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Fighting poverty with bamboo

Since 2006, IFAD and the European Union have partnered in investing over EUR 234 million in agricultural research. This partnership aims to support scientific innovation with the active involvement of smallholder farmers. It has produced demand-driven and context-specific solutions, leveraging the agricultural research capacity of research organizations to improve food security, livelihoods and the environment.

Regional context

Poverty and environmental degradation are widespread in the African region. In East and Southern Africa, agriculture is the largest sector of the economy, employing over 65 per cent of the population and accounting for over 30 per cent of regional GDP. But farm production has declined in recent years due to drought and climate change. For millions of poor people in East and Southern Africa, bamboo has huge potential to alleviate poverty, protect the environment and help achieve the Sustainable Development Goals. Africa has huge, largely untapped reserves of indigenous bamboo and excellent conditions for growing cultivated species. With sound management, both natural and

QUICK FACTS

PROJECT South-South knowledge transfer strategies for scaling up pro-poor bamboo livelihoods, income generation and employment creation, and environmental management in Africa

BENEFICIARY COUNTRIES

Ethiopia, Tanzania and Madagascar

EU FUNDING EUR 1,000,070

IFAD FUNDING US\$500,000

INBAR FUNDING (IN KIND)

US\$2,150,000

DURATION September 2014-December 2018

IMPLEMENTING AGENCY

International Bamboo and Rattan Organisation (INBAR), Beijing, China

FUNDING AGENCY

IFAD-EU grant

cultivated bamboo can be key elements in overcoming core challenges to sustainable rural development. Bamboo can be grown on wastelands, degraded lands and on homesteads. Or it can be farmed as a cash crop, helping provide families with clean energy, higher incomes and sustainable livelihoods, e.g. for vulnerable groups such as rural women and unemployed youth.

The project, funded by the European Union and IFAD and implemented by the International Bamboo and Rattan Organisation (INBAR), targeted three countries – Ethiopia, Madagascar and Tanzania. Contributing to higher productivity and incomes, it fully conformed to the strategy of the EU-IFAD agriculture research for development programme (AR4D). It built on valuable lessons learned, provided a framework for a corporate portfolio of agricultural research projects and contributed to projects in other IFAD regional divisions.

Challenges

During implementation, the project faced a number of challenges:

- Land tenure and ownership rights were very unclear.
- National bamboo policies and strategies were often non-existent.
- Ecosystem restoration was critical, requiring dialogue with line ministries.
- Bamboo development professionals and organizations were lacking in the region.
- There was little co-funding for large-scale bamboo plantations and private-sector initiatives.
- Developing quality planting materials of bamboo needed time and adequate investment.

Opportunities

The bamboo sector offers many opportunities for reducing poverty and improving the environment. The crop is perennial, grows fast and has many uses, including:

- environmental management and climate change mitigation
- land restoration
- clean household energy and increased rural livelihoods and food security
- rural housing and eco-friendly tourism development;
- feed for livestock and biochar fertilizer for greater soil fertility
- agroforestry for SMART agriculture practices.

Rationale and relevance to IFAD, INBAR and other partners

The project reflected INBAR's strategy in bamboo-growing countries in accordance with the 2030 Sustainable Development Agenda. INBAR's activities support SDG 1 (poverty alleviation), SDG 7 (affordable and clean energy), SDG 11 (sustainable cities and communities), SDG 12

(responsible production and consumption), SDG 13 (climate action), SDG 15 (ecosystems restoration), and SDG 17 (partnerships and South-South cooperation). The grant served IFAD's overall development goals of overcoming poverty and addressing food security through remunerative, sustainable and resilient livelihood opportunities in the East African region. One way to do so is to help build and/or expand agricultural value chains to create employment. This contributes to shaping an environment in which small and medium-sized rural enterprises, small-scale farmers and rural people, including women, can thrive.

The approach strengthens poor rural people's environmental sustainability and climate resilience through economic activity. It makes sustainable progress possible by building an asset base, together with capabilities, and market opportunities for low-income rural dwellers, while also ensuring that risks and shocks are addressed. Building resilience and enhancing opportunities for the poor to engage collectively in environmentally sustainable businesses contributes to mitigating climate change, e.g. by processing waste from agricultural activities. The end result is the social and economic empowerment of poor rural people.

The project formed close links with other IFAD-supported initiatives such as the Community-based Integrated Natural Resources Management Project (CBINReMP) and the Ministry of Agriculture/World Bank 2nd phase Sustainable Land Management Programme (SLMP) II in Ethiopia, where resources were successfully mobilized through a Memorandum of Understanding with the Amhara Bureau of Agriculture and Rural Development (BoARD) and the Amhara National Regional State Technical, Vocational and Enterprise Development Bureau (BoTVED). In Madagascar, the project collaborated with the Support Programme for Rural Microenterprise Poles and Regional Economies (PROSPERER) and the Vocational Training and Agricultural Productivity Improvement Programme (FORMAPROD), while the Malagasy Ministry of the Environment, Ecology and Forests and the United Nations Environment Programme were extensively involved too. In Tanzania, the project worked closely with, and built capacity at the Tanzania Forest Service and the Mbeya, Iringa and Keyla district councils. Finally, the project worked tightly with the Indian Council of Agricultural Research and the Indian Institute of Soil and Water Conservation.

Project goal and objectives

The project's goal was to maximize benefits to participating communities and to the environment through effective South-South knowledge transfer aimed at increasing bamboo production to improve livelihoods and environmental management and to generate income and employment. The project aimed to achieve the following objectives:

- Promote bamboo for environmental management.
- Develop farming systems for bamboo.
- Develop inclusive models for organized household charcoal and smallholder waste biomass aggregation.
- Develop inclusive enterprise models producing bamboo commodities and products for various markets.

Policy dimensions

The IFAD-EU South-South bamboo grant enabled beneficiary countries to develop bamboo strategies and action plans. The project helped in drafting the Madagascar Bamboo Policy and Strategy 2018, which was validated by the Prime Minister's Office in July 2018, while Bamboo Strategy and Action plans for 2019-2029 for Tanzania and Ethiopia were in the process of validation.

Results

Together with the three beneficiary countries, the project included India as a South-South technical partner. The following key outputs and outcomes were delivered under four components:

Environmental management

A total of 555,698 Bamboos of 12 different species were produced at the nursery level and were then planted on 357.86 hectares of degraded land. This exceeded the original project target production by 206 per cent.

Bamboo farming system development

The project reached 3,384 of the 5,000 households targeted to set up micro nurseries at household level (68 per cent). Some 391,500 bamboo plants (131 per cent of the target) were produced at individual household level (i.e. microscale household planting materials production). Twenty-two farmer field schools and farmer training centres (FFSs/FTCs) were established to familiarize participants with micro planting. Training in the use of bamboo as feed, food and biomass was delivered to 2,686 households (107 per cent). Research on bamboo feed in Madagascar showed that the plants with the highest protein content were *Bambusa bambos* (15.43 per cent protein), followed by *Bambusa tulda* (14.95 per cent) and *Dendrocalamus giganteus* (14.29 per cent). Used as fodder for cattle, the plants can help increase milk production by 10-12 per cent.

NCPP model enterprise for household charcoal

In all, 5072 (50.72 per cent) women were mobilized and trained on quality, bamboo-based charcoal production for clean household energy. Inclusive social enterprises based on the NCPP (NGO + Community + Private-Sector Partnership) model were set up with local partners in three project areas.

Diversified livelihoods

Seven common processing and training centres (CPTCs) were established in the beneficiary countries, where they linked with 49 model enterprises. Training was provided to 1,363 young people on creating diversified bamboo microenterprises.

Innovations

South-South partnerships

The project focused on innovative approaches, transferring field-validated technologies and knowledge between the participating countries (Ethiopia, Madagascar and Tanzania) and India (South-South provider), thus benefiting IFAD target groups, especially farmers, women and young people.

Household-centred approach

The programme adopted a household-centred approach in planting bamboo on homesteads, along farm boundaries, on the banks of rivers and streams, and as shelter belts, thus creating a micro forest.

Micro nurseries

The grant enabled communities to establish micro nurseries in households and on farms. The nurseries generated sales and income as farmers worked to meet large demand for planting materials.

Micro and household tissue culture units

The project developed and validated micro and household tissue culture labs that helped produce large numbers of plants quickly and affordably. Apart from bamboo, the labs could subsequently provide other plants needed by farmers.

Food security from bamboo

The farmers were trained in sustainable bamboo management for different uses such as bamboo poles, bamboo shoots and fodder. They were also shown how to harvest and process bamboo leaves and use them to feed animals – an added benefit providing not only savings for farmers and women, but also increasing cow milk production.

NCPP enterprise approach

The NCPP model proved a viable way of promoting community-led enterprises.

Bamboo for powering rural households

A 25 kWh gasifier was installed to produce electricity from bamboo biomass and farm waste in Tongarivo, Madagascar. It was designed to improve the quality of life of local residents and lead the way for the development of agro-industries and off-farm enterprises, thus creating new opportunities for poor rural people.

Allometric and environmental research

Important research on quantifying the potential of bamboo for soil erosion control, water recharge and improved soil quality was conducted through pilot plots established in each of the three project countries.

Land restoration

Linking community-led bamboo enterprises to homesteads and farms planting bamboo boundaries contributed to land restoration.

Bambusetum

A bambusetum, or bamboo garden, with a variety of native and exotic species, was created to help researchers, policymakers and interested parties to learn about bamboo.

SUCCESS STORY

WODGRA Bamboo and Briquetting Company Ltd, Mbeya, Tanzania

The WODGRA Bamboo and Briquetting Company (Tanzania) was set up in 2013 on the NCPP model. Initial investment came from an NGO and the private sector, with the aim of reducing risk by trying out the venture first and then bringing in community funding. Company ownership was divided as follows: community, 51 per cent; NGO 26 per cent; and private sector, 23 per cent. WODGRA mobilized 3,029 women-led households to produce charcoal for the company, enabling participants to increase their incomes by US\$40-45 a month. One satisfied beneficiary, 45-year-old Margret Njela, commented, “The bamboo charcoal briquettes are very good, nice to burn, and make no smoke. They protect our health and the environment.”



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Investing in rural people

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Future directions

Activities undertaken under the IFAD-EU grant laid a strong base for scaling up and scaling out bamboo initiatives in Africa, with active partnerships and the involvement of governments and local communities. Specifically:

- Pilot bamboo sites encouraged the planting of bamboo along slopes, riverbanks and lakeshores for land and landscape restoration. The beneficiary countries included bamboo in their forestry plans.
- Developing allometric equations for bamboo, the project, in collaboration with the Indian Institute of Soil and Water Conservation, launched a research programme to quantify bamboo's potential to improve soil water holding capacity, reduce soil erosion, control silt and sequester carbon.
- Bamboo technologies disseminated among local communities and counterpart line departments helped scale up plant replication and produce quality bamboo planting materials.
- Farmer field schools made it possible for farmers and smallholders to become bamboo producers and raised their awareness of bamboo's potential not only for traditional uses but also as a source of charcoal and energy.
- The NCPP model could be a new way to encourage public-private partnerships in the bamboo sector.
- Validated bamboo enterprises linked to common processing and training centres could generate green jobs for young people and women.