Balancing restoration and development

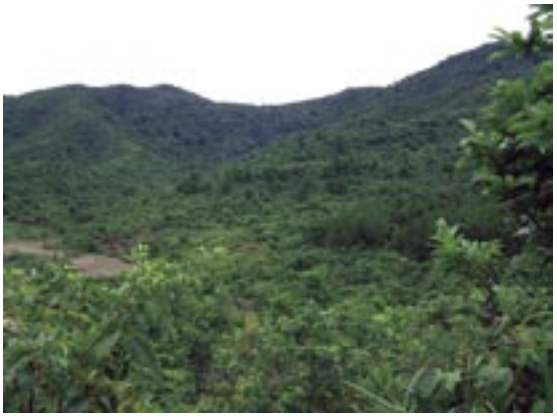
FLR is a tool for ensuring that forest restoration complements development at the landscape scale

by Stewart Maginnis and William Jackson

IUCN

Gland, Switzerland

All there: the 'classic' forest landscape (Lao PDR).
Photo: © Stuart Chape



Changing: the 'secondary forest' landscape (Vietnam).
Photo: © Stewart Maginnis

DEFORESTATION and forest degradation have altered many of the world's tropical forest landscapes to such a degree that at the very most only 42% of remaining forest cover (or 18% of original forest cover) in the tropics is still found in large, contiguous tracts. At least 830 million hectares of tropical forest are confined to fragmented blocks, of which perhaps 500 million hectares are either degraded primary or secondary tropical forest.

Conventional responses to the fragmentation and degradation of forest resources can seldom on their own restore the full range of forest-related goods and services that society requires.

In addition to the large area of fragmented tropical forest, 350 million hectares of former forest land can no longer be classified as forest because of the extent to which they have been degraded by fire, land clearance and destructive harvesting practices. Such areas often remain in a state of arrested succession because the conditions do not support secondary forest regeneration or conversion to other productive land-uses. These areas lack nearly all forest-related attributes (structure, function, productivity, composition) and constitute the greater part of degraded forest landscapes. There also exists an additional 400 million hectares of productive agricultural land that still retains a significant tree component.

1: Using a landscape perspective to enhance site-level management – two case-studies

Early attempts at large-scale reforestation of the Khao Kho district in central Thailand met with violent opposition from landless families, who often resorted to arson in order to prevent plantation establishment. The stand-off was resolved by looking at the broader issues within the landscape, incorporating local people into the project, reallocating about 500 hectares from reforestation to agriculture, and redefining the species' mix and planting configuration to suit both local needs and technical challenges (Marghescu 2001).

Oil-palm plantation managers along the Kinabatangan River in Sabah, Malaysia observed that in some areas of their estate regular flooding prevented them from establishing an oil-palm crop. In collaboration with WWF and local communities, some of these managers encouraged secondary and planted forests to regenerate in affected areas, offering added protection to the rest of the estate while also reducing fertiliser and pesticide run-off to the river, expanding species' habitats and enhancing landscape connectivity for threatened species such as orangutan and forest elephant, and optimising the productivity of the flooded sites (WWF 2002)).

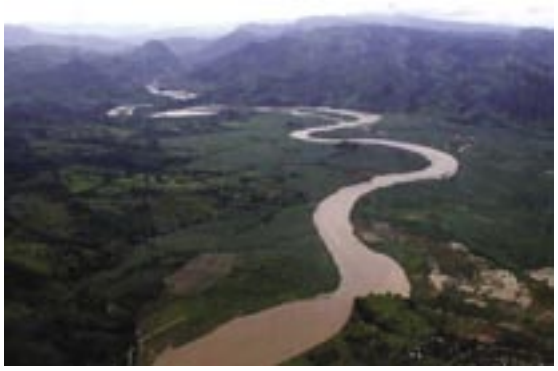
Despite the fact that forest fragmentation, modification and degradation have shaped so many of the world's remaining tropical forests, many national forest strategies still tend to focus on how best to manage and protect intact forest. And, even when national forest programs and strategies do recognise restoration as a priority, they tend to focus activities on the establishment of industrial roundwood plantations. Forest landscape restoration builds on the growing realisation that such strategies alone are insufficient to guarantee a healthy, productive and biologically rich forest estate in the longer term.

What has been missing so far?

Conventional responses to the fragmentation and degradation of forest resources can seldom on their own restore the full range of forest-related goods and services that society requires. Plantation forestry, for example, very definitely has a place in FLR. On their own, however, industrially oriented plantations will rarely replace all the forest functions that have been lost or compromised through landscape-level deforestation, fragmentation and degradation. We therefore need to 'create' space within the landscape so that other, complementary restoration strategies can be deployed. 'Dominant use' is a perfectly legitimate approach to site-level activities, while the achievement of 'multiple functionality' should be the goal of landscape-level management. Thus, a landscape configured so that it accommodates plantations, protected reserves, ecological corridors and stepping stones, regenerating secondary forests and agroforestry systems (or other agricultural systems that make use of on-farm trees) lays the foundation of multiple functionality.

Taking a landscape-level perspective into account in site-level management results not only in potentially healthier landscapes, but also in improved stand-level management, as illustrated in the two case-studies in *Box 1*. Both highlight two key principles that are critical to building a landscape perspective into decision-making:

- **meaningful public participation:** as many as 500 million people live within modified and degraded



Changing: the 'modified' forest landscape (Costa Rica).
Photo: © Alberto Salas

Gone: the 'degraded' forest landscape (Papua New Guinea).
Photo: © David Lamb

forest landscapes in the humid tropics and are dependent on a mixture of agricultural and forest resources to maintain their livelihoods. Practitioners need to realise that landscapes, especially modified or degraded ones, have many different stakeholder groups—each with their own particular needs and priorities. FLR seeks not only to take local people's needs into account but also to involve them actively in the processes of decision-making and implementation; and

- **balancing land-use trade-offs:** it is common to hear about the need to pursue win-win solutions—that is, where two independent outcomes (such as biodiversity conservation and economic development) are maximised through a single intervention. In reality, however, win-win outcomes are extremely rare, particularly at the site level. There are often trade-offs involved between two sets of priorities and there is usually a need to develop compromise solutions. Without a landscape perspective, the same types of compromises tend to be repeated over and over again until key forest-related functions are lost from the landscape. Under an FLR approach, the ecological and economic benefits of FLR *(see Box 2)* complement other approaches to economic development at the landscape scale.

Many of the challenges to making forest landscape restoration work are social, legal and political in nature. For example, ambiguity over ownership rights for timber trees growing on private or communal agricultural land in Ghana during the 1980s and 1990s resulted in many farmers 'ring-barking' ecologically and economically valuable trees; it also made it almost impossible to persuade farmers to invest in tree-planting, even though this would have been beneficial agronomically. Nevertheless, despite these kinds of problems there is nearly always an opportunity for practitioners to take decisions with a landscape perspective.

The Shinyanga case-study

The Shinyanga region in Tanzania used to be covered with dense acacia and miombo woodland, but by 1985 much of the landscape had been transformed into semi-desert. Significant areas of forests had been cleared under colonial tsetse fly eradication schemes and some of the remaining areas were converted to cash crops such as cotton and rice in the 1970s. In 1975 many people were relocated under the government's 'villagisation' program, which meant that they had to leave their homes, their farms and, most significantly, their *ngitili*—their enclosures of acacia-miombo woodland.

2: Building support for forest landscape restoration

Convincing policymakers of the value of FLR is important not only for the success of restoration initiatives but also for continued support for forestry activities in general. Indeed, unless foresters can start to convince their own governments of the real value of forests and the need to restore degraded forest landscapes, then it is likely that forest department budgets will decline significantly.

Poverty reduction

Ironically, poor people rely more on natural resources, particularly degraded natural resources, than do other sectors of the population, even though they are often denied formal permission to utilise such resources. Experience has shown that once poor people are given long-term secure rights over degraded forest resources and supported with good technical advice they can turn such resources into healthy, productive and biologically rich assets within a few years. An economist might question whether this is enough by itself to lift poor people out of poverty. It seldom is, but it does constitute an effective and efficient first step, particularly in rural areas—where up to 75% of very poor people live.

Local economic growth

Economic planners and treasury officials spend a good deal of time considering how to make macroeconomic conditions more conducive to stimulating economic growth. At first appearance such concerns may seem completely unrelated to forest conservation and FLR and it is true that the forest sector (especially where forests are degraded) can never be expected to make the same contribution to national economies as many other sectors. However, the forest sector still has a role to play, particularly in stimulating local economic growth in places that have not, or will not, benefit from the trickle-down effects of globalisation and national-level growth.

The benefits of national economic growth are seldom distributed evenly across all sections of society. In general, countries experiencing high economic growth are also seeing a widening in the gap between the rich and poor. What can be done to stimulate economic growth in poor rural areas? Part of the answer is to permit people to invest in, use and enhance the productivity of degraded and secondary forest resources.

Environmental security

The links between FLR and environmental security are relatively straightforward. Loss of forest functionality in degraded landscapes has both *in situ* and downstream impacts. For example, as forest land is degraded and fragmented, the velocity and rate of site-level run-off increases, soil erosion accelerates, slope stability reduces, siltation loads increase and water quality declines. The disasters that grab headlines are therefore not just a consequence of, for example, one particularly heavy rainfall but are symptomatic of a long-term erosion of ecological integrity. FLR can help reverse this trend by increasing not only landscape-level resilience to shocks but also by enhancing landscape-level adaptability so that both government and local communities are better able to respond to such shocks.

Gone: in the mid-1980s it was estimated that the Shinyanga region of Tanzania had only 1000 hectares of *ngitili*. At that time the landscape was typically barren and degraded, with few if any forest resources. *Photo: © Stewart Maginnis*

Back: the 17-year-old Mwendakulima *ngitili*. These villagers used an FLR approach to restore 105 hectares of productive woodland, mainly by excluding cattle from the area and introducing silvicultural treatments. *Photo: © Stewart Maginnis*

The Sukuma have long relied on *ngitili* to provide them with dry-season fodder for their cattle, firewood and other essential products. But by 1985, a mere 1000 hectares of *ngitili* remained across the entire region. Previous government land rehabilitation initiatives relied mostly on exotic species and largely failed, so in 1985 government foresters started to consult with the local people as to what sort of strategy might be more likely to succeed. The response they received was almost unanimous—the restoration of the old system of *ngitili* should be a priority.

The first task of the new program (HASHI) was to raise awareness about the importance of restoring forest resources within a degraded landscape context. Farmers and communities were helped to select the most promising sites for their *ngitili* and advised on how to manage them. Besides advising individual farmers, HASHI also worked closely with the *dagashida*, the traditional community assemblies that lay down and enforce customary by-laws. It wasn't long before the *ngitili* were transforming the lives of tens of thousands of people. In Mwendakulima village, for example, where animal fodder and forest product shortages were common, the villagers removed the grazing pressure from 105 hectares of severely degraded land in 1987 and the site was soon colonised through natural regeneration. Income from *ngitili* is now used regularly throughout the Shinyanga region to support basic social services such as the construction of primary schools and the employment of local village health workers. In some villages there is anecdotal evidence that water supply has also improved because of the *ngitili*.

The HASHI project recently sampled 172 out of the 800 villages in the Shinyanga region. They enumerated over 15 000 individual and communal *ngitili* covering around 70 000 hectares. When one considers that this pattern of woodland restoration has also occurred in the other 628 villages that were not surveyed it means that it is highly likely that over 350 000 hectares of once-degraded forest land have been restored in a period of less than 20 years (Barrow et al. 2002).

What makes forest landscape restoration different?

The concept of FLR is different from many other restoration-orientated technical responses for several reasons:

- it focuses restoration decisions on how best to restore **forest functionality** (that is, the goods, services and processes that forests deliver), rather than on simply maximising new forest cover;
- it encourages the practitioner to take site-based decisions within a **landscape context**, ensuring, at the very least, that such decisions do not reduce the quality or quantity of forest-related functions at a landscape level;
- it requires that **local needs** are addressed and balanced alongside national-level priorities and requirements for reforestation, thus making **local stakeholder involvement** in planning and management decisions an essential component;
- while promoting the need for site-level specialisation, it strongly discourages actions that would result in **human well-being** being traded off against ecological integrity at the landscape level, or vice versa. Such trade-offs are unsustainable and tend to be counterproductive in the medium to long term;
- it recognises that neither the solutions to complex land-use problems nor the outcomes of a particular course of action can be predicted accurately, especially as ecosystems and land-use patterns change over time. FLR is therefore built on **adaptive management** and requires that necessary provision is made for monitoring and learning; and
- given the complex challenge of restoration, FLR will normally require a package of tools.

Over the long term, FLR cannot be driven solely by good technical interventions but will require supportive local and national policy frameworks. In many situations it is likely that policy change will follow on from good innovative practice. Therefore, if FLR is to succeed, practitioners need to familiarise themselves with how other land-use policies impact the restoration and management of forests. They also need to convince both policymakers and local communities of the benefits of FLR—and to show that these will actually materialise.

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