Area (MPA) for the Conservation of Dugong and Seagrass in Bay of	Conduct Honorary Wildlife Ranger Programme and Nature n U programme to enable involvement of local community to carry out their own community development		

		Brunei, Lawas, Sarawak, East Malaysia	activities in conserving dugong and seagrass.		
Mozambique	MZ1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Mozambique	Formation of Bartolomeu Dias management council representing all stakeholders and actors in the region; Formation of a Joint Law Enforcement Unit (LEU) for the Bartolomeu Dias region (initial stages).	Train local community members in dugong and seagrass monitoring techniques; Train local community members in participative monitoring and surveillance for effective management; Conduct an environmental education and awareness (EEA) programme for local communities, targeting fishers and school children.	Formation of regional management plan involving zoning, fishing restrictions, monitoring of fishing activity, dugong sightings.
	MZ2	The distribution of dugongs in the coastal waters of Mozambique			
	MZ3	Developing an Education and Awareness Campaign to Conserve Dugongs in the Bazaruto Archipelago and Mozambique.		Work with school children along the Mozambique coast to promote dugongs as an icon or flagship species and to foster youth interest. Dugongos.Org will use educational activity games; a Dugong March; regional inter-school competitions with prizes such as educational materials being awarded to schools; a traveling theatre project; and a dugong festival. In the wider community, implement national and international awareness campaigns which encourage media coverage on the plight of dugongs and other marine species or systems.	
	MZ4	The Dugong Emergency Protection Project	Create a dugong protection forum: Strengthen local structures by formalising a Dugong Protection Unit	Coach the DPU to implement appropriate actions for reporting procedures of dugong sightings, gill net sightings, and dugong	

			(DPU) comprised of local authorities, fishing associations, and the tourism sector.	mortality; Facilitate delivery of a local marine-themed environmental education curriculum at all Vilanculos, Inhassoro, and island schools.	
	MZ5	Participatory Research of Additional Methods to reduce the Impact of the beach seine fisheries on seagrass beds at Vilanculos and Inhassoro	Develop collaborations with Fishing Associations (CCP's) and other relevant stakeholders.		Undertake at least three meetings at each fishing community (Fisheries Community Councils (CCP)) to discuss management gaps, identify and rank socially acceptable additional management measures and agree with the fishers on these management measures; present management gaps and socially acceptable management measures for discussion in the District Fisheries Co-Management Committee and produce a set of additional management measures to be enforced, as agreed with the fishing communities.
	MZ6	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project	Develop collaborations with Fishing Associations (CCP's) and other relevant stakeholders to promote best practice.		
Solomon Islands	SB1	Consultation on the development and implementation of a national dugong and seagrass conservation strategy in the Solomon Islands		Conduct standardised community questionnaires, hold workshops and consultations with national, provincial and local stakeholders, and develop subsequent recommendations for project activities.	
	SB2	National-level awareness raising campaign to champion dugong and seagrass conservation		Raise national awareness of dugong and seagrass conservation through the development and dissemination of	

				materials and media that highlight the importance of dugong and seagrass conservation, including festivals and training of a national spokeperson for a conservation awareness campaign.	
	SB3	Identification of priority sites for conservation of dugongs and seagrassess in the Solomon Islands	Increase awareness and encourage local communities to engage in conservation by conducting standardised dugong rapid assessment questionnaires nationwide.		
	SB4	Development of seagrass and dugong Locally Managed Marine Areas	Consult communities and stakeholders and perform ecological habitat assessments in target areas.	Draft written records of process of LMMA establishment, for publication and guiding of subsequent LMMA development efforts; Evaluate the effectiveness of social marketing campaign.	Create and disseminate locally-relevant educational and social marketing materials documenting the importance of dugongs and their seagrass habitats, as well as publication of their guidance notes for LMMA development.
	SB5	Building national-level expertise in dugong and seagrass conservation and mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making			
Sri Lanka	LK1	A Community Based Approach for Conserving the Globally Threatened *Dugong dugon* in Sri Lanka	Conduct a pre-knowledge/awareness assessment	Implement community and target group awareness campaigns to highlight dugong and seagrass habitats, their importance to healthy fisheries and to establish a sense of respect in key areas through social networking and relevant mass-media, as well as material targeted at school age children, i.e.	

				puppet shows, colouring books.	
	LK2	Improving communication and collaboration amongst all relevant stakeholders in Sri Lanka to enhance seagrass and dugong conservation			
	LK3	Contributions to the long term conservation of seagrasses and dugongs in Sri Lanka		Expand training workshops to include local communities in target areas.	
	LK4	Development of a multiple-community-based marine resource management plan in the Gulf of Mannar			Improve cross-community dialogue and problem solving to generate a multiple-community-based Fisheries Management Plan in Mannar - implement both community meetings to allow discussion between communities, local and national government partners, and subsequent workshops between stakeholders and partners in order to develop management plans which address the community input.
	LK5	Ensuring seagrass ecosystem values are incorporated into coastal area planning in Sri Lanka.			
	LK6	Increasing knowledge on sea grass habitats and dugong distribution at selected sites in North Western Sri Lanka			
	LK7	Providing incentives to local communities in return for wise stewardship of		Review baseline public knowledge of dugongs and seagrasses in Kalpitiya before implementing a broad-	

		coastal habitats		scope awareness programme amongst communities, including a youth and sports component, radio programmes, community clean-up events, environmental exhibitions, film shows, lectures and workshops for different target groups, and site visits by media and political figures.	
	LK8	National Facilitating Committee For the GEF Dugong and Seagrass Conservation Project			
Timor-Leste	TL1	Identification of priority sites for conservation of dugongs and seagrasses in Timor-Leste.		Train national partners in standard dugong and seagrass research techniques.	
	TL2	Development of seagrass and dugong LMMAs.	Establish governance structures for improved community involvement in conservation and monitoring of dugong and seagrass habitats through national-level endorsement and legislative protection of Locally Managed Marine Areas (LMMAs).	Increase awareness and active participation of local communities in conservation and monitoring of dugongs and their seagrass habitats by distributing locally-relevant educational and social marketing materials that document the importance of seagrass habitats and dugongs and consulting communities regarding aims and potential benefits of LMMAs.	Integrated community management plans for conservation management and monitoring developed through the implementation of long-term habitat, dugong, turtle and fisheries monitoring programmes and establishing a local steering committee(s).
	TL3	Building national-level expertise in dugong and seagrass conservation and Mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making.			

	TL4	National-level awareness raising campaign to champion dugong and seagrass conservation.		Develop innovative materials and media that document the importance of dugong and seagrass conservation, in Tetum, Portuguese and English; Disseminate materials and media for seagrass conservation via creative mass media approaches and community festivals.	
Vanuatu	VU1	Implementing the Vanuatu National Plan of Action for Dugong in Maskelynes Islands, Efate Islands and other selected areas.	Improve community awareness and facilitate community involvement in the project through activities including nationwide workshops, promotional posters and development of information sharing platforms; Build capacity for community-based stewardship of dugongs and seagrasses by developing an Integrated Community Management Plan (ICMP) and providing both on-site training and good practice guidelines.		
	VU2	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project			

Overall Project Component 2

Outcome 2: Sustainable fisheries practices that reduce damage to dugongs and their seagrass ecosystems widely adopted through uptake of innovative incentive mechanisms and management tools

Country	Project Ref. #	National Project title	Overall Project Output 2.1: A range of management and incentive mechanisms and tools for sustainable fisheries developed, tested and piloted in target areas and capacity built within local community and government for effective implementation	Overall Project Output 2.2: Awareness raising and social marketing programmes developed, implemented and contributing to the adoption of more sustainable practices among subsistence and small-scale artisanal net fishers in target areas
Indonesia	ID1	Strengthen and operationalize national policy strategy and action plan for dugongs and seagrass conservation		
	ID2	Improving National Awareness and Research of Dugong and Seagrass in Indonesia		
	ID3	Community based conservation and management of dugong and seagrass habitat Bintan Island, Riau Archipelago Province, Indonesia	Investigation of viable alternative livelihoods / market-based mechanisms; trial for market-based mechanism.	
	ID4	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project		
Madagascar	MG 1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Madagascar	Investigation of viable alternative livelihoods / market-based mechanisms; trial for market-based mechanism in 1 or 2 communities (if viable option identified).	
	MG 2	Fisher knowledge, awareness and behaviour change for the conservation of		Delivery of social marketing campaign for dugong/seagrass conservation at selected LMMA sites.

		dugongs and seagrass using the Mihari network of Locally Managed Marine Areas in Madagascar		
	MG 3	Using incentivized Environmental Stewardship to conserve dugongs and seagrass habitat at an identified national hotspot	Provision of community services and promotion of sustainable livelihoods; seed funding of sustainable livelihoods based on evaluation of business plans submitted by the community.	
	MG 4	Integrated approaches to enhance the conservation of dugongs and seagrass ecosystems in Sahamalaza areas	Reducing by-catch rates in traditional fisheries.	Evaluation of the success of the existing incentives based marine conservation adopted by the community structure and identification of other alternative strategies to diversify the source of revenues.
	MG 5	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project		
	MG 6	Dugong and seagrass conservation in North West Madagascar		
Malaysia	MY 1	Operationalizing the Malaysian National Plan of Action for Dugong in Pulau Sibu and Pulau Tinggi, Johor, Peninsular Malaysia		
	MY 2	Establishment of the National Working Committee for Conserving Dugongs and their Habitats through Involvement of Various Stakeholders		
	MY 3	Community understanding and management of		

		dugong and seagrass resources in Johor, Malaysia		
	MY 4	A Two-Pronged Approach for Overcoming Knowledge Barriers On The Ecology And Status Of Dugongs In Johor, Malaysia – Towards Critical Habitat Protection		
	MY 5	Overcoming the Knowledge Gaps and Involvement of Local Community to Establish a Marine Protected Area (MPA) for the Conservation of Dugong and Seagrass in Bay of Brunei, Lawas, Sarawak, East Malaysia		
Mozambique	MZ 1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Mozambique	Discussion and implementation of viable alternative livelihoods / market-based mechanisms with local communities; Conduct trial for market-based mechanism in 1 (2) communities (if viable option identified).	
	MZ 2	The distribution of dugongs in the coastal waters of Mozambique		
	MZ 3	Developing an Education and Awareness Campaign to Conserve Dugongs in the Bazaruto Archipelago and Mozambique.		
	MZ 4	The Dugong Emergency Protection Project	Ensure the continuation of an established Sustainable Seafood Initiative which facilitates the transition from netting to hand-line fisheries; Determine a list of species that are considered viable to exploit in the Bazaruto Archipelago Region; Perform a survey throughout the Lodge and Hotel sector; Secure markets for the	

			SASSI products to ensure lodges & hotels continue supporting endorsed fishermen. Ensure lodges & hotels continue supporting endorsed fishermen. Ensure endorsed SASSI fishermen are supplying sustainable seafood only.	
	MZ 5	Participatory Research of Additional Methods to reduce the Impact of the beach seine fisheries on seagrass beds at Vilanculos and Inhassoro		
	MZ 6	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project		
Solomon Islands	SB 1	Consultation on the development and implementation of a national dugong and seagrass conservation strategy in the Solomon Islands		
	SB 2	National-level awareness raising campaign to champion dugong and seagrass conservation		
	SB 3	Identification of priority sites for conservation of dugongs and seagrassess in the Solomon Islands		
	SB 4	Development of seagrass and dugong Locally Managed Marine Areas	Develop activities which encourage sustainable practices; Engage communities in consultations regarding aims and potential benefits of LMMA, including discussion of potential incentive mechanisms, and consult outside stakeholders regarding development of payment systems or other incentives.	Encourage adoption of sustainable practices through awareness raising educational and social marketing materials which document the importance of seagrass habitats and dugongs.
	SB	Building national-		

	5	level expertise in dugong and seagrass conservation and mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making		
Sri Lanka	LK 1	A Community Based Approach for Conserving the Globally Threatened *Dugong dugon* in Sri Lanka		
	LK 2	Improving communication and collaboration amongst all relevant stakeholders in Sri Lanka to enhance seagrass and dugong conservation		
	LK 3	Contributions to the long term conservation of seagrasses and dugongs in Sri Lanka		
	LK 4	Development of a multiple-community-based marine resource management plan in the Gulf of Mannar	Investigate opportunities for alternate employment or incentives to enhance buy-in amongst local fishers, and seek partners who might implement programmes along these lines.	
	LK 5	Ensuring seagrass ecosystem values are incorporated into coastal area planning in Sri Lanka.		
	LK 6	Increasing knowledge on sea grass habitats and dugong distribution at selected sites in North Western Sri Lanka		
	LK	Providing	Negotiate with communities in	

	7	incentives to local communities in return for wise stewardship of coastal habitats	Kalpitiya to alter natural resource use practices in return for additional income-generation activities; Provide training in batik making, fish breeding, coir mats, and tourism (as appropriate by community) as supplemental income-generation opportunities; Raise capacity in branding, marketing, accounting, and quality assurance through specialized training. Assess improvements in socio-economic conditions.	
	LK 8	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project		
Timor-Leste	TL 1	Identification of priority sites for conservation of dugongs and seagrasses in Timor-Leste	Complete a total economic valuation of seagrass ecosystem goods and services.	
	TL 2	Development of seagrass and dugong LMMAs	Consult outside stakeholders regarding development of payment structure and establish eco-volunteering marine tourism initiative(s) at selected sites.	
	TL 3	Building national-level expertise in dugong and seagrass conservation and Mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making		
	TL 4	National-level awareness raising campaign to champion dugong and seagrass conservation		

Vanuatu	VU 1	Implementing the Vanuatu National Plan of Action for Dugong in Maskelynes Islands, Efate Islands and other selected areas		
	VU 2	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project		

Overall Project Component 3
Outcome 3: Increased availability and access to critical knowledge needed for decision-making for effective conservation of dugongs and their seagrass ecosystems in Indian and Pacific Oceans basins.

Country	Project Ref. #	National Project title	Overall Project Output 3.1: Critical gaps in knowledge of dugong and seagrass status, distribution, threat and conservation identified and survey programmes initiated or supported in priority areas	Overall Project Output 3.2: Good practice guidelines developed for dugong and seagrass ecosystem conservation (including incentive-based approaches), based on assessment of project results and experiences	Overall Project Output 3.3: Conservation-relevant information and guidance on dugong and seagrass ecosystems collated, shared across partner network and disseminated through dedicated web-based platforms and other channels
Indonesia	ID1	Strengthen and operationalize national policy strategy and action plan for dugongs and seagrass conservation			
	ID2	Improving National Awareness and Research of Dugong and Seagrass in Indonesia	Conduct a national awareness level survey which will facilitate identification of gaps in knowledge of dugong and seagrass status, distribution, threats and conservation; Produce reports on the socio-economic situation at key sites, such as Kei Island; implement training	Develop good practice guidelines for dugong and seagrass ecosystem conservation through the preparation of standardized research methods and guidelines of research on carbon budget.	Collate and disseminate conservation-relevant information and guidance on dugong and seagrass ecosystems, including the development and distribution of national awareness materials; media campaigns and the development of seagrass and dugong website and database.

			on research and survey methods; update national reviews; and prepare maps of status, distribution and threats to dugong populations and seagrass meadows.		
	ID3	Community based conservation and management of dugong and seagrass habitat Bintan Island, Riau Archipelago Province, Indonesia	Implement surveys of dugong populations and seagrass meadows.		
	ID4	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project			
Madagascar	MG 1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Madagascar	Assessments of seagrass habitats and dugong populations; Socio-economic assessment of communities; Interview surveys of fishers for information on habitats, fishing grounds, direct and incidental dugong mortality.		
	MG 2	Fisher knowledge, awareness and behaviour change for the conservation of dugongs and seagrass using the Mihari network of Locally Managed Marine Areas in Madagascar	Monitoring and evaluation system put in place and baseline data collected.		
	MG 3	Using incentivized Environmental Stewardship to conserve dugongs and seagrass habitat at an identified national			

		hotspot			
	MG 4	Integrated approaches to enhance the conservation of dugongs and seagrass ecosystems in Sahamalaza areas	Conduct a rapid assessment methodology for increasing data information, seagrass status, distribution, threat and conservation. Consider, and include a system of self-regulation monitoring undertaken by the coastal stakeholders members in the existing local platform structure named "COSAP". Participatory mapping of seagrass ecosystems will be undertaken.		Information collected through monitoring (output 3.1) will be populated through the Clearing House Mechanisms to be implemented at the national or international level.
	MG 5	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project			
	MG 6	Dugong and seagrass conservation in North West Madagascar	Conduct rapid assessment interview surveys in targeted villages from Ankivonjy MPA to Mahajunga followed by detailed interview surveys at key locations identified in the rapid assessments.		Conservation-relevant information and guidance on dugong and seagrass ecosystems will be collated and shared across partner networks - organise regional workshops and produce material to communicate new information and relevant conservation strategies to scientists, MPA managers (e.g., Ankarea, Ankivonjy, Sahamalaza), marine resources users, authorities and decision makers in the North West through various media, including web, videos, leaflets and peer reviewed science publications.
Mala ysia	MY 1	Operationalizing the Malaysian National Plan of	Conduct data and information stocktaking,		

		Action for Dugong in Pulau Sibu and Pulau Tinggi, Johor, Peninsular Malaysia	monitoring and evaluation; as well as stakeholder and community consultation to address critical gaps in knowledge of dugong and seagrass status, distribution, threat and conservation, and gain an understanding of the socioeconomic status of project area.		
	MY 2	Establishment of the National Working Committee for Conserving Dugongs and their Habitats through Involvement of Various Stakeholders	.		knowledge-sharing and capacity-building amongst and across the various stakeholders on conserving and protecting the dugong and their habitats.
	MY 3	Community understanding and management of dugong and seagrass resources in Johor, Malaysia	Interview surveys and dialogue with key community members on potential management plans for dugong and seagrass (Pretest); Evaluation of the implementation of management initiatives by a post test.		
	MY 4	A Two-Pronged Approach for Overcoming Knowledge Barriers On The Ecology And Status Of Dugongs In Johor, Malaysia – Towards Critical Habitat Protection	Aerial surveys; Acoustic surveys – data collected will be used to identify critical habitats for dugongs for inclusion in local and national marine conservation decision-making and protected area planning (i.e. planning for a Special Area of Conservation for dugongs and seagrasses).		
	MY 5	Overcoming the Knowledge Gaps and Involvement of Local Community	Acoustic surveys to fill knowledge gaps in relation to dugong distribution,		

		to Establish a Marine Protected Area (MPA) for the Conservation of Dugong and Seagrass in Bay of Brunei, Lawas, Sarawak, East Malaysia	abundance, Behaviour and movement; A long-term monitoring programme to fill knowledge gaps in relation to spatial and temporal distribution patterns of seagrass; Observing of dugong feeding trails in seagrass meadows to determine potential high conservation areas for dugongs.		
Mozambique	MZ 1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Mozambique	Conduct assessments of seagrass habitats and dugong populations; Socio-economic assessment of local communities; Conduct interview surveys of fishers for information on habitats, corridors, fishing grounds, direct and incidental dugong mortality.		
	MZ 2	The distribution of dugongs in the coastal waters of Mozambique	Determine the extent and diversity of seagrass beds in areas outside Bazaruto Archipelago and determine the presence/absence of dugongs in these areas, through community questionnaires and acoustic monitoring.		
	MZ 3	Developing an Education and Awareness Campaign to Conserve Dugongs in the Bazaruto Archipelago and Mozambique.	Community monitoring in important fishing areas to obtain information on bycatch.		
	MZ 4	The Dugong Emergency Protection Project	Determine a list of species that are considered viable to exploit in the Bazaruto Archipelago Region; Perform a survey throughout the Lodge and Hotel		

			sector.		
	MZ 5	Participatory Research of Additional Methods to reduce the Impact of the beach seine fisheries on seagrass beds at Vilanculos and Inhassoro	Identify current management gaps in the beach seine fishery that over-exploits the resource and the seagrass habitats through surveys.		
	MZ 6	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project			
Solomon Islands	SB 1	Consultation on the development and implementation of a national dugong and seagrass conservation strategy in the Solomon Islands	Conduct standardised reviews, national and regional reviews, meetings at national levels to identify priorities for conservation action.		Hold national, provincial and local stakeholder workshops to develop project activities which target newly identified areas and issues.
	SB 2	National-level awareness raising campaign to champion dugong and seagrass conservation		Evaluate the effectiveness of social marketing campaign.	Develop and disseminate innovative materials and media for seagrass conservation via creative mass media approaches and community festivals. Make the media and tools produced during campaigns available online for public use through the project Clearing House Mechanism (CHM).
	SB 3	Identification of priority sites for conservation of dugongs and seagrassess in the Solomon Islands	Carry out dugong rapid assessment surveys nationwide; conduct broad-scale assessment of threats to seagrasses and dugongs and identify conservation hotspots; identify and map seagrass ecosystems; assess productivity of seagrass ecosystems at priority areas; and conduct spatio-temporal assessment of dugong	Contribute policy briefings on seagrass and dugong conservation to key national level stakeholders to encourage incorporation of seagrass and dugong research into national-level decision making and policy planning.	Disseminate policy briefings to key national level stakeholders.

			populations.		
	SB 4	Development of seagrass and dugong Locally Managed Marine Areas	Consult communities and stakeholders and perform ecological habitat assessments in target areas.	Draft written records of process of LMMA establishment for publication and guiding subsequent LMMA development efforts. Evaluate the effectiveness of social marketing campaign.	Create and disseminate locally-relevant educational and asocial marketing materials documenting the importance of dugongs and their seagrass habitats as well as publication of their guidance notes for LMMA development.
	SB 5	Building national-level expertise in dugong and seagrass conservation and mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making			
Sri Lanka	LK 1	A Community Based Approach for Conserving the Globally Threatened *Dugong dugon* in Sri Lanka	Conduct a post-knowledge/awareness and dugong stranding/take assessment to determine programme success.		
	LK 2	Improving communication and collaboration amongst all relevant stakeholders in Sri Lanka to enhance seagrass and dugong conservation			Establish a pilot coastal coordination centre to collate resource data, Train staff members from DWC to collect, collate and communicate findings related to standings, illegal activities, sightings, community issues. Coordinate with agencies (e.g. Navy).
	LK 3	Contributions to the long term conservation of seagrasses and dugongs in Sri Lanka	Collaborate with other Project Partners in resource surveys and assessments.		
	LK 4	Development of a multiple-community-based marine resource management plan in the Gulf of Mannar	To improve management of shared resources and facilitate a greater understanding of the connectivity of ecosystems and		

			habitats in Mannar conduct focused dialogue with fishing communities to identify locations of human activity, locations of key threats, local oceanographic conditions and migration of fishing communities; Incorporate field data to identify priority areas for management, hotspots, and management needs.		
	LK 5	Ensuring seagrass ecosystem values are incorporated into coastal area planning in Sri Lanka	Map the distribution of seagrasses using remote sensing techniques (High Satellite images); Ground truth surveys at selected sites to map species distribution; Delineate density zones according to seagrass shoot density and habitat structure; Select three pilot sites and determine seagrass productivity, regeneration capacity, carbon sequestration and potential blue carbon benefits; Identify the presence of dugongs based on visual observations of feeding trails; Analyse degree of eutrophication at known areas of human or industrial impacts; Document and map illegal fishing activities which impact seagrasses habitats, such as bottom trawling, blast		

			fishing, moorings and propeller strikes; Provide findings of distribution, pollution and impact assessments to the Department of Wildlife Conservation, other GEF Project Partners, and other relevant agencies involved in the management of seagrass.		
	LK 6	Increasing knowledge on sea grass habitats and dugong distribution at selected sites in North Western Sri Lanka	Assess quality and coverage of UNEP-CMS rapid survey data; Conduct UNEP-CMS rapid survey in areas where knowledge is lacking; Determine habitat types, species composition and density and key hotspot areas identified in the survey data assessment; Record evidence of dugong presence through feeding trails and direct sightings; Conduct seagrass habitat assessments to expand ground-truthing activities by NARA (LK5); Collate the findings of the surveys and generate reports in graphic and written format for inclusion in national planning and decision-making.		

	LK 7	Providing incentives to local communities in return for wise stewardship of coastal habitats	Conduct community pre-awareness and socio-economic surveys to inform decision makers regarding the location, status and abundance of any dugong populations; gain information regarding the local socio-economic conditions; and garner an understanding of the impacts on dugongs and their seagrass habitats by local communities; Assess damaging habitat and resource-use practices; Assess changes in habitat and resource use patterns.		
	LK 8	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project			
Timor-Leste	TL 1	Identification of priority sites for conservation of dugongs and seagrasses in Timor-Leste.	Conduct standardised CMS-UNEP dugong rapid assessment nationwide and use the results to conduct a broad-scale assessment of threats to seagrasses and dugongs; map seagrass ecosystems using GIS; assess productivity of priority seagrass ecosystems; conduct aerial surveys to determine spatio-temporal distribution of dugong populations.		
	TL 2	Development of seagrass and dugong LMMAs	Consult communities and key stakeholders to identify critical areas for seagrass and coral reef		Draft written records of the process of LMMA establishment for publication and guiding subsequent LMMA

			conservation, and follow up with ecological assessments of target habitats.		development efforts.
	TL 3	Building national-level expertise in dugong and seagrass conservation and Mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making			
	TL 4	National-level awareness raising campaign to champion dugong and seagrass conservation			Make media and tools produced during campaigns available online for public use through the project Clearing House Mechanism (CHM); Evaluate the effectiveness of social marketing campaigns.
Vanuatu	VU 1	Implementing the Vanuatu National Plan of Action for Dugong in Maskelynes Islands, Efate Islands and other selected areas			
	VU 2	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project			

Overall Project Component 4

Outcome 4: Conservation priorities and measures for dugongs and their seagrass ecosystems incorporated into relevant policy, planning and regulatory frameworks across the Indian and Pacific Ocean basins.

Country	Project Ref. #	National Project title	Overall Project Output 4.1: Policy, planning and regulatory gaps in conservation of dugongs and their seagrass ecosystems identified, and recommendations to address these developed, in all Project Countries	Overall Project Output 4.2: Advocacy programmes developed and implemented and capacity built within advocacy groups in target areas to advocate for improved conservation policy, planning, regulation and management of dugongs and their seagrass ecosystems	Overall Project Output 4.3: Capacity for national and regional networking and contribution to global policy processes for effective dugong and seagrass conservation in the Indian and Pacific Ocean basins
Indonesia	ID1	Strengthen and operationalize national policy strategy and action plan for dugongs and seagrass conservation	Reviews of existing legislation; workshops to incorporate suggestions; production of a revised national strategy action plan.	Build capacity of national and local stakeholders through national networking and establishing national dugong conservation committees.	(National Dugong Conservation Committee (NDCC).
	ID2	Improving National Awareness and Research of Dugong and Seagrass in Indonesia		Public figure to be selected as dugong and seagrass ambassador.	
	ID3	Community based conservation and management of dugong and seagrass habitat Bintan Island, Riau Archipelago Province, Indonesia	Harmonisation and integration of KKLD (local MPAs).	Build capacity of national and local stakeholders through national networking and establishing dugong conservation committees.	Dugong and Seagrass Collaborative Conservation Management Board (DSCCMB).
	ID4	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project		Build capacity of national and local stakeholders; Advocate dugong and seagrass conservation through participation in national events; Contribute to guidelines on conservation best practice, such as	National Facilitating Committee (NFC) Contribute to regional and global networks by publishing NFC decisions through the project Clearing House Mechanism (CHM).

				project implementation and rescue of injured dugongs; Consultations with ministries, government stakeholders; agree terms of reference for the NFC; document and publish key decisions and recommendations of meetings; Training for NFC members (seagrass and dugong ecology, participatory seagrass and dugong research methods, tropical marine conservation management).	
Madagascar	MG 1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Madagascar			.
	MG 2	Fisher knowledge, awareness and behaviour change for the conservation of dugongs and seagrass using the Mihari network of Locally Managed Marine Areas in Madagascar			
	MG 3	Using incentivized Environmental Stewardship to conserve dugongs and seagrass habitat at an identified national hotspot	Evaluation and enforcement of dina and Marine National Park regulations.		Development and training of project steering / community environmental stewardship committee (CESC).
	MG 4	Integrated approaches to enhance the conservation dugongs and seagrass ecosystems in Sahamalaza areas			.

	MG 5	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project	Undertake a thorough legal analysis and review of gaps in legislation and policies concerning dugong conservation and seagrass ecosystem management; Develop recommendations for legislative and policy reform to improve management of seagrass ecosystems and conservation of dugongs, which may include efforts to: restrict export of shark fin from Madagascar, reduce or eliminate the use of shark gill nets in western Madagascar, and reduce degradation of seagrass ecosystems from industrial fisheries in western Madagascar. Develop collaborations with GAPCM and industrial shrimp fisheries stakeholders to promote best practice to reduce damage to seagrass habitats.		Training for key government stakeholders in the importance of seagrass ecosystems; Capacity building for National Facilitating Committee.
	MG 6	Dugong and seagrass conservation in North West Madagascar			
Malaysia	MY 1	Operationalizing the Malaysian National Plan of Action for Dugong in Pulau Sibu and Pulau Tinggi, Johor, Peninsular Malaysia	Development and implementation of a management plan and proposal for a dugong and seagrass sanctuary.		.
	MY 2	Establishment of the National Working	Make recommendations of improvements in the		Establish a National Task Force / Working Committee to ensure

		Committee for Conserving Dugongs and their Habitats through Involvement of Various Stakeholders	coordination of reviews of regulations / legislation and national policies on conservation of dugongs and their habitats; Conduct periodic revision of the status of implementation of the Malaysia National Plan of Action for Conservation and Management of Dugongs.		conservation and protection measures regarding dugongs and their habitats are implemented.
	MY 3	Community understanding and management of dugong and seagrass resources in Johor, Malaysia			
	MY 4	A Two-Pronged Approach for Overcoming Knowledge Barriers On The Ecology And Status Of Dugongs In Johor, Malaysia – Towards Critical Habitat Protection		Contribute to a Ministerial Paper to be presented to Cabinet: Information from aerial surveys and acoustic surveys (output 3.1) will be used to identify critical habitats for dugongs for inclusion in local and national marine conservation decision-making and protected area planning (i.e. planning for a Special Area of Conservation for dugongs and seagrasses).	.
	MY 5	Overcoming the Knowledge Gaps and Involvement of Local Community to Establish a Marine Protected Area (MPA) for the Conservation of Dugong and Seagrass in Bay of Brunei, Lawas, Sarawak, East Malaysia		Build national capacity within advocacy groups by holding strategic discussions and advocacy efforts with stakeholders, including state government agencies, federal agencies, local people, NGOs, academic institutions and private sector companies; Findings from activities for	.

				outcome 3 will be used to develop a Sarawak State Cabinet Paper for the gazettement of the seagrass area of Lawas waters as a Protected Area for protection of dugong and seagrass.	
Mozambique	MZ 1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Mozambique			
	MZ 2	The distribution of dugongs in the coastal waters of Mozambique	Formation of a Joint Law Enforcement Unit (LEU) for the Bartolomeu Dias region to assist in restricting fishing through the use of LMMAs.		
	MZ 3	Developing an Education and Awareness Campaign to Conserve Dugongs in the Bazaruto Archipelago and Mozambique.			
	MZ 4	The Dugong Emergency Protection Project	Create a dugong forum and strengthen local structures by formalising a Dugong Protection Unit (DPU) comprised of local authorities, fishing associations, and the tourism sector.		
	MZ 5	Participatory Research of Additional Methods to reduce the Impact of the beach seine fisheries on seagrass beds at Vilanculos and Inhassoro	Develop a set of additional management measures agreed with the fishing communities to be enforced.		
	MZ 6	National Facilitating Committee for the	Undertake a thorough legal analysis and review of gaps in	Training for key government stakeholders in the	

		GEF Dugong and Seagrass Conservation Project	legislation and policies concerning dugong conservation and seagrass ecosystem management; Develop recommendations for legislative and policy reform to improve management of seagrass ecosystems and conservation of dugongs.	importance of seagrass ecosystems.	
Solomon Islands	SB 1	Consultation on the development and implementation of a national dugong and seagrass conservation strategy in the Solomon Islands	Identify policy, planning and regulatory gaps through a desktop review of legal/ institutional barriers.		Implement advocacy and national level capacity development through the creation of a Terms of Reference for a National Facilitating Committee; Utilise Clearing House Mechanism as a networking tool, including reporting results, as appropriate.
	SB 2	National-level awareness raising campaign to champion dugong and seagrass conservation		Identify and train national spokesperson to become strong advocate for seagrass and dugong conservation through campaign messaging, which will further build capacity of advocacy groups.	Contribute to regional and global networks by making media and tools produced during campaigns available online for public use through the project CHM.
	SB 3	Identification of priority sites for conservation of dugongs and seagrassess in the Solomon Islands			.
	SB 4	Development of seagrass and dugong Locally Managed Marine Areas			
	SB 5	Building national-level expertise in dugong and seagrass conservation and mainstreaming dugongs and their seagrass habitats into national coastal zone			Establish a National Facilitating Committee (NFC), which will convene all project stakeholders at least four times yearly, and on an ad hoc basis when necessary, throughout the project; Consult with all relevant ministries

		planning and decision-making			and government stakeholders (national and provincial level), community stakeholders and NGOs; agree Terms of Reference for NFC; document and publish key decisions and recommendations of meetings; arrange training workshops for NFC members in seagrass and dugong ecology, participatory seagrass and dugong research methods, and tropical marine conservation management. Publish NFC decisions through the CHM.
Sri Lanka	LK 1	A Community Based Approach for Conserving the Globally Threatened *Dugong dugon* in Sri Lanka			.
	LK 2	Improving communication and collaboration amongst all relevant stakeholders in Sri Lanka to enhance seagrass and dugong conservation			Establish a National Facilitating Committee (NFC), which will meet biannually to discuss management and conservation of seagrasses and dugongs and undertake activities including drafting of a National Plan of Action for seagrass and dugong conservation; amending marine mammal eco-tourism guidelines as necessary and developing 'best practice' guidelines for community-based dugong eco-tourism. Launch a coastal conservation coordination centre in Kalpitiya with computerised communication system and database in order to establish a

					communication network established between the Navy, Coast Guard, local communities and DWC. Build capacity at the national level through training of staff members to collect, collate and communicate findings related to strandings, illegal activities, sightings and community issues related to dugongs and their seagrass habitats.
	LK 3	Contributions to the long term conservation of seagrasses and dugongs in Sri Lanka	Review regulatory and enforcement framework and levels of implementation; In consultation with Department of Wildlife Conservation, make recommendations on potential improvements to current regulatory framework.	Implement activities which build capacity within advocacy groups in target areas from Kalpitya to Jaffna; Conduct targeted awareness workshops with relevant enforcement agencies (Fisheries, Navy, Coast Guard) which highlight legal and illegal fishery activities, endangered species, and the ecological values of these species and ecosystems in supporting fishery resources. Assist in the training and capacity building by DWC to assess data relevant for conservation management.	
	LK 4	Development of a multiple-community-based marine resource management plan in the Gulf of Mannar	Work toward the declaration of identified areas as marine protected areas (MPAs) under the Fauna and Flora Protection Ordinance of the Department of Wildlife Conservation.	Advocate improved conservation and management of dugongs by identifying community leaders who can be involved in local area management.	.
	LK 5	Ensuring seagrass ecosystem values are incorporated into coastal area planning in Sri			

		Lanka.			
	LK 6	Increasing knowledge on sea grass habitats and dugong distribution at selected sites in North Western Sri Lanka			
	LK 7	Providing incentives to local communities in return for wise stewardship of coastal habitats			
	LK 8	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project			Establish a National Facilitating Committee to review the progress of the national projects and provide direction as required. The NFC will enhance advocacy programmes and build the capacity of advocacy groups; The National Facilitating Committee will contribute to regional and global networks by publishing NFC decisions through the project Clearing House Mechanism (CHM).
Timor-Leste	TL 1	Identification of priority sites for conservation of dugongs and seagrasses in Timor-Leste	Develop policy briefs on seagrass and dugong conservation for national level stakeholders.		.
	TL 2	Development of seagrass and dugong LMMAs	Secure legislative protection of LMMA(s) and draft written records of process of LMMA establishment for guidance of future LMMA establishment.	Establish local steering committee(s) for conservation efforts; advocate improved conservation policy, planning, regulation and management of dugongs and their seagrass ecosystems by seeking national-level endorsement of community based conservation efforts.	
	TL 3	Building national-level expertise in dugong and seagrass		Consultation with all relevant ministries and government stakeholders;	Establish a National Facilitating Committee (NFC), convening all project stakeholders

		conservation and Mainstreaming dugongs and their seagrass habitats into national coastal zone planning and decision-making		Consultation and agreement of terms of reference for inter-ministerial committee; Convening regular meetings represented by all relevant stakeholders at least four times yearly, and on an ad hoc basis when necessary; Documentation and publication of key decisions and recommendations of meetings.	quarterly throughout project; Conduct training workshops for NFC members in seagrass and dugong ecology, participatory seagrass and dugong research methods, and tropical marine conservation management.
	TL 4	National-level awareness raising campaign to champion dugong and seagrass conservation		Identify and train a national spokesperson to advocate for seagrass and dugong conservation through campaign messaging.	.
Vanuatu	VU 1	Implementing the Vanuatu National Plan of Action for Dugong in Maskelynes Islands, Efate Islands and other selected areas	Review of existing legislation and guidelines and promotion of better and more responsible coastal management policies; Incorporate seagrass-dependent biodiversity conservation priorities and measures into relevant policy, planning and regulatory frameworks (regional, national, local, coastal and sectoral, as appropriate), including development of a proposal for a dugong and seagrass sanctuary.		

	VU 2	National Facilitating Committee for the GEF Dugong and Seagrass Conservation Project			Establish a National Facilitating Committee to review the progress of the national projects and provide direction as required. The NFC will enhance advocacy programmes and build the capacity of advocacy groups; The National Facilitating Committee will contribute to regional and global networks by publishing NFC decisions through the project Clearing House Mechanism (CHM).

Appendix 21: Stakeholder Capacity

Executing Agency

Executing Agency	Organisation Type	Capacity
Mohamed bin Zayed Species Conservation Fund (MbZSCF)	Charity Organization	The MbZSCF is a not-for-profit fund with the mandate to support species conservation worldwide. The organization was launched in 2008 and to date has supported over eight hundred projects, with a total of $9,247,398. The MbZSCF will establish a highly experienced Project Coordination Team (PCT) with a Project Coordinator to lead the project and the four supporting roles of Regional Manager, Finance Manager, Communications Manager and Project Associate. The PCT will be supported by the various technical networks of the MbZSCF, CMS Dugong MoU Secretariat and the Dugong Technical Group (DTG), as well as a National Facilitator. For details regarding the roles and requirements of the PCT and National Facilitator see Appendix 11. For more information regarding the implementation arrangements and support networks see Section 4.

Indonesia

Project Ref	Project Partner	Organisation Type	Capacity
ID1	Ministry of Marine Affairs and Fisheries (MMAF)	Government Agency	MMAF is the government agency entrusted to develop national policy, strategy and Action Plan for dugong and seagrass conservation. The MMAF and other partner agencies are responsible and have experience in implementing parts of the Action Plan relevant to their mandates.[55]
ID2	MMAF	Government Agency	The research and development unit of MMAF will conduct research to support dugong and seagrass management. RCO LIPI, as partner agency of MMAF, has a mandate to conduct marine research including dugongs and seagrass. WWF-Indonesia, Seaworld Indonesia and LAMINA Foundation NGOs which have a lot of experiences in marine biodiversity studies and awareness are providing support to this project.[56]
ID3	MMAF	Government Agency	MMAF has experience in management of protected areas and protection of marine and endangered species, including dugongs and their seagrass habitat. Regional administration setup exists for protected areas, i.e. Bintan Marine Affairs and Fisheries Office. Monitoring and supervision will be done by Marine Affairs and Fisheries Office directly from the head office. Bintan Regional Planning Board, as partner/stakeholder, has a mandate for the development, planning and allocation of funds. The existing community group which manages the seagrass sanctuary will be developed as grass root institution for managing dugong conservation.[57]
ID4	National Facilitating	Government Agency	This will be led by the Ministry of Marine Affairs and Fisheries

[55] Indonesia Project I GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[56] Indonesia Project II GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[57] Indonesia Project III GEF Dugong and Seagrass Conservation Project Proposal (unpublished)

Project Ref	Project Partner	Organisation Type	Capacity
	Committee		

Madagascar

Project Ref	Project Partner	Organisation Type	Capacity
MG1	Blue Ventures	NGO	Blue Ventures is an NGO that has been implementing marine and coastal ecosystem conservation projects in Madagascar since 2003 and covers almost the entire Western coast with 56 staff spread across five field offices: Tulear, Andavadoaka, Belo-sur – Mer, Maintirano and Ambanja. Blue Ventures' staff of fishery, aquaculture and blue carbon science experts have extensive experience in community-based marine and coastal conservation.[58]
MG2	Blue Ventures	NGO	Blue Ventures has implemented large-scale LMMAs in programmes that have reached over 70 communities, more than 25,000 people, and covered a total marine area of 2,284 km^2. Blue Ventures trains and supports LMMA participant communities to monitor their natural resources and implement sustainable fishery management systems.[59]
MG3	Community Centred Conservation (C3), Madagascar	NGO	C3 has over 10 years of experience in dugong research and conservation activities, including seagrass habitat mapping and ecological studies. The organization has a technical advisory board including world sirenian experts Prof. Helene Marsh and Dr. John Reynolds. C3 has been registered and operating in northern Madagascar since 2009 and works in close partnership and with the University of Antsiranana, MNP and the Director of Nosy Hara Marine Park in both the planning and execution of all projects in the region. It also has formal agreements with the community associations and health authorities with regards to this particular project. On site, the project team currently consists of six C3 field officers, four park rangers and 20 Conservation Ambassadors. C3 significantly contributed to the development of the international MoU and coordinated the first ever regional workshop for UNEP CMS in 2010. It continues to contribute to the aims of the international CMS Dugong MoU in both the Indian and Pacific Ocean regions. C3 received the prestigious international Future for Nature Award in 2012 (IUCN Netherlands) in recognition and support of its significant advances in dugong conservation in developing countries.
MG4	Madagascar National Parks: "COSAP, Platform Structure in the	NGO	Madagascar National Parks was founded in 1990 and works toward conservation and lasting and rational management of the network of national parks and reserves of Madagascar. MNPs conservation approach involves environmental education, community based ecotourism, science and equitable sharing of

[58] Blue Ventures CBRM GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[59] Blue Ventures LMMA GEF Dugong and Seagrass Conservation Project Proposal (unpublished)

Project Ref	Project Partner	Organisation Type	Capacity
	northwestern area"		the profits generated by protected areas with the riparian population.[60] A local structure, called "orientation and support committee of the protected area" (COSAP), works with Madagascar National Parks to manage local natural resources. COSAP is composed of volunteers from the civil society. Its mission is, among others, to defend advantages and interests of protected area and surrounding villages, so that they are taken into account in the management plan and the conservation actions. Committee's point of view is considered in the management and the development of the regional 'plans, the sensitization and the integration of local populations, and finally to face conflicts that may affect protected area' management and conservation. The COSAP is also in charge of the assessment of the contract conditions between the administrator and the beneficiary communities. It supervises the implementation of the micro project and participates in the assessment of the biodiversity health indicators of the protected areas.[61]
MG5	Ministry of Environment and Forests (MEF)	Government agency	The Ministry of Environment (including the General Direction of The Environment - DGE) was committed and mandated to maintain the integrity of Madagascar's unique and rich biodiversity when the National Strategy for Sustainable Management of Biodiversity was adopted. The DGE is regarded as a credible agency by decision makers and donors for the implementation of conservation programmes in Madagascar. The DGE will have five staff members to be involved in the current project and is already compiling information on dugongs from three sites as part of the CMS MoU work.[62]
MG6	Wildlife Conservation Society (WCS)	NGO	WCS Marine Programme in Madagascar includes the implementation of, and management support to, several Marine National Parks (34,087 ha) and locally managed MPAs (over 500,000 ha). The WCS Ocean Giants Programme in Madagascar, since 1996 has made critical contributions to the understanding and protection of humpback whales at the local, regional and international levels, and since 2004 has focused on coastal marine mammal conservation on the west coast, establishing research tools, status assessment of impacted populations and locally-managed community mitigation strategies addressing artisanal hunting and by-catch of coastal marine mammals. Since 1965, WCS has worked to protect Madagascar's last biodiversity strongholds with community-based management of forest, coastal, and marine resources using innovative approaches

[60] http://www.parcs-madagascar.com/madagascar-national-parks_en.php?Navigation=25 Last visited 25 August 2013
[61] http://www.parcs-madagascar.com/madagascar-national-parks_en.php?Navigation=26 Last visited 25 August 2013
[62] MEF GEF Dugong and Seagrass Conservation Project Proposal (unpublished)

Project Ref	Project Partner	Organisation Type	Capacity
			that are grounded in science. WCS currently oversees a portfolio of more than 500 conservation projects in 60 countries in Asia, Africa, Latin America, and North America.[63]

Malaysia

Project Ref	Project Partner	Organisation Type	Capacity
MY1	Department of Marine Park Malaysia	Federal Government Agency	The Department is involved actively in international projects and forums geared towards conservation of our marine resources. These projects among others include Coral Triangle Initiative (CTI) and Bay of Bengal Large Marine Ecosystem Programme (BOBLMEP). At the same time the department receives funding from organisations such as Global Environment Facility (GEF) through United Nations Development Programme (UNDP) for Conserving Marine Biodiversity through Enhanced Marine Park Management and Inclusive Sustainable Island Development Project which runs from 2007 to 2012.[64]
MY2	Turtle and Marine Ecosystem Research Centre (TUMEC)	Government Agency	TUMEC is a subsidiary of the Department of Fisheries Malaysia (DoFM), the authorised government agency for protecting and conserving dugong in Malaysia. The Senior Research Officer of DoFM will act as project leader and establish a National Task Force involving various agencies and NGOs with experience in the conservation of dugongs and their habitats.[65]
MY3	Center for Marine and Coastal Studies	University	The Centre for Marine and Coastal Studies (CEMACS) was established in August 1991 to undertake research and post-graduate training in Marine Science and Coastal Ecosystems. It provides the institutional mechanism for mobilising and integrating the University's considerable expertise and resources in marine science. The main objective of CEMACS is to enhance the capability of conducting integrated inter-and multi-disciplinary studies leading towards solving problems related to marine and coastal ecosystems. The centre is served by a number of core academics working in collaboration with research associates identified from other teaching schools as well as from outside the University. Presently, research and training conducted at the centre is focused on biodiversity and conservation of marine ecosystems, coastal forest ecosystems, mariculture and marine mammal ecology (dugong and dolphin).[66]
MY4	The MareCet Research Organization & Institute of Ocean & Earth Sciences,	NGO & University	MareCet Research Organization (MareCet), a local non-profit organization focused on marine mammal research and conservation, and co-supported by the Institute of Ocean and Earth Sciences (IOES), University Malaya. MareCet chairperson, and IOES Research Fellow, Dr. Louisa Ponnampalam, will be leading this project. The Department of Fisheries Malaysia, as the management authority on marine mammals in Malaysia will

[63] WCS GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[64] Department of Marine Park GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[65] TUMEC GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[66] http://cemacs.usm.my/index.php/en/ Last visited 25 August 2013

Project Ref	Project Partner	Organisation Type	Capacity
			assist in the collection of data during aerial surveys, while the Department of Marine Parks Malaysia will assist during dugong acoustic surveys, and be engaged in discussions regarding protected areas. Dr. Kotaro Ichikawa, a researcher at the Research Institute for Humanity and Nature in Japan, will provide the necessary expertise for dugong acoustic surveys.[67]
MY5	Protected Area and Biodiversity Conservation Division (PABC)	Government Link Company	SARAWAK FORESTRY was established by the State Government as outlined in Sarawak Forestry Corporation Ordinance, approved by the State Legislative Assembly in 1995. The Protected Areas and Biodiversity Conservation unit is responsible for environmental protection and conservation activities throughout the state and is the custodian of Sarawak's national parks, other protected areas and protected species and wildlife in general. It's duties include: • Management of national parks, wildlife sanctuaries, nature reserves and other protected areas. • Protection, enhancement and regeneration of Sarawak's indigenous flora and fauna, including wildlife rescue and rehabilitation, both inside and outside protected areas. • Activities related to forest biodiversity conservation. • Raising public awareness of conservation and sustainability issues through education and training programmes. • Business development and project planning for conservation based activities. • Promotion and regulation of nature-based tourism.[68]

Mozambique

Project Ref	Project Partner	Organisation Type	Capacity
MZ1	Blue Ventures	NGO	Blue Ventures has been implementing marine and coastal ecosystem conservation projects in the Western Indian Ocean region since 2003. Blue Ventures strives to develop innovative market-based mechanisms, providing economic incentives for stakeholders to conserve the ecosystems that underpin their livelihoods, while improving their well-being, and protecting important biodiversity. Blue Ventures also trains and supports LMMA participant communities to monitor their natural resources and implement sustainable fishery management systems.[69]
MZ2	Dugongos.Org	NGO	The project will be managed by Doctors A. Guissamulo, of Natural History Museum, Maputo; K. Findlay of University of Pretoria; and V. Cockcroft of Nelson Mandel Metropolitan University. This project team collectively has more than 50 years of experience working with dugongs and communities in Mozambique.[70]

[67] MareCet GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[68] http://www.sarawakforestry.com/htm/snp.html Last visited 25 August 2013
[69] Blue Ventures BD GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[70] Dugongos Dist GEF Dugong and Seagrass Conservation Project Proposal (unpublished)

Project Ref	Project Partner	Organisation Type	Capacity
MZ3	Dugongos.Org	NGO	The project will be managed by Doctors A. Guissamulo, and V. Cockcroft, the latter has 30 years of experience working with schools and communities in awareness and educational programmes. [71]
MZ4	Endangered Wildlife Trust (EWT)	NGO	The Endangered Wildlife Trust (EWT), founded on 31 October 1973, is a South African non-governmental, non-profit, citizen organization dedicated to conserving threatened species and ecosystems in southern and eastern Africa to the benefit of all people. The EWT today has a staff of 69 people, coordinating a range of projects which focus on threatened species and ecosystems, capacity building, training and skills development, policy analysis and legislation development, human-wildlife conflict prevention and mitigation of a range of threats to environmental health and sustainability. EWT implements programmes which aid South Africa and neighbouring SADC countries to achieve the social development targets of the Millennium Development Goals and the World Summit on Sustainable Development.[72]
MZ5	Ministry for the Coordination of Environmental Affairs (MICOA) – Directorate of Environmental Management (DNGA)	Government Agency	DNGA in its capacity of being responsible for environmental management in Mozambique will be in charge of the project and will use its technical department – CDS_ZC (Centre for sustainable development for coastal zones) which has been interacting with coastal communities on several issues and promoting best practices demonstration projects. In addition, Instituto de Desenvolvimento de Pesca de Pequena (IDPPE) – a fisheries extension service will also be involved due to their expertise with dealing with fishers and fishing communities.[73]
MZ6	Ministry for the Coordination of Environment Affairs (MICOA)		MICOA through DNGA will implement the project. Staff members at DNGA have the necessary skills to convene and guide the facilitating committee meetings and accumulated experience and expertise in consultation and streamlining of activities. Consultants will be employed to facilitate with the review of National Legislation and a Gap analysis assessment.[74]

Solomon Islands

Project Ref	Project Partner	Organisation Type	Capacity
SB1	Ministry of Environment	Government agency	The Ministry of Environment, Conservation and Meteorology is mandated to ensure the environment and natural resources of Solomon Islands are protected, managed and sustainably used for

[71] Dugongos EEA GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[72] EWT GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[73] MICOA GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[74] MICOA NSC GEF Dugong and Seagrass Conservation Project Proposal (unpublished)

Project Ref	Project Partner	Organisation Type	Capacity
			the maximum benefit of the people and government of Solomon Islands.[75]
SB2	Environment and Conservation Division (E&CD),Ministry of Environment	Government agency	The E&CD was created in 2008[76] under the Ministry of Environment, Conservation and Meteorology which is mandated to ensure the environment and natural resources of Solomon Islands are protected, managed and sustainably used for the maximum benefit of the people and government of Solomon Islands.
SB3	Seagrass-Watch	NGO	Seagrass-Watch is the largest scientific, non-destructive, seagrass assessment and monitoring programme in the world. Since its genesis in 1998 in Australia, Seagrass-Watch has now expanded internationally to 26 countries. Monitoring is now occurring at over 300 sites across 17 countries and an additional 9 countries participate but are currently at resource identification stage. Seagrass-Watch aims to raise awareness on the condition and trend of nearshore seagrass ecosystems and provide an early warning of major coastal environment changes. Seagrass-Watch monitoring efforts are vital to assist with tracking global patterns in seagrass health, and assess the human impacts which have the potential to destroy or degrade these coastal ecosystems and decrease their yield of natural resources. Responsive management based on adequate information will help to prevent any further significant areas and species being lost.[77]
SB4	The Nature Conservancy (TNC)	NGO	An NGO with operations in the Arnavon Island area, between Choiseul and Isabel, TNC supports the Solomon Islands communities with the expertise to protect their resources and keep rare and iconic species.[78]
SB5	Ministry of Environment	Government agency	The Ministry of Environment, Conservation and Meteorology is mandated to ensure the environment and natural resources of Solomon Islands are protected, managed and sustainably used for the maximum benefit of the people and government of Solomon Islands.

Sri Lanka

Project Ref	Project Partner	Organisation Type	Capacity
LK1	Biodiversity Education And Research (BEAR)	NGO	Biodiversity Education And Research is a local NGO active in both terrestrial and aquatic conservation. BEAR staff includes scientists, humanitarian aid workers and media personnel with experience conducting awareness programmes in the North and

[75] Solomon Islands State Of Environment Report 2008 Ministry of Environment Conservation and Meteorology July 2008
[76] http://www.sprep.org/Solomon-Islands/pein-solomon-islands Last visited 17 September 2013
[77] http://www.seagrasswatch.org/home.html Last visited 26 August 2013
[78] http://www.nature.org/ourinitiatives/regions/asiaandthepacific/solomonislands/index.htm Last visited 26 August 2013

Project Ref	Project Partner	Organisation Type	Capacity
			East of the country in various different spheres, including human elephant conflict, whale and dolphin watching. [79]
LK2	Department of Wildlife Conservation	Government agency	The Department of Wildlife Conservation (DWC) under the Ministry of Agrarian Services and Wildlife is entrusted with the overall conservation of fauna and flora of the country and the maintenance of its diversity. The functions of DWC are largely governed by the Fauna and Flora Protection Ordinance and the Wildlife Conservation Policy approved in the year 2000. DWC maintains a network of protected areas in the country for the purpose of conserving the natural resources within. The network includes 15 National Parks, 4 Nature Reserves, 3 Strict Natural Reserves and 55 Sanctuaries.[80]
LK3	Centre for Research on Indian Ocean Marine Mammals (CRIOMM)	Centre for Research on Indian Ocean Marine Mammals (CRIOMM)	CRIOMM was established in 1982 as a marine mammal research center under the auspices of IOMAC with support from NARA. An institutional focus for interested persons, especially the scientific community, to interact with others, sharing similar interests.[81]
LK4	IUCN Sri Lanka	International Organisation	With proven convening power and access to pool of experts through various IUCN Commissions, IUCN will manage this project with close collaboration with key National agencies. IUCN has extensive experience in working in the Gulf of Mannar region, most recent work includes two year regional project being implemented in the Gulf with India on living resources of Gulf of Mannar and BOBLME supported resources survey and awareness raising of living resources in and around Gulf of Mannar. IUCN Sri Lanka's Marine Scientist has nearly three decades of experience and was instrumental in declaring Bar Reef marine Protected Area.[82]
LK5	National Aquatic Resources Research and Development Agency (NARA)	Government agency	The National Aquatic Resources Research and Development Agency (NARA) is the apex national institute vested with the responsibility of carrying out and coordinating research, development and management activities on the subject of aquatic resources in Sri Lanka. Over the past 30 years NARA conducted numerous scientific studies in the field of fisheries and aquatic resources. NARA also provides services for development and sustainable utilization of living and non-living aquatic resources.[83] NARA is well equipped with laboratory facilities, technology and experienced staff and has undertaken research work on seagrasses at Puttalam, Mundal and Negombo lagoon and has conducted opportunistic studies on the analysis of dugong stomach contents.

[79] BEAR GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[80] http://www.theredddesk.org/countries/sri_lanka/info/resources/organisations/department_of_wildlife_conservation_sri_lanka Last visited 25 August 2013
[81] https://www.facebook.com/criomm/info Last visited 25 August 2013
[82] IUCN GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[83] http://www.nara.ac.lk/ Last visited 25 August 2013

Project Ref	Project Partner	Organisation Type	Capacity
LK6	Ocean Resources Conservation Association (ORCA)	NGO	ORCA has administered, implemented and completed projects with grants under the UNDP/GEF/SGP and MFF/IUCN and, along with its sister organization Natcog, holds the longest standing programme of Marine survey, research, conservation, habitat restoration and activism in Sri Lanka with a sound track record that spans 20 years. The team is one of the most recognized marine survey outfits in the country. [84]
LK7	Sri Lanka Turtle Conservation Project (TCP)	NGO	TCP was established in 1993 has focused on community environmental training programmes at various locations in Sri Lanka, including education and awareness programmes, various community surveys to identify environmental threats, and development of alternative incomes through eco-tourism, fish breeding and other programmes[85]. TCP's community based responsible tourism programmes have earned awards from the tourism sector in Sri Lanka. [86]
LK8	National Facilitating Committee		This will be led by the Department of Wildlife Conservation

Timor-Leste

Project Ref	Project Partner	Organisation Type	Capacity
TL1	Marine Research Foundation (MRF)	NGO	The Marine Research Foundation is a non-profit research foundation based in Kota Kinabalu and incorporated under the Trustees Act of 1951. Established to further the understanding of marine ecosystems and their associated diverse flora and fauna in Southeast Asia and other Indo-Pacific sites, the Foundation carries out a number of projects related to biodiversity assessment and conservation, and seeks to provide management-oriented solutions to Government administrations and conservationists.[87] MRF will partner with the Ministry of Environment and Ministry of Fisheries and Agriculture on this project.
TL2	Blue Ventures Conservation	NGOs	Blue Ventures is a science-led social enterprise that works with coastal communities to in places where the ocean is vital to local people, cultures and economies, and where there is a fundamental need to support human development. Blue Ventures will partner with Move Forward, a local NGO, on this project.
TL3	Ministry of Agriculture and Fisheries (MAF)	Government Agency	Ministry of Environment is a partner on this project.
TL4	Haburas Foundation	NGO	The Haburas Foundation was formed by a group of Timorese students in 1998 during the Indonesian occupation of Timor-Leste. It is the oldest and most active national environmental

[84] ORCA GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[85] TCP GEF Dugong and Seagrass Conservation Project Proposal (unpublished)
[86] http://www.tcpsrilanka.org/ Last visited 25 August 2013
[87] http://www.mrf-asia.org/ Last visited 25 August 2013

Project Ref	Project Partner	Organisation Type	Capacity
			group in the country. Haburas uses a wide network of local community groups and relies on traditional Timorese culture to promote better environmental management practices that also respond to the developmental needs of local communities. Haburas' goal is to achieve harmony between people and the environment by conserving and restoring the environment and ensuring that natural resources are managed responsibly and for the shared welfare and prosperity of the people of Timor-Leste.[88] Haburas Foundation will partner with the Ministry of Agriculture and Fisheries and the NGOs Move Forward and Blue Ventures Conservation on this project.

Vanuatu

Project Ref	Project Partner	Organisation Type	Capacity
VU1	Department of Environmental Protection andConservation (DEPC)	National Government Agency	The Department of Environment Preservation and Conservation is in charge of enforcing Environmental Legislation in Vanuatu[89] and is actively involved in international projects and forums geared towards conservation of Vanuatu's marine resources. The department receives funding from organisations such as Global Environment Facility (GEF) through United Nations Development Programme (UNDP) for Conserving Marine Biodiversity.[90]
VU2	National Facilitating Committee		This will be led by Department of Environment Preservation & Conservation (DEPC)

[88] http://www.foei.org/en/who-we-are/member-directory/groups-by-region/asia-pacific/timor-leste Last visited 25 August 2013
[89] http://www.mol.gov.vu/environment-acts.php Last visited 25 August 2013
[90] DEPC GEF Dugong and Seagrass Conservation Project Proposal (unpublished)

Appendix 22: Relevant GEF and Non-GEF Projects[91]

Relevant GEF projects:

Project name	Summary	Geographic scope	Executing Agency
Standardized Methodologies for Carbon Accounting and Ecosystem Services Valuation of Blue Forests (UNEP GEF Blue Forests project)	To develop methodologies for carbon accounting and ecosystem services valuation in blue forests to be recognized and used by the international community and the GEF	Global (Indonesia, Madagascar, Mozambique)	UNEP
Demonstration of Community-based Management of Seagrass Habitats in Trikora Beach East Bintan, Riau Archipelago Province, Indonesia (GEF IW 3188)	To establish an integrated management system for a total of 1,500 ha of the coastal and marine environment including seagrass and associated habitats, through ensuring a cross-sectoral and participatory approach to addressing the threats, and the root-causes of current and future habitat degradation. In fact much of the work proposed has already been done/trialled during the Trikora project.	Indonesia	UNEP
Capturing Coral Reef & Related Ecosystem Services (CCRES; Proposed GEF IW project)	To demonstrate the fundamental relationships between the ecological value of intact coral reef, seagrass and mangrove ecosystems and the economic value and market potential of their ecosystem services, how these are tied to healthy, resilient systems and the routine distribution of economic benefits that can bring transformational change in sustaining the welfare of coastal communities.	Regional (Indonesia, Philippines and Pacific Islands Countries)	
Bay of Bengal Large Marine Ecosystem (BOBLME) Project	Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, and Thailand are collaborating through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project to better the lives of their coastal populations by improving regional management of the Bay of Bengal environment and its fisheries.	Regional (Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, and Thailand)	FAO
Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand (recently finalised)	The first attempt to develop a regionally co-ordinated programme of action designed to reverse environmental degradation particularly in the areas of coastal habitat degradation and loss, including seagrass, land-based pollution, and fisheries.	Regional (Cambodia, China, Indonesia, Malaysia, Philippines, Thailand, Viet Nam)	UNEP
Establishment and Operation of a Regional System of Fisheries Refugia in the	This project is a follow-on to the multilateral, intergovernmental project "Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand" and builds upon the collaborative	Regional (Cambodia, Indonesia, Malaysia,	UNEP

[91] N.B.: The proposed list of projects is non-exhaustive.

Project name	Summary	Geographic scope	Executing Agency
South China Sea and Gulf of Thailand	relations among fisheries agencies achieved through the latter investment.	Philippines, Thailand and Viet Nam)	
Support to GEF Eligible Parties (LDCs & SIDs) for the Revision of the NBSAPs and Development of Fifth National Report to the CBD - Phase 1	With the overarching goal of integrating CBD Obligations into National Planning Processes through Enabling Activities, the main objective of this project is to enable GEF eligible LDCs and SIDs to revise the National Biodiversity Strategies and Action Plans (NBSAPs) and to develop the Fifth National Report to the CBD	Global (Madagascar, Mozambique, Solomon Islands, Timor-Leste, Vanuatu)	UNEP
Bay of Bengal Large Marine Ecosystem	To develop an agreed strategic action programme for the sustainable management of the Bay of Bengal Large Marine (LME) Ecosystem that addresses transboundary marine resources issues along the coast of this LME	Regional (Indonesia, Malaysia)	FAO
R2R- Pacific Islands Ridge-to-Reef National Priorities – Integrated Water, Land, Forest and Coastal Management to Preserve Biodiversity, Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods	To maintain and enhance Pacific Island countries' (PICs) ecosystem goods and services (provisioning, regulating, supporting and cultural) through integrated approaches to land, water, forest, biodiversity and coastal resource management that contribute to poverty reduction, sustainable livelihoods and climate resilience	Regional (Solomon Islands, Vanuatu)	UNDP
CTI Arafura and Timor Seas Ecosystem Action Programme (ATSEA) - under the Coral Triangle Initiative	To ensure the integrated, cooperative, sustainable, ecosystem-based management and use of the living coastal and marine resources, including fisheries and biodiversity, of the Arafura and Timor Seas region, through the formulation, inter-governmental adoption and initial implementation of a Regional Strategic Action Programme (SAP) and National Action Programmes (NAPs)	Regional (Indonesia, Timor-Leste)	UNDP
CTI Strategies for Fisheries Bycatch Management (REBYC-II CTI)	To establish effective public and private sector partnership for improved trawl and bycatch management and practices that support fishery dependent incomes and sustainable livelihoods	Regional (Indonesia, Papua New Guinea, Philippines, Thailand and Viet Nam)	FAO
PAS Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific - under the Pacific Alliance for Sustainability Programme	To promote the conservation and sustainable use of globally significant coastal and marine resources in the Coral Triangle region through the introduction of integrated and ecosystem-based coastal and marine resources management in five Pacific countries.	Regional (Solomon Islands, Timor-Leste, Vanuatu)	ADB
PAS Forestry and Protected Area Management	To conserve biodiversity in Fiji, Samoa, Vanuatu and Niue by expanding and consolidating their networks of PAs, building capacity for conservation management and sustainable use of biodiversity and reducing forest	Regional (Vanuatu)	FAO

Project name	Summary	Geographic scope	Executing Agency
	and land degradation.		
National Biodiversity Planning to Support the Implementation of the CBD 2011-2020 Strategic Plan	To strengthen National biodiversity framework for implementation of Indonesia Biodiversity Strategy and Action Plan (IBSAP) and integration Indonesia's obligations under the CBD into its national development and sectoral planning frameworks in line with the Strategic Plan for 2011-2020.	Indonesia	UNDP
Citarum Watershed Management and Biodiversity Conservation Project	To achieve clean, healthy and productive catchments and rivers while conserving globally and locally significant biological diversity and bringing about sustainable benefits to all people of the Citarum River Basin through collaborative efforts between government and the community.	Indonesia	ADB
Enhancing the Protected Area System in Sulawesi (E-PASS) for Biodiversity Conservation	To strengthen the effectiveness and financial sustainability of Sulawesi's protected areas system to respond to threats to the globally significant biodiversity	Indonesia	UNDP
Madagascar's Network of Managed Resource Protected Areas	To expand the PA system of Madagascar by developing a sub-network of managed resource protected areas in represented ecological landscapes, co-managed by local government and communities and integrated into regional development frameworks	Madagascar	UNDP
Support to the Madagascar Foundation for Protected Areas and Biodiversity (through Additional Financing to the Third Environment Support Programme Project (EP3)	To enhance the protection and sustainable management of protected areas.	Madagascar	IBRD
Conservation of Biological Diversity through Improved Forest Planning Tools	The development of tools and generation of knowledge needed to ensure that production systems are planned and managed in a manner which will contribute to biodiversity conservation or the sustainable use of its components against the baseline scenarios.	Malaysia	UNDP
National Biodiversity Planning to Support the implementation of the CBD 2011-2020 Strategic Plan in Malaysia	To integrate Malaysia's obligations under the CBD into its national development and sectoral planning frameworks through a renewed and participative 'biodiversity planning' and strategizing process, in a manner that is in line with the guidance contained in the Strategic Plan for 2011-2020.	Malaysia	UNDP
Conserving Marine Biodiversity through Enhanced Marine Park Management and Inclusive Sustainable Island Development	To ensure improved marine resource conservation and management in the Malaysian east coast and inclusive sustainable island development by diminishing the negative impacts arising from island-based development through the implementation of effective, broad scale mechanisms for multi-sectoral coordination and sustainable development planning	Malaysia	UNDP
Enhancing the Effectiveness and Financial Sustainability	To establish a performance-based financing structure to support effective Protected Area system management in Peninsular Malaysia	Malaysia	UNDP

Project name	Summary	Geographic scope	Executing Agency
of Protected Areas			
Transfrontier Conservation Areas and Sustainable Tourism Development Project	To ensure the sustainable management and conservation of Mozambique's global biodiversity assets and critically important transboundary ecosystems through an integrated ecosystem management approach by institutionalizing a fully participatory, multi-sectoral planning and implementation process for transfrontier conservation areas and integrate environmental and social values with economic development.	Mozambique	IBRD
Sustainable Financing of the Protected Area System in Mozambique	To strengthen the overall effectiveness and sustainability of Mozambique's protected area system, including financial sustainability, through working partnerships between private, NGO and community stakeholders.	Mozambique	UNDP
Protected Areas and Wildlife Conservation Project	To address institutional and legal deficiencies in protected area management and pilot test participatory conservation activities in selected protected areas.	Sri Lanka	IBRD
National Biodiversity Planning to Support the Implementation of the CBD 2011-2020 Strategic Plan	To update the Biodiversity Conservation in Sri Lanka-Framework for Action (national biodiversity strategy and action plan) according to the global guidelines of the CBD Strategic Plan 2011-2020.	Sri Lanka	UNDP
Agulhas and Somali Current Large Marine Ecosystems (ASCLME)	To work on filling gaps in understanding of transboundary living resources of two existing LMEs and to build capacity of the participating countries to utilise this improved understanding for more effective management by use of an ecosystem approach, and to complement two existing projects in the same LMEs, Southwest Indian Ocean Fisheries Project (SWIOFP; World Bank) and Addressing land-based activities in the Western Indian Ocean (WIOLaB; UNEP), and to build capacity at the national and regional level and help to create effective strategies for evolving information into policies and governance mechanisms that support the sustainable management of marine and coastal resources.	Regional (Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, South Africa, Tanzania)	UNDP

Relevant non-GEF projects at the national and regional levels:

Country	Relevant ongoing and planned national and regional projects
Indonesia	*Directorate of Marine and Aquatic Resources Conservation, Ministry of Marine Affairs and Fisheries* • Coordination related to enforcement of illegal utilization of endangered marine species: coordination and meetings with relevant stakeholders • Ecosystem (including Seagrass) monitoring in the existing marine and aquatic conservation area • Seagrass and dugong inventory and assessment related to identification and establishment of new MPAs • Development of NGO networking to support dugong and seagrass conservation under the activities of National Committee on Aquatic Conservation • National Awareness Campaign of Dugong and Seagrass Conservation • Development of Best Practice Rescue Guideline on Stranded marine mammals

Country	Relevant ongoing and planned national and regional projects
	(including dugong) • Dugong & seagrass wbsite development and operation *Research Centre for Fisheries resources and Fisheries Management* • Assessment of Dugong and Seagrass Condition, distribution and threats *Agency for Research and Development of Marine Affairs and Fisheries* • Scientific Observation and Assessment of Blue Carbon in Indonesian waters: o Banten Bay (Java Sea) and Derawan Islands (East Kalimantan) o Tanjung Lesung (Sunda Strait) and Tomini Bay (North Sulawesi) *Research Centre for Oceanography, Indonesian Institute of Sciences* • Research on Carbon Stock in Coastal Ecosystems (mangrove, seagrass and phytoplankton) in Bintan coastal area • Research for Management of Small Islands and Marine Biodiversity in Bitung and Bintan (in cooperation with China Oceanographic Research Centre) • Mapping of Seagrass and Assessment of Dugong distribution and threats in Kei Kecil Archipelago (proposed project) • Phylogeography of Thalassia hemprichi in the Indo-Australian Archipelago (Indonesian Ph.D student research programme in Australia) *Bogor Agriculture University* • Research on connectivity of seagrass and fisheries in Bintan coastal area *Hasanuddin University* • Carbon stock and budget of seagrass community in Baranglompo Island, Makasar Strait (Student Dissertation Research Programme) *WWF Indonesia* • Awareness Campaign and advocacy programme at National and Local level (Kei Islands, Cendrawasih Bay and Alor Island) *Seaworld Indonesia* • National awareness campaign and education • Keeping dugong alive in captivity *Coral Reef Rehabilitation and Management-Coral Triangle Initiative Project (COREMAP-CTI)* *The Regional Fisheries Livelihood Programme for South and Southeast Asia (RFLP)* *Regional Plan of Action of Sea Turtles Foraging Habitats in Southeast Asian Waters*
Madagascar	• Government of Madagascar: baseline funding for protected areas management • Extension of CMS Dugong MoU Standardised Survey Questionnaire to other target areas • Assessment of hunting and bycatch and conservation of coastal marine mammals on the west coast of Madagascar, WCS • Implementation of three community-based marine protected areas on the west coast (Ankarea and Ankivonjy in the north-west and Salary in the south-west), WCS • Implementation of community-based marine protected areas and integrated coastal management in Antongil Bay, WCS
Malaysia	*Universiti Sains Malaysia* • Status, issues and perceptions: conserving the dugong in Johor • Testing the effectiveness of conservation education programmes: the dugong as a case study in Johor • Community-based seagrass meadows conservation in Penang South Channel *The MareCet Research Organization* • Research and conservation of dugongs in eastern Johor waters *National Oceanograpy Directorate (NOD), Department of Fisheries Malaysia, University Malaysia Sabah, Sabah Parks* • Coral Triangle Initiative *Department of Fisheries Malaysia, Department of Fisheries Sabah, Sabah Parks, Sarawak Forestry Corporation*

Country	Relevant ongoing and planned national and regional projects
	• Conservation and Management of Dugong in Malaysia *Universiti Malaysia Sabah, Universiti Malaysia Terengganu and Sarawak Forestry Corporation* • Occurrence and distribution of dugong and associated threats in Lawas, Sarawak. *Ministry of Higher Education (MOHE), Higher Institution Centre of Excellence (HICoE), Institute of Oceanography and Environment, Universiti Malaysia Terengganu. Sarawak Forestry Corporation, Department of Fisheries Sabah and Department of Fisheries Malaysia* • Occurrence, Distribution and Abundance of Marine Mammals (Dugong, Whales, Dolphins and Porpoises) in the Malaysian South China Sea *Ministry of Higher Education (MOHE), Higher Institution Centre of Excellence (HICoE), Institute of Oceanography and Environment, Universiti Malaysia Terengganu. Sarawak Forestry Corporation, Department of Fisheries Sabah and Department of Fisheries Malaysia are main partners of the projects* • Species Composition, Distribution and Abundance of Seagrass and Their Relationships With Dugong's Population Ecology in The Malaysian Bay of Brunei *Sarawak Forestry Corporation* • Long-term seagrass and feeding trail monitoring in Lawas, Sarawak *Regional Plan of Action of Sea Turtles Foraging Habitats in Southeast Asian Waters*
Mozambique	• Government of Mozambique: baseline funding for protected areas management • Extension of CMS Dugong MoU Standardised Survey Questionnaire to other target areas, UNEP/CMS • Pilot project planning & development in Bazaruto Archipelago, UNEP/CMS • Dugong By-catch survey and alternative livelihood project, US Marine Mammal Commission – UEM & Centre for Dolphin Studies • EWT the Dugong Emergency Protection Project, IUCN SOS Fund - Bazaruto National Park
Solomon Islands	*Coral Reef Targeted Research and Capacity Building for Management Project (CRTR)* • To be further assessed at inception
Sri Lanka	*Government of Sri Lanka* • Baseline funding for protected areas management • Sustainable Management of the Bay of Bengal (BOBLME) *The Regional Fisheries Livelihood Programme for South and Southeast Asia (RFLP)* *UNDP Country Programme Action Plan (CPAP)* • Poverty alleviation and livelihood support through sustainable practices including improving fisheries and other environmentally friendly livelihood practices
Timor-Leste	*World Wildlife Fund (WWF), Conservation International (CI), and The Nature Conservancy* • Coral Triangle Initiative on Coral Reefs Fisheries and Food Security (CTI-CFF) *Government of Timor-Leste* • Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) • Regional technical assistance (RETA) project : Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific, Phase 2 (CTIPacific) *ACDI/VOCA in collaboration with the Fisheries Department of the Ministry of Agriculture and Fisheries (MAF) and the Ministry of Tourism, Commerce, and Industry (MTCI)* • Mud Crab and Milkfish Cultivation Project • Haburas Foundation *Roman Luan (Local NGO)* • Bikeli Marine Management Project: activities are concerned with sustainable fisheries, sustainable eco-tourism Conservation International

Country	Relevant ongoing and planned national and regional projects
	• Promoting Livelihoods through Marine Conservation *The Regional Fisheries Livelihood Programme for South and Southeast Asia (RFLP)*
Vanuatu	• Government of Vanuatu: baseline funding for protected areas management • Extension of CMS Dugong MoU Standardised Survey Questionnaire to other target areas • Dugong Project (surveying dugongs and dugong habitats), Vanuatu Cultural Center

Appendix 23: National MPAs/ LMMAs and National Projects Activities Based Within MPAs/ LMMAs

National Projects with activities based within MPA/LMMAs or with proposals for the extension or creation of MPA/LMMAs

Country	National MPAs	National LMMAs	National Project ID	National Project/ *Lead Partner*	Existing MPA/ LMMA	Proposed new MPA/ LMMA
Indonesia	Min. of Forestry MPAs (National Marine Park; Marine Nature Recreation Park; Marine Nature Reserve; Marine Nature Wildlife Reserve). Total extent designated approx. 4.7M ha. Min. of Marine Affairs & Fisheries (Regional Marine PAs). Total extent designated approx. 11.4M ha.	District/Local Government assisted by Ministry of Marine Affairs & Fisheries (MMAF), 27 LMMAs, Total extent designated 5.4 Mha.	ID3	Community based conservation and management of dugong and seagrass habitat Bintan Island, Riau Archipelago Province, Indonesia *Dir. Gen. of Marine, Coast and Small Islands Affairs, Ministry of Marine Affairs & Fisheries*	Bintan Island (Riau Archipelago Province) Kawasan Konservasi Padang Lamun Kabupaten Bintan (Seagrass Conservation Area of Bintan District) Local Marine PA Established June 3, 2010 3,000 ha seagrass bed METT completed for Kawasan (13-15/03/13) Score: 42	
			ID2	Improving National Awareness and Research of Dugong and Seagrass in Indonesia *Dir. Gen. of Marine, Coast and Small Islands Affairs, Ministry of Marine Affairs & Fisheries*		Location of Aru has potential to be developed into MPA
Madagascar	Seven Marine Parks – IUCN Category II.	37 LMMAs managed by NGOs. Extent approx. 2.8Mha.	MG2	Fisher knowledge, awareness and behaviour change for the conservation of dugongs and seagrass using the Mihari network of Locally Managed Marine Areas in Madagascar *Blue Ventures (NGO)*	Mihari network LMMA Includes Ankarea LMMa and Ankivonjy LMMAs - see below.	
			MG3	Using incentivized Environmental	Nosy Hara Marine Park	

				Stewardship to conserve dugongs and seagrass habitat at an identified national hotspot *Conservation Centrée sur la Communauté Madagascar*	Established 15/10/07 183,100 ha marine BD METT (08/03/13) Score: 48	
			MG4	Integrated approaches to enhance the conservation of dugongs and seagrass ecosystems in Sahamalaza areas *COSAP: Sahamalaza Community Based Conservation (Stakeholder Platform*	Sahamalaza and Ile Radama coastal and Marine Biosphere Reserve & National Park Established 19/07/07 18,492 ha Conservation (endemic species, intact marine ecosystems, failure of conservation approach initiated in 1990s METT (no date) Score: 72	
			MG6	Dugong and seagrass conservation in North West Madagascar *Wildlife Conservation Society (NGO)*	Ankarea LMMA Established December 2010 METT (no date) Score: 26	
					Ankivonjy LMMA Established December 2010 METT (no date) Score: 26	
			MG1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Madagascar *Blue Ventures (NGO)*		Area between Mahajanga and Sahamalaza
Mala ysia	In total 50 MPAs in Malaysia, covering approx.	No information available on	MY1	Operationalizing the Malaysian National Plan of Action for	Pulau Sibu Marine Park Established	

	3500 km^2, none are designated MPAs for seagrass habitats and dugongs. Few proposed MPAs overlap with the dugong's range and seagrass availability (except Pulau Banggi and Lawas).	LMMAs.		Dugong in Pulau Sibu and Pulau Tinggi, Johor, Peninsular Malaysia *Ministry of Natural Resources and Environment (Federal Government. Agency)*	20/10/94 4260 ha Coral Reefs, Fisheries, Dugong, Sea Turtles and Seagrasses METT (08/05/13) Score: 71	
					Pulau Tinggi Marine Park Established 20/10/94 10,180 ha Coral Reefs, Fisheries, Dugong, Sea Turtles and Seagrasses METT (08/05/13) Score: 69	
			MY5	Overcoming the Knowledge Gaps and Involvement of Local Community to Establish a Marine Protected Area (MPA) for the Conservation of Dugong and Seagrass in Bay of Brunei, Lawas, Sarawak, East Malaysia *Protected Area & Biodiversity Conservation Division (PABC) Sarawak Forestry Corporation Sdn Bhd (SFCSB). Government Link Company (Wholly owned by the Sarawak State Government)*		Lawas

Mozambique	Seven protected areas: Five protected areas declared prior to 2011 protected only 3% if the coastline. These MPAs are Bazaruto (1430 km^2), Ilhas da Inhaca e dos Portugueses (1 km^2), Quirimbas (1522 km^2) , North Quirimbas (230 km^2) and Vilanculos (80 km^2) Lake Niassa reserve declared in mid-2011, Primeiras and Segundas archipelago Marine Protected Area covers almost 10,500 km^2	No information available on LMMAs	MZ4	The Dugong Emergency Protection Project *Endangered Wildlife Trust (NGO)*	Bazaruto Archipelago National Park 143,000 ha shallow sandy bay and seagrass meadow Endangered Species protection (incl. dugongs and marine turtles METT (27/03/13) Score: 43	
			MZ1	Building a model for innovative long-term community-based conservation of seagrass-dependent biodiversity in Mozambique *Blue Ventures (NGO)*		Bartolomeu Dias

Solomon Islands	In total approximately 180 marine protected areas, 50 of which have known boundaries. The extent of the marine protected areas with known boundaries is approx. 450 km^2. The Arnavon Marine Conservation area is the only nationally designated MPA.	Most protected areas in Solomon Islands are managed under traditional or LMMA frameworks.	SB4	Development of seagrass and dugong Locally Managed Marine Areas *The Nature Conservancy (TNC)*		Project will focus on one or two sites for an LMMA; to be identified during the Inception Phase
Sri Lanka	Four MPAs: Bar Reef MPA (west of the Kalpitiya peninsula in the vicinity of Puttalam lagoon) - Total extent designated approx. 306.7 km2; The Hikkaduwa marine sanctuary (southern province of Sri Lanka) - Total extent designated is approx. 45 ha. Pigeon Island National Park and Rummassala Marine Sanctuary in Galle Bay also established.	No information available on LMMAs	LK3	Contributions to the long term conservation of seagrasses and dugongs in Sri Lanka *Centre for Research on Indian Ocean Marine Mammals (CRIOMM) (Government agency)*	Wilpattu National Park Buffer zone (Western boundary coast) Established 1938 131,667 ha. Biodiversity, Water catchment, Unique aquatic ecosystem METT (27/05/13) Score: 54	
			LK2	Improving communication and collaboration amongst all relevant stakeholders in Sri Lanka to enhance seagrass and dugong conservation *Department of Wildlife Conservation (Government agency)*		Gulf of Mannar and Palk Bay MBR
			LK4	Development of a multiple-community-based marine resource management plan in the Gulf of Mannar *IUCN Sri Lanka*		North West Coast Fisheries Management Area (including Bar Reef Marine

						Sanctuary)
			LK7	Providing incentives to local communities in return for wise stewardship of coastal habitats *Sri Lanka Turtle Conservation Project (NGO)*		Portugal Bay
						Dutch Bay
Timor-Leste	Four main Marine Protected areas within network, with an extent of approx. 1200 km^2. Nino Konis Santana National Park, and three others at Lamsanak, Behou and on the island of Atuaro.	No information available on LMMAs	TL2	Development of seagrass and dugong LMMAs *Blue Ventures Conservation (NGO), Move Forward (NGO)*		Tasi-Tolo
						1 - Bikeli region of Ataúro Island
						2 - Bikeli region of Ataúro Island
Vanuatu	22 terrestrial/marine protected area initiatives	10 marine protected areas are managed as traditional protected areas.	VU1	Implementing a Vanuatu National Plan of Action for Dugong in Maskelynes Islands, Efate Islands and other selected areas *Department of Environment Preservation & Conservation (DEPC) (Government agency)*		Havannah harbour, Undine Bay and the extensive intertidal reef flats to the east of Kakula island
						The Maskelyne islands
						The Port Stanley area of Malekula, including Uri and

						Uripiv islands
						The Hog Harbour area of Santo

Appendix 24: Management Toolboxes

Incentives Toolbox:

Management option	Definition	Example
Buyouts (direct incentive)	Conservation investors purchase resource rights or equipment with the intention of retiring them, thereby reducing the overall level of effort applied to harvesting[92]. Compensation to resource owners or users is typically in the form of an up-front, one-time cash payment, followed by government enforcement to prevent illegal activities.	There are numerous examples of buyouts from around the world, but purchases of fishing rights or equipment have typically been motivated by objectives relating to industry profitability or conservation of overexploited commercial fish stocks, rather than by biodiversity conservation. Buyouts are also used far more commonly in developed countries rather than low-income country contexts. Although the basic premise of a buyout is a straightforward transaction that often takes place within developed nations, a case study in Kiribati was more complex. The New England Aquarium and Conservation International worked with the Government of Kiribati to protect reefs of the Phoenix Islands by establishing what was at the time the largest marine protected area (MPA) in the world (410,500 km^2), established through financial compensation paid to the government for designating no-take zones within the MPA and forgoing fishing license revenue. The agreement is structured such that periodic payments are conditional on continued effective management of the MPA, including enforcement of the no-take zones. Thus, this buyout is adapted to match the national system of annual access agreements for fishing fleets[93]. The absence of a local population within the no take areas means that payments are made directly to the government, so this example can be seen as a government buyout strategy rather than a community buyout conservation and development strategy. *Successes*: The project enjoys firm government support, dedicated partners, and a scale and scope that have generated extremely positive international attention[93]. *Challenges*: The project must build the human capacity to manage this MPA, to include a robust monitoring and surveillance framework to ensure that the fishing activity that does take place meets rigorous sustainability standards[93]. The St. Croix Fisheries Advisory Committee (FAC) in the

[92] Niesten, E. and H. Gjertsen. (2010). *Economic Incentives for Marine Conservation*. Science and Knowledge Division, Conservation International, Arlington, Virginia, USA.

[93] Niesten, E. and H. Gjertsen. (2010). Case studies of three economic incentive approaches in marine conservation. Case studies of three economic incentive approaches in marine conservation. Science and Knowledge Division, Conservation International, Arlington, Virginia, USA.

		Caribbean recommended a ban on trammel and gill nets in 2002 due to impacts to benthic habitats[94]. FAC agreed and to implement a buyback on the gear to reduce the economic impacts of the ban. NOAA Fisheries provided $75,000 through the National Oceanic and Atmospheric Administration's Coral Reef Conservation Programme (CRCP) to the Division of Fish and Wildlife of the Virgin Islands Department of Planning and Natural Resources. (DPNR) for the implementation of a one-time trammel and gill net buy-back. The project was approved in 2006, with the buyback beginning in 2008[93]. Fishers who had harvested 10,000 to 19,999 pounds of wet fish between 1999 and 2003 received approximately $2,083, those who had harvested 20,000 to 29,999 pounds received $4,167, and those who had harvested more than 30,000 pounds received $6,250[93]. *Successes*: Despite a number of challenges and conflicts that arose while implementing the gill and trammel net ban and buyback (see below), the initiative did finally succeed in removing the gear from the water. The legislation was adopted, the buyback implemented, and the ban is being enforced as far as the current literature reports[93]. *Challenges*: The low level of funds allocated to the buyback may have done little to secure the buy-in of fishers, given the far larger value of foregone profits from net fishing. It appears that this led to the perception that managers do not understand or appreciate the value of the fishery[93].
Gear change (indirect incentive)	Replacement of one fishing gear type with another to reduce the risk of incidental catch.	There are many examples of small-scale fishing communities being provided with line-fishing gear in return for gill-nets, the latter being one of the primary drivers of dugong mortality in much of the Indopacific region. For example, in and around Mafia Island Marine Park, Tanzania, fishermen were compensated for turning in destructive nets with cost-free loans to purchase more sustainable gear. *Successes:* From 2004 to 2006, groups of fishermen who turned in their nets received interest-free loans ranging from US $4,413 to US$13,239. The participants in this buyback programme reported that it played an important role in helping them sustain their livelihoods while conforming to the new regulations against destructive techniques. According to WWF staff in Mafia, approximately 50% of illegal seine nets were removed. It was also hoped that some of the fishers who turned in their

[94] Uwate, K. R. and W. Tobias. (2005). Implementation of a One-Time Trammel and Gill Net Buy-Back Program to Reduce Gear Impacts to Benthic Habitat in St. Croix, Virgin Islands. Project Progress Report. Bureau of Fisheries, Division of Fish and Wildlife, Department of Planning and Natural Resources, United States Virgin Islands.

		prohibited nets would embrace the alternative livelihood initiatives that were offered by the Mafia Island Marine Park[95]. *Challenges:* During the pilot gear exchange programme there were accusations of the marine park showing favouritism towards certain fishers when selecting beneficiaries of interest-free loans. In this programme fishermen have been reported as struggling to adjust from thinking of the ocean as a common pool resource to thinking of it as a regulated area[92].
Permits (disincentive)	A legal provision or document that grants official permission to do something otherwise prohibited. Permits may be used to control the amount and type of catch (quota), the type, power or capacity of vessel used by fishers, the type of fishing gear, the area where fishers can operate, or the period during which fishing is permitted.	The literature appears to be lacking in examples of the issuing of permits as an incentive based conservation strategy. In 2003, The Nature Conservancy (TNC) and Environmental Defence Fund engaged the Morro Bay bottom trawling industry to protect marine habitats along the central California coast. With the support of TNC, in June 2005, the Pacific Fishery Management Council approved a network of no-trawl zones spanning ~1.5 million hectares of ocean. The regulations were enacted in May 2006, and TNC subsequently purchased six federal limited-entry trawling permits and four trawling vessels from commercial fishers. *Successes*: the project seeks to sustain fisheries by leasing permits back to fishers who commit to switching to sustainable gear and practices[93]. *Challenges*: the conditions needed for a buyout to succeed (i.e., a limited-entry fishery with reliable enforcement) are typically most likely to be characteristic of more developed areas that also tend to exhibit higher costs, and therefore buyouts are unlikely to be cheap investments[93].
Vessel/gear confiscation (disincentive)	A penalty resulting in the confiscation of a vessel or gear for a specified period of time or indefinitely.	The Toledo Institute for Development and Environment (TIDE) is responsible for co-management of Belize's Port Honduras Marine Reserve (PHMR) (see Conservation Agreements). The reserve was established in 2000, covering 40,470 ha of coastal ecosystems and comprises two zones: a general use zone and a no take conservation zone[96]. During 2007 34 gill nets and five long lines were confiscated, two arrests made and eight warnings given within the no take zone. More than 60 joint patrols were carried out in the marine reserve, and approximately 20% of these resulted in arrests for illegal activity or confiscations of illegal gear[92]. *Successes*: The arrests led to successful prosecutions and sanctions included financial penalties and confiscation of equipment. *Challenges*: Although most perpetrators were fishers travelling from Honduras or Guatemala to poach in Belizian waters, some of the locals involved in the TIDE training programmes were

[95] Tobey, J. and Torell, E. (2006) Coastal poverty and MPA management in mainland Tanzania and Zanzibar. Ocean & Coastal Management, 49, 834-854.
[96]http://en.wikipedia.org/wiki/Port_Honduras_Marine_Reserve[30-01-13]
http://en.wikipedia.org/wiki/Port_Honduras_Marine_Reserve [30-01-13]

		caught poaching. This was mostly due to opportunity cost, whereby a change in livelihood has meant a drop in income. Thus often local fishers would express the need to continue fishing despite the availability of alternative jobs linked to tourism and conservation.
Cultural tools (disincentive)	Cultural lore that protects/manages natural resources, whereby community members who infringe this lore are subjected to cultural/village level judiciary systems.	Liangai village is located in Dovele district within the Western Province of the Solomon Islands. Most of the land and reefs in Liangai are under customary ownership and management[97], using traditional management techniques commonplace throughout Melanesia, whereby areas of land and sea are periodically closed to extractive resource exploitation activities. *Success:* Customary uses of natural resources is structured through a multifaceted system of traditional practices which - if followed - ensured social equity and enforced social norms through peer pressure and shared value systems within the local community[97]. This in turn works as a biodiversity conservation tool, whereby limiting extractive activities results in an ecologically diverse and functional local ecosystem. *Challenges:* In recent years communities such as Liangai have experienced many outside factors that did not exist when traditional management systems evolved. There are growing observations that resources are decreasing due to increased levels of exploitation to meet subsistence and commercial demands within Liangai. There are also erosions of customary institutions within the community, with the church becoming more powerful in local decision-making than the traditional village chief system[97].
Spatial closures (indirect incentives)	Restriction of human activity (particularly fishing) in a defined area to protect marine resources. Spatial closures are also known as area closures, marine reserves, marine parks, marine managed areas and marine protected areas. Closures can enhance fisheries stock biomass within closed areas, and help replenish adjacent areas surrounding the protected zone. Closures also help attract ecotourism to marine parks.	Local communities, in collaboration with local government, established the Gilutongan Marine Sanctuary (GMS) in the Philippines, whereby the area was closed to fisheries. It is estimated that population of over 2 million people reside within a 20 km radius of the protected area and some 250,000 tourists visit the area per year[98]. Villages receive a portion of revenue from this substantial tourism operation and this revenue is shared among households[92,98]. Better protection (and less poaching) suggests greater attraction to tourists resulting in more revenue to share[92]. *Successes*: In terms of outcomes, there is evidence of increased fish density inside GMS. Among the strengths of the project is the strong community commitment backed up by strong municipal government support, as well as NGO support in the form of training, funding and technical expertise (research and monitoring)[92].

[97] Bennett, G. (2012). Customary marine tenure and contemporary resource management in Solomon Islands. Proceedings of the 12th International Coral Reef Symposium, Cairns, Australia, 9-13 July 2012, 22A Cultural, political & historical dimensions of coral reef management.

[98] Ross, M.A., White, A.T., Sitoy, A.C. and Menguito, T. (2000). Experience from improving management of an "urban" marine protected area: Gilutongan Marine Sanctuary, Philippines. Proceedings 9th International Coral Reef Symposium, Bali, Indonesia 23-27 October 2000.

		Challenges: There has been a history of disputes concerning the revenue sharing between the local government and the community[92].
Temporal closures (indirect incentives)	Restriction of human activity (particularly fishing) in a defined area *at a specific time*. For example, temporal closures of an area of reef restrict the catching of fish when the fish are known to be breeding. This stock management method can lead to improved catches and a more sustainable fishery.	In Baraulu, Solomon Islands, management of a women's multi-species invertebrate fishery (targeting, amongst others, *Anadara granosa* (blood cockle), various *Polymesoda* sp. (mud clams) and the bivalve *Batissa fortis*), was established in 1999[99]. This arose as a result of anecdotal evidence indicating a decrease in shell size and abundance due to probable over-exploitation[20]. The Baraulu and Bulelavata communities agreed to close two large mangrove areas (34 hectares) to shellfish gathering annually, between September and May, to relieve pressure on the fishery[92,99]. Short-term closures of specific marine areas have long been implemented by communities throughout Melanesia as a means of reducing resource exploitation. Compensation to women for the closures was provided through an alternative income-generating project that provided sewing machines to the community, funded by the New Zealand Government and WWF Solomons[20]. The closure was planned for only two years, however as of 2003 it was still in place[100]. *Success*: Data from biological monitoring indicate that the project appeared to be achieving its goal of protecting specific marine resources[99, 100, 101]. *Challenges*: Poaching incidents have been reported, and universal compliance was not achieved, with some members of the community disregarding closures[21]. As of 2003 the sewing project was no longer operating, due to disputes and jealousies between community groups about the location of sewing machines and distribution of benefits[92].
Alternative livelihoods (indirect incentives)	Conservation investors support new livelihood alternatives to replace unsustainable resource-use practices. These practices are replaced by new economic activities or revised forms of previous activities. When income is sought through enterprises, benefits depend on market	The UNEP/CMS Dugong, Seagrass and Coastal Communities Initiative is partnering with a number of regional and national NGOs and government departments in Daru (Western province, PNG) to develop the Moro Momoro Pilot Project to draw communities away from exploitation of dugong and their seagrass habitats by developing small-scale aquiculture projects and microfinance assistance[102]. *Successes:* This is one of the first incentive driven conservation programmes specifically targeting dugong. *Challenges*: This pilot project is donor-dependent and currently

[99] Aswani, S. (2000). Women, rural development and community-based resource management in the Roviana Lagoon, Solomon Islands: establishing marine invertebrate refugia. SPC Traditional Marine Resource Management and Knowledge Information Bulletin. 12, 11-22.
[100] Aswani, S. and Weiant, P. (2003). Shellfish monitoring and women's participatory management in Roviana, Solomon Islands. SPC Women in Fisheries Information Bulletin. 12:3–11.
[101] Aswani S. and Weiant P. 2004. Scientific evaluation in women's participatory management: monitoring marine invertebrate refugia in the Solomon Islands. Human Organization. 63:301–319.
[102] UNEP/CMS Dugong, Seagrass and Coastal Communities Initiative. (2012). The dugong, seasgrass and coastal communities initiative; Opportunities for biodiversity conservation, livelihood improvement and sustainable fisheries management. UNEP/CMS Office, Abu Dhabi.

	profitability. Whether or not these enterprises are based on natural resource use, benefits are typically not contingent on conservation performance *per se*.	trying to attract further funding. Within the Velondriake Locally Managed Marine Area (LMMA) in southern Madagascar, marine aquaculture initiatives have been established to farm seaweed (*Kappaphycus alvarezii*) and sea cucumbers (*Holothuria scabra)* and red seaweed, with technical support and training from local NGO Blue Ventures. Farmers receive income from selling mariculture products, reducing dependency on traditional fishing on threatened coral reef and seagrass habitats[103]. *Successes:* This programme provides regular income to hundreds of farmers, many of whose fishing activity has been reduced markedly. *Challenges:* Establishment of the aquaculture initiative was dependent on substantial donor support, particularly for capital-intensive phases such as construction of the holothurian hatchery.
Conservation agreements (direct incentives)	Conservation investors negotiate contracts through which resource users forego unsustainable activities in exchange for benefits that are conditional on conservation performance. Benefits may be in the form of cash, services, or goods, and are provided periodically upon verification that conservation performance targets are met.	The Toledo Institute for Development and Environment (TIDE) co-manages Belize's Port Honduras Marine Reserve (PHMR) with the Department of Fisheries. One type of non-cash incentive provided by TIDE to local communities is an educational scholarship programme. This programme encourages fishers to give up unsustainable fishing practices in return for receiving scholarships for their children, thus providing an alternative way for parents to finance their children's education. Over 50 students received scholarships between 2000 and 2007[92]. The programme targets children whose parents agree to stop using unsustainable fishing and farming methods. The recipients of the scholarship programme are expected to contribute to conservation efforts and work alongside TIDE on community outreach activities[12]. Financial assistance allows these scholarship recipients to attend second- or third-level schools, raising their prospects of a higher standard of living than that of their parents, and reducing their likelihood of entering the fishery for employment[104]. *Successes*: Before the introduction of TIDE scholarship programmes, funded educational opportunities within this region of Belize were very limited[92, 103]. *Challenges*: Although scholarships are provided in exchange for commitments to forego unsustainable fishing practices, eligibility is not directly contingent on performance, and there is no explicit contract system.
Microfinance loans and small grants	Small loans and other financial services products in exchange for improving	Tubbataha Reefs Natural Park (TRNP), located in the Sulu Sea within the Philippines, was designated as the country's first national park in 1988, covering 96,828 ha[105]. The TRNP is

[103] Harris, A. (2012) Out of sight but not out of mind: a climate of change for marine conservation in Madagascar. Madagascar Conservation and Development 6(1), 7-14.
[104] United Nations Development Programme. (2012). Toledo Institute for Development and Environment (TIDE), Belize. Equator Initiative Case Study Series. New York, NY.

(indirect incentives)	the protection of an environment.	under a no-take policy that prohibits all human activities except tourism, research, and management. In order to compensate Cagayancillo residents for loss of fishing access to the park 10% of the tourism entry fee is used to fund ten community development projects including the funding of the Cagayancillo Pangabuhian Foundation, Inc. (CPFI), a microcredit facility to support alternative local livelihoods[105]. In 2003, the credit portfolio gave priority to loans and marketing support for seaweed farming projects. The CPFI is open to local community members and is run as a cooperative with a membership of 306 in 2005, representing 31% of households[105]. The foundation charges 3% interest on loans to members, of which 1% is returned to the borrower through their savings account. If a member of the CPFI is found guilty of committing environmentally damaging behaviour, then he or she will lose his or her membership of the foundation[105,106]. *Successes*: Up until 2008 no cases of CPFI infringements concerning environmental offences had arisen[105]. *Challenges*: The project relies on revenue generated through the tourism user fees, but the park and project struggles with long-term financial sustainabilitly[104].
Conditional cash incentives (direct incentive)	Money provided in exchange for participation in an environmental programme.	Marine turtles have attracted a relatively large number of examples of conditional cash incentive conservation programmes for coastal communities close to rookeries[107]. In Rendova in the Solomon Islands, community members are incentivised to refrain from poaching leatherback turtle eggs by informing designated community based agents whenever a turtle or turtle nest is discovered. These agents record basic data on the turtle/nest in exchange for a small payment if the turtle/nest is unmolested[107]. The payment is made to the agent, the finder and also a community development fund. In the year 2000 it was reported that 14 successful performance-related payment schemes to protect nesting sea turtles were in existence globally[107] using similar payment models. *Successes*: In a similar sea turtle performance related payment scheme in Tanzania, poaching rates decreased from 100% nest mortality prior to inception to less than 1% after three years of the project[107]. *Challenges*: A number of performance related payment schemes to protect nesting turtles lack robust monitoring of the success of the schemes[107]; thus it is difficult to establish if the projects represent efficient conservation returns for the donor funds invested.

[105] Ferraro, P.J. (2011). The future of payments for environmental services. *Conservation Biology*. 25, 1134–1138
[106] Dygico, M. (2006). Tubbataha Reefs: A Marine Protected Area that Works: A Case Study on the Philippines. WWF-Philippines. Available at www.wwf.org.ph/downloads/TubbatahaCaseStudy.pdf [30-01-13]www.wwf.org.ph/downloads/TubbatahaCaseStudy.pdf [30-01-13]
[107] H. Gjertsen and Niesten, E. (2010). Incentive-based approaches in marine conservation: Applications for sea turtles. *Conservation and Society*. 8, 5-14

Conservation performance payments (direct incentive)	Money provided to communities in exchange for positive conservation outcomes.	Before 2001, the vast majority of turtle nests discovered by residents on Tanzania's Mafia Island were poached. In 2001, the Mafia Island Turtle Conservation Programme was initiated as a collaboration between Mafia Island Marine Park and Mafia District Council, with financial support from WWF. The programme led to the establishment of a local NGO, Sea Sense, which trained and paid elected community monitors to patrol nesting beaches, relocate nests when necessary, and assist with data collection. Staff perceived that the local monitors were not sufficient, since 50% of nests were still poached. In 2002, Sea Sense began paying individuals for finding and reporting nests, with the size of payment depending on the nest's hatching success. *Successes*: Under the combined programme of nest monitoring, nest protection payments, and education programmes to raise awareness and concern about sea turtle conservation, the poaching rate decreased to 3% in 2002, 2% in 2003, and less than 1% in 2004. *Challenges*: There are several confounding issues that make precise estimation of the performance payments' effectiveness challenging to establish: difficulty establishing the baseline number of nests; difficulty in establishing baseline poaching rates; and the fact that payments are only one component in a portfolio of conservation activities[92].
Fines (disincentives)	Money extracted as a penalty when an offence has been committed.	The Torres Strait Regional Authority in northern Australia, using funding from the Caring for our Country initiative, has supported 15 Torres Strait Islander communities to develop community-based Dugong and Turtle Management Plans that are tailored to their specific community's customs and environment. Each plan sets out a range of culturally appropriate hunting regulations as well as penalties for infringements[108]. *Successes:* The regulations and management plan are consistent with traditional customs governing the region's fisheries[26]. It would appear from current available literature that management regulations are enforced[106, 109]. *Challenges:* There is concern that some dugong and turtle meat is smuggled into commercial markets in Daru in Papua New Guinea.

[108] Havemann, P and Smith, R. (2007).Community Based Management of Dugong and Turtle Fisheries Safe-guarding culture for future generations — joining together to protect dugong and turtle fisheries for the Torres Strait. Summary of TSRA Torres Strait Dugong and Marine Turtle Project Governance and Policy Review. James Cook University, Queensland, Australia.

[109] http://pzja.gov.au/the-fisheries/dugong-and-turtle-fisheries/#.UQkzjmfyCSo [30-01-13] http://pzja.gov.au/the-fisheries/dugong-and-turtle-fisheries/#.UQkzjmfyCSo [30-01-13]

Management toolbox

Management option	Definition	Example
Education	Activities that impart skill or knowledge that result in a change of behaviour.	Environmental education on the biology of dugongs and their existing threats to raise awareness in the community.
Incentives	Set of tools that encourage people to modify existing practices and change behaviour.	Providing line-fishing gear to communities so that they can remove their gill-nets at a low cost.
Training	Activities that lead to skilled behaviour and improved conservation outcomes.	Communities taught fishing techniques (e.g. line-fishing) that are less harmful to dugongs then gill-netting.
Gear change	Replacement of one fishing gear type with another to reduce the risk of incidental catch.	Communities provided with line-fishing gear in return for their gill-nets.
Microfinance loan	Small loans and other financial services in exchange for improving the protection of an area.	Fisherman stops using gill-nets and is payed a loan to buy a new boat.
Conditional cash incentives	Money provided in exchange for participation in an environmental programme.	Individuals who stop using gill-nets in an important dugong area are given a money to pay children's school fees
Cultural tools	Cultural lore that protects/manages natural resources.	Communities agree not to hunt or fish in a special/sacred/taboo area.
Spatial closures	Restrict human activity in a defined area to protect marine resources. Spatial closures are also known as area closures, marine reserves, marine parks and marine protected areas.	Banning gill-netting in an important dugong area.
Temporal closures	Restrict human activity in a defined area *at a specific time*. For example, temporal closures restrict the catching of fish when the fish are known to be breeding.	Banning gill-netting when dugongs are known to be feeding, breeding or moving through a defined area.
Permits	A legal document that gives official permission to do something otherwise prohibited. Permits are used to control: the amount and type of fish caught (quota); the type of boat used by fishermen; the type of fishing gear used by fisherman; and the area where fishermen can operate.	Permits to fish only issued to fishermen with demonstrated capacity to avoid dugong incidental catch in gil-nets.
Fines	Money extracted as a penalty when an offence has been committed.	A gill-net fisherman is fined for fishing inside a protected area.
Vessel/gear confiscation	A penalty resulting in the confiscation of a vessel or gear for a specified period of time or indefinitely.	The boat or gear of a gill-net fisherman is confiscated because he fished inside a protected area.

Appendix 25: Budget Comparison With PIF

Project numbering and wording of objectves and outcomes identified in the PIF and revised in the PPG phases.

		Percentage of Project Budget						
PIF phase wording and numbering	**Revised PPG phase wording and numbering**	**GEF**		**Co-finance**		**TOTAL (GEF + Co-finance)**		**Justification of changes**
Objective		PIF	PPG	PIF	PPG	PIF	PPG	
To enhance the conservation effectiveness of protected and non-protected areas hosting significant populations of Dugong across the Indian and Pacific Oceans Basins, through sustainable community-led stewardship and socio-economic development	To enhance the effectiveness of conservation of dugongs and their seagrass ecosystem at selected globally important sites in the Indian and Pacific Oceans basins [through innovative community-based stewardship approaches, removal of knowledge barriers and national and regional mainstreaming activities]							
Outcomes								
1.1 The management effectiveness of selected globally important coastal seagrass and associated mangrove and reef ecosystems in target areas listed below that are critical for the conservation of the dugong and other seagrass-dependent	Outcome 1: Community-based stewardship of seagrass-dependent biodiversity at selected globally important sites (PAs and non-PAs) enhanced	26%	23%	26%	9%	26%	10%	Co-finance received globally was largely allocated to information gathering and capacity building (Outcomes 3 and 4). This has been reflected in the redistribution of co-financing resulting in a reduction from Outcome 1 and an increase in Outcomes 3 and 4.

biodiversity is improved								
1.2 Incentive-based sustainable financing and certification mechanisms are applied on the basis of existing guidelines and toolboxes (already developed in the framework of the CMS Dugong MoU) at target areas to support the conservation of biodiversity in seagrass, mangrove and reef ecosystems, resulting in a win-win scenario for communities' livelihoods and improved conservation effectiveness	Outcome 2: Responsible fisheries and other practices that reduce damage to dugong and seagrass ecosystems adopted through uptake of innovative incentive mechanisms (e.g. financial schemes, certification, "e-mortgage schemes", ecosystems services evaluation, blue carbon) and other management tools (e.g. gear change, temporal and spatial closures)	26%	12%	26%	8%	26%	8%	The overall budget for Outcome 2 was reduced from 26% to 8% of the overall expenditure (12% of the GEF funds). The incentive mechanisms and alternative livelihood aspects of this outcome were deemed inappropriate for Malaysia, while Vanuatu lacked the budget to implement such schemes. In addition, the six Project Countries which are implementing activities to address Outcome 2 require initial collection of baseline data and community awareness programmes, therefore part of the budget for Outcome 2 was reallocated to Outcomes 1 and 3.
2.1 Critical knowledge barriers for the protection of seagrass-dependent biodiversity, to support the implementation of national planning frameworks and international biodiversity obligations, are removed, through targeted research on	Outcome 3: Barriers to critical knowledge needed for decision-making for effective conservation of seagrass-dependent biodiversity removed	19%	25%	20%	50%	20%	49%	The limited and insufficient baseline data available during the PPG stage highlighted the necessity to increase the amount of available information in each country to effectively target conservation activities; therefore the budget for addressing outcome 3 was increased from 20% at PIF projection to 49% of the total budget (25% of the GEF funds).

Dugong and seagrass habitats in selected under-studied target areas								
3.1 Seagrass-dependent biodiversity conservation priorities and hotspots areas included into relevant national planning frameworks in all target countries.	Outcome 4: Seagrass-dependent biodiversity conservation priorities and measures incorporated into relevant policy, planning and regulatory framework review processes (regional, national, local, coastal and sectoral, as appropriate)	24%	29%	23%	32%	23%	32%	The increase in the budget for Outcome 4 reflects the importance of increasing national capacity, reviewing and updating policy, and establishing networks to ensure the efficient conservation and management of dugongs and their seagrass habitats is sustainable beyond after project completion.
3.2 Regional-level dugong habitat conservation plans with SMART timeframe and priority-setting frameworks are developed as a basis for adoption and mainstreamed in National environmental management policies for target countries.	Included in Outcome 4							
4.1 The intra- and inter-regional knowledge sharing and capacity development network for seagrass-dependent biodiversity protection is	Removed as discrete Outcome as capacity building is a means to an end and built into activities to deliver the other Outcomes							

significantly strengthened								
Monitoring and Evaluation		0%	4%	0%	0%	0%	0%	
Project Management		5%	7%	5%	1%	5%	1%	The GEF budget for project management was increased from 5% to 7.1% of the total GEF budget to provide appropriate support to all thirty-two Project Partners across the eight Project Countries. The amount for project management decreased overall from 5% to 1% due to the ratio between the project GEF funds and the co-finance provided for global conservation activities.

Appendix 26: Responses to GEF STAP's PIF Review

UNEP & PARTNERS - SECOND RESPONSE TO THE GEF STAP (Scientific And Technical Advisory Panel) REVIEW AND REQUEST FOR **UPSTREAM REVIEW PRIOR TO SUBMISSION FOR CEO ENDORSEMENT**

GEF ID:	**4930**		
Country/Region:	**Global: Indonesia, Madagascar, Malaysia, Mozambique, Sri Lanka, Timor Leste, Vanuatu and Solomon Islands**		
Project Title:	**Enhancing The Conservation Effectiveness Of Seagrass Ecosystems Supporting Globally Significant Populations Of Dugong Across The Indian And Pacific Oceans Basins (Short Title: The Dugong And Seagrass Conservation Project).**		
GEF Agency:	**UNEP**	GEF Agency Project ID:	**857**
Type of Trust Fund:	**GEF Trust Fund**	GEF Focal Area (s):	**Multi Focal Area**
GEF-5 Focal Area/ LDCF/SCCF Objective (s):		**BD-1; BD-1; BD-2; BD-1; Project Mana;**	
Anticipated Financing PPG:	**$170,000** + IA Fees	Project Grant:	**$4,902,272** + IA Fees*
Co-financing:	**$99,586,575**	Total Project Cost:	**$105,492,102**
PIF Approval:	**June 2012 WP**	Council Approval/Expected:	
CEO Endorsement/Approval		Expected Project Start Date:	
Program Manager:	**Charlotte Gobin** cgobin@thegef.org	UNEP Contact Person:	**Edoardo Zandri,** edoardo.zandri@unep.org

#	STAP REVIEW POINTS	PRELIMINARY RESPONSE BY UNEP & PARTNERS (SUBMITTED FOR JUNE 2012 GEF COUNCIL MEETING AFTER STAP REVIEW OF THE PIF)	SECOND RESPONSE AND COVER NOTE ACCOMPANYING UNEP REQUEST FOR UPSTREAM REVIEW PRIOR TO SUBMISSION FOR CEO ENDORSEMENT REQUEST 10 SEPTEMBER 2013	LOCATION IN PROJETT DOCUMENT (ATTACHED)
	STAP Advisory Response: Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies): **Major revision required**	The STAP review is welcome, and will be taken fully into consideration during project preparation. The preliminary response by UNEP and partners is organized accordingly to each	UNEP and partners have carefully taken into consideration the STAP review feedback during the PPG phase. The present document complements and expands the preliminary response provided by UNEP on the STAP review of the PIF (May 2012). The responses	

#	STAP REVIEW POINTS	PRELIMINARY RESPONSE BY UNEP & PARTNERS (SUBMITTED FOR JUNE 2012 GEF COUNCIL MEETING AFTER STAP REVIEW OF THE PIF)	SECOND RESPONSE AND COVER NOTE ACCOMPANYING UNEP REQUEST FOR UPSTREAM REVIEW PRIOR TO SUBMISSION FOR CEO ENDORSEMENT REQUEST 10 SEPTEMBER 2013	LOCATION IN PROJETT DOCUMENT (ATTACHED)
		STAP review point.	are detailed below and cross-referenced within the DRAFT Project Document version. We welcome STAP input on the technical design and methodological aspects of the project at this second review stage, prior to submission of CEO Endorsement Request which is anticipated for October 2013.	
1-2	1. Dugong populations and seagrass beds are under severe both globally and in the Indian/Pacific Ocean Basins. STAP welcomes this important regional initiative with the overall objective of enhancing the conservation effectiveness of protected and non-protected areas hosting significant populations of dugong through sustainable community - led stewardship and socio-economic activities. The project proposes to support Indonesia, Madagascar, Malaysia, Mozambique, Vanuatu, Sri Lanka and Timor Leste in their national dugong conservation plans and to support the important international/regional activities under the UNEP/CMS Dugong	1. For clarification, the dugong populations and seagrass beds are under sever threat throughout most of their vast range in the Indian and West Pacific Ocean Basins. 2. The implementing agency intends to	1. This project represents an unprecedented level of investment for a coordinated approach to dugong and seagrass conservation and management which is essential because of the migratory nature of dugongs across national borders. This investment is coming at a critical time to address the chronic threats to coastal ecosystems, which are increasing and compounding with climate change, population growth and coastal development.	Section 2.1. Page 10 - 15. Additional information in Appendix 17. Section 3.3,

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	MOU. While STAP believes that this initiative is highly valuable and important, the Panel wishes to highlight the following considerations as important for the successful implementation of the project and achievement of quantifiable global environmental benefits. 2. At this stage in development, STAP acknowledges that additional information and analysis will be forthcoming during the PPG stage. At present, however, strategies to address the defined objective are only described in general terms in the body of the proposal, and as such it is difficult for STAP to assess the scientific and technical aspects of expected project outcomes.	complete this aspect of the PIF during the development of the full proposal. Over the past two years our team of Technical Advisors has assisted in the development of an innovative toolbox for dugong and seagrass conservation. By adapting this toolbox to local contexts, solutions to coastal environmental challenges can be crafted and implemented on a site-specific basis. This innovative approach integrates two services: opportunities for sustainable economic development, and financial incentives for coastal biodiversity conservation. We intend to develop specific project activities which revolve around the four key project components: 1. Mainstreaming of marine and seagrass-dependent biodiversity priorities and hotspots into national planning; 2. Enhanced community engagement in marine and seagrass-dependent biodiversity through greater cooperation, sharing of best practices, capacity building and tailored communication tools; 3. Provision of economic drivers and strategies to promote behavioural change and conservation buy-in; 4. Removal of critical knowledge barriers for the protection of marine and seagrass-dependent biodiversity, to	2. A large project involving 32 project partners across eight countries required that the overall project need to be developed in an adaptive and dynamic manner. During the development phase, there was increasing interest from other range states, which led to the Solomon Islands joining the project very late on the PPG Phase. During the PPG Phase the objective, outcomes and outputs were refined and streamlined. There are now 4 outcomes and 11 outputs, as stated in **Appendices 4 Log Frame (Outcomes & Indicators) and 6 (Outputs &Benchmarks)** National meetings were held in all participating countries to identify which partners would develop projects (aligned with priorities within national frameworks) to contribute to overall project outcomes. All partners selected activities that they were already experienced in undertaking. Target areas were identified based on the following criteria: <u>Conservation targets</u> Population status Habitat status and viability Threats <u>Community management capacity and project</u>	Page 45. Appendix 4, Page 97; Appendix 6, Page 115. Section 5, Page 81-82

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		support the implementation of national and international biodiversity obligations. In the PIF we have provided a specific suite of 25 outputs and 10 outcomes from each of the actions within the proposed work plan which will be further addressed with the specific technical and scientific detail requisite of the full proposal. This technical input will be developed by a working group of technical experts assembled by the UNEP/CMS Dugong MOU Secretariat. The Secretariat's Technical Advisors will provide input into all the scientific and technical aspects of this project. Through their individual inputs as well as through the Secretariat's extensive network of other technical experts, researchers and conservation practitioners, the project will receive the best available technical and scientific support to meet the project outcomes. A short summary of the main Technical Advisors to the UNEP/CMS Dugong MOU Secretariat is provided below: Dr. Garth Cripps is the Carbon Finance Specialist of Blue Ventures Conservation. He is currently working to build on the	<u>longevity</u> Community management structure Community management activities Community management capacity Long term presence Complementary actions and support Financial viability <u>External risks</u> Socio-political context Stakeholder engagement The PPG phase was successfully executed because of the high level of commitment demonstrated by national project partners. The participatory process was effective because sub-projects were country driven and developed from the national level. As such the national meetings, the short PPG phase, limited resources and large number of sub-projects required project partners to develop proposal concepts rather than full proposals. The concepts developed using a standard project template and sent to the Dugong Technical Group (DTG) for their initial review. With the addition of Solomon Islands as a new country and some other changes, the total list stands at 40 national proposals (Section 3.3 Table 9; Appendix 20) As a consequence of the national participatory process described above, an extended inception	Section 3.3, Page 45.

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		organisation's tradition of using social enterprise to conserve marine biodiversity and alleviate rural poverty in some of the world's most marginalized communities. Dr. Josh Donlan is the Executive Director of Advanced Conservation Strategies. He has worked in over a dozen countries on a variety of environmental issues, including environmental restoration, environmental markets and developing financial and incentive instruments for biodiversity conservation. Dr. Alana Grech is a researcher at the ARC Centre of Excellence for Coral Reef Studies at James Cook University. She studies the distribution of dugongs and seagrass habitats and assesses risks to dugongs from multiple anthropogenic threats. Dr. Alasdair Harris is the Research Director of Blue Ventures Conservation and has spent much of the past decade working on marine conservation issues in the Indian Ocean. Jeff Kinch is currently the Principal of the National Fisheries College in Papua New Guinea. He has an extensive knowledge of coastal livelihood strategies throughout the	period (8 months) is envisaged and required to supplement critical baseline data collected during the PPG phase. The extended inception period will also allow the refinement and planning of sub-projects concepts to further define regional, national and project specific targets, milestones and indicators. This process will enable these concepts to be fully developed operationalised in the inception phase,with the support of the DTG and other technical experts. At the start of the inception period a strategic planning workshop will be held with key technical advisors, the project coordination team and national "lead partners" to provide dedicated appropriate technical support to the refinement and operationalization of full project proposals. This may include holding two or three sub-regional planning workshops. In effect there will be 8 national programmes (each composed of between 3 and 8 national projects, together with national coordination and oversight structures - National Steering Committees) which link to regional and global project coordination. The project management team and technical advisers will provide support and appropriate skills in standardized survey methodology, seagrass assessment and monitoring, dugong assessment and monitoring, fisheries assessment, socio-economic assessment, other information for development	

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		Pacific, including work focused on marine resources, socio-economic and environmental impacts and supply chains. Dr. Donna Kwan is the Head of the UNEP/CMS Dugong MOU Secretariat based in Abu Dhabi, and she holds a PhD in Dugong biology. Prof. Helene Marsh is a Distinguished Professor of Environmental Science at James Cook University. She is internationally recognized as an authority on dugongs and has provided scientific advice to governments and NGOs in 14 countries. Dr. Hoyt Peckham is the Director of Fisheries Science for Grupo Tortuguero de las California, which partners with fishers, managers, and scientists reduce fisheries bycatch of vulnerable marine megafauna, including turtles and dugongs. Dr. Nicolas Pilcher is the Director of the Marine Research Foundation. His work focuses on the management of fisheries bycatch, including turtles, dugongs, and other marine mammals. In addition to other seagrass researchers	of LMMAs and incentive mechanisms; detailed project planning and budgets; and monitoring and evaluation at both project and programme levels. The inception phase will therefore also support the fine-tuning and rationalization of all project concepts into national programmes (linked regionally). Some national concepts or activities could be combined or linked and synergies/ working linkages established between national projects (and at regional level), based on the actual situation at project outset. It will also allow the Solomon Islands' National Programme in particular to be further refined and developed with appropriate national stakeholder input (The Solomon Islands only joined the project after this stage of PPG regional and national workshops was completed in other countries) Support from DTG/ advisers will be provided to partners and national programmes during the Inception phase (refinement, detailed project design plans and budgets). During project implementation ongoing support from technical advisers on a "roving" basis is envisaged – according to need. A suite of overall Project Indicators has been identified, with guidance from the DTG (see Log Frame Appendix 4). These will also be	Appendix 4, Page 97

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		who work in individual countries e.g. Indonesia and Madagascar, the project will also involve the team at Seagrass-Watch HQ based at the Northern Fisheries Centre in Cairns, Australia. The role of Seagrass-Watch HQ is to develop scientifically rigorous assessment of seagrass resources, provide training, manage/validate/interpret the data, coordinate between communities and scientists, facilitate the establishment of networks across participating countries.	developed further and more quantified baselines and targets established during the inception period. The development of more detailed national projects will include specific targets and SMART indicators for individual projects and national programmes and project-specific monitoring and evaluation plans. Overall Project M&E indicators and targets need to encompass the outcomes and impacts targeted across all 8 countries and the proposed regional impacts. This is the approach taken in the Log Frame, which will be further developed at inception in response to revised national plans and programmes. The complex nature of the project has required that the best strategic option is to go directly to an extended inception phase where technical support can be provided to partners to fully develop their proposals and national programmes for implementation.	
3	3. The PIF describes well the national and international actions that have been underway to protect the dugong, a red-listed species "vulnerable to extinction," and gives confidence that it is well connected to the existing (but still too thin) knowledge base. Despite this obvious awareness	3. The existing data and information reviewed in the PIF were based on the best available peer reviewed papers, as well as grey literature and unpublished data and anecdotal information, where available, but we acknowledge this was not fully and clearly explained in the PIF as it currently stands. There is an existing body of information on dugong trends and while it is presently patchy it does contribute	Information on MPAs has been provided at national (e.g. Table 6 in Section 2.4) and project-specific scales. The reason for mentioning nationally gazetted MPAs is to demonstrate how the project will increase the area under some form of protection and contributes to the GEF "BD-1" Focal Area objective to improve the sustainability of Protected Area Systems (GEF BD Outcome 1.1)	Table 6, Section 2.4 and more MPA info. in Appendix 23

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	of current knowledge, the present proposal lacks at the very least a preliminary assessment of data and information on the current status of dugong populations and sea grass ecosystems, along with that of existing MPAs. With respect to MPA data, reasonably accurate data on existing marine and coastal protected areas in the countries identified is available â€“ and as such reasonably good information on existing conservation status is currently known. The PIF suggests that existing protected sea grass ecosystems will be extended by 15% in each participating country. STAP would be interested to see the analysis upon which this estimate is based, as only a very preliminary assessment is currently provided in section B.2. In addition, STAP assumes that the many expert meetings conducted by the international and national agencies under the	baseline data with respect to identifying priority areas based on dugong ecology. To further resolve this data patchiness, the Secretariat has commissioned a number of studies to establish baselines for population status, trends and threats, and this work is being completed at this present time. We expect to have final reports for nearly every range country, including most of the country partners of this project, by the end of 2013. In addition to this, we base our proposal on the extensive and leading work by Prof. Helene Marsh, who has led dugong research and conservation activities on behalf of varying government and intergovernmental agencies for several decades. The scant information in particularly for Mozambique, Sri Lanka, Timor Leste and Vanuatu reflects the critical need to obtain such information though this project. In these countries there is a lack of information on dugong distribution, relative abundance and the critical seagrass habitats required to support dugong populations. It is intended that much of the specific situational analysis will be identified and designed to be addressed during the national PPG process.	and will support the improvement of overall management effectiveness of existing protected areas, including across trans-boundary areas, as well as via the creation and effective integrated management of new protected areas that extends and improves the coverage of threatened species across their spatial range (contributing to the achievement of GEF BD-1 Core Outputs 1.1 and 1.2). Eight projects are based within 10 existing MPAs/LMMAs; Ten projects plan to develop 16 new MPAs/LMMAs under Outcomes 1 or 2 of the Project; These areas have been identified because they are potentially important seagrass meadows that support dugongs. Specific criteria will be applied during the project inception phase to determine final target sites. The emphasis will be on also on seagrass habitat with the potential to support dugongs rather than only on dugong occurrence per se, because of the difficulty in obtaining evidence of dugong occurrence. Overall Project indicators and targets will be better defined during the first inception strategic workshop and the extended Inception Phase (based on detailed development of 8 national	Table 6, Section 2.4 and more MPA info. in Appendix 23 Section 3.3, Page 45-46. Appendix 4, Page 97.

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	UNEP/CMS Dugong MOU and its activities would have begun already to distinguish the priority seagrass beds for dugong populations.	With regards to the project goal of an estimated 15% increase in protected seagrass ecosystems (assessed as critical habitat for supporting dugong populations) this should be considered as a maximum target as those countries listed above have very little or no existing protected seagrass ecosystems. In this context, meeting this target has the potential to make a significant contribution to protecting seagrass ecosystems and their dugong populations of those countries. The project will develop tools to improve the biodiversity outcomes in existing MPAs and to create additional areas that are managed in a way that produce biodiversity outcomes and complement MPAs. The Convention of Biological Diversity (CBD 2004) refers to these as "ancillary marine conservation initiatives". We will take two approaches to do this on the ground with incentive programs and/or creating small "markets" or entrepreneurial opportunities that are explicitly linked to conservation activities. Our approach will acknowledge that integration of MPAs with other frameworks is needed in order to effectively scale-up marine conservation efforts. Our project focuses on the design and	programmes and supporting regional activities). The Project Log Frame includes Indicators relating to total area of seagrass under improved conservation management and increases in METT scores in targeted MPAs. Baselines and targets for overall project monitoring will be better defined with information obtained during this phase from all 8 countries on final site selection and details of sites for action (protected area status/ aim to achieve PA status or extend area of seagrass protected; baseline METT score and targets for improvement). "Improved conservation management" is used as the Indicator to cover different possible approaches as described here and in the ProDoc (formal designation; community-led management; initiatives promoting behavioural change etc.). Approaches will need to be site specific and with targets (e.g. METT score improvements) specific to project sites. Overall Project targets will be defined to encompass the expected results across all 8 countries and the associated regional activities.	

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		implementation of complementary tools to MPAs or "ancillary marine conservation initiatives" with local stakeholders (i.e. fishing cooperatives). The driving force behind our proposal is that if properly designed, piloted, and scaled-up, ancillary measures could provide significant marine biodiversity conservation outcomes, and complement regional network of marine coastal biodiversity protected areas. Our proposal will initiate an approach focused on an integrated and more comprehensive marine biodiversity strategy, which would include fully and partially protected areas. The most comprehensive recent assessments of the data and information we used in the development of our proposal are referenced below and some of the authors will be providing technical advice to this project: Marsh, Helene, O'Shea, Thomas J., and Reynolds, John E. (2011) Ecology and Conservation of the Sirenia: dugongs and manatees. Conservation Biology, 18. Cambridge University Press, Cambridge, UK. Hines E, Reynolds III J, Aragones LV,		

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		Mignucci-Giannoni AA, Marmontel M (eds) (2012) Sirenian Conservation: Issues and Strategies in Developing Countries. Florida University Press. Secretariat of the Convention on Biological Diversity (2004). TECHNICAL ADVICE ON THE ESTABLISHMENT AND MANAGEMENT OF A NATIONAL SYSTEM OF MARINE AND COASTAL PROTECTED AREAS, SCBD, 40 pages (CBD Technical Series no. 13).		
4	4. The PIF notes (under overview of baseline activities) that data from Dugong Catch/Incidental Catch surveys exists, although no analysis or assessment of this existing data is provided. Moreover, it is unclear in this proposal whether estimates of Dugong populations and distributions will be used as indicators of achievement of global environmental benefits. STAP acknowledges that at this stage some needed information is unavailable and will be collected during the PPG stage. However, given existing data	4. Establishing biological baselines at the project-level is the key for our approach to developing and implementing incentive programs and/or creating small "markets" or entrepreneurial opportunities that are explicitly linked to conservation activities. The available data from the Dugong Catch/Incidental Catch surveys is currently being analysed and data will be available by December 2012 (final reports by the end of 2013). Obtaining new or additional data for the 7 countries is to be a strategic research priority within this project. Thus while we do not have current data that will allow us to establish biological baselines at the site-level, this will be one of the first steps in terms of research and program design.	Thirty-four of the 40 projects will conduct data collection, analysis and increase the accessibility of information to policy and decision-makers as part of their project activities under Project Outcomes 1 and 3. Dugong Catch/Incidental Catch surveys were conducted in 6 of the 8 project countries. Data analysis from these surveys is expected to be available prior to or during the Inception period of the project. While dugong population and distribution data will be collected throughout the Project, changes over such a short period of four years will not be reflective of long term trends in dugong population status. Therefore, proxies to indicate impact of the project and subsequent	Section 3.3, Page 46. Section 3.1.2, Page 43.

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	the Panel believes proponents should be able to provide a preliminary indication of quantifiable baselines and GEBs.	These data will be able to provide preliminary indication of quantifiable baselines for dugong distribution and threats from bycatch or direct take, but will not be sufficiently reliable to detect trends in dugong abundance and thus indicators of achievement that informs global environmental benefits (GEBs) within the life time of this project. This aspect of the surveys is being developed in a manner which is expected to yield basic trend data when surveys are implemented successively at the sites. Reliable counts of cryptic, rare and widely dispersed animals such as the dugong are impossible to obtain. Thus proxy estimates of abundance are required and we will investigate the robustness of such proxies and their capacity to detect trends in abundance as part of the project. In addition, as part of the project, other indicators which are not reliant on estimates of dugong abundance will be developed as proxies for measures of success for GEBs (for instance, counts of boats which switch gear types could be a proxy for level of impact, and thus success measures). In anticipation of the need to address the key issue of measuring success, the Secretariat is using its own funds to convene a meeting of its key Technical	contributions to achieving GEBs will be developed during the Inception period. These will include quantifiable changes such as measurement of behavioural change in fishing practices that will reduce dugong mortality and destruction of seagrass meadows. Examples include percentage of gill net fishers, time of day of gill net use, soak time of gill nets, location of gill net fishing. Broad indicators are defined in the Project Log Frame; baselines and targets will be defined in more detail, through the inception Phase as described above. These will form the basis for detailed M&E during implementation (national and regional levels) Details on GEBs are provided in Section 3.1.2. Baselines and targets (conservation management; management effectiveness; behavioural changes in fishing practices etc.) will be better defined and quantified during Inception, as described above – building from site and national to overall Project level. For socio-economic indicators (e.g. benefits derived from alternative income-generating activities or incentive mechanisms) quantifiable information will be obtained at sub-project level. Sub-projects (individual "national Projects") will establish project and site-specific baselines and report against these. This will provide evidence of global benefits derived at site and	Section 3.1.2.

#	STAP Review Points	Preliminary Response by UNEP & Partners (submitted for June 2012 GEF Council meeting after STAP review of the PIF)	Second response and Cover note accompanying UNEP request for upstream review prior to submission for CEO endorsement request 10 September 2013	Location in Projett Document (attached)
		Advisors in July 2012 to agree on the approach required to develop or identify the necessary methodologies.	national level – in effect as case studies. Similarly, levels of ecosystem benefits will be investigated and reported on for some specific national initiatives. These will also be site and project-specific results	
5	5. STAP is pleased to see the research component in the project on the status and distribution of the dugong and seagrass habitats. A description of how this research will be designed and methodologies to be used is unavailable. STAP therefore wishes to be consulted on this aspect of project design in advance of CEO endorsement.	5. As highlighted in Point 2 above, some of the Technical Advisors to the project have developed the research methodologies used world-wide for assessing the status and distribution of dugongs and seagrass habitats that will be used in the project. It is anticipated that this expertise will be provided at the PPG stage to ensure that the best available expertise is accessed for the project design and implementation. This expertise will include Seagrass-Watch HQ who are internationally recognised for their scientifically rigorous assessment of seagrass resources, training, manage/validate/interpret the data, coordinating role between communities and scientists and contribution to the facilitation and establishment of networks across participating countries. Key references in relation to research methodologies for dugongs and seagrasses are included below. Marsh, Helene, O'Shea, Thomas J., and	Project summaries have been included at Appendices 20 and 23. These summaries include a description of the key activities to be undertaken. As stated in the PIF response and the response to point 2 above, the design of the research and specific methodologies to be used will be fully developed in the inception phase in consultation with appropriate technical experts. The key relevant methodologies for dugongs and seagrasses are provided in the references provided in the PIF response (i.e. Marsh et al., 2011 and Hines et al., 2012).	Appendix 20, 23

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		Reynolds, John E. (2011) Ecology and Conservation of the Sirenia: dugongs and manatees. Conservation Biology, 18. Cambridge University Press, Cambridge, UK. Hines E, Reynolds III J, Aragones LV, Mignucci-Giannoni AA, Marmontel M (eds.) (2012) Sirenian Conservation: Issues and Strategies in Developing Countries. Florida University Press. In addition, the development and trials using the standardised survey questionnaire were presented at the 2nd Small Scale Fisheries Congress in Bangkok in 2010. Pilcher, N.J & D. Kwan, 2010. Development and field testing of a standardized questionnaire to determine threats from small-scale fisheries, spatial distribution and population status of dugongs and other marine megafauna. 2nd Small Scale Fisheries Congress, Bangkok.18-22 Oct 2010.		
6	6. STAP is also pleased to see included in this initiative an open repository of data to be collected during the project â€“	6. We envision an open electronic format data and publication repository (likely hosted by an appropriate institution currently engaged in dugong research and	Additional information has been included regarding the structure and function of the Clearing House Mechanism.	Section 3.9

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	as this will be an important legacy of this initiative and will be instrumental in both guiding and assessing the success of conservation efforts and delivery of GEBs. The proponents should provide greater clarity, however, on any differences in data availability with respect to the proposed public, private, and academic interfaces proposed. In addition, STAP urges proponents to adopt existing data standards and take the necessary steps to ensure this repository remains active beyond the conclusion of the project.	conservation), which will be supported by data sharing agreements and long-term maintenance/development plans and finance structures. We also envision a global database structure which can feed into the WCMC databases, OBIS Seamap, and other global data repositories. Outputs of the project will be stored in an online digital library using the DELOS Digital Library Reference Model framework and ISO/IEC 11179 metadata standard. We envision a tiered access level where public information is available to all, and restricted information is available via password protection and where users need to seek permission before accessing the database. We will develop partnership agreements between this project and communities and will stipulate data access constraints.		
7	7. Although STAP assumes that the project will be well connected to good scientific expertise on dugongs and seagrasses, despite the lack of detail provided in the PIF, STAP is not as confident that the project will be as well	7. The project conservation solutions will consist of custom-built solutions focused on incentive programs and micro-entrepreneurial opportunities. While a carbon-base financing strategy is most likely a long-term solution, it is anticipated that an incentive program can be launched much faster – with market creation and	Most, if not all, project partners undertaking community based projects are already working on the ground with communities so have established networks and the requisite experience. Performance-based pilot projects to trial incentive tools will be designed based on the	Appendix 21 – partner capacity table

#	STAP REVIEW POINTS	PRELIMINARY RESPONSE BY UNEP & PARTNERS (SUBMITTED FOR JUNE 2012 GEF COUNCIL MEETING AFTER STAP REVIEW OF THE PIF)	SECOND RESPONSE AND COVER NOTE ACCOMPANYING UNEP REQUEST FOR UPSTREAM REVIEW PRIOR TO SUBMISSION FOR CEO ENDORSEMENT REQUEST 10 SEPTEMBER 2013	LOCATION IN PROJETT DOCUMENT (ATTACHED)
	founded in the area of conservation solutions. The proposal identified a number of potential financial incentives that could be adopted in the regions but did not indicate which conservation means would be most appropriate to which countries. It would be useful to conduct a comparative analysis of the approaches proposed based on the specific understanding of relevant regional/local parameters with regard to each sub-project. Some of the potential conservation methods mentioned briefly, such as use of Blue Forest approaches to protect seagrasses, are unlikely to be immediate solutions, How will such innovative means be developed and their effectiveness measured and monitored?	carbon-finance as mid/long-term goals. We acknowledge that a custom-build solution will require quite due diligence on the ground early on in the project and consequently development of new approaches (e.g. designing workshops/efforts around innovating new entrepreneurial opportunities). Our aim would be to ensure this would be much of the focus early on in the GEF project and take a design-thinking approach to the problem across all seven countries. Based on the decades of experience brought to the project by the Secretariat's Technical Advisors, we are confident we will be developing the very latest and very best in conservation strategies, which respond to modern pressures and social situations. We intend to trial incentive programmes, offsets, gear exchanges and the like, all of which are currently being implemented by our advisors on other projects elsewhere. We will rely heavily on our Technical Advisors and other expertise where appropriate, and we will be taking a participatory approach to the design and implementation of the project which will be customised to each country. Our conservation actions will be developed and designed in consultation with international	established approach used by the CMS Dugong MOU secretariat to develop projects in other non-GEF funded pilot projects. This approach included initial site visits to identify stakeholders and potential partners (e.g. local communities, industry, and government) in target sites to work in the development of a project. Project development included identifying other key stakeholders, threat analysis and a process to identify and implement solutions. As for the other technical aspects of the projects, these innovative solutions will be developed during the extended inception phase of the project using technical expertise of key partners supported by technical expertise of the Dugong Technical Group (DTG) as necessary.	

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		and national technical experts. In preparation to the application of this approach, the Secretariat is using its own funds to convene a meeting of its key advisors in July 2012 to discuss issues in relation to: • Program design; • Incentives and human behavior as it relates to understanding direct/incidental take of dugongs and possible mitigation actions; • Monitoring and evaluation; and • Outcomes e.g. how to document successes and failures and show tangible results.		
8	8. In B3 (socio-economic benefits), the benefits and steps to be taken to measure and achieve them are covered in a general way. If the proponents engage appropriate methods and experts in gathering the baseline information during the PPG stage, the socio-economic side will be progressing in the right direction.	8. See above for information on appropriate methodology and experts. Our experts will provide advice with regards to undertaking perception/ incentive / economic mapping and surveys. This would not only would facilitate and inform the design of our incentive program better, but it would also help provide a sound socio-economic baseline.	Preliminary information regarding local and community socioeconomic data at potential project sites was gathered in some countries. However, the limited PPG period and funding available will necessitate the full development of methodologies to measure the socioeconomic status of local communities at project sites across all eight countries during the extended Inception Period. Any projects incorporating incentive-based programmes (Outcome 2) will use available socio-economic data at the site and community level. Where there is no baseline or there are	Section 3.1.2, Page 43

#	STAP REVIEW POINTS	PRELIMINARY RESPONSE BY UNEP & PARTNERS (SUBMITTED FOR JUNE 2012 GEF COUNCIL MEETING AFTER STAP REVIEW OF THE PIF)	SECOND RESPONSE AND COVER NOTE ACCOMPANYING UNEP REQUEST FOR UPSTREAM REVIEW PRIOR TO SUBMISSION FOR CEO ENDORSEMENT REQUEST 10 SEPTEMBER 2013	LOCATION IN PROJETT DOCUMENT (ATTACHED)
			data gaps, socioeconomic information will be collected using standard methodologies used by partners such as Blue Ventures, as a precursor activity for these incentive-based projects and as baselines for monitoring impacts (e.g. livelihoods improvements) at the sub-project level.	
	9. With respect to the risk assessments, the proponents should also consider the risk (especially to seagrass beds) of destruction from outside interests, such as land reclamation and coastal construction. This is a risk normally occurring from outside the communities that will typically be directly participating in the project.	9. The project design approach will be to take a stage based risk assessment approach to identify those site/communities best suited based on selection criteria which includes conservation, biological and ecological significance – which incorporates the potential upstream risks, capacity and governance aspects, Secretariat has already applied to selection of pilot projects to trial incentive tools. This approach will include applying informed biological and ecological criteria and then considering other factors to help identify prospects with the highest probability of success. This is will necessarily require establishing a solid baseline as the basis to better ensure positive environmental outcomes. Recent research has shown that the bulk of dugong mortality is through direct hunting and incidental capture in fisheries. We recognise the importance of assessing the impact on seagrass beds by other sources,	This risk has been factored into the Project planning. At the site based (sub-project) level, if habitat destruction is an immediate risk, the sub-project will include whatever action is locally and nationally appropriate to try to remove or minimize the risk. For example, local and national awareness/ advocacy and policy approaches (supported by the Project and the Dugong MoU Secretariat regionally and nationally, as required). Outcomes 3 and 4 include longer-term responses to the risk, which, as the STAP review comment implies, may be largely outside the project's immediate influence. The mainstreaming approaches under Outcome 4 target longer-term impact (including post-Project) through awareness, advocacy and policy reform. This includes increases in knowledge and awareness (e.g. ecosystem and biodiversity/ natural resource values and the real costs of damaging development)/ demonstration of alternatives and	Section 2.1, Page 10.

#	STAP Review Points	Preliminary Response by UNEP & Partners (submitted for June 2012 GEF council meeting after STAP review of the PIF)	Second response and Cover note accompanying UNEP request for upstream review prior to submission for CEO endorsement request 10 September 2013	Location in Projett Document (attached)
		but also consider that the most cost-effective conservation outcomes will be achieved through addressing fishery-related issues primarily. Such an approach has good potential to address these key threats and make a critical conservation contribution which would not have been previously available in the partner countries. Our technical advisors include the leading authorities on threat assessment to dugongs and their critical seagrass habitats and this expertise will be brought to bear on our project design. For example, see references on recent publications by our key advisors in relation to this issue: Grech, Alana, Chartrand-Miller, Katie, Erftemeijer, Paul, Fonseca, Mark, McKenzie, Len, Rasheed, Michael, Taylor, Helen, and Coles, Rob (2012) A comparison of threats, vulnerabilities and management approaches in global seagrass bioregions. Environmental Research Letters, 7 (2). pp. 1-8. Grech, A., Coles, R., and Marsh, H. (2011). A broad-scale assessment of the risk to coastal seagrasses from cumulative threats.	socio-economic benefits (productive fisheries etc.). National and regional policy and advocacy will be supported through the Project coordination and activities and the wider Dugong MoU Secretariat programme (encouraging countries to become signatories and adhere to the MoU); and support from other MEAs (e.g. NBSAP/ CBD processes and reporting).	

#	STAP REVIEW POINTS	PRELIMINARY RESPONSE BY UNEP & PARTNERS (SUBMITTED FOR JUNE 2012 GEF COUNCIL MEETING AFTER STAP REVIEW OF THE PIF)	SECOND RESPONSE AND COVER NOTE ACCOMPANYING UNEP REQUEST FOR UPSTREAM REVIEW PRIOR TO SUBMISSION FOR CEO ENDORSEMENT REQUEST 10 SEPTEMBER 2013	LOCATION IN PROJETT DOCUMENT (ATTACHED)
		Marine Policy, 35 (5). pp. 560-567		

ANNEX 1 – STAP REVIEW

Scientific and Technical Advisory Panel

The Scientific and Technical Advisory Panel, administered by UNEP, advises the Global Environment Facility
(Version 5)

STAP Scientific and Technical screening of the Project Identification Form (PIF)

Date of screening: May 18, 2012 Screener: Thomas Hammond

Panel member validation by: Meryl Williams; Thomas Lovejoy
Consultant(s): Margarita Dyubanova

I. PIF Information *(Copied from the PIF)*
FULL SIZE PROJECT GEF TRUST FUND
GEF PROJECT ID: 4930
PROJECT DURATION : 4
COUNTRIES : Global (Indonesia, Sri Lanka, Madagascar, Malaysia, Mozambique, Timor Leste, Vanuatu)
PROJECT TITLE: Enhancing The Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugong Across the Indian and Pacific Oceans Basins (Short Title: The Dugong and Seagrass Conservation Project).
GEF AGENCIES: UNEP
OTHER EXECUTING PARTNERS: The overall Executing Agency will be the Mohamed bin Zayed Species Conservation Fund because of its close proximity and relationship with the UNEP/CMS Dugong MoU Secretariat who will provide technical oversight of the project.

Technical Partners include: the UNEP/CMS Dugong MoU Secretariat and its Technical Advisory Team, UNEP-DEPI, Blue Ventures, GRID-arendal & Forest Trends.

The key National Partners1 are:
Indonesia: Ministry of Marine Affairs and Fisheries, Ministry of Environment.
Madagascar: Ministry of Environment and Forests
Malaysia: Ministry of Natural Resources and Environment
Mozambique: Ministry for Coordination of Environmental Affairs (MICOA), Natural History Museum / Eduardo Mondlane University.
Sri Lanka: Department of Wildlife Conservation, Ministry of the Environment
Timor Leste: Ministry of Agriculture and Fisheries.
Vanuatu: Department of Environment and Conservation

GEF FOCAL AREA: Biodiversity

II. STAP Advisory Response *(see table below for explanation)*

Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies): **Major revision required**

III. Further guidance from STAP

1. Dugong populations and seagrass beds are under severe both globally and in the Indian/Pacific Ocean Basins. STAP welcomes this important regional initiative with the overall objective of enhancing the conservation effectiveness of protected and non-protected areas hosting significant populations of dugong through sustainable community â€“ led stewardship and socio-economic activities. The project proposes to support Indonesia, Madagascar, Malaysia, Mozambique, Vanuatu, Sri Lanka and Timor Leste in their national dugong conservation plans and to support the important international/regional activities under the UNEP/CMS Dugong MOU. While STAP believes that this initiative is highly valuable and important, the Panel wishes to highlight the following considerations as important for the successful implementation of the project and achievement of quantifiable global environmental benefits.

2. At this stage in development, STAP acknowledges that additional information and analysis will be forthcoming during the PPG stage. At present, however, strategies to address the defined objective are only described in general terms in the body of the proposal, and as such it is difficult for STAP to assess the scientific and technical aspects of expected project outcomes.
3. The PIF describes well the national and international actions that have been underway to protect the dugong, a red-listed species "vulnerable to extinction," and gives confidence that it is well connected to the existing (but still too thin) knowledge base. Despite this obvious awareness of current knowledge, the present proposal lacks at the very least a preliminary assessment of data and information on the current status of dugong populations and sea grass ecosystems, along with that of existing MPAs. With respect to MPA data, reasonably accurate data on existing marine and coastal protected areas in the countries identified is available â€“ and as such reasonably good information on existing conservation status is currently known. The PIF suggests that existing protected sea grass ecosystems will be extended by 15% in each participating country. STAP would be interested to see the analysis upon which this estimate is based, as only a very preliminary assessment is currently provided in section B.2. In addition, STAP assumes that the many expert meetings conducted by the international and national agencies under the UNEP/CMS Dugong MOU and its activities would have begun already to distinguish the priority seagrass beds for dugong populations.
4. The PIF notes (under overview of baseline activities) that data from Dugong Catch/Incidental Catch surveys exists, although no analysis or assessment of this existing data is provided. Moreover, it is unclear in this proposal whether estimates of Dugong populations and distributions will be used as indicators of achievement of global environmental benefits. STAP acknowledges that at this stage some needed information is unavailable and will be collected during the PPG stage. However, given existing data the Panel believes proponents should be able to provide a preliminary indication of quantifiable baselines and GEBs.
5. STAP is pleased to see the research component in the project on the status and distribution of the dugong and seagrass habitats. A description of how this research will be designed and methodologies to be used is unavailable. STAP therefore wishes to be consulted on this aspect of project design in advance of CEO endorsement.
6. STAP is also pleased to see included in this initiative an open repository of data to be collected during the project â€“ as this will be an important legacy of this initiative and will be instrumental in both guiding and assessing the success of conservation efforts and delivery of GEBs. The proponents should provide greater clarity, however, on any differences in data availability with respect to the proposed public, private, and academic interfaces proposed. In addition, STAP urges proponents to adopt existing data standards and take the necessary steps to ensure this repository remains active beyond the conclusion of the project.
7. Although STAP assumes that the project will be well connected to good scientific expertise on dugongs and seagrasses, despite the lack of detail provided in the PIF, STAP is not as confident that the project will be as well founded in the area of conservation solutions. The proposal identified a number of potential financial incentives that could be adopted in the regions but did not indicate which conservation means would be most appropriate to which countries. It would be useful to conduct a comparative analysis of the approaches proposed based on the specific understanding of relevant regional/local parameters with regard to each sub-project. Some of the potential conservation methods mentioned briefly, such as use of Blue Forest approaches to protect seagrasses, are unlikely to be immediate solutions, How will such innovative means be developed and their effectiveness measured and monitored?
8. In B3 (socio-economic benefits), the benefits and steps to be taken to measure and achieve them are covered in a general way. If the proponents engage appropriate methods and experts in gathering the baseline information during the PPG stage, the socio-economic side will be progressing in the right direction.
9. With respect to the risk assessments, the proponents should also consider the risk (especially to seagrass beds) of destruction from outside interests, such as land reclamation and coastal construction. This is a risk normally occurring from outside the communities that will typically be directly participating in the project.

STAP advisory response	*Brief explanation of advisory response and action proposed*
1. Consent	STAP acknowledges that on scientific/technical grounds the concept has merit. However, STAP may state its

	views on the concept emphasising any issues that could be improved and the proponent is invited to approach STAP for advice at any time during the development of the project brief prior to submission for CEO endorsement.
2. Minor revision required.	STAP has identified specific scientific/technical suggestions or opportunities that should be discussed with the proponent as early as possible during development of the project brief. One or more options that remain open to STAP include: Opening a dialogue between STAP and the proponent to clarify issues Setting a review point during early stage project development and agreeing terms of reference for an independent expert to be appointed to conduct this review The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.
3. Major revision required	STAP proposes significant improvements or has concerns on the grounds of specified major scientific/technical omissions in the concept. If STAP provides this advisory response, a full explanation would also be provided. Normally, a STAP approved review will be mandatory prior to submission of the project brief for CEO endorsement. The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.