DRYLAND ZONE CASE STUDY 4

Community-based Rehabilitation of the Nazinon Forest in Burkina Faso[1]

BACKGROUND

The Nazinon reserved forest (11°30' - 11°51' north latitude and 1°27 '- 1°50' west longitude) is a gazetted forest covering 32,000 ha in the tree savanna zone of southern Burkina Faso. The forest is located at an altitude of about 300 m on leached ferruginous soils with patches of indurate pans. Rainfall is unimodal with an annual average of 800 mm concentrated during a short period of four months from June to September. Average temperature is 33°C.

Natural vegetation is tree savanna. Dominant tree species are *Vitellaria paradoxa, Detarium microcarpum,* and various species of *Acacia*, *Lannea* and *Combretum*. Dominant grass species are *Loudetia togoensis, Pennisetum pedicellatum,* and *Andropogon spp*.

Surrounding communities, estimated to be in excess of 21,000 people, are increasingly encroaching on the forest through human settlements, crop fields and pastoral activities (year-round grazing by resident livestock and seasonal incursions by transhumant pastoralists during the dry season). In addition, the Nazinon forest has increasingly become the main source of fuelwood in the region after uncontrolled cutting depleted other sources of supply in the immediate vicinity of the capital city.

In 1985, a project on fuelwood production identified the Nazinon forest in which to experiment a newly developed approach to natural forest management in Burkina Faso.

OBJECTIVES

The Nazinon Forest Rehabilitation Project was launched with the following objectives:

- To manage the forest for fuelwood production;
- To generate revenues from the sale of fuelwood;
- To empower local communities for effective participation in forest rehabilitation activities.

[1] This case study has been compiled by Dr. Edouard G. Bonkoungou on the basis of the following two sources:

- Bellefontaine R, A. Gaston and Y .Petrucci. 2000. Management of Natural Forests of Dry Tropical Zones. FAO Conservation Guide N°32, Rome, 225 – 242;
- Kaboré, C. 2002. Aménagement des forêts du Sahel. Point sur vingt années de pratiques au Burkina Faso. Direction Générale des Eaux et Forêts, Ouagadougou.

APPROACH

Key project partners are the communities of surrounding villages, the Forest Service, professional fuelwood traders, and transhumant pastoralists. Other partners are UNDP for financial support and FAO for technical assistance.

Local communities are responsible for marketing fuelwood collected from the forest either as deadwood or logged wood. They also provide labour for field operations, direct seeding and other forest regeneration activities, opening up of firebreaks, logging, etc. The Forest Service provides technical expertise in forest regeneration, logging techniques and other silvicultural operations.

The forest area deemed appropriate for silvopastoral management (23,700 ha) was partitioned into 8 management units 2,000 to 4,000 ha each, using aerial photographs at scale 1:20,000. Boundary strips of management units were 8m wide. Using a 20 year rotation plan, each management unit was subdivided into 20 logging compartments and assigned for field operations to one or several villages based on proximity, number of volunteers, and inter-village cooperation.

In addition to land preparation for silvicultural operations (boundary lanes, skid roads and firebreaks), various surveys were conducted to collect socio-economic information on surrounding villages in connexion with the participatory approach adopted by the project.

Main activities of the project are:

- Regeneration of forest cover using the following techniques:
    - Enrichment by direct seeding. This option was adopted because of its low cost and also because it uses the same techniques and tools that are used locally by farmers for sowing cereals in crop fields;
    - Protection of regenerants (seedlings, root suckers and stump sprouts) from bush fires and livestock damage.
- Selective cutting to preserve species and individual stems for which the ecological and/or economic benefits are perceived to be higher than the market value of their firewood.
- Integration of pastoral activities in management plans to take into account other land use systems that are important to local communities. The approach used is known as controlled grazing and consists of opening the forest to grazing during the rainy season in July and August with the following restrictions:
    - Forest compartments which have been logged are excluded from grazing for at least 18 months;
    - Grazed compartments are rotated to reduce risks of overgrazing;
    - Lopping of fodder trees is not permitted.

    The rationale for controlled grazing is that livestock, which is a major component of the rural economy in the Nazinon area, will benefit from pastures inside the forest. In turn, reduction of grass cover due to grazing will reduce the risks of severe bush fires.

- Marketing of fuelwood and sharing of revenues. Dead wood and logged wood from the forest is sold to wood traders who buy it at forest gate. Sharing of revenues has been negotiated among stakeholders to cover remuneration of labour for field operations, and to establish a common fund to meet collective needs in the villages, as well as a forest fund to cover recurrent costs of the project.

- Institutional building and empowerment of local communities. The project assisted the communities of surrounding villages to organize themselves into pre-cooperative groups known as forest management groups. These groups have full responsibility for wood marketing. Group members were given training in basic literacy as well as in field techniques in forestry and livestock production.

RESULTS

Success

Considerable forest seed collection and direct seeding operations to regenerate the forest have been achieved: some 3,500 kg of tree seed was collected annually by local populations (especially women) from trees indigenous to the region;

The regeneration potential of the forest is now well documented. The density of juvenile plants in logged compartments is high (more than 2,500 stems/ha), although very variable (range=1,600 to 3,600 stems/ha). It is difficult in many cases to separate true seedlings from root suckers, but the contribution of the direct seeding operations to forest regeneration appears to be considerable and is being investigated.

Species response to logging has been documented. Based on stump vigour (survival rate, number and size of stump sprouts), the following have been identified as the top 10 species with highest regeneration potential: *Terminalia avicennoides, Detarium microcarpum, Piliostigma reticulatum, Entada africana, Burkea africana, Strychnos spinosa, Combretum glutinosum, Terminalia macroptera, Vitellaria paradoxa,* and *Gardenia erubescens*.

Fuelwood collection and marketing has generated substantial revenues. A volume of 500,000 steres has so far been collected and sold for 800 million CFA francs. A revenue sharing mechanism has been agreed among stakeholders to benefit local communities, the Government, and a forest management fund to cover project recurrent costs in anticipation of the end of external support.

Participation of local communities: Village communities have been organised into pre-cooperative groups known as Forest Management Groups: 26 such groups are currently in existence, up from 9 groups in 1987. These groups now provide employment not only for casual labour, but also professional staff, including forest ingenieurs.

Capacity building: 2,696 members of the Forest Management Groups have been trained in basic literacy and in silvopastoral field techniques, exceeding the project initial objective of 1,574 persons to be trained. In 1992, the project built a vocational training centre to sustain the capacity building effort.

Shortcomings

- The pastoral component failed to achieve any tangible result. Pastoralists did not comply with either the agreed levels of carrying capacity or the rules on controlled grazing.

- Control of bush fires has proved far more difficult than anticipated mainly because opening of firebreaks and implementation of prescribed early burning activities coincide with intensive labour demand for crops.

- The training centre lacks resources and is momentarily closed.

REASONS FOR SUCCESS/FAILURES AND LESSONS LEARNT

Reasons for Success

- Very favourable political and policy environment (the Government of Burkina Faso took a decision in 1985 to combat uncontrolled wood cutting and also adopted a forest policy to manage natural forests for fuelwood production);

- The Project's emphasis on income generation and revenue sharing;

- Empowerment of local communities;

- A strong component of capacity building.

Reasons for Failures

- Pastoral component very weak

- Resources generated from the sale of fuelwood are not sufficient for proper maintenance of skid roads and firebreaks

RECOMMENDATIONS

Policy

The forest management fund still awaits official recognition. Otherwise, the policy environment is good.

Management

- The pastoral component needs to be re-diagnosed and re-designed;

- Revenue generation activities need to look beyond fuelwood; non-timber forest products should be given serious consideration;

- Re-opening the training centre should be supported;

Research

More research is needed on:

- The rotation period of 20 years: there are suggestions to shorten the period to 15 years but supporting data is missing.

- Information on the ecological dynamics after logging, grazing, or burning is currently limited and weak.