Baa Atoll Biosphere Reserve:

A model for collaborated Marine Protected Area Management

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Maldives is endowed with 1190 beautiful tropical islands and a marine environment pristine and rich in biological diversity.

These significant ecosystems are by far the largest group of coral reefs in the Indian Ocean, extending to an area of more than 21,000 square kilometers

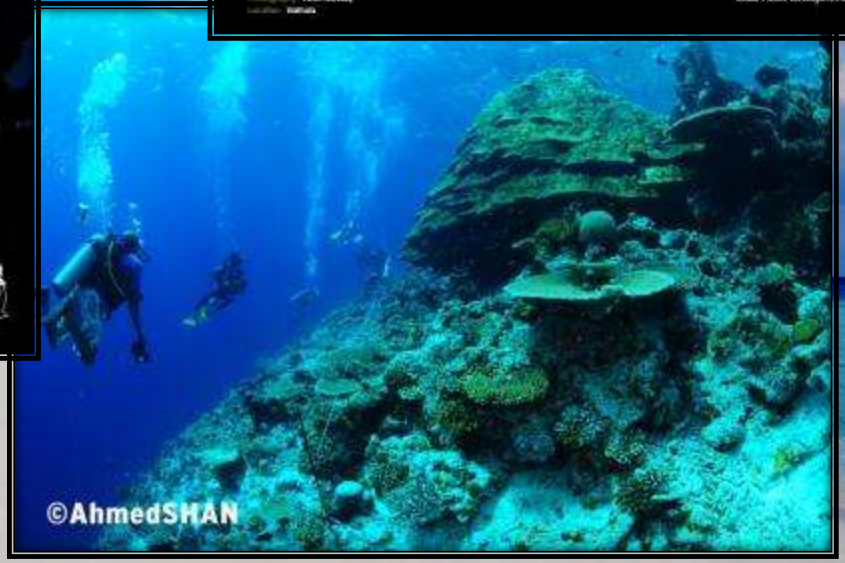
Protected Marine Species

1. Black Coral
2. Triton
3. Berried and small lobsters
4. Turtles
5. Napoleon Wrasse
6. Dolphins
7. Whale Sharks
8. Whales
9. Sharks
10. Manta Rays

Protected Areas

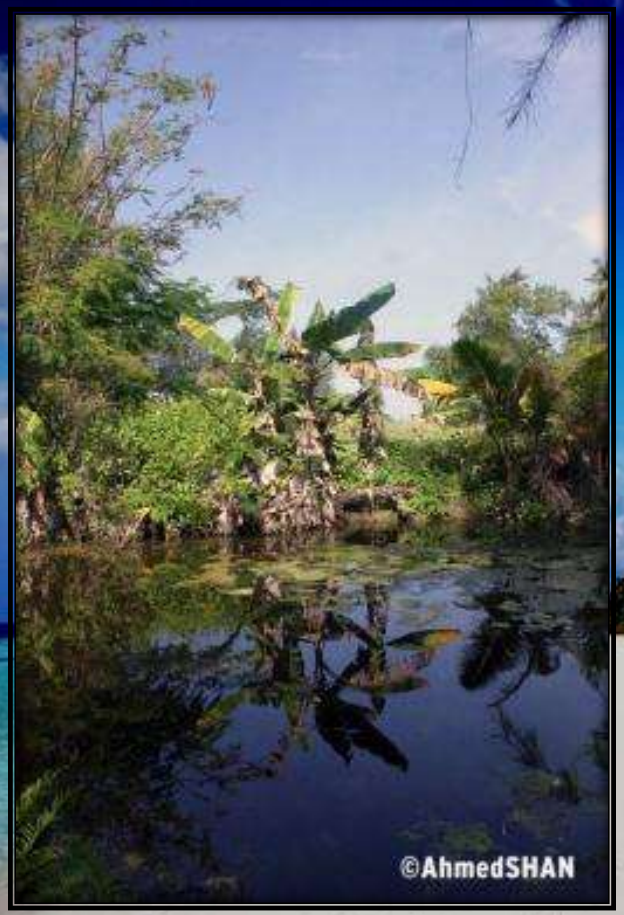
- 39 marine protected areas

OVER 290 ENVIRONMENTALL SENSITIVE AREAS



Protected Mangrove areas

- K. Huraa Mangrove area
- Eydhigali Kilhi, Koattey Area of S.Hithadhoo
- Goidhoo Kulhi

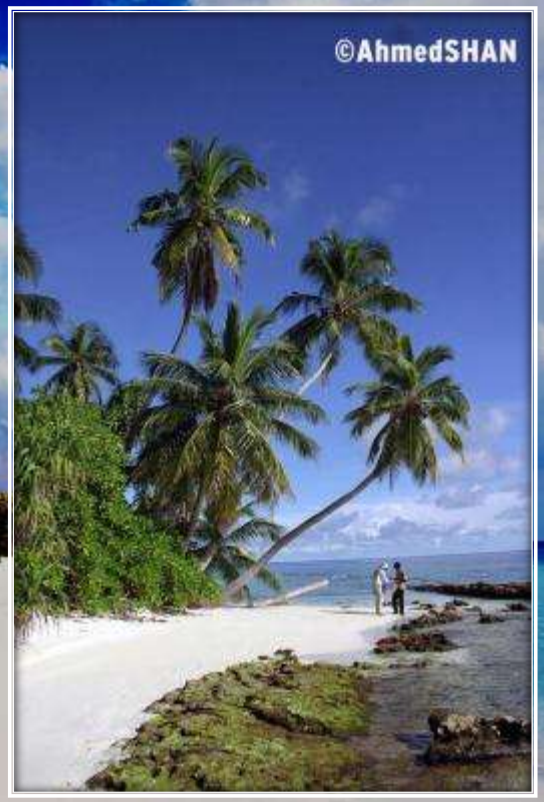


Protected Birds in the Maldives

- **70 birds are protected**
- **The first bird to be protected- White tern (Dhondheeni)**

Protected islands

- Adh. Hurasdhoo
- B.Olhugiri
- Ga.Hithaadhoo
- B.Hulhudhoo



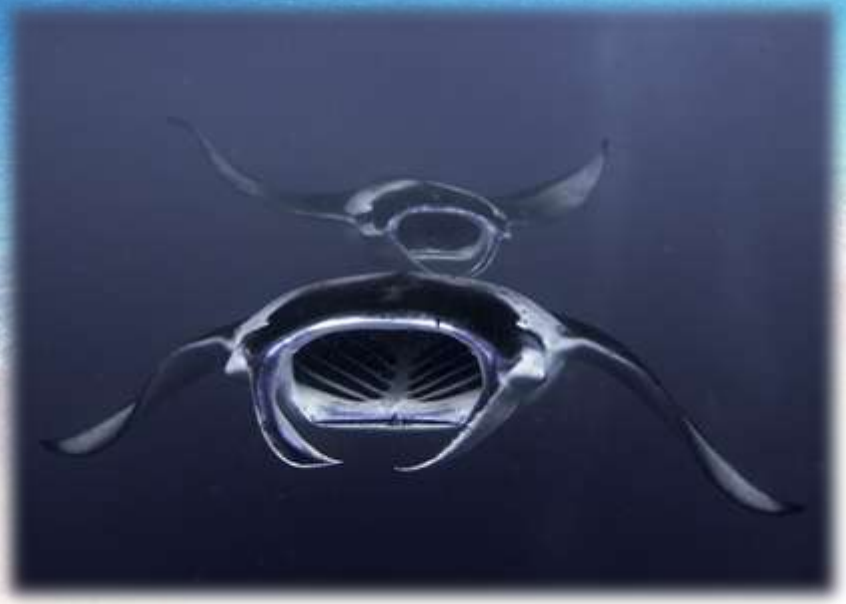
Marine Turtles - Endangered

1. **Green Turtle**
2. **Olive Ridley Turtle**
3. **Hawksbill Turtle**
4. **Loggerhead Turtle**
5. **Leatherback Turtle**

- **land turtle found in the Maldives**

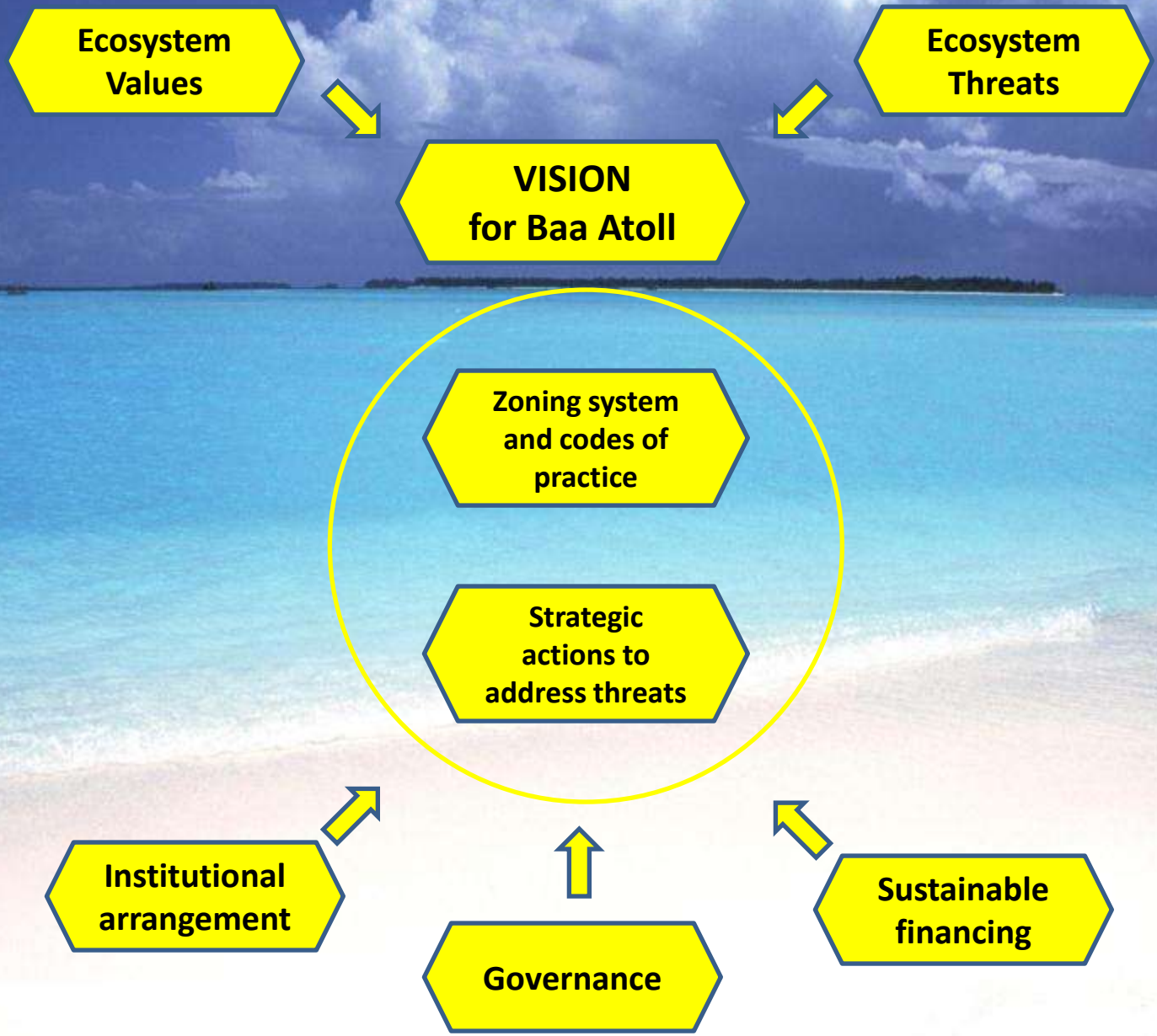
  Black Turtle, *(Melanochelys trijuga thermalis)*

- Government of Maldives through Ministry of Environment and Energy undertook the "Atoll Ecosystem Conservation" (AEC) Project, which is co-financed by the Global Environment Facility (GEF).
- The project is implemented through (UNDP), Maldives



- This project is focused on Baa Atoll, with the purpose of designing and demonstrating an effective management system and plan for atoll ecosystem conservation and sustainable development, which could then be replicated throughout the Maldives in the future.

BAA ATOLL CONSERVATION PROGRAMME



- **Government of Maldives proposed the international designation of Baa Atoll as a UNESCO World Biosphere Reserve on 28 September 2010.**
- **Baa Atoll was declared as a UNESCO Biosphere Reserve on 28 June 2011.**

- **Baa Atoll harbors globally significant biodiversity including a significant concentration of Mega fauna such as Whale Sharks and Manta Rays and a unique diversity of benthic fauna and marine turtles.**

- **Baa atoll has one of the largest areas of mangroves in the central part of the Maldivian atoll chain, and one of the few roosting sites of frigate birds in the Maldives.**

ZONATION PLAN

PROPOSED CORE AREAS

BAA ATOLL

CORE AREA 6
BATHALAA REGION

Kamadhoo

CORE AREA 7
HULHUDHOO ISLAND AND REEF

CORE AREA 5
MAAMIGILI REGION

CORE AREA 1
MENDHOO REGION

CORE AREA 2
DHIGALIDHAA REGION

EYDHAFUSHI

CORE AREA 3
HANIFARU REGION

CORE AREA 4
ANGAFARU REGION

CORE AREA 11
MUTHAAFUSHI REGION

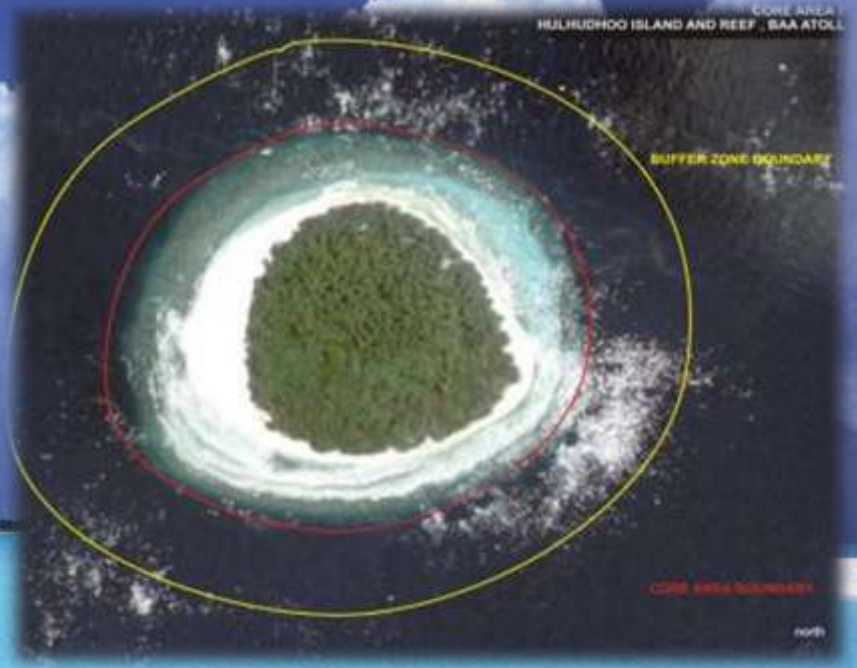
CORE AREA 8
OLHUGIRI ISLAND AND REEF

CORE AREA 9
GOIDHOO KOARU

GOEDHOO ATOLL

CORE AREA 10
DHORUKANDU REGION

DRAFT ONLY



Percentage of protected areas in B. Atoll

Area of protected reefs	35.72	Total area of reefs in the atoll	299.96
Area of protected dry land	0.52	Total area of dry land in the atoll	10.43
Total area of protected areas	39.34	Total area of the atoll	823.21

Percentage of protected reefs	11.9%
Percentage of protected wetlands	5.0%
Percentage of protected area in B.Atoll	0.05%

NOTE: All areas in square kilometers

- There are 9 main core areas in the Baa Atoll Biosphere Reserve. All these sites are designated as protected areas under the Environment Protection and Preservation Act of Maldives (Law no. 4/93).
- They have different ecosystem types such as Mangroves, Terrestrial and Marine.

1. DHIGALI HAA & DHIGALI GIRI is well known for its rich biodiversity and standing population of hard and soft corals and associated marine invertebrates and vertebrates. It is a of the long and narrow reef characterized by a colorful reef top

2. The WRECK OF CORBIN showing the historical wreck of a French ship turned into an ecosystem for colorful marine species

3. MATHIFARU HURA REGION has a reputation as a nesting site for green and hawksbill turtles.

4. GOIDHOO KOARU REGION has highest biodiversity and largest mangrove forest within Baa Atoll, with high biodiversity of mangrove associated vertebrates and invertebrates

5. The reef system of ANGAFARU REGION is directly associated with the unique dynamic water circulation system of the protected area of Hanifaru. During the south west monsoons it is an aggregation site for feeding high numbers of endangered whale sharks and manta rays

6. MENDHOO REGION including Nibiligaa island is a key bird roosting and nesting site of Lesser Noddies and Brown Noddies as well as the Black-Naped Tern, Greater Crested Tern and Frigate Birds.
7. A pool of IUCN red listed species Napoleon wrasse (Cheilinus undulatus)is found in MAAHURAUVALHI REEF

8. MENDHOO REGION including Nibiligaa island is a key bird roosting and nesting site of Lesser Noddies and Brown Noddies as well as the Black-Naped Tern, Greater Crested Tern and Frigate Birds.
9. The central attraction of this biosphere reserve is the **HANIFARU MARINE PROTECTED AREA**

- Hanifaru reef and its resources were designated as a Marine Protected Area (MPA) in 2009.
- Protection the reef and its living and non-living resources are allocated the highest level of protection within the nation.
- The designation was specifically made to ensure the protection of the bay, its resources and the mega fauna that visit the site.

Both manta rays and whale sharks visit Baa atoll periodically throughout the year, but during the south west monsoon they aggregate in high numbers in Hanifaru bay to feed on high concentrations of zooplankton.

This feeding aggregation is an annual event with an average duration of 5-7 months (May-November) with many individual manta rays and whale sharks returning each year.

Hanifaru bay is one of the few places on earth where manta rays and whale sharks aggregate in such high numbers to feed.

- In order to manage the Hanifaru MPA, a regulation has been published and implemented from January 2012.
- The very first Marine rangers have been assigned and a financial mechanism has been established for the management of the Area and the Biosphere Reserve as whole.

- A financing mechanism is very crucial for the sustainable management of a protected area.
- the Government of Maldives has established a Baa Atoll Conservation Fund which in turn will be utilized for the Management of the Biosphere Reserve and sustainable management of resources throughout Baa Atoll.

Implementation mechanisms

Governance of the BACP

- Devolving governance from national to regional to local levels
- BACP Steering Committee
- Stakeholder engagement

Institutional arrangements for BACP

- Institutional needs (human resources, office, boats , communications etc)
- What role for local communities (co-management)
- What role for government
- Enforcement (role of police and judiciary)

Sustainable financing of BACP

- What are the budget requirements?
- How to establish / manage the Fund?

STRATEGIC ACTIONS 2009 - 2013

High Priority

=> • **Shark-finning / overfishing**

=> • **Hanifaru development proposal**

=> • **Disturbance to Seabird nesting / roosting sites**

• **Turtle egg collection (and catching adults)**

Medium Priority

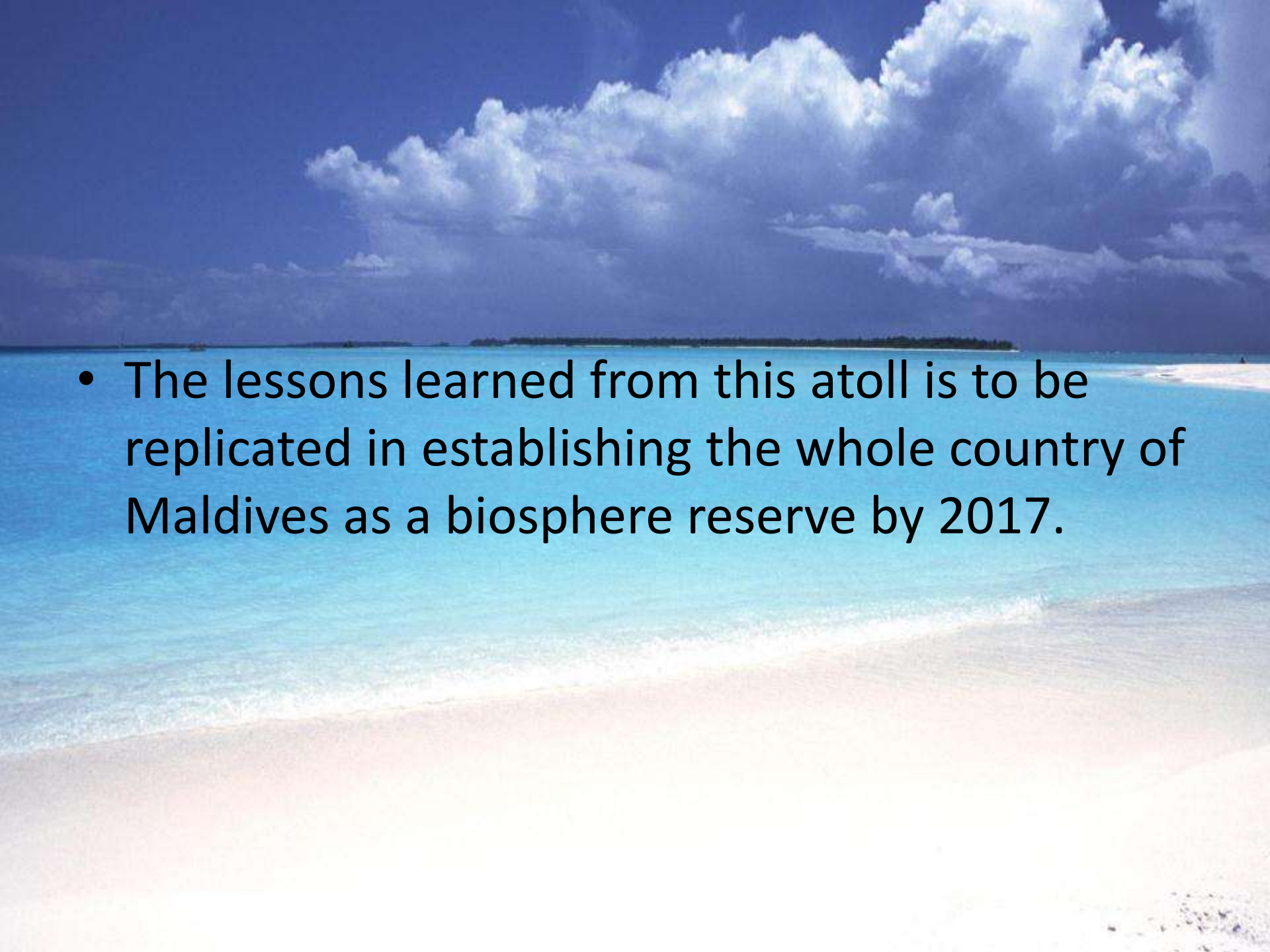
- Sea cucumber over-fishing
- Alien invasive species on islands
- Spiny lobster over-fishing
- Grouper over-fishing
- Pollution from solid wastes
- Recreational reef angling by resorts
- Marine megafauna disturbance by tourists
- Shipwrecks and oil spills
- Mangrove mis-management
- Reef damage from anchoring / diving
- Loss of natural habitats/ landscape

The establishment of Biosphere Reserve demonstrates a great contribution made by Maldives in achieving the 3 goals of the Convention on Biological Diversity, conservation and the sustainable use biodiversity, fair and equitable sharing of benefits arising from the use of genetic resources.

- The Biosphere Reserve is a collaborative effort by the government, private sector and local communities.
- The process of formulation and implementation has major challenges and obstacles along the way as well.
- With continuous effort from the private sector, local communities and government, the Baa Atoll Biosphere Reserve is a trophy for the nation.

Baa Atoll: a UNESCO Biosphere Reserve

- **Differentiator** – "world class"
- **Pride** – social and cultural development
- **Self-reliance** – local produce, renewable energy, recycling
- **Sustainability** - for future generations
- **Business opportunity** – marketing, accreditation, inward investment
- **Innovation** attracting new funding sources
- **Demonstration** – Maldives and internationally
- **Network learning** – with other Biosphere Reserves



- The lessons learned from this atoll is to be replicated in establishing the whole country of Maldives as a biosphere reserve by 2017.

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