

## **Artificial reefs used to improve marine environment**

### **Holcim – IUCN Agreement in Sri Lanka**

In March 2007, Holcim Lanka and IUCN Sri Lanka signed a Programme Agreement for a period of five years. The Agreement outlines two main workstreams: biodiversity conservation management and sustainable livelihoods. Under Biodiversity Conservation Management, “Facilitating Conservation and Rehabilitation of Site-Specific Coral Ecosystems” was identified as a specific area of work. The objective is to enhance marine biodiversity by rehabilitating a degraded reef along the South Western coast of Sri Lanka where over the last 10 years, more than 50% of the corals from the known reefs have been degraded by both natural and human intervention. Most of the destruction was to produce lime for masonry construction.

#### Benefits of reef rehabilitation and artificial structures

Coral reefs have great capacity to recover. The primary function of the artificial reef is to create a refuge for fisheries and to encourage colonization of a variety of species. The rehabilitated reefs can also provide long term livelihood for the local fishing communities. Artificial reefs have been suggested as a potential tool for the restoration of marine habitats. The artificial structures will serve not only as reef habitats and potential substrate for reef growth, but also as coastal protection structures in the face of natural disasters. Creation of new habitats will offer shelter for many species by providing protection for their survival. Well designed structures will offer a variety of niches for both shallow and deep coral reef fish and many other marine species while increasing the recruitment opportunities of the juvenile fish. Newly recruited juvenile fish serve as a food for larger fish species adding many levels of the marine food web by increasing the diversity and abundance. Over time, colonization of algae and seaweed species on the artificial reef attracts many herbivorous fish species as well. Apart from increasing fish diversity, multiple chambers of the artificial structure will increase the diversity of the marine crustaceans mainly lobsters, shrimps and crabs as they prefer enclosed structures with multiple chambers. Artificial reef structures will act as a hard substrate to increase the probability of coral colonization by mimicking natural hard substrates like rocks. Rough texture on the surface of the artificial substrate will also increase the coral and other benthic organisms to colonize to enhance the marine biodiversity. Stability of the artificial reef is very important as colonized organisms may become detached during the stormy conditions.

### The project utilizes the strengths of each organization

Under the Holcim-IUCN partnership, artificial reef structures will be placed in two identified locations in the south coast where coral reefs have been damaged and are under threat. One location is close to shore and another is located further out in the sea in deeper water.

The location and deployment of the structures has been defined in a collaborative manner. IUCN provided recommendations on the most appropriate locations of placing the reef structures and provided recommendations on the structure characteristics. Size, relief, surface area, complexity and the location are demonstrated to be important factors of the success of the artificial reef. Specifications have been defined regarding these factors. Holcim will manufacture the structures and deploy them in the defined locations.

### Working together to reduce mining of corals

Currently, mined corals are used by builders as a raw material known as 'lime' used in mortar. Holcim has developed a product, Holcim Pedereru, that does not require lime for masonry and thereby reduces the need for mining of corals. Holcim and IUCN are working together to raise the awareness of this product . By working together to promote and increase the use of this product, both organizations further contribute towards saving the coral reefs of Sri Lanka.

### **About Holcim Lanka**

Holcim Lanka is wholly owned subsidiary of Holcim Ltd, one of the world's leading suppliers of cement and aggregates (crushed stone, sand and gravel) as well as further activities, such as ready-mix concrete and asphalt, including services.

### **About IUCN Sri Lanka**

IUCN Sri Lanka is part of IUCN, a global network of sovereign States, government agencies, international agencies, non-governmental organizations, and affiliates, founded in 1948 under the auspices of the United Nations Educational, Scientific and Cultural Organization, and with its mission to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable, seeks to engage the business sector in reducing its environment footprint and enhancing its positive contribution to nature conservation.