TECHNICAL ADVISORY NOTE (TAN)

Project title:

Rural Enterprise Development for Livelihood Enhancement: Ghana Demonstration Enterprises

INBAR

The INBAR Action Research Site (ARS) programme in Kumasi, Ghana, was established in 2004 to demonstrate the potential that bamboo has to provide livelihoods for income generation. The ARS works through demonstration enterprise, which enable more effective and wider application of bamboo technologies to allow the rural poor to produce and process bamboo more effectively and to participate in and benefit from, the market economy at reduced risks and through economies of scale in operations.

The general objective of this project is to develop and trial small bamboo-based businesses in Ghana as a means of demonstrating the effectiveness of bamboo products to contribute to sustainable income generation. For this purpose, a trial model of community-based bamboo furniture makers – called Akyawkrom Bamboo Furniture Makers Association (ABFMA) was set up.

The Context

Bamboo-based production activities in Ghana are characterized by several constraints such as: lack of bamboo resource inventory; lack of technical know-how and the needed machinery for processing; limited or no training in bamboo processing and product design; and no or limited access to credit, permanent production facilities and marketing channels.

The specific objectives of the INBAR ARS project are to first evaluate the bamboo resource base in the project area and make recommendations for its improvement. Secondly, the project seeks to establish a small business enterprise, which produces different types of bamboo school furniture, executive/director's chairs, bamboo charcoal and bamboo vegetable crates. Thirdly, it aims to train local bamboo workers in production, business management and process flow. Finally, it plans to assist the enterprise to develop a business plan for obtaining credit facilities from rural and commercial banks. This will ensure that the enterprise is able to expand and modernize its production facilities, thus improving the quantity and quality of the products to meet market demand and standards.

To help implement the objectives of the Action Research model, an assessment of the resource base (picture right), beneficiary community, association, type of products, market potentials and existing institutional and stakeholders capacities was initiated by INBAR's Livelihoods and Economic Development (LED) Africa Coordinator and the National Project Co-ordinator. Based on the information obtained, a SWOT analysis of the proposed activities was carried out to assess and ensure successful implementation of a sustainable income-generating model.

MAIN RESEARCH PROGRAM COMPONENTS

Components:

- Organizing members of the local community (mainly carpenters) into a group to enable them to participate in higher value added bamboo processing and production activities.
- Providing training on process flow and processing techniques to the group.
- Creating community-based enterprises run by the trained entrepreneurs.
- Setting up a production unit with all necessary facilities.
- Providing market survey and product design support to the enterprise.
- Establishing successful marketing linkages for bamboo school furniture

CONDITIONS FOR REPLICABILITY

Scaling-up: A number of organisations and districts have expressed interest in replicating similar action projects in their districts. For example, Juaso District, Ashanti Region is keen to employ ABFMA to train local community members on bamboo lamination production. In the future, community-based enterprises across districts could form a larger cooperative to undertake standardized and distributed production of different bamboo furniture, and other, products. A cooperative would be financially able to set up a marketing unit.

The integrated Rural Art Industry of Kwame Nkrumah University of Science and Technology (KNUST) also intends to use the ARS as an academic skill practical centre for university students pursuing bamboo rural act courses. The university will also purchase bamboo laminated ply-board and panels from ABFMA for practical work in their department.

With the improved facility now available, the ABFMA can develop a business plan to source for additional capital to expand the production facilities to scale up its production.

Scaling out: As capital investments for ARS community enterprises are low, this model can be easily replicated across many village communities in Ghana and other African countries. For example, oil drum kilns used for producing bamboo charcoal are locally available and cost around US$ 100. For all products pioneered through the ARS programme, the required production skills and technologies are easily transferable, as long as suitable bamboo resources and markets are available.

EXISTING LINKAGES WITH OTHER IFAD INITIATIVES

- Community-based enterprise development in Kumasi, Ghana, is one of several INBAR ARS Programmes developed under INBAR LED programme, under IFAD grants TAG 518, TAG 774 & TAG 836. The project also has linkages with the Rural Enterprise Project (Ghana) of IFAD.

BEFORE – PROCESS – AFTER






THE PROGRAMME IMPLEMENTATION

TARGET GROUPS AND OUTPUTS

Project target group:

- The ARS target group were women and youth, bamboo smallholders, and artisans from local community.

Institution involved during the ARS process:

Microenterprises:

Akyawkrom Bamboo Furniture Makers Association

Government

Ejisu Juaben District Assembly – to provide land, work shed and financial support for skills training, and to help market laminated bamboo school furniture;

Bamboo and Rattan Development Programme (BARADEP) of the Ministry of Lands, Forestry and Mines; Government of Ghana; and

Universities and Training Centres:

The Department of Agricultural Engineering of KNUST – to support the fabrication of bamboo tools and equipment for the project.

Wood Industrial training Centre (WITC) – to provide access to their training workshop, equipment and human resources for the initial skills training activities for ABFMA members.

Outputs:

- The provision of a work shed that can accommodate at least 15-20 workers at a time, and provision of electricity; earlier, the association members had to work out in the open and during daylight.
- Equipping of the work shed with a ripsaw, wood planer, charcoal pyrolysers and other tools, to enhance production processes.
- The technological skill level of the ABFMA members in the bamboo furniture making has improved considerably following the skills training and capacity building programmes.
- The adoption of process flow and management techniques has equipped ABFMA members with better ways of running and operation their enterprise to minimize wastage and maximize productivity to improve income.

IMPACTS

Tangible impacts

Impacts on the human capital:

- Capacity building provided to community members on production and enterprise management, and product design.
- Capacity building provided to community members on bamboo furniture and crate production and bamboo charcoal making.
- Capacity building provided to smallholders and farmers for bamboo cultivation, management, harvesting and post-harvest treatment techniques.
- Increased awareness among community members about the potential of bamboo in livelihood creation and income generation.

Impacts on the social capital:

- Creation of ABFMA, a local community association, for the implementation of some of the activities under the ARS programme.
- Establishment of a work shed with facilities (electricity, machinery, equipment) for bamboo-based production.
- Change brought about in the perception of bamboo as an inferior material.
- Setting up of a bamboo charcoal pyrolyser for managing bamboo waste from production and partly address local energy needs.
- Formation of community partnerships with government and inter-governmental organizations, and educational and industry institutions.

Impacts on the natural capital:

- The bamboo-based school furniture and packaging crate programmes have potential to impact on the environment, as they are intended to replace wood products and thus relieve the stress on forests.
- The bamboo charcoal production currently optimizes bamboo waste utilization. At a larger scale, the activity can ease the pressure on the use of wood for making charcoal.

Intangible Impacts

Due to successful demonstration of bamboo charcoal technology through the IFAD project, INBAR has been awarded an EC project worth more than 1.6 million Euros. The project will establish five pilot production sites in Ghana and Ethiopia, helping to establish 1,000 micro-enterprises.

CONSTRAINTS FACED DURING THE IMPLEMENTATION

Main difficulties faced during the process were:

Internal constraints

- Lack of resource persons and adequate equipment for skills training
- Lack of adequate processing machinery, particularly for drying operations
- Lack of adequate number of project staff
- Lack of transportation facilities
- Perception among the community that the project is a social intervention

External constraints

- Shortfall in the delivery of commitments (land and building for the production facility) on the part of a project partner
- Low level and scale of bamboo processing
- Negative perception about the durability and potential of bamboo as a material
- Lack of bamboo resource inventory
- Under-representation of women in the workforce, entrenched by traditional social attitudes towards gender roles
- Limited access to credit financing mechanism for community producers

Sustainability, Acceptability and Accessibility

Accessibility

Because of the programme's linkage with INBAR, technical and research outputs from the programme are available for replication at both the national and international level. In Ghana, the programme continues to develop relations with knowledge partners and government agencies to ensure that institutional support for the enterprises and access to marketing and training are available. Bamboo harvesters and transporters, as well as the forestry commission, have been contacted to help ensure standard bamboo prices.

The ARS has already started to promote cross-learning, adaptation, and validation of technologies with knowledge partners such as WITC and KNUST. Internationally, action research from Ghana can be adaptively replicated across INBAR's network of 34 countries, particularly in Africa. In addition, research outputs are available at low, or no cost to individuals and community groups operating in INBAR member countries.

Institutional Sustainability and Degree of Farmers' Involvement in the Research Programme

At the time the programme was launched, the demand for bamboo poles for scaffolding was becoming a remunerative business in Ghana. Therefore, the introduction of value addition to the bamboo culms by turning them into laminated school furniture, charcoal and crates has helped increase the confidence of farmers whose lands have bamboo stands. Unlike in the past when they

used to slash and burn bamboo, these farmers are now protect bamboo stands and are even prepared to go into bamboo farming. With such interest on the part of farmers, the sustainability of bamboo stock is assured, which in turn assures sustained raw material supply to the enterprises.

The ARS programme has taken initiative to muster the support of government agencies and trade/industry organizations to ensure markets and marketing channels for the products developed by the community members.

Gender dimension

Traditionally, few women are engaged in bamboo processing business in Ghana. However, ABFMA has seven women members. Their primary roles in the association cover keeping records of the association, marketing, and some product finishing tasks such as packaging. The participation of the women in ABFMA, and in the skills training programmes, is serving to help break the conventional roles of women, dictated by traditions, as farm hands and salespersons (in markets). When the production volume and the income generation increase, it is expected that more women will enter the bamboo industry, as it provides new, attractive livelihood options.

DISSEMINATION PATHWAYS

- *Communication strategies at the village level:*
  - Face-to-face meetings
  - Training workshops and activities in the field
  - Meetings with stakeholder groups
- *Communication strategies at the national and international level:*
  - Meetings with government departments and other enabling agencies
  - Meetings with technical experts in the field
  - Technical reports and publications

FURTHER RESEARCH NEEDS

- The need for solar dryers for bamboo drying, to reduce dependence on the vagaries of the weather. The Engineering Department of KNUST or Ghana Regional Appropriate Technology Industrial Service could help in this regard.
- Large-scale bamboo plantation and management to improve the quality and quantity of the bamboo available.
- The establishment of a Common Facility Centre (CFC) to help small enterprises access machinery and equipment for processing and finishing.
- Transfer of mature technologies, rather than prototypes, at community level.
- The need for continuous education and sensitization of the community and various bamboo associations on the rationale of bamboo-based interventions for sustainable livelihoods.

ANNEX ONE: DATA ENTRY BOX

The Research Programme

The ARS Programme is carried out at Akyawkrom Community in Kumasi, Ashanti-Region of Ghana. The community is strategically located near a number of timber mills and a wood training centre. A large number of its members are working in these factories while others, such as those in ABFMA, are engaged in the production of bamboo products. Although the predominant economic activity of the people in the community is farming, the presence of timber mills has given the people an opportunity to gain experience in woodwork. The ARS programme found it easy to transfer these woodworking skills to bamboo product development.

BARADEP of the Ministry of Lands, Forestry and Mines has also undertaken several bamboo-training workshops for ABFMA using local wood factories. The availability of these facilities and the training obtained helped the Akyawkrom community develop ABFMA into a cottage industry with a comparative market advantage over other Districts. This new industry has helped reduce migration of local youth to urban centres. The ARS programme trained members of ABFMA in higher value adding bamboo processing and production, so as to create sustainable livelihoods with cash income generation. Based on a market survey, some products were then selected for production.

Laminated bamboo board: Laminated bamboo boards were introduced to develop bamboo board/panel as a primary product, which can then be used to develop semi-finished and finished bamboo products such as school furniture, T&Gs, door panels, tables, executive chairs, etc. This technology involves the low-cost processes aimed at reducing the cost of production. Besides the members of ABFMA, local artisans were trained, with the cooperation of WITC, in the production of laminated bamboo items to spur bamboo enterprise expansion in other communities in Ghana.

With the bamboo laminating skills obtained, ABFMA can now produce laminated bamboo panels of any size to suit different bamboo product designs. The Ministry of Education, Science and Technology has introduced laminated bamboo school furniture, supplied by ABFMA through the ARS, on a trial basis. The government has now agreed in principle to the introduction of the bamboo school furniture in both public and private educational institutions.

Bamboo charcoal: Bamboo charcoal production technology model from the Philippines was introduced for the ABFMA with a prototype charcoal pyrolyser. The drum-type pyrolyser enables the association to produce bamboo charcoal efficiently with less environmental hazards, low production costs and limited labour compared with the conventional system of wood charcoal production. The pyrolysing process is simple and easily adopted at the community level. Though further trail productions are needed to improve the carbonization and recovery of the bamboo charcoal, the technology transfer to the community association makes it easy for ABFMA to start improving on the production process.
The bamboo charcoal production is sustainable because waste from the production of major bamboo products such as bamboo school furniture, panels, etc. are being used to produce the charcoal. The community is being encouraged to go into bamboo cultivation to sustain raw material supply in the future for the bamboo enterprises.

Bamboo crate: The demand for crates for the transportation of vegetables, especially tomatoes, is growing rapidly in Ghana, increasing the pressure on wood supplies. A more affordable, durable and environmentally friendly product, which would complement and eventually replace the wood crates, is therefore becoming a necessity. Following marketing research, a prototype bamboo vegetable crate was designed and produced, with the help from ABFMA. The crate prototypes were later market-tested, with local farmers expressing that the crates were acceptable in terms of quality. However, costs need to come down before bamboo crates can effectively compete with wooden equivalents.

USEFUL INFORMATION

Key words

Bamboo, Ghana, Kumasi, artisans, furniture, charcoal, crate

Useful links

www.inbar.int

www.inbar.int/livelihood/ldmain.htm *INBAR's Livelihood Development Programme*

"The Rural Poor – Survival or a Better Life? The choice between destruction of resources and sustainable development." A paper submitted by IFAD to the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002.
(http://www.ifad.org/events/wssd/e/index.htm)

Year of publication: 2008

Contacts:

INBAR

Dr. I.V. Ramanuja
Programme Director
Beijing, China
E-mail: rrao@inbar.int

IFAD

Ms. S. Mwanundu
Senior Technical Adviser Environment\NRM
Rome, Italy
Email: s.mwanundu@ifad.org

Acronyms:

ABFMA	Akyawkrom Bamboo Furniture Makers Association
BARADEP	Bamboo and Rattan Development Programme
INBAR	International Network for Bamboo and Rattan
ARS	Action Research Site
IFAD	International Fund for Agricultural Development
KNUST	Kwame Nkrumah University of Science and Technology
WITC	Wood Industrial Training Centre
LED	Livelihoods and Economic Development