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**EXECUTIVE SUMMARY**

**Thematic Ex-post Evaluation on Mangroves**

**PD 156/02 Rev.3 (F)**

**Conservation and Reforestation of Threatened Mangrove Forest Areas  
along the Pacific Coast of Panama – Phases I and II**

**PD 349/05 Rev.2 (F)**

**Criteria for the Management of Mangrove and Flood Forests  
in the Central Coastal Plains of Veracruz, Mexico: A Community  
Management Tool**

**Prepared for ITTO by**

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THEMATIC EX-POST EVALUATION REPORT  
ITTO PROJECTS  
PD 156/02 Rev.3 (F) Phases I and II and PD 349/05 Rev.2 (F)

Contents

Executive Summary .....	3
1. Introduction .....	4
2. Evaluation scope, approach and procedure .....	5
3. Project facts .....	5
3.1. Project PD 156/02 Rev.3 (F) – Conservation and Reforestation of Threatened Mangrove Forest Areas along the Pacific Coast of Panama - Phases I and II .....	5
3.2. Project PD 349/05 Rev.2 (F) Criteria for the Management of Mangrove and Flood Forests in the Central Coastal Plains of Veracruz, Mexico: A Community Management Tool .....	6
4. Findings and lessons learned.....	8
4.1. Findings .....	8
4.2. Lessons learned.....	12
5. Conclusions and Recommendations .....	13
5.1. Conclusions.....	13
5.2. Recommendations .....	14

**Acronyms and abbreviations**

ANAM:	Autoridad Nacional del Ambiente (National Environmental Authority)
ARAP:	Autoridad de Recursos Acuáticos de Panamá (Water Resources Authority of Panama)
CATHALAC:	Centro del Agua del Trópico Húmedo para América Latina y el Caribe (Water Center for the Humid Tropics of Latin America and the Caribbean)
CONAFOR:	Comisión Nacional Forestal (National Forest Commission), Mexico
CONAGUA:	Comisión Nacional de Aguas (National Water Commission), Mexico
INECOL:	Instituto de Ecología A.C. (Institute of Ecology), Mexico
ISME:	International Society for Mangrove Ecosystems
ITTA:	International Tropical Timber Agreement
ITTC:	International Tropical Timber Council
ITTO:	International Tropical Timber Organisation
SAGARPA:	Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food)
SEMARNAT:	Secretaría de Medio Ambiente y Recursos Naturales (Secretariat of the Environment and Natural Resources)

**Basic information on finance and implementation**

Project PD 156/02 Rev.3 (F) – Conservation and Reforestation of Threatened Mangrove Forest Areas along the Pacific Coast of Panama - Phases I and II

Proposed budget and funding sources:

**Phase I**

Total Budget:	US\$	701,547
ITTO Budget:	US\$	491,257
Government of Japan:	US\$	400,000
Government of USA:	US\$	86,257
Government of Norway:	US\$	5,000
Government of Panama:	US\$	210,290

**Phase II**

Total Budget:	US\$	485,177
ITTO Budget:	US\$	316,887
Government of Japan:	US\$	302,887
Government of Norway:	US\$	14,000
Government of Panama:	US\$	168,290
Total budget – Phases I and II:	US\$	1,186,724

Executing Agency:	National Environmental Authority (ANAM)
Session of Approval:	ITTC Session XXXIV, May 2003, Panama City, Panama
Phase I: Starting Date and Duration	September 2004 / (24 months planned, 48 executed)
Phase I Approved Revised Date of Project Completion:	August 2008
Phase II: Starting Date and Duration	December 2007 / (24 months planned, 48 executed)
Phase II Approved Revised Date of Project Completion:	March 2011

Project PD 349/05 Rev.2 (F) Criteria for the Management of Mangrove and Flood Forests in the Central Coastal Plains of Veracruz, Mexico: A Community Management Tool

Proposed budget and funding sources:

**Phase I**

Total Budget:	US\$	1,024,521
ITTO Budget:	US\$	387,296
Government of Japan:	US\$	327,296
Government of USA:	US\$	40,000
Government of Norway:	US\$	20,000
Government of Panama:	US\$	637,225

Executing Agency:	Institute of Ecology, INECOL
Session of Approval:	ITTC Session XXXIX, November 2005, Yokohama, Japan
Starting Date and Duration	February 2007 / 36 months (a 10 month extension was requested, without additional funds)
Approved Revised Date of Project Completion:	First extension until August 2010 (CRF XLIII)

## Executive Summary

The Forty-eighth Session of the ITTC in Yokohama, Japan, 5 to 10 November 2012, recommended a thematic ex-post evaluation for two Latin American mangrove projects.

The purpose of the ITTO decision and the relevant allocation of the two projects for the thematic ex-post evaluation, was to assess the achievement of project objectives, the contribution made by the projects to mangrove conservation, sustainable management and/or rehabilitation taking into account ITTO objectives, its Objective 2000, the ITTO Yokohama Action Plan and the ITTO Mangrove Work Plan - 2002-2006. Furthermore, the evaluation was to summarize potential lessons learned, assess the underlying causes or reasons for successes or failures, any positive or negative impacts for the countries and target communities, as well as make recommendations for possible future projects and develop a draft proposal for a subsequent ITTO Mangrove Work Plan.

The terms of reference for the Mission provided for the task to be completed between 15 July and 31 August including a review of the documents, field missions and submission of reports. Furthermore, the final report would be presented during the Forty-ninth ITTC Session in Libreville, Gabon, in November 2013. Previous individual reports prepared for each project were used as a basis for the summary report on the thematic ex-post evaluation.

Mangrove forests in Panama account for approximately 170,000 hectares, mostly located along the Pacific Coast. The pressure for land use change and unplanned utilisation of these ecosystems has become a threat to the general community and has limited the availability of resources for community livelihood and sustainable use.

This project focused on mangrove ecosystems in protected areas under the jurisdiction of the Executing Agency, ANAM (National Environmental Authority). The development objective was: To ensure the collective conservation and sustainable management of 4,000 hectares of mangrove forests along the Panamanian Pacific Coast and to implement rehabilitation activities on 1,250 hectares of degraded lands to maintain the contribution of this ecosystem to the welfare of Panamanian society, in particular the communities that are directly dependent on these natural resources.

In Mexico there are approximately 770,057 hectares of mangroves, of which 36,237 hectares are situated in the State of Veracruz, commonly associated with coastal flood forests. Historically these ecosystems have been subjected to unsuitable management as a result of the lack of awareness of their operation, structure, management and restoration, and of the economic, ecologic and social benefits they can offer. The project was executed by the Instituto de Ecología (Institute of Ecology), INECOL A.C. The development objective was: To contribute to the conservation and sustainable use of mangrove forests and coastal flood forests in the Gulf of Mexico.

### **For both projects it was clear that:**

- The direct beneficiaries of the projects were local communities and the ecosystems and, indirectly, the institutions in charge of their management as well as the community as a whole.
- The projects used participatory approaches.
- The development and specific objectives and the outcomes expected were achieved, with significant contributions made to ITTO's Objective 2000, ITTA objectives, the general Action Plan and the Mangrove Work Plan 2002-2006.
- The investments made have continued with their own dynamics, especially with respect to local stakeholder involvement and the follow-up of management plans developed by the project.
- In general, the projects were successfully completed in accordance with project documents, agreements with ITTO and the Organization's guidelines.
- The other institutions that were associated in some way to resource management or land administration were involved and informed, and still have a proactive culture towards these ecosystems, their uses and management.
- In general, the design of the projects was appropriate, and no better alternative option could be suggested for any of the two cases, although some recommendations were made on aspects to be considered in future designs (customs and regulations for land tenure and use, costs, marketing and trade for production activities, evaluation and use of appropriate technology, and fire and pests and diseases control).

**The major lessons learned included:**

- The synchronised execution of actions and activities dealing with awareness building, extension services, law enforcement and economic options for sustainable use, exerted a powerful attraction for local communities towards resource and ecosystem conservation and sustainable use in both projects.
- With equal opportunities and incentives, women are as interested and actively involved as men in activities for the sustainable management of mangrove forest resources.
- Costing, marketing and trade studies and activities are indispensable elements in designing forest projects. This was one of the aspects that lacked in-depth detail in the design of these projects.
- It is quite common to have appropriate technology for each particular situation. These prior analyses and subsequent actions could be an integral part of project design.
- The study of land tenure regulations and customary land use must be a part of the analysis leading to project design; this helps avoid delays and cost overruns which could have been foreseen.
- It is possible to reforest mangroves at comparatively lower costs than traditional reforestation on land.

**The most salient conclusions and recommendations are very similar for both projects. The conclusions included:**

- The projects made significant contributions to the objectives of the ITTA 1994, to ITTO's Objective 2000, to the Yokohama Action Plan 2002-2006 and to ITTO's Mangrove Work Plan 2002 - 2006, particularly regarding the restoration and promotion of sustainable management of tropical timber producing forests.
- The projects used resources efficiently and effectively.
- They achieved satisfactory and outstanding levels of involvement and gender equality.
- The information collected and generated was successfully distributed among local communities, competent authorities and the general public. Such information is kept and made available to stakeholders by each Executing Agency.

**It was recommended that:**

- Greater and closer coordination between ANAP and ARAP be sought for mangrove management in Panama.
- In the light of the project outcomes, consideration should be given to reflecting on how to become involved in the international trade in timber and non-timber products and services, from sustainably managed sources.
- Outcomes should be disseminated to other regions in order to extend the areas under sustainable use.
- Voluntary forest certification should be obtained for local stakeholders involved in sustainable production activities.
- Suitable involvement should be sought in markets targeting Global Climate Change mitigation.
- Efforts should be made to build awareness in the community and among national authorities on the socioeconomic and comparatively disadvantaged status of mangrove and flood forest ecosystems, when considering alternative land uses under other production sectors.
- Consideration should be given to revisiting a formal and independent self-assessment mechanism by local communities involved in their projects.
- Contributions and formal adjustments should be made to ITTO guidelines for mangrove ecosystems (and flood forests for Mexico).
- Fire, pest and disease prevention guidelines should be taken into consideration, with relevant adjustments, in current activities and future projects.
- For Panama's Executing Agency, follow-up should be implemented for restored and reforested plots.
- For Mexico's Executing Agency, a contribution should be made to Tropical Forest Update.

**1. Introduction**

The Committee on Reforestation and Forest Management in its Document CRF (XLVI)/1 Rev.1, 17 October 2012, item 8, (A) Ex-post Evaluation Reports, reminded the ITTC at its Forty-eighth Session held in Yokohama, Japan, from 5 to 10 November 2012, of the thematically grouped projects which had been selected for ex-post evaluation by the Council at its Forty-seventh Session. Section 5, the "Mangroves" Thematic Group, included the two projects in this ex-post evaluation.

The purpose of the ITTO decision and the relevant allocation of the two projects for thematic ex-post evaluation, was to assess the achievement of project objectives, the contribution made by the projects to mangrove conservation, sustainable management and/or rehabilitation taking into account ITTO objectives, its Objective 2000, the ITTO Yokohama Action Plan and the ITTO Mangrove Work Plan - 2002-

2006. Furthermore, the evaluation was to summarize potential lessons learned, assess the underlying causes or reasons for successes or failures, any positive or negative impacts for the countries and target communities, as well as make recommendations for possible future projects and develop a draft proposal for a subsequent ITTO Mangrove Work Plan.

Previous individual reports for each project, prepared using ITTO's guidance format, were used as a basis for the summary report on the thematic ex-post evaluation; both had been submitted to the ITTO Secretariat and Executing Agencies for comment. In general, they agreed with the contents of the reports. The documents contain several annexes with additional information.

## 2. Evaluation scope, focus and approach

The ex-post evaluation included data collection, field studies and an in-depth analysis of project performance and impact after completion, in order to determine how well the projects had achieved their objectives, how efficient and effective they had been and the sustainability of their outcomes<sup>1</sup>.

In early June, ITTO invited Biologist J. Antonio Villa L. to consider the terms of reference for the ex-post evaluation, based on his specific training in mangroves, protected area and wildlife management, establishment, management and certification of forest plantations, and his experience in public and private sectors as well as his work with local communities.

The terms of reference for the Mission provided for the task to be completed between 15 July and 31 August including the document review, field missions and submission of reports. Furthermore, the final report would be presented during the Forty-ninth ITTC Session in Libreville, Gabon, November 2013. The Special Services Agreement (F) F 13/05 between ITTO and the ex-post evaluation consultant for both projects, and the respective Terms of Reference, were signed on 12 June 2013. The ITTO Secretariat had already sent the relevant communications to the Governments and Executing Agencies in Panama and Mexico and then the consultant contacted the Executing Agencies to plan his visits.

The document review took the entire period of time allocated to the mission (15 July to 31 August 2013). The field visit to Panama took place from 13 to 19 July, while the field visit to Mexico took place from 28 July to 4 August 2013. The consultant was free from any constraints in his field visits, meetings and interviews, as well as his communication with the various stakeholders; he was afforded full and satisfactory cooperation from all the parties involved.

## 3. Project facts

### 3.1. Project PD 156/02 Rev.3 (F) – Conservation and Reforestation of Threatened Mangrove Forest Areas along the Pacific Coast of Panama - Phases I and II

Mangrove forests in Panama account for approximately 5.6 % of the natural forest cover, i.e. some 170,000 hectares, the majority of which are located along the Pacific Coast. Panama has reported 11 of the 13 species of mangroves present in the Americas.

The pressure for land use change and unplanned utilisation of these ecosystems has become a threat to the general community and has limited the availability of resources for community livelihood and sustainable use. The project aimed to set the foundations for the forest management of these ecosystems, in order to ensure their restoration, conservation and sustainable management.

The Executing Agency of the Project, ANAM, is responsible for mangroves in protected areas, while the Water Resources Authority of Panama (ARAP) is responsible for mangroves in other areas. This project focused on mangrove ecosystems under ANAM administrative jurisdiction.

**Development objective:** To ensure the collective conservation and sustainable management of 4,000 hectares of mangrove forests along the Panamanian Pacific Coast and to implement rehabilitation activities on 1,250 hectares of degraded lands to maintain the contribution of this ecosystem to the welfare of Panamanian society, particularly the communities that are directly dependent on these natural resources.

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<sup>1</sup> ITTO Manual for Project Monitoring, Review, Reporting and Evaluation Series IG 14. Third Edition, 2009.

**Specific Objective 1.** To ensure the conservation of 4,000 hectares of mangrove forests in vulnerable areas or areas threatened by development activities.

**Output 1.1.** 4,000 hectares of mangroves have been selected in the Azuero and Western Panama region, which are suitable for sustainable management and utilisation techniques. Management plans have been developed.

**Output 1.2.** 4,000 hectares of mangroves are under a sustainable management and harvesting system.

**Specific Objective 2.** To rehabilitate through enrichment planting and reforestation with mangrove species, 600 hectares of mangrove forests destroyed and altered as a result of human activity, and to implement agroforestry and reforestation with multiple-use forest species in 250 hectares (initially this was 650 ha) of degraded forest lands, in order to promote the use of alternative forest species.

**Output 2.1.** 600 hectares of mangrove forests rehabilitated through community enrichment planting and reforestation with mangrove species.

**Output 2.2.** 650 hectares of degraded forestlands under agroforestry and reforestation with multiple-use forest species. (Note: The Project Steering Committee was forced to reduce this target to 250 hectares as a result of difficulties encountered in involving farm producers with sufficient land available. For the same reason it was decided to reforest areas further upstream).

Project activities were centred on key sites under high pressure (regions in Western Panama, Coclé and Azuero) and developed participatory intervention models that allowed the conservation, reforestation, rehabilitation, sustainable management and use of mangrove ecosystems. Furthermore, given the methodology applied, the outputs achieved and the degree of involvement, project outcomes are being replicated in other areas of Panama.

The project target beneficiaries included:

- Mangrove-dependent communities, inasmuch as the project sought to increase their long-term income levels and access to mangrove resources;
- Fishers and shrimp farmers whose livelihood depends on the species whose life cycles are associated with mangrove forests (6 to 10 species of high commercial value);
- Mangrove-related biological diversity. In particular, 227 species of birds and 92 species of migratory birds have been reported in these mangrove ecosystems;
- The Environmental Authority, inasmuch as mangrove forests under its responsibility can be sustainably managed; and
- Society in general, inasmuch as environmental services and mangrove-related product exports are maintained or increased.

The project had three major components: mangrove forest management, reforestation and extension. The basic strategy of the project consisted of a participatory approach together with effective communication and coordination between the project stakeholders and central, provincial and local bodies.

Project PD 156/02 Rev. 3 (F) I and II built directly on the results of project PD 128/91 Rev.2 (F) "Management, Conservation and Development of the Mangrove Forests in Panama", and indirectly on project PD 54/98 Rev.1 (F) "Institutional Strengthening of the Geographic Information System (GIS) of the National Environmental Authority (ANAM) for the Monitoring and Evaluation of Panama's Forest Resources with a View to their Sustainable Management".

### 3.2. [Project PD 349/05 Rev.2 \(F\) Criteria for the Management of Mangrove and Flood Forests in the Central Coastal Plains of Veracruz, Mexico: A Community Management Tool](#)

In Mexico there are approximately 770,057 hectares of mangrove forests, of which 36,237 hectares are situated in the State of Veracruz<sup>2</sup>, on the coast of the Gulf of Mexico. Mangrove forests and coastal flood forests along the Veracruz coastline are generally associated in zones according to salinity levels; they remain flooded for most of the year since the waters coming from the Sierra Madre Oriental reach these plains and form a rich and productive coastal and lagoon ecosystem complex. Historically, mangrove

<sup>2</sup> Final project report. Giri et al. (2011) report 741,917 hectares or 5.4% of the total area of Mexico.

Giri, C., Ochieng, E., Tieszen, L. L., Zhu, Z., Singh, A., Loveland, T., Masek, J. and Duke, N. (2011), Status and distribution of mangrove forests of the world using earth observation satellite data. *Global Ecology and Biogeography*, 20: 154–159.



forests and flood forests in the project area have been under inadequate management as a result of the ongoing lack of awareness of these ecosystems, particularly their operation, structure, management, rehabilitation and the economic, ecological and social benefits they offer. The project aimed to deal with this situation in order to start remediation action.

**Development objective:** To contribute to the conservation and sustainable use of mangrove forests and coastal flood forests in the Gulf of Mexico.

**Single Specific Objective:** To develop ecological and socioeconomic criteria with the participation of local communities for the identification of the natural potential of mangrove forest and flood forest ecosystems, and to develop production projects and management plans in the context of managing the central coastal plains in Veracruz, Mexico.

**Output 1.1:** An environmental and socioeconomic diagnosis and valuation of environmental services provided by mangrove forests, flood forests and their replacement ecosystems (popal, tital, flood paddocks) in the central coastal plains of Veracruz, Mexico.

**Output 1.2:** A compatibility analysis between the current use of mangrove forests and flood forests and their natural potential for production activities, as the basis for management policy allocations.

**Output 1.3:** Pilot production projects for the sustainable use of mangrove forests and coastal flood forests.

The project strategy consisted of participatory environmental and socioeconomic diagnoses, including local stakeholder views complemented by technical information; such diagnoses would guide actions, help develop management proposals, identify, plan and launch immediate production alternatives, and target the outcomes at local, state and national political and regulatory bodies and authorities. Furthermore, the strategy contemplated significant efforts towards inter-institutional coordination and the dissemination and mainstreaming of outcomes as they are produced.

The Mexican legal and political forest context provided an excellent framework both for the implementation of the project and for the absorption of its outputs. In summary, Mexican legislation includes the following:

- The General Law for Sustainable Forest Development 2003 (DOF 25/II/03).
- The National Water Resources Law (LAN) (latest amendment DOF 07/06/2013), that provides legal definitions of wetland ecosystems and allocates to CONAGUA the power for their demarcation and rehabilitation.
- Official Mexican Standards 059 SEMARNAT and 60 TER<sup>3</sup> that protect mangrove species established in Mexico.
- The Mexican policy that promotes the designation of wetlands as RAMSAR sites, with the commitment to develop a management plan jointly with various stakeholders.
- CONAFOR's scheme for the payment of environmental services.

The project target beneficiaries included:

- Mangrove-dependent communities whose livelihood is directly linked to mangrove forest and flood forest resources, inasmuch as the project sought to increase their long-term income levels and access to mangrove resources;
- Fishers who get resources from species whose life cycles are associated with mangroves;
- Ecotourism operators whose activities are situated in these ecosystems in the State of Veracruz;
- Women groups that have taken on the cultivation of forest species and the production of crafts from non-timber products as their production strategy;
- Biological diversity associated with mangrove forests and flood forests;
- Water management and regulation, because of the vulnerability to flooding in these plains, as a result of the water coming down from the Sierra Madre Oriental, apart from recurrent hurricanes that hit the Gulf coast every year;
- Environmental bodies, in particular SEMARNAT (Secretariat of the Environment and Natural Resources), CONAFOR (National Forest Commission), CONAGUA (National Water Commission) and SAGARPA (Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food), because of their responsibilities in terms of policies on, and regulation of these ecosystems;

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<sup>3</sup> [http://www.profepa.gob.mx/innovaportal/file/435/1/NOM\\_059\\_SEMARNAT\\_2010.pdf](http://www.profepa.gob.mx/innovaportal/file/435/1/NOM_059_SEMARNAT_2010.pdf)

- Society in general, inasmuch as environmental services and mangrove-related product exports are restored, maintained and increased; and
- Significantly, the project included the involvement of postgraduate students of INECOL A. C. as well as a select group of researchers, extension workers and leaders who formed the project work team.

Project PD 349/05 Rev. 2 (F) is complemented by project PD 045/11 Rev.2 (M) “Environmental assessment and economic valuation of ecosystem services provided by coastal forests (mangrove forests, flood forests, rain forests and scrub forests on dunes) and their agricultural replacement systems on the central coastal plain of Veracruz, Mexico”.

#### 4. Findings and lessons learned

##### 4.1. Findings

The main outcomes for Project PD 156/02 Rev. 3 (F) - Conservation and Reforestation of Threatened Mangrove Forest Areas along the Pacific Coast of Panama - Phases I and II were taken from available documents for the project and checked through field visits and interviews held between 15 and 19 July 2013 with ANAM officials, the Project Coordinator and the local population involved in the project.. In summary, the project achieved and exceeded its objectives and expected outcomes.

For project PD 349/05 Rev.2 (F) Criteria for the Management of Mangrove and Flood Forests in the Central Coastal Plains of Veracruz, Mexico: A Community Management Tool, the most salient outcomes were also taken from available documents for the project and checked through field visits and interviews held between 29 July and 2 August 2013, with INECOL A.C. officials (Coordinator, Community Extension Worker, postgraduate students), SEMARNAT (Veracruz), CONAFOR and the local population involved in the implementation of the project. Here too the project achieved and exceeded its objectives and expected outcomes.

##### 4..1.1. Project PD 156/02 Rev. 3 (F) – Conservation and Reforestation of Threatened Mangrove Forest Areas along the Pacific Coast of Panama - Phases I and II

<b>i) Achievements of the project</b>
<b>Objectives and outputs with respect to planning</b>
<ul style="list-style-type: none"> <li>• Specific Objective 1 and Outputs 1.1. and 1.2 were fully achieved, with a management plan for an area of 5,980 hectares (against 4,000 initially proposed). The area is under management, including a harvesting system respected by the local community.</li> <li>• Specific Objective 2, Output 2.1 was achieved through the reforestation and enrichment of 892 hectares versus 600 hectares proposed initially. For Output 2.2., which had proposed 650 hectares initially (modified by the Project Steering Committee to 250 hectares) for the establishment of agro-forestry systems, 457 hectares were completed.</li> </ul>
<b>Impacts and effects</b>
<ul style="list-style-type: none"> <li>• Local communities are following the Management Plan and are operating the first businesses under forest management.</li> <li>• ANAM is managing the area based on the Management Plan; it has disseminated the outcomes and is actively replicating them in other areas.</li> <li>• An unexpected fire (controlled and now under reforestation) suggested the need to take prevention action against fires, pests and diseases.</li> <li>• Aspects that need attention include the use of appropriate charcoal technology and transport in mangrove areas with a wide range of tide heights.</li> <li>• Ecosystems are showing signs of forest recovery.</li> </ul>
<b>Sustainability</b>
<ul style="list-style-type: none"> <li>• The local community has achieved good training levels.</li> <li>• ANAM has managed the areas without interruption through a project coordinator and is planning to extend project outcomes to other areas.</li> <li>• The information available has been complemented with ecosystem studies and advances in the formulation and launch of management plans for other mangrove forest areas.</li> <li>• No signs of illegal logging were found in the areas visited.</li> <li>• ANAM and ARAP are coordinating actions to manage all the mangrove ecosystems in the country, thanks to the knowledge gained from the outputs of the project.</li> </ul>

- Municipal authorities are now aware of the mangrove forest issue and are interacting positively with the other stakeholders in mangrove forest management.

#### ii) Design and Implementation process

##### Suitability of Project Design

- This project originates from another project funded by ITTO, “Management, Conservation and Development of the Mangrove Forests in Panama”.
- Throughout the implementation there was close communication and coordination between ANAM and the direct stakeholders of the project, as well as with other central, provincial and local bodies.
- Members of ANAM personnel (at central and provincial levels) and local stakeholders involved in the implementation of the project in the field, were proactive, acknowledged each other, interacted and were respectful of each other as key components in the sustainable management of mangrove forests.
- Women have acquired an important role in the dynamics of mangrove forest rehabilitation, management and use.
- The project document, particularly the logical framework, the schedule and budget, served as excellent guidance in the implementation of each activity.
- It would have been extremely useful to have a formal final self-evaluation document prepared by local stakeholders.
- Some activities were missing, including cost analysis for production and improved trading and marketing skills for mangrove timber, non-timber products and services, evaluation of appropriate technologies, prevention of fires, pests and diseases, and concrete evaluations of land use.

##### Efficiency and Operational Aspects

- CATHALAC was the body in charge of managing ITTO resources. CATHALAC, ANAM and the Project Coordinator explained that disbursements were made following a request from the Coordinator, with the approval of ANAM and no issues were reported regarding the management of funds. Although it was not possible to obtain from CATHALAC copies of the audit reports on the implementation of ITTO resources, their management seems to have been correct, subjected to the schedules and requests made by the Project Coordination, as inferred from a study of the overall figures and checking them against the outputs and from the interviews held with various project participant stakeholders.
- The salaries and wages paid to project personnel and local stakeholders for their activities were in accordance with the socioeconomic context in Panama and the region.
- A future reforestation project of the Panama Canal Authority (ACP) suggested that mangrove reforestation costs could be comparatively high in comparison with reforestation using other species and in other types of non-salty lands<sup>4</sup>. In principle this should not be so, particularly if direct sowing techniques are used to establish some species, the high costs of preparing and repairing the soils are avoided, and if transport of personnel, tools and inputs is streamlined with the use of suitable vessels and motors.
- If, in terms of the development objective and the specific objectives, a comparison was drawn between the total investment in resources (US\$ 1,186,724) and the area managed (5,980 hectares) plus the reforested area in mangrove forests and on land (1,389 hectares), the median cost per hectare would be US\$161.04. This seems very low for reforestation and high for forest management, but consideration must be taken of the fact that besides the participatory development of the Management Plan and the establishment of plantations (with planting distances ranging from 1X2.5 m up to 5X5 metres and mostly 3X3 m), the Plan was also implemented and there was follow-up of the plantations over 24 months with project resources.
- The direct costs of designing the Management Plan were reported as<sup>5</sup> US\$ 645,500<sup>6</sup>, which means an approximate cost/hectare of US\$108, which could be considered somewhat expensive but reasonable for local conditions and a mangrove forest area. If direct costs of forest management (US\$ 645,500) are deducted from the global figure (US\$ 1,186,724), we have US\$541,224 to distribute among 1,389 reforested hectares and the other costs of the project; this would mean a cost/reforested hectare of US\$389.65, which is quite low.
- Based on the above, the conclusion is that the project used ITTO and Government of Panama counterpart funds effectively and efficiently.

<sup>4</sup> Personal communication by Patricia Rodríguez, ANAM Consultant.

<sup>5</sup> Plan de Manejo de los Manglares de la Bahía de Chame, CONFOREC S.A., 2007. (PDF file: Management plan report, Version 2, provided by ITTO).

<sup>6</sup> Assuming 1 Balboa = 1 US\$.

<b>Effectiveness</b>
<ul style="list-style-type: none"> <li>• The project provided for a good technical and participatory combination for the resources inventory, forest management and the development of management plans, thus helping achieve the intended outcomes, let alone exceed them.</li> <li>• The project was well designed from the outlay of the problems to be addressed to the selection of components and implementation strategy based on in-depth and ongoing coordination and involvement.</li> </ul>
<b>iii) Project proposal process</b>
<ul style="list-style-type: none"> <li>• In very general terms it could be stated that agricultural activities that compete for mangrove forest land use are legally grounded and historically, culturally and socioeconomically promoted; this has generated and is still generating enormous pressure to change land use in mangrove forests, thus putting the entire community at risk, in particular in the face of climate change and food security issues. Something similar is happening with infrastructure development.</li> <li>• The above would explain, at least in part, the reluctance of some farmers to be involved in the project with production activities based on agro-forestry and forest systems, in neighbouring lands or lands that were previously under mangroves.</li> </ul>

#### 4..1.2. [Project PD 349/05 Rev.2 \(F\) Criteria for the Management of Mangrove and Flood Forests in the Central Coastal Plains of Veracruz, Mexico: A Community Management Tool](#)

Before examining the specific project findings in detail, three aspects need to be highlighted which corroborate, document and alert on its global outcomes:

- The critical relictual status of flood forests associated to mangrove forests on the coastal plains of the State of Veracruz, resulting in particular (but not only) from extensive livestock and sugar cane operations.
- The close but fragile link between flood forest and mangrove forest ecosystems, together with the biological diversity and watershed regulation associated with such ecosystems on the coastal plains of the State.
- The fragility and vulnerability to landslides, floods and hurricanes impacting the community as well as transport, housing, trade, industry, tourism, food, energy, nuclear energy, ports and other infrastructure on the coastal fringe where most of the forest vegetation has been removed, and where the ability to regulate water and put up a defence against natural disasters has been gradually removed.

<b>i) Achievements of the project</b>
<b>Objectives and outputs with respect to planning</b>
<ul style="list-style-type: none"> <li>• The project achieved its single Specific Objective of developing an environmental and socioeconomic diagnosis and valuation of environmental services provided by the target area (Output 1.1).</li> <li>• Output 1.2 was achieved not only through the study of compatibility between the present use of mangrove forests and flood forests and their natural potential for production activities, as the basis for management policy allocations, but also through a land management proposal and applications for Ramsar site designations.</li> <li>• Output 1.3 was achieved by training 20 groups in the implementation of production projects. Eight of these were still active at the time of the ex-post evaluation.</li> </ul>
<b>Impacts and effects</b>
<ul style="list-style-type: none"> <li>• The local residents trained by the project are active in, and still working on maintenance and reforestation, fishing, ecotourism and manufacturing crafts, in accordance with the guidance provided by the Management Plans and in coordination with INECOL, SEMARNAT and CONAFOR, as well as other government institutions.</li> <li>• The common denominator was the intensive awareness building effort in the face of the environmental and socioeconomic circumstances, their responsibility and opportunities to implement environmentally sound activities and the long-term project.</li> </ul>
<b>Sustainability</b>
<ul style="list-style-type: none"> <li>• Efforts are ongoing with their own dynamics, mainly at INECOL and in local communities, but also with the cooperation of SEMARNAT, CONAFOR and supported by ITTO through the second project PD 045/11 Rev.2 (M).</li> <li>• INECOL has kept up uninterrupted field work with participating communities with major efforts towards dissemination and complementing outcomes, including with postgraduate Institute students.</li> </ul>

<ul style="list-style-type: none"> <li>• No signs of illegal logging were found in the areas visited.</li> </ul>
<p><b>ii) Design and Implementation Process</b></p>
<p><b>Suitability of Project Design</b></p> <ul style="list-style-type: none"> <li>• At the sites visited and, seemingly also in other swampy complexes, particularly in Alvarado, it was agreed that there was a need to use suitable vessels and motors for mangrove conditions. In operational and economic terms, this is a critical aspect for business venture success.</li> <li>• No forest fires, pests or diseases were detected or reported, but neither was any evidence found of explicit prevention actions.</li> <li>• As for Panama, the project was well designed and the document, particularly the logical framework, the schedule and budget, served as guidance for the implementation of each activity. The project requested a ten-month extension for various reasons, including two hurricanes<sup>7</sup>, without additional ITTO funds.</li> <li>• Both the concept and the design of this project were based on a participatory approach which also applied to its implementation and to the distribution of outcomes. INECOL A.C. was constantly in contact with, and made generous allowances for the involvement of local stakeholders and municipal, state and national institutions.</li> <li>• Women are the most outstanding stakeholders in the project for their enthusiasm, dedication, commitment and awareness. Although the marketing and trade of their products are going through a difficult time which is also affecting other production projects (only the group of La Mancha guides seems to have been able to overcome these barriers), INECOL, SEMARNAT and CONAFOR efforts will be able to help them achieve economic stability in their activities.</li> <li>• Members of INECOL personnel and local stakeholders involved in the implementation of the project in the field, are proactive, acknowledge each other, interact and are respectful of each other as key components in the sustainable management of mangrove forests and flood forests.</li> <li>• Some activities were missing, including cost analysis for production and improved trading and marketing skills for mangrove timber, non-timber products and services, evaluation of appropriate technologies, prevention of fires, pests and diseases, and concrete evaluations of land use.</li> </ul>
<p><b>Efficiency and Operational Aspects</b></p> <ul style="list-style-type: none"> <li>• Although INECOL did not organise a public forum on the project in its Internet site (as had been its intention), it did ensure a high level of communication and dissemination via links to micro sites and to the “Costa sustentable” (Sustainable Coast) micro site<sup>8</sup>, its intranet and through countless field visits to the area.</li> <li>• The following were not completed: (a) partial collection of <i>mycorrhizae</i> data; (b) no data collected on rich bird life; (c) the fisheries analysis was only partial; (d) partial model from the local community's point of view to incorporate an ecological-economic valuation of environmental goods and services; (e) the appropriation of management by the community, local and federal authorities through workshops for proposal validation and adjustment has not been completed; (f) there were no exchanges with Honduras and Guatemala, only with Panama; (g) the Technical Consultative Committee for the Conservation and Management of Wetlands in Veracruz could not be launched. In its place and for the time being at least, it was decided jointly with the community to request the inclusion of the work areas as RAMSAR sites, with the relevant documents delivered to CONANP and with INECOL in charge of following up the formalities.</li> <li>• The additional outputs of the project are a very good compensation and exceed the expectations of the project.</li> <li>• These included: (a) More detailed environmental diagnosis; (b) community awareness of hurricanes, floods and the role of wetlands; (c) analysis of soil water-holding capacity; (d) documentary on the journey of a consolidated production group, its impact on participants and the issues confronted; (e) analysis of the use of flora and fauna in flood forests and their potential use; (f) integration of a vulnerability model in the Tecolutla area, based on the pressure and status study; (g) definition of potential areas for rehabilitation in flood forests; (h) larger number of production projects than initially proposed; (i) association with the NGO Zicaro for business training purposes; (j) evaluation scheme of a community group with a sustainable project; (k) business plan for one of the groups and training programmes for the creation of microenterprises; (l) proposals of RAMSAR sites, management criteria and guidelines for management plans for each location; (m) much higher number of scientific publications with project outcomes and postgraduate theses; (n) mangrove forest and flood forest manuals, organization manual, ecotourism manual; (o) GIS for the area; (p) detailed analysis of land use change; (q) participatory management plans with communities and authorities.</li> </ul>

<sup>7</sup> Dean (22 August 2007) and Lorenzo (27 September 2007).

<sup>8</sup> <http://www.inecol.edu.mx/inecol/index.php/es/ct-menu-item-1/ct-menu-item-21>  
<http://www1.inecol.edu.mx/costasustentable/esp/presentacion.htm>

- The salaries and wages paid to project personnel and local stakeholders for their activities were in accordance with the Mexican socioeconomic context.
- The management of resources was subjected to a formal and independent audit, with compliance of both Mexican regulations and ITTO's specific project agreement. With the exception of particular delays in the legalisation of DSA and in budget transfers, these reports show that ITTO and INCECOL A.C. resources were managed appropriately.
- The investment in resources shows that the highest amounts were allocated to Research. The high production of technical and information documents and the quality and impact of the management proposals is fully justified.

#### **Effectiveness**

- The project produced outstanding technical and information articles.
- Documents were prepared to extend one RAMSAR site and for the designation of two new ones in ecosystem areas targeted by the project<sup>9</sup>, besides the proposal to manage the Veracruz coastal area and the management plans for specific sites. These applications involve guidelines and criteria for the respective Management Plans and are currently in progress before the National Commission of Natural Protected Areas, CONANP.
- Municipal authorities and very particularly, the ecotourism industry, have been made aware of the issues affecting mangrove and flood forests, and are interacting positively with communities and other stakeholders in the management of mangrove and flood forest ecosystems.
- The presentation of project outcomes at the start of the mission included slides to report on the outstanding results of the studies on carbon storage in the ecosystems studied. The details, which are still unpublished, are dramatic and deserve very special attention from INECOL, Mexican authorities, ITTO and other relevant organisations so that they can be best applied. These outcomes will be completed with the project that is currently funded by ITTO.
- No contribution for ITTO Tropical Forest Update was reported.

#### **iii) Project proposal process**

- Please see the relevant section for Panama, which also applies to Mexico.

## 4.2. Lessons learned

This section was prepared on the basis of the ex-post evaluation for each project, and contains common lessons learned as well as specific ones for each project.

- It would seem possible to reduce substantially the costs of future reforestation in mangrove areas and to strengthen more attractive value chains for various goods and services.
- The simultaneous execution of actions and activities dealing with awareness building, extension services, law enforcement and economic options for sustainable use, exerted a powerful attraction for local communities towards resource and ecosystem conservation and sustainable use in both projects.
- Several years, usually more than five, of uninterrupted actions are needed to consolidate resources and efforts of sustainable management and international trade projects in the hands of local able communities.
- With equal opportunities and incentives, women are as interested and actively involved as men in activities for the sustainable management of mangrove forest resources.
- Previous consultation and agreement, as well as close coordination of local, regional and central stakeholders, were a decisive boost to the viability and sustainability of both projects' actions and investments.
- During the implementation, the projects followed the project documents, agreed rules and guidance provided by the various ITTO guidelines for the restoration and management of natural and planted forests, which made a significant contribution to the success of the project.
- Costing, marketing and trade studies and activities are indispensable elements in designing forest projects. Universities and research centres and other institutions will always be good partners in these endeavours and provide support to local communities. Probably, this was one of the aspects that lacked in-depth detail in the design of these projects.
- It is quite common to have appropriate technology for each particular situation. Much like the previous case, these prior analyses and subsequent actions could be an integral part of project design, and there will always be an institution that is ready to provide support. This is mentioned specifically in connection

<sup>9</sup> The sites include: Extension of La Mancha-El Llano, proposal for the creation of Ramsar sites in the wetlands of La Apompal (Jamapa) and Wetlands in the North of Veracruz (Ciénaga del Fuerte and Tecolutla).



with the techniques for the production of charcoal (Panama) and for means of transport in mangrove forests (both projects).

- Mangrove and flood forests can also be seriously affected by forest fires, pests and diseases, and there is a need for projects to take precautions and implement preventative actions in these respects. It may be appropriate to mention here that in Mexico there has been an increase in the occurrence of a native climber, *Dalbergia brownii*, which grows a lot after a hurricane, and covers both dead and live trees and ends up killing them. This is a pest that requires attention.
- The study of land tenure regulations and customary land use must be a part of the analysis leading to project design; this helps avoid delays and cost overruns which could be foreseen.

#### 4.2.2. Project PD 349/05 Rev.2 (F) Criteria for the Management of Mangrove and Flood Forests in the Central Coastal Plains of Veracruz, Mexico: A Community Management Tool

### 5. Conclusions and Recommendations

#### 5.1. Conclusions<sup>10</sup>

Project PD 156/02 Rev. 3 (F) – Conservation and Reforestation of Threatened Mangrove Forest Areas along the Pacific Coast of Panama - Phases I and II

- The project made significant contributions to the objectives of the ITTA 1994, ITTO's Objective 2000, to the Yokohama Action Plan 2002-2006 and to ITTO's Mangrove Work Plan 2002 - 2006, particularly regarding the restoration and promotion of sustainable management of tropical timber producing forests. It also followed ITTO guidelines for reforestation and sustainable forest management and created initial mechanisms for the development of mangrove forest products and their marketing launch. Furthermore, it had a significant impact on awareness building, training and community organization. It also paved the way for project actions and activities to continue after project completion.
- The information on the project submitted by ANAM to ITTO, the information contained in the Project Coordinator's contributions for publication in ITTO's "Tropical Forest Update"<sup>11</sup> and the information presented by the Reforestation and Forest Management Division to the Committee and Council, are a very good reflection of the two phases of the project.
- The project fully achieved its specific and development objectives. The outcomes and goals were fully achieved.
- The project design was appropriate in general. The following aspects required either inclusion or more in-depth actions: (a) analysis of land tenure and use; (b) costing, marketing and trade of mangrove forest products and services; (c) evaluation and adoption of appropriate technologies; (d) prevention of fires, pests and diseases; (e) formal and independent self-evaluations of stakeholders involved, in particular local communities.
- The project was successfully executed in accordance with the initial formulation and ITTO guidelines and procedures, even exceeding the initial goals.
- The project excelled in its participatory work and coordination with local, provincial and national stakeholders and authorities.
- The involvement of women was outstanding, and years after the completion of the project, both women and men are still actively involved and committed to the actions that it launched.
- The extension services or training activities as well as the distribution of information, progress and outcomes were noteworthy and largely responsible for outcomes achieved.
- Based on the above, the conclusion is that the project used ITTO and Government of Panama counterpart funds effectively and efficiently.
- ANAM, jointly with its officials at the regional level, local communities and other municipal and national bodies, has continued the activities launched by the project, which means there is good potential for the continuation towards sustainable management of mangrove forests in Panama.
- It is very appropriate for Panama, for ITTO and for the sustainable management of forest resources, that the first project has identified and described the status of mangrove forest resources, while the second project has made progress towards the management, restoration and foundations for the sustainable use and trade from sustainably managed sources.

Project PD 349/05 Rev.2 (F) Criteria for the Management of Mangrove and Flood Forests in the Central Coastal Plains of Veracruz, Mexico: A Community Management Tool

<sup>10</sup> Based on the ex-post evaluation documents for each project.

<sup>11</sup> *The tide turns for Panama's mangroves*. Tropical Forest Update, 22/2.

- This project also made significant contributions to the objectives of the ITTA 1994, ITTO's Objective 2000, to the Yokohama Action Plan 2002-2006 and to ITTO's Mangrove Work Plan 2002 - 2006, particularly regarding the restoration and promotion of sustainable management of tropical timber producing forests. It also followed ITTO guidelines for sustainable forest management and highlighted aspects that required adaptation to local conditions. Furthermore, it had a significant impact on awareness building, training and community organization. It also paved the way for project actions and activities to continue after project completion. Although some minor activities and outputs were not completed, the number of additional activities and outputs achieved amply made up for this.
- Additionally, it is very appropriate for Mexico, for ITTO and for the sustainable management of resources in mangrove forests, flood forests and the coastal fringe of the Gulf of Mexico in general, that this first project has set the foundations for sustainable management and use and trade from sustainably managed sources, and that subsequently, the second project, RED-PD 045/11 Rev.2 (M) has been implemented and is also striving in the same direction, that is towards ITTO's Objective 2000 and its Mangrove Work Plan.
- The project fully achieved its specific and development objectives. The outcomes and goals were almost completely achieved.
- The project design was appropriate in general. More in-depth work would have been appropriate in the following actions: (a) costing, marketing and trade of mangrove and flood forest products and services; (b) evaluation and adoption of appropriate technologies; and (c) prevention of fires, pests and diseases.
- The project was successfully executed in accordance with the initial formulation and ITTO guidelines and procedures, even exceeding its initial goals.
- The project excelled in its participatory work and coordination with local, state and national stakeholders and authorities.
- The involvement of women was also outstanding, and years after the completion of the project, both men and women are still actively involved and committed to the actions that it launched. The balance, equity and harmony between men and women seemed outstanding in at least two communities and working groups.
- The extension services or training activities as well as the distribution of information, progress and outcomes were noteworthy and largely responsible for outcomes achieved.
- The expenses and investments seemed reasonable for a research project with a strong human component devoted to research and community work. Duty travel and consumable item costs seem comparatively low but, on the other hand, the miscellaneous items seem comparatively high, although in view of the distances and the community work of the project, they are acceptable. Capital item expenditure seemed very reasonable for a project of this nature.
- No major observations were included in the accounting audit regarding the management of resources from both sources, besides an indication of delays in legalising DSA under the regulations that govern INECOL and in formalizing minor budgetary transfers. On the basis of the reports submitted in Steering Committees, the contents of the final report and the review of project figures, it was concluded that the project invested ITTO and Government of Mexico counterpart resources effectively and efficiently.
- INECOL, jointly with the local community and other municipal and state bodies, has continued with its own resources the activities launched by the project, which means there is good potential for the continuation towards sustainable management of mangrove forests and flood forests in Veracruz.
- The project generated lessons relating to the suitability of project activities with respect to ITTO guidelines and C&I, although these were not systematically compiled.

## 5.2. Recommendations<sup>12</sup>

### Project PD 156/02 Rev. 3 (F) – Conservation and Reforestation of Threatened Mangrove Forest Areas along the Pacific Coast of Panama - Phases I and II

- ANAM, ARAP and the population are very much aware of the implications of institutional dichotomy for mangrove forest management (ANAM in protected areas and ARAP in the remainder); therefore, thanks to the project, they have held increasingly close discussions on regulations, compliance with regulation and planning for sustainable use. There is no doubt that the experience and lessons learned through the project could be used by the two bodies, and others, as well as the community, to provide appropriate guidance for regulations and planning.
- It would be ideal to see new actions and investments complement the achievements of these two projects, with the strengthening of sustainable international trade of non timber mangrove forest products, to ensure mangrove forest survival and balance with respect to other agricultural pursuits that put a lot of pressure for changes in mangrove forest land use.

<sup>12</sup> Based on the ex-post evaluation documents for each project.



- It would be advisable for ANAM and ARAP to assume a leadership role within Panama's Government and society for a study of the way to balance and manage the various agricultural activities and land uses and resources, in order to provide the best possible guidance and social, environmental and economic balance.
- It seems highly advisable that ARAP and ANAM should deal with and lead management for the sustainable use and conservation of remaining mangrove forests, especially those that are outside protected areas, taking advantage of the experiences and capacities gained by stakeholders involved in the project. With the available information and the experience gained it would be possible to act quickly, for example in the mangrove forests in Chiriquí, Darién, Herrera, Los Santos and the Caribbean.
- It would be advisable for ANAM and ARAP to take joint preventative action together with the other regional institutions and local communities, in order to prevent future forest fires in the Arco Seco de Azuero areas, and pests and diseases in the other areas.
- It would also be very convenient for these same stakeholders to consider the possibility of formulating a new project proposal to guide and pursue future actions, building on the achievements and lessons learned from the first two mangrove forest projects funded by ITTO.
- The manner in which activities have been and are being implemented in mangrove forest areas targeted by the project presents the opportunity to seek voluntary forest certification which would greatly help improve performance and gain access to new markets for goods and services.
- Another recommendation would be to seek a share of the CO<sub>2</sub> emission reduction/ mitigation markets.
- The project sought to manage mangrove forests and neighbouring zones on land both under protected forest cover and commercial forest cover. Despite the difficulties encountered with some producers and land tenure circumstances, this effort should continue to ensure the permanence of forest cover and the protection of the coastline, the population, infrastructure, food production and watershed regulation.
- Perhaps ITTO may wish to revisit a formal and independent self-assessment mechanism by the local communities involved in its projects.
- In view of the achievements of the project, local authorities and communities in both countries may wish to reconsider the idea of utilising mangrove forest goods and services commercially, as a complement to agroforestry and reforestation of non-salty neighbouring lands.
- Therefore, it would be advisable for both ANAM and ARAP to attend to the collection and improved dissemination of the experiences of mangrove nurseries, direct sowing and the amount of traditional knowledge among local stakeholders who worked in the project.
- Similarly, it would be advisable to try to make contributions and adjustments either at the national or mangrove ecosystem levels, to ITTO's guidelines for C&I, sustainable management and fire management in dry mangrove forest ecosystems.
- Strive, wherever possible, to resume the protection and measurement in the plots established to study growth in reforested areas.

Project PD 349/05 Rev.2 (F) Criteria for the Management of Mangrove and Flood Forests in the Central Coastal Plains of Veracruz, Mexico: A Community Management Tool

- It is the consultant's opinion that it would be advisable to launch new actions and investments to complement the achievements of the two projects funded by ITTO, with preparation for sustainable international trade of non-timber mangrove and flood forest products; although this has been suspended by law or is impossible as a result of the status of flood forests, with forest management systems that ensure conservation, restoration and sustainable use, this option would bring much livelihood relief to local communities as well as competitiveness for these ecosystems with respect to other agricultural uses such as extensive grazing and sugarcane. Furthermore, there is another option: that of investing in the conversion of agricultural operations to agroforestry or grazing-forestry systems which are better suited to the environmental conditions of the coastal area of Veracruz.
- It would be advisable for INECOL, CONAFOR, SEMARNAT and CONANP, together with SAGARPA, to assume a leadership role within Mexico's Government and society for a study of the way to balance and manage the various agricultural activities and land uses and resources, in order to provide the best possible guidance and social, environmental and economic balance.
- Although the above is a major challenge for many countries, Mexico has two advantages: (a) forests and water have been declared national security elements by presidential decree, and the National Environment and Natural Resources Programme 2001-2006 provides the need to stop and reverse environmental degradation, as a national security priority; and (b) CONAFOR has

issued calls for the payment of environmental services provided by various tree ecosystems, including mangrove forests<sup>13</sup>.

- It would be advisable for the relevant state institutions and local communities to take preventative action and assess and prevent forest fires, and pests and diseases in the area. The pest that is having a severe impact on coconut palms on the coast is but an indication of what could happen to other forest species.
- The manner in which activities have been and are being implemented in mangrove forest and flood forest areas targeted by the project presents the opportunity to seek voluntary forest certification (or another type of certification that is better suited to the relevant production activity), which would greatly help improve performance and gain access to new markets for goods and services.
- Another unavoidable additional recommendation is to redouble efforts to gain a greater share of CO<sub>2</sub> emission reduction/mitigation markets.
- It would be advisable for INECOL to formalize its recommendations for adjustments in ITTO's guidelines and C&I to local conditions and more specifically, to mangrove and flood forest conditions.
- Furthermore, it would be advisable for INECOL, CONAFOR, or SEMARNAT, whichever is the most appropriate, to provide urgent support to community groups that have launched commercial operations, in order to help them overcome their basic problems of accumulated stocks, marketing, trade and product and service quality. The economic failure of these groups could be very counterproductive and a grave setback for all the advances achieved.
- There was little evidence of close cooperation between the bodies that were so deeply involved in the project and the offices of the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA). Similarly to many other countries, this dichotomy makes it difficult to advance towards forest management and sustainability. If this assessment is correct, it is recommended that INECOL, CONAFOR, SEMARNAT and CONANP, as well as other institutions, work together with the former to appropriate the outcomes and coordinate work to strengthen forest, production and ecosystem management in the Veracruz plains.
- Make an INECOL A.C. contribution to ITTO Tropical Forest Update.