

GOAL
14**Conserve and sustainably use the oceans,
seas and marine resources for sustainable
development**

Photo: Shutterstock/divedog

SDG 14 strives for healthy and productive oceans and seas through the reduction of marine pollution and ocean acidification, the sustainable management of marine and coastal ecosystems based on effective regulations of harvesting and fishing, and the conservation of at least 10 percent of global marine and coastal areas. It stands for the eradication of overfishing and promotes increased economic benefits from sustainable use of marine resources for Small Island Developing States and Least Developed Countries.

How do ecosystems and biodiversity support this SDG?

The core of SDG 14 concerns ecosystems and biodiversity conservation in coastal and marine areas. The alteration of marine and coastal ecosystems caused by pollution, introduction of invasive species and overexploitation of resources is threatening livelihoods and economic development for people and industries relying on these ecosystem services. Marine and coastal ecosystems such as coral reefs and mangroves provide essential services of critical socio-economic importance as buffering against storm surges, stabilizing coastal and nearshore areas against erosion, serving as nursery habitats for commercially important fish species and supporting livelihoods and economic activities like tourism. In order to maintain the great contribution of oceans and seas to our global economy and various livelihoods, marine and coastal biodiversity must be preserved and ecosystems protected.

How does UNDP's work support this SDG?

Case study: Ecosystem-based conservation in Baa Atoll, Maldives

Some of the richest marine biodiversity in the world is found in Maldives' coral reefs, lying in ring-shaped atolls and chains of coral islands that constitute this island nation's territory. The 250 species of coral forming Maldives' reefs represent 5% of the global reef area and are home to over a thousand species of fish,

along with whale sharks, manta rays and endangered sea turtles. Atolls themselves are believed to play a significant role in the distribution and maintenance of coral reef biodiversity throughout the Indian Ocean. However the structure and function of atoll ecosystems that support this globally significant biological diversity are threatened due to direct human activities and impacts of global warming. Unsustainable coastal development practices, overexploitation of marine resources and improper wastewater disposal are causing severe biodiversity loss in Maldivian waters resulting in beach erosion and decline in fisheries production. The two main economic activities in the country, tourism and fishing, are thus directly affected by the decline in marine species and coral reef cover.

The “Atoll Ecosystem-based Conservation” (AEC) project focused on introducing a pilot system for collaborative management of integrated ecosystem conservation and sustainable development activities on Baa Atoll, chosen for its abundant biodiversity and the commitment of its communities. Largely drawing from scientific knowledge, community consultations and a strong relation with Baa Atoll’s private sector, the project enhanced conservation of biodiversity “in the water” and “on the ground” by establishing additional protected areas and managing them through innovative national-local and public-private partnerships in Baa Atoll. This integrated management system resulted in the recognition of Baa Atoll as a UNESCO Biosphere Reserve, including 10 protected areas patrolled by marine rangers. Both at a national and local level the project has raised awareness among stakeholders on the value of the atoll’s biodiversity and the importance of conservation and sustainable use of resources while strengthening locals’ capacity to better manage their resources through the establishment of a conservation fund and an annual biodiversity monitoring programme. The project also enabled the relief of livelihood-related pressure on biodiversity by supporting the inclusion of alternative sustainable livelihood development strategies in atoll and island planning, and starting their implementation through the creation of handicrafts or traditional medicine businesses.

The AEC model has contributed to the shaping nationwide policies for conservation and sustainable use of marine resources. By presenting evidence that coastal biodiversity plays a key role in the economy and the development of the country, the project was able to strengthen the linkages between government institutions concerned with economic development and environment conservation, while raising the profile of biodiversity conservation among economic and financial planners.

Following the success of the reserve formed in Baa Atoll, the president of the Maldives has pledged that the entire country will be made a sustainable biosphere reserve, and declared plans to implement the reserve plan on more than half of the islands by 2017.

PROJECT: Atoll Ecosystem-based conservation of globally significant biological diversity in the Maldives’ Baa Atoll

MAJOR DONORS: UNDP, GEF, FAO, Government of Maldives, Government of Japan

LOCATION: Baa Atoll, Maldives

DATE: 2004-2012

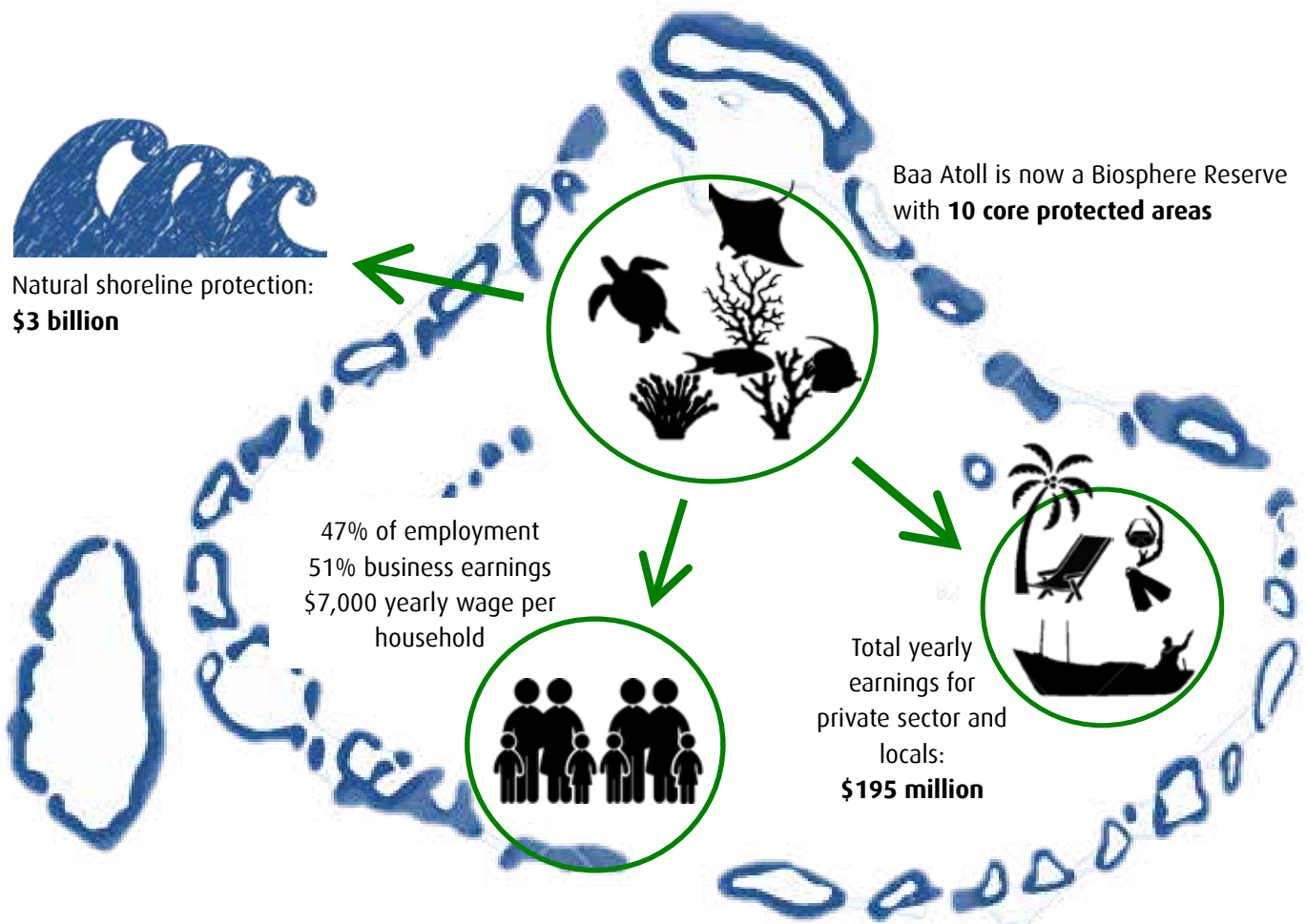
WEBLINKS: <http://www.mv.undp.org/content/maldives/en/home/ourwork/environmentandenergy/successstories/biospherereserve/>

Nature count\$: Key impacts of conservation and sustainable use of marine resources in Baa Atoll

Establishing an integrated management system for ecosystem conservation in Baa Atoll enhanced locals’ capacity to safeguard marine and coastal ecosystem services worth US\$195 million per year in direct uses by local communities and the private sector. The increase in protected areas, now covering 11,500 hectares or almost 10% of the atoll, helps sustain biodiversity resources that substantially contribute to local livelihoods. Biodiversity-based activity represent 47 percent of employment and 51 percent of business earnings for the Baa Atoll local population, and provides average yearly earnings of \$7,000 per household. The project also supports the conservation of coral reefs that protect the coastline from waves and storms

and thus limits coastal erosion, avoiding costs of reef replacement by artificial breakwater, at a cost ranging from \$1.7 to \$3 billion. Finally, the establishment of Maldives' whole territory as a sustainable biosphere reserve should help maintain 89 percent of GDP and 98 percent of exports directly depending on coastal and marine biodiversity.

Conserving Baa Atoll coastal and marine biodiversity for sustainable development



The project improved the management and protection of coastal and marine ecosystems on the Atoll and potentially in the country (✓SDG Target 14.2) and increased protected areas to 10% of the atoll (✓SDG Target 14.5). It strengthened locals' capacity to regulate fishing practices and end illegal harvesting (✓SDG Target 14.4). By supporting alternative sustainable livelihoods and improving the sustainability of Atoll's marine and coastal resources the project is increasing sustainable economic benefits for the Maldives (✓SDG Target 14.7).

How the economic impacts were calculated:

In order to provide better recognition and incentives to biodiversity conservation, the project has been focusing on gathering, analysing and disseminating information on the economic value of marine and coastal biodiversity as a base for sustainable economic and social development. For this purpose, a valuation study of biodiversity and ecosystems in Baa Atoll's and Maldives' economy was conducted during the project. The report presented a set of economic benefits generated by activities which directly use Baa Atoll's biodiversity—coral reefs, fisheries, mangroves—and indirect benefits of natural shoreline protection.

Table 1: Values of Baa Atoll Coastal and Marine Biodiversity

Direct Values		
From	To	Million \$
Bio-based business	Local households	6.9
Tourism wages		5.9
Fishing wages		0.8
Other use of biological resources		1.6
Hotel bed nights	Private sector tourism operators	176.8
Diving and other tourist activities		2.5
Total		194.6
Indirect values		
From	Artificial replacement option	Million \$
Shoreline protection	Rock boulders breakwater	3,021
	Cement, sand and concrete breakwater	1,742

Note: US\$ expressed in current terms, values converted from Maldivian rufiyaa to US dollars at 2009 exchange rate (1\$=12.8 Rf) (National Monetary Authority), US dollars have been adjusted to a cumulative rate of inflation of 10.5% between 2009 and 2016. Source: Emerton L., Baig S., and Saleem M. (2009)

Biodiversity-based local livelihoods benefits reported in Table 1 present revenues from the fisheries and tourism sector and other activities based on the harvesting and processing of biological resources such as firewood, turtles and turtle eggs, seabirds, shells, medicinal plants, wood for boat-building, wood for the production of lacquerware, palm fronds and materials for other handicrafts. All these activities represent



An inhabited Baa Atoll island. Photo: Sath Rasheed

47% of the employment in Baa Atoll and 51% of business earnings; altogether they yield around \$15 million of yearly earnings to local households, or on average \$7,000 per year per household. In total the revenues of local households and private sector activities directly using Baa Atoll's biodiversity are estimated at almost \$195 million per year.

Indirect or existence values represent ecosystem function services, which in this case was identified as the protection coral reefs and mangroves provide against waves and storms, thus limiting consequent beach erosion and other damages. The value of this service was calculated based on the total perimeter (38,474 m) of the 13 inhabited islands in the Atoll and the per unit cost of two replacement measures—rock boulders or cement, sand and concrete breakwater, costing \$3 billion and \$1.7 billion respectively.

The project enabled the extension and creation of marine and coastal protected areas in Baa Atoll. They increased their coverage to ten protected areas spreading over 11,580 ha which represents 9.64% of Baa Atoll total area.

Table 2: Protected Areas in Baa Atoll, in hectares

Hanifaru	1,166.9
Mundhoo Region	2,140
Maahuruvalhi Reef Region	1,873.6
Anga Faru	1,320
Olhugiri	573
Goidhoo Kaoru Area	16.9
Wreck of Corbin	330
Mathifaru Huraa Region	752
Dhigali Haa	30
Bhatalaa Region	3,377.6
Total	11,580

Source: The Bay of Bengal Large Marine Ecosystem MPA Atlas, accessed 17 March 2016

At a national level, tourism and fisheries are not only the two main components of Maldives' economy. They also involve many secondary and support industries which amplify their impact in the economy. By stimulating considerable economic activity such as construction, financial services, manufacturing, transport, food, restaurants and entertainment sectors, fish oil production industries, as well as boat building and maintenance, tourism and fisheries and their related activities account for 89 percent of GDP (Emerton et al. 2009). This multiplier effect extends to individuals, households and the government through the income and revenue generated by these two biodiversity-dependent sectors, enabling private and public consumption and expenditure. Moreover, they generate almost all exports earnings—in 2006 fisheries accounted for 98 percent of Maldives' exports—and bring substantial inflows of investment funds, making an important contribution to the country's foreign exchange reserves and balance of payments. Overall biodiversity-based sectors contribute nationally to 71 percent of employment, 49 percent of public revenues, 62 percent of foreign exchange, 98 percent of exports and 89 percent of GDP (Emerton et al. 2009).

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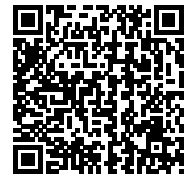
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