



Pontoon built for tourists.

ICM Solutions

Coral Restoration and Conservation in Serangan Island, Denpasar City, Bali, Indonesia: Turning Coral Miners into Conservation Advocates

- In 2003, a group of young coral miners, with increasing awareness of conservation from environmental campaigns in Bali, organized themselves into the Coastal Fishers Group of Karya Segara, which had the conviction to protect the coral reefs and environment in Serangan Island, but did not have enough knowledge, capacity, and facilities to effect change.
- Capitalizing on the community's willingness to improve and effect change, the Bali ICM Program chose Serangan Island as a pilot site for demonstrating the integrated coastal management (ICM) approaches for addressing priority local issues and needs and to empower the community.
- The Coastal Fishermen Group of Karya Segara has since then been able to build a network of partners to sustain their conservation program, develop ecotourism services in collaboration with tourism entrepreneurs, and in 2011 received the the highest award for environmental management programs in Indonesia.
- Most importantly, the members of the organization have been transformed from being destroyers of the environment into active conservation advocates.



Context

Serangan Island is a small island in Bali that lies in front of Benoa Bay, close to three famous tourist destinations in Bali—Sanur, Kuta, and Nusa Dua. With a high diversity of coastal ecosystems including seagrass beds, mangroves, coral reefs, seaweeds, and tidal flats, the island ecosystems support an abundance of marine resources.

The community of fishers did not need to and were not trained to catch fish far out into the deep sea, away from the island; the shallow coastal waters of the island provided abundant resources. Serangan Island is also a natural nesting site of the green sea turtles, thus earning its monicker as the “Turtle Island.”

KEY BENEFITS:

- ***From declining fish catch to sustainable ecotourism***
- ***New skills and livelihoods for the community***
- ***Kalpataru Award from the President of Indonesia***

A reclamation project from 1994 to 1997 expanded the island’s size from 101 ha to 481 ha and connected it to the mainland through a 110-m bridge. The reclamation project promised development from tourism, which sadly never came. Instead, the island’s natural habitat of marine life and resources were destroyed and coastal erosion extended to the island’s vicinities that caused severe environmental damage.



Figure 1. Serangan Island before (left) and after reclamation (right). The reclamation increased the size of the island by almost five times.

After the reclamation project, more than 75 percent of the seagrass beds and 50 percent of mangroves disappeared. Adjacent coral reef communities were also affected by suspended and accumulating sediments caused by excavation and dredging activities. In 2002, the mortality index of the coral reefs in Serangan Island was 37.9 percent.

The fishers also lost their fishing grounds. The decline of the coastal resources forced some of the already poor fishers into using cyanide for fishing and engage in mining the coral reefs. Beautiful coral colonies were taken out of the sea and sold as ornaments for aquariums. Stony corals were excavated, and large coral boulders were sawed off and used as building materials. The income derived from these illegal and harmful activities was not huge, but there were hardly any alternatives to fishing.

Before the reclamation, majority of the population in Serangan were fishers such that the island was also known as a fisher's village in the Denpasar Municipality. The local economy in the community was highly dependent on the coastal resources such that the level of welfare was determined by the reserves and the quality of the resources available for access and utilization by the community. The situation of the people and the habitat went from bad to worse after the reclamation project. They became known as the destroyers of coral reefs and were suspected of being illegal fishers. They were barred from fishing in the waters of the islands of Sanur and Nusa Dua. Shame among the younger generation of islanders hung over the island like an ever present dark cloud.

Solutions

The youth of Serangan, 42 young coral miners, wanted to turn things around. What motivated these young people to change the bad image of the island and its people?

Their awareness of the importance of preserving the environment was a result of their interaction with external parties and campaigns on the conservation of coral reefs in Bali. They learned that there are ways to use the resources of the environment in accordance with the principles of conservation, which in the long run would also provide alternative sources of income.

In 2003, the young coral miners launched their group, the Kelompok Nelayan Pesisir Karya Segara (Coastal Fishers Group of Karya Segara), and pledged to restore the coral reefs and instill mindfulness toward the environment. They had the conviction but not enough knowledge, capacity, and facilities to effect change.

But soon enough, their community initiatives in preserving coral reefs were welcomed by the Environmental Impact Management Agency (Bapedalda) of Bali Province (later called Environmental Agency of Bali Province). In 2004, through the Bali ICM Demonstration Site Project, a joint program with PEMSEA, the Bapedalda decided to make Serangan Island a pilot project in applying ICM approaches.

Capitalizing on the community's willingness to improve and effect change, the Bali ICM program, in this case, took the role of providing approaches and methodologies in dealing with the problems in Serangan Island using a holistic and integrated approach. The integrated coastal management (ICM) principles and processes served as guidelines in the implementation of the project where the environmental, social, and economic problems were viewed as integrated elements of a whole.

Through a pilot project in Serangan Island that aimed to increase the awareness of the broad community about the importance of conserving marine and coastal resources and to develop alternative livelihoods, the capacities and resources of the community, agencies, and other stakeholders in addressing the problems were harnessed through a collaborative management approach. Some of the solutions developed for that project include:

Empower the community through various awareness campaigns and educational forums, with the support of local champions/motivators

As a core element in achieving positive change, community empowerment activities were implemented in Serangan Island, strongly supported by the presence of motivators, the young pioneers who encouraged the initiative of the youth to organize themselves. These young motivators had leadership skills and were trusted by the members of the organization and the community. The role of the motivators was to guide, inspire, and mobilize the community.

The program gave priority to campaigns that raised awareness through the use of media. These campaigns were followed by educational forums that were supported by the local government, universities, and nongovernmental organizations (NGOs). The content of the messages in the campaigns and educational activities were adapted to the level of knowledge and the sociocultural characteristics of the community who generally had a low level of education. The main topics of these activities were information on:

- a. The ecological processes of the ecosystem and the implications of resource use activities on ecosystem; the negative effects that result from harmful human activities on the coral reefs; and
- b. The functions of the coral reef ecosystem (physical, ecological, and socioeconomic aspects) and the importance of conservation efforts to reduce the pressure and damage to the ecosystem in order to maintain the functions of the coral reef ecosystem and use the resources in a sustainable manner.

Develop the community organization and the skills of its members

The existing community organization was strengthened by providing the necessary facilities, including land, office buildings, and operating resources, which were made available through the support of the traditional villages, local government, and grants from various parties.

A network of organizations comprised of government agencies, NGOs, university, and the private sector was also developed that provided wider support to the community organization and strengthened the implementation of the programs, either through financial assistance, or provision of facilities and expertise. The NGOs in particular helped the community organization identify possible problems that may arise, arrive at possible ways to address new problems, organize programs, and manage the common business.

A number of training programs aimed to develop skills of the members of the group were also organized. Some of the major training programs were: (a) life skills training, such as diving, salvage, and underwater construction; (b) training of environment-friendly fishing and ornamental fish handling; and (c) training of reef restoration, such as the construction of artificial reefs, coral transplantation, and coral reef monitoring.



Coral restoration and protection in Serangan Island. Clockwise from top left: coral cuttings attached to concrete substrate; coral cuttings ready for transplantation; corals transplanted in artificial reefs; and growth of transplanted corals.

Strengthen the community economically through development of alternative sources of income

The economic empowerment of the community was implemented through development of alternative sources of income. In the short term, the alternative sources of income were: (1) the development of market access for fish catch that used eco-friendly methods, transplanted soft corals, and artificial live rock for tropical aquariums; and (2) the provision of employment to members of the organization who had skills for underwater works and construction.

The medium-term alternative sources of income were expanded by building networks with local governments in and outside of Bali, and with the private sector. The organization capitalized on the new knowledge, skills, and experiences that its members acquired on the restoration and rehabilitation of coral reefs. The organization received many orders from local governments and the private sector to work on the rehabilitation of coral reefs in different areas throughout Indonesia. At the same time, the organization was able to build partnerships with the private sector such as the PT. Bali Tourism Development Center (BTDC), Nusa Dua, and PT. Indonesia Power through their corporate social responsibility (CSR) programs. The organization was able to raise funds to support its own coral reef restoration program.

The long-term development of alternative livelihoods aimed towards achieving self-reliance of the community. This began in 2008 by developing ecotourism services. Working closely with travel agents and tourism entrepreneurs, the sites of coral reef restoration in Serangan Island were used as tourist attractions, which included a program of adopting corals as part of a creative tour package. The business has shown good results and has provided a sustainable source of capital for sustainable livelihoods.



A pontoon built with the support of private sector partners and operated by the Coastal Fishers Group of Karya Segara where tourists learn about marine conservation, at the same time choose tour packages that include transplanting corals, releasing seahorses, diving, and snorkeling. The seahorses come from the culture farm of the community group.

Engage and mobilize support from various levels of government and stakeholders in an integrated manner

The development of the community environmental management program in Serangan Island involved integration of support among different levels in government and among stakeholders and the integration of science and management. This was achieved by engaging and mobilizing resources of the different entities. The program was supported at all levels of government, from the village level to the national level. Each level of government performed their role that was complementary to each other. For example, the village administration facilitated group activities, provided land for offices and workshops facilities, and access and management rights of the restoration area for the tourism business of the organization. The Denpasar Government facilitated several social safety net assistance programs during the program implementation. The Bali Provincial Government coordinated the implementation of the program, while the national government, through the Ministry of Marine Affairs and Fisheries (MOMAF), facilitated capacity building and provided various facilities to the organization.

Collaborative programs among government, NGOs, universities, and the private sector were implemented in harmony and in support of each other. Public awareness, education, and training for the community were supported by several NGOs and universities. NGOs and academics also helped the community in the overall implementation of the program.

A proactive community organization

The Coastal Fishers Group of Karya Segara has become an active force in the practice of conservation in the island. On top of stopping destructive activities, the group had restored two hectares of coral reefs in the dredged area of Serangan Island.

A sustainable business opportunity

Since 2008, restoration of coral reefs has been used as a tourist attraction through the coral adoption program. Tourists are offered to participate in transplanting corals, an activity that has become an attraction in the island along with other recreational activities such as swimming or snorkeling. Each tourist is charged a fee for each coral cutting that they transplant; the fee goes to the host community. Experience shows that on the whole, tourists participate in the program — they count themselves as part of the community, proud to be counted as protectors and conservationists, and enjoy the benefits derived from the unique and valuable experience of their visit to the island. In 2011, the Coastal Fishers Group of Karya Segara had begun to work with travel agents to bring more tourists to the island, thus contributing to the increasing revenues generated from ecotourism.

A place to learn and share good practices in community conservation

At present, Serangan Island has become a place of learning for many local governments, NGOs, academic institutions and community groups from various regions in and outside Indonesia. They visit or at times send delegations to study and practice the restoration and conservation methods of coral reefs. They also learn how to develop ecotourism that is integrated with restoration and conservation of coral reefs.

These activities also benefit the Coastal Fishers Group of Karya Segara. The group earns from providing lodging, food, and services to the students and delegates. The Bali ICM program also puts in a helping hand to increase the income of the group by promoting the island as a place to learn the methodology and practice of ICM.

With the ecotourism development through activities and programs on restoration and conservation of coral reefs, and opportunities in providing services to other parties in setting up and running projects on restoration of coral reefs in other regions in Indonesia, the Coastal Fishers Group of Karya Segara has achieved a level of economic independence. Some members of the group were also able to get decent employment on account of the skills that they learned from the Bali ICM project.

National recognition

In recognition of the efforts and achievements of the Coastal Fishers Group of Karya Segara in conservation and in saving coral reefs, in 2011, President Susilo Bambang Yudoyono of the Republic of Indonesia awarded the “Kalpataru” to the group, the highest award in the environmental management program. This award raised the spirits of the group and the community of Serangan Island and boosted them to further push forward the conservation of coral reefs.



Mr. Wayan Patut (extreme left), Head of the Coastal Fishers Group of Karya Segara explaining the coral restoration method to visitors from Timor-Leste (August 2015).

Lessons Learned

A major achievement of the Bali ICM pilot project was the behavior change among the people of Serangan Island—from being destroyers of the environment to saviors of the sea. This was facilitated by:

1. Nurturing and enabling the willingness to change that sprung from the community itself, from the ranks of its youth. The change was not forced on the community from above (i.e., government or outside forces). The youth subsequently organized themselves and received support to engage other parties to support their cause;
2. Ensuring the availability of a support network through an integrated system that promotes harmony and collaboration among various stakeholders;
3. Integrating ecological, social, and economic aspects in developing the community environmental management program; and
4. Empowering the communities in sustainable environmental management by developing decent alternative livelihoods for the local people.

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Keywords

Integrated coastal management (ICM), Serangan Island, Bali, Coastal Fishers Group of Karya Segara, reclamation, coral restoration / conservation, Kalpataru

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"ICM Solutions" is a digest of some of the contributions to an ICM case studies publication currently being prepared by PEMSEA, Coastal Management Center (CMC) and the World Bank (publication pending).



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