

Baa Atoll

Conservation Programme

5 year Strategy / 2009 - 2013

www.biodiversity.mv/aec



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Atoll Ecosystem Conservation Project (AEC project)

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VISION

Baa Atoll: a world class model of atoll ecosystem conservation where sustainable use supports a prosperous economy and good quality of life for all, for ever – for replication across Maldives

Atoll Ecosystem Conservation Project (AEC)
Ministry of Environment Energy and Water, Government of Maldives
UNDP-GEF



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List of abbreviations

AEC	Atoll Ecosystem Conservation Project
BACP	Baa Atoll Conservation Programme
BASDP	Baa Atoll Sustainable Development Plan
GEF	Global Environment Facility
IDP	Island Development Plan
MEEW	Ministry of Environment Energy and Water
NDP	National Development Plan
NGO	Non-Governmental Organisation
UNDP	United Nations Development Programme
UNESCO	UN Educational, Scientific and Cultural Organisation



1 Introduction

1.1 Background

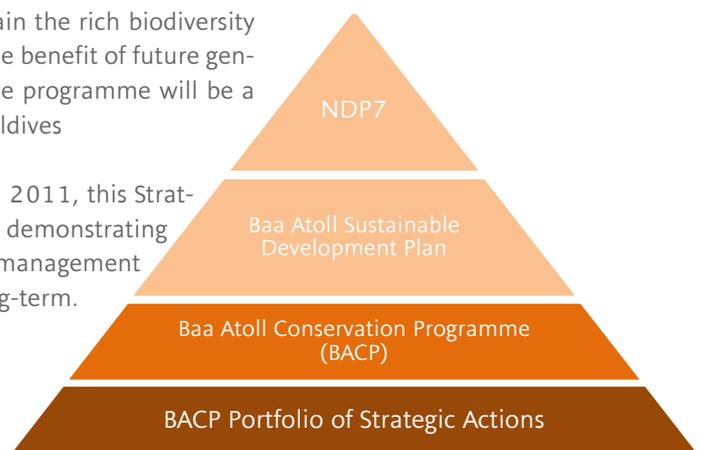
Baa Atoll is the demonstration atoll for the UNDP/GEF/GoM Atoll Ecosystem Conservation Project. The project's Vision is:

Baa Atoll: a world class model of atoll ecosystem conservation where sustainable use supports a prosperous economy and good quality of life for all, for ever – for replication across Maldives

The AEC project has assisted preparation of the Baa Atoll Sustainable Development Plan (BASDP) which provides the overall framework for sustainable development of the Atoll. Within this integrated plan, the AEC project is supporting implementation of two strands of activities on Baa Atoll: a) Biodiversity Conservation and b) Livelihoods support.

The Baa Atoll Conservation Programme (BACP) is the implementing Strategy for achieving biodiversity conservation on Baa Atoll. The purpose of the BACP is to design, test and demonstrate a management system that will secure and sustain the rich biodiversity and ecological processes of Baa Atoll for the benefit of future generations. Once successfully established, the programme will be a model to be replicated throughout the Maldives

Although the AEC project will terminate in 2011, this Strategy covers the 5 year period, 2009-2013, demonstrating that the AEC project aims to establish a management system which can be sustained for the long-term.



▲ Policy framework for the Baa Atoll Conservation Programme (BACP)

1.2 Why is the BACP needed

Life, economic prosperity and social development in Maldives depend upon maintaining the atoll ecosystems in a healthy natural state. The reefs, islands and surrounding seas and their outstanding biodiversity are the natural assets on which the tourism and fishing industries depend, which provide land for development and materials for building, and which protect communities from storms. More than almost any country in the world, the future of the Maldives is inextricably linked to the quality of the environment.

Conventional sectoral approaches have not been effective in conserving Maldivian atoll ecosystems. Emblematic species like sharks and several fisheries (sea cucumbers, lobsters etc) are in decline, breeding seabird colonies have been abandoned, the land and seas are increasingly polluted, and islands are threatened with coastal erosion, storms, sea-level rise and invasive species. There is an urgent need to plan, conserve and manage the country's natural resources in a more integrated and sustainable manner that is appropriate to the country's unique geography and ecology, socio-economic development and patterns of resource use. Only by achieving this will future generations have the same rich natural resource base to support them that has sustained our development to date.

To ensure the restoration and continued functioning of these ecosystems mechanisms are needed to address some of the currently unsustainable activities that have begun to degrade atoll resources, and to provide opportunities to allow these resources to recover. The BACP will address these issues for Baa Atoll.

1.3 Integrated ecosystem management

The BACP is being developed and implemented in line with the Ecosystem Approach of the Convention on Biological Diversity. This is "A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way". The main differences between the ecosystem approach and the more traditional approach to environmental management are that it:

- Puts people (rather than biodiversity) at the heart of natural resource management
- Extends biodiversity management beyond protected areas, to whole ecosystems
- Engages the full range of sectoral interests in an integrated way
- Decentralises management and governance to the lowest appropriate level
- Integrates conservation and sustainable use
- Recognises that (climate) change is inevitable, and promotes adaptation strategies to deal with change

This approach is highly relevant to the development objectives of Maldives, and also to the ongoing process of constitutional reform. The AEC project therefore provides a timely opportunity to pilot, on Baa Atoll, a system for future environmental governance and management. This opportunity, which is receiving significant international support through the Global Environment Facility, is unlikely to be repeated.

1.4 How has the BACP been developed?

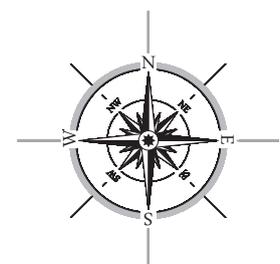
The BACP is being developed with support of the UNDP/GEF/GoM Atoll Ecosystem Conservation Project. It is an adaptive process building on local, national and international experience and inputs. Numerous community consultations and workshops have been held with different stakeholders at local and national level. These have identified the main values and threats facing atoll ecosystems, the stakeholders involved, and the aspirations of the local communities, resorts and other stakeholders of Baa Atoll. The BACP integrates all of this material into a proactive conservation Strategy for the next 5 years. It is implemented through a portfolio of strategic actions, targeted to address the most significant threats to Baa Atoll biodiversity/ecosystem conservation.

1.5 About Baa Atoll

Baa Atoll lies to the northwest of Male', and has a total area of approximately 1,200 km². The atoll is comprised of seventy-five islands; thirteen of these are inhabited with a combined population of approximately 11,000 people. Six islands have been developed as resorts; the remaining 57 islands are uninhabited. Whilst resorts have become the main economic driver, tuna and reef fishing remains an important activity. Production of handicrafts and other materials for the tourist industry is also significant.

Baa Atoll harbours globally significant biodiversity including significant concentrations of whale sharks and manta rays and also a unique diversity of benthic fauna, including rare pink hydrozoan corals (*Distichopora nitida*), Bryozoans (*Bugula*) and sea slugs (*Tambja olivaria*) that are only recorded from Baa atoll. Baa has a particularly high density of the ring-shaped reef forms called faroes, a peculiar reef structure unique to the Maldives, as well as other unique reef forms. Baa Atoll also has one of the largest areas of mangroves in the central part of the Maldivian atoll chain, and one of only two roosting sites in the Maldives for the frigate bird (more than 10,000 individuals).

To date, there are only two very small protected areas in Baa Atoll: Olhughiri island, and Dhighali-ha dive site. Neither receive any form of active management and are not well known or understood by local people. Virtually no human or financial resources are specifically directed to atoll ecosystem or biodiversity conservation on Baa.



Resource Map
of Baa Atoll



2 Structure and operation of the BACP

The Baa Atoll Conservation Programme aims to be a world class management system for the conservation of the Baa atoll ecosystem. It is designed to be guided by a series of 5 year strategies, which will be evaluated at mid-point and in their fifth year, and then rolled forward for further periods of 5 years.



The BACP has six strands of activity. At the heart of these lies a portfolio of action plans to address priority conservation issues. Implementation of these action plans will be supported by the five other strands of activity: *Community engagement and participation, Governance and institutional support, a Spatial planning and management system; Information management and communication, and Sustainable conservation financing.*



These six strands and the steps to be undertaken for each during this 5 year strategy are described in the following chapters. The final chapter (9) describes the aspiration of the AEC project that Baa Atoll should be designated as a UNESCO Biosphere Reserve.



3 A portfolio of actions to address priority conservation issues

Non-sustainable human activities are the root cause of damage to the Baa Atoll ecosystem. The BACP will therefore pursue a strategy of addressing directly the human activities that impact negatively on the biodiversity and functioning of the Baa atoll ecosystem. The overall objective is to achieve conservation and sustainable use.

3.1 The main threats to atoll ecosystems

Workshops and consultations during the early phases of the AEC project, revealed the main threats to atoll ecosystems and their biodiversity to be as follows:

Direct threats to the Baa Atoll Ecosystem and its component biodiversity

Type of threat	Cause of threat	Current issues
Damage to habitats	Construction	Harbour developments Resorts and other infrastructure Hanifaru development proposal Mariculture proposals
	Sand/coral mining Anchor damage	Erosion on many islands Widespread coral damage
Overharvesting	Over-fishing	Declines of sharks, groupers and some other reef fish, bait fish, spiny lobster, sea cucumbers, ?turtles
	Cutting trees	Damage to mangroves
Disturbance	Resort use of sandbanks	Seabird colonies abandoned
	Tourists pursuing megafauna Activities on beaches	Manta rays disturbed? Turtles disturbed
Pollution	Disposal of waste at sea	Pollution of beaches and reefs
	Sewage disposal	Nutrient enrichment of lens and reefs
Alien species	Predation on native species	Rats eating breeding seabirds / eggs
	Invasion into habitats	Alien invasive plants on islands
Climate change	Greenhouse gases	Sea level rise
		Increased swells and storms
		Coral bleaching

With regard to climate change, it is not possible for the BACP to pursue direct mitigation actions that will solve this global threat (except for encouraging carbon-neutral policies for the atoll); the focus must therefore be on integrating climate change adaptation measures into all of the actions that are taken.

3.2 Prioritising the conservation issues

At the heart of the BACP is a portfolio of strategic actions to address the key threats/issues that have been identified above. Whilst the BACP should encompass measures to address all of the issues, a clear prioritisation should guide the development of the programme recognising that some issues are much more significant and urgent than others.

The priority of each issue was therefore assessed in terms of three criteria: Conservation Importance, Urgency and the Ease with which it can be addressed.

Annex 1 shows the criteria and preliminary scores applied to each issue, which will be checked through further consultations. The resultant table shown below then sorts the strategic issues into High, Medium and Low Priority actions for the BACP based on a cumulative score.

Prioritised listing of the biodiversity/ecosystem conservation issues to be addressed

High Priority	Medium Priority	Low Priority
▪ Shark-finning / overfishing	▪ Sea cucumber over-fishing	▪ Ornamental fish over-fishing
▪ Hanifaru development proposal	▪ Catching turtles at sea	▪ Mariculture
▪ Seabird nesting / roosting sites	▪ Alien invasive species on islands	▪ Pollution from sewage
▪ Turtle egg collection (and catching adults) on beaches	▪ Rat predation on breeding seabirds (& turtles)	▪ Other reef fish overfishing
	▪ Spiny lobster over-fishing	▪ Bait fish over-fishing
	▪ Grouper over-fishing	▪ Alien invasive species (marine)
	▪ 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	
	▪ Wildlife captured as pets	
	▪ Loss of natural habitats/ landscape	

3.3 Conservation action plans for implementation

The prioritized conservation issues need to be tackled systematically, recognising that there are many inter-connections between groups of issues and solutions. To achieve this, different stakeholders with varying capacities will need to be engaged in a mixed programme of collaborative actions. For each issue, an action plan will therefore be drawn up with the stakeholders concerned. The resulting portfolio of Action Plans will lie at the heart of the BACP.

A first step in preparing each Action Plan is to determine the objective(s) of managing each conservation issue. For example with regard to shark-finning, what future status does Maldivian Society want for sharks – more, the same number as now, or even less? Once the management objective has been agreed, measures can be designed and implemented to achieve that objective. Usually, this will be to ensure that the human activity causing the threat is managed so that its effects are sustainable or allow recovery of the species. This may mean limiting the nature, intensity, duration or extent of the activity, or perhaps even banning it in exceptional circumstances. These measures can be implemented through regulation, codes of practice, protected areas and other mechanisms.

Two draft examples of developing issue-based conservation action plans are shown in Annex 2 They concern the issues of: (i) coral reef damage from boat anchoring; and (ii) ornamental or aquarium fish collection. For each issue, possible management objectives and a set of possible management strategies are suggested. This form of action plan development will be undertaken with all collaborating stakeholders, to plan a series of programs for managing the priority conservation issues within the BACP. The institutional arrangements and resources required to organise each planned action and program will need to be defined as part of the action plan development. This will create a co-management arrangement in which all relevant stakeholders are engaged. Each stakeholder organisation – government office, user group, island community organisation – will be part of the conservation action planning, and part of the solution responsible for implementing specific actions.

3.4 5 year plan for conservation actions

During the 5 year period of the Strategy, the BACP will pursue the following actions: *see next page*

Action	2009	2010	2011	2012	2013
1 Consult on the prioritisation of conservation issues	X				
2 Prepare Action Plans for High and Medium priority issues with the concerned stakeholders	X	X			
3 Prepare Action Plans for Low priority issues with the concerned stakeholders		X	X		
4 Implement the prepared Action Plans with the concerned stakeholders	X	X	X	X	X
5 Undertake annual assessment of emerging new issues (through the BACP Steering Group)	X	X	X	X	X
6 Review the success of implementation annually		X	X	X	X

▲
5 year plan for conservation actions



4 Community engagement

The communities of Baa include the 12,000 people of the 13 inhabited islands, the managers and staff of the 6 resorts, as well as the tourists (350,000 bed nights) who visit the Atoll's resorts each year.

Measures to conserve the Baa atoll ecosystem through the BACP will only succeed if these communities are aware of, and support, its objectives and are engaged in its implementation.

4.1 Current situation

Because of their historically direct dependence on the environment for their livelihoods (fishing, palm thatch, medicinal plants etc.), the local communities of Baa have a strong awareness of the need for environmental conservation and sustainable development. However, due to increased population and economic development, and lack of adequate infrastructure (eg for waste management), pressures from human activities are increasingly leading to environmental degradation. There is a strong local demand to address these issues.

During the last two years, the AEC project has engaged local communities directly in the preparation of island and atoll development plans, and in the production of land-use maps. There have also been workshops about future environmental management.

4.2 Desired situation

- Communities strongly supporting the principles of the BACP
- Communities well informed of issues and actions (see Ch.7)
- Communities engaged with sustainable living measures
- Users engaged with sustainable use measures
- Community conservation volunteer groups

4.3 5 year plan

During the 5 year period of the Strategy, the BACP will pursue the following actions:

Action		2009	2010	2011	2012	2013
1	Establish / support annual meetings of a Baa Atoll Conservation Forum	X	X	X	X	X
2	Engage households to implement conservation measures through a Charter for Sustainable living	X	X	X	X	X
3	Engage fishermen to implement conservation measures through a Charter for Sustainable Fishing	X	X	X	X	X
4	Engage all schools in a Conservation Education Forum	X	X	X	X	X
5	Engage all resorts to implement conservation measures in a Charter for Sustainable Tourism	X	X	X	X	X
6	Establish community conservation champions and an award scheme		X	X	X	X
7	Establish community-based management of protected areas	X	X	X	X	X
8	Establish community conservation volunteer groups on each inhabited island		X	X	X	X



5 Zoning and codes of practice

Spatial zoning can be an important tool for managing human activities across whole ecosystems. In large and complex ecosystems like those of Baa Atoll, human activities need to be managed to ensure that use of resources is sustainable, that sensitive features are protected and that degraded features are restored. Uncontrolled use will inevitably lead to degradation of the resource and increasing levels of conflict between users, as has already been observed.

5.1 Current situation

There is at present no overall zoning plan for Baa Atoll, and decisions regarding development activities and use are currently taken without a strategic overview of the capacity of the area to support such activities. The recent allocation of one of the top sites for Manta Ray (Hanifaru) for development exemplifies this problem.

Similarly, access to marine resources either for fishing or for tourism, is also unmanaged, with free access to all users. The only exceptions are the two protected areas: Olhughiri Island and Dhighali-ha dive site. However, these designations exist on paper only and are not respected.

With support of the AEC project, land use maps and plans have been drafted for each of the inhabited islands of Baa Atoll, and draft management plans are in preparation for both sites. In addition, a marine biodiversity assessment has been undertaken for the whole atoll (2008).

5.2 Desired situation

- The locations of the most sensitive and valuable conservation areas are well known
- There is a zoning plan for the whole atoll encompassing:
 - multiple use areas where sustainable activities can take place
 - managed areas where some types of activities are re-

- stricted
- highly protected areas where only non-damaging, non-extractive use is allowed.
- Users have adopted codes of practice to ensure sustainability of their activities (eg. for diving, reef fishing, sand-mining, construction etc.)
- These measures should take account of the best evidence available (particularly local knowledge) - but information is lacking, the precautionary principle should be applied.

5.3 Desired situation

During the 5 year period of the Strategy, the BACP will pursue the following actions:

Action		2009	2010	2011	2012	2013
1	Publish and disseminate a sensitivity map for Baa	X				
2	Design overall zoning scheme for Baa atoll	X				
3	Finalise Island land use plans	X				
4	Obtain approval of zoning scheme / land use plans		X			
5	Support designation of highly protected areas	X	X	X		
6	Finalise management plans for protected areas		X	X		
7	Prepare codes of practice for main activities*	X	X			
8	Approve and enforce codes of practice		X	X		
9	Evaluate and review					X

* Snorkelling/Diving, Safari Boats, Reef Fishing,



6 Governance and institutional arrangements

Implementation of the BACP will require excellent governance and an adequate human resource to coordinate and support implementation. In accordance with the ecosystem approach, governance should be devolved to the lowest appropriate level, but it will be essential to ensure that this is well integrated with national policies and institutions.

6.1 Current situation

Conservation management is currently highly centralised from Male', and implemented principally through the policies, plans and activities of the Environment and Fisheries Ministries. There are no specific institutions or government positions on Baa with specific responsibility for conservation management. The non-governmental sector has been more active at local level, through school environment clubs, local NGOs and through the activities of the resorts. Marine ecologists from the latter have recently joined forces in a Baa Atoll Project, focusing initially on shark conservation, as well as manta ray and whale shark research.

6.2 Desired situation

- The BACP is approved by the new Atoll Council, who will provide the governance
- A Steering Group is established by the Atoll Council to oversee implementation of the BACP.
- A BACP office is established in Eydhafushi, with adequate staff (from Ministries and the Atoll) and equipment to carry out its duties
- Police and judiciary are providing effective enforcement of environmental laws

6.3 5 Year plan

During the 5 year period of the Strategy, the BACP will pursue the following actions:

Action		2009	2010	2011	2012	2013
1	Approval of BACP Strategy by Atoll Council	X				
2	Establish a representative BACP Steering Group and hold regular meetings	X	X	X	X	X
3	Prepare annual reports of BACP	X	X	X	X	X
4	Review/evaluate implementation of the BACP			X		X
5	Establish BACP Office	X				
6	Appointment staff to office (AEC(1), MEEW(1),	X	X			
7	Training of police and judiciary in enforcement of environmental laws, and police appointment of an Environment Liaison Officer		X	X		



7 Information, data management and monitoring

All activities undertaken for the BACP should be evidence-based, and this evidence should be used to raise the awareness of all stakeholders through education and outreach programmes. This will require the establishment of an information management system for Baa Atoll, which can be easily accessed by interested users.

The BACP must also be able to monitor whether management actions have been effective, and also to detect new issues that emerge over time. In order to track progress with removing current threats to the ecosystem, the baseline situation for each priority action should be assessed, and regular monitoring undertaken at appropriate intervals. Where possible, local communities, dive centres and other user groups should be closely involved with this information gathering.

7.1 Current situation

There are many reports and published papers concerning aspects of the Baa Atoll ecosystem. The AEC project commissioned in 2008 a baseline marine assessment of the reef resources across the whole atoll. However, all this information is currently held in disparate locations and can generally not be accessed on Baa.

7.2 Desired situation

- Information centre established within the BACP office
- Baa Atoll conservation database populated with existing data
- Baseline situation for each priority action known and monitoring being undertaken to measure effectiveness of actions
- Horizon-scanning for emerging issues to be addressed
- Research priorities known and being pursued
- Effective communications of activities and progress with BACP to local communities and key stakeholders

7.3 5 Year plan

During the 5 year period of the Strategy, the BACP will pursue the following actions:

Action		2009	2010	2011	2012	2013
1	Prepare an information management and communications plan	X				
2	Establish an electronic BACP data management system and information centre	X	X			
3	Biannual BACP electronic newsletter		X	X	X	X
4	Complete priority baseline assessments, and design monitoring programme	X	X			
5	Identify research priorities and prepare research plan		X	X		
6	Provide training in monitoring		X	X		
7	Produce a "State of the Atoll" report (every 5 years)			X		
8	Track emerging issues and prepare strategic actions as appropriate	X	X	X	X	X



8 Conservation financing

Conservation activities need sustainable financing. The current funding provided through the AEC project is a unique chance to establish the Baa Atoll Conservation Programme and to design and test the most appropriate management system.

Long-term financing is required for (i) the core running costs of the programme, including the BACP Office, information management, staff and equipment; and (ii) funds to implement conservation projects on the ground, such as awareness programmes, restoration measures, surveys etc..

Potential sources of funds include direct government contributions to cover core running costs, governmental contributions for project activities, private sector sponsorship (mainly resorts), individual donations (from tourists), user fees, other taxes etc..

8.1 Current situation

The current financing for biodiversity conservation initiatives on Baa Atoll is very limited. Neither the Ministry of Environment nor the Fisheries Ministry have any paid staff on Baa, and only very limited funds have been devoted to conservation activities prior to the AEC project.

Several of the resorts employ marine ecologists whose primary function is to work with tourists. However, some are able to allocate time both on a personal or professional basis to conservation activities such as surveys, awareness programmes and even campaigns (eg. shark-finning).

A survey of tourist “willingness to pay” for visits to the Dhigali-ha dive site has been undertaken with support of the AEC project.

8.2 Desired situation

- Sustainable financing for BACP core costs (office, staff, equipment etc)
- A Conservation Fund established to finance conservation projects

8.3 5 year plan

During the 5 year period of the Strategy, the BACP will pursue the following actions:

Action		2009	2010	2011	2012	2013
1	Study the BACP financing needs and potential sources of funds	X				
2	Prepare BACP financing plan		X			
3	Secure long-term government funding for BACP office, staff and equipment	X	X			
5	Explore options and pilot a Baa Atoll Conservation Fund		X			
6	Establish a Baa Atoll Conservation Fund (if viable)			X		



9 Baa Atoll as a UNESCO Biosphere Reserve?

The BACP aims to be a world-class management system for the conservation of the Baa Atoll ecosystem. In recognition of the outstanding natural values of this atoll, the commitments made by local communities to sustain these values, and the demonstration nature of this initiative, the AEC project will seek to achieve international recognition of Baa Atoll through its designation as a UNESCO Biosphere Reserve (subject to the support of local communities).

9.1 What are UNESCO Biosphere Reserves?

UNESCO (the United Nations Educational, Scientific and Cultural Organisation) coordinates a world network of over 500 Biosphere Reserves in 105 countries. These are sites recognized under UNESCO's Man and the Biosphere Programme, which innovate and demonstrate approaches to conservation and sustainable development. They are vehicles for knowledge-sharing, research and monitoring, education and training, and participatory decision-making. Biosphere Reserves are of course under national sovereign jurisdiction, yet share their experience and ideas nationally, regionally and internationally within the world network of Biosphere Reserves.

Biosphere Reserves are "living laboratories" for testing and demonstrating sustainable development. They have three functions and three zones.

Functions:

Conservation

Learning and research

Sustainable development

Zones:

A core area : the area of highest biodiversity/natural value (an iconic, world class ecosystem) which should be protected by

national legislation. For Baa, this is likely to be a set of key reefs which represent the most bio-diverse areas of the atoll, which will be established as protected areas.

A buffer area : an area which supports the core area, where local people can derive direct benefits from the ecosystem (such as through fishing and tourism). For Baa, this is likely to be the remaining reefs and lagoon areas of the atoll, the uninhabited islands and perhaps the environmental protection zone around each island.

A transition area : where individual and community contributions to sustainable development can greatly enhance environmental quality of the area. For Baa, this will include all the inhabited islands and resorts.

The delimitation of these zones will require strong community engagement.

For an area to be designated as a Biosphere Reserve, it needs to demonstrate special features in terms of its natural environment – biodiversity and landscapes / seascapes. It also needs to demonstrate a community commitment to sustainability through the economy, arts and culture. The AEC project believes that Baa Atoll fully meets these requirements.

9.2 What are the benefits of Biosphere Reserve designation?

UNESCO (the United Nations Educational, Scientific and Cultural Organisation) coordinates a world network of over 500 Biosphere Reserves in 105 countries. These are sites recognized under UNESCO's Man and the Biosphere Programme.

Living in a world Biosphere Reserve raises two questions:

What can the Biosphere Reserve do for us?

Experience from existing Biosphere Reserves show that this designation can bring diverse benefits to an area:

- A sense of pride for local communities (social and cultural development)
- A responsibility and standard for sustainability (environmental improvement)
- A differentiator – this will be the only Biosphere Reserve in the Maldives
- An opportunity for marketing and product accreditation (“Biosphere approved.....”)
- A focus for innovation (and national / international funding)
- An opportunity to learn from, and share experiences with, other Biosphere Reserves (perhaps enhanced through a twinning arrangement)

The extent to which a Biosphere Reserve achieves these benefits will depend on the community - on innovation, on entrepreneurship and on bold leadership.

What can we do for our Biosphere Reserve?

This Strategy and the Baa Atoll Sustainable Development Plan already provide guidance on what individuals, businesses and government can do for Baa Atoll if it were designated as a Biosphere Reserve. Overall, any action which would make Baa Atoll a better and more sustainable place for future generations will be consistent with the aims of the Biosphere Reserve. Once the nomination has been approved, a specific Strategy for the Biosphere Reserve would be prepared with full community participation.

9.3 Next steps

During the 5 year period of the Strategy, the BACP will pursue the following actions:

Action		2009	2010	2011	2012	2013
1	Community consultations to secure support for the proposed nomination	X				
2	Seek GoM approval for the nomination to proceed	X				
3	Design of the zoning system	X				
4	Communities and resorts sign sustainability charters	X				
5	Prepare and submit nomination document to UNESCO	X	X			
6	Consultations with and approval by UNESCO		X			
7	Launch and celebrations		X	X		
8	Establish Biosphere Reserve governance			X		
9	Develop and approve Biosphere Reserve Strategy			X	X	

Annex 1

- Preliminary prioritisation scoring for conservation issues on Baa Atoll

- High Priority: Score >7
- Medium Priority: Score 5.5-7
- Low Priority: Score 3-5

Issues		Conservation importance (3,2,1)	Ease to address (3,2,1)	Urgency (3,2,1)	Score (sum) (3-9)
Reef conservation issues					
1	Shark-finning / overfishing	3	3	3	9
2	Spiny lobster over-fishing	3	1.5	2	6.5
3	Sea cucumber over-fishing	3	2	2	7
4	Grouper over-fishing	3	1.5	2	6.5
5	Other reef fish overfishing	2	1	1	4
6	Bait fish over-fishing	1	1	1	3
7	Catching turtles at sea	2	3	2	7
8	Ornamental fish over-fishing	1	3	1	5
9	Recreational reef angling by resorts	2	3	1	6
10	Mariculture	1	3	1	5
11	Marine megafauna disturbance by tourists	2	2	2	6
12	Reef damage from anchoring / diving	2.5	1	2	5.5
13	Alien invasive species (marine)	1	1	1	3
14	Shipwrecks and oil spills	2	2	2	6
15	Hanifaru reef development proposal	3	3	3	9
Island conservation issues					
16	Alien invasive species on islands	3	2	2	7
17	Rat predation on breeding seabirds (&turtles)	2	3	2	7
18	Seabird nesting / roosting sites	3	2	2.5	7.5
19	Turtle egg collection (and catching adults)	3	2	2.5	7.5
20	Wildlife captured as pets	2	2.5	1	5.5
21	Mangrove mis-management	2	2	2	6
22	Pollution from solid wastes	2.5	2	2	6.5
23	Pollution from sewage	1	3	1	5
24	Loss of natural habitats/ landscape	2	1.5	2	5.5

Annex 2 Strategic action template

- Examples of issue-based conservation action plans (draft – not yet subject to consultation)

Outline of Strategic action plan for Baa Atoll

Issue 1.	Coral reef damage from boat anchoring
Management objective(s):	<ul style="list-style-type: none"> • To reduce coral reef damage from boat anchors and propellers to the lowest practical level on all Baa reefs • To stop all anchor damage on Baa coral reefs visited frequently by tourist divers • To enhance coral re-growth at sites damaged previously by anchoring and boat operations
Management strategies/ actions:	<ol style="list-style-type: none"> <li data-bbox="517 813 1345 1032"> 1. Code of behaviour Engage all tourist and local boat operators in self-compliance with a code of responsible boat operation on and around coral reefs (types of anchor to use; methods of anchor deployment; avoiding reef damage). Lead actors – BACP, tourist and boat operators associations <li data-bbox="517 1059 1345 1429"> 2. Dive site permit system Ban anchoring at designated reef sites, as part of a permit system by which individual boats would each be issued a permit, with conditions attached, to install and use a fixed mooring to visit particular sites. Note that the permit system would be a main AEC tool for managing all aspects of tourist use of reefs (regulating access equitably, minimising conflict between operators, limiting numbers of boats and tourists at the same time at one site, as well as stopping anchor damage, night fishing, fish-feeding and aquarium fish collecting at the designated sites) Lead actors – BACP, MTCA, tourist resorts and boat operations <li data-bbox="517 1485 1345 1664"> 3. Reef condition monitoring and Score Card A scheme for boat operators to conduct regular long-term monitoring of reef site condition (including any physical damage to corals) as a routine part of their reef visits, reported to and publicised by BA Conservation Program. Lead actors – BACP, tourist and boat operators associations <li data-bbox="517 1720 1345 1899"> 4. Reef replenishment sites A series of reef replenishment sites approved and monitored by the BACP, at sites close to resorts, inhabited islands, harbours and jetties. Coral transplanting and monitoring undertaken by local voluntary groups. Lead actors – BACP, tourist resorts and boat operators <li data-bbox="517 1933 1345 2078"> 5. Possible effects of climate change Possible changes in storm frequency, direction and severity should be taken into account in the code of behaviour, in designation of no-anchoring sites, and allocations of moorings.

Sea surface temperature and coral bleaching events should be incorporated in long-term routine monitoring and reporting.

The precautionary principle should be followed, recognising that for corals that are under increasing stress, usage levels should be correspondingly reduced.

Lead actors – BACP

Outline of Strategic action plan for Baa Atoll

Issue 2.

Over-harvesting of ornamental fish species

Management objective(s):

- Development of certified sustainable fishery for ornamental fish species
- Protection of ornamental fish species on 90% of Baa reefs.

Management strategies/ actions:

1. Development of local ornamental fishing enterprise

Organise and support trial and development of 1-3 ornamental fish enterprises as a local community-based sustainable livelihood, in accordance with international certification standards (such as Marine Aquarium Council). Use permit system to designate the small number of sites and the species able to be collected.

Lead actors – BACP, local fishers/ entrepreneurs

2. Activity zoning plan

Designate the small number of sites on Baa Atoll where ornamental fish collection will be permitted, as part of developing an activity zoning plan for the whole atoll. Ban ornamental fish collection on Baa atoll, other than by BACP-issued permit.

Lead actors – BACP, MFAMR

3. Possible effects of climate change

The precautionary principle should be followed, recognising that climate change may well reduce the optimum conditions for the health of the coral reef community, including ornamental fish populations. Precautions include imposing tighter controls over the numbers of sites, the target species, methods and intensity of collection permitted, and on self-reporting and monitoring of activity and impacts.

Lead actors – BACP, MFAMR

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