

Locally-based Coastal Resources Enhancement in the Province of Aklan, Philippines: A Success Story

by Kai-J. Kühlmann



The beginning ...

For more than three decades, the rural coastlines of the Philippines, with their once rich near shore coral reefs, fishing grounds, and mangrove belts, have been becoming increasingly depleted due to commercial fishing, migration to coastal areas and, clearing of upland forests. Ongoing near shore commercial fishing and coastal overpopulation have caused heavy competition over remaining food sources and introduced destructive fishing methods, such as fishing with locally produced explosives, fine meshed nets or high density installation of stationary fishing gears. Moreover, clearing of upland forests to export high quality lumber has caused terrestrial run-off, which has led to siltation (“marine snow”), burying coral reefs and making them inhabitable for coral reef fishes.

These major threats have led to the present socio-ecological conflict in rural coastal areas and motivated

the German Development Service (Deutscher Entwicklungsdienst, or DED for short), one of the numerous foreign development organizations at work in the Philippines, to provide extension work for local stakeholders and government units. For more than six years now, DED and its development workers assigned to the Provincial Government of Aklan have attempted to address the threatened socio-ecological situation of the Aklan coastline through the sustainable management of its coastal resources.

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Community planning

In the 1990s, in response to the global call for the protection, conservation and sustainable management of coastal resources, the Provincial Government of Aklan initiated efforts for coastal resource management programs along its 155 km long coastline. As early as 1997, the Provincial Government of Aklan established an advisory body on coastal resource management (CRM), known as the Provincial Technical Working Group (PTWG), which is composed of representatives of fishing communities, municipal governments, local non-government organizations (NGOs), fisheries and forestry line agencies, the national police and academics in the province. By convening this group in regular consultative meetings to brainstorm on local CRM issues, the management responsibility has been gradually passed to local government and stakeholders. These participatory efforts have become an important networking tool, rewarded with trust and commitment, and have strengthened the dialogue between local stakeholders and the provincial government (Figure 1).

Arriving at group decisions is often an arduous process. During a series of planning workshops held in 2002 and 2003, the participating local stakeholders, vested with the responsibility for managing their coastal resources, found themselves struggling to make choices, plan activities and resolve CRM issues and conflicts using their own resources and capabilities, within their own local socio-political context. Proposed outputs were further discussed and evaluated in order to prioritize concise actions. Finally, they decided unanimously to give immediate priority to an ecological assessment of 11 stakeholder-selected marine spots of fringing or hilly coral reefs along Aklan’s coastline (Figure 2) and to the declaration of these spots as marine

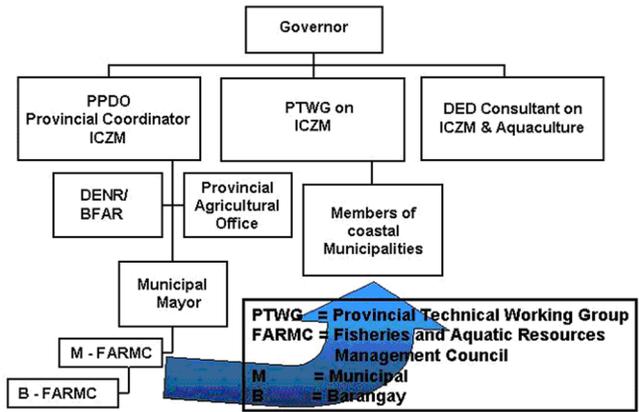
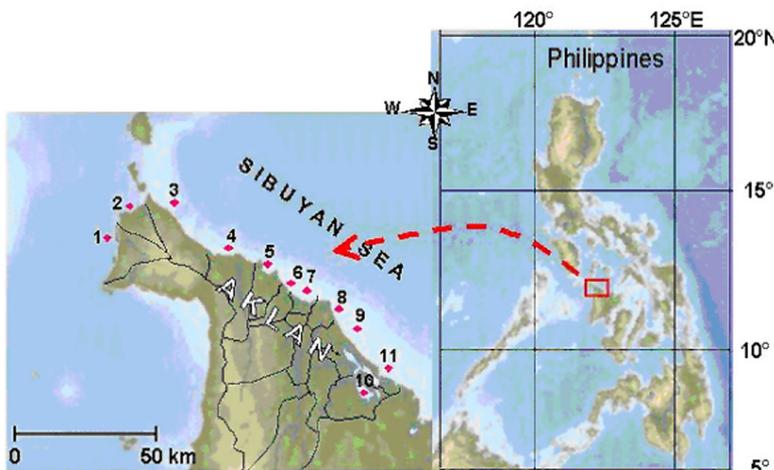


Figure 1: Provincial network in coastal resource management in Aklan, Philippines

one MPA for each concerned municipality. If managed in a sustainable way, it is expected that there will be a spill-over effect, with coral reef fish migrating to surrounding municipal waters (Figure 3), where they can be caught by traditional fishing methods such as hook and line. It is likewise hoped that this focus on coral reef protection will increase coral reef biodiversity, total biomass and bio-density, and also contribute to the rebuilding of depleted fish stocks.

The Benefits of Artificial Reefs

While carrying out the ecological assessment exercises, a remarkably high standing fish biomass was observed at a nine-year-old concrete artificial reef (AR) with a sandy bottom in comparison to a 14-year-old rubber-tire AR at another site. Encouraged by this observation, the communities decided to deploy further concrete-made ARs (jackstone and crossbar types) within the core areas of two MPAs in 2003. First coral growth of branching and encrusting coral tissue was observed after one year of deployment.



MPA as nurseries and safeguard to ARs

Figure 2: Project site with proposed marine protected areas (pink) at coastal Municipalities along the Aklan coastline, Philippines



Ecological Assessment

In 2003, the provincial CRM team together with its DED development worker conducted ecological assessments by manta tow (Figure 4) and transect dives (Figure 5) at the 11 marine spots selected by the PTWG. The results of the assessments revealed promising ecological conditions. Fringing reefs, which are characterized by a spore and grove system of calcareous rocks covered by marine biota, were found in two municipalities, and patch reefs in four others. Marine spots in the five remaining municipalities have only flat and sandy sea bottom.

The surface of the fringing and patch reefs was mainly composed of sand or rubble, followed by hard corals, rock, and soft and dead coral in much smaller quantities. Surface compositions conducted by transect dives, carried out at the selected high biodiversity spots at the proposed MPA sites containing fringing and patch reefs, reflected a hard coral cover combined with rocks, often overgrown by alga. Soft coral, sand and rubble are less common, while only few dead corals and no silt were found.

Generally, a high Condition Index (CI), i.e. the sum of living substrates (such as hard corals, soft corals, alga) quantified (%) and divided by 100 (%) was determined for all transect-dived MPAs. But a high Coral Coverage Index (CCI), i.e. the sum of hard coral tissue coverage directly under the transect line measured in meters, was only obtained for two sites, due to limited alga coverage but remarkable hard coral cover. With the highest reef condition index, these two MPAs were found to have good and very good coral reef conditions, while the others were found to be in fair condition.

Standing coral reef fish biomass estimates for fish of 1–20 cm of total body length, was about 60 tons per square km, an impressive value, with potentially more coral reef fish of smaller size, which doubled the quantity of larger fish. Small coral reef fish were comprised of the taxonomic families of Caesionidae, Labridae, Lutjanidae, Pomacentridae, Scaridae and Serranidae, while Acanthuridae, Caesionidae, Diodontidae, Lutjanidae, Scaridae and Serranidae accounted for the larger reef fish.

In summary, coral cover and fish abundance, although still remarkable, is not as luxuriant as it might have been decades ago. Recent ecological works showed that the Aklan coastline has considerable scope for improving the biodiversity of stakeholder-selected and managed MPAs.

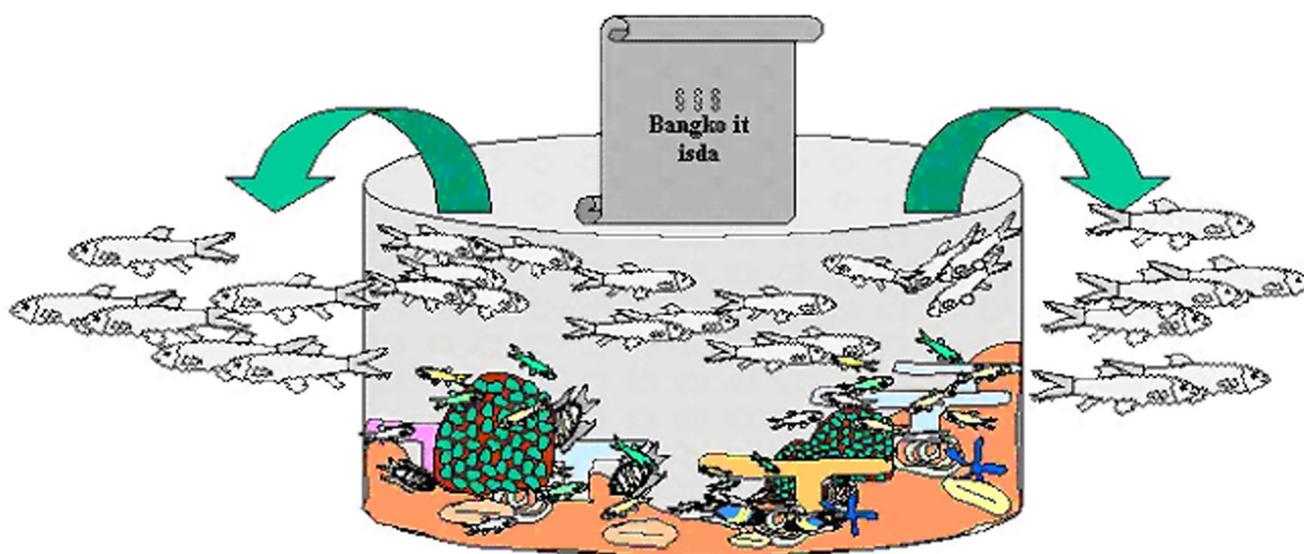


Figure 3: “Spill-over” effect of a marine protected area after 5 to 10 years of protection (“Bangko it isda” mean Fish Bank in the local dialect, Akeanon)

Although most MPAs appeared to be in a fair ecological condition, two MPAs figured well and very well in terms of surface coverage on all assessed parameters. Moreover, stocks of small coral reef fish occurred in high numbers, which may indicate various breeding grounds and shelters for juveniles at most MPAs. Larger fish however occurred less frequently, while fish over 20 cm in total body length were not found during the assessments.



by raising environmental awareness and enforcing laws and policies related to resource protection. The cohesive network established among stakeholders and government agencies and, led by the PTWG on CRM, may serve as a strong basis for continuous strong efforts through the years.

Deploying ARs in developing countries has often been a critically discussed issue because of the socio-ecological conflict of increasing the scarcity of food supply and the temptation offered to fishers to exploit fish stocks attracted to the ARs. Established within MPAs, ARs can genuinely contribute to increasing fish stocks once local stakeholders have been carefully educated and become aware of their potential long term effects in fish stock enhancement – supported by appropriate MPA and AR management plans.

Both strategies, progressively monitored by the CRM team of the provincial government, have inspired, challenged and motivated Aklan’s stakeholders to adopt new and innovative CRM approaches. Thus local stakeholders’ collective efforts and consensus make them realize their own potential as individuals and as a dynamic CRM network (Figure 4). Similar observations have already been emphasized, suggesting that strong collaboration between Local Government Units (LGUs) and locally organized CRM-

educated groups will empower them to act on their environmental and social responsibility once local networks between fishing communities, their Municipal Fisheries and Aquatic Resource Management Council, LGUs and NGOs are established.

Stakeholder Networking

The sincere leadership of the Provincial Government of Aklan coupled with legal responsibility for its coastline may foster strong linkages among key players, including local governments, stakeholder fishers and communities, fishery and forestry agencies, coast guards and local police. These players engage in the rational and sustainable use of coastal resources

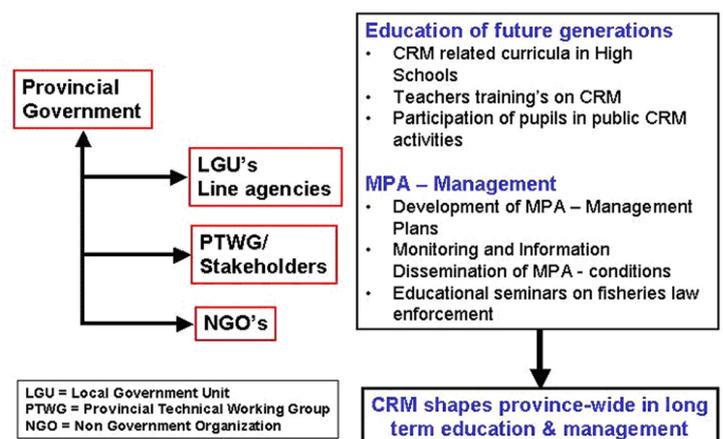


Figure 4: Outlook of coastal resource management in the Province of Aklan, Philippines

Additionally, by transforming the biodiversity of MPAs into monetary values, local stakeholders in MPAs have an excellent opportunity to initiate positive development and socio-economic changes, which may be spearheaded by LGUs, fisheries and environmental line agencies.

Strengthening local management capacity

The sustainability of municipal MPAs is therefore the responsibility of local management. Often, however, no suitable management plans are available because local expertise, appropriate planning activities and funding support, particularly at the LGU or national agency level, are missing. Seeking expertise and assistance from volunteers' organizations is one of several ways to promote strong local MPA management. Here, experts from diverse backgrounds work on the spot for several years under long-term bilateral agreements, and act as local consultants to local-level coastal resource management. They support assessments of local environmental and socio-economic conditions, and assist local governments and stakeholders to formulate and implement locally appropriate CRM plans.

Support to local leadership, fine-tuned to local cultural environments and communication in the local dialect will also contribute substantially to stakeholders' motivation to engage actively in CRM. Moreover, the use of participatory approaches in regular seminars and workshops for local stakeholders will enhance their professionalism and establish a cooperative, supportive and trustworthy working environment among key players, which may contribute to enabling them to create a strong provincial network with a common aim.

Diverse management approaches, such as MPA management plans, artificial reef deployment, public education and environmental awareness raising campaigns are under a strong multi-sectoral cooperation and responsible governance will surely, in the case of Aklan, lead to the emergence of a full grown coastal alliance, with its municipal MPAs turned into an ecological network system, of benefit not only to coastal communities but to the province as a whole.

About the author

Kai-J. Kühlmann is an expert on aquaculture and coastal resource management, and since 2002 has worked as a DED consultant to the Provincial Government of Aklan. He has seven years experience in aquaculture research and development work in the Philippines, and conducted his Ph.D. thesis on milkfish nutrition and physiology as a University of Hohenheim visiting scientist at SEAFDEC from 1994 to 1995.



The author conducting video-transects (photo courtesy of Eric Ritcher)

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