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# META-EVALUATION OF PREVIOUSLY EVALUATED ITTO PROJECTS

## Lessons learned & good practices towards sustainable management of tropical forests

## Summary Report

### 4. Restoration, rehabilitation, reforestation and plantations

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**THEMATIC SUMMARY REPORT No. 4**

**RESTORATION, REHABILITATION, REFORESTATION, AND PLANTATIONS**

## 1. INTRODUCTION

Restoration, rehabilitation, reforestation and general forest plantations projects are undertaken for a variety of environmental, economic and social objectives. The most common activities are those related to rehabilitation of degraded lands and establishing productive plantations as well as to supply other forest goods and services such as protective and amenity services.

Associated research projects, often with experimental nature, are essential to improve knowledge on technical and economic aspects and ensure establishment of enabling conditions for successful tree plantation programmes (especially for high-value and indigenous species). Such projects can also help establish and train national entities responsible for field activities and monitoring.

All ITTO–funded projects in this domain are intended to contribute to the realization of the ITTO Objective 2000 and the sustainable management of forest resources, taking into account relevant ITTO guidelines. The projects must comply with the International Tropical Timber Agreement, particularly with Objective 1 (j) "*To encourage members to support and develop industrial tropical timber reforestation and forest management activities as well as rehabilitation of degraded forest land, with due regard for the interests of local communities dependent on forest resources*."

The ITTO Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests provide useful principles and recommended actions to help project formulators and implementers. Another important source of information is the ITTO Guidelines for the Restoration, Management and Rehabilitation of Degraded and Secondary Forests which specifically address the challenges of restoration of fragile and impoverished land and degraded forests.

## 2. KEY ISSUES

- Halting forest degradation which can lead to total loss of forest productivity with serious social, ecological and economic consequences both locally and nationally.
- Replacing unsustainable forest use with sustainable management and utilization of forest resources with long-term social, economic and environmental benefits for local communities and the nation at large. For example, overgrazing leads to land degradation and the clearing of forests for pasture often acts as an incentive for irrational timber exploitation resulting in deforestation. This degradation process usually leaves behind a social legacy of poverty and loss of community rights due to increasing pressure on land.
- Diversification of the tropical timber supply by plantations due to dwindling production from natural forests which is a major concern in most producing countries.
- There is often little clarity about the long-term objectives of programmes and projects beyond planting any kind of trees. Therefore, the choice of species may be inappropriate, reforested areas may not be maintained, and when harvesting of mature trees starts, there may be no markets for products.
- Local participation in the implementation of tree planting projects is often neglected or minimal resulting in conflicts in the rights of the land to be planted and the use of forests. Projects may not meet the expectations of the forest dwellers and adjacent populations and they may not benefit from the activities realized.
- Reforestation projects may be promoted with local participation but without due consideration of the need to ensure the flow of economic benefits for the people who easily lose their interest in maintaining reforested areas if there are no tangible incentives.
- Illegal logging may continue in the area in spite of on-going efforts to restore natural forests and to establish new planted forests. Illicit activities may continue to be practiced because they generate

employment and income for some community members while undermining the economic feasibility of restoration and reforestation efforts.

- Engaging local communities, farmers, the private sector, NGOs and other stakeholders in forest restoration and plantation development and maintenance is often limited in government-led programs.
- Inappropriate choice of suitable species, provenances and sites for reforestation is often due to lack of adequate information.
- Activities and results of projects are frequently inadequately recorded and therefore valuable experiences cannot be disseminated.
- In some afforestation projects the economic feasibility of plantations may be demonstrated, but promotion with the private sector, the main source of expected future financing, is lacking.
- Lack of economic information often makes it difficult to assess and promote restoration and planting activities.
- Projects have rarely pragmatic exit strategies beyond the project completion date and due to termination of external support activities they may collapse.

## 3. LESSONS LEARNED

***Project design***

- The objectives of reforestation projects are often too ambitious, their duration is too short, and involving local communities based on a participatory approach suffers from a lack of experience. Proposed outputs are in many cases excessive in relation to proposed inputs. Multiple objectives and projecting unattainable results should be avoided;
- There is a tendency to make over-optimistic assessment of risks which can have negative effects particularly on projects divided into successive phases. Project planners need to carefully assess what is achievable.
- The concept of community development is a fundamental element of restoration and reforestation projects in all the tropical regions even in cases where the population density is low.
- Integration of agroforestry activities can be a decisive element for the generation of benefits to farmers particularly, during the first years of the project.
- Failure to achieve some objectives can be due to inappropriate, even erroneous identification and involvement of partners and beneficiaries.
- In addition to community groups, small-scale nursery operators and private tree farmers can be a very important component of the project strategy.
- Projects implemented close to communities that do not benefit directly from project activities may suffer from unforeseen risks due to pressure from other land uses.
- If prevalent, illegal logging needs to be addressed to ensure economic sustainability of forest restoration and plantation projects.
- Project results tend to mostly depend on the ability to capture the interest of partners and ensure their proactive cooperation. This is in turn dependent on their participation during project formulation.
- When population density increases, tenure in planted forests becomes a real issue and needs to be specifically addressed. However, this may fall outside the project scope and contingency plans to address this risk need to be considered from the outset.

***Project implementation***

- Geographically extensive projects can be faced with diverse demands by a large number of stakeholders. Lack of active commitment on the part of some of them may become a major pitfall, leading to delays in the implementation of activities, a rapid turnover of unmotivated teams and delays in dissemination and reporting. In regional projects of this kind, all the interests need to be incorporated in a balanced way.
- If a project was initially planned to be implemented by a government agency, but no progress could be seen, implementation may be assigned through subcontracting to a competent NGO with track record on successful field-level activities.
- The success of a project depends on the high level of commitment and professional skills of the project teams and the participating government forest administration staff. Necessary skills include both technical and social aspects.
- Training on the ground is usually highly needed. It should be mainly practical and training materials broadly available. Study trips abroad, particularly to neighboring countries, can be valuable eye openers.
- Project coordinator may spend a lot of her/his time managing the overall communication, logistical, financial and administrative aspects of the project at the expense of its qualitative monitoring.
- Monitoring and evaluation of project implementation, through self-evaluation workshops and stakeholder meetings, contribute to smooth project execution.
- Several projects have not created any dissemination mechanisms which limit project impacts. The dissemination and exchange of experiences and results is a necessary activity in all restoration and reforestation projects. However, the effectiveness of dissemination is jeopardized if the results were not published or communicated to stakeholders.
- Delays during the implementation could happen due to political changes in the country and other factors such as security concerns and tenure issues.
- Some forest restoration projects are implemented assuming a second phase would follow immediately. Consequently, some intended activities may not be implemented. The project plan should have provisions for a situation in which the subsequent phase of support is delayed or may not come forward.
- Mixed co-management between the local NGO's in charge of organization and dissemination and the government forest agency for technical assistance has been an excellent arrangement in many cases but the experience shows that it requires clarification of partner roles and commitment to meeting deadlines.
- Training of community level trainers can be another success element in the project strategy. Training at the basic level is the key. Collaboration between government agencies and NGOs in organizing training improves impacts and efficiency.
- Because subsequent funding is sometimes not obtained, actions initiated by some projects may have to be halted half-way through, to the disappointment of rural beneficiaries who were the most adversely affected by forest degradation. This can lead to loss of credibility and lack of continuing motivation among all the actors involved.
- Delaying the distribution of the planted forest management plan among stakeholders restricts its use and impact.

***Participation and partnerships***

- A forest planting project is often a good way to start a process of local participation, to make community members aware of the sustainable forest management concepts and the importance of restoration and reforestation. Specific action is needed thereafter to convert this awareness into action.

- Sustainable timber production can be viable and realistic for local stakeholders only after necessary steps have been taken for community development involving services, education, health care and other developments.
- It has proved to be an extremely difficult task to find suitable livelihood alternatives in degraded areas and make them adopted by people within a short project period.
- A successful planning process at community level can include (i) a well-conducted consultation process, (ii) technical and economic viability of different production options; (iii) preparation of the forest management plan and its swift approval by the authorities, and (iv) building up of stakeholders' commitment to implement the plan.
- Before starting on project activities, a preparatory stage may be needed for observation and evaluation of the on-going practices and initiatives by the population which can be suitable for adaptation and integration, rather than bringing something entirely new from outside which may not work in practice.
- Identification of beneficiaries and partners is essential and preliminary workshops and meetings are useful for this purpose. However, geographical characteristics, language barrier and communication difficulties have often led to partial understanding of the problems and possible solutions thereby reducing full achievements of the targeted results. Building up an effective participatory process may often require more time than the duration of the project
- The high cost/benefit efficiency of restoration and plantation projects is essential for success for local community participation. The economic and social impacts of tree planting projects are usually positive but need to be practically demonstrated to local people.
- Decentralization and democratization can both pave the way for people's own initiative in sustainable development including forest restoration and plantation development.
- Population has often difficulties to see the benefit link between degradation and reforestation. This is particularly the case when unsustainable wood harvesting continues for basic livelihood while replanting is being promoted. People should consider replanting more an economic than environmental activity to get truly motivated.
- Distributing seedlings free may lead to negligence in the handling and planting. However, sometimes local people are so poor that even a token price for seedlings could not be afforded.
- Local communities should understand the need to set up a local committee for forest protection and reforestation; this often greatly contributes to ensuring effective community participation in the achievement of the project outputs;
- Women's participation is particularly important in nursery operations, fuelwood collection, NTFP-related activities and project management. Their leadership can often ensure that projects become socially acceptable and local stakeholders broadly engaged in implementation.
- The social capital through solid community organization and good relations between the forest authority and local populations as well as demonstrated results in the field are likely to lead to project sustainability. This may be sufficient but formal monitoring and agreements on follow-up actions are often necessary.

***Restoration***

- In certain situations restoration of degraded forests may not be justified due to their limited economic outcomes although it may be desired by community members. In such cases it is better to concentrate on plantations which can yield economic returns from wood and NTFPs.
- Local populations can significantly contribute to restoration of degraded areas by enhancing low-cost natural regeneration through protection against fire, uncontrolled grazing and illegal logging, but they need to be provided with incentives to make this happen. Good basic organization of the community has

been the main factor for success for the involvement of local people in restoration and plantation activities.

- Mobilization of adequate funds, technical assistance and human resources is usually needed for continuation of restoration and reforestation activities. This is a critical element of exit strategies for time-bound projects. One source of financing can be revenue from seedling sales of a community-operated nursery but the problem can be that people often are too poor to pay even a low price for seedlings. In such cases other funding would be needed.

***Plantations***

- In plantation projects for production purposes, it is often questionable to choose species to be planted in the absence of adequate future demand-supply studies. On the other hand, the available information is always imperfect and the right decision becomes known only with hindsight.
- Tree planting can be efficient and proceed according to the schedule but tending is often totally missing. If economic incentives for tending cannot be provided, at a minimum, the government agency needs to provide technical advice.
- Demonstrating the potential of establishing high quality production plantations is not enough as further action is often needed to fully convince local communities, farmers and the private sector on their economic merits.
- Adequate field-level studies of economic, financial, social and environmental feasibility of forest plantations are necessary to justify investment by the private sector, farmers, local communities or the government.
- Competitive industrial plantations in the tropics need state of the art technology, detailed surveys, and adequate research and development.
- Good selection of species and sites, high-quality genetic material and improved techniques are key ingredients of successful plantation projects. Forest investors prefer to have plant material of high quality (even if paying more) and well suited species for the sites.
- If elaboration of the management plan for planted forest is completed only at the end of the project, implementation cannot be ensured. There should be a clear strategy for how implementation can be supported in a systematic way.
- Agroforestry activities are important in generating short-term income thereby ensuring farmers' participation. On the other hand, some agroforestry practices may lead to larger than optimal spacing of planted trees (but the trade-off is less important than ineffective community participation).
- A local forest fund financed through a small tax on the sales of forest products, even though modest, can support critical activities related to forest plantations and restoration even in cases where the main project support has terminated.
- Private companies can be convinced to participate in the funding of follow-up activities with smallholders and communities to increase wood supply for their industrial plants.

***Research***

- A research element is essential to systematize technical knowledge on selection of sites, species and provenances, methods of propagation and maintenance of planted areas.
- Studies and research in this area suffer from inadequate attention to the acceptance of technologies by communities, farmers and the industry thereby limiting adoption of improved practices.
- Lack of relevant documentation on previous experiences at the project start and on obtained results after project completion seriously limits sharing of lessons learned. Good experimental works are often being carried out but very little is documented, analyzed and systematized.

- The success of reforestation projects should be underpinned by good science, as well as the keenness of the scientists to pursue it.
- Recording systems of technical activities are usually needed to provide a basis for systematization of the knowledge obtained. If there is no monitoring and recording system for activities and their outcomes, it becomes impossible to verify and assess achievements in detail.
- Technical research projects tend to be focused but there is also a need to carry out research on social impacts. Results can be valuable for private organizations or NGOs involved in the promotion of restoration, reforestation forest production.
- Selection of multiple experimental sites is often over-ambitious, albeit reflecting a desire for scientific perfection. Multiple experimental sites should be avoided, especially if remote and difficult to access, as logistical and administrative monitoring conditions can weigh down effective management and hinder sustainability;
- It is always important to ensure maintenance of surviving plantations and appropriate silviculture operations in general but, in research projects on planted forests, this is particularly vital. Research plots may be cleared or burned by uninformed or misinformed local communities leading to a serious loss of costly investments.
- Close relationships are needed between the research (the species, plantation and progeny trials, etc.) and the users of results (the private and state forest companies, forest communities, farmers, etc.). Working closely with the potential users of the research outputs has the benefit of minimizing any mismatch between research and operational activity.
- Establishment and strengthening of a specialized unit for R&D can be a good strategy to ensure the sustainable use of the acquired knowledge.
- Executing agencies and beneficiaries tend to consider that research and development projects are mainly the responsibility of external financial support. Without follow-up financial support, project outputs are sometimes (if not often) ignored or neglected despite their high cost.
- The minimum duration of forest research projects, which incorporate aspects of pure and applied research, is around five years but often much longer. Therefore, long or medium-term technical support may have to be ensured. Although a research project extension may be needed, additional funds may not be requested. This reflects optimistic underestimation of the time needed to implement research activities.

## 4. GOOD PRACTICES

***Project design and implementation***

- Good project preparation correctly identifies stakeholders, beneficiaries and partners to be actively involved.
- Activities should be demand driven; adequate control and decision mechanisms should be put in place; and permanent staff dedicated to the project should be ensured.
- The preparatory phase of the project may take longer than planned but it is essential to ensure good participation of local communities.
- There is a need for careful selection of partners and adequate consultation to clarify expectations and commitments during the planning stage. Participation of appropriate educational and research institutions is essential to research and training activities carried out by the project.
- As a proven practice, the project should reflect strategies in line with the national forest policy, taking into account the specific local context.

- A good preparation process includes sufficient surveys and consultations with the stakeholders in order to clearly identify the viability of SFM in the target area, requirements for approval of the forest management plans, and the roles and necessary commitments of the stakeholders. A feasibility study or pre-project study can be useful, particularly in larger projects or when the available information is not adequate for project design.
- Adaptive implementation is a good practice. Changing conditions or errors in the project design may lead to adjustment of the project strategy. For example, the activities may have to be geared towards effective demand rather than to increased supply. This could apply, e.g., to the establishment of a productive nursery, demonstration plantations on a large scale, and promotion of native species.

***Restoration and rehabilitation***

- Restoration projects involving enrichment planting can have significant impacts when:
  - guidelines on enrichment planting techniques are developed and used nationally; ITTO's guidelines for restoration provide a useful framework for such national guidelines.
  - adequate reconnaissance surveys of the areas to be planted are undertaken to match species to site conditions
  - accumulating knowledge is used in further development of techniques and practices;
  - establishing wildlife corridors and other approaches to improve connectivity in fragmented forests hampered by timber harvesting and other land use practices
- Over-mature seedlings that cannot be used in rehabilitation planting can be provided to schools and other community groups for use in amenity plantings.
- The establishment of agroforestry plantations by local farmers can be a viable alternative economic activity to pure tree plantations in the rehabilitation of some degraded areas. However, projects should demonstrate the significant economic and social potential that agroforestry can have.

***Projects involving tree planting***

- When designing a plantation project, management planning and timber harvesting should be considered. Clear understanding of targeted markets would help avoid investment failures.
- Dedicated seed collection/processing teams can be designated to collect and process seeds from SPAs, preferably for use in all nurseries. Training in safe tree climbing is necessary.
- Experience on raising seedlings should cover both local and exotic species for commercial plantation development and restoration/rehabilitation of natural forests.
- Efficient and safe methods of transporting seedlings are necessary, thereby enhancing survival rates.
- A visual method for determining when planted seedlings require fertilizer such as nitrogen, phosphorus and potassium (NPK) should be developed. Research is usually required to understand how much fertilizer to apply and what is the most efficient way to apply it to obtain maximum benefit.
- Tree planting projects can be successful when:
  - seed production areas are established and seed quality standards are developed
  - all the mother trees selected for the plantations and progeny trials are mapped and recorded, to enable easy identification;
  - the trials established for basic species selection, species and progeny trials consider both local and exotic species, are well maintained, and used for on-going research, learning and teaching;
  - nurseries are well maintained and are used for on-going research while producing planting materials;
  - procedures for grading and selecting high quality seedlings are in place
  - planting models successful at comparable site, climatic and economic conditions; are developed;

- climatic and edaphic constraints are respected to avoid planting haphazardly and/or at the wrong time;
- the status of soils (structure, drainage, fertility, degradation risks, etc.) covered by various types of plantation is carefully studied and managed;
- financial and economic analyses demonstrate that afforestation and restoration options, new silviculture systems and planting models are cost-effective and economically viable to promote community and private sector investment;
- economic and financial analyses are carried out on different in order to determine the appropriate cost structures;
- economic and financial incentive mechanisms are created for the benefit of local communities and to attract the private sector;
- appropriate technical support and supervision by the government are provided to ensure high rates of seedling survival in planting by the private sector and communities;
- an extension strategy is an integral part of the project including dissemination activities including on-site training activities;
- staff and students continue to be trained;
- support is provided to research into further developing and refining innovative silviculture systems and planting models for restoration of degraded forests and lands;
- good models of public-private partnership are identified which could be replicated ;
- risk assessment considers externalities such as the availability of appropriate planting stock and planning of alternative planting schedules in order to avoid delays in field activities;

***Research***

- Partnerships between universities, research and development institutes, NGOs and local communities are useful to ensure demand driven research and sharing of responsibilities.
- Research projects often need to be complemented by targeted activities to raise awareness among beneficiaries and decision-makers, technical training and extension.
- Preparing and disseminating reports on successes and gaps in the existing knowledge is a good practice to avoid repeating costly experimental or demonstration plots which have already failed.
- Transfer of technology can involve publication of scientific research results, technical and other reports, training courses, handbooks and brochures as well as participation in regional and international conferences.
- A combination of state-of-the-art technology and local R&D efforts with participation of local wood processing companies is often an appropriate approach to develop technologies for value-added industry utilizing tropical plantations.
- The continuity of research projects can be ensured through the appropriate promotion of their results and through elaboration of new follow-up projects.
- A complete record of project activities, including monitoring and evaluation of positive and negative outcomes, helps replicate success and avoid repeating failures. A research and development unit may be necessary to compile and disseminate the information.
- Strengthening of networks linked to the project before and after its completion, as well as linkages with other forest organizations working in the same field may be necessary for mainstreaming of project results.

***Participation***

- In order to find solutions to increasing environmental degradation related to deforestation and to combat forest degradation, projects need to particularly focus on community development and other social issues related to SFM.
- Good practices for awareness raising and organization of community members include (i) building on traditions of working in groups and through communities' own organizations, and (ii) informing people that their livelihood depends on the protection of vegetation and that tree planting is a good, often the only, way to improve their livelihoods in degraded areas.
- Participative rural appraisal and broad-based campaign to promote reforestation are often the key to success. Community participation can be best organized through formal committees which ensure systematic approach by the community to development.
- Engaging local communities living around the experimental sites and placing trust in local forest owners can reduce the risk for destruction of planted plots. Incentives may have to be provided to mitigate the risk.
- Clear and transparent rules and mechanisms for sharing of benefits between the government, the community and other actors undertaking forest plantation are often necessary and need to be clearly communicated. Benefit sharing through contractual arrangements could be better than through regulatory rules.
- Demonstration of the economic and social impact of tree planting projects to local people is a feature of successful projects.

***Sustainability***

- Measures to ensure the uptake of the outputs and continuation of some project activities after completion is often necessary.
- Periodic assessment of experimental plantations (including assessment of nurseries, propagation and irrigation systems) is necessary to determine silvicultural priority activities that should be continued together with long-term maintenance and protection of planted areas.
- The acquired knowledge and results need effective dissemination on websites and through other means in order to share and exchange information with other research or support organizations which could potentially contribute to future initiatives in the field.
- Assessment of policy implications of pilot and demonstration projects is necessary for preparation of adjustments in the policy and institutional framework to ensure mainstreaming of the project results.
- A forestry fund can be the determining factor for sustainability of reforestation activities.

**SOURCES**

This thematic summary is based on the ex-post evaluation reports of the following projects:

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|---|---|
| PD 68/01 Rev.2 (I) | TRAINING IN REDUCED-IMPACT LOGGING IN GUYANA |
| PD 69/01 Rev.2 (I) | IMPROVED AND DIVERSIFIED USE OF TROPICAL PLANTATION TIMBER IN CHINA TO SUPPLEMENT DIMINISHING SUPPLIES FROM NATURAL FORESTS |
| PD185/91 Rev.2 (F) II | SUSTAINABLE FOREST MANAGEMENT AND DEVELOPMENT IN PENINSULAR MALAYSIA - PHASE II |
| PD026/93 Rev.1 (F) | DEVELOPMENT OF BENTUANG KARIMUN NATURE RESERVE AS A NATIONAL PARK - PHASE I |
| PD018/94 Rev.1 (F) II | PARTICIPATORY FOREST DEVELOPMENT IN THE ALTO MAYO REGION FOR THE SUSTAINABLE MANAGEMENT OF MOIST TROPICAL FORESTS |
| PD013/96 Rev.1 (F) | MULTIPLE-USE MANAGEMENT IN THE MACAUA NATIONAL FOREST BASED ON RUBBER ESTATES - PHASE I: DEVELOPMENT OF MASTER PLAN TO SUPPORT COMMUNITY ORGANIZATION |
| PD017/97 Rev.3 (F) | PILOT PROJECT FOR THE REFORESTATION AND REHABILITATION OF DEGRADED FOREST LANDS IN ECUADOR |
| PD044/99 Rev.2 (F) | IMPLEMENTATION OF A MANAGEMENT PLAN BY THE CHIQUIACA AND OROZAS COMMUNITIES IN TARIJA, BOLIVIA |
| PD051/99 Rev.2 (F) | SUPPORT TO GRASSROOT FORESTRY PROMOTION INITIATIVES IN THE YOTO AREA |
| PD041/00 Rev.3 (F,M) | MODEL DEVELOPMENT TO ESTABLISH COMMERCIAL PLANTATION OF DIPTEROCARPS |