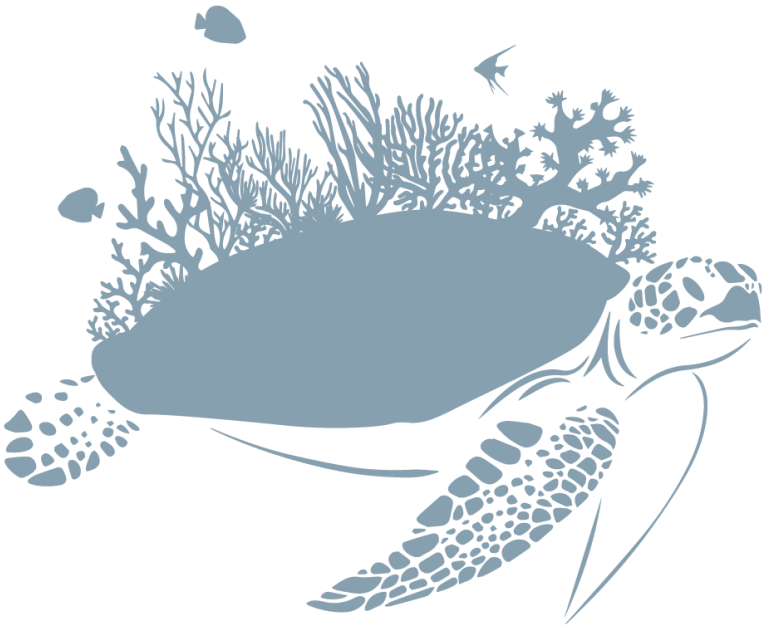
KINGDOM OF CAMBODIA
NATION RELIGION KING

MINISTRY OF AGRICULTURE FORESTRY AND FISHERIES

FISHERIES ADMINISTRATION

ACTION PLAN FOR PROTECTION OF SEA TURTLES IN CAMBODIA 2016-2026



FOREWORD

Sea turtles are some of the most important marine species in Cambodia and as such they are classified as Endangered Species under Sub-Decree No.123, dated August 23rd 2009. Of the species of sea turtle found in Cambodia, green turtles are listed as Endangered and hawksbill turtles as Critically Endangered on the IUCN Red List of Threatened Species. Sea turtles are also listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which bans international trade of these animals.

Both national and international frameworks are addressing the need to manage and conserve these species due to their endangered status in Cambodia, where the catch, sale, purchase and transport of sea turtles has been banned. In Cambodia, collecting and stocking of all types of endangered fisheries species from the natural environment is banned, except for the purposes of scientific research which must be under the written permission of the Fisheries Administration. In the case of accidental fishing of endangered species such as sea turtles, all fishermen are obliged to immediately release the animal into its natural waters without any exceptions. The endangered species must not be harmed, injured or killed and the incident must be reported to fishery staff and any instructions from Fishery Administration officials must be followed.

There is an urgent need for this Sea Turtle Action Plan and on behalf of the Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries; I fully support this Action Plan that will help the Fisheries Administration and the nation restore these species to their natural waters. In addition, I would like to deeply thank to Fauna & Flora International (FFI) and Department of Fisheries Conservation that have been preparing this important document. I strongly encourage all relevant institutions, organizations and donors to support and contribute to the successful implementation of this Action Plan. On behalf of the Fisheries Administration, I would like to declare the Action Plan for protection of sea turtles in Cambodia to be implemented from this day forwards./.

Phnom Penh, 18 October 2017

ENG CHEASAN

Delegate of the Royal Government of Cambodia,
Director General of Fisheries Administration

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Sea turtles, also known as marine turtles are a flagship species for Cambodia's marine habitats. Five species of sea turtle have been recorded in the coastal waters of Cambodia, yet all are currently under threat of local extinction. Key threats include destructive fishing practices and associated by-catch, habitat degradation, coastal development, and pollution. In addition, opportunistic harvesting of meat and eggs reduce the likelihood of fishers releasing turtles caught as by-catch, and the combating threats of global warming add further challenges to sea turtle survival.

The goal for this action plan is that:

By 2026, sea turtles and their habitat are protected or conserved, providing healthy ecosystems and economic prosperity for future generations of Cambodia.

We will achieve this through the following complementary objectives:

1. Reduce anthropogenic threats that cause mortality of sea turtles and their eggs
2. Protect and rehabilitate sea turtle foraging and nesting grounds
3. Strengthen research and monitoring of turtle populations, foraging and nesting habitats and by-catch reduction methods
4. Increase public awareness of the threats to sea turtles and their habitats, and enhance public participation in conservation activities and
5. Strengthen national and trans-boundary collaboration, and regional and international information sharing on sea turtles.

This report outlines the priority actions needed to achieve these objectives, thereby ensuring the long-term survival of sea turtles in Cambodia.

1. BACKGROUND

1.1 TAXONOMY

Kingdom : Anamalia
Phylum : Chordata
Class : Reptilia
Order : Testudines
Suborder : Cryptodira
Family : *Cheloniidae* or *Dermochelyidae*
Species : *Chelonia mydas, Eretmochelys imbricate, Dermochelys coriacea, Caretta caretta,* & *Lepidochelys olivavea*

1.2 POLICIES

1.2.1 INTERNATIONAL CONSERVATION AND LEGAL STATUS

The IUCN Red List of Threatened Species (IUCN) classifies six of the seven species of sea turtle as threatened with extinction. Of the five species of sea turtle found in Cambodia, the IUCN has listed them as the following: Green turtle (*Chelonia mydas*): Endangered (Seminoff 2004); Hawksbill turtle (*Eretmochelys imbricate*): Critically Endangered (Mortimer & Donnelley 2008); Leatherback turtle (*Dermochelys coriacea*): Vulnerable (Wallace et al 2013); Loggerhead turtle (*Caretta caretta*): Vulnerable (Casale & Tucker 2015); Olive Ridley turtle (*Lepidochelys olivavea*): Vulnerable (Abreu-Grobois & Plotkin 2008). All are CITES listing Appendix 1, which prohibits international trade in these species except for non-commercial import purposes (e.g. scientific research).

1.2.2 NATIONAL POLICIES AND LEGISLATION

Based on the Cambodian Sub-Decree N. 123 (2009) on Identification of Endangered Fisheries Resource, all five species of sea turtles found within Cambodia are listed as an Endangered Fisheries Resource. It is illegal under Cambodian Fisheries Law to capture, collect, process, trade or kill any sea turtle in Cambodia (2006). This is reiterated within the Proclamation on Protected Measure on Endangered Fisheries Resources (2010). Although high protective legislation is in place, little active protection is afforded to sea turtles at present. Since becoming a full member of ASEAN in 1999 Cambodia should aim to adhere to the Memorandum of Understanding (MoU) of ASEAN Sea Turtle Conservation signed by all nine ASEAN member countries (Ing 2000). In addition to ASEAN, Cambodia is a signatory to a number of regional legislation relating to the conservation of sea turtles, including the Indian Ocean South-East Asian (IOSEA) MoU (signed in 2002). For a full list of national and international legislation relating to sea turtles see Appendix 1.

1.3 CONSERVATION SITUATION

1.3.1 DISTRIBUTION, POPULATION SIZE AND TRENDS

Standardized information on sea turtles in Cambodia is sparse, and reports or sightings are largely anecdotal from local fishers. In the 1990s, anecdotal data were collected by Cambodian fishers, who reported that five species of sea turtles had been seen regularly prior to 1979, including the olive ridley, hawksbill, loggerhead, green and leatherback turtle (Ieng 1999; McNamara *et al.* 2016). In 2010, an updated survey indicated that fishers (n=66) reported seeing all five species; however, sightings of olive ridleys, loggerheads and leatherbacks had decreased (FFI 2011). Of the fishermen surveyed, 72% had reported to see green, 74% hawksbill, 3% olive ridley, 1% loggerhead and 1% leatherback turtles (FFI 2011).

In 2015, participants of a provincial survey mapped sea turtle sightings observed over a 10-year period (Figure 1) (McNamara *et al.* 2016). Overall, 233 turtle sighting events (in water and underwater, not nesting) were recorded by 120 participants from Kampot, Kep, Preah Sihanouk and Koh Kong provinces (McNamara *et a*l. 2016). Sightings are recorded per grid section to depict where hotspots are occurring. Although this information cannot provide an accurate understanding of species abundance, this survey has shown a clear observed decline in sea turtle sightings over the past 10 years.

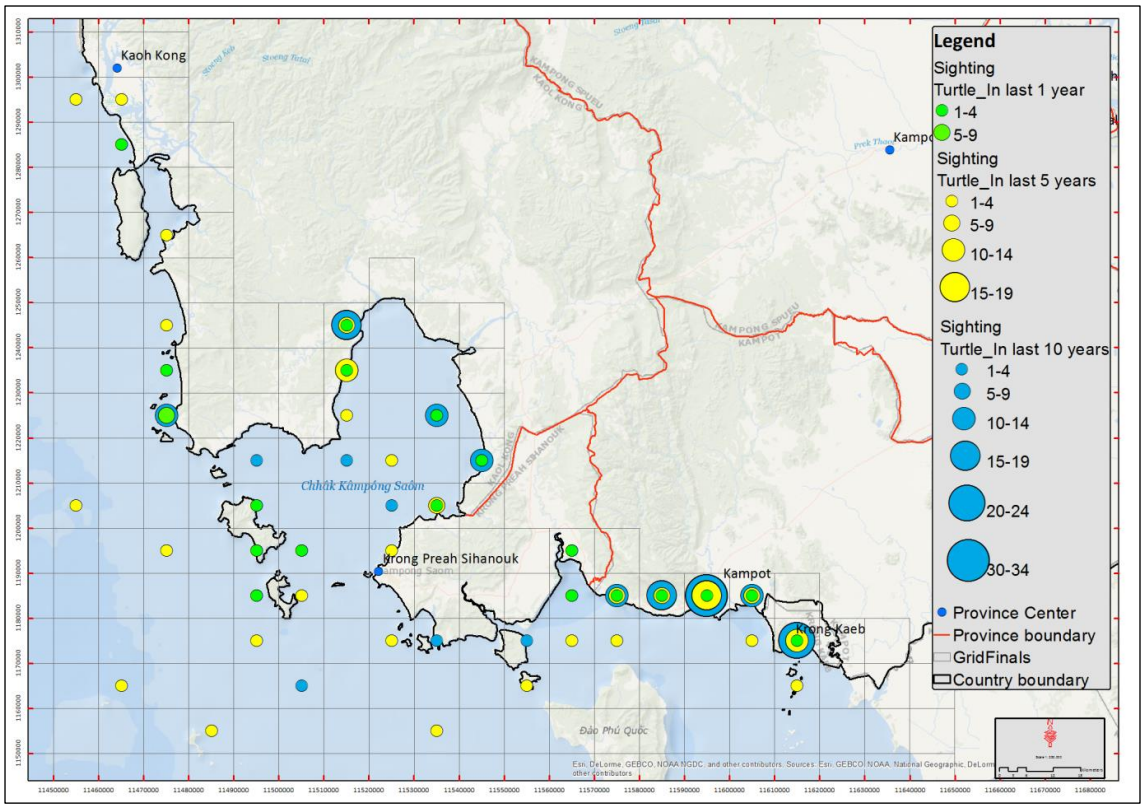

Figure 1. Anecdotal sea turtle sighting events from 2005-2015 (number of participants: 120; total number of turtle sighted: 233) (Source: McNamara *et al.* 2015)

1.3.2 LIFE HISTORY

Sea turtles are highly migratory animals, travelling long distances throughout tropical and subtropical ocean environments around the globe (Guebert *et al.* 2013; Plotkin 2010). Although they are air-breathing reptiles, sea turtles spend most of their lives beneath the ocean surface (Lohmann & Musick 2013), inhabiting pelagic to estuarine and coastal waters depending on their life stage and species (Guebert *et al.* 2013; Bolten, 2003). Most species undertake migrations between well-established breeding grounds and foraging areas at regular and relatively predictable intervals (Plotkin 2003; Plotkin 2010). Whilst males spend their entire lives at sea, females nest on sandy tropical beaches and oceanic islands several times per season, every 2-5 years, with an incubation period of approximately 60 days (Guebert *et al.* 2013; Lohmann & Musick 2013).

Sand temperature in which the turtles nest will determine the sex of the hatchlings (Yntema & Mrosovsky 1980). Although there are fluctuations among species and populations, in most populations, cooler temperatures below 29 °C will produce predominately male offspring, and warmer temperature above 30 °C will produce predominately female offspring (Mrosovsky; Chevalier *et al.* 1999; Morreale *et al.* 1982; Santidrián Tomillo *et al.* 2015; Wibbels 2003; Yntema & Mrosovsky 1980).

1.4 KEY HABITATS

1.4.1 Coral reefs

An estimated 2,700 ha of coral reef align Cambodia's coastline, totaling 28km^2 (Johnson & Munford 2012), the majority of which is found in Preah Sihanouk province (FiA 2005) (Figure 3). Most of Cambodia's reefs are located near offshore islands, in shallow depths between 2.5 to 30 meters below the surface (Krell et al. 2011). These valuable habitats support biodiversity, fisheries, livelihoods, and provide coastal protection through the regulation of global climatic systems, moderation of extreme events and waste treatment (Brander *et al.* 2007; Londono & Johnston 2012).

Coral reefs also act as important foraging grounds for sea turtles (Sims 2009). Hawksbill turtles feed on mostly encrusting invertebrates such as anemones, corals and sponges, and both adult and juveniles can be found foraging in coral reef habitats (Goatley *ei al.* 2012; Leo´n & Bjorndal 2002; Lohmann & Musick 2013). In addition, green turtles also frequent coral reefs within their range, and, along with hawksbill turtles, act as reef grazers of algae that build up on corals (Goatley *et al.* 2012). They can therefore be considered to be key components of the resilience of coral reefs.

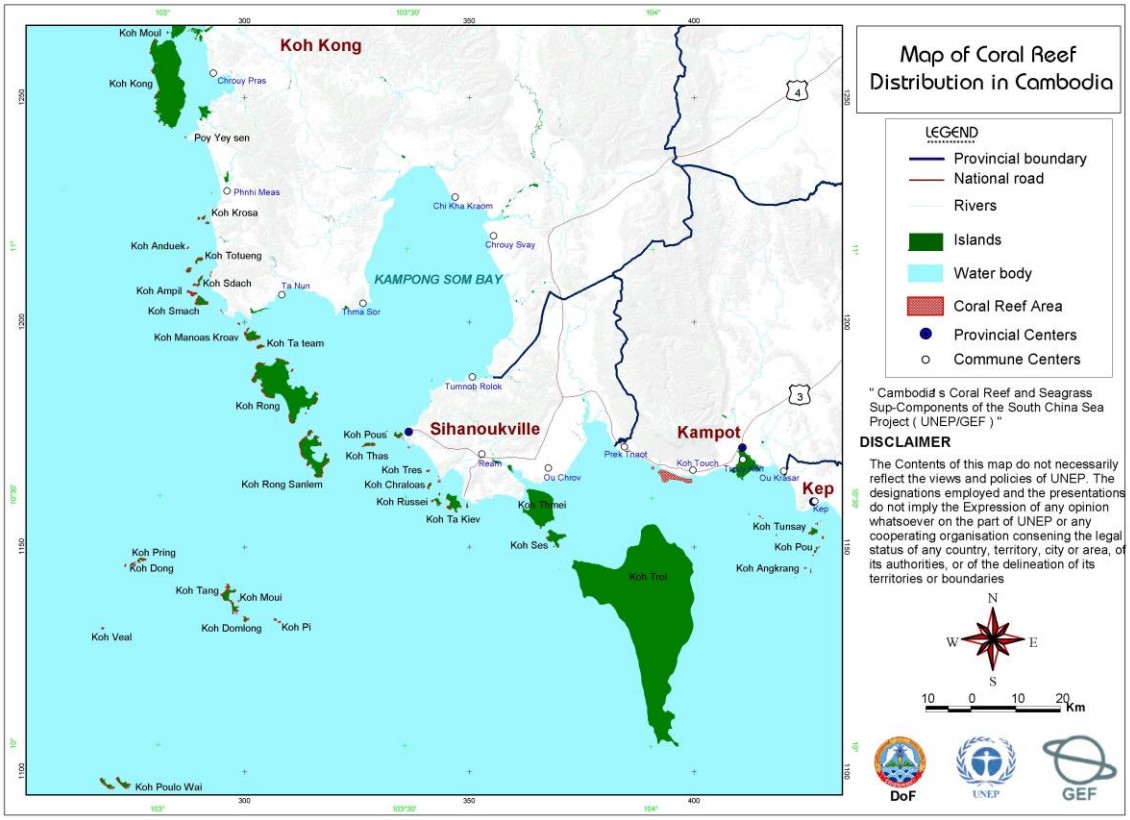

Figure 2: Coral reef distribution in Cambodia (Source: FiA 2005)

1.4.2 SEAGRASS BEDS

The total area of seagrass in Cambodia's waters covers 30,000 ha (Johnson & Munford 2012) (Figure 4). The largest area lies in Kampot, covering 25,240 ha (Johnson & Munford 2012). Other areas of high seagrass cover include Koh Kong (3,993 ha) and Kep province (3,095 ha) (FiA 2005) (Figure 4). The smallest area of seagrass is found in Preah Sihanouk province (164 ha) (FiA 2008).

Seagrass beds provide critical feeding and breeding grounds for sea turtles, in particular green turtles (UNEP 2008). Green turtles graze on seagrass blades, which helps to maintain seagrass health by increasing the productivity and nutrient content of grass (Zieman *et al.* 1999; Jackson *et al.* 2001). Grazing also keep seagrass beds from becoming overgrown which would otherwise obstruct currents, shade substrate, and decompose (Jackson *et al.* 2001; Moran & Bjorndal 2005; Zieman *et al.* 1999).

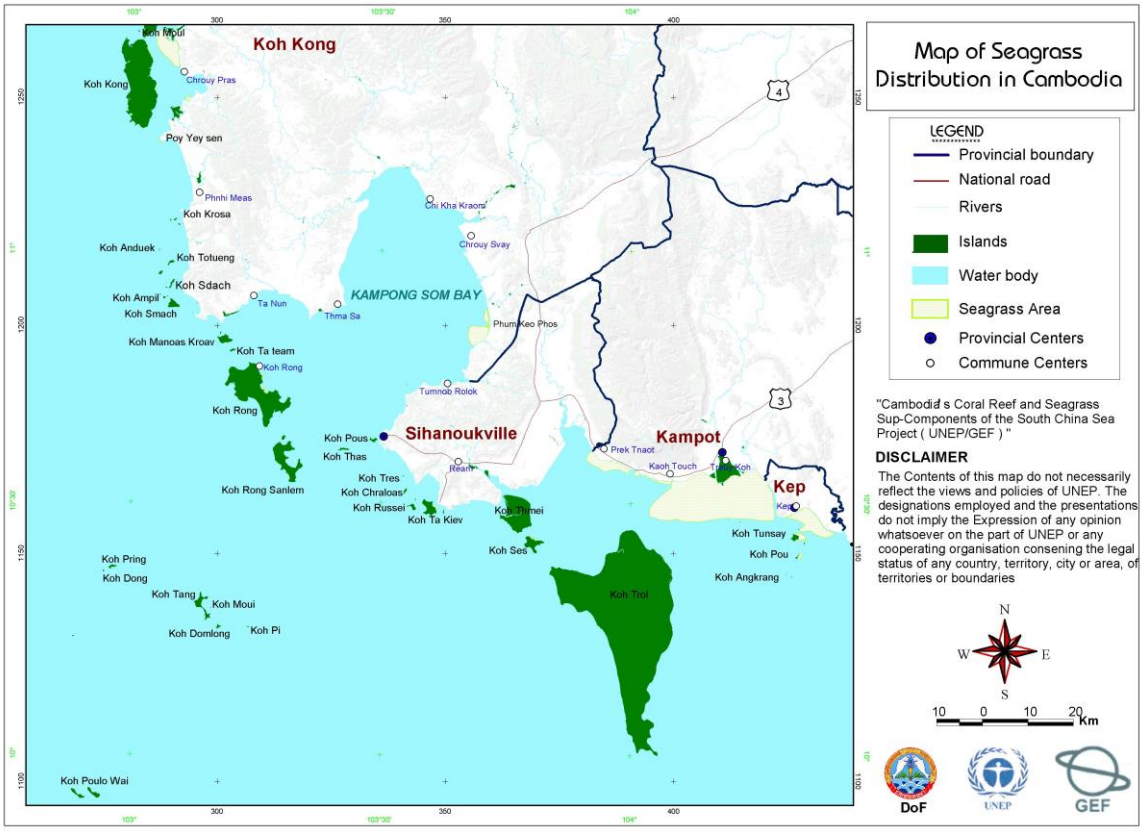

Figure 3: Distribution of seagrass in Cambodia (Source: UNEP 2008).

1.4.3 MANGROVES

Mangroves have historically played a poorly appreciated role in the diet of sea turtles; however numerous studies have shown that localised feeding exists (Amorocho *et al.* 2007; Limpus & Limpus 2000; Pendoley & Fitzpatric 1999). Green turtles in particular have been observed to feed on mangrove leaves and fruit during high tides when mangroves are most submerged underwater (Amorocho *et al.* 2007; Limpus & Limpus 2000).

Cambodia's coast and islands are scattered with mangrove forests, covering a total of 78,400 ha (Figure 5) (Johnsen & Munford 2014). The majority of mangrove forests are found within Koh Kong province and are considered to be wetlands of international importance (Johnsen & Munford 2014). These mangroves are protected under the Koh Kapik and Associated Islets Ramsar Site and the Peam Krasop Wildlife Sanctuary (Johnsen & Munford 2012). In addition, the 112ha of mangroves of Koh Rong and 15 ha of mangroves of Koh Rong Sanloem (Johnsen & Munford 2012) are managed within the Koh Rong Archipelago Marine Fisheries Management Area (KRA-MFMA) (Mizrahi *et al.* 2016).

Despite the importance of mangroves to turtles (and as broader ecosystem service providers (Chang-yi *et al.* 1997; Giesen *et al.* 2007; Malik *et al.* 2015)), annual rates of mangrove clearing is occurring (often illegally) at an accelerated rate: 1.6% between 1990 and 2000, and 1.9% between 2000 and 2010 (Johnsen & Munford 2012). Reasons for clearing are predominantly for use as firewood, charcoal, saltpan investments, aquaculture, and coastal development (Johnsen & Munford 2012; Mizrahi *et al.* 2016)

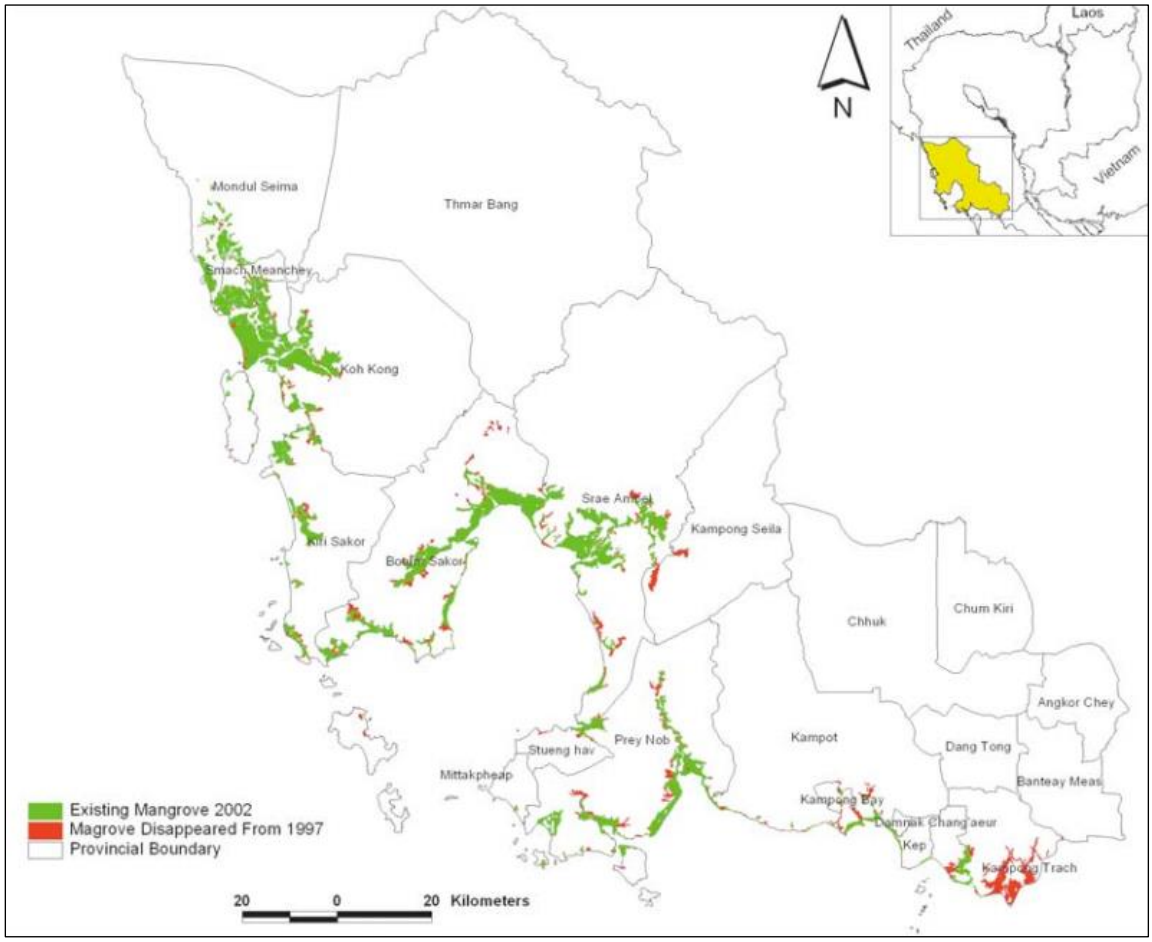

Figure 4: Distribution of mangroves in Cambodia (Source: MoE 2007).

1.5 PRIORITY ISSUES

1.5.1 KEY THREATS TO SEA TURTLES

All species of sea turtle are currently under threat of extinction (IUCN 2012; MMA 2008). Almost all of these threats are human induced (Guebert *et al.* 2013). Habitat loss and degradation due to uncontrolled coastal development directly threaten critically important nesting beaches (Guebert *et al.* 2013), and opportunistic harvesting of meat and eggs reduces the likelihood of fishers releasing accidently caught turtles. In addition, the threats of global warming add further challenges to sea turtle survival.

A 2015 provincial consultation of Cambodia's coastal community members identified the principle perceived threats to Cambodia's sea turtles to be:

1. **Fishing** (trawling, hook & line, illegal fishing & by-catch);
2. **Habitat degradation** (seagrass & coral reef);
3. **Development** (coastal and island construction);
4. **Pollution (**ghost nets, solid waste) (McNamara *et al.* 2016).

1.5.2 FISHING

An intensification of fishing effort over the course of the last century has resulted in overall marine species population decline (Anticamara *et al.* 2011; Casale 2011; FiA 2015). In Cambodia, marine fisheries capture had increased steadily from 85,000 metric tons in 2010 to 120,250 metric tons in

2014, then increased to 120,500 metric tons in 2015 (without accounting for fishing effort) (FiA 2015). Increased fishing capture up until 2014 has in turn led to amplify incidental captures of non-target species such as sea turtles. Capture of sea turtles as by-catch is of major concern throughout all of coastal Cambodia. Nets, hooks and illegal inshore trawling remain to be the primary fishing techniques implicated in turtle by-catch incidents within the country (FFI 2011). In 2015, purse seine was identified as another key fishing method to threaten sea turtles (McNamara *et al*. 2016).

1.5.2.1 Gillnets

Gillnets are mesh nets that allow fish to pass their heads through a hole, then become stuck whilst they attempt to swim out. In Cambodia, these nets can be 4km to 6km long and up to 4m deep (FiA & FFI 2015). Nets are difficult to see underwater and trap everything larger than the nets' mesh, including sea turtles (FiA & FFI 2015). Although artisanal fishers in Cambodia do not appear to regularly target sea turtles, hawksbill and green turtles are occasionally caught as by-catch in crab gillnets (McNamara *et al.* 2016, Sann Satya pers comm.).

1.5.2.2 Trawlers

Trawlers drag large weighted nets along the seabed, capturing nearly everything in their path. Not only can they catch sea turtles directly, trawlers can also have a detrimental impact on turtle habitat, damaging coral reefs and sea grass beds when used at shallow depths (FiA & FFI 2015; Sensereivorth & Rady 2013). In addition, trawling for long periods of time increases the risk of a turtle suffering from decompression sickness or drowning due to prolonged periods without surfacing for air (FiA & FFI 2015; García-Párraga *et al.* 2014). Recent research findings are also demonstrating that accidentally caught sea turtles that are brought alive on deck and seemingly healthy may be suffering from decompression sickness and die post release if not treated in decompression chambers (Garcia-Parraga D., *et al.* 2014).

In addition, shrimp fisheries make up one of the largest targeted marine species in Cambodia, and are generally targeted through trawling (Sensereivorth & Rady 2013). Shrimp trawling is considered one of the most indiscriminate fishing methods as the small mesh used to capture shrimp allows for few other animals to escape (Kelleher 2005). As shrimp fishing efforts continue to accelerate over time (Sensereivorth & Rady 2013), we can assume that so does the implementation of trawling practices.

1.5.2.3 Long Line Fishing

Long line fishing is a commercial fishing technique that uses long, bated lines to catch its target. Although long line fishing commonly targets rays and sharks, turtles are often attracted to the baited 'J-hooks' (FiA & FFI 2015). These can lead to suffocation or internal bleeding when swallowed and can cause death. A circular hook has been shown to effectively reduce the amount of by-catch caught by long line fishing (Mooreside 2008; Pacheco *et al.* 2011). Due to their shape, these hooks are less likely to be ingested by the turtle and are therefore easier to remove – improving post-hooking survival rates (Mooreside 2008).

Furthermore, long lines remain in the water for lengthy periods of time (sometimes over 16 h) (Hazin 2006). This will often result in the drowning of turtles caught incidentally by the time of lines are retrieved (Hazin 2006, FAO 2010).

1.5.2.4 Purse Seine

Purse seine fishing involves the utilization of a large weighted dragnet, typically deployed around a school of fish. A reported 31% of accidental captures of sea turtles in Cambodia are caught in purse seine nets (McNamara *et al.*2016). This method of fishing has been identified as a key threat in

Kampot and Kep (McNamara *et al.* 2016). The chances of turtles dying from purse seine are low as fishers are able to retrieve their nets quickly. The decision to release or keep, however, is ultimately with the fishers.

1.5.3 HABITAT DEGRADATION & DEVELOPMENT

Development along Cambodia's coastline is increasing at an unprecedented rate, with little environmental regulation (McNamara *et al.* 2016; Rizvi & Singer 2011). Many turtle nesting habitats along Cambodia's islands such as Koh Pring, Koh Tunsai, and Koh Tang are currently leased with future plans for development (McNamara *et al.* 2016). Coastal development directly impacts a turtles' ability to nest on beaches (Verutes *et al.* 2015). Bright lights from infrastructure attract hatchings, disorientating them away from the sea (Verutes *et al.* 2015). High traffic on beaches also compacts the sand, making it increasingly difficult for turtles to dig nests (Sea Turtle Conservancy 2015). Furthermore, irresponsible tourism can lead to littering, disturbing sea turtle nesting sites, and supporting the curios trade (Sea Turtle Conservancy 2015).

Ongoing development activities also damage coastal water quality and cause key sea turtle habitat degradation (Rizvi & Singer 2011). Waste from residential areas and industry is of particular concern due to poor management of wastewater from an increasing population and growing industry (Rizvi & Singer 2011). Upstream agricultural runoff discharges chemicals and sediment from rice fields, salt harvesting, and aquaculture into the marine environment (McNamara *et al.* 2016; Rizvi & Singer 2011). Additional pollution from offshore development of oil and gas exploration causes discharge of solid and liquid waste, and accidental spillage (Rizvi & Singer 2011). Finally, illegal fishing practices such as dynamite and 'cyanide' fishing spill harmful chemicals into the water, damaging coral polyps and algae (Rizvi & Singer 2011).

1.5.4 POLLUTION

Discarded ocean plastics are recognized as a major pollutant to the marine environment, representing a serious threat to the marine ecosystem (Poli *et al.* 2015). Sources of these pollutants are largely land-based activities (e.g. plastic debris from urban areas & beach litter) and to a lesser degree ocean-based sources (abandoned fishing gear and ocean dumping by ships and boats) (Barletta & Costa, 2009; Chapman 2012; Liebezeit *et al.* 2011). Turtles often mistake floating garbage to be food such as jellyfish. Plastic debris in digestive tracts can cause blockages, ulceration, internal perforation and death (Hoarau 2014; Poli *et al.* 2015). Results from a necropsy of a dead juvenile turtle found in Koh Sdach revealed plastic in its digestive tract (reported to FFI 24th May 2013 by Shallow Waters).

Consequences from debris ingestion are disease (Derraik 2002) and increased vulnerability to fishing gears and vessel collisions (Poli *et al.* 2015). In addition to consumption of plastics, sea turtles are subject to entanglement in discarded fishing gear or 'ghost nets', which can cause injuries and in some cases death (Guebert-Bartholo *et al.* 2011). In 2014, a live green turtle was found off shore from Koh Rong Sanloem entangled in a ghost net (reported to FFI 2nd March 2014). Litter on key potential nesting beaches, such as Koh Tang and Koh Pring, could further impact turtle nesting activities, acting as a significant barrier to turtles attempting to nest on beaches (FFI 2013).

1.5.5 OPPORTUNISTIC HARVESTING OF MEAT AND EGGS

In 2010, FFI conducted a rapid assessment to determine the status of sea turtle nesting in Cambodia (FFI 2011). 87% of fishermen surveyed declared that there was no trade of turtle meat; 8% stated there had been localized trade in the past with caught turtles being sold occasionally to neighbours (FFI 2011). Results from a 2015 provincial consultation suggest that meat is eaten occasionally in all

provinces with the largest consumption in Kampot and Kep (McNamara *et al.* 2016). Turtle eggs are also eaten in Koh Kong and Sihanoukville (McNamara *et al*. 2016).

The reported market price for meat is US$1-$4 per kg however turtle meat has not been seen on the market in recent years (McNamara *et al.* 2016). Community members will more likely consume large turtles that are accidentally caught as by-catch ((McNamara *et al.* 2016). Although this varies from village to village, both green and hawksbill turtles are sometimes not eaten as they can be considered to be poisonous by local custom (FFI 2011). Turtle eggs were also not reported to be marketed, however, in 2010, six of the seven nesting sites found on Koh Tang, had been dug up, presumably sold or eaten (McNamara *et al.* 2016).

Turtle carapaces are reportedly sold on the Cambodian market for approximately US$15 per shell, however incidences are rare (McNamara *et al.* 2016). Some Cambodian fishers collect accidently killed turtles and keep their products for future sale; e.g. one interviewed fisherman owned 6 turtle carapaces (2x green turtle and 4x unconfirmed) that he had collected over a 2-3-year period, however was unsure as to what to do with them (McNamara *et al.* 2016).

1.5.6 Global Warming

Projected global warming trends threaten sea turtles directly due to their temperature dependent sex determination (Santidrián Tomillo *et al.* 2015). Climate change projections indicate that air temperatures will likely increase to 1–4 °C warmer than today by the end of the 21st century (Santidrián Tomillo *et al.* 2015). This could lead to hatchling production at many nesting sites could become 100% female by the end of this century (Santidrián Tomillo *et al.* 2015). Higher incubation temperatures beyond 33- 35 degrees C can also lead to increasing embryo mortality (Howard *et al.* 2014).

An additional consequence of global warming is ocean acidification: the increase in acidity of coastal waters (Wong *et al.* 2014). This changing p.H. of water will compound the stress to coral reefs and seagrass, causing coral bleaching and subsequently the loss of key sea turtle habitat (Koch et *al.* 2013; Wong *et al.* 2014). Furthermore, global mean sea levels are predicted to rise by up to 0.98m by 2100 (with regional variations) (Wong *et al.* 2014), decreasing already threatened sea turtle nesting habitats (Pike *et al.* 2015).

2. Ongoing conservation strategies

2.1 Sea turtle Conservation Team

FiA, FFI and their local partners have worked to establish and build an informal Sea Turtle Conservation Team, composed of counterparts from the provincial and national Community Fisheries, FiA and national FFI staff. This project aims to ensure that information on key sea turtle habitats is available and incorporated into MPA zoning schemes, thereby affording greater protection to turtle nesting and foraging grounds within the first model large-scale marine fisheries management area (MFMA) in the KRA.

2.2 Marine Fisheries Management Area (MFMA)

The Royal Government of Cambodia has established the country's first large-scale MFMA in the KRA, declared on the 16th June 2016. This marks a significant step towards meeting Cambodia's commitment under the Convention for Biological Diversity to effectively conserve and equitably

manage 10% of the country's marine and coastal areas by 2020. This MFMA encompasses over 400 km^2 of ocean, including key turtle habitat of fringing reefs, seagrass beds, and mangrove forests. Zoning legislation within the MFMA will have a positive effect on sea turtle population by restricting fishing activities in Conservation Areas, prohibiting destructive fishing gear and prohibiting trawling in shallow inshore areas (<20 m water deep) (Mizrahi *et al.* 2016). One limitation of the MFMA is that it does not provide protection to sea turtles and their habitats outside of its jurisdiction. Sea turtles are highly migratory species and are thus likely to spend most of their time outside of the MFMA. Therefore, although the MFMA can protect key turtle habitats within allocated zones, more effort needs to be done to protect turtles outside of their nesting and foraging grounds (Hyrenbach *et al.* 2007).

2.3 PATROLLING

In 2010, FiA of the Ministry of Agriculture, Forestry and Fisheries (MAFF) worked in collaboration with FFI to survey the sea turtle population in Cambodia. The result of this survey led to all parties supporting the protection of the sea turtle nesting site on Koh Tang. The Cambodian Navy was asked to warden, patrol, and clean the beach every day to protect the nesting site under the guidance of FFI and FiA. FFI also provides technical advice to the three Community Fisheries (CFi) in the KRA for patrolling the near shore and conservation areas of their boundaries that lie within the MFMA. These patrols visit the conservation areas within the CFi boundaries and key sea turtle foraging habitat, specifically coral reef and seagrass beds.

2.4 AWARENESS RAISING

Between 2010 and 2014, FiA and FFI carried out sea turtle nest awareness raising activities throughout the KRA. An incentive program was developed to help manage any new nesting site. This included a US$10 reward for anyone who found a nest, US$1 per egg hatched and US$0.50 per egg that didn't hatch.

In 2014, FiA and FFI conducted a workshop focusing on sea turtle conservation and sea turtle safe handling releases in the KRA. FFI conducted a re-training program in the KRA in 2015, raising awareness and building capacity on the sea turtle safe handling release. In addition, a Sea Turtle By-Catch Reduction manual has been produced to provide useful recommendations to fishers to help reduce the number of sea turtles caught as by-catch and to instruct on safe measures of release in order to maximize the potential for turtles surviving accidental catch.

3. ACTION PLAN MATRIX

3.1 AIM

Protect and conserve sea turtles and their habitat for healthy ecosystems, economic prosperity and future generations of Cambodia.

3.2 OBJECTIVES

1. Reduce anthropogenic threats that cause mortality to sea turtles and their eggs.

2. Protect and restore sea turtle foraging and nesting grounds.

3. Strengthen research and monitoring of turtle populations, foraging and nesting habitats and by-catch reduction methods.

4. Increase public awareness of the threats to sea turtles and their habitats, and enhance public participation in conservation activities.

5. Strengthen national and trans-boundary collaboration, and regional and international information sharing on sea turtles.

3.3 OUTCOMES

1. Sea turtle populations are increased.

2. Coral reef, seagrass, and mangrove health is improved. Nesting success and survival rates are increased.

3. Accurate determinations of sea turtle populations (abundance, diversity, and distribution) are established. Research and monitoring is used to inform management.

4. Cambodia's coastal community members are instilled with an awareness about the value of sea turtle biodiversity and as a flagships species for associated habitats.

5. Trans-boundary efforts and legislation are implemented and enforced.

4. ACTIVITIES

Note: L= Low, M=Medium, H=High and VH= Very high

Actions	Indicators/Outputs	Budget	Responsible Institutions	Risk and Assumptions	Outcome/ Result	Priority Level	Relevance to International Agreements
GOAL: Protect and conserve sea turtles and their habitat for healthy ecosystems, economic prosperity and future generations of Cambodia							
Objective 1: Reduce anthropogenic threats that cause mortality to sea turtles and their eggs							
1.1 Identify and document anthropogenic threats to sea turtles	1. Conservation management recommendations 2. Targeted conservation practices applied in the field by FiA, CFi and NGOs 3. Sea turtle consultation 3 time with coastal province 4. Reported for sea turtle situation	$1000 2016 &2017	NGO, FiA	A: Community members are willing to provide anecdotal information about sea turtles R: Fishers are not honest about destructive fishing practices	Improved knowledge outlining the threats to sea turtles, allowing targeted conservation actions to combat anthropogenic threats	H	
1.2 Regulate and where appropriate combat (illegal) fishing practices threatening sea turtles.	1. Regular patrols (5 days per month), conducted in shallow waters 2. Patrol report sea turtle foraging habitat 3. Report of confiscated equipment and penalties	$25,000 per year	FiA, CFi, local authority, border police, police and navy	A: Wider governance of marine resources R: Lack of enforcement capacity and limited budget Trans-boundary illegal fishing	Reduced threat from fishing / bycatch / illegal fishing	H	
1.3 Build CFi, FiA and local authority's capacity to support the implementation of turtle safeguarding legislation.	1. Annual training for CFi, FiA and local authority's representatives 2. Clear reporting channel between CFi and FiA and procedures for rapid response in case of illegal activities on land and sea.	$5,000 from 2017	CFi, FiA, navy, police, local authority,	A: Participants are active in training workshops and utilise taught techniques	Increased local management of marine resources. Endangered species values are more widely understood.	VH	
1.4 Reduce sea turtle by-catch by switching to turtle-friendly fishing gears	1. Pilot turtle friendly devices and methods 2. Roll out training for CFi and 40 fishermen on turtle friendly devices and methods 3. Market turtle friendly fishing equipment 4. Fishing net projects set up in key areas	$10,000 per year	CFi, FiA, NGO	A: Marketability of new gear modifications / practices A: Fishers have the resources to buy new gear R: Challenge to introduce new or modified gears	Reduction in by-catch of sea turtles Reduction in number of sea turtles caught or killed by ghost nets	VH	
1.5 Identify opportunities for the financial support for sea turtle friendly practices	1. Liaise with SEAFDEC and other turtle conservation and research bodies to see if there is the opportunity to receive support on investment into turtle friendly devices (e.g. TEDs)	$2000 from 2020	FiA, NGO	R:No funding available	Turtle friendly devices are donated and implemented within Cambodia	M	

Objective 2: Protect and rehabilitate sea turtle foraging and nesting grounds							
2.1 Identify areas of critical habitat such as migratory corridors, nesting beaches, inter-nesting and feeding areas and finding the necessary measures to protect and conserve that area	1. Mapping of important and threatened habitat 2. Awareness about sea turtle habitat to local people and authorities 3. Poster & banner of important habitat in the key habitat 4. Report of patrol of habitat and nesting area	$4000 (year 1&2)	FiA, NGO, CFi, Local Authority, University	R: Infrequent nesting makes funding projects inefficient R: Infrequent nesting makes it difficult to identify nesting areas R: Lack of by in from local businesses and communities R: Timeframe until useable data	Critical habitats for sea turtle populations will be identified to allow for better approach to management	VH	
2.2 Explore legislative options for the protection of key nesting and foraging sites.	1. Legislation identified 2. Legislation passed to protect key turtle nesting and foraging sites	*$5,000* from 2018-2020	CFi, FiA, NGO, provincial government	R: Challenge of passing new legislation. A: Compliance with new legislation	Key nesting and foraging habitat is protected. Reduced threat from harvesting, pollution, habitat degradation.	H	From IOSEA agreement
2.3 Demarcation and protection of conservation zones, sanctuaries and fisheries refugia zones in areas of critical habitat (conservation zones, MPAs, MFMAs).	1. Report of recommended sites 2. Agreement of conservation areas with local communities 3. Site specific outreach projects 4. Demarcation	$15,000 in 2016-2017; $4000 from 2018 onwards	FiA, CFis, Navy, FiAC, NGOs including IUCN and FACT, CORINE, community	R: Private land owners do not support conservation activities A: Compliance by fishers on conservation areas legislation	Reduced threat from fishing and habitat degradation Sea turtle population is increase	VH	
2.4 Install artificial reef or posts to prevent trawling in turtle habitat	1. Installations in critical habitats or foraging areas (e.g. on the boundary of seagrass beds)	$8,000 years 17-20	FiAC, NGOs including IUCN and FACT, CORINE, community	R: Governance limitations A: Must ensure that posts do not damage existing habitat.	Reduced threat from habitat degradation Reduced threat from trawlers Improved key turtle habitats of coral reefs and seagrass beds.	VH	
2.5 Develop incentives for adequate protection of areas of critical habitat outside protected areas	1. Identify critical sites outside of protected areas 2. Develop schemes led by communities	*$7,500 a year (2018 onwards)*	FiAC, NGOs including IUCN and FACT, CORIN, community	A: Knowledge of key habitat areas R:overnance limitations	Reduced threat from habitat degradation	VH	From IOSEA agreement
2.6 Integrate conservation and protection of sea turtles into the land use planning process and private sector stakeholders, in order to limit impact of development on key sea turtle habitats.	1. Report identifying key sea turtle habitats and land use planning recommendations 2. Actions to be implemented within the provincial land use development plans	$2,000 2018-2020	FiA, FiAC, Provincial government, NGO, Provincial Department of tourism, DP, Private sectors, dive operators	R: Private sector do not support conservation initiatives	Reduced threat from development and pollution	VH	
2.7 Engage the community in the protection and restoration of key habitats	1. Education programme for fishermen on legislation, damaging and non-damaging fishing methods and long term benefits 2. Develop outreach and education on islands and in foraging and nesting hotspots to engage communities, especially new immigrants, in sea turtle conservation and the importance of rehabilitation of degraded habitats to their livelihoods (IEC materials))	$4,000 per year	NGO, local authority, community, FiAC CFi, DP	A: Fishers available for education programmes R: Length of time it takes to change community perception	Communities and fishers take onboard conservation initiatives	VH	
2.8 Engage with the private sector on upstream development and how this will effect sea turtle habitat	1. Open lines of communication between the FiA, CFi, NGOs and members of the private sector 2. Report outlining private sector activities that effect sea turtle habitat	$3,000 2020 onwards	FiA NGOs CFi	R:Lack of openness to communication between the private sector and the conservation sector	Reduced threat from upstream runoff or development to sea turtle habitat	L	

Objective 3: Strengthen research and monitoring of turtle populations, foraging and nesting habitats and by-catch reduction methods							
3.1 Create four primary databases for sea turtle research and monitoring	1. Create national database system to collate data collected throughout the country: A. Distribution and abundance of nesting B. Migration that links nesting sites to feeding areas C. Sea turtle genetics D. Causes of mortality to sea turtles 2. Training to CFi, FiA, NGOs, dive operators and coastal communities on ad hoc data collection procedure	$500 2016 $1000 2017 only	FiA, CFi, NGOs, FiAC, Provincial government, NGO, Navy, Provincial Department of tourism, DP, Private sectors, dive operators	R: Incorrect or non-uniform data collection	Data across the country can be collected and stored in one place resulting in a more comprehensive understanding of turtle populations and behavior within Cambodia	H	
3.2 Collate and document information on sea turtles and their critical habitats in Cambodia, and highlight research gaps.	1.Regular status review updates 2. Memo outlining recommended research projects 3. Document outlining potential research partners	$2,000 2016 only	FiA, NGOs	R: Poor data management	Increase knowledge and understanding	VH	
3.3 Determine conservation and management requirements for sea turtle at priority sites and country wide through research and ongoing monitoring	1. Database of reported sightings and threats to turtles 2. Database of reported mortalities 3. Annual report of scientific recommendations for review by marine turtle working group.	1,500 per year	FiA, CFi, NGO, DP, provincial authority	A: Research and knowledge availability, A:Research funding R: Long time before data is usable	Results from monitoring and research are used towards sea turtle conservation	VH	
3.4 Develop a STNAP 'scientific advisory body' to initiate collaboration in long term research and surveys	1. Build understanding and capacity of monitoring tools available 2. Develop a range of turtle tracking tools 3. Genetic analysis of populations	$10,000 year 2018	FiA, NGO, Cfi, Universities	A: Research funding R: Long time until data is usable	Increase knowledge and understanding	VH	
3.5 Integrate required monitoring and reporting needs into national and provincial government planning and controls including into provincial development plans and required EIA studies	1. Monitoring and reporting are included in the government's planning and control	$0	Provincial authority, MoE, FiA, NGO	A: Cooperation of national and provincial government	Reduced threat from development	M	
3.6 Review periodically and evaluate research and monitoring activities. Regular review of effectiveness of current conservation measures and use of results to improve management and mitigation of threats.	1. Annual workshops	$800 per year	FiA, NGO	A: Ongoing leadership and administration A: Standardised monitoring system	Increased cooperation within and between countries High standard of research and monitoring activities is maintained	M	From IOSEA agreement (Use research results to improve management, mitigate threats and assess the efficacy of conservation activities (e.g. hatchery management practices, habitat loss, etc.)
3.7 Collect data and conduct research into fishing practices with negative impact on sea turtles and habitats, and how to mitigate these effects	1. Observer programme on fishing vessels including turtle bycatch 2. Database of turtle bycatch 3. Report on impacts of fishing on turtle populations 4. Review of solutions 5. Development of turtle friendly devices and fishing practices	$15,000 per year (starting 2018)	NGOs, researchers, universities and government	A: Research funding R: Long timeframe until useable data R: Lack of cooperation from fishers	Reduced threat from fishing	VH	

3.8 Promote peer-reviewed publication and dissemination of research findings at National and International forums	1. Publish research findings (through regional agreements and scientific journals)	$0	FiA, NGO, Universities	A: Research funding R: Long timeframe until data becomes useable	Increase knowledge and understanding	M	From IOSEA agreement (determine the most appropriate methods for information dissemination)
3.9 Establish baseline data collection and monitoring programmes, and collate with existing data to gather information on the threats to sea turtles in Cambodia	1. Status review report 2. Regular status review updates 3. Collaborative database and data management system in keeping with standard international protocols 4. Creation of a central reporting system where information can be fed into	Already covered under other activities	FiA, NGO, University	A: Research funding A: Good data management A: Long term collaboration.	Improved understanding on the status of sea turtles in Cambodia which helps to inform better management decisions Regional data sharing. Status report provides a baseline for monitoring conservation outcomes	H	From IOSEA agreement (1.1 *Identify and document the threats to sea turtle populations and their habitats*
3.10 Identify and document best practice protocols for conserving and managing sea turtle populations and their habitats within the region.	1. Conservation management recommendations briefing documents 2. Best practices applied in the field by FiA staff and conservation organisations		FiA, NGO, University	A: Best practices are applied once understood.	Improved management within Cambodia Sea turtle population stabilises or increases Increased regional cooperation	H	From IOSEA agreement (1.2 Determine and apply best practice approaches to minimising those threats to sea turtle populations and their habitats

Objective 4: Increase public awareness of the threats to sea turtles and their habitats, and enhance public participation in conservation activities							
4.1 Organise events on sea turtle conservation and their presence in Cambodia	1. Campaign strategy and programme 2. Media strategy	$1,000 per year	FiA, MoE, provincial community, DP	A: Campaigning influences behavior of local community A: Sufficient funding for events	Reduced threat from pollution Increased public support and understanding about the species	H	
4.2 Awareness and information dissemination at the local level on turtles and the impacts on them in coastal and island areas	1. Leaflets 2. Billboards 3. Online videos	$1000 per year	FiA, NGO, community	A: Campaigning influences behavior of local community R: Lack of literacy in local communities	Reduced threat from development	H	
4.3 Conduct focused educational and awareness programmes for target groups (e.g. policy makers, fishing communities, schools in coastal areas, CFi and private sector).	1. Educational events 2. Leaflets 3. Endangered species awareness incorporated in to school and University teaching 4. Disseminate information on the effects of pollution	$2,000 per year	FiA, MoE, provincial community, DP	A: Campaigning influences behavior of local community A: Availability of key sections of people A: Education programmes are understood by all target groups	Reduced threat from pollution General public understanding of sea turtles is increased	H	
4.4 Set up a 'community endangered species conservation network' relating to sea turtle conservation. Strengthen the information sharing between communities and FiA Cantonment.	1. TOR for network 2. List of representatives and contact details 3. Recorded communications (e.g. photographs, GPS coordinates etc.) 4. Central location for reporting and storing communications i.e. email address, dropbox folder, website, Facebook page	$400 2017 only	FiAc, CFi, community focal points and dedicated fishermen	A: Data is managed well	Increased information sharing and management nationally	H	
4.5 Improve public awareness on laws protecting sea turtles and the enforcement of legislation on protected species	1. Coastal awareness raising campaign: producing posters and leaflets 2. Local authority and law enforcement officers engaged in regular checks for turtles and products on land and sea 3. Spot checks at local markets.	$2,000 per year	FiA, CFi, Navy, police, local authority	R: Limited resources to properly implement law enforcement R: Lack of awareness and engagement by local people of the law	Better understanding of the law resulting in higher compliance with law for sea turtles promoting the release of sea turtles back to the sea alive. Compliance has increase in local area. Sea turtle population is increase	VH	

Objective 5: Strengthen national and trans-boundary collaboration, and regional and international information sharing on sea turtles							
5.1 Establish a Sea turtle Working Group (STWG) (to coordinate actions and share information among stakeholders in Cambodia) and set regular meetings.	1. TOR for STWG 2. Agreed roles and responsibilities 3. Regular progress reports 4. Meeting minutes and outputs	$1,500 per year for meetings	FiA lead, FiAC and NGO	A: Motivated team with strong leadership and administration A: Long term data management	Increased cooperation within and between countries Sea turtle trade manage in the region	H	
5.2 Secure funding for sea turtle conservation and management (including contribution from development companies, government, NGOs and other donors to turtle conservation)	1. Private sector conservation agreements 2. Private sector conservation fund for a range of projects 3. Website or leaflet to promote	Staff time for those fundraising.	FiA, Private sector, NGO, authority	A: Transparent corporate donor system	Reduced threat from development Increased donor funding	VH	2. From IOSEA agreement (a) Prioritise conservation and management activities for funding b) Explore funding options with Governments and other donors such as the Asian Development Bank, World Bank, UNDP, European Union, UNEP, GEF, etc.
5.3 Engage with relevant trans-boundary agreements and strengthen cooperation with neighbouring countries to coordinate efforts to reduce threats to sea turtles. This includes reduce turtle by-catch between countries within the region.	1. Representative in attendance to regional marine turtle meeting 2. Information collected and disseminated through IOSEA 3. Transboundary body /committee	$800 per year	FiA, MoE, DP, Provincial authority, NGO and IOSEA network	A: Ongoing leadership and administration A: Data and information management	Reduced threat from pollution, fishing and bycatch	H	
5.4 Strengthen trans-boundary collaboration through existing mechanisms	1. Representative in attendance to regional marine turtle meeting 2. Information collected and disseminated 3. Marine turtle working group expert contact list 4. Expert problem solving workshops 5. Encourage post-graduate studies that address turtle conservation issues relevant to Cambodia	$1,200 per year	FiA, NGO	A: Communication channels within country and transparency A: Data and information management A: Motivated representatives	Increased cooperation within and between countries	H	
5.5 Ensure that turtle-trade laws are enforced and implemented between countries and commitments related to CITES. Dissemination of information to eliminate the catch, trade and transport of sea turtle.	1. MoU with neighbouring countries 2. Database recording incidents 3. System for reporting illegal activity to neighbouring country	$3,000 2018 only	FiA, Vietnam, Thailand, country focal points for CITES, NGO, FAC, FiAc	A: Data and information management	Reduced threat from illegal fishing	VH	

5. BUDGET

Three budget scenarios were prepared for the Sea Turtle Action Plan for the period 2016 to 2020. A summary of the project budget under each scenario is detailed below. Note that indicative budget does not account for rate of inflation. Key: L = Low; M = Medium; H = High; VH = Very high

Scenario 1 assumes a minimal level funding is available. Activities listed as 'VH' or 'H' under the Priority column in the Action Matrix are included and allocated full budgets. Actions assigned priority levels 'M' or 'L' are excluded**. Scenario 2** assumes a medium level of funding is available. Activities listed as 'VH', 'H' and 'M' under the Priority column in the Action matrix are included and allocated full budgets Actions assigned priority level 'L' are excluded. **Scenario 3** assumes a maximum level of funding is available. All activities (priority 'VH', 'H', 'M' and 'L') are included and allocated full budgets.

Table 1: Budget for Scenario 1

Budget for Scenario 1	2016	2017	2018	2019	2020	Total
Objective 1	36,000	41,000	40,000	40,000	40,000	**197,000**
Objective 2	23,000	31,000	30,500	30,500	30,500	**145,500**
Objective 3	4,000	2,500	26,500	16,500	16,500	**66,000**
Objective 4	6,000	6,400	6,000	6,000	6,000	**30,400**
Objective 5	3,500	3,500	6,500	3,500	3,500	**20,500**
Total	**72,500**	**84,400**	**109,500**	**96,500**	**96,500**	**459,400**

Table 2: Budget for Scenario 2

Budget for Scenario 2	2016	2017	2018	2019	2020	Total
Objective 1	36,000	41,000	40,000	40,000	42,000	**199,000**
Objective 2	23,000	31,000	30,500	30,500	30,500	**145,500**
Objective 3	4,800	3,300	27,300	17,300	17,300	**70,000**
Objective 4	6,000	6,400	6,000	6,000	6,000	**30,400**
Objective 5	3,500	3,500	6,500	3,500	3,500	**20,500**
Total	**73300**	**85200**	**110300**	**97300**	**99300**	**465400**

Table 3: Budget for Scenario 3

Budget for Scenario 3	2016	2017	2018	2019	2020	Total
Objective 1	36,000	41,000	40,000	40,000	42,000	**199,000**
Objective 2	28,000	36,000	30,500	30,500	33,500	**158,500**
Objective 3	4,800	3,300	27,300	17,300	17,300	**70,000**
Objective 4	6,000	6,400	6,000	6,000	6,000	**30,400**
Objective 5	6,500	6,500	6,500	6,500	6,500	**32,500**
Total	**81,300**	**93,200**	**110,300**	**100,300**	**105,300**	**490,400**

6. IMPLEMENTATION PLAN

Action/Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Objective 1											

1.1											
1.2											
1.3											
1.4											
1.5											
Objective 2											
2.1											
2.2											
2.3											
2.4											
2.5											
2.6											
2.7											
2.8											
Objective 3											
3.1											
3.2											
3.3											
3.4											
3.5											
3.6											
3.7											
3.8											
3.9											
3.10											
Objective 4											
4.1											
4.2											
4.3											
4.4											
4.5											
Objective 5											
5.1											
5.2											
5.3											
5.4											
5.5											

7. LAW AND REGULATION DRAFTING SCHEDULE

Sea turtles are protected under the Cambodian Sub-Decree N. 123 on Identification of Endangered Fisheries Resources (2009), and the Proclamation on Protected Measure on Endangered Fisheries Resources (2010), making it illegal to capture, collect, process, trade or kill any sea turtle in Cambodia. Given the already strict protection provided to sea turtles in Cambodia, there is no need for new laws to be passed to prohibit the harvest or trade of these species. There is however scope to explore the legislative options for protecting key nesting and foraging sites (see Action 2.2 under Objective 2), which will be investigated as more robust data emerges pertaining to where these sites are.

8. MONITORING AND EVALUATION

There is a strong need to strengthen research and ongoing monitoring of turtle populations (abundance, diversity, migration patterns and distribution), foraging and nesting habitats and by-catch reduction methods in Cambodia. New data will be compared to baseline records on sea turtle status and population in Cambodia sourced from the Marine TurtleStatus Report 2015 (McNamara *et al.* 2016). For a full outline of monitoring and evaluation actions planned refer to Objective 3 under Actions and Budgets.

9. CONCLUSION

Sea turtles are flagship species for Cambodia's coastal environment, however, these species are under sever threat of extinction. Key threats facing sea turtles include incidental capture of sea turtles from fishing, habitat degradation, pollution and coastal development.

Continued survival of sea turtles depends on commitment to protect key breeding, nesting and foraging sites, and to mitigate human threats mentioned above. Knowledge gaps remain regarding sea turtle population abundance, distribution, migration patterns and diversity across Cambodia, including accurate information on key nesting beaches and foraging grounds. On-going monitoring and research is therefore required to inform conservation interventions and to better understand sea turtle populations in Cambodia.

This Action Plan supports the recent promulgation of Cambodia's first MFMA, an action that will protect vital turtle habitats of nesting beaches, coral reefs, seagrass beds and mangrove forests. The Action Plan also supports the informal formation of the Sea Turtle Working Group, a core group of government, NGO and coastal community partners who will drive and implement proposed actions outlined in this document.

APPENDIX

APPENDIX 1. LEGAL FRAMEWORK RELATING TO SEA TURTLES

International agreements	Details
Convention on Migratory Species (CMS)	Cambodia is currently not a CMS signatory but are engaged in CMS related agreements to protect sea turtles; the Indian Ocean – South-East Asia Marine Turtle Memorandum of Understanding (IOSEA).
Convention on International Trade of Endangered Species (CITES)	Cambodia ratified in 1997. All sea turtles are covered under Appendix I of the convention. CITES prohibits international trade in specimens of all these species and requires member states to fulfil a number of measures: https://www.cites.org/eng/disc/text.php#VIII
Convention on Biodiversity (CBD)	Cambodia signed in 1995. As part of commitments towards CBD Cambodia developed their National Biodiversity Strategy and Action Plan (NBSAP) in 2002: https://www.cbd.int/doc/world/kh/kh-nbsap-01-en.pdf. Sea turtles are included. National reporting of progress to CBD every 4 years. Latest 2014 version online: https://www.cbd.int/doc/world/kh/kh-nr-05-en.pdf

Cambodian legislation	Details
Proclamation No. 359 of the Ministry of Agriculture, Forestry and Fisheries.	Provides an identification list of nationally threatened wildlife species for which hunting is prohibited. This proclamation was signed and came into force on 1st August 1994.
Proclamation No. 1563/533 of the Ministry of Agriculture, Forestry and Fisheries and the Ministry of Environment	For the prevention and protection of all wildlife in Cambodia. This proclamation was signed by the Minister of Agriculture, Forestry and Fisheries and the Minister of Environment and came into force in 1996.
Declaration No. 3837 of the Ministry of Agriculture, Forestry and Fisheries.	Prohibited trade of wildlife in Cambodia. This declaration was signed in 2001.
Letter No. 033	Letter No. 033 of the Department of Fisheries and Cambodian CITES Scientific Authority for Fisheries and aquatic animals to the CITES management Authority for Cambodia. Prohibited reptile trade in Cambodia. This letter was signed in 2000.
New draft fisheries law	Has Articles concerning the protection and conservation of endangered species of aquatic fauna and flora. The list of endangered species is defined by the sub-decree.
Fisheries regulations (2002) and Law on Fisheries (2006)	In 2002 sea turtles came under the protection of fisheries regulation and the Law on Fisheries was enacted in 2006.
Sub decree on endangered species 2009	58 of fisheries endangered species were determined. Five species of sea turtle also in this list.
Proclamation on the fisheries endangered species protection (2010)	The Proclamation is to define the measures to protect endangered fishery resources in the Kingdom of Cambodia in order to protect, conserve and restore these resources sustainably.
Sub-decree on International Trade of Endangered Species	Provides a legal framework for the importing and/or exporting Endangered Species

RELATING TO SEA TURTLE HABITATS

International agreements	Details
Various relating to Coral Reefs	There are fourteen Multilateral Environmental Agreements, Programmes, Partnerships and Networks Relevant to the Protection and Conservation of Coral Reefs, and the World Summit on Sustainable Development Plan of Implementation. These are outlined in the following document: http://www.icriforum.org/sites/default/files/Conventions_CoralReefs.pdf
Various relating to Seagrass	The FAO code of conduct for responsible fisheries (1995); calls upon member states to reduce the use of indiscriminate and destructive technologies such as trawl and drift nets and eliminate entirely the use of poisons and explosives. http://www.fao.org/docrep/005/v9878e/v9878e00.htm Convention on Wetlands, 1976 (known as the Ramsar convention); The definition of wetlands in the convention specifically covers seagrass beds, both intertidal and subtidal. Requires a management plan with conservation objectives (including EIA). Large scale changes to sites to be reported to Ramsar through the Montreux Record (NERC, 2013) http://www.ramsar.org/

UN Convention of the Law of the Seas (UNCLOS)	These make obligations on the parties to protect and preserve the marine environment and prevent environmental pollution. Since 1992 the Precautionary Principle has been integrated into the UNCLOS framework, specifically in terms of how pollution is defined (Article 1) and obligations to undertake EIAs (Article 206). http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf

Regional agreements	**Details**
ASEAN agreement on the conservation of nature and natural resources 1985	Accession by Cambodia in 1999 http://environment.asean.org/agreement-on-the-conservation-of-nature-and-natural-resources/

Cambodian Legislation	**Details**
Environmental Protection and Natural Resource Management, Law on (1996)	Cambodian law requires that when projects risk significant environmental impacts an Environmental Impact Assessment (EIA) must be completed prior to project approval. This assessment must include an Environmental Management Plan and encourage public participation. https://www.globalwitness.org/sites/default/files/pdfs/1996_environmental_protection_and_natural_resource_management_law_on_1996.pdf
Anukret on Environment Impact Assessment (1999)	http://portal.mrcmekong.org/assets/documents/Cambodian-Law/-Sub-decree-on-EIA-Process-(1999).pdf
Article 12 of Law of Fisheries	Gives protection to all types of fishing areas; fisheries conservation areas, seagrass areas, coral reef areas, flooded areas in the wet season, and inundated forest and mangrove forest areas are Fisheries Management Area. The creation or nullification of a fishery management area shall be defined by the proclamation of the Minister of Agriculture, Forestry and Fisheries.
Protected Areas Law 2008	Reaffirms the authority of the Ministry of Environment (MoE) to manage Protected Areas, including the "zoning" of existing protected areas. Of the four zones, development activities may only be conducted in the "sustainable use zones" of Protected Areas. Development activities may only be permitted within these zones following consultation with relevant ministries, authorities and communities, and in accordance with a request from the MoE (Global Witness, 2010) http://www.opendevelopmentcambodia.net/briefing/protected-areas/

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