

5. Approaches to Tree Planting

Tree planting activities have the highest potential for success where land tenure is secure and long-term, where community needs are met, and decisions are socially acceptable (ITTO 1993). In the context of the *Guideline*, tree planting can imply the following (refer to Part II for technical guidance).

- rehabilitation of degraded and secondary forests
- community based tree planting activities
- establishment of large scale plantations
- farm forestry

5.1 Rehabilitation of Degraded and Secondary Forests

Degraded and secondary forests form the largest forest type in many Asian countries. Their rehabilitation into multiple-use forests can play an important role in the production of timber and non-timber forest products, generating significant livelihood and environmental benefits, provided that the root causes of forest degradation are given due consideration in decision-making processes. Planning for rehabilitation must be viewed within the context of a landscape approach and in the framework of sustainable development, thereby ensuring a spectrum of forest and other land uses that meet the needs of society (ITTO, 2002).

Degraded forests are often converted for pulp production or agricultural tree plantations through a process which often fails to consider the full economic value of rehabilitation. Rather, purely financial assessments show rehabilitation of degraded and secondary forests to be more expensive than industrial plantations, but ignore the potential benefits-to-costs ratios of different management strategies in degraded and secondary forests. For example, industrial plantations do not contribute to biodiversity conservation, they do not consider the social value of labour intensive silvicultural interventions, and returns are assessed on the basis of wood alone, and products with established markets which overlooks the wider range of potential new products (ITTO, 2002).

Although a large percentage of Cambodia's forests are estimated to be in need of rehabilitation, there are currently no procedures or guidelines to steer this process. Despite the range of products and services provided in the short and longer term, the RGC economic development policy of land concessions may result in the allocation of degraded forests to industrial plantations. On the other hand, allocation of these areas to the implementation of social concessions or community forests would contribute directly to poverty alleviation, and some forest rehabilitation.

Methods of tree planting for forest rehabilitation differ depending on the level of degradation, for example :

- enrichment planting is a commonly used method for the rehabilitation of logged-over forests, using commercially important indigenous species
- assisted natural regeneration, based on the ecological principles of community succession in appropriate for patches of forest mixed with grassland
- planting of 'framework species' (a mix of 20-30 pioneer and climax native forest species) within heavily degraded areas

It should be noted that in forests of moderate to low degradation, management through succession may be a preferable alternative to tree planting.

5.2 Community Based Tree Planting Activities

In recent decades, there has been a trend in forest policies and legislation to promote community based forest management, providing a favourable framework for strategies to restore and manage degraded primary forests and secondary forests. Community forestry concepts are not new, but have recently emerged in response to the failings of large-scale commercial forestry in contributing to socio-economic development. Experience indicates that local communities are prepared to accept responsibility for sustainable forest management in exchange for socio-economic development and forest-use benefits.

“Nearly one-fourth of the forest estate in the most forested developing countries is now owned (14 percent) or officially administered (8 percent) by indigenous and rural communities, as a result of recent government recognition of local claims and devolution” (Wunder 2001, cited in Scherr *et al.*, 2002).

The livelihoods of the majority of rural Cambodians are dependent on access to forest products, especially for food, fuel wood, small-scale timber harvesting (for building and household materials), resin tapping, fodder, traditional medicines and other non-timber forest products. However, in many rural areas, forest resources are heavily degraded or have been lost entirely, leading to access constraints in terms of distance, increasing population pressure, and exclusion from forest areas. In terms of commune development planning, a need for tree planting may be identified to overcome such losses.

The last few years has witnessed a proliferation of community forestry initiatives, which allocate management rights to communities, thereby providing an incentive for sustainable forest resource use. Generally, community forestry agreements are in heavily degraded areas that are in need of rehabilitation. Community participation in tree planting could be extended beyond community forests through a range of partnership agreements with other stakeholders.

Many rural families plant trees in areas where tenure is perceived to be more secure than forestlands, especially on agricultural land, home gardens, and public areas. This trend indicates a need for the integration of forestry into aspects of the agricultural landscape, and therefore, a multi-institutional approach to planning.

Community based tree plantings can include:

- partnership in rehabilitation of degraded and secondary forests
- community forestry/small scale plantations
- agro-forestry
- plantations on public lands (such as schools, pagodas, roadsides, etc)

Strategies to promote local participation in planting and managing trees must be ‘people-centred’. They must provide security of tenure/rights of use, and improve marketing of the end products, including the creation of partnerships between communities and forest enterprises. In aiming to fully realise their potential to contribute to poverty reduction, forestry related activities must be integrated into wider rural development strategies (Sunderlin *et. al*, 2004).

5.3 Establishment of Large Scale Plantations

Plantations may be appropriate for establishment on non-forest land, or in forest areas that are so heavily degraded that it is no longer feasible to attempt rehabilitation. Natural forests must never

Forestry Administration/Cambodia Tree Seed Project/DANIDA, 2005
Guidelines for Site Selection and Tree Planting in Cambodia

be cleared for their establishment. Plantations cannot substitute for natural forests, and nor can they replace them as sources of raw materials, and environment and social benefits.

A pre-requisite for the sustainable establishment and management of plantations is that land allocation considers the interests, legal rights and long-term interests of all stakeholders concerned with, or affected by, their development, with particular consideration to the legal claims, and interests, of the local residents and communities. Due consideration should also be given to present and future needs for agriculture and pasture lands, as well as customary use of various forest products and conservation requirements (ITTO, 1993).

If properly planned, commercial plantations can achieve high levels of timber production, contributing greatly to national economic development through increased and stable export earnings, and to socio-economic development through increased access to resources, employment generation and enhanced infrastructure, for example, planted forests in New Zealand and Chile supply all the domestic wood needs of those countries, and additionally, support significant export industries (Rollinson, 2003). However, many plantations have not fulfilled such expectations, due in part to poor maintenance and a lack of markets for the species grown (ITTO, 1993).

5.3.1 Monoculture Plantations

Large scale monoculture plantations are often promoted as ‘low-cost, low-risk, and high-yield and with a uniform and predictable result’ (Myers and Vermeulen 2002), and fast growing species are favoured due to high volume increments and short rotations. However, large scale, monocultures composed of fast-growing species can not be classified as forests, as they offer none of the benefits of natural forests. They can result in negative impacts on the environment, such as reduced local biodiversity, accelerated erosion, water pollution, and stream-bed sedimentation (ITTO, 1993), and on rural livelihoods due to loss of access to forests and agricultural lands taken over by plantation companies (Carrere 2004a). Box 1 illustrates some interesting descriptions of ‘plantation’ by local people.

Box 1 – Plantation Definitions from a Local Perspective	
<i>The selfish tree (Thailand)</i>	taking many nutrients from the soil and allowing for little intercropping
<i>Planted soldiers (Chile)</i>	as they are green, planted in straight lines, and are often advancing
<i>Green deserts (Brazil)</i>	providing no food to local fauna, no space for local flora, and no goods or services to local people
<i>Green cancer (South Africa)</i>	destroying water, soil, wildlife, plants and people’s livelihoods, eventually killing everything
<i>Plastic forests (Laos)</i>	which may look like forests, but once inside have nothing in common with true forests
Carrere, 2004b	

Slower growing, but higher valued native species are increasingly attractive in both commercial and environmental terms, and are better adapted to local conditions. Integration into broad land use planning processes that contain effective community consultation procedures can mitigate some of the concerns noted above.

5.3.2 Mixed Species Plantations

Plantations using mixed species may be more financially secure as they could be less susceptible to pest, disease and other hazards, and early maturing species can be harvested comparatively quickly. Unlike monocultures, well designed plantations of multiple species do have the potential to contribute to watershed protection, genetic and biodiversity conservation, and enhance ecological and economic benefits to local communities through the provision of sites suitable for income generating activities, such as agro-forestry.

5.4 Farm Forestry

Farm forestry is growing in popularity following the recognition that future timber and wood products will originate outside forest areas. Although small scale, farm forestry can be sustainable and cost-effective, as it promotes local entrepreneurship. A number of constraints are evident, for example, in scaling-up activities, lack of access to credit, and distance to markets. These could be assisted through enabling government policies, incentive schemes and other support services, and the creation of partnerships between smallholders, government and the private sector (Pasicolan, 2003).

This approach is in its infancy in Cambodia, but could include:

- small scale commercial plantations for the domestic market
- community/smallholder contracts for specific products