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## **Draft Conservation and Management Plan for Dugong – For Consideration at the Second Meeting of Dugong Range States**

### *General Comment*

The draft Conservation and Management Plan for Dugong (Attachment A) draws upon the document *Analysis of elements from IOSEA Turtle MoU possibly relevant to dugong conservation* (Attachment B) prepared by the technical experts at the First Meeting of Dugong Range States. The key priority objectives and actions identified by the technical experts at the First Meeting have been included in the draft Plan for your consideration. The more detailed actions have been included in the draft Plan as examples that individual Signatory States can use to inform their implementation of the plan when finalised.

The seven key objectives and the relevant actions outlined in the draft Plan are considered to be the most important for the effective conservation and management of dugong populations across their distribution. Upon review of Attachment B developed by the technical experts, the objectives, activities and specific actions have been amended to minimise repetition and to provide a sense of the priorities, time scale and responsibilities. The approach taken has been to aggregate the key objectives, activities and specific actions to facilitate their application by individual Signatory States. For example, *Objective 1 Improve legal protection of dugongs* in the draft Plan (Attachment A) reflects an amalgamation with *Objective 5.5 Strengthen and improve enforcement of conservation legislation* of Attachment B. It is also proposed to defer the proposal to develop national, sub-regional and regional action plans at this time in order to first build a more reliable information base and capacity. This issue can then be re-examined by the signatories to the MOU at a later date.

Attachment C contains a review of how each key objective in Attachment B was incorporated into the draft Plan (Attachment A).

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## Attachment A: Draft Conservation and Management Plan for Dugong

Action	Priority Level	Time-scale	Organisations	Target
<b><i>Objective 1. Reduce direct and indirect causes of dugong mortality</i></b>				
1.1 Identify the threats to dugong populations and develop appropriate measures to address these threats.	High	Ongoing	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers	Threats to dugongs and their required conservation measures identified and addressed.
<p>Examples of specific actions that could be implemented</p> <ul style="list-style-type: none"> <li>a) <i>Regularly update existing data on threats to dugong populations and their habitats</i></li> <li>b) <i>Establish baseline data collection and monitoring programmes to gather information on the nature and magnitude of threats</i></li> <li>c) <i>Determine those populations affected by traditional subsistence take, incidental capture in fisheries, and other sources of mortality</i></li> <li>d) <i>Implement programmes to correct adverse social and economic incentives that threaten dugong populations</i></li> <li>e) <i>Conduct socio-economic studies among communities that interact with dugongs and their habitats</i></li> <li>f) <i>Identify desired modifications to the social and economic incentives in order to reduce threats and mortality, and develop programmes to implement the modifications</i></li> <li>g) <i>Facilitate the development of alternative livelihoods to minimise resultant adverse social and economic impacts</i></li> <li>h) <i>Identify resources and sources of funding for the above programmes</i></li> </ul>				

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<p>i) <i>Prohibit the direct use (capture or killing) of, and domestic trade in, dugongs, their parts or products, whilst allowing exceptions for traditional subsistence use.</i></p> <p>j) <i>Enact, where not already in place, legislation to prohibit direct use and domestic trade other than traditional subsistence use</i></p> <p>k) <i>Establish management programmes to enforce such legislation</i></p> <p>l) <i>Negotiate, where appropriate, management agreements in consultation with other concerned States</i></p>				
1.2 Reduce to the greatest extent practicable the incidental capture and mortality of dugongs in the course of fishing activities	High	Ongoing	Environment and Fisheries Government Agencies	Incidental fishing mortality of dugongs is minimised
<p>Examples of specific actions that could be implemented</p> <p>a) <i>Develop and use gear, devices and techniques to minimise incidental capture of dugongs in artisanal and commercial fisheries, such as the use of alternative gears and spatial closures</i></p> <p>b) <i>Develop procedures and training programmes to promote implementation of these measures</i></p> <p>c) <i>Exchange information and, upon request, provide technical assistance to other signatory States to promote these activities</i></p> <p>d) <i>Liaise and coordinate with fisheries industries, fisheries management organisations and community groups to develop and implement these activities</i></p> <p>e) <i>Support the UN General Assembly resolution 46/215 concerning the moratorium on the use of large-scale driftnets on the high seas</i></p> <p>f) <i>Develop and implement net retention and recycling schemes to minimise the disposal of fishing gear at sea and on beaches</i></p> <p>g) <i>Provide and ensure the use of port facilities for the disposal of ship-borne waste</i></p>				
1.3 Ensure that traditional subsistence use is sustainable in areas where it is allowed	High	Ongoing	Environment and Fisheries Government Agencies	Illegal take of dugong is addressed and traditional subsistence use is managed sustainably
<p>Examples of specific actions that could be implemented</p> <p>a) <i>Assess the level and impact of subsistence use on dugongs at ecologically relevant scales</i></p>				

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- b) *Reduce as much as possible all other human impacts on dugongs and their habitats in areas that sustain subsistence use*
- c) *Determine the cultural and subsistence values and uses of dugongs (both consumptive and non-consumptive)*
- d) *Establish culturally appropriate management programmes to ensure that subsistence use is sustainable, taking account of the temporal and spatial variability of dugong reproductive rates and other impacts on the species in a precautionary manner*
- e) *Ensure that such programs do not have adverse unintended consequences (e.g. increase use of other threatened species such as marine turtles)*
- f) *Consider the development of alternative livelihoods in areas where the subsistence use of dugongs has adverse cultural, social and economic impacts*
- g) *Negotiate, where appropriate, management agreements on the sustainable level of subsistence use, in consultation with other concerned States, to ensure that such use does not undermine conservation efforts*
- h) *Ensure that the management of other species (including fisheries) does not have adverse unintended consequences on the subsistence use of dugongs*

**Objective 2. Protect and manage important habitats for dugong**

2.1 Identify and map areas of important dugong habitat such as sea grass beds.	High	Immediate	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers	Important habitat identified.
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Examples of specific actions that could be implemented  
*Identify areas of critical habitat such as seagrass beds and migratory corridors, using rapid assessment techniques where appropriate*

2.2 Establish necessary measures to protect and conserve dugong habitats	High	Ongoing	Environment Government Agencies	Habitat areas for dugong are increased.
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Examples of specific actions that could be implemented

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<p>a) <i>Designate and manage protected/conservation areas, sanctuaries or temporary exclusion zones in areas of critical habitat, or take other measures (e.g. modification of fishing gear, banning destructive fishing practices, restrictions on vessel traffic) to remove threats to such areas, involving the local community as much as possible</i></p> <p>b) <i>Consider protecting dugong habitats as part of ecosystem based management (e.g. networks of marine protected areas)</i></p> <p>c) <i>Develop incentives for adequate protection of areas of critical habitat outside protected areas</i></p> <p>d) <i>Assess the environmental impact of marine and coastal development and other human activities on dugong populations and their habitats at a catchment scale</i></p> <p>e) <i>Monitor and promote the protection of water quality from land-based and maritime pollution, including marine debris, which may adversely affect dugongs</i></p> <p>f) <i>Strengthen the application of existing bans on the use of poisonous chemicals and explosives in the exploitation of marine resources</i></p>				
2.3 Where possible, rehabilitate degraded dugong habitats	Medium	Ongoing	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers	Degraded important habitats for dugong are identified where possible remedial steps are taken.
<p>Examples of specific actions that could be implemented</p> <p><i>Enhance recovery of degraded seagrass, mangrove and coral reef habitats used by dugongs</i></p>				
<p><b><i>Objective 3. Monitor dugong populations and carry out conservation research</i></b></p>				
3.1 Conduct research for dugongs and their habitats which are targeted to their conservation and management	High	Ongoing	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers	Research for dugong conservation is conducted by Signatory States.

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<p>Examples of specific actions that could be implemented</p> <ul style="list-style-type: none"> <li>a) <i>Conduct baseline studies or gather secondary information on dugong populations and their habitats using cost effective techniques, including community-based monitoring</i></li> <li>b) <i>Initiate and/or continue long-term monitoring of priority dugong populations at appropriate spatial scales in order to assess conservation status, using a combination of traditional, community-based and western science techniques where appropriate</i></li> <li>c) <i>Characterise the genetic identity of dugong populations</i></li> <li>d) <i>Identify migratory routes through the use of techniques such as genetic studies and/or satellite tracking</i></li> <li>e) <i>Carry out studies on dugong population dynamics and survival rates</i></li> <li>f) <i>Conduct research on the frequency and pathology of diseases of dugongs</i></li> <li>g) <i>Promote the use of traditional ecological knowledge in research and management studies, where possible</i></li> <li>h) <i>Involve local communities at all stages of the research and monitoring programs with training as required</i></li> <li>i) <i>Review periodically and evaluate research and monitoring activities</i></li> <li>j) <i>Identify and include priority research and monitoring needs in regional and sub-regional action plans</i></li> <li>k) <i>Conduct collaborative studies and monitoring of genetic identity, conservation status, migrations, and other biological and ecological aspects of dugongs</i></li> </ul>				
<p>3.2 Collect and analyse data that supports mitigation of threats and assess and improve conservation practices</p>	<p>High</p>	<p>Ongoing</p>	<p>Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers</p>	<p>Data analysed to improve conservation practices is reported in national reports.</p>
<p>Examples of specific actions that could be implemented</p> <ul style="list-style-type: none"> <li>a) <i>Prioritise populations for conservation actions</i></li> <li>b) <i>Identify population trends using local information where appropriate</i></li> <li>c) <i>Use research results to improve management, mitigate threats and assess the efficacy of conservation activities (e.g. habitat loss, etc.)</i></li> </ul>				
<p><b>Objective 4. Raise awareness of problems faced by dugongs and measures needed to conserve them</b></p>				

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4.1 Establish public education, awareness and information programmes	High	Ongoing	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers, education institutions	Programmes implemented and the conservation needs of dugong are widely understood by all stakeholders.
<p>Examples of specific actions that could be implemented</p> <ul style="list-style-type: none"> <li>a) <i>Collect, develop, co-ordinate and disseminate education materials (e.g. dedicated regional web site)</i></li> <li>b) <i>Establish community learning / information centres</i></li> <li>c) <i>Develop and implement accurate mass media information programmes</i></li> <li>d) <i>Develop and conduct focused education and awareness programmes for target groups (e.g. policy makers, teachers, schools, fishing communities, subsistence hunters, media)</i></li> <li>e) <i>Identify champions to help disseminate messages about the need to conserve dugongs and their habitats</i></li> <li>f) <i>Encourage the incorporation of dugong biology and conservation issues into school curricula</i></li> <li>g) <i>Organise special events related to dugong conservation and biology (e.g. Dugong Day, Year of the Dugong, symposia, community education workshops)</i></li> <li>h) <i>Promote public participation in conservation activities</i></li> <li>i) <i>Involve stakeholders, including key policymakers, subsistence hunters, and local communities in particular, in planning and implementation of conservation and management measures</i></li> <li>j) <i>Encourage the participation of Government institutions, non-governmental organisations, the private sector and the general community (e.g. students, volunteers, fishing communities, local communities) in research, conservation and management efforts</i></li> <li>k) <i>Implement, where appropriate, incentive schemes to encourage public participation (e.g. T-shirts, public acknowledgement, certificates)</i></li> </ul>				

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4.2 Consult with local communities on the need for possible alternative livelihood opportunities to encourage their active participation in conservation efforts	High	Ongoing	Environment and Fisheries Government Agencies and Non-governmental organisations	Local communities are actively involved in dugong conservation.
<p>Examples of specific actions that could be implemented</p> <p><i>Identify and facilitate alternative livelihoods (including income generating activities) that are not detrimental to dugongs and their habitats, and are sustainable in nearshore regions, in consultation with local communities and other stakeholders</i></p>				
<p><b><i>Objective 5. Enhance national, regional and international cooperation</i></b></p>				
5.1 Collaborate with and assist signatory and non-signatory States to regulate and share information on trade, to combat illegal trade, and to cooperate in enforcement activities relating to dugong products	Medium	Ongoing	Environment and Fisheries Government Agencies and Non-governmental organisations	Illegal trade is minimised by cooperative action

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<p>Examples of specific actions that could be implemented</p> <ul style="list-style-type: none"> <li>a) <i>Encourage signatory States that have not already done so to become Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)</i></li> <li>b) <i>Review at a national level, compliance with obligations under CITES relating to trade in dugong parts or products</i></li> <li>c) <i>Facilitate better compliance with CITES through training of relevant authorities in cooperation with other signatory States, the CITES Secretariat and other relevant organisations</i></li> <li>d) <i>Identify routes of international illegal trade through monitoring, and seek cooperation to take action to prevent, deter and, where possible, eliminate illegal trade</i></li> <li>e) <i>Exchange and discuss information on compliance and trade issues at regular intervals, such as through annual reporting to the MoU Secretariat and at meetings of the signatory States</i></li> <li>f) <i>Identify, prevent, deter and, where possible, eliminate domestic illegal trade through monitoring, implementation of legislation, identification of gaps in enforcement capabilities in each country, and training of enforcement officers</i></li> </ul>				
<p>5.2 Enhance mechanisms for cooperation and promote information exchange</p>	<p>High</p>	<p>Ongoing</p>	<p>Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers</p>	<p>Mechanisms for cooperation and information exchange are established and used by Signatory States.</p>

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<p>Examples of specific actions that could be implemented</p> <ul style="list-style-type: none"> <li>a) <i>Identify and strengthen existing mechanisms for cooperation at the sub-regional level</i></li> <li>b) <i>Develop a website and/or newsletter to facilitate networking and exchange of information</i></li> <li>c) <i>Develop a web-based information resource for dugong conservation (including data on populations, nesting, migration, on-going projects)</i></li> <li>d) <i>Regularly update a directory of experts and organisations concerned with dugong conservation</i></li> <li>e) <i>Develop networks for cooperative management of shared populations, within or across sub-regions, and, where appropriate, formalise cooperative management arrangements</i></li> <li>f) <i>Cooperate where possible in the establishment of transboundary marine protected areas using ecological rather than political boundaries</i></li> <li>g) <i>Develop a streamlined format for reporting and exchanging information (through the MoU Secretariat and among signatory States) on the state of dugong conservation at the national level</i></li> <li>h) <i>Encourage MoU signatory States that have not already done so to become Parties to the Convention on Migratory Species (CMS)</i></li> <li>i) <i>Encourage signatory States to become Parties to global fisheries agreements such as the UN Fish Stocks Agreement (1995) and the FAO Compliance Agreement (1993) and implement the FAO Code of Conduct for Responsible Fisheries (1995)</i></li> <li>j) <i>Establish relationships with regional fisheries bodies with a view to obtaining data on incidental capture and encourage them to adopt dugong conservation measures within Exclusive Economic Zones (EEZ) and territorial waters</i></li> <li>k) <i>Improve coordination among government and non-government sectors in the conservation of dugongs and their habitats</i></li> </ul>				
<p>5.3 Build capacity to strengthen conservation measures</p>	<p>High</p>	<p>Ongoing</p>	<p>Environment, Fisheries and aid Government Agencies, Non-governmental organisations and scientists/researchers, philanthropic organisations</p>	<p>Mechanisms to support capacity building of Signatory States are established and used.</p>
<p>Examples of specific actions that could be implemented</p> <ul style="list-style-type: none"> <li>a) <i>Identify needs for capacity-building in terms of human resources, knowledge and facilities</i></li> <li>a) <i>Provide training (e.g. through workshops) in conservation and management techniques for dugongs and their habitats</i></li> </ul>				

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<p><i>to relevant agencies, individuals and local communities</i></p> <p>b) <i>Coordinate training programmes and workshops</i></p> <p>c) <i>Develop partnerships with universities, research institutions, NGOs, training bodies and other relevant organizations to support capacity building initiatives</i></p> <p>d)</p>				
5.4 Exchange information	High	Ongoing	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers	Information relevant to the conservation and management of dugongs is effectively exchanged.
<p>Examples of specific actions that could be implemented</p> <p>a) <i>Standardise methods and levels of data collection and adopt or develop agreed protocols for inter alia monitoring of dugong populations and their habitats, genetic sampling, and collection of mortality data</i></p> <p>b) <i>Determine the most appropriate methods for information dissemination e.g. internet and community fora</i></p> <p>c) <i>Exchange at regular intervals scientific and technical information and expertise among nations, scientific institutions, non-governmental and international organisations, in order to develop and implement best practice approaches to conservation of dugongs and their habitats</i></p> <p>d) <i>Disseminate traditional knowledge on dugongs, their habitats and traditional practices for conservation and management in a culturally appropriate manner</i></p> <p>e) <i>Update data on dugong populations of regional interest on a regular basis (e.g. country status reports)</i></p>				
5.4 Improve coordination among government and non-government sectors in the conservation of dugongs and their habitats	High	Ongoing	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers	Coordination amongst government and non-government sectors is established for the conservation of dugong and their habitats.
<p>Examples of specific actions that could be implemented</p> <p>a) <i>Review the roles and responsibilities of government agencies related to the conservation and management of dugongs and their habitats</i></p> <p>a) <i>Designate a lead agency responsible for coordinating national dugong conservation and management policy</i></p>				

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b) <i>Encourage cooperation within and among government and non-government sectors, including through the development and/or strengthening of national networks</i>				
<b><i>Objective 6. Improve legal protection of dugongs</i></b>				
6.1 Ensure relevant national legislation such as environment and fisheries legislation protects dugongs and their habitats.	High	Immediate	Environment and Fisheries Government Agencies	Dugongs are given full protection in the national legislation of all Signatory States.
Examples of specific actions that could be implemented a) <i>Encourage and guide the establishment of legislation to protect dugongs and their habitats.</i> b) <i>Review domestic policies and laws to address gaps or impediments to dugong conservation.</i>				
6.2 Where necessary, strengthen legal protection for dugongs and their habitats by ensuring appropriate penalties for harming dugongs or destroying important habitat, training law enforcement authorities, and raising public awareness to boost surveillance and reporting of illegal activities.	Medium	Ongoing	Environment and Fisheries Government Agencies	Protection laws are enforced and results of prosecutions are relayed to the secretariat and included in national reports.
Examples of specific actions that could be implemented <i>Cooperate in law enforcement to ensure compatible application of laws across and between jurisdictions (including through bilateral/multilateral agreements and intelligence sharing)</i>				
<b><i>Objective 7. Promote implementation of the MoU including the Conservation and Management Plan</i></b>				
7.1 Broaden membership in the MoU, and ensure continuity of MoU activities	Medium	Ongoing	Environment and Fisheries Government	The MoU encompasses all dugong range states

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			Agencies	for effective conservation and management of dugongs and their habitats
<p>Examples of specific actions that could be implemented</p> <p>a) <i>Encourage non-signatory States to sign the MoU</i></p> <p>b) <i>Arrange sub-regional workshops involving non-signatory States to raise awareness of the MoU</i></p> <p>c) <i>Consider at the first meeting of the signatory States the development of a timetable for regular revision of implementation the MoU</i></p>				
7.2 Support the Secretariat and any Advisory Committee for the MoU to ensure the objectives of the Conservation and Management Plan are met	High	Ongoing	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers	The Secretariat and Advisory committee is established and is effective in implementation of the MoU and Conservation and Management Plan.
<p>Examples of specific actions that could be implemented</p> <p>a) <i>Secure reliable sources of funding to support the MoU Secretariat</i></p> <p>a) <i>Appoint at the first meeting of the signatory States the members of the Advisory Committee</i></p> <p>b) <i>Establish lines of communication between the MoU Secretariat and the Advisory Committee to facilitate advice to the signatory States</i></p>				
7.3 Seek resources to support the implementation of the MoU	High	Ongoing	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/researchers	Adequate resources are provide to implement the MoU
<p>Examples of specific actions that could be implemented</p>				

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<p>a) <i>Prioritise conservation and management activities for funding</i></p> <p>b) <i>Explore funding options with Governments and other donors such as the Asian Development Bank, World Bank, UNDP, European Union, UNEP, GEF, etc.</i></p> <p>c) <i>Solicit funding and other contributions from industries that have impacts on dugongs and their habitats (e.g. fisheries, tourism, oil industry, real estate)</i></p> <p>d) <i>Seek synergies (with respect to fund-raising, provision of institutional support, etc.) with other regional/global convention secretariats</i></p> <p>e) <i>Explore international funding support and other incentives for signatory States that effectively manage populations</i></p>				
7.4 Create links to other relevant regional conservation MoUs and Agreements	Medium	Ongoing	Environment and Fisheries Government Agencies, Non-governmental organisations and scientists/ researchers	Complementarities between dugong and other marine wildlife species such as turtle and conservation and management are identified and addressed.

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## ATTACHMENT B

**ANNEX 6. ANALYSIS OF ELEMENTS FROM IOSEA TURTLE MOU  
CONSERVATION MANAGEMENT PLAN POSSIBLY RELEVANT TO DUGONG  
CONSERVATION**

**ANNEX 6. ANALYSIS OF ELEMENTS FROM IOSEA TURTLE MOU  
CONSERVATION MANAGEMENT PLAN POSSIBLY RELEVANT TO DUGONG  
CONSERVATION**

Programme	Activity
<b>Objective 1. Reduce direct and indirect causes of dugong mortality</b>	
1.1 Identify and document the threats to dugong populations and their habitats	<ul style="list-style-type: none"> <li>a) Regularly update existing data on threats to dugong populations and their habitats</li> <li>b) Establish baseline data collection and monitoring programmes to gather information on the nature and magnitude of threats</li> <li>c) Determine those populations affected by subsistence use, incidental capture in fisheries, and other sources of mortality</li> </ul>
1.2 Determine and apply best practice approaches to minimising those threats to dugong populations and their habitats	<ul style="list-style-type: none"> <li>a) Identify and document best practice protocols for conserving and managing dugong populations</li> <li>b) Adapt and adopt the best conservation and management practices for dugong populations</li> </ul>
1.3 Implement programmes to correct adverse social and economic incentives that threaten dugong populations	<ul style="list-style-type: none"> <li>a) Conduct socio-economic studies among communities that interact with dugongs and their habitats</li> <li>b) Identify desired modifications to the social and economic incentives in order to reduce threats and mortality, and develop programmes to implement the modifications</li> <li>c) Facilitate the development of alternative livelihoods to minimise resultant adverse social and economic impacts</li> <li>d) Identify resources and sources of funding for the programmes</li> </ul>
1.4 Reduce to the greatest extent practicable the incidental capture and mortality of dugongs in the course of fishing activities	<ul style="list-style-type: none"> <li>a) Develop and use gear, devices and techniques to minimise incidental capture of dugongs in artisanal and commercial fisheries, such as the use of alternative gears and spatial closures</li> <li>b) Develop procedures and training programmes to promote implementation of these measures</li> <li>c) Exchange information and, upon request, provide technical assistance to other signatory States to promote these activities</li> <li>d) Liaise and coordinate with fisheries industries, fisheries management organisations and community groups to develop and implement these activities</li> <li>e) Support the UN General Assembly resolution 46/215 concerning the moratorium on the use of large-scale driftnets on the high seas</li> <li>f) Develop and implement net retention and recycling schemes to minimise the disposal of fishing gear at sea and on beaches</li> <li>g) Provide and ensure the use of port facilities for the disposal of ship-borne waste</li> </ul>

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Programme	Activity
<p>1.5 Ensure that subsistence use is sustainable in areas where it is allowed</p>	<ul style="list-style-type: none"> <li>a) Assess the level and impact of subsistence use on dugongs at ecologically relevant scales</li> <li>b) Reduce as much as possible all other human impacts on dugongs and their habitats in areas that sustain subsistence use</li> <li>c) Determine the cultural and subsistence values and uses of dugongs (both consumptive and non-consumptive)</li> <li>d) Establish culturally appropriate management programmes to ensure that subsistence use is sustainable taking account of the temporal and spatial variability of dugong reproductive rates and other impacts on the species in a precautionary manner</li> <li>e) Ensure that such programs do not have adverse unintended consequences e.g. increase use of other threatened species such as marine turtles</li> <li>f) Facilitate the development of alternative livelihoods in areas where the management of the subsistence use of dugongs has adverse cultural, social and economic impacts</li> <li>g) Negotiate, where appropriate, management agreements on the sustainable level of subsistence use, in consultation with other concerned States, to ensure that such use does not undermine conservation efforts</li> <li>h) Ensure that the management of other species (including fisheries) does not have adverse unintended consequences on the subsistence use of dugongs</li> </ul>
<p>1.6 Prohibit the direct use (capture or killing) of, and domestic trade in, dugongs, their parts or products, whilst allowing exceptions for subsistence use as outlined in 1.5</p>	<ul style="list-style-type: none"> <li>m) Enact, where not already in place, legislation to prohibit direct use and domestic trade other than subsistence use under 1.5</li> <li>n) Establish management programmes to enforce such legislation</li> <li>o) Negotiate, where appropriate, management agreements in consultation with other concerned States</li> </ul>
<p><b>Objective 2. Protect, conserve and rehabilitate dugong habitats</b></p>	
<p>2.1 Establish necessary measures to protect and conserve dugong habitats</p>	<ul style="list-style-type: none"> <li>a) Identify areas of critical habitat such as seagrass beds and migratory corridors, using rapid assessment techniques where appropriate</li> <li>b) Designate and manage protected/conservation areas, sanctuaries or temporary exclusion zones in areas of critical habitat, or take other measures (e.g. modification of fishing gear, banning destructive fishing practices, restrictions on vessel traffic) to remove threats to such areas, involving the local community as much as possible</li> <li>c) Consider protecting dugong habits as part of ecosystem based management e.g. networks of marine protected areas</li> <li>d) Develop incentives for adequate protection of areas of critical habitat outside protected areas</li> <li>e) Assess the environmental impact of marine and coastal development and other human activities on dugong populations and their habitats at a catchment scale</li> <li>f) Monitor and promote the protection of water quality from land-based</li> </ul>

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Programme	Activity
	<p>and maritime pollution, including marine debris, that may adversely affect dugongs</p> <p>g) Strengthen the application of existing bans on the use of poisonous chemicals and explosives in the exploitation of marine resources</p>
2.2 Rehabilitate degraded dugong habitats	a) Enhance recovery of degraded seagrass, mangrove and coral reef habitats used by dugongs
<b>Objective 3. Improve understanding of dugong ecology and populations through research, monitoring and information exchange</b>	
3.1 Conduct studies on dugongs and their habitats targeted to their conservation and management	<p>a) Conduct baseline studies or gather secondary information on dugong populations and their habitats using cost effective techniques, including community-based monitoring</p> <p>b) Initiate and/or continue long-term monitoring of priority dugong populations at appropriate spatial scales in order to assess conservation status, using a combination of traditional, community-based and western science techniques where appropriate</p> <p>c) Characterise the genetic identity of dugong populations</p> <p>d) Identify migratory routes through the use of techniques such as genetic studies and/or satellite tracking</p> <p>e) Carry out studies on dugong population dynamics and survival rates</p> <p>f) Conduct research on the frequency and pathology of diseases of dugongs</p> <p>g) Promote the use of traditional ecological knowledge in research and management studies</p> <p>h) Involve local communities at all stages of the research and monitoring programs with training as required</p> <p>i) Review periodically and evaluate research and monitoring activities</p>
3.2 Conduct collaborative research and monitoring	<p>a) Identify and include priority research and monitoring needs in regional and sub-regional action plans</p> <p>b) Conduct collaborative studies and monitoring on genetic identity, conservation status, migrations, and other biological and ecological aspects of dugongs</p>
3.3 Analyse data to support mitigation of threats and to assess and improve conservation practices	<p>a) Prioritise populations for conservation actions</p> <p>b) Identify population trends using local information where appropriate</p> <p>c) Use research results to improve management, mitigate threats and assess the efficacy of conservation activities (e.g. habitat loss, etc.)</p>
3.4 Exchange information	<p>a) Standardise methods and levels of data collection and adopt or develop agreed protocols for <i>inter alia</i> monitoring of dugong populations and their habitats, genetic sampling, and collection of mortality data</p> <p>b) Determine the most appropriate methods for information dissemination e.g. internet and community fora</p> <p>c) Exchange at regular intervals scientific and technical information and expertise among nations, scientific institutions, non-governmental and international organisations, in order to develop and implement best practice approaches to conservation of dugongs and their habitats</p>

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Programme	Activity
	<ul style="list-style-type: none"> <li>d) Disseminate traditional knowledge on dugongs, their habitats and traditional practices for conservation and management in a culturally appropriate manner</li> <li>e) Update on a regular basis data on dugong populations of regional interest e.g. country status reports</li> </ul>
<p><b>Objective 4. Increase public awareness of the threats to dugongs and their habitats, and enhance public participation in conservation activities</b></p>	
4.1 Establish public education, awareness and information programmes	<ul style="list-style-type: none"> <li>a) Collect, develop, co-ordinate and disseminate education materials e.g. dedicated regional web site</li> <li>b) Establish community learning / information centres</li> <li>c) Develop and implement accurate mass media information programmes</li> <li>d) Develop and conduct focused education and awareness programmes for target groups (e.g. policy makers, teachers, schools, fishing communities, subsistence hunters, media)</li> <li>e) Identify champions to help disseminate messages about the need to conserve dugongs and their habitats</li> <li>f) Encourage the incorporation of dugong biology and conservation issues into school curricula</li> <li>g) Organise special events related to dugong conservation and biology (e.g. Dugong Day, Year of the Dugong, symposia, community education workshops)</li> </ul>
4.2 Develop alternative livelihood opportunities for local communities to encourage their active participation in conservation efforts	<ul style="list-style-type: none"> <li>a) Identify and facilitate alternative livelihoods (including income generating activities) that are not detrimental to dugongs and their habitats, and are sustainable in nearshore regions, in consultation with local communities and other stakeholders</li> </ul>
4.3 Promote public participation	<ul style="list-style-type: none"> <li>a) Involve stakeholders, including key policymakers, subsistence hunters, and local communities in particular, in planning and implementation of conservation and management measures</li> <li>b) Encourage the participation of Government institutions, non-governmental organisations, the private sector and the general community (e.g. students, volunteers, fishing communities, local communities) in research, conservation and management efforts</li> <li>c) Implement, where appropriate, incentive schemes to encourage public participation (e.g. T-shirts, public acknowledgement, certificates)</li> </ul>
<p><b>Objective 5. Enhance national, regional and international cooperation</b></p>	
5.1 Collaborate with and assist signatory and non-signatory States to regulate and share information on trade, to combat illegal trade, and	<ul style="list-style-type: none"> <li>g) Encourage signatory States that have not already done so to become Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)</li> <li>h) Review at a national level compliance with obligations under CITES relating to trade in dugong parts or products</li> <li>i) Facilitate better compliance with CITES through training of relevant</li> </ul>

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Programme	Activity
to cooperate in enforcement activities relating to dugong products	<p>authorities in cooperation with other signatory States, the CITES Secretariat and other relevant organisations</p> <ul style="list-style-type: none"> <li>j) Identify routes of international illegal trade through monitoring, and seek cooperation to take action to prevent, deter and, where possible, eliminate illegal trade</li> <li>k) Exchange and discuss information on compliance and trade issues at regular intervals, such as through annual reporting to the MoU Secretariat and at meetings of the signatory States</li> <li>l) Identify, prevent, deter and, where possible, eliminate domestic illegal trade through monitoring, implementation of legislation, identification of gaps in enforcement capabilities in each country, and training of enforcement officers</li> </ul>
5.2 Assist signatory and non-signatory States, upon request, to develop and implement national, sub-regional and regional action plans for the conservation and management of dugongs and their habitats	<ul style="list-style-type: none"> <li>a) Develop a set of key management measures that could be used as a basis for action plans, through consultation with concerned Government authorities, research institutions, NGOs, local communities and other stakeholders</li> <li>b) Identify existing action plans that could be used as models</li> <li>c) Identify specific local management issues where cooperation among States is required for successful conservation and management</li> <li>d) Review action plans at regular intervals to take into account recent advances in skills and knowledge regarding dugong conservation and management, as well as changes in conservation status of dugong populations</li> </ul>
5.3 Enhance mechanisms for cooperation and promote information exchange	<ul style="list-style-type: none"> <li>a) Identify and strengthen existing mechanisms for cooperation at the sub-regional level</li> <li>b) Develop a website and/or newsletter to facilitate networking and exchange of information</li> <li>c) Develop a web-based information resource for dugong conservation (including data on populations, nesting, migration, on-going projects)</li> <li>d) Regularly update a directory of experts and organisations concerned with dugong conservation</li> <li>e) Develop networks for cooperative management of shared populations, within or across sub-regions, and, where appropriate, formalise cooperative management arrangements</li> <li>f) Cooperate where possible in the establishment of transboundary marine protected areas using ecological rather than political boundaries</li> <li>g) Develop a streamlined format for reporting and exchanging information (through the MoU Secretariat and among signatory States) on the state of dugong conservation at the national level</li> <li>h) Encourage MoU signatory States that have not already done so to become Parties to the Convention on Migratory Species (CMS)</li> <li>i) Encourage signatory States to become Parties to global fisheries agreements such as the UN Fish Stocks Agreement (1995) and the FAO Compliance Agreement (1993) and implement the FAO Code of Conduct for Responsible Fisheries (1995)</li> <li>j) Establish relationships with regional fisheries bodies with a view to obtaining data on incidental capture and encourage them to adopt dugong conservation measures within EEZs and territorial waters</li> </ul>

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Programme	Activity
5.4 Build capacity to strengthen conservation measures	<ul style="list-style-type: none"> <li>a) Identify needs for capacity-building in terms of human resources, knowledge and facilities</li> <li>b) Provide training (e.g. through workshops) in conservation and management techniques for dugongs and their habitats to relevant agencies, individuals and local communities</li> <li>c) Coordinate training programmes and workshops</li> <li>d) Develop partnerships with universities, research institutions, NGOs, training bodies and other relevant organizations</li> </ul>
5.5 Strengthen and improve enforcement of conservation legislation	<ul style="list-style-type: none"> <li>a) Encourage and guide the establishment of legislation to protect dugongs and their habitats.</li> <li>b) Review domestic policies and laws to address gaps or impediments to dugong conservation</li> <li>c) Cooperate in law enforcement to ensure compatible application of laws across and between jurisdictions (including through bilateral/multilateral agreements and intelligence sharing)</li> </ul>
<b>Objective 6. Promote implementation of the MoU including the Conservation and Management Plan</b>	
6.1 Broaden membership in the MoU, and ensure continuity of MoU activities	<ul style="list-style-type: none"> <li>a) Encourage non-signatory States to sign the MoU</li> <li>b) Arrange sub-regional workshops involving non-signatory States to raise awareness of the MoU</li> <li>c) Consider at the first meeting of the signatory States the development of a timetable for regular revision of the MoU</li> </ul>
6.2 Promote the role of the Secretariat and the Advisory Committee of the MoU in ensuring the objectives of the Conservation and Management Plan are met	<ul style="list-style-type: none"> <li>c) Secure reliable sources of funding to support the MoU Secretariat</li> <li>d) Appoint at the first meeting of the signatory States the members of the Advisory Committee</li> <li>e) Establish lines of communication between the MoU Secretariat and the Advisory Committee to facilitate advice to the signatory States</li> </ul>
6.3 Seek resources to support the implementation of the MoU	<ul style="list-style-type: none"> <li>a) Prioritise conservation and management activities for funding</li> <li>b) Explore funding options with Governments and other donors such as the Asian Development Bank, World Bank, UNDP, European Union, UNEP, GEF, etc.</li> <li>c) Solicit funding and other contributions from industries that have impacts on dugongs and their habitats (e.g. fisheries, tourism, oil industry, real estate)</li> <li>d) Explore the use of economic instruments for the conservation of dugongs and their habitats by integrating with instruments to conserve coral reefs, seagrass and other marine wildlife</li> <li>e) Approach the private sector, foundations and NGOs that may have an interest in funding activities in particular countries to catalyse the creation of a small grants fund</li> <li>f) Generate funding for conservation and management activities through managed ecotourism and other self-supporting schemes (while benefiting local communities)</li> <li>g) Seek synergies (with respect to fund-raising, provision of institutional support, etc.) with other regional/global convention secretariats</li> </ul> <p>Explore international funding support and other incentives for signatory States that effectively manage populations</p>

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Programme	Activity
6.4 Improve coordination among government and non-government sectors in the conservation of dugongs and their habitats	<ul style="list-style-type: none"><li>a) Review the roles and responsibilities of government agencies related to the conservation and management of dugongs and their habitats</li><li>b) Designate a lead agency responsible for coordinating national dugong conservation and management policy</li><li>c) Encourage cooperation within and among government and non-government sectors, including through the development and/or strengthening of national networks</li></ul>
6.5 Create links to the marine turtle MoU	<ul style="list-style-type: none"><li>a) Seek synergies with other regional global convention secretariats (the MoU for marine turtles especially)</li></ul> Explore collaborative international funding support and other incentives for signatory states that also are involved with management of marine turtle populations.

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## ATTACHMENT C

Extract of the key objectives in the *Analysis of elements from IOSEA Turtle MoU possibly relevant to dugong conservation* (in italics) with Commentary on the changes made for the draft Conservation and Management Plan for Dugong.

*Objective 1. Reduce direct and indirect causes of dugong mortality*  
No changes proposed.

1.1 *Identify and document the threats to dugong populations and their habitats*

1.2 *Determine and apply best practice approaches to minimising those threats to dugong populations and their habitats*

1.1 and 1.2 amalgamated and revised to:

1.1 Identify the threats to dugong populations and develop appropriate measures to address these threats.

1.3 *Implement programmes to correct adverse social and economic incentives that threaten dugong populations*

Incorporated as a specific example in Action 1.1 Identify the threats to dugong populations and develop appropriate measures to address these threats.

1.4 *Reduce to the greatest extent practicable the incidental capture and mortality of dugongs in the course of fishing activities*

No changes proposed to text but re-ordered as:

1.2 Reduce to the greatest extent practicable the incidental capture and mortality of dugongs in the course of fishing activities

1.5 *Ensure that subsistence use is sustainable in areas where it is allowed*

No changes proposed to text but re-ordered as:

Action 1.3 Ensure that the subsistence use is sustainable in areas where it is allowed.

1.6 *Prohibit the direct use (capture or killing) of, and domestic trade in, dugongs, their parts or products, whilst allowing exceptions for subsistence use as outlined in 1.5*

Incorporated as a specific example in Action 1.1 Identify the threats to dugong populations and develop appropriate measures to address these threats.

*Objective 2. Protect, conserve and rehabilitate dugong habitats*

Text proposed to be reworded as:

Objective 2. Protect and manage important habitats for dugong

**Note:** A new action is proposed

2.1 Identify and map areas of important habitats such as seagrass beds

2.1 *Establish necessary measures to protect and conserve dugong habitat*

No changes proposed to text but reordered as:

2.2 Establish necessary measures to protect and conserve dugong habitat

2.2 *Rehabilitate degraded dugong habitats*

Text proposed to be reworded as:

2.3 Where possible, rehabilitate degraded dugong habitats.

# DRAFT

*Objective 3. Improve understanding of dugong ecology and populations through research, monitoring and information exchange*

Text proposed to be reworded as:

Objective 3. Monitor dugong populations and carry out conservation research.

*3.1 Conduct studies on dugongs and their habitats targeted to their conservation and management*

Text proposed to be reworded as:

3.1 Develop research priorities for dugong and their habitats which are targeted to their conservation and management

*3.2 Conduct collaborative research and monitoring*

Incorporated as a specific example in Action 3.1 Develop research priorities for dugong and their habitats which are targeted to their conservation and management

*3.3 Analyse data to support mitigation of threats and to assess and improve conservation practices*

Text proposed to be reworded as:

3.2 Collect and analyse data that supports mitigation of threats and assess and improve conservation practices.

*3.4 Exchange information*

No changes proposed to the text but reordered to Objective 5 Enhance national, regional and international cooperation as:

5.4 Exchange information

*Objective 4. Increase public awareness of the threats to dugongs and their habitats, and enhance public participation in conservation activities*

Text proposed to be reworded as:

Objective 4. Raise awareness of problems faced by dugongs and measures needed to conserve them

*4.1 Establish public education, awareness and information programmes*

No changes proposed to text

*4.2 Develop alternative livelihood opportunities for local communities to encourage their active participation in conservation efforts*

Text proposed to be reworded as:

4.2 Consult with local communities on the need for possible alternative livelihood opportunities to encourage their active participation in conservation efforts

*4.2 Promote public participation*

Incorporated as a specific action in Action 4.1 Establish public education, awareness and information programmes.

*Objective 5. Enhance national, regional and international cooperation*

No changes proposed to text.

*5.1 Collaborate with and assist signatory and non-signatory States to regulate and share information on trade, to combat illegal trade, and to cooperate in enforcement activities relating to dugong products*

No changes proposed to text.

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- 5.2 *Assist signatory and non-signatory States, upon request, to develop and implement national, sub-regional and regional action plans for the conservation and management of dugongs and their habitats*

Objective not included because as stated earlier, it is proposed to defer the proposal to develop national, sub-regional and regional action plans at this time, in order to build a more reliable information base and capacity first.

- 5.3 *Enhance mechanisms for cooperation and promote information exchange*

No proposed change to text but action is reordered as:

- 5.2 *Enhance mechanisms for cooperation and promote information exchange*

- 5.4 *Build capacity to strengthen conservation measures*

No proposed change to text but action is reordered as:

- 5.3 *Build capacity to strengthen conservation measures*

- 5.5 *Strengthen and improve enforcement of conservation legislation*

**Note:** A new objective is proposed which incorporates Action 5.5:

Objective 6 Improve legal protection of dugongs

- 6.2 *Ensure relevant national legislation such as environment and fisheries legislation protects dugongs and their habitats*

- 6.1 *Where necessary, strengthen legal protection for dugongs and their habitats by ensuring appropriate penalties for harming a dugong or destroying important habitat, training law enforcement authorities, and raising public awareness to boost surveillance and reporting of illegal activities.*

No proposed changes to text but actions are reordered to Objective 6.

*Objective 6 Promote implementation of the MoU including the Conservation and Management Plan*

- 6.1 *Broaden membership in the MoU, and ensure continuity of MoU activities*

No proposed changes to text but reordered as Action 7.1

- 6.2 *Promote the role of the Secretariat and the Advisory Committee of the MoU in ensuring the objectives of the Conservation and Management Plan are met*

Text proposed to be reworded and reordered as:

- 7.2 Support the Secretariat and any Advisory Committee for the MoU to ensure the objectives of the Conservation and Management Plan are met

- 6.3 *Seek resources to support the implementation of the MoU*

No proposed changes to text but reordered as Action 7.3

- 6.4 *Improve coordination among government and non-government sectors in the conservation of dugongs and their habitats*

Incorporated as a specific example in Action 5.2 Enhance mechanisms for cooperation and promote information exchange.

- 6.5 *Create links to the marine turtle MoU*

Text proposed to be reworded and reordered as:

- 7.4 Create links to other relevant regional conservation MoUs and Agreements