

GOAL
4**Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

Photo: UNDP India/Tom Pietrasik

SDG 4 focuses on the equitable access and the quality of education in all its forms and for all. It promotes free primary and secondary education and better access to pre-primary education in order for all youth to achieve literacy and numeracy. It also supports an increase in technical and vocational skills leading to better jobs, and the elimination of disparities in education between genders and for the vulnerable. This SDG fosters the acquisition by all of knowledge and skills needed to promote sustainable development, sustainable lifestyles and appreciation of cultural diversity.

How do ecosystems and biodiversity support this SDG?

Biodiversity and ecosystems are the basis of a wide knowledge of the earth and its ecological dynamics, enabling people to find pathways towards sustainable development. Spreading awareness and knowledge about biodiversity and ecosystems, and increasing this knowledge through further research, is a stepping-stone for establishing sustainable lifestyles and development. This is the aim of education for sustainable development as defined by UNESCO, which is putting biodiversity at the center of the teaching of an integrated vision of environmental, social and economic concepts.

The efforts globally conducted to conserve and protect biodiversity involve teaching and training populations on biodiversity and ecosystems functions and sustainable practices. These learning activities provide people with new skills and knowledge which enable them to switch to sustainable production and livelihoods, and often create new opportunities for decent jobs. Preventing land degradation requires teaching farmers about soils and training them to use sustainable agricultural practices involving new skills such as making organic fertilizers, which takes place in Farmer Field Schools. Similarly, the protection of bamboo forests and mangroves entail dispensing knowledge about the benefits of conservation of these ecosystems for the production of shrimps, for instance, and fostering the acquisition of technical skills for the production of bio-products. Biodiversity is highly dependent on education for its conservation and protection, as much as it provides precious knowledge about our environment and how to sustainably use and live in it.

How does UNDP's work **support** this SDG?

Case study: Coastal biodiversity protection in the Gulf of Mannar's Biosphere Reserve, India

India is one of the 12 “mega-diverse” countries, counting around 130,000 species of plants and animals. Its 7,500 km long coastline is home to many rare species but also to 20 percent of the country's population, including many of the poorest. The Gulf of Mannar Biosphere Reserve in Tamil Nadu province is a striking example of this cohabitation; it has one of the highest concentrations of marine species in the world and is also home to 250,000 people mostly relying on marine products for their subsistence. When it was created in 1989, the Gulf of Mannar Biosphere Reserve was the first marine Biosphere Reserve in South and Southeast Asia. It covers 10,500 km², and comprises 21 islands and 3,600 species of plants and animals, among which are endangered dugong, seahorses and whale sharks. Of the 2,200 fish species in Indian waters, 450 species (20%) are found in the Gulf, making it the single richest coastal area in the Indian sub-continent in terms of fish diversity (UNDP 2002). Yet, over-harvesting of marine resources, illegal mining of coral reef, civic pollution, changes in the environment and a growing population dependent on the coast for livelihoods is threatening the region's rich biodiversity. This has caused a substantial loss of coral reef in the Reserve, about 25 km² of coral reef disappearing between 1988 and 1998.

The project's main aim was to conserve the globally significant coastal biodiversity of the Gulf and to demonstrate approaches to integrating biodiversity conservation into coastal zone management plans by minimizing fishing pressure and providing alternative livelihoods. The project started by establishing the Gulf of Mannar Biosphere Reserve Trust (GoMBR Trust) to coordinate the conservation programmes, facilitate livelihood development and raise consciousness among the fisher communities living in the Reserve. The demonstration of sustainable coastal management and alternative livelihood opportunities for local



communities was conducted through awareness raising campaigns in schools, vocational training for the youth of fisher communities, and educational activities promoting eco-friendly fishing practices for adult fishers. The Trust also participated in empowering local communities to manage their natural resources through joint patrolling in fisheries and all over the National Park. The project strengthened local communities' institutional capacity to implement conservation strategies through the establishment of Village Marine Conservation and Eco-development Councils in 248 villages in the coastal zone. A Research Advisory Committee was also formed to review and approve research proposals related to the biodiversity of the Reserve. A total of 24 research projects related to the biodiversity of the region were completed, under which more than 3,600 species of marine flora and fauna were recorded in the Gulf of Mannar region with the support of different research institutes.

This resulted in an overall improved protection of the marine resources, visible by the increase in coral reef by five percent between 2005 and 2009, following a complete cessation of coral mining within the Reserve and a complete ban on trawling between the coast and the 21 islands. The project also supported local communities in accessing alternative livelihoods by providing 1,900 young people vocational training for employment in the services sector and tuition assistance for 2,500 students to decrease dropout rates. Besides, it contributed to the creation of a corpus fund which has given access to micro-credit to almost 30,000 women of the local communities.

Over ten years the project was able to establish the Trust as a sustainable structure for coordinating the protection and conservation of marine biodiversity, as well as substantially including the local communities into the conservation activities while improving their access to alternative livelihoods.

PROJECT: Conservation and Sustainable Use of Gulf of Mannar Biosphere Reserve's Coastal Biodiversity

MAIN DONORS: GEF, UNDP

LOCATION: Gulf of Mannar, Tamil Nadu, India

DATE: 2002-2013

WEBLINKS: http://www.in.undp.org/content/india/en/home/operations/projects/environment_and_energy/conservation_andsustainableuseofgulfofmannarbiospherereservescoa.html



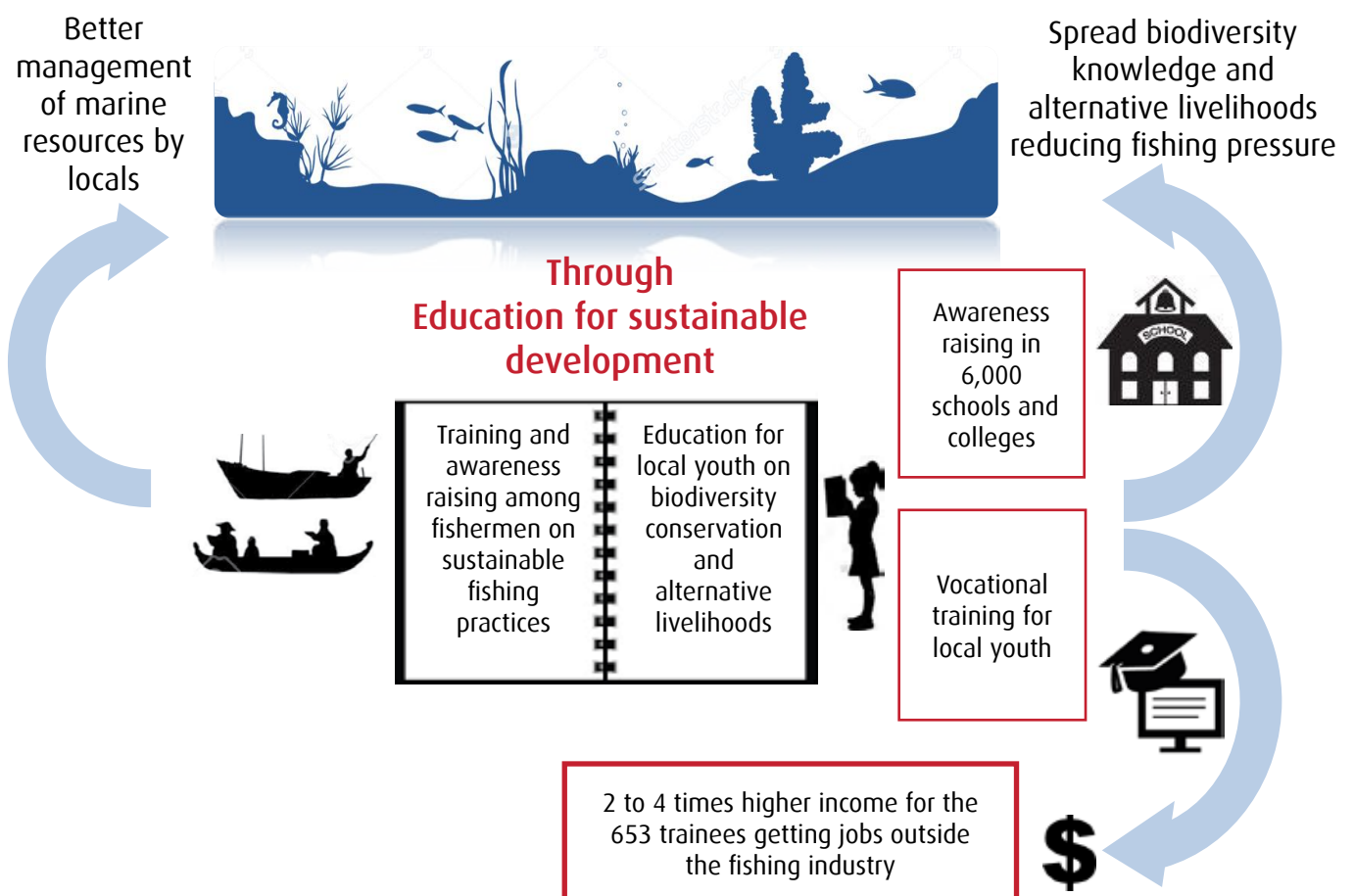
Nature count\$: Key impacts of the project on knowledge, skills and opportunities for communities' youth

By providing vocational training and financial support to local communities' youth, the project has enabled 653 students to get better employment opportunities, for an income two to four times higher than an average fisher income in Tamil Nadu province. 2,500 students in 26 schools also received financial support for tuition before a critical examination period decreasing dropouts and increasing student potential for completing secondary school. It thus contributed to the reduction of fishing pressure in the Gulf of Mannar by empowering the communities' younger generation to access alternative livelihoods and improved economic opportunities.

The project has also increased the knowledge of marine biodiversity and the importance of its conservation for sustainable development for the students and teachers of 6,000 schools, thus spreading over and beyond the 3,192 schools within the target districts and reaching around 9 percent of all schools and colleges in Tamil Nadu State, which counted 13.7 million students and 528,042 teachers in 2010.

The creation of a Research Advisory Committee has increased scientific knowledge about the Gulf of Mannar's ecosystem through 24 approved research projects on documentation of biodiversity, destructive fishing practices and resource availability. The outcome of the findings has been summarized and is published as Compendium of Research Findings Vol. 1 & 2.

Conservation of Coastal Biodiversity in the Gulf of Mannar



By providing vocational training for alternative livelihoods this project increased the number of youth who have relevant technical and vocational skills for employment and decent jobs (✓SDG Target 4.4), and ensured equal access to education for children in vulnerable situations by supporting financially 2,500 students from local communities (✓SDG Target 4.5). It also takes part in ensuring the acquisition of knowledge and skills needed for sustainable development through biodiversity conservation by all learners (✓SDG Target 4.7).

How the economic impacts were calculated:

In order to offer fisher community youth new opportunities to access alternative livelihoods, the project conducted short vocational trainings. In total 1,914 students participated between 2007 and 2012. Statistics available for the period 2007-2010 revealed that of 1,229 students participating during this period, 653 (or 53 percent) found employment outside the fishing industry (UNDP 2013).

Table 1: Number of students completing vocational training programme funded by the GoMBR Trust 2007-2012

Name of Course	2007 -08	2008 -09	2009 -10	2010 -11	2011-12	2012-13	Total	%
Tailoring	0	320	40	22	0	0	382	20.0
Diploma in Health Assistant	67	50	35	52	52	48	304	15.9
Diploma in Computer Application	76	70	40	48	3	2	239	12.5
A/C Mechanic	39	40	24	30	25	10	168	8.8
JCB	65	42	0	33	0	0	140	7.3
Basic Electrical and Plumbing	12	71	0	16	13	17	129	6.7
Car Driving	50	41	30	0	0	0	121	6.3
Catering Technology & Hotel Mangt.	0	17	0	12	12	23	64	3.3
Automobile Engineering	11	15	0	19	4	11	60	3.1
Welding	17	16	5	5	0	0	43	2.2
Primary school Teacher Training	0	15	0	25	0	0	40	2.1
Four-wheel drive training	0	0	0	38	0	0	38	2.0
Fashion designing	0	31	0	0	0	0	31	1.6
Auto Cad	0	29	0	0	0	0	29	1.5
Computer Hardware	5	20	0	0	3	0	28	1.5
Home Application - Repair & Service	0	19	0	0	0	7	26	1.4
Diploma in Lab Technology	0	0	0	10	6	10	26	1.4
Beauty care	0	19	0	0	0	0	19	1.0
Food Production	0	0	0	0	0	10	10	0.5
Printing Technology	4	5	0	0	0	0	9	0.5
Dip.in Operation Theatre Technology	0	0	0	0	6	0	6	0.3
First Aid Practical Nursing	0	0	0	0	0	2	2	0.1
Grand Total	346	820	174	310	124	140	1,914	

Source: Project Terminal Evaluation (UNDP 2013)

As shown in Table 1, most of the students completed their training in either tailoring, health assistantship or computer application.

Most of the courses—such as tailoring, A/C mechanic, car driving and catering—trained students in jobs belonging to the service sector, according to the International Standard Classification of Occupations (ISCO-08). Other classes led students to become technical and professional workers, such as computer hardware technicians or health assistants, and eventually some courses such as hotel management may lead to managerial employment.

Table 2 below shows the national average per capita monthly income of these three sectors of employment, as well as for the sector comprising fishermen, as reported by the National Survey for Household Income and Expenditure (NSHIE 2004-05) analyzed in a report of 2010 by Rajesh Shukla. It also includes the average monthly income of fishermen in Tamil Nadu as reported by J. Fredrik in his study

of 2011. Income values have been adjusted for inflation (cumulative inflation rate of 128 percent for 2005-2016, and 53 percent for 2010-2016) and translated from Indian Rupees into US dollars at a rate of 1INR=\$0.015 (as of February 2016).

Table 2: Average household monthly income per capita by occupation, and increase as compared to fishermen income in Tamil Nadu

Occupation	Average monthly income		Increase in income as compared to fishermen in Tamil Nadu	
	US\$	US\$	US\$	%
Administrative, executive and managerial workers	95	71		295.8
Professional, technical and related workers	70	46		191.6
Services workers	46.5	20.5		93.75
Fishermen, all India	26			
Fishermen, Tamil Nadu	24			

Source: NSHIE (2004-05) in Shukla (2010), Fredrik (2011)

Therefore the 653 students who found employment outside of the fishing sector are very likely to earn an income at least 93.7 percent or almost 2 times higher than fishermen in Tamil Nadu. Those employed as Health Assistants should have an income 191 percent or almost three times higher than fishermen in Tamil Nadu. Some of the trainees in hotel management may even become managerial workers and earn almost four times more than fishermen. Moreover, these figures might be an underestimate of the real wages in these sectors as the NSHIE data reports the income per capita from households' major occupation while households include generally four or five people and only two workers.

No data was available on the impact of the financial support provided to 2,500 students before a critical period of examination. However, this decision was supported by the fact that most fishermen retire around the age of 45, bringing their teenage sons (around 15 years old) to take over, thus causing boys to dropout and enter fishing before they complete secondary school (UNDP 2013). As a matter of fact, the dropout rate among boys in Tamil Nadu secondary schools (16.1 percent) is two times higher than for girls (7.99 percent) (U-DISE 2015). Financial support is thus likely to prevent them from dropping out by decreasing the opportunity cost of having a son going to school instead of fishing for the family (Sabates et al. 2010).

Lastly, project documents reported that in total the project conducted training and awareness activities on sustainable use of coastal resources in more than 6,000 colleges and schools which represent 9.3 percent of the 54,428 schools and 10,186 secondary schools and colleges that Tamil Nadu counted in 2010 (UNDP 2012). The state of Tamil Nadu counted 9.92 million students enrolled in elementary school in 2010 and 3.81 million in secondary and upper secondary, summing up to a total of around 13.7 million students. The number of teachers was 330,200 in elementary schools and 197,842 in secondary school (U-DISE 2011, U-DISE 2012).

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