Mangrove Action Project's Toolkit for Communities

Ideas on low impact methods of enhancing community economies in tropical tidal regions

It should be noted that MAP's "toolkit" is not so much a shopping list of packaged solutions, as it is a cross fertilization process of ideas/projects/activities that communities can draw upon and adapt to meet local conditions in order to help find workable solutions to their own resource management problems.

* Silvofisheries involves the establishment of small-scale aquaculture systems or pens constructed within or adjacent to existing or replanted mangrove forests. The idea is to not adversely affect the existing mangroves, but to enhance them via a sustainably managed aquaculture activity. This activity is actually enhanced by the good health of the mangroves, so that proper management of the silvofishery pens and the restoration and/ or conservation of the mangroves go hand in hand. Various forms of silvofisheries include crab, shrimp, fish, mollusks, sea weeds, etc. Crab silvofisheries seem to be the most cost effective and profitable.

* Oyster culture can take place in different ways, such as with floating rafts with ropes held vertically below the rafts where the oysters are attached as larva, or spat. Oysters can then be harvested from the vertical ropes upon maturing. This technique can be used as a substitute for the harvesting of wild caught oysters directly from mangrove roots, which often results in the destruction of the mangrove trees, especially when the roots bearing the oysters are cut and removed. Other methods of oyster culture include the use of constructed frames and racks.

* Small-scale clam culture and/ or mussel culture can be accomplished by cordoning off a selected area for raising the spat and protecting the culture area from unregulated harvesting. Harvests are managed by the community to ensure sustainability. This also requires constant vigilance against encroachers and pollution problems that could affect harvests.

* Seaweed culture can supplement both local dietary needs and incomes. Small enclosures can be constructed to raise seaweed, but again, a careful watch must be made for pollutants that could affect the crop. Moreover, when large amounts of seaweed are grown, the activity can itself cause serious environmental impacts through blocking the sun's rays from entering the sea below the seaweed.

* Fish smokehouses can be much more fuel efficient, thus reducing the need for large supplies of mangrove wood to smoke and preserve fish products. The fish smokehouse design is adapted from traditional Native Americans from the Pacific Northwest of the US and Canada who use this technique to preserve their fish. The smokehouse is simple in both design and with regard to the local materials needed for its construction. See MAP's website for visual images of smokehouses.

* Solar ovens or more efficient wood burning stoves, of which there are several designs available and tested, cut down on both wood usage and air pollution.

* Mangrove Community Forests (MCFs) have been initiated with good success in Thailand and many other countries. Yadfon Association, Thailand, has worked with local communities to initiate MCFs in Trang Province, and local communities utilizing these important community resources are discovering innovative ways to become more self-sufficient in sustaining their resource base. The idea is to promote a more holistic approach whereby mangroves, seagrass beds and coral reefs are integrated in the community natural resource management plans created through utilizing participatory processes.

* Small-scale, limited eco-tourism, which is carefully designed and monitored so as not to impose on the local communities, nor upset natural systems, both environmentally and socially, can benefit both local communities and the environment.

* Workshops that can offer assistance and guidance in critical areas for local community members can be useful. These can include local education and training classes or seminars. Also, these can follow the design of the "In the Hands of the Fishers" workshops, whereby a positive interaction between fishers and NGOs takes place. For the "In the Hands of the Fishers" workshops, facilitating the direct exchange of experiences and ideas between fishers from different places can help increase the knowledge and understanding of all those participating.

* Independent, low interest revolving loans, whereby a fund is set up that can be used to support small local business ventures, such as fishing and artisan work, can assist coastal communities. Microfinance is being used successfully in Sri Lanka to greatly strengthen the social and economic standing of widows' groups that otherwise are being ostracized by the local communities because of their lowered social status. Microfinance initiatives tend to be more successful when they include a component to mobilize local resources, such as a savings component. This helps the beneficiaries feel more like they own the activities, thus improving the chances of sustainability.

* Using Nypa Palm for roof thatching, syrups, fruits, etc. can provide a sustainable income for local people, provided that the resource is managed sustainably.

* Fish ball processing, which helps preserve and process fish for other, more value added uses in cooking, can help local communities. This technique has been used in Thailand for many years and is now being introduced into Sri Lanka.

* Small-scale fresh water aquaculture utilizing, where possible, native species in freshwater ponds and small-scale marine floating pens (e.g. grouper or milk fish) can assist local communities in improving their livelihoods. If non-native species are used, such as the common carp and tilapia, it is important to carefully consider the possible negative repercussions that could occur if these fish escape into the wild. Both species, and many other non-native species, have already caused serious environmental and social impacts after being accidentally and intentionally released into the wild. History shows

that fish raised for aquaculture almost always escape into the wild eventually. Closed systems that do not pollute surrounding waterways should be put into place whenever possible. It is also important to consider land and water tenure issues when promoting small-scale aquaculture to ensure that poor and disadvantaged groups of people are not negatively impacted by the transfer of resources associated with introduction of aquaculture. Nevertheless, if managed well, small-scale aquaculture can benefit local communities and the environment.

* Small-scale mangrove replanting and restoration projects utilizing visiting volunteer teams and/or local community members can benefit the environment and local people. However, it is important to ensure that appropriate species of mangrove trees are chosen for replanting particular areas, and that local communities retain tenure over the replanted areas after they have been replanted, to ensure that they are adequately protected and maintained after planting.

* Getting MAP's Mangrove Educational Curriculum into the primary schools of nations with mangrove forests is important in order to raise the awareness of future stakeholders.

* Traditional local artisan/craft sales that encourage traditional culture and help supplement local incomes can assist local communities living in coastal areas.

* Shrimp paste and other value-added products that are used to supplement the incomes of small-scale producers can assist coastal communities.

* Coastal Community Resource Centers that emulate the existing MAP-SFFL Centers in Sri Lanka can help encourage sustainable and environmentally friendly development. These centers can help demonstrate most of the alternatives or project ideas described above.

* Bamboo preservation treatments for use in building projects have been developed at MAP's Coastal Community Resource Center in North Sulawesi, Indonesia. Treating carefully harvested bamboo with a simple solution of borax, the bamboo can be used as a marketable, insect and rot resistant construction material.

* Waste-water gardens are being used at the CCRC at Tiwoho, Indonesia. This system recycles waste water, both human waste and kitchen waste, turning this into fertilizer for home gardens or trees.

Note: For a list of projects and organizations that have already successfully incorporated parts of MAP's "toolkit," please contact MAP. MAP would be happy to help connect interested persons and organizations with those who already have experience implementing similar projects and ideas.