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**MEMORANDUM OF UNDERSTANDING  
ON THE CONSERVATION AND  
MANAGEMENT OF MARINE TURTLES  
AND THEIR HABITATS OF THE INDIAN  
OCEAN AND SOUTH-EAST ASIA**

CMS/IOSEA/MOS8/Inf.7.1.k

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8<sup>TH</sup> MEETING OF THE SIGNATORY STATES

Da Nang, Viet Nam, 21-25 October 2019

Agenda Item 9.1

**PAKISTAN – NATIONAL REPORT 2019**

*(Prepared by Pakistan)*

# IOSEA MARINE TURTLES MEMORANDUM OF UNDERSTANDING - NATIONAL REPORTING 2019

## IOSEA Marine Turtles MoU - National Reports

The purpose of completing the national report is to provide information on your country's implementation of the IOSEA Marine Turtle MoU including, as far as possible, contributions of cooperating non-governmental partners. Implementation will be assessed in terms of the six objectives of the Conservation and Management Plan (CMP). The online questionnaire is divided into these six main objectives, and asks specific questions in relation to the activities that need to be carried out to fulfil those objectives.

Please answer all questions as fully and as accurately as possible. It may seem time-consuming, but once you have completed the first report, the next time will be much easier because you can simply revise your existing report online. Comprehensive responses to the questions posed in Section 1.4 should satisfy many of the reporting requirements of the 2004 FAO Guidelines to Reduce Sea Turtle Mortality in Fishing Operations, thereby avoiding duplication of effort.

Description text is provided below some of the questions to explain what information needs to be provided. Text boxes can be expanded to accommodate longer answers or to explain and provide additional information, beyond what is requested. Details of future plans are especially encouraged. Wherever possible, please try to indicate the source of information used to answer a particular question, if a published reference is available. Remember that you are sharing information with other countries about your progress, so that it may be of benefit to them. At the same time, you may find it useful to look at other countries' reports to get ideas for marine turtle conservation that might be adapted to your context.

When working on the online questionnaire, save your information by clicking on the "Save all" button inside each section. An auto-save feature also saves any changed responses every 30 seconds, and whenever you move between sections. Feel free to attach additional material (published reports, maps etc) to this questionnaire.

Throughout the questionnaire, alongside each question you will find one or more 3-letter abbreviations within square brackets. These are used to indicate the purpose for which the information provided will be used in the subsequent analysis of all of the national reports, as shown in the following table.

To some extent, the order in which these different types of information are listed below is a reflection of their importance - ranging from critical indicators of performance to factual details that are merely informative.

### **Abbreviation**

#### **Type**

#### **Treatment / Purpose**

IND

Indicator

The information provided serves, in and of itself, as a key indicator of successful implementation or of pre-requisites for same (eg. of core actions undertaken, resource availability, capacity etc.)

PRI

Priorities

The collective data will be synthesized to give an indication of what has been done already (helping to avoid duplication of effort); what is generally not being done (gaps that need to be addressed); and what interventions or specific assistance may be required.

TSH

Trouble-shooting

Particular implementation problems and issues (possibly of special interest to a small group of countries) are identified/highlighted with a view to stimulating remedial action in the short-term.

BPR

Best practice

Well-documented examples of best practices / success stories will be compiled and presented as approaches that other Signatory States might consider pursuing (ie adopting or adapting to suit their own circumstances).

SAP

Self-Appraisal

Self-assessment of effectiveness and completeness of actions undertaken - intended to stimulate reflection within a given Signatory State on what more could or should be done in relation to a particular activity.

INF

Information

The information will be collected and compiled, with little or no modification, mainly for purpose of sharing of information that could be of interest or value to other readers and/or other analyses.

## **GENERAL INFORMATION**

Signatory State:

Which agency or institution has been primarily responsible for the preparation of this report?

> Pakistan

Ministry of Climate Change, Government of Pakistan.

List any other agencies, institutions, or NGOs that have provided input:

> Sindh Wildlife Department, Balochistan Forest and Wildlife Department, WWF-Pakistan, IUCN Pakistan

Memorandum in effect in Signatory State since (dd/mm/yyyy):

> MoU signed: 07/12/2004

Effective Date: 01/03/2005

This report was last modified (dd/mm/yyyy):

> 04/09/2014

Designated Focal Point (and full contact details):

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# OBJECTIVE I: REDUCE DIRECT AND INDIRECT CAUSES OF MARINE TURTLE MORTALITY

## 1.1 Introduction to marine turtle populations and habitats, challenges and conservation efforts

Please introduce and summarise, in an abstract of less than a page, the marine turtle populations and their habitats in your country. Comment on their status and highlight the main conservation challenges and achievements to date. It is not necessary to list here by name the individual nesting beaches, feeding areas and developmental habitats that are important for marine turtles in your country, as this information can be generated from the 'Site-Threat' data sheets to be completed in Annex 1. **[INF]**

> Five species of marine turtles are reported in Pakistan. Nesting species include; Green turtle (the most common species in Pakistan) and Olive Ridley turtle (less common, no nesting reported since 2003). Non-nesting species include; Leatherback turtle (few reports), Hawksbill turtle (few reports), Loggerhead turtle (few reports).

Important turtles beaches in Sindh Province include; Hawke's Bay, Sandspit and Hub River Estuary, Cape Monze area and in Balochistan Province include; Omara Turtle Beaches, Jiwani Turtle Beaches (Dharan, Rodini and Taak), Hingol National Park Beaches, Astola Island's Turtle Beach and Coral Reef, Gwadar Turtle Beach, Ras Malan Beach, Coral Reef of Ganjabad.

Main threats to the species are; Incidental entanglement in fishing gears, habitat degradation, pollution, disturbance on nesting beaches, eggs and juvenile depredation by feral dogs and other predators, illegal trade (local, research required).

## 1.2 Best practice approaches to minimizing threats

Describe any protocol or approaches practiced in your country, which you consider exemplary, for minimising threats to marine turtle populations and their habitats, which may be suitable for adaptation and adoption elsewhere. **[BRP]**

- > • Legal protection to species
- Designation of protected areas in habitats
- Reducing mortality by minimizing threats
- Awareness raising
- Engagement of local communities in conservation

## 1.3 Programmes to correct adverse economic incentives

1.3.1 Describe any socio-economic studies or activities that have been conducted among communities that interact with marine turtles and their habitats. **[BPR, INF]**

Elaborate on the nature of the socio-economic study/ activity undertaken, the results obtained (successful or otherwise) and the desirability/ suitability for replication.

Include references to published reports, where available.

> No studies on adverse economic effects have been undertaken, however studies on different socio-economic aspects have been undertaken under different project implemented by WWF-Pakistan and IUCN Pakistan.

1.3.3 Has your country taken any measures to try to correct these adverse economic incentives? **[BPR]**

Not applicable (No adverse economic incentives exist)

## 1.4 Reduction of incidental capture and mortality

**1.4.1 Indicate, and describe in more detail, the main fisheries occurring in the waters of your country, as well as any high seas fisheries in which flag vessels of your country participate and interact with marine turtles.**

Tick 'YES' to indicate that a fishery is present and interacting marine turtles or 'NO' to indicate that a fishery is not present or is not interacting with marine turtles. **[INF]**

If a fishery is present, use the text box to indicate, for example, the approximate geographic distribution of the fishery, how long it has been operating, how many vessels are involved, etc.

a) Shrimp trawls:

Yes (Please provide details)

> Shrimp trawling is main fishery in Pakistan (about 2500 trawlers). The operation is mainly carried out in coastal water. Turtles entanglement is low and due to short operation duration mortality is very low and the entangled specimens are immediately released. Moreover use of TED in thses gears has also reduced the bycatch.

b) Set gill nets:

Yes (Please provide details)

> Gillnet fleet in Pakistan is about 1200 and various types of gillnets are used to catch various fish and invertebrate species. Turtle entanglement is higher, however due to involvement of fisher communities the entangled specimens are safely released.

c) Anchored Fish Aggregating Devices (FADs):

No (Please provide details)

d) Purse seine (with or without FADs):

Yes (Please provide details)

> About 2300 sein fishing boats operate in Pakistan. Turtle entanglement is low and entangled specimens are released immediately.

e) Longline (shallow or deepset):

Yes (Please provide details)

> Turtle entanglement in longline is rare, however the entangled specimens are released after removing the hooks.

f) Driftnet:

No (Please provide details)

**1.4.2 Please indicate the relative level of fishing effort and perceived impact of each of the above fisheries on marine turtles (e.g. in terms of by-catch) [TSH]. Select from one of the following descriptions: RELATIVELY HIGH, MODERATE, RELATIVELY LOW, NONE (i.e. not present), UNKNOWN (i.e. unable to answer for whatever reason).**

a) Shrimp trawls

*Please select only one per line*

	UNKNOW N	NON E	RELATIVELY LOW	MODERAT E	RELATIVELY HIGH
Fishing efforts:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perceived impact:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

b) Set gill nets

*Please select only one per line*

	UNKNOW N	NON E	RELATIVELY LOW	MODERAT E	RELATIVELY HIGH
Fishing effort:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Perceived impact:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

c) Anchored Fish Aggregating Devices (FADs)

*Please select only one per line*

	UNKNOW N	NON E	RELATIVELY LOW	MODERAT E	RELATIVELY HIGH
Fishing effort:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perceived impact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

d) Purse seine (with or without FADs)

*Please select only one per line*

	UNKNOW N	NON E	RELATIVELY LOW	MODERAT E	RELATIVELY HIGH
Fishing efforts:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Perceived impact:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

e) Longline (shallow or deepset)

Please select only one per line

	UNKNOW N	NON E	RELATIVELY LOW	MODERAT E	RELATIVELY HIGH
Fishing effort:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perceived impact:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

f) Driftnet

Please select only one per line

	UNKNOW N	NON E	RELATIVELY LOW	MODERAT E	RELATIVELY HIGH
Fishing effort:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perceived impact:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**1.4.4 Which of the following methods are used by your country to minimise incidental capture/mortality of marine turtles in fishing activities? [IND]**

a) **Appropriate handling** of incidentally caught turtles (e.g. resuscitation or release by fishers using equipment such as de-hooking, line cutting tools and scoop nets)

YES (Details/future plans)

> WWF Pakistan in collaboration with government departments have been working with local fisher communities on safe release of entangled turtles.

b) **Devices that allow the escape of marine turtles** (e.g. turtle excluder devices (TEDs) or other measures that are comparable in effectiveness)

YES (Details/future plans)

> Use of TED is mandatory under the Federal and Provincial Fisheries laws.

c) **Measures to avoid encirclement** of marine turtles in purse seine

UNDER INVESTIGATION or NOT APPLICABLE (Details/future plans)

d) **Appropriate combinations** of hook design, type of bait, depth, gear specifications and fishing practices

YES (Details/future plans)

e) **Monitoring and recovery of fish aggregating devices** (FADs)

UNDER INVESTIGATION or NOT APPLICABLE

f) **Net retention and recycling schemes**

UNDER INVESTIGATION or NOT APPLICABLE (Details/future plans)

g) **Spatial and temporal control of fishing** (e.g. seasonal closures of fishing activities)

YES (Details/future plans)

> In general a seasonal closure of fishing in June and July is observed.

h) **Effort management control**

UNDER INVESTIGATION or NOT APPLICABLE (Details/future plans)

**1.4.5 Which of the following programmes has your country developed - in consultation with the fishing industry and fisheries management organisations - to promote implementation of measures to minimise incidental capture and mortality of turtles in national waters and in the high seas? [IND]**

Please use the corresponding text boxes to explain/clarify each of your responses, including 'NOT APPLICABLE' responses, and indicate future plans in this regard. [IND]

Please describe the collaboration, when/where the programmes were introduced, any difficulties encountered, and general results obtained (i.e. successful and unsuccessful). Provide references to publications, where available.

a) **Onboard observer programmes**

X

YES (Details/future plans)

> WWF-Pakistan in collaboration with government department has been working with fisher communities to monitor by catch through onboard observers.

#### b) **Vessel monitoring systems**

NO (Details/future plans)

#### c) **Inspections** (i.e. at sea, in port, at landing sites)

YES (Details/future plans)

#### d) **Training programmes / workshops** to educate fishers

YES (Details/future plans)

> WWF Pakistan in collaboration with government departments have been working with local fisher communities for capacity building on:

- Use of TED
- Flipper tagging
- Safe released of entangled turtles
- Beach patrolling for turtle nests protection and safe release of hatchlings to sea.

#### e) **Informative videos, brochures, printed guidelines** etc.

YES (Details/future plans)

> Information material has been developed in local language for distribution among the fisher communities.

- Other OR none of the above

Other (list and explain):

> Use of LED lights in gears to reduce by catch.

1.4.6 Are the mitigation measures described in 1.4.4 and 1.4.5 periodically reviewed and evaluated for their efficiency? **[SAP]**

YES (Please give details)

> Evaluated to some extent.

1.4.7 In your country, what types of data collection, research and development have been undertaken to support the reduction of marine turtle incidental catch (while taking into consideration the impact of various mitigation measures on other species)? **[SAP]**

> There are some studies in which fishing vessels were monitored for data collection on by catch.

1.4.8 Has your country exchanged information and provided technical assistance (formally or informally) to other Signatory States to promote the activities described in 1.4.4, 1.4.5 and 1.4.7 above? **[SAP]**

UNSURE

1.4.9 What legislative and practical measures has your country taken in support of UN General Assembly Resolution 46/215 concerning the moratorium on the use of large-scale driftnets? **[SAP]**

> Not applicable.

### **1.5 Addressing harvest of, and trade in, marine turtles; and protecting of habitat**

1.5.1 Does your country have legislation to prohibit direct harvest and domestic trade in marine turtles, their eggs, parts and products; and to protect important turtle habitats? **[IND]**

Please provide details (title/date) of the relevant legislation, as well as any exemptions (e.g. for traditional harvest) under that legislation.

YES

> Marine turtles are "Protected" under the following laws:

- Balochistan Wildlife (Protection, Preservation, Conservation and Management) Act, 2014
- Balochistan Sea Fisheries Ordinance, 1971 and Balochistan Sea Fisheries Rules, 1971
- Sindh Wildlife Protection Ordinance, 1972
- Sindh Fisheries Ordinance, 1980

It is illegal to hunt, kill or captured a protected species.

- Export and domestic consumption of turtles is prohibited under the Pakistan Fish Inspection and Quality Control Act, 1997

- Export of reptiles is prohibited by the Export Policy Order issued under Customs Act, 1969
- The Pakistan Trade Control of Wild Fauna and Flora Act, 2012 (CITES Law regulates imports/export of CITES-listed species). However a ban is being observed on export of all reptiles.

### 1.5.2 Which, among the following list, are economic uses and cultural values of marine turtles in your country? [INF]

Please rate the relative prevalence / importance of each consumptive or non-consumptive use. Use the text boxes below each rating to explain or clarify your responses.

#### a1) Meat consumption

NO

#### b1) Egg consumption

YES

b2) Egg consumption: relative prevalence/importance

UNKNOWN

#### c1) Shell products

NO

#### d1) Fat consumption

NO

#### e1) Traditional medicine

YES

e2) Traditional medicine: relative prevalence/importance

UNKNOWN

#### f1) Eco-tourism programmes

YES

f2) Eco-tourism programmes: relative prevalence/importance

LOW

#### g1) Cultural / traditional significance

NO

1.5.3 Please indicate the relative level and impact of traditional harvest on marine turtles and their eggs. [IND, TSH]

	RELATIVELY HIGH	UNKNOW N	NON E	RELATIVELY LOW	MODERAT E
Level of harvest:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Impact of harvest:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1.5.4 Have any domestic management programmes been established to limit the levels of intentional harvest? [SAP]

Use the text box to give details.

NO

> Not applicable

1.5.5 Describe any management agreements negotiating between your country and other States in relation to sustainable levels of traditional harvest, to ensure that such harvest does not undermine conservation efforts. [BPR]

> No

## 1.6 Minimizing mortality through nesting beach programmes

### 1.6.1 Measures and effectiveness

First, tick one of the YES/NO-boxes to indicate whether or not your country has any of the following

measures in place to minimise the mortality of eggs, hatchlings and nesting females. If yes, then **estimate the relative effectiveness** of these measures. **[IND, SAP]**

Use the text boxes below each rating to elaborate on your responses, including any lessons learned that might be of value to other Signatory States, and indicate your plans for the coming year. Please explain any "Not Applicable (N/A)" responses.

**a1) Monitoring/protection programmes**

YES

a2) Monitoring/protection programmes: relative effectiveness

GOOD

**b1) Education/awareness programmes**

YES

b2) Education/awareness programmes: Relative effectiveness

GOOD

**c1) Egg relocation/hatcheries**

YES

c2) Egg relocation/hatcheries: Relative effectiveness

GOOD

**d1) Predator control**

YES

d2) Predator control: Relative effectiveness

GOOD

**e1) Vehicle / access restrictions**

YES

e2) Vehicle/access restriction: relative effectiveness

GOOD

**f1) Removal of debris / clean-up**

YES

f2) Removal of debris /clean-up: relative effectiveness

GOOD

**g1) Re-vegetation of frontal dunes**

NO

**h1) Building location/design regulations**

N/A

**i1) Light pollution reduction**

YES

i2) Light pollution reduction: Relative effectiveness

GOOD

1.6.2 Has your country undertaken any evaluation of its nest and beach management programmes? **[SAP]**

Use the text box to elaborate on your response, if necessary.

NO

## **OBJECTIVE II: PROTECT, CONSERVE AND REHABILITATE MARINE TURTLE HABITATS**

### **2.1 Measures to protect and conserve marine turtle habitats**

2.1.1 What is being done to protect critical habitats outside of established protected areas? (NB: It is assumed that legislation relating to established protected areas will have been described in Section 1.5.1)

**[BPR, SAP]**

> Following are some activities at critical habitats:

- Safeguarding key turtle nesting beaches through watch and ward
- Beach patrolling and transferring turtle eggs to safe enclosures for hatching. The hatchlings are then safely released in the sea
- Protection against predators (feral dogs, cats etc) and other negative human impacts
- Beach cleaning activities to remove debris and other non-biodegradable items from beaches

2.1.2 Are assessments routinely made of the environmental impact of marine and coastal development on marine turtles and their habitats? **[IND, SAP]**

Use the text box to elaborate on your response.

YES

> Environmental Impact Assessment is mandatory under relevant Federal and Provincial legislation.

2.1.3 Is marine water quality (including marine debris) monitoring near turtle habitats? If yes, describe the nature of this monitoring and any remedial measures that may have been taken. **[SAP]**

YES

> It is done in EIAs of development projects only.

2.1.4 Are measures in place to prohibit the use of poisonous chemicals and explosives? **[SAP]**

Use the text box to elaborate on your response.

YES

> It is prohibited under the relevant laws.

### **2.2 Rehabilitation of degraded marine turtle habitats**

2.2.1 Are efforts being made to recover degraded coral reefs? If yes, give details (location, duration, effectiveness, lessons learned, future plans etc.). **[IND, SAP]**

Provide sufficient details of the measures taken, especially those measures shown to have been effective in recovering degraded coral reefs. Please indicate future plans in this regard.

NO (Details/future plans)

> Coral reef in Pakistan have been studied in past few years, however the information in this regard is limited.

2.2.2 Are efforts being made to recover degraded mangrove habitats that are important for turtles? If yes, give details (location, duration, effectiveness, lessons learned future plans etc.). **[IND, SAP]**

YES (Details/future plans)

> Pakistan is a member of IUCN's Mangroves for the Future (MFF)

2.2.3 Are efforts being made to recover degraded sea grass habitats? If yes, give details (location, duration, effectiveness, lessons learned future plans etc.). **[IND, SAP]**

NOT APPLICABLE (No degraded sea grass habitats)

# OBJECTIVE III: IMPROVE UNDERSTANDING OF MARINE TURTLE ECOLOGY AND POPULATIONS THROUGH RESEARCH, MONITORING AND INFORMATION EXCHANGE

## 3.1 Studies on marine turtles and their habitats

3.1.1 Give a list of available literature that includes baseline information from studies carried out in your country on marine turtle populations and their habitats. **[INF]**

- > 1. Minton, S. A. 1966. A contribution to the herpetology of West Pakistan. Bulletin of the American Museum of Natural History 134(2):31-184.
2. GHALIB, S.A. AND ZAIDI, S.H., 1976 Observation on the survey and breeding of Marine Turtles of Karachi coast. Agric. Pak., 27: 87 - 96.
3. GROOMBRIDGE, B., 1987a. Makran Coast: a newly explored habitat for marine turtles. WWF-Pakistan Newsl., 6: 1-5.
4. GROOMBRIDGE, B., 1987b. A preliminary marine turtle survey on the Makran coast, Baluchistan, Pakistan with notes on birds and mammals. IUCN Conservation Monitoring Centre, Cambridge (Unpublished report) 25 pp.
5. GROOMBRIDGE, B., KABRAJI, A.M. AND RAO, A.L., 1988. Marine Turtle in Baluchistan (Pakistan). Marine Turtle Newsl., 42: 1-3.
6. FIRDOUS, F. 1988 Conservation of turtles at Sandspit and Hawkesbay, Karachi. In: Proc. Int. Conf. on Marine Sciences of the Arabian Sea (eds. M.F. Thompson and N.M. Tirmizi), American Institute of Biological Sciences, Washington D.C: pp. 217-222.
7. GROOMBRIDGE, B., 1989. Marine turtles in Balochistan: Report on Aerial Survey, 9-11 September 1988 with notes on wetland sites and a proposed marine turtle Conservation project. World Conservation Monitoring Centre, Cambridge. Unpublished report. 22 pp.
8. Firdous, F., 1998. Marine turtle conservation in Pakistan, Proceedings of the Northern Indian Ocean Sea. Turtle Workshop and Strategic Planning Session Bhubaneswar, Orissa, India, 13-18 January 1997.
9. Asrar, F. F., 1999. Decline of Marine Turtle Nesting Populations in Pakistan. Marine Turtle Newsletter 83:13-14.
10. FIRDOUS, F., 2001 Sea Turtle Conservation and Education in Karachi, Pakistan. ASEAN. In: Sea turtles of the Indo-Pacific (eds. N.J. Pitcher and G. Ismail) Rev. Biodiv. Environ. Conserv. (ARBEC) pp. 1-10.
11. ARSHAD, M., ALI, Z., MAHMOOD, H. AND MUZAFFAR, M., 2002. Makran Coastal Wetlands Complex - A preliminary biological assessment, WWF, Pakistan. pp. 60 (Unpublished report)
12. FIRDOUS, F., 2003 Some aspects of bioecological studies of green turtle (*Chelonia mydas*) and Olive Ridley Turtle (*Lepidochelys olivacea*) from Karachi Coast. Ph.D. thesis, Karachi University.
13. Khan, M. S., 2004. Annotated checklist of amphibians and reptiles of Pakistan. Asiatic Herpetological Research 10: 191-201.
14. WWF - Pakistan 2004 Rapid Rural Appraisal - Tehsil Jiwani (Unpublished report)
15. Hussain, B. 2010. Studies on population, status, distribution, and environmental impacts on reptiles in the vicinity of Karachi coast. PhD thesis. University of Karachi. Pakistan.
16. Khan, A., 2010. Records of loggerhead turtles on the Makran Coast, Pakistan. Indian Ocean Turtle Newsletter No. 12: 13.
17. IUCN, 2010. Nesting of Loggerhead Turtles in Pakistan confirmed by renowned expert Nicolas Pilcher. [http://www.iucn.org/news\\_homepage/news\\_by\\_date/?4742/Nesting-of-Loggerhead-Turtles-in-Pakistan-confirmed-by-renowned-expert-Nicolas-Pilcher](http://www.iucn.org/news_homepage/news_by_date/?4742/Nesting-of-Loggerhead-Turtles-in-Pakistan-confirmed-by-renowned-expert-Nicolas-Pilcher)
18. Khan, M. Z., Ghalib, S. A., and Hussain, B., 2010. Status and New Nesting Sites of Sea Turtles in Pakistan. Chelonian Conservation and Biology, 9: 119-123
19. WAQAS, U., HASNAIN, S. A., AHMAD, E., ABBASI, M. and PANDRANI, A. 2011. Conservation of Green Turtle (*Chelonia mydas*) at Daran Beach, Jiwani, Balochistan. Pakistan J. Zool., vol. 43(1), pp. 85-90.
20. WWF-Pakistan, 2013. First evidence of a leatherback turtle along Pakistan's coastline ([http://wwf.panda.org/wwf\\_news/?208408/First-evidence-of-a-leatherback-turtle-along-Pakistans-coastline](http://wwf.panda.org/wwf_news/?208408/First-evidence-of-a-leatherback-turtle-along-Pakistans-coastline))
21. WWF-Pakistan, 2014. WWF-Pakistan records authentic occurrence of hawksbill turtle for the first time in Pakistan. ([http://www.wwfpak.org/newsroom/160114\\_hawksbill.php#sthash.TZBCrLkq.dpuf](http://www.wwfpak.org/newsroom/160114_hawksbill.php#sthash.TZBCrLkq.dpuf))
22. Khanum, F., Kazmi, S. J. H. and Shaikh, S., 2014. A Spatio-Temporal Assessment of Green Turtle Habitat at Hawkes Bay, Karachi through Geo-Informatics Techniques. Journal of Basic & Applied Sciences, 2014, 10, 377-383.
- 11) Hussain, B. 2010. Studies on population, status, distribution, and environmental impacts on reptiles in the vicinity of Karachi coast. PhD thesis. University of Karachi. Pakistan.
- 12) WAQAS, U., HASNAIN, S. A., AHMAD, E., ABBASI, M. and PANDRANI, A. 2011. Conservation of Green Turtle (*Chelonia mydas*) at Daran Beach, Jiwani, Balochistan. Pakistan J. Zool., vol. 43(1), pp. 85-90.

3.1.2 Have **long-term** monitoring programmes (i.e. of at least 10 years duration) been initiated or planned for priority marine turtle populations frequenting the territory of your country? **[IND, BPR]**

Please give details of the nature, duration and continuity of these programmes.

YES

3.1.3 Has the genetic identity of marine turtle populations in your country been characterised? **[INF, PRI]**

Please give details (e.g. which species, which populations?).

YES

> To some extent for Green Turtles.

**3.1.4 Which of the following methods have been or are being used to try to identify migration routes of turtles? Use the text boxes to provide additional details [INF, PRI]**

**a) Tagging**

YES (Details/future plans)

> Flipper tagging

**b) Satellite tracking**

YES (Details/future plans)

3.1.5 Have studies been carried out on marine turtle population dynamics and survival rates (e.g. including studies into the survival rates of incidentally caught and released turtles)? **[INF, PRI]**

YES

> To some extent.

3.1.6 Has research been conducted on the frequency and pathology of diseases in marine turtles? **[INF, PRI]**

UNSURE

3.1.7 Is the use of traditional ecological knowledge in research studies being promoted? **[BPR, PRI]**

UNSURE

**3.2 Collaborative research and monitoring**

- 3.2.1 List any **regional** or **sub-regional action plans** in which your country is already participating, which may serve the purpose of identifying priority research and monitoring needs. **[INF]**

Use the text box to elaborate on your response.

> Pakistan is a member of Northern Indian Ocean Marine Turtles Task Force (NIO-MTTF) and working on programme of work for NIO-MTTF for 2017-2020.

**3.2.2 On which of the following themes have collaborative studies and monitoring been conducted? Use the text boxes to describe the nature of this international collaboration or to clarify your response. Answer 'NO' if the studies/monitoring undertaken do not involve international collaboration. [INF, PRI]**

a) Genetic identity

YES (Details/future plans)

b) Conservation status

YES (Details/future plans)

c) Migrations

YES (Details/future plans)

d) Other biological and ecological aspects

YES (Details/future plans)

> Impacts of Climate Change on breeding.

**3.3 Data analysis and applied research**

3.3.1 List, in order of priority, the marine turtle populations in your country in need of conservation actions, and indicate their population trends. **[PRI]**

> • Impact of different fishing gears on marine turtles through data collection

- Entanglement and mortality in ghost nets
- Piloting of pilot bycatch reduction technologies in gillnets (LED lights)

3.3.2 Are research and monitoring activities, such as those described above in Section 3.1, periodically reviewed and evaluated for their efficacy? **[SAP]**

UNSURE

3.3.3 Describe how research results are being applied to improve management practices and mitigation of threats (in relation to the priority populations identified in 3.3.1, among others). **[SAP]**

› The research results are used to modify fishing gears and practices.

### **3.4 Information exchange**

3.4.1 Has your country undertaken any initiatives (nationally or through collaboration with other Range States) to standardise methods and levels of data collection? **[BPR, INF]**

YES [If yes, please give details of the agreed protocol(s)]

› Under Northern Indian Ocean Marine Turtles Task Force.

3.4.2 To what extent does your country exchange scientific and technical information and expertise with other Range States? **[SAP, IND]**

OCCASIONALLY

3.4.3 If your country shares scientific and technical information and expertise with other Range States, what mechanisms have commonly been used for this purpose? Comment on any positive benefits/outcomes achieved through these interactions. **[INF]**

› Under regional forum, Northern Indian Ocean Marine Turtles Task Force.

3.4.4 Does your country compile and make available to other countries data on marine turtle populations of a regional interest?

Please give details **[INF]**

NO

# **OBJECTIVE IV: INCREASE PUBLIC AWARENESS OF THE THREATS TO MARINE TURTLES AND THEIR HABITATS, AND ENHANCE PUBLIC PARTICIPATION IN CONSERVATION ACTIVITIES**

## **4.1 Public education and information programmes**

4.1.1 Describe the educational materials, including mass media information programmes that your country has collected, developed and/or disseminated. **[INF, PRI]**

Details/future plans:

- > • Development of awareness material on identification of marine turtle species and safe release of marine turtles caught in fishing gears
- Information centers established by WWF Pakistan at important turtles habitats (Sandspit Karachi and Jiwani) are playing important role in raising awareness
- Marine Turtle Laboratory of Sindh Wildlife Department at Hawke's Bay, Karachi carryout awareness raising activities; turtle watching tours and display of publicity material etc.
- Celebration of World Sea Turtle Day (16 June)
- Organizing awareness raising workshops

4.1.2 Which of the following groups have been the targets of these focused education and awareness programmes described in above in Section 4.1.1? **[PRI, INF]**

- Policy makers
- Fishing industry
- Local/Fishing communities
- Indigenous groups
- Tourists
- Media
- Teachers
- Students
- Military, Navy, Police
- Scientists

4.1.3 Have any community learning / information centres been established in your country? **[BPR, SAP]**

Please give details and indicate future plans

YES

> Information centers have been established by WWF Pakistan at important turtles habitats (Sandspit Karachi and Jiwani) and a Marine Turtle Laboratory of Sindh Wildlife Department has been established at Hawke's Bay, Karachi.

4.2 Alternative livelihoods opportunities Describe initiatives already undertaken or planned to identify and facilitate alternative livelihoods (including income-generating activities) for local communities. **[IND, BPR]**

> To provide alternative livelihoods opportunities different activities have been undertaken with the local communities under some projects run by NGOs in collaboration with government departments which include; ecotourism, aquaculture, education and improvement of fishing practices .

## **4.3 Stakeholder participation**

4.3.1 Describe initiatives already undertaken or planned by your country to involve **local communities**, in particular, in the planning and implementation of marine turtle conservation programmes. Please include details of any incentives that have been used to encourage public participation, and indicate their efficacy. **[BPR, IND]**

> WWF Pakistan and IUCN in collaboration with government departments have been working with local fisher communities on:

- Use of TED
- Flipper tagging
- Data collection on bycatch
- Safe released of entangled turtles
- Beach patrolling for turtle nests protection and safe release of hatchlings to sea.

4.3.2 Describe initiatives already undertaken or planned to involve and encourage the cooperation of **Government institutions, NGOs** and the **private sector** in marine turtle conservation programmes. **[IND, BPR]**

> WWF-Pakistan in collaboration with Engro Foundation Pakistan

# OBJECTIVE V: ENHANCE NATIONAL, REGIONAL AND INTERNATIONAL COOPERATION

## 5.1 Collaboration with, and assistance to, signatory and non-signatory States

5.1.1 Has your country undertaken a national review of its compliance with Convention on International Trade in Endangered Species (CITES) obligations in relation to marine turtles? **[SAP]**

NOT APPLICABLE

5.1.2 Does your country have, or participate/cooperate in, CITES training programmes for relevant authorities? **[SAP]**

YES (If yes, please provide details of these training programmes)

> Pakistan has been participating in training programmes organized under CITES especially to curb illegal wildlife trade.

5.1.3 Does your country have in place mechanisms to identify **international** illegal trade routes (for marine turtle products etc.)? Please use the text box to elaborate on how your country is cooperating with other States to prevent/deter/eliminate illegal trade. **[SAP]**

Please give details of particularly successful interventions and prosecutions; and/or mention any difficulties experienced that impede progress in this area. Please provide references to any published reports (e.g. already prepared for CITES purposes) that give a more ample explanation.

NOT APPLICABLE

5.1.4 Which international compliance and trade issues related to marine turtles has your country raised for discussion (e.g. through the IOSEA MoU Secretariat, at meetings of Signatory States etc.)? **[INF]**

> Nil

5.1.5 Describe measures in place to prevent, deter and eliminate domestic illegal trade in marine turtle products, particularly with a view to enforcing the legislation identified in Section 1.5.1. **[INF]**

> The marine turtle species are protected under relevant laws, which prohibit their domestic consumption and international trade.

## 5.2 Prioritisation, development and implementation of national action plans

5.2.1 Has your country already developed a national **action plan** or a set of **key management measures** that could eventually serve as a basis for a more specific action plan at a national level? **[IND]**

Please explain.

NO

5.2.2 From your country's perspective, which **conservation and management activities**, and/or which particular **sites or locations**, ought to be among the highest priorities for action?

(List up to 10 activities from the IOSEA Conservation and Management Plan). **[PRI]**

> Priority sites /locations in Sindh province: Hawks bay, Sand Pit and Hub River Estuary.

Priority sites /locations in Balochistan province: Omara Turtle Beaches, Jiwani Turtle Beaches, Hingol National Park Beaches and Astola Island, Turtle beach in Gwadar and Ras Malan Beach.

The conservation and management activities include:

- i. Collect, develop and disseminate education materials
- ii. Establish community learning / information centres
- iii. Develop and implement accurate mass media information programmes
- iv. Develop and conduct focused education and awareness programmes for target groups (e.g. policy makers, teachers, schools, fishing communities, media) e)
- v. Organise special events related to marine turtle conservation and biology (e.g. Turtle Day, Year of the Turtle, symposia, Track-a-turtle)
- vi. 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 and conservation efforts
- vii. Facilitate better compliance with CITES through training of relevant authorities in cooperation with other signatory States, the CITES Secretariat and other relevant organisations
- viii. Identify and strengthen existing mechanisms for cooperation at the sub-regional level
- ix. Develop networks for cooperative management of shared populations, within or across sub-regions, and, where appropriate, formalise cooperative management arrangements
- x. Provide training (e.g. through workshops) in marine turtle conservation and management techniques to

relevant agencies, individuals and local communities

5.2.3 Please indicate, from your country's standpoint, the extent to which the following **local** management issues require **international** cooperation in order to achieve progress. **[PRI]**

In other words, how important is **international** cooperation for addressing these issues?

Please select only one per line

	NOT AT ALL	LIMITED	IMPORTANT	ESSENTIAL
Illegal fishing in territorial waters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Incidental capture by foreign fleets	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Enforcement/patrolling of territorial waters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hunting/harvest by neighboring countries	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poaching, illegal trade in turtle products	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Development of gear technology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil spills, pollution, marine debris	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Training / capacity-building	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Alternative livelihood development	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identification of turtle populations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Identification of migration routes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Tagging / satellite tracking	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Habitat studies	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Genetics studies	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Use the text box to list and rank any other local management issues for which international cooperation is needed to achieve progress.

> There is a need to build capacity through training of field staff and fisher communities to monitor the population and safe release of entangle specimens. Moreover collaboration in research areas is important to understand populations, their migration pattern, habitats and genetics.

### 5.3 Cooperation and Information exchange

5.3.1 Identify existing frameworks/organisations that are, or could be, useful mechanisms for cooperating in marine turtle conservation at the sub-regional level. Please comment on the strengths of these instruments, their capacity to take on a broader coordinating role, and any efforts your country has made to enhance their role in turtle conservation. **[INF, BPR]**

> Regional and sub-regional forum like Northern Indian Ocean Marine Turtle Task Force may be helpful in cooperation and information exchange.

5.3.2 Has your country developed, or is it participating in, any networks for cooperative management of shared turtle populations? **[BPR, INF]**

YES (if yes, give details)

> Northern Indian Ocean Marine Turtle Task Force

5.3.3 What steps has your country taken to encourage Regional Fishery Bodies (RFBs) to adopt marine turtle conservation measures within Exclusive Economic Zones (EEZs) and on the high seas? Please

describe the interventions made in this regard, referring to specific RFBs. **[SAP]**

> Pakistan is a member of Indian Ocean Tuna Commission (IOTC) and have been participating in different activities under it.

## **5.4 Capacity-building**

5.4.1 Describe your country's needs, in terms of human resources, knowledge and facilities, in order to build capacity to strengthen marine turtle conservation measures. **[PRI]**

> There is a need to build capacity in research and monitoring of marine turtle species and their interaction with fisheries.

5.4.2 Describe any training provided in marine turtle conservation and management techniques (e.g. workshops held, training manuals produced etc.), and indicate your plans for the coming year. **[PRI, INF]**

> Nil

5.4.3 Specifically in relation to **capacity-building**, describe any partnerships developed or planned with universities, research institutions, training bodies and other relevant organisations. **[BPR]**

> There is no formal partnership, however government departments, universities, research institutions and NGOs are involved in such activities.

## **5.5 Enforcement of conservation legislation**

5.5.1 National policies and laws concerning the conservation of marine turtles and their habitats will have been described in Section 1.5.1. Please indicate their effectiveness, in terms of their practical application and enforcement. **[SAP, TSH]**

> The marine turtle species are protected and their local consumption and international trade is prohibited. The enforcement is ensured through watch and ward and any violation is dealt under the relevant laws. The legal protection is very helpful to control exploitation of the species.

5.5.2 Has your country conducted a review of policies and laws to address any gaps, inconsistencies or impediments in relation to marine turtle conservation? If not, indicate any obstacles encountered in this regard and when this review is expected to be done. **[SAP]**

Please give details.

NO

5.5.3 From the standpoint of law enforcement, has your country experienced any difficulties achieving cooperation to ensure compatible application of laws across and between jurisdictions? **[TSH]**

Please give details.

YES

> Enforcement

## **OBJECTIVE VI: PROMOTE IMPLEMENTATION OF THE MOU, INCLUDING THE CMP**

### **6.1 IOSEA Marine Turtle MoU membership and activities**

6.1.1 What has your country already done, or will it do, to encourage other States to sign the IOSEA MoU? **[INF]**

> Nil

6.1.2 Is your country **currently** favourable, in principle, to amending the MoU to make it a legally binding instrument? **[INF]**

NO

6.1.3 Would your country be favourable, over a **longer time horizon**, to amending the MoU to make it a legally-binding instrument? **[INF]**

NO VIEW (Use the text box to elaborate on your response, if necessary)

### **6.2 Secretariat and Advisory Committee**

What efforts has your country made, or can it make, to secure funding to support the core operations of the IOSEA MoU (Secretariat and Advisory Committee, and related activities)? **[IND]**

> An amount of US\$ 1261/- was contributed by Pakistan 2017-18 as voluntary contribution to Technical Cooperation Trust Fund. The same amount has been contributed in 2018-19 as well.

### **6.3 Resources to support implementation of the MoU**

6.3.1 What funding has your country mobilised for **domestic** implementation of marine turtle conservation activities related to the IOSEA Marine Turtle MoU? Where possible, indicate the specific monetary values attached to these activities/programmes, as well as future plans. **[IND]**

> An umbrella project Green Pakistan Programme has been launched for revival of wildlife resources of the country. Balochistan component of the project includes activities for conservation of turtle nesting beaches.

6.3.2 Has your country tried to solicit funds from, or seek partnerships with, other Governments, major donor organizations, industry, private sector, foundations or NGOs for marine turtle conservation activities? **[IND]**

NO

6.3.3 Describe any initiatives made to explore the use of economic instruments for the conservation of marine turtles and their habitats. **[BPR]**

> Nil

### **6.4 Coordination among government agencies**

6.4.1 Has your country designated a lead agency responsible for coordinating national marine turtle conservation and management policy? If not, when is this information expected to be communicated to the IOSEA MoU Secretariat? **[IND]**

Please elaborate, as necessary.

YES

> The detail

6.4.3 Has your country ever conducted a review of agency roles and responsibilities? If so, when, and what was the general outcome? If not, is such a review planned and when? **[SAP]**

This question seeks to ascertain whether Signatories have made a serious examination of which agencies have a role to play in marine turtle conservation, either directly or indirectly, and which therefore should be apprised of the IOSEA MoU and its provisions.

If no internal review of interagency roles and responsibilities has been or will be undertaken, please elaborate if only to indicate that the necessary arrangements are already clear and not in need of further review.

NO (Use the text box to elaborate)

## **OTHER REMARKS**

Please provide any comments/suggestions to improve the present reporting format.

> Nil

Feel free to include additional information not covered above:

> Nil

