

Artificial-reef projects: Are we doing it right?

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In Photo: An artificial reef installed by Hinatuan Mining Corp. and partners in Barangay Talavera, Hinatuan Island, Surigao del Norte.

With less than 1 percent of the country's corals in excellent condition, the Philippines, one of the world's top fish producers, is currently experiencing dwindling fish catch.

In several occasions, the Department of Agriculture (DA), through the Bureau of Fisheries and Aquatic Resources (BFAR), had declared fishing moratorium or fish ban to allow the remaining fish stock to replenish fishing grounds.

Scientists have blamed the massive destruction of the country's corals to a number of reasons. The destructive fishing methods—like the use of trawls, dynamite or cyanide—have been identified as major causes of coral-reef destruction.

The Philippines has approximately 27,000 square kilometers of coral reefs. Over the years, however, coral reefs began to vanish.

Destructive fishing methods and overfishing all contribute to the massive destruction of the country's once-healthy coral reefs.

The sorry state of the country's corals got the attention it deserved with a budget of P500 million allocated for coral-reef rehabilitation last year. The Department of Environment and Natural Resources (DENR) decided to revisit its on-going program on the rehabilitation of the country's damaged marine ecosystems.

Coral reefs

Corals or coral reefs are habitat-building species. Along with seagrass and mangroves, coral reefs provide very important ecological and economic functions.

The World Wide Fund for Nature (WWF) said the latest estimates suggest that corals provide close to \$30 billion revenues each year from fisheries, tourism, coastal protection, as source of medical advances and intrinsic value.

In fisheries alone, an estimated 1 billion people are dependent on coral reefs for food and income from fishing, according to the WWF.

Healthy reefs can yield around 15 tons of fish and other seafood per square kilometer each year, it added.

Artificial reefs

The Implementing Rules and Regulation of Republic Act 8550, or the Fisheries Code of the Philippines as amended by Republic Act 10654, define artificial reefs as any structure of natural or man-made materials placed on a body of water to serve as shelter and habitat, a source of food, breeding areas for fishery species and shoreline protection.

Installation of artificial-reef modules in the Philippines began in the 1970s.

Tens of thousands have been installed in various parts of the country to provide the ecological functions that were lost with the destruction of coral reefs.

Today, many local government units (LGUs), the private sector and non-governmental organizations continue to engage in artificial-reef projects as part of coastal resource-management programs, basically, to increase fish catch.

A huge amount of investment has been poured in various coral-reef rehabilitation projects, ranging from the installation of modules through the transplantation of corals, or natural rock formations.

In fishing communities, artificial-reef projects have succeeded in increasing fish catch, as artificial reefs act like fish-aggregating device that recruits fish from other areas, hence, increasing fish density in a particular area.

Second look

Vincent Hilomen, executive director of the DENR's Biodiversity Management Bureau (BMB) Coastal and Marine Division, has a reservation in the wisdom of artificial-reef projects.

Hilomen said it entails a huge cost if the proponent of the project wishes to do it right, including the maintenance and protection against overfishing.

“Before, we thought that the project [artificial reef] is effective. Lately, however, we realized that it is being used to establish fishing grounds where fishermen go fishing, so it is useless,” Hilomen told the BusinessMirror in a telephone interview.

He added that, instead of recommending the installation of artificial-reef modules, the DENR-BMB's Coastal Marine Division is encouraging investment in projects that will remove the threat to coral reefs, such as destructive fishing, ocean pollution and overfishing.

“Fish-aggregating device or aggregator, is not bad per se, as long as there are enough fish, and people will not resort to overfishing,” he added.

But if the fish stock is already depleted and the fishermen will continue to catch fish, reef fishes in the area may become extinct, thereby causing an ecological imbalance.

Reef fishes are beneficial to corals as they feed on algae that cover corals. Without reef fishes, the algae can suffocate and kill corals.

Fish aggregator

Experts believe that because of the depleting fish catch, the installation of modules to create artificial reefs will provide the ecological functions, mainly for young fish to feed on and for protection against predators.

With the continued destruction of what remains of the country's coral reefs, artificial reefs have become a necessity in many areas, as they also attract bigger fish that prey on small fish.

Artificial-reef projects, however, should be done properly, as there have been reports of negative effects as a result of several projects.

Best alternatives

Gregg Yan, an environmentalist and founder of Best Alternatives Campaign, which has published several international studies on fish, said the best way to conserve coral reefs is to protect the remaining reefs.

“The government, coastal communities and all concerned players must better invest their time and resources in preventing the further deterioration of our coastal resources,” he said.

The Best Alternatives Campaign, a movement to promote modern and practical conservation solutions, recognizes that some reefs need a hand to recover from decades of degradation faster, Yan added.

Artificial-reef modules like reef blocks and metal barricades can serve as “hard points” or points of attachment for marine life.

“The key is to let corals, sponges, sea anemones and algae grow naturally,” he explained.

Community managed

For his part, Fernando Hicap, national chairman of the Pambansang Lakas ng Kilusang Mamamalakaya ng Pilipinas, welcomes the installation of artificial reefs, locally known as *payao*, especially in the critical marine habitat and coastal areas, recognizing the degrading marine biodiversity “due to the government’s development-aggression projects.”

In his response to the BusinessMirror e-mailed questions, Hicap asserted that local fishing communities or established fishing cooperatives should be the one to manage the artificial reefs instead of LGUs or private stakeholders, which may take advantage of the program.

He said LGUs and their partners have the tendency to declare traditional fishing grounds off-limits to small fishermen while failing to stop commercial fishing activities.

“Installation of artificial reefs will not guarantee complete rehabilitation of degrading marine resources, especially if corporate activities in coastal areas like land reclamation, mining and unlimited fishing expedition of giant commercial fishing fleets, among others, still prevail. *Paya* installation should be accompanied with planting and restoring the damaged mangroves, seagrasses and other havens of marine species,” he added.

Case by case

Paolo B. Pagaduan, a project manager at WWF and a communication expert at the Center for Philippine Biodiversity Journalism, said that, in general, an artificial reef is not necessary.

However, in some cases like the coral recruitment in El Nido, Palawan, due to the 1987 El Niño, the installation of artificial reefs was recommended. The best option for the government, considering the massive destruction of coral reefs, is to address the reasons the reefs are degraded.

“That is why we often recommend using the resources for artificial reefs into proper coastal-resources management, which includes law enforcement,” he pointed out.

Pagaduan added that artificial reefs are often used as fish aggregators, a practice assailed by conservation experts for giving a wrong impression of the real state of the fish population or the health of the marine ecosystem.

“Fish aggregators tend to attract fish and, therefore, make it easier for the fisherfolk to catch them, contributing to overfishing,” he said.

Marine-protected areas

The DENR-BMB is banking on the success of the protected area system in nursing back to life the country’s degraded marine ecosystems.

Director Theresa Mundita S. Lim, interviewed by the BusinessMirror on October 18, said that as much as possible, artificial-reef projects should be avoided, especially if it is not meant for conservation of the marine environment.

She added that, unlike natural coral-reefs, artificial reefs are not resilient and are easily destroyed by strong ocean current, or in the event of strong typhoons.

Instead of spending money in coral-reef rehabilitation, the government is taking a different path by investing in the protection and conservation, and establishing a network of marine-protected areas (MPAs), she added.

Science-based actions

Vince Cinches, oceans campaigner of Greenpeace Southeast Asia, said that instead of venturing in artificial-reef projects, all resources should be directed at the protection of remaining coral reef in the country and in eliminating the causes of its degradation, including overfishing, unsustainable land-based and coastal development, reclamation, deforestation, land use and land conversion.

He added a science-based mechanism allowing and facilitating recovery of coral reefs should be pursued to make artificial reefs unnecessary. “Current data and study show that the cost of putting up artificial reefs and coral transplantation is higher compared to implementing existing laws to protect our seas and marine resources,” Cinches added.

Cinches said every intervention for coral recovery should not happen in isolation in the overall protection of the country’s marine resources, fisheries and coastal ecosystems, and should be backed up with a robust and sound science.

He added that current and future interventions should also consider the impacts of climate change, increased oceans acidity and warming waters, such as additional stress that could make previous intervention invalid or inappropriate.

Artificial-reef guidelines

Lim reminded the proponents of future artificial-reef projects to consult experts and follow the guidelines formulated for the purpose.

“There is already a joint memorandum order setting the guideline for artificial reefs. It is also best to consult experts before starting artificial-reef projects,” Lim said.

The Joint Memorandum Order 2000-01 of the DENR, Department of Agriculture, Department of the Interior and Local Government and the Department of National Defense requires special permits and, prior to such application, must seek technical assistance from the DENR and DA-BFAR. A proposed management operation plan is also a requirement.

The site of the artificial-reef projects, under the guideline, should not be less than 1 kilometer away from existing natural reefs, if any, and 500 meters from existing artificial reefs.

The site should also be near alternative food sources, such as seagrass beds, and must be constructed on a flat barren area of relatively good visibility, and at depth protected from wave action.

The artificial reef should also be installed outside navigational sea lanes, navigational sea routes of local fishermen.

Concrete block or culverts and limestone or rocks must be used.

Previously, some materials used include old tires and junk vehicles, or seacrafts.

However, because of their potential adverse impact as they may cause marine pollution, a moratorium on their use was ordered in effect pending further studies.

Lim said that, whenever possible, LGUs, the private sector and coastal communities should actively play a role in biodiversity protection and conservation, and refrain from their destructive activities that undermine the food-production capacity of their coastal and marine resources.

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