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Local Participation, Livelihood Needs, and Institutional Arrangements: Three Keys to Sustainable Rehabilitation of Degraded Tropical Forest Lands

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Key Points to Retain

Three key lessons have emerged from a Centre for International Forestry Research (CIFOR)-led study on reforestation/rehabilitation/restoration in six countries:

1. It is necessary to strengthen local organization and participation in restoration projects.
2. It is necessary to consider local socioeconomic needs in choices of approaches and options.
3. In the long run, it is necessary to ensure that clear and appropriate institutional support and arrangements are in place.

1. Background and Explanation of the Issue

In many tropical countries, government agencies, international agencies, the private sector, and civil society have expended much effort and resources in forest rehabilitation activities

to meet rising demands both for forest products and environmental services.⁵⁰¹ The projects have differed in scale, objectives, background conditions, and implementation strategies, and results have been variable. It is critical to draw strategic lessons from these experiences and use them to plan and guide future efforts to increase their chances of success and long-term sustainability. The key lessons and examples in this chapter are based on the preliminary results of the study *Review of Forest Rehabilitation Initiatives—Lessons from the Past*, undertaken by CIFOR in collaboration with national partners in six countries: Peru, Brazil, Vietnam, the Philippines, Indonesia, and China. The study involved a comparison of a full range of forest rehabilitation projects in each country, an assessment of the technical, ecological, and socioeconomic outcomes of selected case studies, and workshops to obtain the inputs of concerned stakeholders (<http://www.cifor.cgiar.org/rehab/>).

The review focussed on initiatives that aimed to establish trees on formerly forested land to enhance productivity, livelihoods, or environ-

⁵⁰¹ Sim et al, 2003; Sayer et al, 2004.

mental services through deliberate technical, socioeconomic, or institutional interventions. Integrated projects with forest rehabilitation components were also included. The assessment looked at any rehabilitation methods that involved trees, including agroforestry, plantations, and assisted natural regeneration.

Countries have chosen a variety of approaches and incentives to rehabilitate degraded land driven by many different considerations. The four Asian countries in the study have a long history of forest rehabilitation, and the governments played a major role in providing funds and implementing projects, particularly in early efforts. International donor-funded forest rehabilitation increased in importance in recent decades. The trend is now toward more private sector, community-based, and local government rehabilitation efforts for production, livelihoods, or environmental benefits. In the Philippines and China, this translates into a diversity of tenurial and institutional arrangements with the involvement of multiple actors and a range of objectives. Project outcomes on the ground are unclear, but China and Vietnam report success in terms of increased forest cover. In Vietnam, China, the Philippines, and recently Indonesia, political motivations and policy changes have led to intermittent large-scale efforts. Planting trees, in particular fast-growing exotic species, has been the predominant method in Asia, although natural regeneration through protection is also important in China and Vietnam.

In contrast to the larger role played by government in Asia, small-scale farmer rehabilitation efforts appear more important in Brazil and Peru, with colonist agriculture and livestock production being the major land degradation factors. The government mainly provides incentives and schemes for farmers' participation. In Brazil, farmers' associations play an important role in project discussion and support. Rehabilitation efforts are also more recent, since the 1990s, and fewer in number, although growing. Projects are small in size and involve agroforestry cash crops, fast-growing native tree species, and integration with other livelihood activities like bee keeping or fish production.

1.1. Three Key Lessons Learned from Past Rehabilitation Projects

Three lessons have been learned on sustaining rehabilitation efforts of degraded tropical forest lands across the six countries reviewed:

1. Strengthen local organisation and participation in projects. More attention should be given to involve, work with, and strengthen local participation from project conceptualisation to implementation and management. Active participation of the key actors taking into account local knowledge and practices is essential for sustaining the effort. Agricultural and forestry policies should aim to develop and strengthen local organisations and promote appropriate strategies for technology transfer. (Fig. 58.1) A well-organised group has higher possibilities of succeeding, particularly during the phases of product harvesting, processing, and commercialisation. Numerous positive and negative cases exemplifying this lesson exist across the Peruvian and Brazilian Amazon, the Philippines, and Indonesia.

2. Consider local socioeconomic needs in choices of approaches and options. Livelihood-enhancing activities must be part of the plan, and projects developed should address the needs of people in the area in order to ensure their participation and interest in sustaining the project. In some instances, rehabilitation projects have actually deprived people of their original livelihoods (such as agriculture on the lands to be rehabilitated), while not providing viable alternatives. Many cases were observed across the Philippines and Vietnam where the project beneficiaries subsequently burned the project area so that they could be reemployed in the process of replanting or rehabilitation. It is imperative to carry out a socioeconomic analysis of promising production systems and small-scale trials before promoting them. It helps if local farmers and communities benefit directly from the rehabilitated forests. Technologies to be promoted should match the situation and capacity of the producers. Tree-based production systems that incorporate tree species with shorter harvesting cycles and good market prospects tend to be more adoptable. Processing and commercialisa-

FIGURE 58.1. Social forestry programme by the Ministry of Forestry with local farmer participation on private lands in East Kalimantan. The planted species, teak, was selected by the farmers. (Photo © Takeshi Toma.)



tion of products should be considered from the start if rehabilitation aims at economic objectives. Integrated production systems (e.g., agroforestry, livestock, and fish) can help increase food security and overcome market instability. Positive and negative cases exemplifying this lesson exist in all six study countries.

3. Ensure clear and appropriate institutional support and arrangements. Strong and appropriate institutional support is critical for promoting investment and local participation in rehabilitation projects, and ensuring their sustainability. This includes clear and undisputed land-tenure status, a facilitating legal framework and policies, and good coordination among agencies at different levels. Also important are formalised institutional arrangements with clear division of tasks, rights, costs, and benefits among multiple stakeholders as a result of thorough and mutually acceptable negotiations. Clear and mutually accepted institutional arrangements help to avoid conflicts, support coordinated project management and fulfilment of assigned tasks, and ensure agreed-upon benefit flows to different stakeholders and their stake in the long-term success of the project. Enforcement of agreements is an important part of such institutional arrangements. Positive and negative cases exemplifying this lesson exist in Vietnam, China, and Indonesia.

These three factors that contribute to successful forest rehabilitation are highly inter-

related and occurred across different project types with different implementing actors, project scales, objectives, funding sources, and socioeconomic conditions. Project types ranged from government-driven reforestation to community-based forest management, joint management, state or private company plantations, company–community partnerships, cooperative or group activities, integrated livelihood projects, and private tree farming or agroforestry. Each of the three lessons is illustrated below with cases from different countries. Some cases are illustrative of more than one of the specified lessons, but have been placed under the major lesson to which they relate.

2. Examples

2.1. Strengthen Local Organisation and Participation in Rehabilitation Projects

2.1.1. *KMYLB (Farmers Association for Forest Land Inc.) Agroforestry Development Corporation, Brgy, Nugas, Alcoy, Cebu, Philippines*

KMYLB is a community-based forest management (CBFM) project of the government of the Philippines' Department of Environment

and Natural Resources, located in a public forest area in southern Cebu. The project area of 1651 hectares was occupied by settlers early on and subject to a government-led social forestry programme in the 1980s with many farmers granted the Certificate of Stewardship Contract. This was followed by the issuance of a reforestation contract in 1996 for people to develop the remaining open areas. As part of the reforestation contract, there were community organising activities that gave birth to KMYLB as a people's organisation. The people's organisation was then given the CBFM agreement in 1999 by the government, consolidating the many stewardship contract areas, the plantations, and the remaining natural forests in the area. Community organising was one of the major activities that enabled active community participation in forest development and protection. High levels of cooperation and interest in CBFM activities have been observed among community members. Each member is assured of continuous benefits from the forest through individual forest gardens and community plantations. Many organisational problems did occur, but these were transitory and helped the organisation mature and strengthen its internal policies. The strength of the people's organisation and its successful development and protection of the CBFM area also makes it a magnet for supportive infrastructure and livelihood pro-

grammes from international nongovernmental organisations (NGOs) and others.

2.1.2. Agroforestry Development in the Rio Cumbaza Basin, Peru

The San Martín region, with a land area of 1.9 million hectares, is the most deforested area in the Peruvian Amazon. Deforestation and land degradation are mainly due to short-rotation slash-and-burn agriculture and the production of illegal crops. The project Management, Conservation, and Productive Development in the Rio Cumbaza Basin (1997–2001) executed by the NGO CEDISA (Centro de Desarrollo e Investigación de la Selva Alta), promoted agroforestry systems for rehabilitating and maintaining soil productivity (Fig. 58.2). These systems were well received by farmers because they were based on species of economic importance such as coffee, and incorporated promising short-rotation forest tree species (such as *Schizolobium amazonicum*, *Calycophyllum spruceanum*, and *Colubrina glandulosa*) and other species (mainly fruits) traditionally used for subsistence and the local market. Families actively participated in the design and establishment of the rehabilitation areas. The project also promoted the formation of organised farmers' groups to strengthen their negotiation capacity in local and regional markets and with development agencies. One of these is a



FIGURE 58.2. Agroforestry trial for rehabilitating degraded lands and improving farmers' livelihoods in Peru. (Photo © Takeshi Toma.)

committee of ecological farmers who adopted low-impact production strategies (including agroforestry and management of naturally regrowing forests) in buffer zones of protected areas. The project promoted community involvement in conserving and managing their natural resources, in generating added value for their products, and in developing markets for nontraditional timber species.

2.2. Consider Local Socioeconomic Needs in Choice of Approaches and Options

2.2.1. *The Bai Bang Pulp and Paper Mill, Vietnam*⁵⁰²

The Bai Bang Pulp and Paper Mill Project in Vietnam costing \$360 million was implemented between 1974 and 1992. The project was designed by the Vietnamese government and Swedish Development Assistance with little consideration of how sufficient wood supply could be obtained from the surrounding region, where there was high pressure on the land from small farmers who subsisted on low-technology agriculture and grazing. As a result, the mill operated at less than full capacity for a long time. The local population challenged the monopoly on the wood and forest land claimed by the forestry sector. Only a minor part of the wood and bamboo cut by forest enterprises could be used in the mill, as some 50 percent was diverted, for instance, to Hanoi as fuelwood. Population pressure on the forest lands increased with the construction of new roads and loss of jobs in the forest enterprises. However, in recent years private farmers have been selling wood to the mill, thereby altering the supply situation dramatically, and the mill is now producing at capacity. Some state forest enterprises are still in operation and producing wood for Bai Bang, but much of the current supply of mostly bamboo is grown and sold by farmers. One important failure of the whole process was inadequate project planning that led to the adoption of inappropriate strategies.

The mill, however, provided a stable market where people could sell wood products, and they responded by starting to grow trees.

2.2.2. *Rehabilitation of Degraded Pasture Lands Project—Alternative Association of Producers, Brazilian Amazon*

The Alternative Association of Producers (APA) in the Municipality of Ouro Preto D'Oeste, Rondônia, Brazilian Amazon, was funded in 1992 by small-scale farmers in the region with the objective of providing land-use alternatives to slash-and-burn agriculture and cattle ranching. With the support of government-sponsored programmes (Type A—Ministry of Environment, Brazilian Fund for Biodiversity) and NGOs (Movement Laici Latin American, Group of Research and Extension in Agroforestry Systems of Acre-Pesacre), APA focussed work on rehabilitating degraded pastures and secondary regrowth through integrated production systems involving the planting of various fruit and forest tree species along with aquaculture and bee keeping. With around 300 participating families, the association has improved the infrastructure for processing and commercialisation of the diverse products coming out from the rehabilitated areas, which include fruit pulp and syrups, canned palm hearts, honey, guarana powder, medicinal oils, and furniture from wood residue. Labour conditions and quality of life of the families have improved significantly, contributing to the sustainability of this project.

2.2.3. *Project in Vila de Novo Paraíso, Municipality of São Geraldo do Araguaia, Pará State, Brazilian Amazon*

AGROCANP (Associação dos Pequenos Produtores do Grotão dos Caboclos de Novo Paraíso), an association of small-scale farmers and residents of the community of Novo Paraíso, started a project to rehabilitate degraded areas in several farmers' lands in 1996. The project was supported by an NGO

⁵⁰² Ohlsson et al, 2004.

and funding from a government programme (Type A—Ministry of Environment). The activities proposed by the project included the introduction of production systems based on the agroforestry practice known as “agriculture in stages,” which consists of establishing herb, shrub, and woody species together with small, medium-sized, and large tree species in the same area. This project experienced the same problems already found in various other projects implemented in the Amazon in the 1970s and 1980s. Farmers did not participate directly in the initial project proposal and even less in the selection of species to be included in the agroforestry modules. There was no market prospecting or planning for the products to be grown. Labour investment was too high, and there was little security of production and income. Given this situation, families abandoned the agroforestry modules and returned to their only income source, livestock rearing for milk production, despite much criticism.

2.3. Ensure Clear and Appropriate Institutional Support and Arrangements

2.3.1. *Farm Forestry in Gunung Kidul, Yogyakarta Province, Indonesia*

Gunung Kidul used to be a dry area with limited water supply that made it a poor region. The local community started rehabilitating the degraded land in the 1970s. The local government then supported community efforts through formal recognition of the community initiative, the provision of facilitating local regulations, and funding support. The community and the local forestry agency successfully rehabilitated the area using participatory approaches. The dry landscape of 11,072 hectares has been afforested with mainly teak and some *Acacia* sp., and now provides both wood and ecological benefits. Land productivity, forest cover, and water availability in the area have increased, sedimentation rates have decreased, and the microclimate has improved. All of the above have in turn resulted in increased supply of timber, fodder, and fuelwood. Community income and access to

education, health, and other services have also improved.

What differentiates this case from numerous others is that the effort was not a top-down approach with the government forcing an initiative on the community. Rather, the government acted appropriately in response to local needs and provided strong institutional and financial support for the local initiative. Local institutions were recognised and empowered, technical support was provided, and the community was allowed to sell timber and to continue its activities. The community itself was highly motivated to transform the area and its livelihoods, and were also supported by strong leadership from within. Rights and responsibilities were clearly divided among the government, the forestry agency, and community groups in the implementation of this effort.

2.3.2. *Diversified Institutional Arrangements in Guangdong, China*

The province of Guangdong in southern China has had considerable experience in recent years with formalising institutional arrangements, and clarifying rights and roles of different stakeholders to ensure the success and sustainability of its extensive rehabilitation efforts. With these efforts, Guangdong has increased its forest cover from 27 to 57 percent of the land area from 1985 to 2003. The province’s experiences with diverse institutional arrangements are serving as models for the rehabilitation of degraded forest lands nationwide.⁵⁰³ Tenure stabilisation, institutional reform in the rural areas, and opening up of wood markets helped to stimulate the involvement of different stakeholders in rehabilitation. Diversified institutional arrangements among stakeholders appeared, such as cooperative and joint afforestation by different levels of government, state forest farms with village committees, and village committees with private individuals; stock sharing; and private investment on leased land. From 1999 to 2000, Guangdong issued a series of favourable policies further encourag-

⁵⁰³ SFA (State Forestry Administration), 1999.

ing and facilitating the development of private commercial afforestation. There have been 540,000 private entities (including private individuals, and private, civil, and foreign enterprises) that have invested in afforestation in Guangdong using a wide range of institutional arrangements since 1993, and they have contributed to rehabilitation of 1.04 million hectares of degraded lands with fast-growing and high-yielding plantation forests by 2003.⁵⁰⁴

The development of different types of management options involving multiple institutions in Guangdong was accompanied by a clear division of responsibilities, rights, and benefits of the different stakeholders through formal contracts. For example, in the 30-year joint afforestation projects of the Chikan and Xiangang towns of Kaiping city, the state forest farms offer funds and technology, the village committees provide the degraded forest land, and the town forestry stations guarantee supervision. Rights, responsibilities, and cost- and benefit-sharing arrangements are first decided by negotiation among the three stakeholders and then spelt out in a contract. Net profits from the fast-growing high-yielding timber and resin plantations within the 30-year contract period would be shared by these stakeholders in agreed proportions—50 percent due to the investing party, 40 percent due to the land-owning party, and 10 percent to the management party. The investing party has decision-making rights from project planning to implementation, and responsibilities for afforestation and plantation protection. The land-owning and management parties have consulting rights from project planning to implementation, and responsibility for protecting the plantations from man-made or natural disasters. The land is to be delivered back to the village committees within half a year after the project's expiration.

2.3.3. *Three KfW-Funded Afforestation Projects, Northern Vietnam*

Three afforestation projects funded by the German Development Bank (KfW) operated

in Bac Giang, Quang Ninh, and Lang Son provinces in northern Vietnam. Since their start (in 1995, 1999, and 2001, respectively), the projects have established some 23,000 hectares of new forest through plantation and natural regeneration and have established 17,000 deposit accounts with a total savings of 2.5 million Euros.⁵⁰⁵ The projects have had positive results because they effectively implemented early on the national forest land allocation programme such that participant farmers had clear rights over their land. The project worked in 80 communes (each with several villages) and established forest farm groups and completed village land use planning in 75 of them. In addition, funds invested into the project were carefully directed to generate benefits for participating farmers, while strict responsibilities were agreed upon. This combination of three essential factors—clear tenure, benefits for participating farmers, and agreements on roles and responsibilities—explains the success of this project.

3. Outline of Tools

3.1. Strengthen Local Organisation and Participation in Projects

The literature is replete with tools to strengthen local participation and collaboration in resource management. Key volumes include Borrini-Feyerabend⁵⁰⁶, the Food and Agriculture Organisation's (FAO) series for community forest management, and training materials from the Regional Community Forestry Training Center for Asia and the Pacific, in Bangkok. These include participatory tools and processes for social communication, information gathering and assessment, local organisational development, planning, implementation, considering local knowledge, conflict management, and monitoring and evaluation. CIFOR has developed interactive tools (Co-learn⁵⁰⁷) for collaborative learning and creating shared visions and pathways to reach these visions. General

⁵⁰⁵ KfW Project in Brief, 2003.

⁵⁰⁶ Borrini-Feyerabend, 1997.

⁵⁰⁷ CIFOR, ACM Team, 2003.

⁵⁰⁴ Deng Huizhen, 2003.

criteria and indicators or guidelines are available for community participation and organisation, conflict management, and use of local knowledge in community managed landscapes⁵⁰⁸, plantation landscapes⁵⁰⁹ and restoration of degraded landscapes.⁵¹⁰ Tools have also been designed to engage local forest dwellers in collaborative development of criteria and indicators for sustainable forest management using their local knowledge.⁵¹¹ Many of these tools are directly applicable or can be easily adapted to strengthen participation in rehabilitation projects.

3.2. Consider Local Socioeconomic Needs in Choices of Approaches

DFID's (the UK Department for International Development) sustainable livelihoods toolbox provides numerous tools for using sustainable livelihoods approaches at different stages of the project cycle, from planning to implementation, monitoring, and evaluation. The FAO⁵¹² has a manual on selecting tree species based on community needs. Ames⁵¹³ describes methods for comparing the economic value of producing commercial forest products with other local income earning opportunities. The ITTO restoration guidelines⁵¹⁴ provide numerous suggestions on livelihood-enhancing activities, including evaluating prospects for forest products and environmental service payments, evaluating different rehabilitation options and trade-offs with other land uses, adding value to rehabilitation products, and developing partnerships for processing and marketing.

Various tools have been outlined and assessed for processing and commercialisation of forest products including business planning, the enterprise development approach, and market analysis and development.⁵¹⁵ The latter

combines ecological sustainability and social and financial objectives in small-scale, low capital, low-skills enterprises. Networking especially between technicians working on forest products and potential producers and markets is also mentioned as a possible approach.

Numerous sets of indicators have been developed within CIFOR and elsewhere for assessing and evaluating socioeconomic impacts of different projects, processes, or policy changes. The current rehabilitation review study has a set of such indicators specifically tailored for assessing the impacts of rehabilitation initiatives.

3.3. Ensure Clear and Appropriate Institutional Support and Arrangements

The FAO⁵¹⁶ provides a rapid appraisal tool for tree and land tenure. Participatory mapping can be used to develop and affirm agreements among stakeholders about tenure boundaries.⁵¹⁷ Other tools available to design and assess institutional arrangements and support include group and key informant interviews, Venn diagrams, matrices, flow diagrams, cost-benefit analysis of different institutional options, stakeholder analysis⁵¹⁸, and the "4 Rs" approach, which attempts to define stakeholders by their respective rights, responsibilities, returns from a given resource, and relationships.⁵¹⁹ The 4 Rs approach draws attention to tenure issues as crucial in shaping people's differentiated concerns with and capacities to manage land and trees. Relationships among stakeholders comprise various facets: service, legal/contractual, market, information exchange, and power. CIFOR has developed general criteria and indicators for institutional agreements, land tenure, and legal frameworks to ensure sustainability of community-managed and large-scale plantation landscapes.

⁵⁰⁸ Ritchie et al, 2000.

⁵⁰⁹ Poulsen et al, 2001.

⁵¹⁰ ITTO, 2002.

⁵¹¹ Haggith et al, 1999.

⁵¹² FAO, 1995.

⁵¹³ Ames, 1998.

⁵¹⁴ ITTO, 2002.

⁵¹⁵ Lecup et al, 1998.

⁵¹⁶ FAO, 1994.

⁵¹⁷ Wollenberg et al, 2002.

⁵¹⁸ Grimble and Chan, 1995.

⁵¹⁹ Vira et al, 1998.

4. Future Needs

Based on the results of this research project, the following needs have emerged:

- Adapting available participatory approaches and tools for rehabilitation projects with different management objectives, socioeconomic and ecological conditions, and stakeholder groups.
- Simple technical guidelines for target groups on how to design, implement, and monitor rehabilitation efforts, incorporating participatory approaches and tools for different rehabilitation objectives and site conditions.
- Participatory planning process to generate simple validated management plans for degraded forest landscapes. Such management plans include mapping; identifying tenure arrangements; choosing appropriate rehabilitation and livelihood options; developing a management strategy; establishing a monitoring framework; clearly assigning rights, responsibilities, costs, and benefits; and formal arrangements for coordination of activities and enforcement of agreements.
- Evaluating prospects for forest products and environmental service payments to communities. This includes the feasibility of producing high-value timber for industries; timber, fuelwood, and other forest products for local needs and markets; and payments for biodiversity, watershed, and carbon functions at the local to international levels.
- Framework for assessing potential contribution and impact of different rehabilitation approaches to communities, in comparison with other local income-earning opportunities and alternative land uses.
- Market research and viable marketing strategies adapted to the specific conditions offered by different types of degraded forest lands. By promoting local-level and value-added production and processing, and developing partnerships to enhance processing and marketing efforts prospects for improving local incomes can be improved.
- Boosting policy, donor, and implementer support for genuine local participation and consideration of local needs in rehabilitation

projects. It is important to integrate rehabilitation activities with regional development strategies and community development activities based on local conditions and needs.

- Institutional and political instruments including incentives to support different rehabilitation objectives.

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