Indonesia

GENERAL INFORMATION

Agency or institution primarily responsible for the preparation of this report:

Directorate of Biodiversity Conservation,
Directorate General of Forest Protection and Nature Conservation,
Ministry of Forestry of the Republic of Indonesia,
Manggala Wanabakti Building, 7th Block, 7th Floor
Jl.Jenderal Gatot Subroto, Jakarta 10270
Tel/ Fax. 021-5720227
E-mail : herrysusilo@yahoo.com; asbsutito@yahoo.com; exploitasia@yahoo.com

Other agencies, institutions, or NGOs that have provided input:

Directorate Conservation and Marine National Parks,
Ministry of Marine Affairs and Fisheries of the Republic of Indonesia
Jl Medan Merdeka Selatan
Jakarta

World Wide Fund for Nature-Indonesia (WWF)
Kantor Taman Kuningan A9, Unit A1
Jl. Mega Kuningan Lot 8.9/A9
Kawasan Mega Kuningan, Jakarta 12950
Phone : 021-5761070
Fax : 5761080

Additional information on fisheries interactions provided in March 2007 by: Dr Ngurah Nyoman Wiadnyana (Research Centre for Capture Fisheries), Dr Toni Ruchimat (Ministry of Marine Affairs and Fisheries), and Imam Musthofa Zainudin (WWF-Indonesia).

Designated Focal Point:

Tonny Soehartono
Director of Biodiversity Conservation
Directorate General of Forest Protection and Nature Conservation,
Ministry of Forestry of the Republic of Indonesia,
Manggala Wanabakti Building, 7th Block, 7th Floor
Jl.Jenderal Gatot Subroto, Jakarta 10270
Tel/ Fax. 021-5720227
e-mail : tsoehartono@yahoo.com

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OBJECTIVE I. REDUCE DIRECT AND INDIRECT CAUSES OF MARINE TURTLE MORTALITY

1.1 Introduction to marine turtle populations and habitats, challenges and conservation efforts. [INF]

Indonesia, the world's largest archipelago with more than 17,000 islands along the equator is blessed with more than 360 million ha of marine area. Being within the North and South 20oC isotherms of average sea surface temperature, Indonesia is a perfect location for the growth of coral-reef, sea grass-bed, and a high biodiversity of marine organisms,

including nesting, feeding and migration corridors for six of the world's seven species of marine turtles.

Among the six turtle species found in Indonesian waters, three species are prominent, i.e. the green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*), and the leatherback turtle (*Dermochelys coriacea*). The green turtle and the hawksbill turtle have wide distributions and are the most abundant turtles found in the region. The annual total nesting activity throughout the country for the green and hawksbill turtles may exceed 35,000 and 28,000, respectively. Derawan island of East Kalimantan, with annual nesting density between 4635 - 5011 per year is considered to be one of the largest green turtle rookeries in the region. Although the numbers of nesting turtles fluctuate throughout the year (low to peak season), this area is one place where people may see the nesting turtles anytime during the year. This is not necessarily the case for other rookeries, and Derawan island a perfect site to develop turtle-based tourism. The nesting population of the leatherback turtle has not been properly documented, except at the single nesting beach of Jamursba Medi (and nearby), Irian Jaya. However, the northern coast of Papua (including Jamursba Medi) remains as the largest leatherback rookery in the Pacific.

Two of the other three turtle species, i.e. the olive ridley (*Lepidochelys olivacea*) and the loggerhead (*Caretta caretta*), nest in relatively small numbers at scattered locations throughout the archipelago. The third species, the flatback turtle (*Natator depressus*), is endemic to Australia, but is found in many feeding grounds within the Flores Banda and Arafura seas.

See references in Section 3.1.1

1.2.1 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. [BPR]

Indonesia is implementing 'best practice' approaches to minimize the threats to marine turtle populations through the archipelago. These practices include:
- Legal protection for all marine turtle and prohibition of commercial trade in marine turtles;
- Education and awareness programs for various level of audiences;
- Law enforcement (e.g. East Kalimantan, east Java, Bali);
- Select critical nesting beaches for index sites to implement standardized monitoring protocol at selected sites;
- Encourage, facilitate, and support community based turtle conservation through implementation of turtle based ecotourism (e.g., adopt the nest schemes).

All the best practices mentioned above are the elements of the National Marine Turtle Conservation Strategy and Action Plan (2001).

Other examples of good conservation management include, for example, Yayasan Pulau Banyak has a Maklumat Bersama which protects 12 nautical miles from the nesting beach into the sea as a no fishing zone. Through conservation concessions Yayasan Pulau Banyak has also protected a total of 620 ha of mangroves, rainforest and coral reefs in agreement with 3 communities in trade of community assets.

In addition, beach monitoring and surveillance at nesting sites through community based patrols (West Papua) are providing daily nest counts and predator control; collaboration with University for research and monitoring and other NGO (e.g. Sea Turtle Foundation in Berau Islands, East Kalimantan) also collects data and assists with protection by enforcement agencies.

Marine Protected Areas have been established to overcome prevailing threats (expansion of coastal and land development) at some nesting habitats and to ensure long term protection Community Conservation Agreements are used help regulate community activities that may disrupt nesting turtles and habitats (e.g. ban of domestic pigs and dogs; forest clearing) around watershed and nesting beach.

Public campaign to stop trade and support law enforcement activities at major markets (adult turtle in Bali; Turtle eggs in east and west Kalimantan) has been initiated.

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]

As part of the implementation of the National Marine Turtle Conservation Strategy and Action Plan (2001), several projects have been conducted to describe and understand the socio-economic relationships among communities that interact with marine turtles:

- Economic Valuation on Marine Biodiversity notably Turtle in Tourism has been conducted in Derawan Island complex (2001-2002) and Bali (2003),
- Incentives through implementation scholarship awards for youth community in Jamursba-Medi complex (2003-now),

- Study on community participation in nesting sites of Kuta - Bali (Balai KSDA Bali, 2004),
- Study on socio economics in Perancak nesting beach, Bali (WWF 2003),
- Community participation program on nesting sites protection (BKSDA Bali 2004, BKSDA East Kalimantan and Berau District Government, 2004-2005)
- Yayasan Pulau Banyak conducted a 2 week long environmental education programme that has been integrated with all local schools.
- 50 teachers were trained to deliver lesson plans on coral reef and rainforest conservation. The workbooklets were curriculum based and teaching materials were provided to accompany the lesson plans.

Other actions include: Incentive agreement for community based conservation (community conservation agreement); scholarship for school kids; direct support of livelihood activities and lobbying local governments for livelihood, health, and education programs based on the findings of the socio economic studies.

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

■ **Lack of affordable alternatives to turtle products**

■ **Ease of access to the turtle resource (eg. by virtue of proximity or ease of land / water access)**

☐ Low cost of land near nesting beaches

☐ Low penalties against illegal harvesting

■ Other1: Poverty

■ Other2: Religious ceremonies conducted by Balinese Hindu Priests

☐ Other3:

☐ None of the above or Not Applicable

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

■ YES ☐ NO ☐ NOT APPLICABLE (no adverse economic incentives exist)

Development of Ecotourism:
A pilot project of "turtle tours" involving the local communities in Derawan Islands to develop turtle friendly tourism at the nesting beaches an d foraging areas was accomplished in September - October 2005 (WWF, 2005).

A similar ecotourism project is under way in Kuta Beach, Bali.

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

a) Shrimp trawls: ■ YES ☐ NO

The utilization of shrimp trawls in most Indonesian seas is prohibited in accordance with the current Presidential Decree No 39/1980. Fishing vessels operating shrimp trawls operate only in Arafura Sea (southern part of Papua) and they must be equipped with Turtle Excluder Devices.

Onboard observations were carried out by WWF in 2005 and 2006 on the following fishing grounds: Arafura Sea, Digul, Kalmana, and Timika. In 2005, 12 observed vessels had by-catch of 133 turtles; in 2006 (3 months only) 4 observed vessels had by-catch of 26 turtles.

Additionally, interview data from fishermen (157 respondents) indicated that an average of one sea turtle was caught per individual vessel / trip.

b) Set gill nets: ■ YES ☐ NO

Most fishing vessels in Indonesia use set gill nets. The nets are arranged in accordance with the fish targets by regulating mesh sizes in the fishing gears.

No interactions with sea turtles were reported.

c) Anchored Fish Aggregating Devices (FADs): ■ YES ☐ NO

FADs ("rumpon") are used traditionally by artisanal fisherman.

During the assessment of interactions between sea turtles and fisheries, some fishermen reported often finding sea turtles swimming around their FADs, especially those installed close to nesting areas such as north coast of Papua, Manado (north coast of Sulawesi), Maluku (Banda Seas).

d) Purse seine (with or without FADs): ■ YES ☐ NO

Purse seines are used by both traditional fisheries and large scale fisheries.

Purse seiners in Java say that they catch at least one turtle during a trip, especially where the fishing ground was near a turtle nesting beach.

e) Longline (shallow or deepset): ■ YES ☐ NO

The longline fishery operates in the high seas mostly and is used by large scale fisheries with vessels bearing Indonesian flag.

Data from WWF-RCCF observations (May-December 2006) show that 10 tuna longline vessels with 32,208 hooks (539 settings) caught 85 sea turtles (plus 1 whale, 2 dolphins, 2 seabirds, and 507 sharks).

f) Driftnet: ■ YES ☐ NO

Commonly used by traditional fisheries.

During onboard observation in tuna longline, observers reported that sometimes several sea turtles were entangled in drift nets.

g) Other1:

h) Other2:

☐ **None of the above**

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]

a) Shrimp trawls

Fishing effort:

■ **RELATIVELY HIGH** ☐ MODERATE ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Perceived Impact:

■ **RELATIVELY HIGH** ☐ MODERATE ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Source: WWF-Indonesia in its report of onboard observation in the trawl fishery during 2005 and 2006.

In theory, the use of shrimp trawl is regulated, whereby a TED must be attached to it (Directorate General of Capture Fisheries, Ministry of Marine Affairs and Fisheries)

b) Set gill nets

Fishing effort:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ☐ NONE ■ **UNKNOWN**

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ☐ NONE ■ **UNKNOWN**

Source: Directorate General of Capture Fisheries, Ministry of Marine Affairs and Fisheries

c) Anchored Fish Aggregating Devices (FADs)

Fishing effort:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ■ **RELATIVELY LOW** ☐ NONE ☐ UNKNOWN

Source: The Indonesian type of FAD, used by traditional fishermen, does not catch big marine life, including turtles. (Source: Directorate General of Capture Fisheries, Ministry of Marine and Fisheries)

WWF-Indonesia in its assessment report of interactions between sea turtles and fisheries in Indonesia confirmed this negligible finding.

d) Purse seine (with or without FADs)

Fishing effort:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Source: There have not been extensive studies on the impacts of this type of fishing, but it is predicted that the impact is moderate. (Source: Directorate General of Capture Fisheries, Ministry of Marine Affairs and Fisheries).

Other studies cited:

TAKA Foundation, Sermarong: Assessment report on sea turtle by-catch in Java.

WWF-Indonesia: Assessment report on sea turtle by-catch in Indonesian fisheries

e) Longline (shallow or deepset)

Fishing effort:

■ **RELATIVELY HIGH** ☐ MODERATE ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Perceived Impact:

■ **RELATIVELY HIGH** ☐ MODERATE ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Source: Onboard observation and interview report by WWF-Indonesia and Research Centre for Capture Fisheries (2006).

f) Driftnet

Fishing effort:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Source: WWF-Indonesia onboard observation activities for tuna longliners. (During onboard observation, the observer found several turtles entangled in driftnets.)

g) Other1 (from 1.4.1): **Danish seine**

Fishing effort:

☐ RELATIVELY HIGH ☐ MODERATE ■ **RELATIVELY LOW** ☐ NONE ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ■ **RELATIVELY LOW** ☐ NONE ☐ UNKNOWN

Source: Based on interviews by RCCF and WWF.

h) Other2 (from 1.4.1):

Fishing effort:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Perceived Impact:

☐ RELATIVELY HIGH ☐ MODERATE ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Source:

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]

Foreign flagged vessels operating in Indonesian seas have been encountered catching marine turtles, notably:

- Purse seiners from Thailand;
- Fish trawls from Taiwan, China;
- Drift gillnet from Japan;
- Longliners from Taiwan, Japan and Rep. of Korea.

Some traditional fishermen are still using explosives and chemicals. In order to eliminate or reduce the use of explosive materials and chemicals, the Government of Indonesia has enacted laws and regulations for that purpose. Furthermore, the law on terrorism which strictly controls the use of explosive materials has been found effective in negating this type of destructive fishing.

For large fishing vessels:
- regulation on operation of fishing vessel by issuance of "legal sheet"
- fishing log book (to identity and list specifications of the vessel and to identity and list specifications of the fishing gear and supporting gear)

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

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

■ **YES** ☐ NO ☐ NOT APPLICABLE

Most traditional fishermen release the turtles. Training in onboard de-hooking methods for fishers and field officers has been undertaken and developed by Ministry of Marine Affairs and Fisheries.

Observers on shrimp trawl and tuna longline vessels have knowledge of appropriate handling of incidentally caught turtles, and they transfer this knowledge to fishermen during their on board activities.

In the tuna longline fishery, some of the vessels have de-hookers, line-cutters, and scoop nets for dealing with marine

turtles. Handling manuals were provided by WWF observers.

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

■ **YES** ☐ NO ☐ NOT APPLICABLE

Fishing vessels operating shrimp trawls must be equipped with Turtle Excluder Devices (TED) and are allowed to operate only in Arafura Sea. The prohibition on the utilization of shrimp trawls in other Indonesian seas is stipulated in Presidential Decree No 39/1980.

Shrimp trawlers in Papua are familiar with TEDs, but they lack discipline to install them in their trawls because they would reduce fish by-catch. Usually, boats crews are entitled to take and sell any such fish by-catch as a bonus; this additional income turns out to be higher than their monthly wages. Unless this issue is tackled, it is highly unlikely that the shrimp trawl industry will implement TED regulations.

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

■ **YES** ☐ NO ☐ NOT APPLICABLE

The Government of Indonesia through the Decree of the Minister of Marine Affairs and Fisheries No 2/2002 concerning Guidance on Capture Fisheries Management provides guidelines on the arrangement of capture areas and depth fishing practices, which helps to avoid encirclement of marine turtles in purse seine fisheries.

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

■ **YES** ☐ NO ☐ NOT APPLICABLE

Regulation on gear specification (Decree of the Minister of Marine Affairs and Fisheries No. 3/2002) provides the combination of use of hook design.

WWF-Indonesia is now in the process of conducting circle hook trials in tuna longline fisheries, and the trials are showing promising results. The Research Centre for Capture Fisheries (RCCF) wants to promote this gear to Indonesian fishermen.

To that end, RCCF and WWF will collaborate to make guidelines on best practice for Indonesian tuna longliners, in order to reduce sea turtle by-catch.

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

■ **YES** ☐ NO ☐ NOT APPLICABLE

Decree of the Minister of Marine Affairs and Fisheries No 3/2002 also provides guidelines on monitoring and recovery of FADs.

f) **Net retention and recycling schemes**

■ **YES** ☐ NO ☐ NOT APPLICABLE

These schemes are used only by modern fishing boats, especially those which operate in Arafura Sea.

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

■ **YES** ☐ NO ☐ NOT APPLICABLE

Spatial and temporal control of fishing is not undertaken in Indonesian seas except those in marine national parks (which are totally protected) and in local (province or district) marine protected areas where fishing is strictly regulated, especially in the core zone.

h) **Effort management control**

☐ YES ☐ NO ■ **NOT APPLICABLE**

In general, the tropical climate of Indonesia does not necessitate seasonal closures of fishing activities, and therefore, no regulation on the subject is in place. Nevertheless, the Government has established several (local and national) regulations with regard to fisheries management and endangered species, such as turtles and whales.

☐ Other (list and explain):

☐ None of the above

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]

Onboard observer programmes

■ **YES** ☐ NO ☐ NOT APPLICABLE

A program on Community-based Monitoring System carried out by Directorate General of Marine and Fisheries Resources Monitoring, Ministry of Marine Affairs and Fisheries, has been developed and is currently in operation. This program includes an onboard observer program involving community, local fishermen, and fisheries officers, during which training (e.g. on de-hooking) is undertaken.

An onboard observer program for tuna longliners is supported by WWF and CSIRO; a separate observer program for shrimp trawls is supported by WWF.

Vessel monitoring systems

■ **YES** ☐ NO ☐ NOT APPLICABLE

VMS is implemented through Monitoring, Controlling, Surveillance, Enforcement and Investigation undertaken by the Ministry of Marine Affairs and Fisheries.

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

■ **YES** ☐ NO ☐ NOT APPLICABLE

Inspection at sea, in port, and at landing sites is undertaken through Monitoring, Controlling and Surveillance System of the Directorate General of Marine and Fisheries Resources Monitoring, Ministry of Marine Affairs and Fisheries.

Training programmes / workshops to educate fishers

■ **YES** ☐ NO ☐ NOT APPLICABLE

Some training activities have been undertaken, for example:

Training on Marine Ecosystem Monitoring (Ministry of Marine and Fisheries, 2003)
Training on Sustainable Fisheries Management (Ministry of Marine and Fisheries, 2004)

RCCF and WWF trained tuna longline crews in 3 major bases of tuna longline vessels in 2005 (Benoa-Bali, Bitung-North Sulawesi, Muara Baru-Jakarta). Training of crew by onboard observers also occurs.

A training programme for 50 local fishermen regarding coral reef conservation and sustainable fishing practises has been conducted. In addition the beach patrol team has been trained to identify fishing nets that have washed up on the nesting beaches.

Informative videos, brochures, printed guidelines etc.

■ **YES** ☐ NO ☐ NOT APPLICABLE

Publications have been produced by the Ministry of Marine and Fisheries (2003-2004).

The video "Crossing the Line" was translated into Bahasa by WWF, for use by longliners. Also, booklets and leaflets on handling sea turtles have been produced.

In addition, stickers and booklets are available for boat crews, as well as on-board observers, to help collect by catch and interaction data.

Other (list and explain):

☐ YES ☐ NO ☐ NOT APPLICABLE

☐ **None of the above**

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

■ **YES** ☐ NO ☐ UNSURE

For example, the methods and capacity-building of observers are reviewed and evaluated every year.

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]

- Interviews with fishermen on tuna longliners and shrimp trawls;
- Assessment of various fishing gears, however coverage is still lacking;
- Onboard observers on tuna longliners and shrimp trawls (which needs to be expanded to other areas, and coverage increased);
- Trials of circle hooks and experimentation with TEDs
- In water data on turtle and marine mammals sightings; number of turtles interacted with fishing activities and locations where interactions take place.
- Post Migration pattern of turtles from some major nesting sites (Derawan islands, East/South Java; Birdshead Region, Papua (Piai Island)

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** ☐ NO ☐ UNSURE

Indonesia exchanges information regularly with:
-Australian Government AusAID
-Australian Government Department of Agriculture, Fisheries and Forestry
-Australian Fisheries Management Authority
-Australian Marine Science and Technology Management

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]

Unknown

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]

■ **YES** ☐ NO ☐ UNSURE

Act No. 5 /1990 concerning conservation of living resources and their ecosystems provides prohibition for and sanction of direct harvest of protected species. No harvest or trade of protected species, whether alive or dead or parts and derivatives, is allowed with maximum penalty of five years imprisonment and up to Rp 200.000.000 in fines.

Under the Government regulation No 7/1999, Indonesia accords all 6 (six) species of turtles protection status.

1.5.2 Which, among the following list, are economic uses and cultural values of marine turtles in your country? Please rate the relative prevalence / importance of each consumptive or non-consumptive use. [INF]

USES / VALUES	RELATIVE PREVALENCE / IMPORTANCE
Meat consumption	
■ **YES** ☐ NO	☐ HIGH ☐ MODERATE ■ **LOW** ☐ UNKNOWN
A proportion of turtle meat is still used for religious ceremonial events in Bali, and for cultural events in Enu island (Moluccas) - WWF Indonesia-/Species program, 2005. Varies with locality: consumption at some locations is more than at others.	
Egg consumption	
■ **YES** ☐ NO	☐ HIGH ■ **MODERATE** ☐ LOW ☐ UNKNOWN
Shell products	
■ **YES** ☐ NO	☐ HIGH ☐ MODERATE ■ **LOW** ☐ UNKNOWN
Fat consumption	
☐ YES ■ **NO**	☐ HIGH ☐ MODERATE ☐ LOW ☐ UNKNOWN
Traditional medicine	
■ **YES** ☐ NO	☐ HIGH ☐ MODERATE ☐ LOW ■ **UNKNOWN**
Eco-tourism programmes	
■ **YES** ☐ NO	☐ HIGH ■ **MODERATE** ☐ LOW ☐ UNKNOWN
Cultural / traditional significance	
■ **YES** ☐ NO	☐ HIGH ☐ MODERATE ■ **LOW** ☐ UNKNOWN
Other	

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

Level of harvest:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Impact of harvest:

☐ RELATIVELY HIGH ■ **MODERATE** ☐ RELATIVELY LOW ☐ NONE ☐ UNKNOWN

Source of information:

WWF Indonesia - Species Program (June 2005)

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

■ **YES** ☐ NO ☐ UNKNOWN

Several programmes been established to limit the levels of intentional harvest :

- Harvest phasing out program is being undertaken in Berau to gradually reduce the harvest, until such time that all islands in Derawan complex can be totally protected;
- Cutting the chain of trade at the national level (by i.e. cooperation with several leading national super (hyper) markets) to stop their retail business in turtle eggs;
- Shifting egg harvest concessionaires into other alternative sources of income (e.g. by promoting turtle-based ecotourism);
- Yayasan Pulau Banyak has initiated a monitoring programme focussing on the main nesting beach which stopped all harvest of sea turtle eggs.

1.5.5 Describe any management agreements negotiated 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]

None at the moment

1.6.1 First, select one of the options at left 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]

MEASURES	RELATIVE EFFECTIVENESS
Monitoring/protection programmes	
■ **YES** ☐ NO ☐ N/A	☐ EXCELLENT ■ **GOOD** ☐ LOW ☐ UNKNOWN
Nest adoption program in Meru Betiri NP, Kuta (Bali), Sangalaki and Derawan Island.	
Education/awareness programmes	
■ **YES** ☐ NO ☐ N/A	☐ EXCELLENT ■ **GOOD** ☐ LOW ☐ UNKNOWN
Egg relocation/hatcheries	
■ **YES** ☐ NO ☐ N/A	☐ EXCELLENT ■ **GOOD** ☐ LOW ☐ UNKNOWN
Setting aside of 80% of the total eggs for hatching program at all nesting areas.	
Egg translocation program in many nesting sites undertaken by National Park Authorities.	

Predator control

■ **YES** ☐ NO ☐ N/A ☐ EXCELLENT ■ **GOOD** ☐ LOW ☐ UNKNOWN

Vehicle / access restrictions

■ **YES** ☐ NO ☐ N/A ☐ EXCELLENT ■ **GOOD** ☐ LOW ☐ UNKNOWN

Removal of debris / clean-up

■ **YES** ☐ NO ☐ N/A ☐ EXCELLENT ■ **GOOD** ☐ LOW ☐ UNKNOWN

Re-vegetation of frontal dunes

■ **YES** ☐ NO ☐ N/A ☐ EXCELLENT ☐ GOOD ■ **LOW** ☐ UNKNOWN

Building location/design regulations

■ **YES** ☐ NO ☐ N/A ☐ EXCELLENT ■ **GOOD** ☐ LOW ☐ UNKNOWN

Light pollution reduction

■ **YES** ☐ NO ☐ N/A ☐ EXCELLENT ■ **GOOD** ☐ LOW ☐ UNKNOWN

Other (list and rate them)

☐ YES ☐ NO ☐ N/A

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

■ **YES** ☐ NO ☐ NOT APPLICABLE

Evaluation of nest and beach management programs has been conducted at Derawan islands complex, District of Berau, Sukamade (Meru Betiri National Park, East Java), Alas Purwo National Park East Java, and extended to include 50,000 ha of its turtles nesting and feeding ground outside protected areas.

OBJECTIVE II. PROTECT, CONSERVE AND REHABILITATE 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]

Several projects and activities have been established to protect critical habitats outside protected areas:

Beach cleaning activities (Kuta, Bali)
Habitat protection (Derawan Islands, Sorong-Papua, Sumbawa Island)
Protection from main forms of pollution that might endanger turtles (Seribu Islands)

Prohibition of sand and coral excavation (Bali, West Nusa Tenggara)
An ecotourism project in Kuta Beach, Bali
Cash incentive programs by employing them as the coast/beach guards (Derawan Islands, Bali)

Other local examples include: Through a "Maklumat Bersama" an agreement has been reached between local government and communities to allocate 12 nautical miles in front of the nesting beach as a no fishing zone. Other areas of mangroves, rainforest and coral reef, with a total of 620 ha, have been protrected through conservation concessions for the next decenium. Community based patrol and outreach (in collaboration with University and local NGO; e.g. other sites in Birdshead, West Papua).

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

☐ YES ■ **NO** ☐ NOT APPLICABLE

Act No. 23/1997 concerning EIA of general development planning which includes development in coastal areas.

A local example is: Yayasan Pulau Banyak has recently started a marine debris survey as well as a fishing net survey to identify the types of waste and types of nets washing up on the nesting beaches. All marine debris is collected from the nesting beaches and then divided in hard/soft plastics, metal, rubber, rope, glass and others after which it is weighed.

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

☐ YES ■ **NO** ☐ NOT APPLICABLE

Only at a local level; for example logs around the Birdshead (West Papua) sometimes deter nesting.

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

■ YES ☐ NO ☐ NOT APPLICABLE

Act No. 31 concerning Fisheries provides for prohibition of the use of destructive fishing methods. Penalties and sanctions for the violation of this prohibition are five years imprisonment and fines of Rp 2 billion.

However, in some areas explosives are used by local fishermen.

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

■ **YES** ☐ NO ☐ NOT APPLICABLE (no degraded coral reefs)

In Pulau Seribu National Park, coral reef rehabilitation has been undertaken since 2004 by a coral transplantation program in the degraded areas. Some fish species have started to inhabit the newly transplanted reefs.

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** ☐ NO ☐ NOT APPLICABLE (no mangrove habitats important for turtles)

Efforts have been and are being made to recover degraded mangrove habitats that are important for turtles; for example:

Rehabilitation program in Sukamade (6km), Meru Betiri National Park (2003-2004),
Ngagelan Beach Alas Purwo National Park (18km),
Post-tsunami disaster mangrove rehabilitation along the northern Sumatra coastal beaches (part of 1500 km identified beaches needing rehabilitation) (Source: Ministry of Forestry, 2005)

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 ■ **NO** ☐ NOT APPLICABLE (no degraded sea grass habitats)

No information has been recorded as yet.

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

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]

Data and information on marine turtle population in Guidelines on Management and Conservation Marine Turtle and Their Habitat (Ministry of Marine Affairs and Fisheries, 2003)

a) NESTING AND FEEDING GROUND

Adnyana, IBW (2005). Preliminary Feeding Ground Survey in Derawan Islands Complex (internal report of WWF Indonesia).

Adnyana, IBW, Mahardika, IGNK, and Rusli, A (2003). The Status of Green Sea Turtle Population in Derawan Islands Complex. Internal report of WWF Indonesia Wallacea bioregion.

Adnyana, W., Pet-Soede, L. (2008). "Status of green turtle (Chelonia mydas) nesting and foraging populations of Berau, East Kalimantan, Indonesia, including results from tagging and telemetry." Indian Ocean Turtle Newsletter 7: 2-11.

Dutton, P. H., Hitipeuw, C., et al. (2007). "Status and genetic structure of nesting populations of leatherback turtles (Dermochelys coriacea) in the western Pacific." Chelonian Conservation and Biology 6(1): 47-53.

Hitipeuw, C., Dutton, P. H. et al. (2007). "Population Status and Internesting Movement of Leatherback Turtles, Dermochelys coriacea, Nesting on the Northwest Coast of Papua, Indonesia." Chelonian Conservation and Biology 6(1): 28-36.

Hitipeuw, C. (2002). Status of Sea Turtle Populations in Raja Ampat Islands. In Donnelly, R., Neville, D., & Mous, P. (eds), Report on a rapid ecological assessment of the Raja Ampat Isands, Papua Eastern Indonesia, held 30 October -22 November 2002, pp.85-95. Report from The Nature Conservancy Southeast Asia center for Marine Protected Areas, Sanur, Bali Indonesia.

Hitipeuw, C and Maturbongs, J (2002). Marine Turtle Conservation Programme Jamursba-Medi Nesting Beach, North Coast of the Bird - s Head Peninsula, Papua. In KInan, I (ed), Proceedings of the Western Pacific Sea Turtle Co-operative Research and Management Workshop, 5-8 February 2002, pp. 161-175, Honolulu, Hawaii, USA. Honolulu H: Western Pacific Regional Fishery Management Council.

Stringgel, TB, Bangkaru, M, Steeman, APJM, and Bateman, L (2000). Green Turtle Nesting at Pulau Banyak (Sumatera Indonesia). Marine Turtle Newsletter, 90:6-8.

Suganuma, H, Kamezaki, N, and Yusuf, A (1999). Current Status of Nesting Populations of the Hawksbill Turtle (Eretmochelys imbricata) in the Java Sea, Indonesia. Chelonian Conserv. Biol, 3(2):337-343.

Schulz, JP (1989). Observation on Sea Turtles in East Indonesia (with notes on Nature Conservation in General). Report to IUCN and the Van Tienhoven Foundation, 85 pp.

Raleigh, B. (1982). Sea Turtles in the Meru Betiri Wildlife Reserve. Marine Turtle Newsletter 22:3.

van de Merwe, J. P., Ibrahim, K. et al. (2009). "Habitat use by green turtles (Chelonia mydas) nesting in Peninsular Malaysia: local and regional conservation implications." Wildlife Research 36(7): 637-645.

Winata, C. K., Nadina, A. et al. (2008). "Preliminary study on sea turtles in Bintan Island, Riau Archipelago, Indonesia." Marine Turtle Newsletter(119): 13-14.

b) REPRODUCTIVE POTENTIAL

Purwanasari HN, Dalem R, and Adnyana IBW (2006). Reproductive potential of green turtle nesting in Sukamade Beach

(Thesis manuscript, to be submitted to Udayana University-Bali in 2006);

Suprapti D, Swastika P, and Adnyana IBW (2006). Sex-ratio of hatching green turtle incubated under hatchery condition in Sukamade nesting site. Thesis manuscript, to be submitted to Udayana University-Bali in 2006;

c) DISEASES AND PATHOGENS - RELATED DISEASES

Rata J, Suarjana IGK, Adnyana IBW (2006). Assessing potential pathogens for green turtles in Sukamade nesting site. Thesis manuscript, to be submitted to Udayana University-Bali in 2006; Adnyana IBW (1997). Studies on the harvesting and disesase of wild caught marine turtles in indonesia. PhD-Thesis, James Cook University of Queensland Australia, 230pp

d) MIGRATION AND GENETICS

Geoffrey G et al (2006). Post-nesting migration of Raja Ampat green turtles. Internal report to WWF Indonesia - Conservation International, and the Nature Conservancy;

Dutton et al (2005). Satellite tracked movement of Papuan leatherbacks in 1993-2004. Unpublished;

Moritz D, Broderick K, Dethmers N, Fitzsimmons and C Limpus (2002): Population genetics of Southeast Asian and Eastern Pacific green turtles, Chelonia mydas. Final Report to UNEP/CMS. Department of the Environment and Heritage. GPOBox 787 Canberra ACT 2601 Australia;

Dethmers K & Broderick D (2001). Identification of Units for Regional Management of green turtles in the Australian Region. Papers presented at the National Action Plan Conservation of Marine Turtle in Indonesia conducted by WWF Indonesia, June 2001, 4pp;

e) TRADE, UTILISATION AND HUMAN THREATS

Adnyana IBW & Frazier J (2003). Trade of marine turtle in Bali. Internal report of WWF Indonesia.

Arinal, I. (1997). Marine Turtle Management in Meru Betiri National Park. In: Proceedings of the workshop on marine turtle research and management in Indonesia (ed.Y. R. Noor, I. R. Lubis, R. Ounsted, S. Troeng & A. Abdullah), pp.151-157.Wetlands International, Bogor, Indonesia.

Barr, Catherine (2001). Current status of trade and legal protection for sea turtles in Indonesia. Marine turtle Newsletter 54:4-7.

Bagus IGN, Arsana IGKG, Suka IG, and Sama IN (1993). Masalah penyu serta kaitannya dengan agama, upacara, dan adapt istiadat di Bali. Suatu tinjauan anthropologi (relationships of marine turtle with Balinese religion, rites and culture: Anthropological review). Fakultas Sastra Universitas Udayana Bali, 81 pp.

Hilterman, Martje & Goverse, Edo (2005). A note on the illegal trade in stuffed turtles in South Java Indonesia. Marine Newsletter 109:9.

Kendrick, R. C. and Ades G. W. J. (2009). "Taxonomic and morphometric analysis of a trade confiscation of turtle shells from Java, Indonesia." TurtleLog 4: 1-4.

Suarez, A & Starbird, CH. (1996). Subsistence hunting of leatherback turtles (Dermochelys coriacea) in the Kai Islands, Indonesia. Chelonian Conservation and Biology, 2(2):190-195.

Waayers, D. (2006). "Potential for developing marine turtle tourism as an alternative to hunting in Bali and Indonesia." Indian Ocean Turtle Newsletter 4.

Zainudin, Imam Musthofa L. P.-S., Hitipeuw Creusa and Adnyana I.B. Windya, (2007). "Interaction of Sea Turtles with Indonesian Fisheries – Preliminary Findings." Indian Ocean Turtle Newsletter 6.

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]

■ **YES** ☐ NO ☐ UNSURE

The following monitoring programs have been initiated since 2003 in several index sites:

Derawan islands complex and Jamursba-Medi Reserves:
- Population status and distribution (migration study and population genetic) DNA analysis

- Determinant of sex ratio in ex situ hatching
- Tagging
- Ecological assessment
- Socio cultural economic and investment opportunity assessment

Long-term beach monitoring for Sukamade green turtle nesting beach has been in place since 1980;
Long-term beach monitoring program has been initiated for Derawan islands complex since Januari 2002.

At Berau and Jamursba-Warmon moniotoring is not comprehensive; only nest count data and *in situ* threats are recorded for adaptive management. A long term monitoring programme for sea turtle conservation is in place in Pulau Banyak which includes nightly and daily beach patrol, metal and pit tagging as well as satellite tagging.

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

■ **YES** ☐ NO ☐ UNSURE

Information on migration pattern and impact from fisheries activities obtained by genetic profiling and from satellite tracking study undertaken on hawksbill turtle (Halim, 2003)

See:

- Moritz D, Broderick K, Dethmers N, Fitzsimmons and C Limpus (2002): Population genetics of Southeast Asian and Eastern Pacific green turtles, Chelonia mydas. Final Report to UNEP/CMS. Department of the Environment and Heritage. GPOBox 787 Canberra ACT 2601 Australia;

- Dethmers K & Broderick D (2001). Identification of Units for Regional Management of green turtles in the Australian Region. Papers presented at the National Action Plan Conservation of Marine Turtle in Indonesia conducted by WWF Indonesia, June 2001, 4pp.

Genetic materials from Indonesia were taken from three nesting site i.e. Pangumbahan of West Java, Enu Island of Aru, and Sangalaki Island of East Kalimantan, which include total samples of 22, 28 and 27 respectively.

Additionally, a total of 40 samples from Aru feeding ground and the other 66 samples from turtle trade centre in Bali were also examined.

See also: Citations in Section 3.1.1

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]

Tagging ■ **YES** ☐ NO

On going tagging program in almost all nesting sites

Fragmented tagging activity has been undertaken throughout the country since 1984. The activity involved more than 7000 tags. With regard to the migration routes, however, sufficient reports are not available from which to draw conclusions. The only tag-recovery reports have been published by Sukamade nesting beach authority (Indra Arinal, 1997).

For Sukamade nesters, it was indicated that some of the female turtles undertake post-nesting migration to Northern and Western Australia. This was also confirmed by a tag recaptured in King Sound-Western Australia, as reported by Prince RI (1991) Marine Turtle Newsletter 52:24-25.

Satellite tracking ■ **YES** ☐ NO

Satellite tracking projects: Studies on migration and genetic population Dermochelys coriacea in Papua by satellite telemetry, genetic sampling and Passive Integrated Transponder (PIT) tagging (National Marine and Fisheries Service, NOAA, La Jolla California, BKSDA II Papua, Sorong, and Papua University, 2003)

Satellite tracking has been carried out for Raja Ampat green turtles (Geofrey G, 2006. unpublished), Papuan Leatherbacks (Dutton et al, 2005, unpublished), and Sumatran Hawksbill turtles (Halim M, personal communication).

Many more satellite tracking projects have been continued since 2003 in order to identify and study migration of turtles, as well as raising awareness of the locals to support turtle conservation in the region.

See: IOSEA Satellite Tracking Metadatabase for more details. (http://www.ioseaturtles.org/satellite_search.php)

☐ **Other**

☐ **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]

■ **YES** ☐ NO ☐ UNSURE

Status and population genetic at Papua.
Population monitoring leatherback studies on Passive Integrated Transponder Tagging;
Satellite Tracking;
DNA sampling

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

■ **YES** ☐ NO ☐ UNSURE

This information is based on a study conducted in Bali turtle slaughter houses during 1993-1995 (see Adnyana, IBW 1997). After examining a total of 1409 green turtles and 140 hawksbill turtles, this worker found pathological conditions associated with fibropapillomatosis (21.5%) and spirorchidiosis (100%), as well as numerous other minor findings, such as renal oxalosis, coccidiosis, bacterial and fungal pneumonia, and Birne-like virus particles in hawksbill turtles.

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

☐ YES ☐ NO ☐ UNSURE

Local & limited.

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]

ASEAN MoU on Marine Turtle Conservation (1997): Action plan is not developed and the MoU is inactive

IOSEA CMP has been translated into National Action Plan and partly implemented

Sulu Sulawesi Marine Ecoregion (SSME, 2004): Action plan has been established and implemented

Planned Bismarck-Solomon Seas Ecoregion (BSSE, 2005): ongoing process with Government of PNG and Solomon Islands.

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** ☐ NO ☐ NOT APPLICABLE

Studies on migration and genetic population: Dermochelys coriacea in Papua by satellite telemetry, genetic sampling and Passive Integrated Transponder (PIT) tagging (National Marine and Fisheries Service, NOAA, La Jolla California, BKSDA II Papua, Sorong, and Papua University, 2003).

b) Conservation status ☐ YES ☐ NO ☐ NOT APPLICABLE

c) Migrations ■ **YES** ☐ NO ☐ NOT APPLICABLE

Studies on migration and genetic population: Dermochelys coriacea in Papua by satellite telemetry, genetic sampling and Passive Integrated Transponder (PIT) tagging (National Marine and Fisheries Service, NOAA, La Jolla California, BKSDA II Papua, Sorong, and Papua University, 2003). See also 3.1.4 (B)

d) Other biological and ecological aspects ☐ YES ☐ NO ☐ NOT APPLICABLE

☐ **Other**

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]

1. Green turtle population of the Derawan islands complex. The population is declining due to egg harvest and poaching

2. Leatherback turtle population in Papua. The population is in threat due to habitat disturbance. (WWF Technical Progress Report, 2005)

All species: Fragmentary data collections in several nesting beaches showing population decline for all population in almost all known nesting beaches.

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]

■ **YES** ☐ NO ☐ UNSURE

Research and monitoring activities periodically reviewed and evaluated in index sites (Derawan and Papua, WWF 2005) and Alas Purwo National Park, Kepulauan Seribu National Park, Meru Betiri dan Cikepuh National Park (West Java) - Ministry of Forestry (2005)

Data review is conducted on yearly basis during the annual national turtle assessment workshop

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

The results of monitoring programs have been taken into account to develop national turtle conservation management plan in 2004.

Difficulties encountered: a more rigorous campaign should be in place to encourage field workers to use and to adopt the available result of the research for their turtle management practices.

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** ☐ NO ☐ UNSURE

This was done during our 2003 annual national turtle workshop conducted in Bali. Software for data collection, which has been derived from SEAFDEC, has been introduced.

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

☐ OFTEN (SYSTEMATICALLY) ☐ OCCASIONALLY ■ **RARELY** ☐ NEVER

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]

Not documented

These were mostly based on personal relationships and through participation in regional turtle workshops.

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

☐ YES ■ **NO** ☐ UNSURE

Data on green turtle populations in Derawan islands complex and leatherback turtle populations in Papua have compiled

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

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

- Turtle consumer map (Report market and consumer survey of turtle consumption in Bali, June 2000)
- Reduce Consumption campaign - Agreement of Key Balinese Clans (Banjar) to support turtle conservation (June 2001)
- Turtle Campaign - in Bali to support ecotourism programs
- Many leaflets and booklets have been produced for awareness purposes
- Press release and conferences have been undertaken several times
- Leaflets for 'turtle entangled & release protocol' has been produced and disseminated in long-liner industries

In addition, a monitoring manual, booklets/poster for on-board handling of by-catch for longline (dehooking, resuscitation), coloring book, kid storybooks/comics, maps migration routes and potential interaction with fisheries, press release for specific events have been produced.

Yayasan Pulau Banyak has developped a 2 week training programme on delivering environmental education programmes. Lesson plans, work booklets and equipment have been provided to these teachers to deliver these programmes to their students in their classrooms and to integrate environmental education into their curriculum. 50 local fishermen have also been part of a workshop on sustainable fisheries and the use of FAD's to promote sustainable fishing methods. FAD's have been provided as a follow up and a cooperative has been formed as a result.

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

■ **Policy makers**
■ **Fishing industry**
■ **Local/Fishing communities**
☐ Indigenous groups
■ **Tourists**
■ **Media**

☐ Teachers
■ **Students**
☐ Military, Navy, Police
☐ Scientists
■ **Other:Balinese Hindu Priests; Muslim leaders in Islamic schools (called 'Pesantren').**
■ **None of the above**

General Public, fishers, community based monitoring groups Local fishermen, youth groups, women groups, school children and teachers.

- Joint decrees by Governors of Bali and West Nusa Tenggara on turtle protection especially prohibition on the consumption of turtle meats for religious ceremonies
- Statement by Hindu priests that the use of turtle meats in the religious ceremonies is not compulsory
- Customary bylaws in Bali have been agreed to be revised to include chapters on turtle conservation and protection, and to conduct law enforcement activities targeting the turtle traders.

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

■ **YES** ☐ NO

For example, a turtle center that functions as an education and research center and as an attractive tourist destination has been established in Serangan (Bali). The center is expected to be the focal point of the country's turtle-friendly ecotourism network, which will include Derawan in East Kalimantan and Sukamade in East Java.

Yayasan Pulau Banyak has established an information centre on the main island for tourists to learn about the sea turtle conservation programme and the base camp provides a library on sea turtle conservation information. The work booklets for schools have included sea turtle conservation issues.

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

Project on turtle-based ecotourism development is being conducted in Bali (2005-2006), located in seven districts involving coastal communities. This project aims to enhance community participation in turtle management and conservation through development of turtle-based ecotourism, which includes training on turtle identification, egg translocation and hatching, handling of hatchlings, tour guidance, conservation education and establishment of community-based turtle conservation institutions.

Eco-tourism development, FAD's and conservation concessions.

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]

- Co-management in the form of ecotourism activities at turtle nesting beach in Perancak Bali;

- Local development of an MoU on funding mechanism at Derawan, Pangumbahan, Meru Betiri and Jamursba Medi between business sectors and local community, which aims to support co-management of ecotourism on nesting beaches.

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]

A National Strategy and an Action Plan on Marine Turtles have been developed. The action plan includes encouragement of many government agencies including Department of Fisheries, P2O LIPI, Ministry of Environment, Department of Education, Ministry of Communication and Information, Department of Tourism, and NGOs (WWF, TNC, CI and local NGOs) and Universities to conduct marine turtle conservation in accordance with their expertise and mandates. A working group, acting as an advisory body to coordinate the implementation of National Strategy and Action Plan, is in the process of establishment.

OBJECTIVE V. ENHANCE NATIONAL, REGIONAL AND INTERNATIONAL COOPERATION

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** ☐ NO ☐ NOT APPLICABLE

Indonesia implements CITES effectively and treats marine turtles as an Appendix I species by listing the species in the total protection status in accordance with Indonesian national legislation (which has been categorised into legislation that is fully in compliance with the Convention).

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

■ **YES** ☐ NO ☐ NOT APPLICABLE

The Management Authority of CITES conducts CITES training on an annual basis (since 1995) for law enforcement authorities of Customs, Quarantine, Police Officers, Ministry of Fisheries and Marine Affairs and Conservation Officers. This activity is reported to CITES in Indonesia's Biennial Report.

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]

■ **YES** ☐ NO ☐ NOT APPLICABLE

Within the South East Asian region there is a mechanism for cooperation in CITES implementation that includes identification of wildlife (including marine turtle) illegal trade such as ASEAN Experts Group on CITES and newly established ASEAN Wildlife Enforcement Network (ASEAN-WEN). Especially for marine turtles there have been only a few cases of illegal trade within ASEAN; no prosecution has been undertaken.

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]

None yet

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]

- All 6 (six) species of marine turtles have been nationally protected, meaning that no capture or trade is allowed. Penalties for violation of this provision are 5 (five) years imprisonment and fines up to IDR 200 million;
- Joint decrees by Governors of Bali and West Nusa Tenggara on turtle protection especially prohibit the consumption of turtle meat for religious ceremonies;
- In some places such as Berau and Sukabumi districts, the provision of the law could not be effectively enforced due to dependency of local people on eggs harvested for subsistence.

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]

■ **YES** ☐ NO

- Guidance on management and conservation of marine turtles and their habitats has been established by the Ministry of Fisheries and Marine Affairs (2003);
- Action Plan has also been documented in 2004 for further refinement.

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? [PRI]

The following programs of the CMP : 1.1, 1.2, 1.5, 1.6, 2.1, 2.2, 3.1, 4.1, 5.5, 6.3, 6.4 have been identified during the National Workshop for the development of National Strategy and Action Plan (2005) as the first priority for immediate actions. These programs are identified as important activities to be taken domestically.

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 to achieve progress. [PRI]

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

- Development of collaborative management for sustainable management of turtles the purpose of which is to enhance welfare of people.

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]

- Sulu-Sulawesi Marine Ecoregion (SSME), is a tri-national (Indonesia, Malaysia and the Philippines) cooperatio, one of whose aims is the conservation of migratory species (including marine turtles);
- Bismarck Solomon Seas Ecoregion is a tri-national (Indonesia, PNG and Solomon Islands) cooperation to conserve Leatherback Turtle. The agreement of this cooperation is being developed among the three countries.

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

☐ YES ■ **NO** ☐ NOT APPLICABLE

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? [SAP]

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]

- Education for local communities that still depend on egg harvest is needed for the conservation of marine turtles; without enhancement of their knowledge on conservation, marine turtles will always be under threat.

- Establishment of pilot projects on economic development and training for the local communities to develop alternative sources of income is needed. With these projects it is expected that the communities shift their source of income from direct and extractive utilization of turtle products to non-extractive use.

- Sustainable financing instruments to ensure long term protection.

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]

- Workshop on Sustainable Management of Marine Turtles which aimed to prioritize actions on the turtle populations in Derawan Islands (District of Berau, East Kalimantan, April 2001)
- Training on in situ Management of Nests, Hatching and Hatchling, for the local authorities (Ministry of Forestry, 2003)
- Training on marine turtle identification for local authorities and communities (Ministry of Forestry, 2004)
- Training on biology and conservation and management of marine turtles for local authorities and local NGOs (Ministry of Forestry, 2004)
- National Workshop on Marine Turtle Conservation to develop National Strategy and Action Plan on Marine Turtle Conservation (Ministry of Forestry, 2005)
- Monitoring for field practices (collaboration with Udayana University), at site (Pangumbahan, West java) and database and analysis for adaptive management purposes.
- Patrol staff has been trained according to IUCN guidelines for marine turtle conservation and management. Training has been provided for nest relocation, tagging and beach surveys.

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]

- Some NGOs facilitated some trainings and organised some workshops;

- University of Udayana (Bali) and Bogor Agricultural University (Bogor) provide lectures and training modules;

- Universities (Udayana University Bali, University of Papua; SWFSC-NOAA);

- Yayasan Pulau Banyak has established long term partnerships with local government bodies such as the Forestry department (BKSDA), The Unversity of Syiah Kala, Banda Aceh and fisheries deparment of Aceh Singkil.

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]

In general, national policies and laws are effective; however they need stronger effort in their enforcement. Act No. 5 of 1990 concerning Conservation of Living Resources and Their Habitats, together with associated implementing regulations (Government regulation No. 7/1999 and No. 8/1999) provides deterrent to the wildlife crime.

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]

■ **YES** ☐ NO ☐ UNSURE

- Act No. 5 of 1990 concerning Conservation of Living Resources and Their Habitats is being reviewed in order to be in line with CITES provisions, especially with regard to sanctions that need to be increased to provide more deterrent;

- Some Ministerial Decrees that allow egg harvest are in the process of revocation

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]

☐ YES ☐ NO ■ **UNSURE**

OBJECTIVE VI. PROMOTE IMPLEMENTATION OF THE MoU INCLUDING THE CONSERVATION AND MANAGEMENT PLAN

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

Indonesia is currently active in the process of the development of sub-regional cooperation in the South Pacific between Indonesia, PNG and Solomon Islands through BSSE (Bismark-Solomon Sea Ecoregion) initiative, meant to conserve leatherback turtles in the South Pacific. Through this mechanism Indonesia will encourage other two States to join IOSEA.

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

☐ YES ■ **NO** ☐ NO VIEW

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 ■ **NO** ☐ NO VIEW

The current status of this instrument has provided some basic guidelines for the conservation of marine turtle in the region, so that there is no sufficient reason at the current stage to make it legally binding.

6.2 Secretariat and Advisory Committee

6.2.1 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]

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 central government provides an annual budget for implementation of the activities including those undertaken by National Parks and Provincial Regional Offices of the Ministry of Forestry. The Ministry of Marine Affairs and Fisheries also provides a budget for its activities and activities by District Governments.
- Local governments (Provincial or District), in some cases provides an annual budget for the activities at the local level.
- International and local NGOs have also allocated a budget for activities at site level.
- Grant from international donor countries or agencies (such as GEF) is sometime available.

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

■ YES ☐ NO

- The Government of Indonesia is seeking financial assistance from the GEF through Marginal Fisheries Communities Development Project that focuses on marine biodiversity conservation and specific focus on marine turtles. For this purpose Conservation International (CI) has pledged to provide matching funds;
- Some NGOs have also allocated budgets specifically for marine turtle conservation in several sites in Indonesia.

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

None formal yet, but some are being developed:

- Marine Conservation Agreement (Incentive Agreement/Conservation Easement) for communities co-exist with the major turtle populations (e.g. Birdshead West Papua)
- Partnership with tourism industries for turtle based tourism e.g. in Bali
- Yayasan Pulau Banyak is exploring the possibility in partnership with CSIRO (Australia) and Advanced Conservtion Strategies (U.S.A) to introduce environmental mortgages for local communities linked with coral reefs and nesting beaches.

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]

■ **YES** ☐ NO

The Directorate General of Forest Protection and Nature Conservation is a government agency given the mandate to develop and undertake conservation and management policies for marine turtles.

The Ministry of Marine Affairs and Fisheries also has in its mandate conservation activities of marine resources.

The Ministry of Environment is a coordinating Ministry on the general environmental issues, including conservation.

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]

■ **YES** ☐ NO ☐ UNSURE

The Directorate General of Forest Protection and Nature Conservation (PHKA) is the leading agency for policy making. The implementing agencies under PHKA are National Parks authorities and Provincial Offices of the Ministry of Forestry.

The Ministry of Marine Affairs and Fisheries, has in its mandate conservation of marine species, including marine turtles, especially those which relate to the coastal and small islands management.

The Ministry of Environment is the coordinating body for the policy development at the national level on the conservation and environment issues.

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],

☐ YES ■ **NO** ☐ UNSURE

The arrangement of the mandate for each agency is already clear and at least for the time being, it does not need further review.

Comments/suggestions to improve the present reporting format:

Additional information not covered above: