



## Convention on the Conservation of Migratory Species of Wild Animals

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**Technical Workshops and Meeting to Sign the Memorandum of Understanding  
Concerning Conservation and Management of Dugongs (*Dugong dugon*)  
and Their Habitats throughout Their Range  
Beach Rotana Hotel, Abu Dhabi, United Arab Emirates, 28–31 October 2007**

### **Report of the Technical Workshops and Meeting to Sign the Memorandum of Understanding Concerning Conservation and Management of Dugongs (*Dugong dugon*) and Their Habitats throughout Their Range**

**28–31 October 2007**

**Beach Rotana Hotel, Abu Dhabi, United Arab Emirates**

#### **Introduction**

1. The Technical Workshops and Meeting to Sign the Memorandum of Understanding Concerning Conservation and Management of Dugongs (*Dugong dugon*) and Their Habitats throughout Their Range was held at the Beach Rotana Hotel, Abu Dhabi, United Arab Emirates, from 28 to 31 October 2007. The workshops and meeting were convened under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals (the Convention on Migratory Species) and were hosted by the Government of Abu Dhabi, represented by the Environment Agency–Abu Dhabi.
2. The development of a memorandum of understanding for the conservation of dugongs had been called for in recommendations 7.5 and 8.5 of the Conference of the Parties to the Convention on Migratory Species, in 2002 and 2005 respectively (CMS/DUGONG/Inf.1). A draft memorandum of understanding (CMS/DUGONG/Inf.5) and associated conservation and management plan (CMS/DUGONG/Inf.6) had been developed at two meetings on dugong conservation and management held in Bangkok, Thailand, in August 2005 and May 2006.
3. The purposes of the current meeting were further to discuss the implementation of the conservation and management plan; to obtain updates on progress made by various range States; and to sign the memorandum of understanding. The meeting would commence with two concurrent workshops concerning the implementation of the conservation and management plan in the Western Indian Ocean subregion and in the Eastern Indian Ocean and Pacific Ocean subregions and would conclude with a plenary meeting at which the memorandum of understanding would be signed.
4. A list of participants attending the meeting is provided in annex I to the present report.

## **I. Agenda**

5. The workshop and meeting participants adopted the agenda set out below on the basis of the provisional agenda contained in document CMS/DUGONG/Doc.1:

### **A. Workshops**

1. Dugong workshop on issues concerning the Eastern Indian Ocean and the Pacific subregion and other issues related to the general implementation of the Dugong Conservation and Management Plan.
2. Dugong workshop on key themes for the Western Indian Ocean subregion.
3. Session for integration of outcomes of workshops.

### **B. Meeting of signatory States**

4. Welcoming remarks.
5. Adoption of the agenda and work programme.
6. Election of officers and credentials committee.
7. Secretariat's report on advancement of the memorandum of understanding adoption progress.
8. Brief statements from range States and observers.
9. Report of the credentials committee.
10. Official opening for signature of the memorandum of understanding.
11. Any other business.
12. Closure of the meeting.

## **II. Workshops**

### **A. Dugong workshop on issues concerning the Eastern Indian Ocean and Pacific subregion**

#### **1. Opening remarks**

6. The workshop was opened by Mr. Lahcen El Kabiri, Deputy Executive Secretary of the Convention on Migratory Species, who welcomed the participants and thanked the Government of the United Arab Emirates for its hospitality. The participants decided to conduct their work on the basis of the work programme set out in document CMS/DUGONG/Doc.5. The moderator of the workshop was Ms. Kirstin Dobbs, Director of Conservation, Heritage and Indigenous Partnerships, Great Barrier Reef Marine Park Authority, Australia. In her opening remarks she said that the objective of the workshop was to increase understanding of the challenges of dugong conservation, identifying common issues and priorities through the presentation of country reports and related discussions.

7. Ms. Helene Marsh, Professor of Environmental Science, James Cook University, Queensland, Australia, gave an overview of aspects of dugong biology and behaviour that justified the development of a conservation agreement under the Convention on Migratory Species. The dugong, she said, was the only member of the family Dugongidae and the only strictly marine herbivorous mammal. Its rate of breeding was slow and sensitive to environmental change and it was classed as vulnerable on a global scale by the World Conservation Union (IUCN). It was of cultural and dietary significance in certain areas. While it relied on seagrass beds for grazing it migrated widely throughout its range and there was therefore a compelling case for management planning on a regional scale. The dugong was, encouragingly, still present in the extremities of its range. Both the animal and its habitat were under increasing threat throughout its range, however, and its loss in certain areas could lead to a decline in the quality of the seagrass beds that it farmed. Research had indicated that there was a mismatch between the geopolitical scale at which a resource such as the dugong was typically managed and the biological scale at which it functioned. In conclusion, she said that dugongs needed to be managed at biological scales of hundreds of kilometers and that the signing of the memorandum of understanding would represent significant progress towards the international cooperation that was essential for the conservation of the species. The presentation by Ms. Marsh can be found on the website of the

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([http://www.cms.int/bodies/meetings/regional/dugong/dugong\\_3.htm](http://www.cms.int/bodies/meetings/regional/dugong/dugong_3.htm)).

8. Mr. Douglas Hykle, Coordinator of the Indian Ocean–South-East Asian (IOSEA) marine turtle memorandum of understanding, gave an overview of the dugong memorandum of understanding and the conservation and management plan. He summarized their historical development over the previous five years but said that it was important to concentrate on practical plans for the future. The approach taken had been to develop a non-binding agreement. The experience of the Convention on Migratory Species had shown that Governments were still willing to cooperate and to contribute financially in instances where agreements were not legally binding. Both the memorandum of understanding and the conservation and management plan were solid and comprehensive tools and provided a strong basis for actual implementation on the ground. An impressive amount of information about the status of dugongs had been gathered in many areas and the need now was to focus attention on the specific actions that needed to be taken to implement the agreement, based on the examples set out in the annex to the conservation and management plan. In that regard it was important to take each of the nine themes of the plan and review progress made, document continuing work and base new action on identified priorities. Finally, he stressed that the added value of the agreement lay in those actions that would only succeed through concerted international work.

## 2. Presentations by countries and others

9. Representatives of the following countries made audiovisual presentations on aspects of dugong management and conservation within their jurisdictions, including consideration of status, actions taken, threats and recommendations for future action: Australia, France (Mayotte and New Caledonia), Myanmar and Thailand. The presentations can be found on the website of the Convention on Migratory Species ([http://www.cms.int/bodies/meetings/regional/dugong/dugong\\_3.htm](http://www.cms.int/bodies/meetings/regional/dugong/dugong_3.htm)). The representative of Pakistan delivered a report in which he said that there had been no recent sightings of dugongs in Pakistan but the presence of seagrass off the eastern coast indicated that dugongs might migrate through the area.

10. The representative of the Secretariat of the South Pacific Regional Environment Programme (SPREP) provided an overview of the revised Dugong Action Plan for the Pacific Region (2008–2012), which would take effect in January 2008. The presentation can be found on the website of the Convention on Migratory Species ([http://www.cms.int/bodies/meetings/regional/dugong/dugong\\_3.htm](http://www.cms.int/bodies/meetings/regional/dugong/dugong_3.htm)).

11. A number of key themes emerged from the presentations. The importance of involving indigenous peoples and other local communities in monitoring and conservation activities was highlighted. In Australia, for example, the Turtle and Dugong Management Project sought to assist indigenous communities to develop their own management plans for turtles and dugongs based on customary values. Innovative methods of carrying out effective work with limited funding were noted. In Thailand, for example, monitoring and mapping had been done using microlight aircraft, and work in Myanmar using a grant of \$1,000 from the Society for Marine Mammalogy showed that significant progress could be made through modest funding.

## 3. Interactive mapping exercise

12. The workshop participants undertook an interactive mapping exercise in which country representatives marked on a regional map important areas for dugongs and their habitats. As well as providing a useful overview of dugong distribution, the exercise prompted informative discussion on several aspects of dugong status including threats, gaps in knowledge, regional cooperation, behavioural characteristics of dugongs, conservation efforts and projects and opportunities for further action.

## 4. Conservation and management plan

### (a) Objectives 1, 3, 5, 7, 8: threats and management tools

13. Threats to dugongs. During an interactive discussion the workshop participants compiled a matrix of threats to dugongs, listing them by country. The major categories of threats identified were incidental capture in fishing gear, marine debris, habitat destruction, boat strike, disturbance, pollutants, unsustainable hunting and poaching. For each country, the threats were classified as of high, medium or low importance or not applicable. It was recognized that not all threats were found in all countries and that the impact of the identified threats varied in intensity. The matrix is set out in annex II to the present report.

14. Management tools. In another interactive discussion, a number of current management actions and tools were identified for the threat categories recognized in the previous exercise. Further potential management tools were also identified. The types of tools suggested were wide ranging and included education and awareness raising; fisheries management techniques (for example, temporal and spatial closures and gear modification); community-based management regimes; environmental impact assessment; and legislation. The matrix of current and potential management tools for dugongs is set out in annex III to the present report.

**(b) Objectives 2, 4: improving understanding of dugongs and their habitats through research and monitoring**

15. The representatives of Australia, Myanmar, New Caledonia, Pakistan, Thailand and SPREP identified a number of information needs in relation to dugongs and their habitats within their jurisdictions. Opportunities existed for international cooperation in research projects, for example addressing knowledge gaps regarding the genetic characteristics of dugongs, for which international funding might be available. Information gaps were identified in a number of areas, including dugong movement and habitat use, mapping and monitoring of seagrass, traditional knowledge and practices and dugong management within traditional community structures. There was a significant lack of baseline data in many areas. The matrix compiled during the exercise also identified key national and international research priorities. The workshop sought to identify specific activities that might be carried out to fill knowledge gaps, and the organizations and agencies that might be best placed to assist with the process.

16. The problem of attracting funding for dugong research and conservation was discussed; Mr. Hykle stressed the importance of ensuring that project proposals were clearly defined in order to attract funding. Another representative said it was possible that some existing or planned projects in the region had the potential to include dugong-related activities. Another suggested developing a pro forma on which initial project proposals could be laid out, following which advice might be sought from the Secretariat of the Convention on Migratory Species as to which proposals were most appropriate for full development and most likely to attract funding. There was a budgetary surplus from the present meeting that could be used to fund some priority small-scale projects.

17. It was not possible to compile a comprehensive list of information needs and priorities as a number of countries were not represented at the workshop. The matrix of information needs and priorities for improving understanding of dugongs and their habitats is set out in annex IV to the present report.

**(c) Objective 9: enhance national, regional and international cooperation on capacity-building**

18. During an interactive discussion, a number of suggestions were offered on ways in which national, regional and international cooperation might be enhanced in order to build capacity for dugong conservation.

19. Various Internet options were discussed, including the establishment of a website for the memorandum of understanding, possibly modelled on the IOSEA marine turtle website; in that context, it was recognized that setting up, maintaining and updating such a site would require substantial human resources. Using an international list server, such as the Sirenian International list server, to exchange information was also suggested.

20. Dissemination of information posed particular challenges, given the considerable geographical spread of the dugong, the wide range of stakeholders and communities with particular information needs and the budgetary limitations of the memorandum of understanding. Suggestions included promoting memorandum of understanding meetings and activities via the IUCN Sirenian Specialist Group newsletter, and sharing common resources and ideas, such as educational material.

21. Options for the governance structure of the memorandum of understanding were considered, including the establishment of a dedicated secretariat that would act as a coordination point for the agreement. That would again require significant resources and funding. It was generally considered advantageous to explore opportunities to carry out work in tandem with existing bodies within the region, for example the Southeast Asian Fisheries Development Center (SEAFDEC).

22. To assist research, sharing of technical support and knowledge could be promoted through the provision of internships, university degrees and marine studies courses by countries with specialist expertise.

## **B. Dugong workshop on key themes for the Western Indian Ocean subregion**

### **1. Opening remarks**

23. Mr. Thabit Al Abdessalaam, Environment Agency–Abu Dhabi, opened the workshop on the conservation and management of dugongs in the Western Indian Ocean subregion. He recalled the history of previous meetings on dugongs and noted the importance of the new focus on dugongs among States of the Western Indian Ocean region. He noted that previous attention had been largely focused on dugongs in the Eastern Indian Ocean and Pacific subregion and said that his Government was willing to provide leadership for dugong conservation in the Western Indian Ocean subregion.

24. Outlining the agenda for the workshop, Mr. Abdessalaam said that there were two topics to be addressed. First, representatives would review and, if necessary, update the available information on the status, conservation and management of dugongs and their habitats in each country. Second, representatives would review and finalize the Conservation and Management Plan for Dugongs (*Dugong dugon*) and Their Habitats of the Arabian Gulf, Red Sea and Western Indian Ocean Subregion, which had been developed to aid implementation of the regional conservation and management plan within the subregion.

25. Observing that the present meeting would conclude with a signing ceremony for a new memorandum of understanding on the conservation and management of dugongs, Mr. Abdessalaam said that the United Arab Emirates was prepared to be a founding signatory and further expressed the hope that many other representatives of States from the Western Indian Ocean subregion would commit their Governments to the proposed new accord.

### **2. Review of the status, current threats and management concerning dugongs and dugong habitats within the Arabian Gulf, Red Sea and Western Indian Ocean**

26. Mr. Abdessalaam called on Mr. Himanshu Das, Environment Agency–Abu Dhabi, to present a consolidated overview of the available information pertaining to dugongs and dugong habitats, as prepared by and collected from Governments of countries in the subregion.

27. In his presentation, Mr. Das highlighted the research and conservation efforts on dugongs undertaken by the United Arab Emirates. Information regarding dugong populations in the territorial and adjacent waters of that country included qualitative and anecdotal reports, quantitative data and aerial survey observations. Dugong mortality was largely due to incidental catch in fishing nets and vessel strikes, while habitat destruction resulted from coastal development activities and marine pollution. In response, the Government had already developed and implemented a conservation and management plan that involved the passage of protective legislation in 1999 and the establishment of three marine protected areas encompassing zones of known dugong population concentrations and critical dugong habitats.

28. Turning to information on dugongs and their habitats from other countries in the Western Indian Ocean subregion, Mr. Das reviewed the quality of available data on a country-by-country basis. He noted that there was a need for greater knowledge concerning the size, range and habitats of dugong populations. Human threats to dugongs, including hunting, destructive fishing practices, incidental catch, vessel strikes, habitat destruction, marine pollution and other local or specific risks, also needed further elaboration through expanded research. Summary data from the subregion indicated that only three countries had implemented legislation related to dugong conservation and only five countries had gathered reliable, quantitative data on dugong populations in their waters. Dugong habitat degradation was widespread in all of the range States and, while causes of mortality had not been well studied, it was clear that fishing equipment and practices harmful to dugongs such as the use of underwater explosives, gill and fish nets and trawlers and traps were in widespread use across the subregion. In concluding his remarks, Mr. Das highlighted three priority areas for dugong conservation in the Western Indian Ocean: basic research on dugong populations and causes of mortality; legislation; and implementation of management actions.

29. Ms. Patricia Davis, Community Centred Conservation, made a presentation on dugong conservation and management in the Union of the Comoros, including its coordination of work with Mayotte, an overseas department of France. She briefly reviewed the recent history and current status of dugongs and their range in the Comoros Islands. Dugongs were now found around only one of the three islands, in large part due to past hunting, and across the East African coast and islands their populations were drastically reduced. Although data on dugong sightings by fishermen extended back to 1950 there was a lack of awareness concerning dugongs even among fishermen and the public was largely unaware of their presence in the Comoros. In response, Community Centred Conservation, a non-governmental

organization working in partnership with the Government of Comoros on coastal research and development, was implementing a dugong conservation programme involving community participation in research, awareness raising and development of a national action plan. Public involvement in conservation activities and other dugong management efforts were being pursued in preference to continued aerial surveys, which were not considered cost-effective in the current context. She concluded by noting that the Government of Comoros would sign the memorandum of understanding in the near future and expected to be the first State to pass legislation to implement it.

30. In the ensuing discussion, representatives welcomed the information presented and a few indicated that they might be able to provide supplementary data from their respective countries. Mr. Abdessalaam expressed his thanks for the presentations and said that they would inform and guide the discussions on the conservation and management plan for the Western Indian Ocean subregion.

### **3. Conservation and Management Plan**

31. Mr. Abdessalaam served as Chair of the workshop review of the draft conservation and management plan for the Western Indian Ocean subregion. He introduced the draft plan and led a systematic review of its goals, objectives and actions.

32. Three issues dominated the discussion of the draft plan. Particular attention was paid to the need for further research on the status of dugong populations and evaluation of the threats to both dugongs and their habitats. A need to expand stakeholder involvement was also recognized; and local communities, the private sector and other international conventions were identified as appropriate partners for implementation of the plan. Toward that end, it was considered useful to promote the dugong as a flagship species, similar to the dolphin and the giant panda, in order to generate public interest and goodwill and concomitant additional financial support. Finally, the relative prioritization of management actions was debated extensively and it was ultimately agreed that signatory States would accept the subregional conservation and management plan as a whole and make individual prioritizations of activities according to their local circumstances.

33. At the conclusion of the review and debate, representatives agreed that the final version of the conservation and management plan for the Western Indian Ocean subregion would be forwarded to the plenary meeting for consideration.

## **C. Session for integration of outcomes of workshops**

### **1. Synthesis report and discussion**

34. The representatives of the Eastern Indian Ocean and Pacific subregion and the Western Indian Ocean subregion came together in a joint meeting to synthesize their observations and findings. In her summary of the two subregional technical workshops, Ms. Dobbs said that both had received updated information from countries on threats to dugongs and current management actions and research. The workshops, while adopting different approaches, had both used the regional conservation and management plan as the basis for discussion of threats to dugongs and their habitats; potential management tools to address the threats; research and information needs for dugongs and their habitats; and ideas for cooperation, information sharing and capacity-building at the national, regional and international levels. It was recognized that not all countries across the range of the dugong were represented at the workshops. Further updated information on management of, threats to and status of research on dugongs was therefore required for those range States in order to obtain as full a picture as possible of dugong status and identify priorities.

### **2. Presentations to joint session**

#### **(a) Presentation by Coordinator of IOSEA**

35. To assist representatives in their deliberations regarding a possible governance structure for the dugong memorandum of understanding, Mr. Hykle gave a presentation on the IOSEA marine turtle memorandum of understanding, which had 27 signatory States and covered a similar geographical range to that of the dugong. The IOSEA website ([www.ioseaturtles.org](http://www.ioseaturtles.org)) had proved very successful in assisting in the exchange of information on seas turtles. It was updated regularly and contained a "profile of the month" featuring a particular activity. It also included an electronic library of reference materials, a project database, an interactive mapping system and information on tagging. National reports could be submitted and viewed online. The Year of the Turtle 2006 campaign had proved very successful in raising awareness among Governments, non-governmental organizations and grass-roots organizations.

36. The memorandum of understanding, he said, facilitated cooperation with a range of agencies, for example fisheries organizations, now that solid agreement had been reached on such matters as by-catch, and acted as a focus to bring range States together in regional meetings. Finally, it opened up further funding opportunities, allowing the establishment of a secretariat to coordinate activities across the region.

**(b) Presentation on justification for dugong memorandum of understanding**

37. Ms. Marsh gave a further presentation on aspects of dugong biology and behaviour that justified the development of a conservation agreement under the Convention on Migratory Species. In response to queries following the presentation, she said that the analysis of DNA to identify dugong populations could be carried out in any modern genetics laboratory and offered considerable scope for international collaboration. She saw great advantage in a website similar to that of IOSEA which countries could use to easily update information on dugong-related matters, including status and protected areas. She drew attention to the western Red Sea as a high-priority area for which up-to-date information was lacking.

**(c) Preparation for signing the memorandum of understanding**

38. Mr. El Kabiri presented the text of the draft memorandum of understanding, as amended. The text was in Arabic, Chinese, English and French. After some discussion it was agreed that only range States could sign the agreement; other organizations could attend meetings as observers. Further, based on a submission from the representative of France, it was decided that all language versions of the memorandum of understanding would be considered equally authentic.

### **III. Meeting of signatory States**

#### **A. Welcoming remarks**

39. The meeting of signatory States was opened by Ms. Khansa Al Blouki, Environment Agency–Abu Dhabi. She welcomed representatives to the meeting on dugong conservation and called on Mr. Majid Al Mansouri, General Secretary of the Environment Agency–Abu Dhabi, Mr. El Kabiri and Mr. Abdessalaam to address the participants.

40. In his remarks, Mr. Al Mansouri welcomed representatives to the United Arab Emirates and to the Emirate of Abu Dhabi and expressed his hope that the meeting would prove productive, particularly given the recent efforts in the just-concluded workshops. He noted the long-standing commitment of the United Arab Emirates and of the Emirate of Abu Dhabi to the marine environment, which reflected its fishing and sea trading heritage and its rich endowment of dugongs and other marine species. The conservation and management plan for dugongs adopted by the United Arab Emirates was consistent with the proposed plan for the dugong range States. He concluded by urging the signing of the memorandum of understanding and the adoption of the proposed conservation and management plan as first steps toward implementation of programmes for dugong conservation.

41. In his remarks, Mr. El Kabiri noted that the Convention on Migratory Species was a global convention concerned with migratory species, hosted by UNEP in Bonn, Germany, that promotes species conservation and habitat preservation through its operational instruments (CMS Article IV). Under the auspices of the Convention on Migratory Species, more than 140 Range States had signed around 20 agreements and memorandums of understanding for the conservation and management of migratory wild animals and five new CMS initiatives were underway. The memorandum of understanding on dugong conservation would lead to important outcomes for regional cooperation and for the promotion of biodiversity.

42. In his opening statement, Mr. Abdessalaam said that the impetus for the development of the memorandum of understanding had been the increasing vulnerability of the dugong and its habitat, the declining numbers of dugong throughout much of its range and the animal's ability to migrate over great distances. In his overview of the memorandum of understanding, he stressed that it was a voluntary agreement, of which the conservation and management plan was an integral component. The memorandum of understanding would take effect with two signatures. The original text, in Arabic, Chinese, English and French, would be deposited with the secretariat of the Convention on Migratory Species.

**B. Adoption of the agenda and work programme**

43. The meeting participants adopted an agenda and work programme on the basis of the provisional agenda set out in document CMS/DUGONG/Doc.1 and the annotated provisional agenda and meeting schedule set out in document CMS/DUGONG/Doc.2/Rev/2.

**C. Election of officers and a credentials committee**

44. Mr. Abdessalaam was proposed as Chair of the meeting by the representative of the United Republic of Tanzania and was duly elected.

45. Mr. El Kabiri and the representatives of Myanmar and Saudi Arabia were proposed as members of the credentials committee and duly elected. Members of the credentials committee were not required to be signatories of the memorandum of understanding. Mr. El Kabiri asked delegates who had not yet presented their credentials to do so in order to enable them to sign the memorandum of understanding.

**D. Report of the secretariat on advancement of the memorandum of understanding adoption progress**

46. Mr. El Kabiri presented a note by the Secretariat on progress on adoption and implementation of the dugong memorandum of understanding (CMS/DUGONG/Doc.4). He gave a brief overview of the process by which the memorandum of understanding had been developed. He noted that a number of outstanding issues remained, including the next actions to be taken, the governance structure of the memorandum of understanding, the establishment of a website, the format for reporting and the frequency of meetings.

47. Regarding the location of the secretariat of the memorandum of understanding, Mr. Hykle said that several options were being considered. The minimum that might be expected of a host organization was the provision of offices and staff, development of a website and assistance with coordinating the activities of signatory countries across the range of the dugong. IOSEA was co-located with the United Nations Environment Programme in Bangkok, but there was no fixed model, with different arrangements pertaining to the various agreements under the Convention on Migratory Species. The issue was often one of finance, and which organization in which country was in a position to offer the services required in addition to having the resources, capacity and skills to host a secretariat.

**E. Brief statements from range States and observers**

48. The representatives of the following range States made brief statements: Australia, the Comoros, Eritrea, France (New Caledonia), the Islamic Republic of Iran, Kenya, Madagascar, Myanmar, Pakistan, Qatar, Saudi Arabia, Seychelles, Thailand, United Arab Emirates, United Republic of Tanzania and Yemen. The representative of Iran said that his country was willing to assist in the administration of the memorandum of understanding. Statements were also made by the representatives of some commercial organizations and non-governmental organizations, who underlined their commitment to the protection of the dugong.

**F. Report of the credentials committee**

49. The representative of Myanmar presented the report of the credentials committee. He said that original credentials had been received from the representatives of Australia, Eritrea, the Islamic Republic of Iran, Madagascar and Myanmar. In addition, he said that the Ambassadors of France and the United Republic of Tanzania to the United Arab Emirates and the Minister for Environment and Water of the United Arab Emirates would attend and sign the memorandum of understanding.

**G. Official opening for signature of the memorandum of understanding**

50. Introducing the official signing of the memorandum of understanding, Mr. El Kabiri expressed his gratitude to those range States that had committed to signing the agreement, thereby founding a new era of cooperation in the region. The agreement was then formally signed by the Ambassadors of France and the United Republic of Tanzania, the Minister for Environment and Water of the United Arab Emirates, and the representatives of Australia, Eritrea, Madagascar and Myanmar. The memorandum of understanding is set out in annex V to the present report, and the associated Conservation and Management Plan is set out in annex VI.



**H. Any other business**

51. Mr. Abdessalaam noted that documents for the current meeting would remain available on the website of the Environment Agency–Abu Dhabi, at [www.ead.ae](http://www.ead.ae), which would also include a list of meeting participants.

52. Mr. El Kabiri said that, in consultation with all dugong range States and, while an offer was presented to host a unit for the coordination of dugong activities, the secretariat for the new memorandum of understanding was assured by the secretariat of the Convention on Migratory Species. The secretariat would pursue conservation and management efforts within the region.

**I. Closure of the meeting**

53. Mr. Mansouri, on behalf of His Highness Sheikh Hamdan bin Zayed al Nahyan, Deputy Prime Minister of the United Arab Emirates and Chair of the Board of Directors of the Environment Agency, thanked all those who had attended the meeting. After the usual exchange of pleasantries, Mr. Abdessalaam declared the meeting closed at 2.42 p.m. on Wednesday, 31 October 2007.

## Annex I

### List of participants

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## Annex II

### Threats to dugongs in Eastern Indian Ocean and Pacific subregion (CMP objectives 1 and 3)

	Thailand	Pakistan	Myanmar	New Caledonia	Australia	Other SPREP
<b>Incidental capture in fishing gear</b>						
• Gill nets	H	n.a.?	H	L?	H	H?
• Beach seine nets	n.a.	n.a.?	L	L?	n.a.	L?
• Purse seine nets	n.a.	n.a.	n.a.?	n.a.	n.a.	n.a.
• Stake traps	M	n.a.?	n.a.	n.a.	n.a.	n.a.
• Longlines for stingrays	L	n.a.	n.a.	n.a.	n.a.	n.a.
• Trawl nets	L	n.a.	L	n.a.	L	n.a.?
• Crab pot lines	n.a.	n.a.	n.a.	n.a.	L	n.a.
<b>Marine debris</b>						
• Fishing line and hooks	n.a.	n.a.	n.a.	L?	L	L?
• Ghost nets	n.a.	n.a.	n.a.	L	L	L?
<b>Habitat destruction</b>						
• Reclamation	n.a.	n.a.	n.a.	n.a.	L	M?
• Climate change	?	?	?	?	?	?
• Water quality (eg. agricultural, land & mining run-off)	n.a.	M?	n.a.?	M	M	M-H
• Coastal development	L-M	L	L	L	L	M
<b>Boat strike</b>	L	n.a.	n.a.	L-M	L-M	M (Palau)
<b>Disturbance, e.g., noise, increased boat activity</b>	?	?	?	?	?	?
<b>Pollutants in the animals</b>	n.a.	n.a.?	n.a.	?	L?	?
<b>Unsustainable hunting</b>	n.a.	n.a.	n.a.	n.a.	n.a.-H (depends on location)	H?
<b>Poaching</b>	n.a.	n.a.	n.a.	M	M	M

**Key:**

L, low threat; M, medium threat; H, high threat; n.a., not applicable.

# Annex III

## Current and potential dugong management tools in Eastern Indian Ocean and Pacific subregion (CMP objectives 1, 3, 5, 7, 8)

Impact	Current management tools	Potential management tools or needs
<b>Incidental capture in fishing gear</b>		<ul style="list-style-type: none"> <li>Information: dugong distribution &amp; abundance</li> <li>Social/economic impact</li> <li>Alternate incentives/livelihood</li> <li>Optimal mesh size: fish vs dugong capture rate</li> <li>Fisher education: significance of impact</li> </ul>
<ul style="list-style-type: none"> <li>Gill nets</li> </ul>	<ul style="list-style-type: none"> <li>Area closures (Australia, Myanmar, Papua New Guinea)</li> <li>Time closures (Australia, Myanmar, Papua New Guinea)</li> <li>Gear modification (Australia, Myanmar)</li> <li>Acoustic alarms/pingers (Australia)</li> <li>Fisher education (Australia, Myanmar, Thailand)</li> <li>Net attendant rules (Australia)</li> </ul>	
<ul style="list-style-type: none"> <li>Beach seine nets</li> </ul>	<ul style="list-style-type: none"> <li>Method of fishing (Myanmar, Pakistan)</li> <li>Gear specification, e.g., mesh size (Pakistan)</li> </ul>	
<ul style="list-style-type: none"> <li>Purse seine nets</li> </ul>	<ul style="list-style-type: none"> <li>Similar to beach seine nets</li> </ul>	
<ul style="list-style-type: none"> <li>Stake traps</li> </ul>	<ul style="list-style-type: none"> <li>Rescue stranded dugongs (Thailand)</li> <li>Regulate new traps</li> </ul>	
<ul style="list-style-type: none"> <li>Longlines for stingrays</li> </ul>	<ul style="list-style-type: none"> <li>Legislate to reduce gear (Thailand)</li> </ul>	
<ul style="list-style-type: none"> <li>Trawl nets</li> </ul>		<ul style="list-style-type: none"> <li>Use of turtle excluder devices (Thailand, Pakistan, Myanmar, Australia)</li> </ul>
<ul style="list-style-type: none"> <li>Crab pot lines</li> </ul>	<ul style="list-style-type: none"> <li>Fisher education (Australia)</li> <li>Gear modification: straight tight lines</li> </ul>	
<b>Marine debris</b>	<ul style="list-style-type: none"> <li>Fisher education: significance of impact (Australia)</li> <li>Underwater clean-ups (Thailand)</li> <li>Capacity &amp; resources</li> </ul>	<ul style="list-style-type: none"> <li>Reporting of lost gear</li> <li>Reducing use of gear in key dugong areas</li> </ul>
<ul style="list-style-type: none"> <li>Fishing line and hooks</li> </ul>		
<ul style="list-style-type: none"> <li>Ghost nets</li> </ul>		
<b>Habitat destruction</b>	<ul style="list-style-type: none"> <li>Environmental impact assessment/guidelines</li> <li>Regulations, restrictions &amp; rehabilitation requirements (SPREP, New Caledonia)</li> <li>Public education &amp; extension (Thailand, Pakistan, Myanmar)</li> </ul>	<ul style="list-style-type: none"> <li>Environmental offsets/mitigation? investments in conservation</li> </ul>
<ul style="list-style-type: none"> <li>Reclamation</li> </ul>		
<ul style="list-style-type: none"> <li>Climate change</li> </ul>		<ul style="list-style-type: none"> <li>Mapping of habitats</li> <li>Maximizing resilience of ecosystem</li> <li>Minimizing impacts</li> </ul>

Impact	Current management tools	Potential management tools or needs
<ul style="list-style-type: none"> <li>Water quality (e.g., agricultural, land &amp; mining run-off)</li> </ul>		
<ul style="list-style-type: none"> <li>Coastal development</li> </ul>		
<b>Boat strike</b>	<ul style="list-style-type: none"> <li>No go or go slow zones (Palau, Australia)</li> <li>Reduction of number of boats (Thailand)</li> <li>Change of travel paths (Thailand)</li> <li>Education &amp; awareness (Palau, Australia)</li> </ul>	<ul style="list-style-type: none"> <li>Information: dugong distribution &amp; abundance and use of habitat</li> <li>Social &amp; economic impacts to fishers</li> </ul>
<b>Disturbance, e.g., noise, increased boat activity, vibration, construction activities, dredging</b>	<ul style="list-style-type: none"> <li>Same as boat strike</li> </ul>	<ul style="list-style-type: none"> <li>Information: dugong distribution &amp; abundance and use of habitat</li> </ul>
<b>Pollutants in the animals</b>		<ul style="list-style-type: none"> <li>Monitoring of dugong tissues</li> <li>Monitoring of environment, e.g., Sediments, seagrass, water quality</li> <li>Enforcement of restrictions and reducing use of pollutants</li> </ul>
<b>Unsustainable hunting</b>	<ul style="list-style-type: none"> <li>Increased community capacity &amp; resources to manage</li> <li>Sharing of experiences &amp; skills</li> <li>Education &amp; awareness</li> <li>Addressing socio-economic impacts, well-being</li> <li>Informing/influencing policy</li> <li>Monitoring of catch rates</li> <li>Monitoring of population size</li> <li>Use of traditional knowledge &amp; traditional practices for management</li> </ul>	<ul style="list-style-type: none"> <li>Understanding social, cultural, economic and ecological drivers/impacts</li> <li>Long-term incentives</li> <li>Long-term interventions</li> <li>One size does not fit all communities</li> <li>Need to be pragmatic</li> <li>Identification of a box of tools which can be used</li> </ul>
<b>Poaching (illegal hunting)</b>	<ul style="list-style-type: none"> <li>Enforcement of legislation (New Caledonia, Australia)</li> <li>Education: existing legislation, biological information, impacts on dugongs, need for conservation (New Caledonia, SPREP, Australia)</li> <li>Enforcement using traditional knowledge &amp; practices (New Caledonia, SPREP, Australia)</li> </ul>	<ul style="list-style-type: none"> <li>Lack of resources for enforcement</li> </ul>

## Annex IV

### Information needs and priorities in Eastern Indian Ocean and Pacific subregion (CMP objectives 2 and 4)

	Dugong information gaps	Dugong habitat information gaps
<b>Thailand</b>	<ul style="list-style-type: none"> <li>Population size: Gulf of Thailand</li> <li>Movement &amp; habitat use</li> <li>Genetic sampling</li> <li>Identification of genetic populations (Cambodia, Vietnam)</li> </ul>	<ul style="list-style-type: none"> <li>Mapping of seasonal seagrass habitats for dugong (Eastern Gulf)</li> </ul>
<b>Key priorities</b> <ul style="list-style-type: none"> <li>Cooperation with countries in South-East Asian region on dugongs and habitat to address by-catch of marine mammals, including dugong (exploring opportunities to cooperate with regional organizations such as SEAFDEC)</li> <li>Undertaking in Thailand: (a) tagging studies; (b) mapping of seasonal seagrass habitat in the eastern area of Gulf of Thailand</li> </ul>		
<b>Pakistan</b>	<ul style="list-style-type: none"> <li>Surveys to investigate links to Indian populations? Eastern coastal</li> </ul>	<ul style="list-style-type: none"> <li>Mapping of seagrass on western coast</li> </ul>
<b>Key priorities</b> <ul style="list-style-type: none"> <li>Surveys to investigate links to Indian population on Pakistan's south-eastern coast (Indus delta)</li> <li>Mapping of seagrass in areas of Kalamat Hor, Astola Island (off Pasni coast) and Jiwani on western coast of Pakistan</li> </ul>		
<b>Myanmar</b>	<ul style="list-style-type: none"> <li>Extend fisher surveys: where?</li> <li>Dugong movements &amp; habitat use</li> </ul>	<ul style="list-style-type: none"> <li>Seagrass mapping: where?</li> </ul>
<b>Key priorities</b> <ul style="list-style-type: none"> <li>Assessment of dugong occurrence and distribution in Rakhine and Tanintharyi coastal area</li> <li>Seagrass mapping in Rakhine and Tanintharyi coastal areas</li> <li>Marine mammal by-catch study in Rakhine coastal area (explore linkages to Thailand priorities)</li> <li>Transboundary dugong survey in Tanintharyi coast (Myanmar) and east Andaman coast (Thailand)</li> </ul>		
<b>New Caledonia</b>	<ul style="list-style-type: none"> <li>Biological parameters</li> <li>Dugong mortality</li> <li>Movement &amp; habitat use</li> <li>Better understanding of cultural relationship between dugong &amp; indigenous people and how it is being used in management</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing seagrass monitoring</li> <li>Better understanding of cultural relationship between dugong &amp; indigenous people and how it is being used in management</li> </ul>
<b>Key priorities</b> <ul style="list-style-type: none"> <li>Identify dugong movement and important habitats; 20 dugongs tagged using GPS and TDR tags in intercountry collaboration</li> <li>Quantify threats: coastal communities questionnaire surveys</li> <li>Better understand cultural relationship between dugong &amp; indigenous people through supporting a masters degree on social and cultural values and traditional use of dugongs all around the island</li> <li>Identify genetic population (intercountry collaboration)</li> <li>Obtain knowledge of biological parameters and dugong mortality through collaboration, network, coordination to monitor strandings, ongoing long-term project</li> </ul>		

	Dugong information gaps	Dugong habitat information gaps
<b>Australia</b>	<ul style="list-style-type: none"> <li>• Better understanding of spatial distribution and relative importance of human impacts on dugongs in northwestern Australia</li> <li>• Better understanding of cultural and socio-economic relationship between dugongs &amp; indigenous people</li> <li>• Better transfer of traditional knowledge about dugongs and consideration of how it could be used in management</li> <li>• Better understanding of capacity-building requirements across the range for community-based management</li> <li>• Better understanding of spatial distribution and relative importance of human impacts on dugongs</li> </ul>	<ul style="list-style-type: none"> <li>• Better understanding of spatial distribution and relative importance of human impacts on dugong habitat in northern Australia</li> <li>• Better understanding of cultural and socio-economic relationship between dugongs &amp; indigenous people</li> <li>• Better transfer of traditional knowledge about dugong habitat and how it could be used in management</li> <li>• Better understanding of the capacity-building requirements across the range for community-based management</li> <li>• Better understanding of spatial distribution and relative importance of human impacts on dugong habitat</li> </ul>
<b>Key priorities</b> <ul style="list-style-type: none"> <li>• Genetic sampling (international cooperation)</li> </ul>		
<b>SPREP</b>	<ul style="list-style-type: none"> <li>• Better understanding of dugongs in SPREP countries (numbers, habitat use)</li> <li>• Understanding of capacity to undertake research &amp; management</li> <li>• Identification of opportunities for community-based management</li> <li>• Better understanding of cultural relationship between dugongs &amp; indigenous people and how it is being used in management</li> </ul>	<ul style="list-style-type: none"> <li>• Research, mapping &amp; prioritizing seagrass habitats</li> <li>• Better understanding of cultural relationship between dugongs &amp; indigenous people and how it is being used in management</li> </ul>
<b>Key priorities</b> <ul style="list-style-type: none"> <li>• Identify important dugong populations using appropriate methodology in Papua New Guinea, Vanuatu, Solomon islands and Palau</li> <li>• Determine genetic population structure in SPREP range States by collecting and analysing specimens</li> </ul>		

## Annex V

### **Memorandum of Understanding on the Conservation and Management of Dugongs (*Dugong dugon*) and Their Habitats throughout Their Range**

The States signatory to the present memorandum of understanding,

*Aware* that the populations of dugongs are seriously threatened throughout the range of the species and that effective conservation and management requires an integrated ecosystem approach,

*Recognizing* that dugongs migrate and disperse over vast distances, which makes their survival dependent on their conservation and management over a wide area and in a wide range of marine and coastal habitats,

*Acknowledging* that human activities that may threaten dugong populations directly or indirectly include destruction or modification of habitat, coastal development, pollution, fishing activities, vessel strikes, unsustainable hunting or poaching, uncontrolled mariculture and tourism,

*Concerned* about the harm caused to dugongs by the gear used in some forms of fishing such as coastal trawling and driftnet fishing, including activities by vessels of distant-water fishing nations, while recognizing that some fishing activities are conducted responsibly,

*Acknowledging* their shared responsibility for the conservation and management of dugong populations and their habitats, highlighting the importance of seagrass beds,

*Recognizing* the desirability of involving other States whose nationals or vessels conduct activities that may affect dugongs of the region, as well as States that may be in a position to contribute resources or expertise that may promote the implementation of this memorandum of understanding,

*Noting* that dugongs have a priority for conservation action through their listing in the respective appendices of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),

*Noting* that CMS calls for international cooperative action to conserve migratory species and that CMS article IV encourages CMS contracting Parties to conclude agreements, including non-legally binding agreements, in respect of any population of migratory species,

*Recalling also* resolution 2.6 of the second meeting of the CMS Conference of the Parties, which recommended that Parties implement where appropriate CMS article IV, paragraph 4, within the spirit of the Convention through the use of instruments such as memorandums of understanding,

*Noting* that recommendation 7.5 and resolution 8.5 of the seventh and eighth meetings of the CMS Conference of the Parties called on dugong range States to cooperate among themselves, as appropriate, and to participate actively to develop and conclude a memorandum of understanding and a conservation and management plan to conserve and manage dugongs throughout the species' range,

Express their desire to work closely together to improve the conservation status of dugongs and the habitats on which they depend. To this end, the signatory States to this memorandum of understanding, in the spirit of cooperation, have agreed that they will:

1. Endeavour to cooperate closely in order to restore, or where appropriate maintain, a favourable conservation status for dugongs and the habitats on which they depend, taking into account, where appropriate, subsistence and customary use of dugongs in those States where it is permitted;
2. Consider joining those international instruments most relevant to the conservation and management of dugongs and their habitat in order to enhance the legal protection of the species in the region;
3. Make every effort to review, formulate, revise and harmonize national legislation or regulations, as necessary, relevant to the conservation and management of dugongs and their habitats;

4. Implement, subject to the availability of necessary resources, the conservation and management plan annexed to the present memorandum of understanding. The Conservation and Management Plan addresses:

- (a) Direct and indirect causes of dugong mortality;
- (b) Research and monitoring of dugong populations;
- (c) Protection, conservation and management of habitats;
- (d) Research into and monitoring of important dugong habitats;
- (e) Awareness of dugong conservation;
- (f) National, regional and international cooperation;
- (g) Implementation of the present memorandum of understanding;
- (h) Legal protection of dugongs and their habitats;
- (i) Capacity-building at all levels;

5. Establish a secretariat, based in an appropriate organization or institution to be decided by consensus of the signatory States, to assist in the administration and implementation of the present memorandum of understanding by communicating with, reporting on and facilitating activities between and among signatory States and performing such other functions as may be assigned by the signatory States, such as convening meetings;

6. Assess the implementation of the present memorandum of understanding, including the conservation and management plan, at regular meetings to be attended by representatives of each of the signatory States concerned and persons or organizations technically qualified in dugong conservation and management;

7. Facilitate the timely exchange of relevant information necessary to coordinate conservation and management measures and to cooperate with relevant organizations and recognized experts so as to facilitate the work conducted in relation to the conservation and management plan;

8. 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;

9. Provide to the secretariat a regular report on their implementation of the present memorandum of understanding, the frequency of which will be determined at the first meeting of the signatory States. The secretariat will make available to the signatory States the national reports received and will prepare a periodic review of progress made to implement the memorandum of understanding and the conservation and management plan;

10. Assess at the first meeting of signatory States, and review periodically, the need for and possibilities of obtaining financial resources, as well as the establishment of a special fund for purposes such as:

- a) Contributing toward any expenses required to operate the secretariat and activities carried out under the present memorandum of understanding;
- b) Assisting the signatory States to carry out their responsibilities under the present memorandum of understanding.

### **Basic Principles**

1. The present memorandum of understanding is an agreement under Article IV, paragraph 4, of CMS and is not legally binding.

2. The conservation and management plan is an integral part of the present memorandum of understanding.

3. The present memorandum of understanding is open for signature by the dugong range States. It will take effect with two signatures. It will become effective for each subsequent signatory on the date of signature.
4. The present memorandum of understanding will remain open for signature indefinitely, and will remain in effect indefinitely subject to the right of any signatory State to terminate its participation by providing one year's written notice to all other signatories.
5. The present memorandum of understanding, including the conservation and management plan may be amended by a consensus of the signatory States.
6. Signatory States acknowledge that they may implement more stringent measures domestically than those specified in the conservation and management plan.
7. Signatory States may establish, by mutual agreement, bilateral, subregional or regional management plans that are consistent with the present memorandum of understanding.
8. Actions under the present memorandum of understanding will be coordinated with signatory States, as well as with subregional institutions in the region.
9. The original text of the present memorandum of understanding, in the Arabic, English, French and Chinese languages, each language version being equally authentic, shall be deposited with the CMS secretariat, which will act as depositary. The working language for all matters related to the present memorandum of understanding will be English.

*Signed at Abu Dhabi on this 31<sup>st</sup> day of October 2007*



## Annex VI

### Conservation and Management Plan for the Memorandum of Understanding on the Conservation and Management of Dugongs (*Dugong dugon*) and Their Habitats throughout Their Range

#### Species aspects

<b>Objective 1 – Reduce direct and indirect causes of dugong mortality</b>				
<b>Action</b>	<b>Priority level</b>	<b>Time scale</b>	<b>Organizations</b>	<b>Target</b>
1.1 Identify, assess and evaluate the threats to dugong populations and develop appropriate measures to address them.	High (across all of the range of dugong)	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers	Threats to dugongs and their required conservation measures are identified, assessed and evaluated.
1.2 Reduce to the greatest extent practicable the incidental capture and mortality of dugongs in the course of fishing activities.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers, fishers and fishing communities	Incidental fishing mortality of dugongs is minimized.
1.3 Reduce to the greatest extent practicable the incidental mortality of dugongs arising from other anthropogenic activities.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers and other stakeholders (e.g., tourism operators, recreational fishers)	Mortality arising from other anthropogenic activities on dugong is minimized.
1.4 Reduce to the greatest extent practicable the illegal take of dugongs.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations and communities	Illegal take of dugongs is minimized.
1.5 Ensure that subsistence and customary use of dugongs is sustainable in areas where it is permitted.	High (in areas where subsistence and customary harvest is permitted)	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers and community-based organizations	Subsistence and customary use is managed sustainably.

<b>Objective 2 – Improve our understanding of dugong through research and monitoring</b>				
<b>Action</b>	<b>Priority level</b>	<b>Time scale</b>	<b>Organizations</b>	<b>Target</b>
2.1 Determine the distribution and abundance of dugong populations to provide a base for future conservation efforts and actions.	High	Immediate	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers.	An understanding, across the range of dugongs, of distribution and numbers of dugongs is gained.
2.2 Conduct research into and monitoring of dugongs.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers	Research and monitoring that promote dugong conservation are conducted.
2.3 Collect and analyse data that support the identification of sources of mortality, the mitigation of threats and improved approaches to conservation practices.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers	Data are collected and analysed to improve conservation practices and are reported in national reports.

## Habitat aspects

<b>Objective 3 – Protect, conserve and manage habitats for dugong</b>				
<b>Action</b>	<b>Priority level</b>	<b>Time scale</b>	<b>Organizations</b>	<b>Target</b>
3.1 Identify and map areas of important dugong habitat such as seagrass beds.	High	Immediate	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers	Important dugong habitat is identified and mapped.
3.2 Establish necessary measures to protect and conserve dugong habitats.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers and local communities	Measures to protect dugong habitat are developed and implemented.
3.3 Assess the risk of, and develop measures to mitigate, the degradation of dugong habitats.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers and	Dugong habitats at risk are assessed and action to mitigate risks are taken.

			local communities	
3.4 Identify and, where appropriate, rehabilitate degraded dugong habitats.	Medium	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers and local communities	Degraded important habitats for dugong are identified and where appropriate remedial steps are taken.
<b>Objective 4 – Improve our understanding of dugong habitats through research and monitoring</b>				
Action	Priority level	Time scale	Organizations	Target
4.1 Conduct research into and monitoring of important dugong habitats	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers and local communities	Research and monitoring that promote dugong conservation are conducted.

## Awareness and education

<b>Objective 5 – Raise awareness of dugong conservation</b>				
Action	Priority level	Time scale	Organizations	Target
5.1 Establish education, awareness and information programmes.	High	Ongoing	Relevant government agencies, Intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers	Programmes are implemented and the conservation needs of dugong are widely understood by all stakeholders.
5.2 Consult with local communities to encourage their active participation in conservation efforts.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations and local communities	Local communities are actively involved in dugong conservation.

<b>Objective 6 – Enhance national, regional and international cooperation</b>				
<b>Action</b>	<b>Priority level</b>	<b>Time scale</b>	<b>Organizations</b>	<b>Target</b>
6.1 Collaborate with and assist signatory and non-signatory States to combat illegal international and domestic trade and to cooperate in enforcement activities relating to dugong products.	Medium	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations	Illegal trade is controlled by cooperative action.
6.2 Develop and implement mechanisms for effective exchange of information.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers and local communities	Mechanisms for cooperation and information exchange are established and used by signatory States.
6.3 Improve coordination among government and non-government sectors and communities in the conservation of dugongs and their habitats.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions and local communities	Coordination among government and non-government and community sectors is established for the conservation of dugong and their habitats.
6.4 Develop and implement a regional database of relevant information in relation to dugong conservation and management.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers	Important information in relation to dugongs, across their range, is available to all parties to the memorandum of understanding.
<b>Objective 7 – Promote implementation of the memorandum of understanding</b>				
<b>Action</b>	<b>Priority level</b>	<b>Time scale</b>	<b>Organizations</b>	<b>Target</b>
7.1 Encourage all range States to participate in the memorandum of understanding and its conservation and management activities.	Medium	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations	The memorandum of understanding encompasses all dugong range States.
7.2 Support the Secretariat of the memorandum of understanding to ensure that the objectives of the Conservation and Management Plan are met.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations	The secretariat is established and is effective in implementation of the memorandum of understanding and Conservation and Management Plan.

7.3	Seek resources to support the implementation of the memorandum of understanding.	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, donor agencies and the private sector	Adequate resources are obtained to implement the memorandum of understanding.
7.4	Create links and develop synergies with other relevant regional conservation conventions, memorandums of understanding and agreements.	Medium	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations and other agreement Secretariats	Potential complementarities between dugongs and other marine wildlife species in conservation and management are identified and enhanced.

## Cross-cutting issues

<b>Objective 8 – Improve legal protection of dugongs and their habitats</b>					
<b>Action</b>		<b>Priority level</b>	<b>Time scale</b>	<b>Organizations</b>	<b>Target</b>
8.1	Encourage all range States to incorporate dugong and habitat conservation and protection measures into national legislation and ensure that signatory States do so.	High	Immediate	Relevant government agencies	Dugongs and their habitats are given appropriate protection in the national legislation of all range States.
8.2	Review and, where necessary, strengthen national legal protection for dugongs and their habitats	Medium	Ongoing	Relevant government agencies and other stakeholders (e.g., consultation with non-governmental organizations, local communities and academic institutions)	Laws protecting dugongs are reviewed, strengthened and, where appropriate, enforced.
<b>Objective 9 – Enhance national, regional and international cooperation on capacity-building</b>					
<b>Action</b>		<b>Priority level</b>	<b>Time scale</b>	<b>Organizations</b>	<b>Target</b>
9.1	Promote capacity-building at all levels to strengthen conservation measures	High	Ongoing	Relevant government agencies, intergovernmental and non-governmental organizations, universities and research institutions, scientists and researchers donor agencies, the private sector and philanthropic organizations	Mechanisms to support capacity-building activities within signatory States are established and used.

## **ANNEX 1. Examples of specific actions that could be implemented under the Conservation and Management Plan**

*This annex provides a list of examples that are related to Conservation and Management Plan objectives. The examples provide an indication of the types of activities that could take place at local, national and regional scales. Some of the examples are only applicable to some areas and State signatories to the Memorandum of Understanding will need to assess the relevance of particular approaches in the context of their own national circumstances.*

### **Species aspects**

#### ***Objective 1 – Reduce direct and indirect causes of dugong mortality***

##### **1.1 Identify, assess and evaluate the threats to dugong populations and develop appropriate measures to address those threats**

###### **Examples of specific actions that could be implemented:**

- a) Establish baseline data collection and monitoring programmes to gather information on the nature and magnitude of threats.*
- b) Regularly update existing data on threats to dugong populations and their habitats.*
- c) Determine those populations affected by traditional subsistence and customary use, incidental capture in fisheries and other sources of mortality.*
- d) Conduct socio-economic studies among communities that interact with dugongs and their habitats.*
- e) Implement programmes to correct adverse social and economic incentives that threaten dugong populations.*
- f) Facilitate the development of means of subsistence to minimize adverse social and economic impacts resulting from activities in c).*
- g) Enact, where not already in place, legislation and prohibit the direct use (capture or killing) of, and domestic trade in, dugongs, their parts or products, while allowing exceptions for traditional subsistence or customary use.*
- h) Establish management programmes to enforce such legislation.*
- i) Negotiate, where appropriate, management agreements in consultation with other concerned States.*
- j) Identify resources and sources of funding for the above programmes.*

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

###### **Examples of specific actions that could be implemented:**

- a) Develop and use gear, devices and techniques to minimize incidental capture of dugongs in artisanal and commercial fisheries, such as the use of alternative gear and spatial closures or limiting or controlling the use of gear known to be harmful to dugongs throughout the range of dugongs.*

- b) Develop procedures and extension programmes to promote implementation of these measures.*
- c) Exchange information and, upon request, provide technical assistance to other signatory and cooperating States to promote these activities.*
- d) Liaise and coordinate with fishing industries, fisheries management organizations and community groups to develop and implement these activities.*
- e) Develop and implement net retention and recycling schemes to minimize the disposal of fishing gear at sea and on beaches.*
- f) Provide and ensure the use of onshore facilities for the disposal of ship-borne waste.*

### **1.3 Reduce to the greatest extent practicable the incidental mortality of dugongs arising from other anthropogenic activities.**

#### **Examples of specific actions that could be implemented:**

- a) Assess the level, location and impact of anthropogenic impacts on dugongs at ecologically relevant scales.*
- b) Reduce as much as possible all other human impacts on dugongs and their habitats in areas that sustain subsistence and customary use.*
- c) Establish appropriate management programmes to ensure that anthropogenic impacts are addressed, taking account of the temporal and spatial variability of dugong reproductive rates and other impacts on the species in a precautionary manner.*

### **1.4 Reduce to the greatest extent practicable the illegal take of dugongs.**

#### **Examples of specific actions that could be implemented:**

- a) Assess the level, location and impact of the illegal take of dugongs.*
- b) Establish appropriate management programmes to ensure that the illegal take of dugongs is addressed.*

### **1.5 Ensure that subsistence and customary use of dugongs is sustainable in areas where it is permitted.**

#### **Examples of specific actions that could be implemented:**

- a) Assess the level, location and impact of subsistence and customary use of dugongs at ecologically relevant scales.*
- b) Reduce as much as possible all other human impacts on dugongs and their habitats in areas that sustain subsistence and customary 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 and customary use are 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 programmes do not have adverse unintended consequences (e.g., increased use of other threatened species such as marine turtles).*
- f) *Consider the development of alternative means of subsistence in areas where the subsistence and customary use of dugongs is permitted to alleviate adverse social and cultural impacts.*
- g) *Negotiate, where appropriate, management agreements on the sustainable level of subsistence and customary use where it is permitted, 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 and customary use of dugongs where it is permitted.*

***Objective 2 – Improve our understanding of dugongs through research and monitoring.***

**2.1 Determine the distribution and abundance of dugong populations to provide a base for future conservation efforts and actions.**

**Examples of specific actions that could be implemented:**

- a) *Conduct baseline studies or gather secondary information on dugong populations using cost-effective techniques where possible, including community-based monitoring.*

**2.2 Conduct research into and monitoring of dugongs.**

**Examples of specific actions that could be implemented:**

- a) *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 scientific techniques where appropriate.*
- b) *Identify migratory routes through the use of techniques such as genetic studies and/or satellite tracking where appropriate.*
- c) *Carry out studies on dugong population dynamics and survival rates.*
- d) *Promote the use of traditional ecological knowledge in research and management studies, where possible.*
- e) *Involve local communities in research and monitoring programmes with training as required.*
- f) *Review periodically and evaluate research and monitoring activities.*
- g) *Identify and include priority research and monitoring needs in regional and subregional action plans.*
- h) *Conduct collaborative studies and monitoring of genetic identity, conservation status, migrations, and other biological and ecological aspects of dugongs.*



## **2.3 Collect and analyse data that support the identification of sources of mortality, the mitigation of threats and improved approaches to conservation practices.**

### **Examples of specific actions that could be implemented:**

- a) Identify and prioritize populations for conservation actions.*
- b) Identify population trends using local information where appropriate.*
- c) Use research results to improve management, mitigate threats and assess the efficacy of conservation activities (e.g., habitat loss).*
- d) Involve local communities in research and monitoring programmes with training as required.*
- e) Develop and harmonize data collection and analysis protocols.*
- f) Where appropriate, develop and harmonize a reporting format that can be used for informing decision-making (local, national and regional).*

### **Habitat aspects**

#### ***Objectives 3 – Protect, conserve and manage habitats for dugong.***

### **3.1 Identify and map areas of important dugong habitat such as seagrass beds.**

#### **Examples of specific actions that could be implemented:**

- a) Identify and map areas of critical habitat such as seagrass beds and migratory corridors, using rapid assessment techniques where appropriate.*

### **3.2 Establish necessary measures to protect and conserve dugong habitats.**

#### **Examples of specific actions that could be implemented:**

- a) 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.*
- b) Consider protecting dugong habitats as part of ecosystem-based management (e.g., networks of marine protected areas).*

- c) Develop incentives for adequate protection of areas of critical habitat outside protected areas.*
- d) Assess the environmental impact of marine and coastal development and other human activities on dugong populations and their habitats.*
- e) Monitor and promote the protection of water quality from land-based and maritime pollution, including marine debris, which may adversely affect dugongs and their habitats.*
- f) Strengthen the application of existing bans on the use of poisonous chemicals and explosives in the exploitation of marine resources.*

### **3.3 Assess the risk of, and develop measures to mitigate, the degradation of dugong habitats.**

#### **Examples of specific actions that could be implemented:**

- a) Identify and enhance recovery of degraded seagrass habitats used by dugongs.*
- b) Identify and enhance recovery of degraded mangrove and coral reef habitats used by dugong.*
- c) Undertake measures to restore degraded habitats.*

### **3.4 Identify and, where appropriate, rehabilitate degraded dugong habitats.**

#### **Examples of specific actions that could be implemented:**

- a) Identify and undertake measures, where appropriate, to enhance recovery of degraded seagrass habitats used by dugongs.*

### ***Objective 4 – Improve our understanding of dugong habitats through research and monitoring.***

#### **4.1 Conduct research into and monitoring of important dugong habitats.**

#### **Examples of specific actions that could be implemented:**

- a) Conduct baseline studies or gather secondary information on dugong habitats using cost-effective techniques where possible, including community-based monitoring.*
- b) Initiate and/or continue long-term monitoring of priority dugong habitats.*
- c) Promote the use of traditional ecological knowledge in research and management studies, where possible.*
- d) Involve local communities in research and monitoring programmes with training as required.*
- e) Review periodically and evaluate research and monitoring activities.*
- f) Identify priority research and monitoring needs and include in regional and subregional action plans.*

## Awareness and education

### *Objective 5 – Raise awareness of dugong conservation.*

#### **5.1 Establish education, awareness and information programmes.**

##### **Examples of specific actions that could be implemented:**

- a) *Collect, develop, coordinate and disseminate education materials (e.g., dedicated regional website).*
- b) *Identify key persona/champions to help disseminate messages about the need to conserve dugongs and their habitats.*
- c) *Establish community learning/information centres.*
- d) *Develop and implement mass media information programmes.*
- e) *Develop and conduct focused education and awareness programmes for target groups (e.g., policy makers, teachers, schools, fishing communities, subsistence and customary users and the media).*
- f) *Encourage the incorporation of dugong biology and conservation issues into school curricula.*
- g) *Organize special events related to dugong conservation and biology (e.g., Dugong Day, Year of the Dugong, symposiums and community education workshops).*
- h) *Promote public participation in conservation activities.*
- i) *Involve stakeholders, including key policy makers, subsistence and customary users, and local communities in particular, in planning and implementation of conservation and management measures.*
- j) *Encourage the participation of government institutions, intergovernmental organizations, non-governmental organizations, the private sector and the general community (e.g., students, volunteers, fishing communities, local communities) in research, conservation and management efforts.*
- k) *Implement, where appropriate, incentive schemes to encourage public participation (e.g., T-shirts, public acknowledgement and certificates).*

#### **5.2 Consult with local communities to encourage their active participation in conservation efforts.**

##### **Examples of specific actions that could be implemented:**

- a) *Identify, develop and facilitate alternative programmes (including means of subsistence and incentives) that are not detrimental to dugongs and their habitats, in consultation with local communities and other stakeholders.*

## Cooperative aspects

### *Objective 6 –Enhance national, regional and international cooperation.*

#### **6.1 Collaborate with and assist signatory and non-signatory States to combat illegal international and domestic trade and to cooperate in enforcement activities relating to dugong products.**

##### **Examples of specific actions that could be implemented:**

- a) 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).*
- b) Review, at the national level, compliance with obligations under CITES relating to illegal international trade in dugong parts or dugong products.*
- c) Facilitate better compliance with CITES through training of relevant authorities in cooperation with other signatory States, the CITES secretariat and other relevant organizations.*
- d) Identify routes of international illegal trade through monitoring and seek cooperation to take action to prevent, deter and, where possible, eliminate illegal trade.*
- e) Exchange and discuss information on compliance and illegal trade issues at regular intervals, such as through annual reporting to the memorandum of understanding secretariat and at meetings of the signatory States.*
- f) 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.*

#### **6.2 Develop and implement mechanisms for effective exchange of information.**

##### **Examples of specific actions that could be implemented:**

- a) Identify and strengthen existing mechanisms for cooperation at the regional and subregional levels.*
- b) Develop a website and/or newsletter to facilitate networking and exchange of information.*
- c) Develop a web-based information resource for dugong conservation (including data on populations, migration, ongoing projects) based on IUCN website.*
- d) Regularly update a directory of experts and organizations concerned with dugong conservation.*

- e) *Develop networks for cooperative management of shared populations, within and across subregions, and, where appropriate, formalize cooperative management arrangements.*
- f) *Cooperate where possible in the establishment of transboundary marine protected areas using ecological rather than political boundaries.*
- g) *Develop a streamlined format for reporting and exchanging information (through the memorandum of understanding secretariat and among signatory States) on the state of dugong conservation at the national level.*
- h) *Encourage memorandum of understanding signatory States that have not already done so to become Parties to the Convention on Migratory Species (CMS).*
- i) *Encourage signatory States to become contracting parties to global fisheries agreements such as the United Nations Fish Stocks Agreement (1995) and the FAO Compliance Agreement (1993) and implement the FAO Code of Conduct for Responsible Fisheries (1995).*
- 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 exclusive economic zones (EEZ) and territorial waters.*
- k) *Determine the most appropriate methods for information dissemination, e.g., Internet and community forums.*
- l) *Exchange at regular intervals scientific and technical information and expertise among nations, scientific institutions and non-governmental and international organizations in order to develop and implement best-practice approaches to conservation of dugongs and their habitats.*
- m) *Disseminate traditional knowledge on dugongs, their habitats and traditional practices for conservation and management in a culturally appropriate manner.*
- n) *Update data on dugong populations of regional interest on a regular basis (e.g., country status reports).*

### **6.3 Improve coordination among government and non-government sectors and communities in the conservation of dugongs and their habitats.**

#### **Examples of specific actions that could be implemented:**

- a) *Review the roles and responsibilities of government agencies related to the conservation and management of dugongs and their habitats.*
- b) *Designate a lead agency responsible for coordinating national dugong conservation and management policy.*
- c) *Identify non-governmental organizations with an interest in dugong conservation and management.*
- d) *Encourage cooperation within and among government and non-government sectors, including through the development and/or strengthening of national networks.*

#### **6.4 Develop and implement a regional database of relevant information in relation to dugong conservation and management.**

##### **Examples of specific actions that could be implemented:**

- a) Collate and manage information relevant to dugong conservation and management in a regional database that is easily accessible to all interested parties.*

#### ***Objective 7 – Promote implementation of the memorandum of understanding.***

#### **7.1 Encourage all range States to participate in the memorandum of understanding and its conservation and management activities.**

##### **Examples of specific actions that could be implemented:**

- a) Encourage non-signatory States to sign the memorandum of understanding.*
- b) Arrange regional and subregional workshops involving non-signatory States to raise awareness of the memorandum of understanding.*
- c) Consider at the first meeting of the signatory States the development of a timetable for regular review of implementation of the memorandum of understanding.*

#### **7.2 Support the Secretariat of the memorandum of understanding to ensure the objectives of the Conservation and Management Plan are met.**

##### **Examples of specific actions that could be implemented:**

- a) Secure reliable sources of funding to support the memorandum of understanding secretariat.*

#### **7.3 7.3 Seek resources to support the implementation of the memorandum of understanding.**

##### **Examples of specific actions that could be implemented:**

- a) Prioritize conservation and management activities for funding.*

- b) Explore funding options with Governments and other donors such as the Asian Development Bank, the World Bank, the United Nations Development Programme, the European Union, the United Nations Environment Programme and the Global Environment Facility.*
- c) Solicit funding and other contributions from industries that have impacts on dugongs and their habitats (e.g., fisheries, tourism, oil industry, real estate).*
- d) Explore international funding support and other incentives for signatory States that effectively manage populations.*

#### **7.4 Create links and develop synergies with other relevant regional conservation conventions, memorandums of understanding and agreements.**

##### **Examples of specific actions that could be implemented:**

- a) Identify, facilitate and explore links to other international, regional and subregional forums, conventions, agreements and memorandums of understanding.*

#### **Cross-cutting issues**

##### ***Objective 8 – Improve legal protection of dugongs and their habitats.***

#### **8.1 Encourage all range States to incorporate dugong and habitat conservation and protection measures into national legislation and ensure that signatory States do so.**

##### **Examples of specific actions that could be implemented:**

- a) Encourage memorandum of understanding signatory States that have not already done so to become Parties to the Convention on Migratory Species (CMS).*
- b) Encourage the establishment of legislation to protect dugongs and their habitats while recognizing existing traditional management systems.*
- c) Review domestic policies and laws to address gaps in or impediments to dugong conservation.*
- d) Ensure appropriate sanctions are in place for harming dugongs or destroying habitat; train law enforcement authorities and raise public awareness to boost surveillance and encourage reporting of illegal activities.*

## 8.2 Review and, where necessary, strengthen legal protection for dugongs and their habitats.

### Examples of specific actions that could be implemented:

- a) *Cooperate in law enforcement to ensure compatible application of laws across and between jurisdictions (including through bilateral/multilateral agreements and intelligence sharing).*

## *Objective 9 – Enhance national, regional and international cooperation on capacity-building.*

## 9.1 Promote capacity-building at all levels to strengthen conservation measures.

### Examples of specific actions that could be implemented:

- a) *Identify needs for capacity-building in terms of human resources, knowledge and facilities.*
- b) *Provide training (e.g., through workshops) in conservation and management techniques for dugongs and their habitats to relevant agencies, individuals and local communities.*
- c) *Coordinate training programmes and workshops.*
- d) *Develop partnerships with universities, research institutions, non-governmental organizations, training bodies and other relevant organizations to support capacity-building initiatives.*
- e) *Identify, assess, develop and implement training programmes for local communities, non-governmental organizations, community-based organizations, media, enforcement officers, policy makers, law makers and decision makers.*
- f) *Enhance capacity at all levels to develop and undertake joint research programmes on dugongs and their habitats.*
- g) *Organize forums (local, national and regional as appropriate) with the involvement of all relevant stakeholders to enable knowledge sharing and capacity-building.*
- h) *Provide training on development, implementation and monitoring of community rehabilitation programmes.*
- i) *Support local communities and relevant national organizations with necessary basic equipment and facilities to enable protection, conservation and management of dugongs and their habitats.*