Managing mangroves

ITTO projects in Colombia, Panama, Thailand, India and Japan have advanced the cause of mangrove conservation and sustainable management

by James K. Gasana[1] and Monica Borobia[2]

[1]Swiss Foundation for Development and International Cooperation (Intercooperation)
jgasana@intercooperation.ch

[2]Environmental consultant
m_borobia@yahoo.com

Photo: J. Gasana

SITUATED in coastal tropical and sub-tropical areas of the planet, mangrove ecosystems are a very valuable resource. They function as hatchery, nursery, and feeding ground and are habitats that teem with life. Live and decaying mangrove leaves and roots nourish plankton, algae, shellfish, fish, crabs and shrimps. Many of the fish caught commercially and for subsistence in tropical regions spend some time in mangroves or depend on food chains linked to these coastal ecosystems.

Mangroves are also a source of timber and income for local communities, and they perform valuable protective functions, absorbing the energy of storm-driven waves and wind as well as regulating estuarine and coastal water quality through sedimentation and nutrient uptake. But because they often occupy valuable coastal land, they are also one of the world's most threatened ecosystems.

Recognising their importance and threatened status, ITTO supports a broad project program for mangrove conservation, management and rehabilitation. In January/February 2004 we carried out ex-post evaluations of five completed ITTO mangrove projects *(see table)*. The primary purpose of the evaluations was to provide a concise diagnosis, pointing out the successful and unsuccessful outcomes, the reasons for successes and failures, and the contribution of the projects towards ITTO's Objective 2000 and the ITTO Mangrove Work Plan 2002–2006. The evaluations were also designed to draw lessons that might help guide similar projects in the future. This article presents some of the main findings of general interest; it does not describe the individual projects.

Mangrove work

Summary of the five evaluated ITTO mangrove projects

PROJECT/COUNTRY	IMPLEMENTING AGENCY	DURATION *(months)*		KEY DATES		ITTO BUDGET *(US$)*
		Planned	*Effective*	*Starting*	*Completion*	
PD 171/91 Rev. 2 (F): 'Conservation and management for the multiple use and development of mangroves in Colombia'	INDERENA	36	53	March 1995	September 2000	905 596
PD 128/91 Rev. 2 (F): 'Management, conservation and development of mangroves in Panama'	INRENARE	36	68	September 1992	December 1997	489 000
PD 157/91 Rev. 2 (F): 'Establishment of an international network for the conservation and sustainable utilisation of mangrove forest genetic resources' (global, but mostly implemented in India)	CSARD (MSSRF)	12	32	September 1991	August 1994	613 000
PD 11/92 Rev. 1 (F): 'Development and dissemination of re-afforestation techniques of mangrove forests' (global)	JAM in collaboration with NATMANCOM	42	42	August 1993	May 1997	815 850
PD 6/93 Rev. 2 (F): 'Manual and a world natural mangrove atlas for mangrove ecosystem restoration' (global)	ISME	24	50	September 1993	November 1997	663 467

INRENARE = National Institute for Renewable Natural Resources (Instituto Nacional de Recursos Naturales Renovables) (Panama); CSARD = Center for Soil and Agro-climate Research and Development (Indonesia); MSSRF = MS Swaminathan Research Foundation; JAM = Japan Association for Mangroves; NATMANCOM = National Mangrove Committee (Thailand); ISME = International Society of Mangrove Ecosystems; INDERENA = Institute for the Management of Natural Renewable Resources (Instituto de Desarrollo de los Recursos Naturales Renovables) Colombia.

All the projects evaluated were implemented between 1991 and 2000. As is the case with many early ITTO projects, none of those evaluated followed the current format for project proposals. All projects lacked a description of the monitoring and evaluation procedures to be followed during implementation. In many cases there was confusion between objectives and outputs, and outputs and activities. This confusion and the lack of logical frameworks made accurate ex-post evaluation difficult.

Contribution and impact of the projects

All five projects were in conformity with the objectives outlined in Article 1 of the International Tropical Timber Agreement, 1994. The projects were also in conformity with the Yokohama Action Plan, complying with the Plan's Goal 1, Action 4 for reforestation and forest management: to "promote the conservation, rehabilitation and sustainable management of threatened forest ecosystems, *inter alia* mangroves, in collaboration with relevant organisations".

Mangrove man: evaluator James Gasana (left) stands in a Panamanian mangrove forest with a local expert (centre foreground) and government officers.

The combined results of the projects, which have collected and disseminated a vast quantity of new information on mangroves, confirm the value of mangrove ecosystems; wherever possible, they should be protected in their natural state or—where they have been damaged—restored or rehabilitated. As results in Colombia, India and Thailand show, restored degraded areas can offer numerous environmental and socioeconomic benefits. In this regard, one important lesson is that planning for mangrove resource management should emphasise multiple-use objectives. Mangrove forest zoning should be carried out in coordination with development plans, particularly through integrated coastal zone management approaches.

The environmental impact of projects PD 157/91 and PD 171/91, which all had sizeable field activities, was quite positive. In the Indian and Colombian mangrove projects, the technical performance regarding desalinisation was very high. As for PD 11/92, positive environmental impacts were visible in the planted plots.

Where a project's impacts on the forest sector was weak or lacking, this was due to:

- poor project design and a lack of clear objectives;
- a failure to identify and involve stakeholders and project end-users;
- a lack of an information strategy;
- insufficient consideration of the institutional context for the use of the project's results and their sustainability;
- poor development of social organisation processes in beneficiary communities; and
- a lack of institution-strengthening objectives.

In relation to local communities

While none of the projects incorporated a clear strategy for the mobilisation of stakeholders in its design, all communities involved responded positively to project activities. Nevertheless, in terms of the sustainability of benefits and impacts, mixed results were achieved as far as community development was concerned. In the projects in Colombia and India, considerable attention was paid to mangrove-based development options and to working with and strengthening community-level institutions. But for the other projects, impacts at the community and institutional levels were negligible.

... mixed results were achieved as far as community development was concerned. In the projects in Colombia and India, considerable attention was paid to mangrove-based development options and to working with and strengthening community-level institutions.

For the host countries

All projects were relevant to the policies of the host countries and contributed to the management and conservation of mangroves, as well as to development needs that might not have been addressed sufficiently by other programs. This was particularly the case for projects PD 171/91 in Colombia and PD 128/91 in Panama. In Colombia, the project demonstrated practical management techniques for the Caribbean mangroves that will also have relevance

Mangrove barbeque: a common use for mangrove wood is the production of charcoal, which is used locally for cooking and also often exported to the US, Japan and elsewhere as fuel for barbeques. *Photo: J. Gasana*

for Pacific Coast mangroves; national policies relating to mangroves were also improved by the experiences gained through the project. In Thailand, the government implements policies that aim to slow the loss of mangroves and that encourage the reforestation of degraded areas. In India, the government supports mangrove management and conservation programs underpinned by sound ecological knowledge, greatly derived from the project; it is also providing guidance and financial support to states and territories for the preparation and implementation of management action plans.

To ensure that projects respond better to the needs of beneficiaries and that their objectives are met and results sustained, there is a need to open up the project formulation process to greater stakeholder input—in identifying the problems and objectives and in choosing strategies.

Main lessons learned

In all cases, the five projects made important contributions to awareness about mangrove problems. Important factors contributing to their success were the quality of the project staff, the political commitment of the beneficiary institution, the role played by project steering committees (in particular the interest of donors), the involvement of stakeholders in project activities, and the quality of project design.

Mangrove projects should be designed not simply for forestry but for sustainable development. The setting of the objectives of future projects requires a good balance between forestry issues (conservation/management) and socioeconomic and institutional issues. Capacities at community and institutional levels should be assessed and the need for strengthening those capacities should be taken into account in the setting of objectives, outputs and activities.

The planning and development of mangrove projects should take an incremental adaptive approach. To ensure that projects respond better to the needs of beneficiaries and that their objectives are met and results sustained, there is a need to open up the project formulation process to greater stakeholder input—in identifying the problems and objectives and in choosing strategies.

Lesson learned from sustainable use pertaining to mangroves point to viable low-impact activities that would be compatible with their conservation, such as various forms of nature-based tourism, fisheries and timber harvesting that are non-intensive and non-destructive of mangrove forest cover. Mangrove systems are assets that can provide a basis for sustainable development, in which the development of local communities can be pursued and the integrity of the ecosystem can be maintained. Narrowly focused, sectoral solutions have not always been effective; an integrated approach to the management of coastal zones and river basins may be the best way to protect and sustainably use the marine environment, including mangroves. Several factors and pressures being felt by mangrove systems and elsewhere can also be attributed to inland activities.

Conference on mangroves

The five mangrove projects generated a wealth of publications, scientific articles and experience. To maximise the dissemination and uptake of project results, we propose the convening of an international workshop in which experts from these projects meet and synthesise their experiences in a form that can be shared easily with other countries.