UN environment CMS

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.e
28 August 2019
Original: English

8TH MEETING OF THE SIGNATORY STATES
Da Nang, Viet Nam, 21-25 October 2019
Agenda Item 9.1

KENYA – NATIONAL REPORT 2019

(Prepared by Kenya)

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?
› Kenya Wildlife Service

List any other agencies, institutions, or NGOs that have provided input:
› WWF- Kenya
Kenya Fisheries Service (KeFS)-Mombasa
Kenya Marine and Fisheries Research Institute

Memorandum in effect in Signatory State since (dd/mm/yyyy):
› 1 December 2002

This report was last modified (dd/mm/yyyy):
› 22nd August 2019

Designated Focal Point (and full contact details):
› Ms. Jacquiline Benard
Research Scientist-Coast Conservation Area
Kenya Wildlife Service
Mombasa Kenya
Tel: +254 713 720764 Email: jbernard@kws.go.ke

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 sea turtles, the green turtle (Chelonia mydas), hawksbill (Eretmochelys imbricata), olive ridley (Lepidochelys olivacea), loggerhead (Caretta caretta) and leatherback (Dermochelys coriacea) occur in Kenya. The green turtle, hawksbill and the olive ridley are the most common and known to nest in Kenya (Frazier 1975; Wamukoya et al. 1997; Nzuki 2005a), with the green turtle constituting approximately 97% of reported nests, followed by the hawksbills (2.5%) and olive ridleys (0.5%) (Olendo et al., 2017; Okemwa et al. 2004). The loggerhead (Caretta caretta) and leatherback (Dermochelys coriacea) are rare, although past records indicate that they used to occur within Kenyan waters (Frazier 1975; Nzuki 2005a).

While green turtles nest throughout the Kenyan coast, hawksbill turtles are reported to nest predominantly in Kiunga, Malindi, Watamu and Funzi beaches and olive ridleys in Kiunga, Malindi, Watamu and Mombasa regions (Nzuki et al. 2005a).

There are general uncertainties on the status of local sea turtle populations in Kenya; however, anecdotal evidence based on fishery perceptions indicates declining turtles on nesting beaches and at sea (Wamukota and Okemwa 2009). The islands of the Lamu archipelago and the Malindi-Watamu-Kipini area provide the most important sea turtle nesting areas. Notable in-water concentrations of turtles have been observed e.g. within Mpunguti/Wasini, Takaungu, Watamu, Ungwana Bay and Lamu (Morley et al., 2011).

Recent sea turtle nests mapping exercise along the Kenyan coast in June 2019 corroborates previous studies (Okemwa et al. 2004) that fisheries (both artisanal and commercial fisheries) pose the most threat to sea turtles in the country. In the mid-1990s, it was estimated that between 500 and 1000 turtles were caught annually as by catch in trawlers (Wamukoya et al. 1995), while up to 10,000 turtles are caught annually in artisanal gill nets (Wamukota 2005); 54 to 75% of these turtles are slaughtered or traded by the fishermen (Nzuki 2004). The C. mydas is the most commonly bycatch species in all fisheries, representing 57% of reported by catch especially in net fisheries, followed by E. imbricate-19% and C. caretta-17% (Kiszka, 2012). Another significant threat include poaching of turtle eggs and the nesting females mainly for meat and oil, which is exacerbated by poor law enforcement, poverty and trade of turtle products on the black market (Nzuki 2004; Okemwa et al. 2004; Nzuki 2005b). Illegal trade in turtle products is rampant in Kenya. Meat (preferably from green turtles) and oil are the most important products traded. Eggs, carapaces and stuffed turtles (particularly hawksbill turtles) are also items of trade. Coastal developments particularly along the dense populated towns of Diani, Likoni and Mombasa have caused direct and indirect destruction of turtle habitats (Okemwa et al. 2004; Wamukota and Okemwa 2008). Non compliance to the official setback line regulations (60 m above the high water mark) is a major threat (SOC-2nd Edition, Okemwa et al. 2005a). Pollution mostly by plastic wastes has led to deterioration of turtle nesting beaches. This is predominant in south coast and is attributed to lack of public awareness on turtle conservation and proper waste management. Natural predators include ghost crabs, animals (mongooses, monitor lizards, hyenas, genets, porcupines, hedgehogs) and birds of prey (Okemwa et al. 2005a; Weru 2005).

Kenya through the Wildlife Conservation and Management Act, 2013 protects sea turtles as endangered species. This introduced tough penalties for offenders whereby killing, possession or trading in the species carries a life sentence or fine of $200,000. The marine turtles are also protected through Fisheries Act, 2012 Cap 378. A National Sea Turtle Conservation and Management Strategy developed to guide in conservation efforts towards saving the species expired in 2015 and is currently under review. Additionally, an Integrated Coastal Zone Management (ICZM) policy and a Shoreline Management strategy are in place and these provide guidelines for developments along the coastline. Furthermore, collaborative community based beach monitoring and conservation efforts contribute significantly towards assessing sea turtle populations especially in Lamu archipelago which hosts the most important nesting beaches for sea turtles in the country.

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]**

› Marine Turtles in Kenya are protected under the Wildlife Conservation and Management Act, 2013 and the Fisheries Act, Cap 378. The two government agencies work together for improvement of law enforcement through joint patrols and collaboration with local communities in information gathering and conservation. Under the Fisheries Act, Turtle Exclude Devices (TEDs) are mandatory in the country's prawn trawl fishery. Recent tests on the efficacy of the current TEDs recommended adopting new designs based on our vessels and area. Regular training of inspectors on TEDs inspections is undertaken by the KeFS.

A National Sea Turtles Conservation and Management Strategy was developed to guide in turtle conservation initiatives in the country and implementation of activities which had not been accomplished during the strategy's implementation period (2011- 2015) is ongoing. These include development of a standardize sea

turtle nesting beach monitoring protocol, where a web based monitoring system is under development. In addition, through funding from WWF-Kenya, we are currently mapping sea turtle habitats and updating information on key threats to nesting grounds throughout the Kenyan coast. Local community and stakeholder participation in sea turtle conservation is promoted through establishment of community-based Turtle Conservation Groups (TCGs). The TCGs have established links with other stakeholders including private and public sectors, NGOs and the civil society, and they collect and provide nesting, mortality, and sea turtle sightings to KWS which is the custodian of the national marine turtle database. Additionally, the Kenya Wildlife Service is also working with other stakeholders close to the Marine Protected Areas (MPAs) especially in promoting data and information gathering and threat mitigation.
ICZM Policy, 2014
Development and the ongoing implementation of the ICZM policy, 2014 is a significant efforts towards minimizing the challenges of destruction/obstruction of sea turtles nesting and foraging grounds brought about by unplanned coastal developments and associated tourism activities. The policy among other objectives aims at promoting integrated planning and coordination of coastal developments, as well as conserving the coast and marine resources and environment for sustainable development. KWS in collaboration with the National Environment Management Authority (NEMA) have continuously been advocating for well planned coastal development on the basis of the country's Environmental Management and Coordination Act (EMCA), 1999 which requires an Environmental Impact Assessment (EIA) be conducted for any development with a perceived impact on the environment.
Coral Reef and Seagrass Ecosystems Conservation Strategy
Seagrass beds provide habitat for sea turtles, and in recognizing that human induced threats such as land and maritime based pollution is exerting significant pressures on the ecosystem, KWS in collaboration with stakeholders developed a national coral reef and sea grass ecosystems conservation and management strategy to guide in conservation efforts towards controlling the challenges. The strategy which among other objectives seeks to secure, restore and maintain healthy and resilient coral reef and sea grass ecosystems is under implementation. In 2015 through a World Bank project, KWS in collaboration with Kenya Marine and Fisheries Research Institute (KMFRI) carried out coral and sea grass restoration in one of the degraded Locally Managed Marine Areas (LMMAs) in south coast and monitoring is ongoing.
Education and Awareness
Education and awareness programs are being carried out in many parts of coastal Kenya with a target audience of local people and schools. The programs are conducted by a number of stakeholders including WWF-Kenya, Watamu Turtle Watch, Coastal Oceans Research and Development in the Indian Ocean (CORDIO), Watamu Marine Association (WMA), Wildlife Conservation Society-Kenya Marine programme and the Wildlife Clubs of Kenya. The Kenya Wildlife Service and Kenya Fisheries Service-Mombasa have also programs that constantly engage fishermen and tour operators on the importance of sea turtles 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.
› • Ongoing (From June 2019) survey on identification and evaluation of threats to sea turtles and their habitats among other objectives: The survey which is funded by WWF-Kenya is expected to cover entire coastline and so far Kwale, Tanariver and Lamu counties have been surveyed. Preliminary results indicate that sea turtle deaths/injuries associated with fishing net is most significant threat and this information will be used to make the best management decisions regarding bycatch reduction.
• A study on assessing the effectiveness of Light Emitting Diode (LEDs) lights in reduction of sea turtle bycatch and mortality in artisanal gillnet fishery in north coast of Kenya (Watamu, Ngomeni and Bwana Said areas) was conducted between December 2016 and December 2017. Sea turtles catch was reduced by 65.1% in illuminated nets while fish catch was not influenced by the lights (Kakai, 2019).
• Bycatch assessment and mitigation in the Western Indian Ocean (BYCAM): The study which was conducted in Western Indian Ocean (WIO) countries (Kenya, Tanzania, Madagascar, Mozambique and South Africa) in 2015 was aimed at assessing bycatch in coastal gillnet, longline and prawn trawl fishery, strengthening initiatives to reduce bycatch and at improving uptake of TEDs and other mitigation methods in the region (Fennessy et al, 2015).
• Stock assessment of small and medium pelagic with a focus on the small scale purse seine fishery. The study conducted between 2013 and 2016 determined the species composition of catches and seasonal variations and determined stock indicators for selected species (Okemwa et al, 2017)
• Assessment of dugong population status and distribution across the Western Indian Ocean (Kenya, Comoros, Mayotte, Seychelles, Tanzania, and Mozambique). The study which was carried out between 2015 and 2017 was also aimed at determining dugong population structure and threats as well as formulating and implementing specific dugong management and conservation protocols.
• Bycatch assessment of vulnerable megafauna in coastal artisanal fisheries in the South West Indian Ocean (Kenya,Tanzania, Mozambique and Mauritius). The survey which was conducted between 2011 and 2012 was

aimed at assessing bycatch of marine mammal, sea turtles and elasmobranchs with use of mono and multifilament drift gillnets, bottom-set gillnets, beach seines, purse seines, longlines, lining under FADs and handlines (Kiszka, 2012).
• Socio-economic studies have been conducted within the Kiunga Marine National Reserve by WWF (Church and Palin 2003).
• Munga C. N., Mohamed M. O. S., Obura D. O., Vanreusel A. and Dahdouh-Guebas F. 2010. Resource Users' Perceptions on Continued Existence of the Mombasa Marine Park and Reserve, Kenya. Western Indian Ocean J. Mar. Sci. Vol. 9, No. 2, pp. 71 – 80.
• A study on national survey on trade in sea turtle products and consumption patterns as well as socio-economic survey has been completed (Nzuki 2004; Nzuki 2005b).
• Under Review Mohamed, M. O. S., G., Kairo, J.G., Dahdouh-Guebas, F., Koedam, N. How Sustainable is The Utilization of Mangrove Products in Peri-urban Mombasa, Kenya.
• Victor Mwakha (2011). 'Estimating the value of Goods and Services in a Marine Protected Area: The Case of Watamu Marine National Park and Reserve, Kenya' ECOMAMA Program, Vrije Universiteit Brussel.
• Socio-economic activities include income-generating crafts projects, net-release programmes, and ecotourism ventures, as well as cash incentive schemes for nest reporting and protection and the release of turtles caught incidentally in fishermen's nets.

1.3.2 Which of these adverse economic incentives are underlying threats to marine turtles in your country? **[TSH]**
☑ High prices earned from turtle products relative to other commodities
☑ Ease of access to the turtle ressource (e.g. by virtue of proximity or ease of land/water access)
☑ Others (Please describe)

› Poverty, cultural believes and weak implementation of the wildlife crime law: Poverty is most severe in coast region as compared to other parts of the country (KNBS, 2013), and most turtles are poached basically for food and local trade in order to provide for basic requirements in the homes. It is reported that 1 litre of turtle oil can earn a fisherman up to USD 50 (Okemwa et al. 2004). In Kenya marine turtles products are traditionally believed to have medicinal properties or evil spirits repellents. These beliefs have remained a key driver for consumption and trade of their products among coastal communities.
Despite the current high penalty against illegal harvesting/poaching of sea turtles, the country still experiences low prosecution rates and even lower rates of successful convictions. Sometimes suspects are charged far too lower than the fine specified in the legislation due to political interference. Additionally, the courts procedure requires undisputed proof that the meat or oil confiscated is actually from sea turtle. This requires the use of genetic tools that are currently not available locally leading to some cases being dismissed on this basis.

1.3.3 Has your country taken any measures to try to correct these adverse economic incentives? **[BPR]**
☑ Yes (If yes, please describe these measures in detail)

› Kenya Wildlife Service is working in liaison with marine conservation stakeholders including NGOs, public and private sectors to address underlying drivers of marine turtle threats. Marine Protected Area managers conduct regular conservation awareness meetings with local communities to help counter the cultural beliefs regarding marine turtle products. The organization supports establishment of locally managed marine areas which are managed by local community, and this acts as an incentive for non-consumptive use of turtles as it provides an alternative income generating opportunity though tourism.
In Kenya, the Wildlife Conservation and Management Act, 2013 provides the legal framework to prosecute those committing wildlife crimes. In 2016, with support from WWF-Kenya, 27 rangers from Kiunga Marine National Reserve, Malindi Marine Park, Watamu Marine Park, Kisite-Mpunguti Marine Park and Mombasa Marine Park were trained on judicial processes and prosecution procedures and techniques, crime scene management, exhibit handling and packaging, statement recording, and drafting of charge sheets. This equipped the rangers with necessary skills to successfully prosecute and convict wildlife crime offenders.
Some hotels along the coastline have put in place mechanisms to provide in situ protection of turtle nests. They also run ecotourism programmes where compensation is paid to fishermen for releasing turtles caught incidentally, and for nesting reports. Certain NGOs in the country such Watamu Turtle Watch have a cash incentive scheme where local people are encouraged to report on injured turtles, which are then treated in their facility and released back to the sea.

1.4 Reduction of incidental capture and mortality

1.4.1 Indicate, and describe in more detail, the main fisheries occuring 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)

› Kenya's trawl fishery is restricted to Formosa and Malindi-Ungwana Bays with a designated 5-nM no-trawl zone offshore (Munga et al, 2012). The bay is shallow with a wide continental shelf and supports a significant part of the artisanal fishery as well as the commercial trawl fishery. It is also an important marine turtle foraging area.
Between 2011 and 2017, only 3 trawlers have been licensed to operate within the area (KMFRI, 2018), and currently between 59 and 167 turtles are caught in trawlers annually (Fennessy et al, 2015). This is subsequent to TED implementation in 2001 as in the 1990s, 500 -1 000 turtles per annum were caught when trawl effort was high (Wamukoya and Mbendo 1995, reported in Wamukoya and Salm 1997). Prawn trawlers not only pose a direct threat to turtles, but also indirectly through habitat destruction (Wamukota and Okemwa 2008).
Although the trawlers are required by law to have TEDs, trawler operators consider TEDs to be ineffective (Okemwa et al. 2004; FAO 2007). Preliminary studies conducted in Kenya demonstrated the efficacy of TEDs (IUCN East Africa Programme 1998; Mueni and Mwangi 2001), demonstrating that bycatch is reduced, while not affecting the prawn catch. Yet, there are serious shortcomings that need to be addressed to ensure their effectiveness and to ensure compliance by trawler operators (FAO 2007). Observers lack the proper training to install TEDs when they have been damaged (FAO 2007). There have been reports of decreased prawn catches where TEDs have been installed (Okemwa et al. 2004). The TEDs in Kenya are also less durable (made of steel, not aluminium) and there are incidences where turtles were trapped in trawls even when a TED was installed, probably because the escape opening was too small (FAO 2007).

b) Set gill nets:
☑ Yes (Please provide details)

› The gill net fishery has been reported in Kwale, Kilifi, Malindi and Lamu areas. The fishery involves bottom-set gillnets, multifilament and monofilament drift gillnets. The nets used vary in sizes. Bottom-set gillnets have a mean length of 267m and mesh size ranging from 1.5 to 4.5cm while multifilament drift gillnets have a length of about 383m and mesh sizes varying from 1.5 to 8cm. The length of monofilament drift gillnets range from 8m to 1.3km and mesh sizes from 2 to 6cm. Bottom-set gillnets and multifilament drift gillnets contribute to the highest bycatch rates. According to the 2012 bycatch assessment survey, most sea turtles captured are released back to the sea alive while only smaller percentages are locally traded or discarded dead (Kiszka, 2012).

c) Anchored Fish Aggregating Devices (FADs):
☑ No (Please provide details)

d) Purse seine (with or without FADs):
☑ Yes (Please provide details)

› Currently there are no licensed purse seiners in the country. However, the use of purse seine nets has previously been reported to impact on turtles and their habitats (Wamukota and Okemwa, 2008). Details on the fishery and subsequent impacts to marine turtles are not available.

e) Longline (shallow or deepset):
☑ Yes (Please provide details)

› Longline fishing is practiced in Kwale, Kilifi, Malindi and Lamu areas though in low levels (Kiszka, 2012). It is a legal fishing method and the lines are normally characterized by single main line of monofilament nylon measuring approximately 200m, with vertical short nylon snoods and baited hooks ranging from 2 to 300 in number. The maximum snood length is about 20 m and they are attached at more than 5 m and less than 100 m interval depending on depth of water (Samoily’s et al, 2011). The longline is set near the surface in offshore waters for about 4 hours and is known to capture sea turtle (E. imbricata, C. caretta and C. mydas) as by-catch. In Kiunga, Lamu county, the fishery is noted to take place in areas adjacent to the turtle feeding grounds, and has been responsible for at least some turtle mortalities in the area (Church and Palin 2003; Weru 2005). As many as 7 commercial vessels have been reported to operate in a single night in the Kiunga Marine National Reserve (Church and Palin 2003).

f) Driftnet:
☑ No (Please provide details)

› The drift net fishing practiced in the country is small scale where monofilament and multifilament types of gill nets are used. The nets which measure about 90 m long and 8 m in width are deployed from boats or canoes, usually beyond the reef in offshore waters. The net is set at the surface and left to drift freely with the current or kept connected to the boat and they drift together. After several hours, the net is pulled with its catch to the boat (Samoily’s et al, 2011). The 3 layered net is less selective than other gill nets and sea turtle

by catch has been reported in the country (Kiszka, 2012).

g) Others (Please provide details)
› Beach seine fishing:
This fishery has been banned in the country since November 2001 but is illegally practiced throughout the coast. It uses robust multifilament nylon nets with mesh size of <3 cm, about 100 - 200 m long and 3 - 4 m deep. The fishery is linked to high rate of direct coral damage (Samoily's et al, 2011, Wamukota and Okemwa 2008). Beach seining turtle by catch and mortality have been reported in the country (Kiszka, 2012); Weru 2005; Church and Palin 2003).

› Spear and Harpoon fishing:
The fishery has been banned in the country since 2001 but is still practiced by some coastal communities, particularly in Gazi-Msambweni and Funzi-Bodo areas in south coast. The spear is a steel rod sharpened at one end and with or without a wooden handle on the other end, while the harpoon is a wooden pole with or without a tip. They measure about 1.5 -2.5 m and 1.0-2.5 m respectively (Samoily's et al, 2011). This type of fishing is normally used to hunt turtles (Church and Palin 2003; KESCOM 2005) but details about the turtles poached/hunted through this fishery is not available.

h) None of the above (Please provide details)
› N/A

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

	UNKNOWN	NONE	RELATIVELY LOW	MODERATE	RELATIVELY HIGH
Fishing efforts:	☐	☐	☐	☑	☐
Perceived impact:	☐	☐	☐	☑	☐

- Source of information / clarification
› There has been reduced turtle byatch through trawlers since the introduction of TEDS in 2001. In 2015, Fennessy and others reported that between 59 and 167 turtles were caught in trawlers annually as compared to 500 -1 000 turtles per annum reported in the 1990s (Wamukoya and Salm 1997). Other preliminary studies conducted in Kenya on efficacy of TEDs (IUCN East Africa Programme 1998; Mueni and Mwangi 2001) have also demonstrated reduced turtle bycatch.

b) Set gill nets
Please select only one per line

	UNKNOWN	NONE	RELATIVELY LOW	MODERATE	RELATIVELY HIGH
Fishing effort:	☐	☐	☐	☐	☑
Perceived impact:	☐	☐	☐	☐	☑

- Source of information / clarification
› According to a vulnerable megafauna bycatch assessment conducted in coastal artisanal fishery in Kenya (Kiszka, 2012), bottom-set gillnets has the highest sea turtle by catch rate of about 2.51 turtles per boat per year. In addition, multifilament and monofilament drift gillnets turtle bycatch rates are 1.37 and 0.286 respectively.

c) Anchored Fish Aggregating Devices (FADs)
Please select only one per line

	UNKNOWN	NONE	RELATIVELY LOW	MODERATE	RELATIVELY HIGH
Fishing effort:	☑	☐	☐	☐	☐

Perceived impact:	☑	☐	☐	☐	☐

- Source of information / clarification
› N/A

d) Purse seine (with or without FADs)
Please select only one per line

	UNKNOWN	NONE	RELATIVELY LOW	MODERATE	RELATIVELY HIGH
Fishing efforts:	☑	☐	☐	☐	☐
Perceived impact:	☑	☐	☐	☐	☐

- Source of information / clarification
› N/A

e) Longline (shallow or deepset)
Please select only one per line

	UNKNOWN	NONE	RELATIVELY LOW	MODERATE	RELATIVELY HIGH
Fishing effort:	☐	☐	☐	☑	☐
Perceived impact:	☐	☐	☐	☑	☐

- Source of information / clarification
› According to the megafauna bycatch assessment survey (Kiszka, 2012), longline fishery exhibited turtle by catch rate of about 1.1 turtles per boat per year. Further, foreign commercial longliners have been reported to fish within the boundaries of Kiunga Marine National Reserve in Lamu (Church and Palin 2003) and the impact has not been evaluated.

f) Driftnet
Please select only one per line

	UNKNOWN	NONE	RELATIVELY LOW	MODERATE	RELATIVELY HIGH
Fishing effort:	☑	☐	☐	☐	☐
Perceived impact:	☑	☐	☐	☐	☐

- Source of information / clarification
› N/A

g) Others (from 1.4.1 g))
Please select only one per line

	UNKNOWN	NONE	RELATIVELY LOW	MODERATE	RELATIVELY HIGH
Fishing effort:	☐	☐	☐	☑	☐
Perceived impact:	☐	☐	☐	☑	☐

- Source of information / clarification
› Beach seine fishery according to the megafauna bycatch assessment survey (Kiszka, 2012), recorded turtle by catch rate of 1.33 turtles per boat per year. This fishery is one of the leading causes of turtle mortality in the KMNR (Church and Palin 2003; Weru 2005).

1.4.3 Describe any **illegal fishing** that is known to occur in or around the waters of your country that may impact marine turtles. Describe the measures being taken to deal with this problem and any difficulties encountered in this regard. **[TSH]**
› 1. Beach seine fishing:

This fishery has been banned in the country since November 2001 but is illegally practiced throughout the coast. It uses robust multifilament nylon nets with mesh size of <3 cm, about 100 - 200 m long and 3 - 4 m deep.The nets are deployed on sea grass, reef lagoons and occasionally on offshore reefs. The fishery is linked to high rate of direct coral damage (Samoily's et al, 2011, Wamukota and Okemwa 2008), turtle by catch and mortality (Kiszka, 2012; Weru 2005; Church and Palin 2003).
2. Monofilament gill net:
It is a gillnet of monofilament nylon, with small floats at the top of the net and small weights attached to the bottom. The net measures about 2.5 – 50 m long and has mesh size of 5.1 to 6.5 cm. It is usually set for up to 4 hours on reef lagoons and outer reefs slopes as well as within broad mangrove waterways north of Lamu. The net does not biodegrade and thus remains permanently tangled on benthic habitat. It has turtle bycatch rate of 0.286 turtles/boat/year (Kiszka, 2012).
3. Spear and Harpoon fishing:
The fishery has been banned in the country since 2001 but is still practiced by some coastal communities, particularly in Gazi-Msambweni and Funzi-Bodo areas in south coast. The spear is a steel rod sharpened at one end and with or without a wooden handle on the other end, while the harpoon is a wooden pole with or without a tip. They measure about 1.5 -2.5 m and 1.0-2.5 m respectively (Samoily's et al, 2011). This type of fishing is normally used to hunt turtles (Church and Palin 2003; KESCOM 2005) but details about the turtles poached/hunted through this fishery is not available.
The Kenya Fisheries Act Cap 378 of 1989, subsidiary legislation in Kenya Gazette Notice No. 7565 Vol. CIII. No. 69 of 9 November 2001 introduced the ban on beach seining and spear guns. However, the ban of beach seining on the coast has not been complied with as most beach seiners lack alternative employment opportunities and would have been left without food and livelihoods had they complied with the ban.
The country has adopted fishery resource co-management mechanisms where the KeFS, local fishermen and other stakeholders share responsibilities in management of the resource. This started in 2007 with the establishment of Beach Management Units (BMUs) which are mandated by law to create awareness or train its members on good and acceptable fishing techniques among other roles.
In addition, KWS in liaison with KeFS undertakes joint conservation awareness campaigns where local fishermen are encouraged to report illegal fishing practices to the authorities.
Law enforcement has been intensified through increased KWS and KeFS joint boat patrols.

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 fishersusing equipment such as de-hooking, line cutting tools and scoop nets)
☑ YES (Details/future plans)

› This is done in some areas like in Watamu where incentives are in place. Local Ocean Conservation (LOC) Trust in Watamu run a turtle bycatch release programme where incentives are offered to fishermen who release turtle bycatches or rescue and take injured/sick turtles to the facility for treatment. The condition of rescued turtle is assessed, measurements on length and weight taken and then tagged. If it is in good health, it is transported to Watamu Marine National Park where it is released back into the ocean. The injured ones are held in the facility for treatment and after they are nursed back to health, they are returned to the ocean.

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)

› Trawlers are required by law to have TEDs, however in Kenya observers require continuous training on installation and functionality of the TEDs to ensure their effectiveness and compliance by trawler operators (FAO 2007).

c) **Measures to avoid encirclement** of marine turtles in purse seine
☑ NO (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)
☑ NO (Details/future plans)

f) **Net retention and recycling schemes**
☑ NO (Details/future plans)

g) **Spatial and temporal control of fishing** (e.g. seasonal closures of fishing activities)
☑ YES (Details/future plans)

› The country has installed a VMS for monitoring of all Kenyan flagged fishing vessels and licensed foreign fishing vessels in the EEZ. Fishing closer than 5 nautical miles from the coast is prohibited by law, except for research purposes, which requires a special permit (Fisheries Act Cap. 378 of 1991; FAO 2007). In 2003, restrictions were introduced into the fishing sector which included a closed season from 1 November to 1 March and the restriction of trawling to daylight hours (FAO 2007).

h) **Effort management control**
☑ YES (Details/future plans)

› Through licensing of BMUs and vetting of respective members.

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)

› KeFS has observers onboard trawlers to monitor their activities in collaboration with the Kenya Marine and Fisheries Department (KMFRI) who are carrying out research to determine ecological and socio-economic aspects of trawling in Kenyan waters/effectiveness of TEDs. However, observers lack sufficient training and the technical expertise to deal with faulty TEDs (FAO 2007).

b) **Vessel monitoring systems**
☑ YES (Details/future plans)

› All Kenyan flagged fishing vessels and licensed foreign vessels have been fitted with VMS to ensure compliance with license restrictions on the fishing area. However, operations and maintenance costs of the system is too high. In addition, there is lack of technical expertise to analyze and make use of the collected maritime data. There is need for adequate funding to ensure effective operations of the system and training of personnel on maritime data analysis.

c) **Inspections** (i.e. at sea, in port, at landing sites)
☑ YES (Details/future plans)

› Through dockside monitoring program where KeFS officers conduct regular checks at designated ports to ensure compliance with the fisheries requirements. This also guarantees the accuracy of landing data so as to monitor and support the sustainability of the fishery.

d) **Training programmes / workshops** to educate fishers
☑ YES (Details/future plans)

› Where on board observers are not present (e.g. during longline fishery, gill net fishery, ringnet fishery etc,), fishers are often educated on common monitoring approaches and provided with data capture protocols, identification guides and descriptions. Fishers also receive mobile phones for data entry, and are taught how to easily measure the length and weights of different species. The reports are submitted on a regular basis to KeFS.
KeFS conduct regular workshops and trainings for BMUs members on application/use of legal and acceptable fishing practices.

e) **Informative videos, brochures, printed guidelines** etc.
☑ YES (Details/future plans)

› Through collaboration with local NGOs such as Local Ocean Conservation Trust in Watamu, several videos regarding rescue of marine turtles and other informative materials eg sea turtle education posters have been developed. In addition, KeFS in liaison with key marine conservation stakeholders occasionally prepare and print education/training materials for the BMUs. KeFS is also responsible for printing of BMUs governing regulations.

- Other OR none of the above

☑ Other (list and explain):

› N/A

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)

› Training programmes/workshops are reviewed and tailored to address specific emerging fishery issues.

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]**
› Ongoing (June 2019) survey on identification and evaluation of threats to sea turtles and their habitats among other objectives: The survey which is funded by WWF-Kenya is expected to cover entire coastline and so far Kwale, Tanariver and Lamu counties have been surveyed. Preliminary results indicate that sea turtle deaths/injuries associated with fishing net is most significant threat and this information will be used to make the best management decisions regarding bycatch reduction.
A study on assessing the effectiveness of Light Emitting Diode (LEDs) lights in reduction of sea turtle bycatch and mortality in artisanal gillnet fishery in north coast of Kenya (Watamu, Ngomeni and Bwana Said areas) was conducted between December 2016 and December 2017. Sea turtles catch was reduced by 65.1% in illuminated nets while fish catch was not influenced by the lights (Kakai, 2019).
Bycatch assessment and mitigation in the Western Indian Ocean (BYCAM): The project which was conducted in Western Indian Ocean (WIO) countries (Kenya, Tanzania, Madagascar, Mozambique and South Africa) in 2015 was aimed at assessing bycatch in coastal gillnet, longline and prawn trawl fishery, strengthening initiatives to reduce bycatch and at improving uptake of TEDs and other mitigation methods in the region.
Net-release programme: The net-release programme involves subsistence/artisanal fishermen releasing turtles from their nets, while receiving a monetary reward in turn (Zanre 2005). Data, such as biometric measurements are also collected from these turtles.
Assessment of TED efficiency: Studies were conducted in Kenya to demonstrate the efficacy of TEDs (IUCN East Africa Programme 1998; Mueni and Mwangi 2001), and demonstrated that bycatch is reduced by 14%, while not affecting the prawn 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]**
☑ YES (If yes, please give details of the exchanges/technical assistance)

› The country participates in the Western Indian Ocean Marine Science Association (WIOMSA) conferences where regional scientific information on marine resources is shared. In the last conference (July 2019), information on progress towards implementation of Turtle Excluder Devices in the WIO and effectiveness of Led Lights in Reduction of Sea Turtle Bycatch and
Mortality in Artisanal Gillnet Fishery (Kakai, 2019) was presented.

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]**
› The ban of large-scale driftnets has been included in the draft Fisheries Regulations of 2018.

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 and their associated products are protected under the Wildlife (Conservation and Management) Act Cap 376 and the Fisheries Act Cap 378 which specifically prohibit utilization of any form of turtles, their eggs, meat, oil, shells. Turtles are regarded as wildlife. However, this legislation does not protect turtle nesting and foraging habitats, other than the areas included in marine parks and reserves (Okemwa et al. 2004).

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

☑ YES

› Turtle meat is one of the most important commodity traded for food and income among the local communities (Nzuki 2005b).

a2) Meat consumption: relative prevalence/importance
☑ HIGH

› B.- Consumption of turtle meat is deeply engrained in Kenya's coastal culture and it is most valuable as it believed to be an aphrodisiac for men in some communities.

b1) Egg consumption
☑ YES

› Eggs are poached for food and occasionally for sale where in the illegal local market an egg costs 0.02 US $ and a clutch of eggs sell at between 2.5 and 8 US $ depending on the target customer who include tourists and foreign residents (Nzuki, 2005).

b2) Egg consumption: relative prevalence/importance
☑ LOW

c1) Shell products
☑ YES

› Carapaces are obtained from nesting females, stranded or captured turtles. The carapaces and stuffed turtles are mostly used for decoration and cost between 8 and 20 US$ in the illegal local markets (Nzuki, 2005).

c2) Shell products: relative prevalence/importance
☑ LOW

d1) Fat consumption
☑ YES

d2) Fat consumption: relative prevalence/importance
☑ MODERATE

› Oil is one of the most important products traded (Nzuki 2005b).

e1) Traditional medicine
☑ YES

› Oil is thought to have medicinal value (Nzuki 2005b). It is believed to treat asthma, impotence and infertility, waterborne diseases, ear aches, measles and tuberculosis. Local midwives use it to induce quicker placenta presentation.

e2) Traditional medicine: relative prevalence/importance
☑ MODERATE

f1) Eco-tourism programmes
☑ YES

› Local NGOs such as Local Ocean Conservation Trust through its Watamu Turtle Watch programme encourages visitors to donate towards conservation of sea turtles in Kenya. Further, Serena Beach Hotel in north coast run a sea turtle conservation project where a hatchery to protect turtle eggs from threats and predators is managed. Visitors and staff are notified in advance of hatchings, and hatching ceremonies are held for the guests to experience baby turtles release to the ocean. This provides an opportunity to understand more about the species.

f2) Eco-tourism programmes: relative prevalence/importance
☑ LOW

g1) Cultural / traditional significance
☑ YES

› Marine turtle products in Kenya are traditionally believed to have evil spirits repellents or medicinal properties, and these beliefs have remained a key driver for consumption and trade of their products among coastal communities.

g2) Cultural/traditional significance: relative prevalence/importance

☑ MODERATE

h) Other (list and rank):
› N/A

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

	RELATIVELY HIGH	UNKNOWN	NONE	RELATIVELY LOW	MODERATE
Level of harvest:	☐	☐	☐	☐	☑
Impact of harvest:	☐	☐	☐	☐	☑

Source of information / explanation:
› Illegal trade in turtle products is rampant in Kenya. Trade and associated poaching are particularly high in Malindi and in Lamu Archipelago (Nzuki 2005b).

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.
☑ YES

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]**
› The government of Kenya through KeFS and KWS has initiated talks with Tanzanian government to control/limit use of explosives and poisonous chemicals as a means of fishing.

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

› KWS is mandated by law to protect wildlife including sea turtles. In Kwale, Mombasa and Kilifi counties, monitoring of turtle nesting grounds is carried out by local community members (TCGs members) on monthly basis and information submitted to nearby KWS station. WWF-Kenya in partnership with KWS and the local community has for about 20 years run a turtle monitoring and conservation programme in Lamu County where community members are incentivized to monitor and protect turtle nesting activities until hatching occurs (Olendo et al, 2019). Some private hotel investors along the beach have established artificial hatcheries were turtle eggs prone to threats such predation and poaching are relocated to and monitored until they hatch.

a2) Monitoring/protection programmes: relative effectiveness
☑ GOOD

› Law enforcement by KWS is inadequate due to lack of equipment and human resources. Similarly, community patrols along the beaches and submission of information to KWS has not been consistent and the already submitted information is in different stations and needs to be collated into a central place for easy access. This is attributed to lack of financial resources to constantly facilitate TCG members for the monitoring. Politics is also a significant obstacle in monitoring of turtle nesting activities as most properties bordering the nesting grounds belong to high influential personalities in the government.

b1) Education/awareness programmes
☑ YES

› KWS and KeFS run education and awareness programs that constantly engage fishermen and tour operators on sea turtles conservation. Further, education and awareness programs also targeting local fishermen are being carried out in many parts of coastal Kenya by a number of stakeholders including WWF-Kenya, Local Ocean Conservation Trust, CORDIO, WMA, Wildlife Conservation Society (WCS)-Marine Program and the Wildlife Clubs of Kenya.

b2) Education/awareness programmes: Relative effectiveness
☑ GOOD

› Despite the education & awareness campaigns run in the country, poaching of sea turtles by local community is still reported, and this calls for intensification of the sea turtle conservation campaigns.

c1) Egg relocation/hatcheries
☑ YES

› This is done in a few selected sites (Church and Palin 2003; Weru 2005).

c2) Egg relocation/hatcheries: Relative effectiveness
☑ GOOD

› Egg relocation is significant to marine turtle conservation in Kenya as relocated nests with concerted monitoring by community members in Lamu county reported hatching success of 77.8 + SE 1.4% (Olendo et al, 2019). Hatcheries are only in few areas along the coast and the concept needs to be expanded to other parts of the coast for successful conservation of the turtles.

d1) Predator control
☑ NO

d2) Predator control: Relative effectiveness
☑ UNKNOWN

e1) Vehicle / access restrictions
☑ YES

e2) Vehicle/access restriction: relative effectiveness
☑ GOOD

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

› In Kenya debris is normally removed or collected during international annual events such as the World Wetlands Day on 2nd February, World Environment Day on 5th June, World Ocean’s Day on 8th June and on World Sea Turtle Day on the 16th June. In addition, through the KWS Beach Management Unit programme, more regular beach clean-ups are carried out in partnership with local community and other stakeholders.

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

g1) Re-vegetation of frontal dunes
☑ NO

g2) Re-vegetation of frontal dunes: relative effectiveness
☑ UNKNOWN

h1) Building location/design regulations
☑ YES

› This is largely guided and controlled through an Integrated Coastal Zone Management (ICZM) policy, 2014, Environmental Management and Coordination Act (EMCA), 1999 and the Physical Planning Act, 1996.

h2) Buidling location/design regulations: relative efectiveness
☑ GOOD

› Enforcement of relevant regulations is a challenge due to lack of political good will and inadequate resources particularly personnel for implementing government agencies.

i1) Light pollution reduction
☑ YES

› Mainly achieved through sensitization of property owners along the beaches on effects of lighting on sea

turtle nesting and subsequent conservation implications.

i2) Light pollution reduction: Relative effectiveness

☑ GOOD

› The awareness creation programmes have been inconsistent and localized (centered in few areas) due to insufficient resources to cover entire coast. There are plans to intensify and extend these sensitization campaigns to all sea turtle nesting important areas to ensure successful reduction of light pollution.

j.) Other (list and rate them)

› -Community involvement
-Incentives
-Legislation

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.

☑ YES

› Beach Management Units established under the FCMA, 2016 are through supervision of county governments in charge of management of beach segments within their jurisdiction. The BMUs activities are often evaluated by KeFS in collaboration with the county government. Additionally, there is an ICZM Policy (2014) and a shoreline management strategy which guide in all activities along the coastline.

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]**

› Community participation in beach patrols and monitoring activities. KWS in collaboration with WWF-Kenya and other stakeholders have trained local people on techniques of standard beach patrols, surveys, and monitoring activities to enhance sea turtle information gathering.
Establishment of Community Conservation Areas such as Iweni in Lamu County, Kuruwitu in Kilifi County, Wasini and Kibuyuni in Kwale County. This has mainly worked under the FCMA, 2016 through BMUs and this has been instrumental in promoting conservation initiatives outside protected areas.

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

› NEMA requires all tourists and other industrial scale developments to file environmental audit reports under the Environmental Management and Coordination Act, EMCA of 1999. A shoreline management strategy has also been developed and it identifies areas of conservation importance.
In addition, there is an ongoing mapping of sea turtle nesting sites along the entire coast and this includes characterization of nesting beaches and assessment of impacts of the sea walls on the nesting areas.

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

› KMFRI in collaboration with KWS periodically undertakes water quality assessments within Marine Protected Areas (MPAs) while KWS through an institutional strategic adaptive management programme monitors on monthly basis trash/waste disposal on beaches adjacent to MPAs.

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

› Use of any explosive, poison or other noxious substance for purposes of catching fish is prohibited under the FCMA, 2016. To ensure effective enforcement of the regulation, patrols and monitoring are being intensified. Further, there are plans to establish a transboundary marine conservation area between Kenya and Tanzania to help in addressing the issue of fishing with explosives by migrant fishermen from the neighboring country. With support from UNEP Nairobi Convention and World Bank, a number of meetings between the two governments and several community sensitizations meetings have been held towards the initiative.
Under the Kenya Maritime Authority, a National Contingency plan in response to marine pollution has been developed and is in place.

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, effectveness, 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.
☑ YES (Details/future plans)

› Through KWS marine ecological monitoring programme, status of coral reefs is monitored biannually within the MPAs and in cases where destruction or degradation is noted, the site is temporarily closed from tourists' activities or put on controlled use to enable regeneration of the corals.
Additionally, a National Coral Reef Restoration Protocol (NCRRP) has been developed and is expected to guide in replacement of dead coral reefs in affected areas along the coastline.
An NGO, REEFolution Foundation in collaboration with KWS, Wageningen and Kenyatta Universities is working towards restoration of degraded coral areas outside Kisite-Mpunguti MPA in Shimoni area, south coast. Through the initiative, broken pieces of healthy coral are collected and placed in coral nurseries where they grow under optimal conditions to a suitable size for outplacement. They are then attached to new reef units or directly plugged into the rubble area, and with a cement plug, they are stabilized in the rubble area and new

coral reef grows out of there.
Implementation of the Coral reef and Sea grass Conservation Strategy (2015-2019) is ongoing and this guides in conservation efforts towards recovery of the degraded ecosystems.

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)

› There are a number of mangrove replanting initiatives in Kenya being undertaken mainly by local communities along the entire coast. Most notable is the 'Mikoko Pamoja' (Mangroves together) mangrove conservation and restoration project in Gazi Bay, south coast where about 10 ha of new mangrove forests have been established with support from KMFRI and WWF-Kenya.
In addition, a national mangrove management plan (2015-2025) and mangrove ecosystem restoration strategy is in place and this will guide in conservation initiatives towards restoration of the ecosystems.
In June 2019, Kenya with support from French Government launched a two year project aimed at restoring and conserving mangrove forests in the country to ensure environmental sustainability.

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]**

☑ YES (Details/future plans)

› The coral reef and seagrass Conservation Strategy (2015-2019) seeks to restore and recover degraded seagrass beds.

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]**

› • Church, J.E., Palin, O. 2003. The sea turtle conservation initiative in the Kiunga Marine National Reserve, Lamu, Kenya from February 1997 to June 2003. Report for WWF East Africa Regional Programme Office. 1-107 p.
• Contracting Parties to the Nairobi Convention 2001. Country Report: Kenya. 17-22 p. In: IUCN-EARO (Ed.), Conservation of coastal and marine biodiversity in the Eastern Africa Region: Progress in implementation of the Jakarta Mandate. IUCN East Africa Regional Office and IUCN / SSC Marine Turtle Specialist Group.
• Eastern African Marine Ecoregion Programme 2004. The Eastern African Marine Ecoregion Conservation Plan 2005-2009. 1-62 p.
• FAO 2007. Report of the workshop on managing interactions between sea turtles and shrimp trawl fisheries in the south west Indian Ocean. Interactions between sea turtles and fisheries within an ecosystem approach to fisheries management. Report of the workshop on managing interactions between sea turtles and shrimp trawl fisheries in the south west Indian Ocean. 1-23 p.
• Fennessy ST, Everett BI, Kaguru BL, Mwakosya CA, Munga CN, Sitoe S, da Conceicao K, Razafindrakoto HL and Brito A (2015). Report of a workshop on the analysis of existing data from prawn trawl nets with Turtle Excluder Device (TED) and without TED (non-TED) in the Western Indian Ocean (2015).
• Frazier, J. G. 1975. Marine turtles. POST 11: 6-10.
• Frazier, J.G. 1993. Dry coastal ecosystems of Kenya and Tanzania. 129-150 p. In: Van der Maarel, E. (Ed.), Dry Coastal Ecosystems: Africa, America, Asia and Oceania. Ecosystems of the World. Elsevier, New York.
• Gakuo, A.M. 2009. Advances in sea turtle conservation in Kenya. 1-4 p.
• IUCN East Africa Programme 1998. Report of the Western Indian Ocean turtle excluder device (TED) training workshop. 28 pp.
• Kakai, T. (Pwani University) 2019. Assessing the Effectiveness of Led Lights in Reduction of Sea Turtle Bycatch and Mortality in Artisanal Gillnet Fishery-A Case Study in the North Coast of Kenya.
• Kaloki, F., Wamukoya, G.M. 1996. Local community participation in sea turtle conservation in Kenya. 27-29 p. In: Humphrey, S.L., Salm, R.V. (Eds.), Status of sea turtle conservation in the Western Indian Ocean. IUCN/UNEP, Nairobi, Kenya.
• Kemf, E., Groombridge, B., Abreu, A., Wilson, A. 2000. Marine turtles in the wild: A WWF species status report. 20-32 p.WWF, Gland, Switzerland.
• KESCOM 2005. Enhancing the conservation and management of sea turtles in Kenya. 1-81 p.
• Mbendo, J. R., Wamukoya, G. M., and Kaloki, F. P. 2000. Sea turtle recovery action plan for Kenya. Eighteenth International Sea Turtle Symposium. Proceedings of the Eighteenth International Sea Turtle Symposium. 42-44 p.
• Kiszka, J. 2012. Bycatch assessment of vulnerable megafauna in coastal artisanal fisheries in the southwest Indian Ocean report . Workshop Report. Prepared for the South West Indian Ocean Fisheries Project (SWIOFP).
• Mcclanahan, T.R. (1988) Seasonality in East Africa's coastal waters. Marine Ecology Progress Series, 44, 191-199.
• Mueni, E. and Mwangi, J. 2001 A survey on the use of a turtle excluder device (TED) on the Kenyan Coast. Kenya Wildlife Service Technical Series.
• Mueni, E. and Mwangi, J. 2002 Trawler survey along the Kenyan coast. KWS Report. 11 p.
• Nzuki, S. 2004. KESCOM surveying trade in turtle product. 15-16 p. In: Wilson,A., Humphrey, S.L. (Eds.), Marine turtle update: Recent news from the WWF Africa and Madagascar.
• Nzuki, S. 2005a National status of sea turtle conservation and management: Kenya, In: Okemwa, G.M., Muthiga,N.A. and Mueni,E.M. 2005. Proceedings of the Western Indian Ocean Marine Turtle Conservation Workshop. 24 pp.
• Nzuki, S. 2005b. KESCOM study exposes rampant turtle trade. 7-9 p. In: Humphrey,S.L., Wilson, A. (Eds.), Marine turtle update: Recent news from the WWF Africa and Madagascar marine turtle programme. WWF.
• Nzuki, S., Muasa, J. 2005. Participatory habitat characterization and GIS database development for the conservation and management of sea turtles in south coast Kenya. Report Number WIOMSA/MARG-I/2005-04. 1-24 p.
• Okemwa, G.M., Nzuki, S., Mueni, E.M. 2004. The status and conservation of sea turtles in Kenya. Marine Turtle Newsletter 105: 1-6.
• Okemwa, G. M., Muthiga, N. A., and Mueni, E. M. 2005. Proceedings of the Western Indian Ocean Region Marine Turtle Conservation Workshop. September 16 - 17, 2004, Mombasa, Kenya. Western Indian Ocean Region Marine Turtle Conservation Workshop. 1-27 p.
• Okemwa, G.M., Ndirangu, S., Muthama, C., Ong'anda, H., Mueni, E.M. 2005. A preliminary inventory and characterization of selected sea turtle nesting beaches at the Kenya coast. 1-16 p.
• Olendo, M., Okemwa, G., Munga, C., Mulupi, L., Mwasi, L., Mohamed, H., and Ong'anda, H. (2019). The value

of long-term, community-based monitoring of marine turtle nesting: A study in the Lamu archipelago, Kenya. Oryx, 53(1), 71-80.
• Pilcher, N. J. 2006. Proceedings of the twenty-third annual symposium on sea turtle biology and conservation. 1-261 p.
• Thomas, S. (2006) Watamu marine turtle nest conservation strategy: evaluating the success of relocated turtle nests. Earth & Environment, 2, 138-167.
• Wamukota, A. 2005. Using a rights based approach to conserve natural resources: The case of sea turtles. 1-4 p. In: Wakwabubi, E., Matendo, L. (Eds.), Institutionalising rights in development through citizen participation: Case studies from Kenya, Uganda and Zimbabwe. Participatory - Methodologies Forum of Kenya (PAMFORK), Nairobi.
• Wamukota, A. 2007. Leatherback stranding on Kuruwitu Beach. 1p.
• Wamukota, A., Okemwa,G.M. 2008. Perceptions about trends and threats to sea turtles in Kenya. 1-18 p.
• Wamukoya, G.M. 1996. Kenya to minimise turtle mortality in shrimp fishery. Marine Turtle Newsletter 73: 17-18.
• Wamukoya, G.M. and Mbendo, J.R. 1995 Incidental capture of sea turtles in shrimp trawl fisheries in Kenya. KWS Technical Report Series. 6 pp.
• Wamukoya, G.M., Kaloki, F., Mbindo, C. 1996. The status of sea turtle conservation in Kenya. 57-72 p. In: Humphrey, S.L., Salm, R.V. (Eds.), Status of sea turtle conservation in the Western Indian Ocean. IUCN / UNEP, Nairobi, Kenya.
• Wamukoya, G.M., Kaloki, F.P. and Mbendo, J.R. 1997 Sea turtle recovery action plan for Kenya (STRAP). KESCOM Technical Report Series. 69 pp.
• Wamukoya, G.M., Mbendo, J.R. and Eriya, J. 1998 Bycatch in shrimp trawls in Kenya with specific reference to sea turtles. 14 - 15 p. In: IUCN East Africa Programme, Report of the Western Indian Ocean turtle excluder device (TED) training workshop.
• Watson, D.M. 2006. Growth rates of sea turtles in Watamu, Kenya. Earth and Environment 2: 29-53.
• Weru, S. 2005. WWF Kiunga marine turtle conservation programme. 11-12 p. In: Humphrey, S.L., Wilson, A. (Eds.), Marine turtle update: Recent news from the WWF Africa and Madagascar marine turtle programme.
• Zanre, R. 2005. Report on Watamu Turtle Watch's sea turtle bycatch release programme, Watamu, Kenya: April 1998 – May 2004. 1-87 p.

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

› Through the establishment of TCGs and other community based conservation groups who through patrols and monitoring collect and report on sea turtle mortality, nesting and other turtle activities occurring within their respective areas (Gakuo 2009).
The national database is continually updated.

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?).
☑ NO

› No available information on genetic identification of marine turtles in Kenya.

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)

b) Satellite tracking
☑ YES (Details/future plans)

c) Other OR None of the above
☑ None of the above

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]**
☑ NO

› However, turtles that are released from fishermen's nets as part of the net-release programme in Watamu are tagged. The stranding data of such turtles could be used as an indication of the survival rate of

incidentally caught turtles, at least those caught by artisanal/subsistence fishermen. Turtle mortalities are monitored through beach patrols and cause of death assessments (Weru 2005).

3.1.6 Has research been conducted on the frequency and pathology of diseases in marine turtles? **[INF, PRI]**
☑ NO

› No formal research has been conducted on the frequency or pathology of diseases, but signs of diseases are recorded during necropsies conducted on some stranded individuals. There are some records of fibropapilloma on sea turtles in Kenya (Church and Palin 2003; Zanre 2005). Reports from beach monitors suggest an increase in diseases among turtles (Church and Palin 2003). An unnamed skin disease has also been observed on some stranded or dead turtles in the KMNR (Church and Palin 2003).

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

› Participatory rural appraisals are used to assess turtle population and habitat trends for instance by Wamukota and Okemwa in 2008. An ongoing participatory mapping exercise of sea turtle nesting sites along the coast is using traditional knowledge to identify current key threats to sea turtles in the country.

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.
› There is currently a regional initiative to prioritize and harmonize research and monitoring activities within the Western Indian Ocean region. A number of regional training workshops aimed at harmonizing sea turtle data collection, habitat protection and poaching mitigation measures have been held. This is expected to build capacity in prioritization of research and monitoring needs for respective countries. However, national priorities are area and resource depended.

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)

› With Reunion and Australia

b) Conservation status
☑ YES (Details/future plans)

› Information exchange

c) Migrations
☑ YES (Details/future plans)

› Information exchange and sea turtle tag returns. There have been tags returns to Seychelles and South Africa while tags returns from South Africa, Somalia, Seychelles, Comoros and Tanzania have been recorded (Nzuki 2005a).

d) Other biological and ecological aspects
☑ YES (Details/future plans)

› Information exchange

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]**
› The WCMA, 2013 prohibits any form of exploitation of sea turtles in Kenya hence conservation targets all species irrespective of their population. There is some uncertainty regarding turtle population trends in Kenya (Wamukoya et al. 1996), perhaps at least in part due to a lack of long term data (Zanre 2005). The general perception is that the nesting and foraging sea turtle populations in Kenya are declining (Wamukoya et al. 1996; Zanre 2005; Wamukota and Okemwa 2008). This notion is based mainly on the perceptions of local communities, through participatory rural appraisals/interviews.

Green turtles are the most abundant turtle species in Kenya (Okemwa et al. 2004), and, because they are sought after for their meat (Nzuki 2005b), probably the most exploited. This species also constitute the largest proportion of strandings (Okemwa et al. 2004). Hawksbills occur in smaller numbers, but are threatened by poachers specifically for their carapaces (Nzuki 2005b). Olive ridley nesting and feeding sites overlap with prawn fishing areas (FAO 2007). Leatherback and loggerhead turtles do not nest in Kenya, and little information is available for these two species. Strandings of these two species are very infrequent (Okemwa et al. 2004; Wamukota 2007).

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]**
› Research results are being used to improve the effectiveness of conservation actions through management, threat mitigation, assessment of hatchery management practices, assessment of habitat loss, capacity building, education and awareness.

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)]

› KWS is collaboration with other stakeholders has recently developed sea turtle conservation and management protocols and is awaiting approval by the management. The protocol among other components includes standardized methods of data collection (nesting, mortality, tagging and sighting) and guidelines on habitat characterization, handling/treatment of sick turtles and DNA sampling. The protocol will after endorsement by KWS management be shared among stakeholders including the community based TCGs.

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]**
› • Internet
• Brochures
• Scientific publications
• Meetings/workshops
• Website

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]**
☑ YES

› Kenya maintains a national database which holds specific data on tagging and tag returns from countries within the WIO and has been involved in the collection of DNA data which has a regional potential in terms of population genetic mapping and migratory information. The national data on nesting periodicity offers an opportunity for comparisons of reportedly spatial temporal shifts in nesting behaviours elsewhere in the region and a declining number of nesting females.

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:
› • Videotapes on turtles and marine environment
• Brochures
• Posters
• Stickers and Stamps issue
• Website
• Exchange programs between TCGs
• T-shirts
• Annual awareness days (Marine Environment Day, International Coastal Clean-up)
• Contributions to the IOSEA website and www.seaturtle.org
• Mass media information programmes through national newspapers

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
☑ Tourists
☑ Media
☑ Teachers
☑ Students
☑ 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

› Local Ocean Conservation Trust/Watamu Turtle Watch has well established information center where members of the local community and school children learn about the marine environment from displays, games and video shows. KWS is planning to construct a sea turtle information centre in Mombasa.

4.2 Alternative livelihoods opportunitiesDescribe initiatives already undertaken or planned to identify and facilitate alternative livelihoods (including income-generating activities) for local communities. **[IND, BPR]**
› A number of TCGs and other community groups have been supported by local NGOs to engage in alternative income generating activities to alleviate pressure on the marine environment. The local communities are encouraged to initiate projects that utilize locally available materials and existing skills within the groups. Community based groups in Kiunga and Watamu in Lamu and Kilifi counties respectively have engaged in marine waste based handicraft, community group in Gazi south coast is practicing beekeeping/honey production through support from ‘Mikoko Pamoja’ project while Funzi TCG in south coast is conducting eco-tours within the Island and on nesting beaches.

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]**
› • Local communities are involved in development of management plans for MPAs in Kenya
• Communities are engaged during formulation or review of recovery action plans for endangered species or critical habitats e.g. national sea turtle conservation & management strategy.
• Capacity building for TCG members in community mobilization, basic sea turtle biology and in habitat rehabilitation to influence conservation at local grassroots level.

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]**

› • Engagement of relevant stakeholders from government institutions, NGOs, private sector and the local community in review of the sea turtle conservation & management strategy.
• Facilitate licensing/authorization from KWS of organizations or individuals willing to undertake sea turtle conservation initiatives.
• Formation of the Kenya Sea Turtle Conservation Committee (KESCOM)

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]**
☑ YES (If yes, please elaborate briefly)

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)

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.
☑ YES

› Kenya Wildlife Service has an intelligence unit focusing on illegal trade in endangered species or as listed under CITES and other agreements. The unit which work in liaison with the Kenya Revenue Authority/Customs Department is involved in border and port entry control of illegal wildlife and their products.

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]**
› Kenya is a signatory state to the Lusaka Task Force which deals in the trade of endangered flora and fauna as listed in the CITES.

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]**
› • Beach patrols and monitoring
• Capacity building
• Arrests of culprits
• Education and awareness
• On-going research

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.
☑ YES

› Sea turtle conservation and management strategy for Kenya which is currently under review

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]**
› 1. Data on turtle populations (sizes and structure) and foraging areas
2. Data on migrations
3. Impact of human activities (coastal development, pollution) on marine turtles
4. Capacity building for agency staff and at grassroots level
5. Education and awareness
6. Rehabilitation of degraded nesting areas
7. Waste management along the coast
8. Strengthening regional cooperation
9. Strengthening legislation enforcement

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	☐	☐	☑	☐
Incidental capture by foreign fleets	☐	☐	☐	☑
Enforcement/patrolling of territorial waters	☐	☐	☑	☐
Hunting/harvest by neighboring countries	☐	☐	☐	☑
Poaching, illegal trade in turtle products	☐	☐	☐	☑
Development of gear technology	☐	☐	☐	☑
Oil spills, pollution, marine debris	☐	☐	☐	☑
Training / capacity-building	☐	☐	☐	☑
Alternative livelihood development	☐	☐	☑	☐
Identification of turtle populations	☐	☐	☐	☑
Identification of migration routes	☐	☐	☐	☑
Tagging / satellite tracking	☐	☐	☐	☑
Habitat studies	☐	☐	☑	☐
Genetics studies	☐	☐	☐	☑

Use the text box to list and rank any other local management issues for which international cooperation is needed to achieve progress.
› National sea turtle population information gap

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]**
› • Data and information sharing
• Regional database
• Regional Newsletter
• Standardized protocols
• Tagging systems
• Regional workshops

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)

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]**
› • Through transboundary marine conservation initiatives e.g., between Kenya and Tanzania
• Sensitization through regional workshops
• Encourage voluntary reporting

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]**
› • DNA analysis capacity/expertise and facilities
• Patrol boats
• Vehicle
• Camping facilities
• Computers
• Data collection equipment

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]**
› Training of MPA staff and TCG members on turtle biology, legislation, beach characterization and on participatory mapping of sea turtle nesting sites.

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]**
› Developed partnerships with the Kenya Marine and Fisheries Research Institute (KMFRI), Pwani University, Kenya Wildlife Service Training Institute in Naivasha, University of Nairobi (UoN) and Moi University in the past.

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]**
› They are effective deterrents but sometimes enforcement is hampered by insufficient resources and political influence.

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.
☑ YES

› Both Wildlife and Fisheries Acts and policies have been reviewed from which tougher penalties were instituted for crimes relating to endangered wildlife species and their products.

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

› • Legal specifications on fishing mesh sizes differ
• Limited enforcement capacity
• Different levels of 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]**
› Participation in regional meetings eg WIOMSA symposium help in creating awareness on sea turtle conservation and on the MoU.

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

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]**
☑ YES (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]**
› Develop fundraising proposals to potential donors

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]**
› The country through Kenya Wildlife Service and with funding from the government is implementing some of the aspects of the MOU towards turtle conservation and management.

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]**
☑ YES (If yes, give details of the approaches made (both successful and unsuccessful))

› • WWF-Kenya is this year (2019) supporting mapping of sea turtle nesting sites along the entire coast, and establishment of sea turtle information centre in Mombasa as part of improving KWS capacity in sea turtle conservation.
• UNDP project on enhancing turtle conservation and management in the conservation and management of sea turtles in Kenya and BP conservation program among others.
• BP company through its BP Conservation Program on enhancing community participation in the conservation and management of sea turtles in Kenya
• WIOMSA Participatory habitat characterization and GIS database development for South Coast Kenya

6.3.3 Describe any initiatives made to explore the use of economic instruments for the conservation of marine turtles and their habitats. **[BPR]**
› • Nest adoption programs in hotels
• Lectures to tourists and students
• Adoption of tagged turtles
• Rehabilitation and treatment of injured turtles

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

› Kenya Wildlife Service

6.4.2 Are the roles and responsibilities of all government agencies related to the conservation and management of marine turtles and their habitats clearly defined? **[IND]**

Use the text box to elaborate.
☑ UNSURE

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.
☑ YES (Use the text box to elaborate)

› Under the Integrated Coastal Area Management (ICAM) initiative.

OTHER REMARKS

Please provide any comments/suggestions to improve the present reporting format.
› The form is clearly understood, however, some questions seem to be repeated.

Feel free to include additional information not covered above:
› N/A

ANNEX 1: SPECIES, HABITAT AND THREAT DATA [PRI, INF]

PLEASE COMPLETE A SEPARATE SECTION FOR EACH SITE/AREA

Site 1

Name of site/area:

› Tiwi-Tiwi Location

Geographic coordinates (North/South)

☑ North

› 04º13.231′

Province / State:

› Coast, Kwale County

Name of person / agency wwho has provided the information:

› WWF-Kenya

Information was last updated: (dd/mm/yyyy)

› 15/06/2019

Indicate the species occurence / use and relative importance of the site:

Abbreviations: Loggerhead Caretta caretta (CC); Olive Ridley Lepidochelys olivacea (LO); Green Chelonia mydas CM); Hawksbill Eretmochelys imbricata (EI); Leatherback Dermochelys coriacea (DC); Flatback Natator depressus (ND)
Use one of the following symbols or letters to indicate the presence or absence of a species at this site in the table above, including details (if known) about the relative importance of the site for nesting, feeding or development.

Insufficient information is available on the presence or absence of the species (leave box empty)

The species is **not present** or does not use this particular habitat type at this site.

?

It is speculated (only) that the species is present at this site and may be using one or more particular habitat types. In the absence of definitive information, place a **?** in the appropriate box(es).

✓

The species is definitely **known to be present** at this site; however no information is available on the relative importance of the site for nesting, feeding or development.

✓

H

The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **high importance** for this species, relative to other sites in the country.

✓

A

The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **average importance** for this species, relative to other sites in the country.

✓

L

The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **lower importance** for this species, relative to other sites in the country.

a - h

Additional information on nesting habitat (where available):

Indicate the estimated number of nests per year for each species by inserting, in the appropriate boxes, one of the letters ‘ **a** ’ through ‘ **f** ’, corresponding to the following scale: **a**: 1 - 10 nests ; **b**: 11 - 100 nests ; **c**: 101 - 500 nests ; **d**: 501 - 1,000 nests ; **e**: 1,001 - 5,000 nests ; **f**: 5,001 - 10,000 nests ; **g**: 10,001 - 100,000 nests; **h**: more than 100,000 nests

	ND Flatback	DC Leatherback	EI Hawksbill	CM Green	LO Olive Ridley	CC Loggerhead
Nesting				✓		
Feeding				✓		
Developmental						

Describe the nature of and intensity of threats to marine turtles at this site:

	High (common occurence)	Medium	Low (rare event)	None	Unknown
Exploitation of nesting females (i.e. direct harvest on land)			✓		
Direct harvest of animals in coastal waters at or near the site			✓		
Egg collection (i.e. direct harvest by humans)			✓		
Incidental capture in coastal fisheries		✓			
Boat strikes					✓
Marine debris (e.g. plastics at sea, flotsam)		✓			
Industrial effluent			✓		
Inshore oil pollution			✓		✓
Agricultural/urban/tourism development (e.g. construction that disrupts nesting activities)			✓		
Artificial lighting (on land or near shore)				✓	
Habitat degradation (e.g. coastal erosion, debris that obstructs nesting etc.)		✓			
Vehicles				✓	
Sand mining / removal	✓				
Natural threats, disease, predation of nests/nesting females (e.g. by domestic / feral animals), or natural predation at sea	✓				
Other (type in):					

What measures have been introduced to remove threats to marine turtles at this site?
☑ Monitoring / protection programmes
☑ Education / awareness programmes
☑ Egg relocation / hatcheries
☑ Requirements for modification of fishing gear or fishing practices (e.g seasonal or temporal closures)
☑ Designation / management of protected areas, sanctuaries, exclusion zones etc.
☑ Regulations on building location / design
☑ Regulations on artificial lighting
☑ Removal of debris / beach clean-up

Please give further details or clarification about any of the information provided, as appropriate / necessary.
› N/A

Site 2

Name of site/area:
› Msambweni-Msambweni Location

Geographic coordinates (North/South)

☑ South

› 039° 28.754

Province / State:
› Coast, Kwale County

Name of person / agency wwho has provided the information:
› WWF-Kenya

Information was last updated: (dd/mm/yyyy)
› 15/06/2019

Indicate the species occurence / use and relative importance of the site:

Abbreviations: Loggerhead Caretta caretta (CC); Olive Ridley Lepidochelys olivacea (LO); Green Chelonia mydas CM); Hawksbill Eretmochelys imbricata (EI); Leatherback Dermochelys coriacea (DC); Flatback Natator depressus (ND)
Use one of the following symbols or letters to indicate the presence or absence of a species at this site in the table above, including details (if known) about the relative importance of the site for nesting, feeding or development.

Insufficient information is available on the presence or absence of the species (leave box empty)

The species is **not present** or does not use this particular habitat type at this site.
?
It is speculated (only) that the species is present at this site and may be using one or more particular habitat types. In the absence of definitive information, place a **?** in the appropriate box(es).
✓
The species is definitely **known to be present** at this site; however no information is available on the relative importance of the site for nesting, feeding or development.
✓
H
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **high importance** for this species, relative to other sites in the country.
✓
A
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **average importance** for this species, relative to other sites in the country.
✓
L
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **lower importance** for this species, relative to other sites in the country.
a - h
Additional information on nesting habitat (where available):

Indicate the estimated number of nests per year for each species by inserting, in the appropriate boxes, one of the letters ' **a** ' through ' **f** ', corresponding to the following scale: **a**: 1 - 10 nests ; **b**: 11 - 100 nests ; **c**: 101 - 500 nests ; **d**: 501 - 1,000 nests ; **e**: 1,001 - 5,000 nests ; **f**: 5,001 - 10,000 nests ; **g**: 10,001 - 100,000 nests; **h**: more than 100,000 nests

	ND Flatback	DC Leatherback	EI Hawksbill	CM Green	LO Olive Ridley	CC Loggerhead
Nesting				✓		
Feeding				✓		
Developmental						

Describe the nature of and intensity of threats to marine turtles at this site:

	High (common occurence)	Medium	Low (rare event)	None	Unknown
Exploitation of nesting females (i.e. direct harvest on land)	✓				

Direct harvest of animals in coastal waters at or near the site	✓				
Egg collection (i.e. direct harvest by humans)	✓				
Incidental capture in coastal fisheries	✓				
Boat strikes					✓
Marine debris (e.g. plastics at sea, flotsam)			✓		
Industrial effluent			✓		
Inshore oil pollution					✓
Agricultural/urban/tourism development (e.g. construction that disrupts nesting activities)			✓		
Artificial lighting (on land or near shore)			✓		
Habitat degradation (e.g. coastal erosion, debris that obstructs nesting etc.)			✓		
Vehicles				✓	
Sand mining / removal				✓	
Natural threats, disease, predation of nests/nesting females (e.g. by domestic / feral animals), or natural predation at sea			✓		
Other (type in):					

What measures have been introduced to remove threats to marine turtles at this site?
☑ Monitoring / protection programmes
☑ Education / awareness programmes
☑ Egg relocation / hatcheries
☑ Requirements for modification of fishing gear or fishing practices (e.g seasonal or temporal closures)
☑ Designation / management of protected areas, sanctuaries, exclusion zones etc.
☑ Regulations on building location / design
☑ Regulations on artificial lighting
☑ Removal of debris / beach clean-up

Site 3

Name of site/area:
› Shelly Beach/Likoni

Geographic coordinates (North/South)
☑ North

› 04° 05.333

Province / State:
› Coast, Mombasa County

Name of person / agency wwho has provided the information:
› WWF-Kenya

Information was last updated: (dd/mm/yyyy)
› 15/06/2019

Indicate the species occurence / use and relative importance of the site:

Abbreviations: Loggerhead Caretta caretta (CC); Olive Ridley Lepidochelys olivacea (LO); Green Chelonia mydas CM); Hawksbill Eretmochelys imbricata (EI); Leatherback Dermochelys coriacea (DC); Flatback Natator depressus (ND)
Use one of the following symbols or letters to indicate the presence or absence of a species at this site in the table above, including details (if known) about the relative importance of the site for nesting, feeding or development.

Insufficient information is available on the presence or absence of the species (leave box empty)

The species is **not present** or does not use this particular habitat type at this site.
?
It is speculated (only) that the species is present at this site and may be using one or more particular habitat types. In the absence of definitive information, place a **?** in the appropriate box(es).
✓
The species is definitely **known to be present** at this site; however no information is available on the relative importance of the site for nesting, feeding or development.
✓
H
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **high importance** for this species, relative to other sites in the country.
✓
A
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **average importance** for this species, relative to other sites in the country.
✓
L
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **lower importance** for this species, relative to other sites in the country.
a - h
Additional information on nesting habitat (where available):

Indicate the estimated number of nests per year for each species by inserting, in the appropriate boxes, one of the letters ' **a** ' through ' **f** ', corresponding to the following scale: **a**: 1 - 10 nests ; **b**: 11 - 100 nests ; **c**: 101 - 500 nests ; **d**: 501 - 1,000 nests ; **e**: 1,001 - 5,000 nests ; **f**: 5,001 - 10,000 nests ; **g**: 10,001 - 100,000 nests; **h**: more than 100,000 nests

	ND Flatback	DC Leatherback	EI Hawksbill	CM Green	LO Olive Ridley	CC Loggerhead
Nesting				✓		
Feeding				✓		
Developmental						

Describe the nature of and intensity of threats to marine turtles at this site:

	High (common occurence)	Medium	Low (rare event)	None	Unknown
Exploitation of nesting females (i.e. direct harvest on land)				✓	
Direct harvest of animals in coastal waters at or near the site				✓	
Egg collection (i.e. direct harvest by humans)				✓	
Incidental capture in coastal fisheries			✓		
Boat strikes					✓
Marine debris (e.g. plastics at sea, flotsam)				✓	

Industrial effluent				✓	
Inshore oil pollution				✓	
Agricultural/urban/tourism development (e.g. construction that disrupts nesting activities)	✓				
Artificial lighting (on land or near shore)			✓		
Habitat degradation (e.g. coastal erosion, debris that obstructs nesting etc.)				✓	
Vehicles				✓	
Sand mining / removal	✓				
Natural threats, disease, predation of nests/nesting females (e.g. by domestic / feral animals), or natural predation at sea					
Other (type in):					

What measures have been introduced to remove threats to marine turtles at this site?
☑ Monitoring / protection programmes
☑ Education / awareness programmes
☑ Requirements for modification of fishing gear or fishing practices (e.g seasonal or temporal closures)
☑ Designation / management of protected areas, sanctuaries, exclusion zones etc.
☑ Regulations on building location / design
☑ Regulations on artificial lighting
☑ Removal of debris / beach clean-up

Site 4

Name of site/area:
› Jimbo-Vanga Location

Geographic coordinates (North/South)
☑ South

› 039° 13.089

Province / State:
› Coast, Kwale County

Name of person / agency wwho has provided the information:
› WWF-Kenya

Information was last updated: (dd/mm/yyyy)
› 15/06/2019

Indicate the species occurence / use and relative importance of the site:

Abbreviations: Loggerhead Caretta caretta (CC); Olive Ridley Lepidochelys olivacea (LO); Green Chelonia mydas CM); Hawksbill Eretmochelys imbricata (EI); Leatherback Dermochelys coriacea (DC); Flatback Natator depressus (ND)
Use one of the following symbols or letters to indicate the presence or absence of a species at this site in the table above, including details (if known) about the relative importance of the site for nesting, feeding or development.

Insufficient information is available on the presence or absence of the species (leave box empty)

The species is **not present** or does not use this particular habitat type at this site.
?
It is speculated (only) that the species is present at this site and may be using one or more particular habitat types. In the absence of definitive information, place a **?** in the appropriate box(es).

✓
The species is definitely **known to be present** at this site; however no information is available on the relative importance of the site for nesting, feeding or development.
✓
H
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **high importance** for this species, relative to other sites in the country.
✓
A
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **average importance** for this species, relative to other sites in the country.
✓
L
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **lower importance** for this species, relative to other sites in the country.
a - h
Additional information on nesting habitat (where available):

Indicate the estimated number of nests per year for each species by inserting, in the appropriate boxes, one of the letters ' **a** ' through ' **f** ', corresponding to the following scale: **a**: 1 - 10 nests ; **b**: 11 - 100 nests ; **c**: 101 - 500 nests ; **d**: 501 - 1,000 nests ; **e**: 1,001 - 5,000 nests ; **f**: 5,001 - 10,000 nests ; **g**: 10,001 - 100,000 nests; **h**: more than 100,000 nests

	ND Flatback	DC Leatherback	EI Hawksbill	CM Green	LO Olive Ridley	CC Loggerhead
Nesting				✓		
Feeding				✓		
Developmental						

Describe the nature of and intensity of threats to marine turtles at this site:

	High (common occurence)	Medium	Low (rare event)	None	Unknown
Exploitation of nesting females (i.e. direct harvest on land)	✓				
Direct harvest of animals in coastal waters at or near the site	✓				
Egg collection (i.e. direct harvest by humans)	✓				
Incidental capture in coastal fisheries	✓				
Boat strikes					✓
Marine debris (e.g. plastics at sea, flotsam)			✓		
Industrial effluent				✓	
Inshore oil pollution				✓	
Agricultural/urban/tourism development (e.g. construction that disrupts nesting activities)				✓	
Artificial lighting (on land or near shore)				✓	

Habitat degradation (e.g. coastal erosion, debris that obstructs nesting etc.)			✓		
Vehicles				✓	
Sand mining / removal				✓	
Natural threats, disease, predation of nests/nesting females (e.g. by domestic / feral animals), or natural predation at sea			✓		
Other (type in):		Climate change			

What measures have been introduced to remove threats to marine turtles at this site?
☑ Monitoring / protection programmes
☑ Education / awareness programmes
☑ Requirements for modification of fishing gear or fishing practices (e.g seasonal or temporal closures)
☑ Designation / management of protected areas, sanctuaries, exclusion zones etc.
☑ Removal of debris / beach clean-up

Please give further details or clarification about any of the information provided, as appropriate / necessary.
› N/A

Site 5

Name of site/area:
› Mwakamba-Diani Location

Geographic coordinates (North/South)
☑ North

› 04° 16.452

Province / State:
› Coast, Kwale County

Name of person / agency wwho has provided the information:
› WWF-Kenya

Information was last updated: (dd/mm/yyyy)
› 15/06/2019

Indicate the species occurence / use and relative importance of the site:

Abbreviations: Loggerhead Caretta caretta (CC); Olive Ridley Lepidochelys olivacea (LO); Green Chelonia mydas CM); Hawksbill Eretmochelys imbricata (EI); Leatherback Dermochelys coriacea (DC); Flatback Natator depressus (ND)
Use one of the following symbols or letters to indicate the presence or absence of a species at this site in the table above, including details (if known) about the relative importance of the site for nesting, feeding or development.

Insufficient information is available on the presence or absence of the species (leave box empty)

The species is **not present** or does not use this particular habitat type at this site.
?
It is speculated (only) that the species is present at this site and may be using one or more particular habitat types. In the absence of definitive information, place a **?** in the appropriate box(es).
✓
The species is definitely **known to be present** at this site; however no information is available on the relative importance of the site for nesting, feeding or development.
✓
H
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **high importance** for this species, relative to other sites in the country.
✓

A
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **average importance** for this species, relative to other sites in the country.
✓
L
The species is known to be present at this site and definitely uses this particular habitat. The site is considered to be of **lower importance** for this species, relative to other sites in the country.
a - h
Additional information on nesting habitat (where available):

Indicate the estimated number of nests per year for each species by inserting, in the appropriate boxes, one of the letters ' **a** ' through ' **f** ', corresponding to the following scale: **a**: 1 - 10 nests ; **b**: 11 - 100 nests ; **c**: 101 - 500 nests ; **d**: 501 - 1,000 nests ; **e**: 1,001 - 5,000 nests ; **f**: 5,001 - 10,000 nests ; **g**: 10,001 - 100,000 nests; **h**: more than 100,000 nests

	ND Flatback	DC Leatherback	EI Hawksbill	CM Green	LO Olive Ridley	CC Loggerhead
Nesting				✓		
Feeding				✓		
Developmental						

Describe the nature of and intensity of threats to marine turtles at this site:

	High (common occurence)	Medium	Low (rare event)	None	Unknown
Exploitation of nesting females (i.e. direct harvest on land)			✓		
Direct harvest of animals in coastal waters at or near the site			✓		
Egg collection (i.e. direct harvest by humans)			✓		
Incidental capture in coastal fisheries			✓		
Boat strikes					✓
Marine debris (e.g. plastics at sea, flotsam)	✓				
Industrial effluent					✓
Inshore oil pollution					✓
Agricultural/urban/tourism development (e.g. construction that disrupts nesting activities)	✓				
Artificial lighting (on land or near shore)	✓				
Habitat degradation (e.g. coastal erosion, debris that obstructs nesting etc.)				✓	
Vehicles				✓	
Sand mining / removal		✓			

Natural threats, disease, predation of nests/nesting females (e.g. by domestic / feral animals), or natural predation at sea			✓		
Other (type in):					

What measures have been introduced to remove threats to marine turtles at this site?
☑ Monitoring / protection programmes
☑ Education / awareness programmes
☑ Egg relocation / hatcheries
☑ Requirements for modification of fishing gear or fishing practices (e.g seasonal or temporal closures)
☑ Designation / management of protected areas, sanctuaries, exclusion zones etc.
☑ Regulations on building location / design
☑ Regulations on artificial lighting
☑ Removal of debris / beach clean-up

Please give further details or clarification about any of the information provided, as appropriate / necessary.
› N/A