

A photograph of a woman in a blue jacket weaving a basket in a traditional wooden structure. A child in a white shirt is sitting nearby. The scene is set in a rustic, wooden building with a thatched roof. The woman is focused on her work, and the child is looking towards the camera. The overall atmosphere is one of traditional craftsmanship and community life.

Sustaining Non-Timber Forest Products in Bhutan:

**A Case Study on Community-Based
Management of Cane
and Bamboo**

*By Marianne Meijboom,
Dil Maya Rai, and Robin aus der Beek*

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Summary

This paper shares experiences from the management, production, and commercialization of handicrafts made of cane and bamboo in a remote area of Bhutan called Bjoka. These handicrafts contribute to almost 70% of the annual monetary income of the area's farmers. The paper emphasizes the importance of a community-based management of these common resources through formation of such a community group, sustainable management of the resources, and governance of the community group itself. An overview is given of the assessment (inventory) process of both products and provides lessons on management based on the traditional knowledge of the farmers. The case study concludes that bamboo and cane are essential for the poorest communities in this remote area. The formation of a community group has been essential for the sustainable management of the resources and has strengthened local people's bargaining power in price negotiations with traders. It is also highlighted that the success of community-based management depends on the functioning of the group supported by its bylaws.

Introduction

Bhutan is a landlocked countryⁱ in the Eastern Himalayas, bordering China in the north and India in the three other directions. The total land area is about 38,394 km² with a population of 635,000 people, of which about 70% live in rural areas. It is estimated that about 32% of the Bhutanese live under the poverty line according to national criteria of Nu.740.36ⁱⁱ (equivalent to US\$19) per month per capita.¹ Only 8% of the country is suitable for agricultural production, while 72% is

ⁱ Bhutan is however "land linked" in terms of market access to the booming economies of China and India.

ⁱⁱ US\$1 is equivalent to Nu 39.1.

classified as forest land. Bhutan's policies favor careful management of its natural resources. Currently, revised Forest and Nature Conservation Rules (2006)² form the legal basis for the use and management of forest resources, including Non-Timber Forest Products (NTFPs). According to these rules, local communities can have access to and use NTFPs if they have an approved management plan.ⁱⁱⁱ Although NTFPs play a crucial role in the livelihood of villagers, particularly in the remotest areas of the country, in practice community forestry is still mainly focused on the management of timber and only in recent years has involved more management of NTFPs. Therefore, a Community-Based Natural Resources Management (CBNRM) Project^{iv} conducts participatory action research to develop and mainstream appropriate methodologies for actively involving rural communities in the management and commercialization of NTFPs. This paper draws out the key findings of the work within this project.

In principle, the community-based management of NTFPs follows the same stages as forming a community forestry management group (CFMG). All households with a traditional claim to forest produce are permitted to join the CFMG. The process includes the establishment of a facilitation team,^v information gathering of the local situation, and awareness-raising meetings on CBNRM and current legal framework (roles, responsibilities, and procedures) with the district and village authorities, as well as with the communities. Only if the community shows sincere interest and commitment to form a group is the application letter sent to the Department of Forests. After the application is accepted, the villagers elect representatives to form a working group responsible for the development of a management plan and bylaws,^{vi} supported by the facilitation team. Once the management plan and bylaws are drafted, they are shared and discussed with the entire CFMG and the local government officials. They are then finalized based on the consensus of the community.

Importance of Cane and Bamboo for Rural Livelihood in Bjoka

Most rural areas of Bhutan are located very far from market centers. The people living in these areas depend heavily on forest resources, especially NTFPs, for their livelihood. The current example refers to experiences from Bjoka, situated in a remote area in the southern part of central Bhutan.^{vii} In this area, people intensively use cane (*Calamus spp.*) and bamboo (*Neomicrocalamus andropogonifolius*) to sustain their livelihood. Making handicrafts out of these species has been a traditional activity of the local villagers for at least three generations. Not surprisingly, nowadays almost all households of Bjoka specialize in bamboo and cane crafting to manufacture all sorts of colorful baskets, locally

ⁱⁱⁱ The procedures to obtain these rights are well described in the *Community Forestry Manual for Bhutan*.

^{iv} Executed by the Council for Renewable Natural Resources Research of Bhutan (CORRB, Ministry of Agriculture), with financial support from the International Development Research Center (IDRC) and technical advice from SNV.

^v This team is composed by the District Forest Officer, the Village Extension Officer, and representatives from the Regional Renewable Natural Resources Research Center.

^{vi} Bylaws refer to group norms and rules related to decision making, fund mobilization, memberships, etc.

^{vii} It takes several days walk to reach the road-head and an additional three days of driving to reach the capital Thimphu.



known as *bangchuks*, which account for 66% of their gross monetary household income.

The cash income generated from sale of the products is directly invested in purchasing basic livelihood necessities. Other sources of income include the sale of cash crops and oranges. Cereals, vegetables, livestock rearing, and other NTFPs (ferns, mushrooms, and some medicinal plants) also play a crucial role in their livelihoods (used for household consumption).⁴ Given the importance of cane and bamboo for the community, these products have been intensively exploited and thus very scarce, particularly cane. Open access without following any appropriate management prescriptions and strong competition between local villagers have been recognized by the farmers as the underlying causes for the depletion of the resources. Therefore, it became imperative to develop a sustainable community-based management plan and to hand over the related rights and responsibilities from the government to the community.⁵

Box 1: Contents of a Management Plan

Part One: Resource Management.

This part provides information about:

- the socio-economic background of the village;
- the legal status for resource management and traditional management systems;
- the planning process;
- resource information including product prioritization and a demand/need assessment;
- goals and objectives for group formation as well as resource management;
- location and boundaries (including participatory mapping);
- resource assessment (inventory) including methodology, analysis of data and information on annual harvesting limits, sustainable management, and harvesting prescriptions; and
- annual plans of operation and a chapter on participatory monitoring and evaluation.

Part Two: Bylaws. This part refers to good governance of the group and stipulates the institutional arrangements for the CFMG, including:

- the membership arrangements;
- the roles and responsibilities of the management committee (e.g. chairperson, the vice-chairperson, secretary, and accountant);
- the roles and responsibilities of the group members;
- the benefit sharing procedures;
- fees, offenses, and penalties;
- fund mobilization (including provisions for the poorest group members);
- record keeping;
- conflict resolution;
- provisions for amendment and revision of the management plan; and
- support required from service providers.



Figure 1: Map of Bhutan and Location of Bjoka³

Community-Based Management of Cane and Bamboo

Following extensive consultations within the community, the villagers agreed to form a Community Forest Management Group. The group consists of all 132 households scattered over five villages. The main objectives of the CFMG are to:⁶

- manage forest for sustainable supply of bamboo and cane;
- improve bamboo and cane resource conditions through protection and planting;
- minimize over-harvesting through application of regulated harvesting system;
- distribute annual harvest equally from different collection areas to all households; and
- generate better income to households by improving the quality of products and the marketing strategy.



Local villager crafting bangchugs
(Photo credits: Robin aus der Beek)

While each village has its own collection area for bamboo, they share the same collection area for cane. Therefore, the CFMG consists of five sub-groups for the management of bamboo and one “umbrella” group for the management of cane. The management was designed with a combination of both local knowledge and technical skills of forest technicians. While the communities have excellent knowledge about the growing pattern of the species and their proper harvesting, further technical support is required, particularly for resource assessment and



community mobilization. Traditional timber inventories are not suitable for resource assessments of NTFPs because NTFPs encompass species with different life forms, seasonality, and distribution patterns; include different parts of plants (e.g. leaves, flowers, fruits, seeds, bark, stem, twigs, and roots); and may be difficult to detect in the field. Inventory methods needed to be developed separately for individual NTFP species to provide a reliable resource assessment.⁷

Development of the Sustainable Management Plan for Bamboo

In order to apply a regulated bamboo harvesting system, local villagers carried out a resource assessment (inventory). This started with the participatory mapping of the area and specification of the boundaries. The area was then further stratified according to the forest condition, the abundance of resources, and defined management objectives (collection area, plantation area, protection area, etc). For the inventory of the bamboo resources, villagers were asked to find a number of representative sites in each stratum (sub-block). At these sites, several sample plots of 25 m² were laid out.^{viii} Farmers then counted the number of bamboo clumps (grouped stems), the total number of culms (single stems), and the bamboo culms that can be harvested annually (one to two years old). Based on the information gathered in the field, the total number of clumps, culms, and harvestable culms could be calculated and converted into back-loads in order to use a measurement unit that is familiar to the local villagers.

The harvestable amount itself does not guarantee sustainable harvesting. Guidelines about the harvesting practices are also needed to ensure the regeneration of the plant. Thus, the farmers agreed to the implementation of management prescriptions based on traditional knowledge, including aspects such as harvesting restrictions regarding age and regeneration, collection periods and restrictions to certain areas, joint assessment of resources, and monitoring. Two or three representatives from each village are appointed by the group committee to monitor the collection and ensure that the management prescriptions are properly implemented.

Development of the Sustainable Management Plan for Cane

There are two important cane species in Bjoka: *Calamus acanthospathus* and *C. latifolius*. Both species have a single stem and are well known for their qualities for making handicrafts. Unfortunately, both species take about 20 years to mature. Once cut, they do not regenerate from the base or rhizome. These characteristics, coupled with a high demand, have left these species highly depleted.

The total management area of cane in Bjoka is about 440 hectares, of which almost two thirds were considered suitable for collection based on the inventory. The remaining area is protected for natural regeneration. The resource assessment started in the same way as for bamboo, including the participatory mapping of

^{viii} Sample size was 5x5 meters. The number of sample plot depends on the homogeneity/heterogeneity of the resource condition. The extremely steep slopes of often more than 45 degrees (100 percent) made it impossible to lay out larger sample plots.

the collection area and the stratification of the area according to the resource abundance and management objectives.

Because of the scattered distribution of plants, the sampling was done with transect lines of 15 meters width and variable length, covering as much of the forest area as possible. The width of the transect line was formed by asking the farmers to assemble a line and then walk jointly through the forest and record all the cane plants they encounter along their way. For each encountered plant, farmers were asked to make an estimation of the age,^{ix} the harvestable length,^x and the number required of each specific plant in order to complete one head load they usually carry. While walking through the forest, one person was assigned to measure the distance covered, in order to calculate the total area of the plot (equal to 15 meters width multiplied by the distance covered).

Apart from determining the annual harvestable quantities for each forest area, the group also agreed upon management prescriptions in order to ensure sustainable management. These included group-wide collection, time and harvesting restrictions, limitations for cattle grazing in regeneration areas, etc. The canes in the age class of more than 20 years are considered harvestable and can be harvested in the coming five years.



*Cane inventory in the field, formation of transect line of 15 meter width by farmers
(Photo credits: Robin aus der Beek)*

Bylaws

Bylaws are very important for the good governance of the group, to ensure proper decision-making processes, transparent fund mobilization, consideration of gender and equity issues, accountability, etc. The content of these bylaws is shown in Box 1. In Bjoka, the annual fee for membership is Nu.150, to be paid either in cash or through contribution in equivalent handicraft products. Some special provisions are included to support the group's poorest members. The bylaws also include some specific penalties in case the bamboo and cane management prescriptions are not applied properly.

So far, people have been adhering to the bylaws because these were developed by the local people themselves, resulting in a strong sense of ownership and commitment. Therefore no penalties have been collected so far. Furthermore, there is strong social control as well as good leadership of the CFMG committee, which further strengthens the implementation of the bylaws.

^{ix} Classified into five-year intervals, e.g. less than five years, between five and ten years, etc.

^x Only for plants older than 20 years of age.

Marketing and Processing

Before forming the CFMG, farmers sold their products individually to a middleman. This gave the middleman stronger bargaining power and farmers couldn't attain the prices they expected. With the group formation, all members have agreed that whatever they produce will have to be sold solely through the group itself. This is currently forcing the buyers to accept the prices as determined by the villagers.

The CFMG established several weaving centers, where farmers can jointly gather to craft their products, learn from each other's techniques, and monitor the quality of the products. These weaving centers have been equipped with a solar panel by the CBNRM project to generate electric light, so that farmers can complete their farm work during the day and focus on handicraft production in the evening. Furthermore, because of the group formation, the CFMG attained easier access

to external support both financially as well as in terms of capacity building (training and study tours) from government and donors. Farmers were producing only a few different sizes of "banchuks" a couple of years earlier, but exposure to broader markets taught them to diversify their products. They are currently producing almost 20 different types of products.

The total annual income that goes directly to the farmers (buying price at the collection center in the village for which farmers sell their products) is about Nu. 3,475,000 per year. On average, this makes Nu. 26,320 per household, which is more than double what they were earning before forming the CFMG. The group sells around 60% of their products to the local middleman, 30% at fairs, exhibitions, and the middleman in Thimphu, and the remaining 10% to the road head.^{xi}

Major Lessons Learned

Based on the experiences gained through the community-based management of NTFP in Bjoka, the following lessons learned are drawn with the aim to support similar initiatives in other countries:



*Discussion about bylaws
(Photo credits: Robin aus der Beek)*

^{xi} *The road head refers to the nearest road accessible by car; in the case of Bjoka it takes several days walking to reach the road head.*

Sustainable Management of the Resources

Sustainable management of the resources has been ensured by forming a community group to whom the government has handed over the management rights and responsibilities.

- Management prescriptions are best defined by combining traditional knowledge of farmers with technical support of extension workers and foresters.
- Proper management prescriptions and harvesting guidelines are crucial to ensure the sustainable management of resources and are even more important than calculating allowed harvesting quantities (annual harvesting limit).
- Since each NTFP species has its own ecological characteristics, inventory methodologies and resource assessments differ from product to product.
- Resource assessments and inventories should be carried out in participation with the local farmers. Local people are better in detecting the species, and their knowledge of the species is often required for better visual estimations of certain plant characteristics, such as the age of the species. Furthermore, people will have a better understanding and respect the outcomes of the resource assessment if they have been fully involved in the process.
- Harvesting regimes must be quantified in units that can be easily understood by farmers, e.g. head-loads per acres, instead of tons per hectare.
- Species that are being depleted or over-harvested should be collected in a group so farmers can monitor each other and ensure that the prescribed harvesting guidelines are applied properly.

Organization and Governance

- When discussions on special provisions for the poorer segments of the CFMG were brought up while defining the bylaws, community groups were willing to define such provisions and to help the poorest members of their CFMG. It was found that these discussions created a good opportunity to bring up the idea of sharing benefits with the poor.
- Once groups have been formed and the management rights have been handed over to the communities, regular visits to follow-up and to provide technical support by extension workers and foresters are essential for the successful achievement of the defined objectives.
- Bylaws for good governance of the group are as important as resource management plans for successful community-based resource management.
- A well-respected and active management committee is crucial for the functioning of the CFMG.
- The community's interest, commitment, participation, and feeling of ownership play a crucial role in successful functioning of the group and the community-based management of the resources.



Processing and Marketing

- The community group formation helped local people increase their bargaining power in price negotiations with traders and increased the income for the farmers.
- The formation of a CFMG helped to attract further investments from donors and government in the form of financial and technical support for further product development.
- The weaving centers with the solar panel are instrumental to increase productivity because farmers can work on their farm during the day and focus on handicraft production in the evening.

Conclusions

Bamboo and cane play a crucial role in the livelihood of the poorest communities in Bjoka as their cash income is almost solely derived from these products. Because of this, these products have been intensively exploited, resulting in acute scarcity, particularly of cane. Therefore, it became imperative to hand over the related rights and responsibilities from the government to the community for the sustainable management of these resources. This case study shows that the formation of a CFMG improved the sustainable management of bamboo and cane, and also strengthened income generation through the increased bargaining power in price negotiations with traders. The success of community-based NTFP management is related to the functioning of the group which depends to a large extent on the formulated bylaws and the CFMG management committee as well as the community's interest, commitment, participation, and feeling of ownership.



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