

# **EX-POST EVALUATION REPORT**

**ITTO Project PD 146/02 Rev.1 (I)**

**Promoting Sustainable Utilization of Bamboo through  
Community Participation in Sustainable Forest Management  
(Mynmar)**

Prepared for the ITTO  
by  
Dr. Antonio C. Manila

September 2009

## **Acronyms**

CFIP	:	Community Forestry Instruction Program
DPM	:	Deputy Project Manager
EA	:	Executing Agency
FD	:	Forest Department
FRI	:	Forest Research Institute
FPJVC	:	Forest Products Joint Venture Cooperation
IGGs	:	Income Generating Groups
INBAR	:	International Network for Bamboo & Rattan
IT	:	Itinerary of Travel
ITTA	:	International Tropical Timber Agreement
ITTC	:	International Tropical Timber Council
ITTO	:	International Tropical Timber Organization
LFM	:	Logical Framework Matrix
MTE	:	Myanma Timber Enterprise
MTMA	:	Myanmar Timber Merchants Association
NGOs	:	Non-government Organizations
NTFPs	:	Non-Timber Forest Products
PSC	:	Project Steering Committee
SFM	:	Sustainable Forest Management
ToR	:	Terms of Reference
ToT	:	Training of trainers
WP	:	Work Plan

## TABLE OF CONTENTS

	Page
Part I EXECUTIVE SUMMARY	1
Part II MAIN TEXT	8
1. Introduction	8
2. Evaluation Scope, Focus and Approach	10
3. Project Facts	12
4. Findings and Lessons Learned	14
4.1 Findings	14
4.1.1 Significant Achievements	15
4.1.2 Impacts and Effects	18
4.1.3 Sustainability	21
4.1.4 Process of Project Formulation and Implementation	22
4.1.5 Project Proposal Appraisal Process	25
4.2 Lessons Learned	26
5. Conclusions and Recommendations	28
5.1 Conclusions	28
5.2 Recommendations	29
ANNEX A - Program and Itinerary of Travel Followed during the Evaluation Mission	31
ANNEX B - Persons/Officials Met and Interviewed during the Evaluation Mission	33

## **PART I EXECUTIVE SUMMARY**

The Project PD 146/02 Rev. 1 (I), entitled, "Promoting Sustainable Utilization of Bamboo through Community Participation in Sustainable Forest Management" was approved in the 32<sup>nd</sup> Session of the International Tropical Timber Council (ITTC) Meeting at Bali, Indonesia in 2002 for implementation by the Government of Myanmar through the Forest Department (FD), as the project's executing agency (EA). The main objective of the project was to promote the sustainable management and use of bamboo in the country, where bamboo resources are quite abundant, but their management and utilization are quite very limited. The project strategy was anchored on the active involvement of rural community in sustainable forest management (SFM), including the use of bamboo resources to enhance their socio-economic benefits and alleviate poverty incidence of forest communities. It was carried out for 48 months or 4 years duration which started operations on January 1, 2003 to December 31, 2006, with a 3-month no-cost extension period until March 31, 2007.

The development objective of the project was to enhance the socio-economic benefits of bamboo to rural communities through their active participation in sustainable management and utilization of bamboo forests. In this way, this project also contributed to SFM in Myanmar.

The specific objectives of the project are shown below:

- (a) To develop and disseminate technical guidelines for sustainable management of bamboo forests and quality production of bamboo products, and
- (b) To increase income of rural communities in Mandalay, Bago and Yangon Divisions through the establishment of bamboo production cooperatives based on improved processing technologies and marketing.

The total project budget approved by the ITTC was US\$ 453,256.00 (Donors: Japan and Republic of Korea), with in-kind contribution from the Government of Myanmar a total of local currency Kyats 1,309,620.00.

Considering the potential value of the lessons learned and experiences gained from the project, the ITTO through the Committees on Economic and Market Intelligence and the Forest Industry at their 41<sup>st</sup> ITTC Session in November 2007 in Yokohama, Japan, has decided that a thematic ex-post evaluation of the project be undertaken to determine how well the project served its purpose and to draw up lessons and recommendations to improve the implementation of future projects.

The ex-post evaluation involved consulting a range of project documents and relevant background materials and data, conducting an evaluation mission in Myanmar on July 26, 2009 to August 1, 2009 (one week), cross-checking information and clarifying contextual issues or concerns, including thorough follow-up via email communications after the mission and preparing the report following the ITTO Manual for Project Monitoring, Review and Evaluation (3<sup>rd</sup> edition, 2008).

At the outset, the bamboo project contributed to the attainment of ITTO Objective 2000 & ITTO Yokohama Action Plan (2002-2006) through the promotion and implementation of R & D activities in the management of secondary forests, restoration and rehabilitation of degraded forest land, promotion of non-timber forest products (NTFPs) in

close cooperation with local forest owners and communities living in the forest areas and through trainings of local folk and implementers in bamboo forest management, among others. The actual contribution to ITTO's SFM work is on the conduct of six (6) in-house trainings for local communities or target beneficiaries and the international cross-visits/study tours of implementers serving as pool of trained FD staff, with multiplier-effect towards continuous implementation of bamboo conservation work and the influence of those trained FD staff on national forest policy.

In addition, the in-house training documents/designs produced and 29 technical bamboo guidelines/manuals/reports compiled and published by the project out of R & D programs, which, when disseminated will surely provide the tools for more widespread implementation. Project-sponsored bamboo seminars/workshops, both locally and internationally, have served to increase the awareness of all stakeholders in the importance and value of bamboos in SFM.

Another significant project output was the establishment of expanded demonstration areas comprising of 150 hectares of natural bamboo stand and plantations, with 26 bamboo species in three (3) project areas, as compared to the planned 100 hectares only of 10-15 bamboo species, and broken down as follows:

- 50 hectares bamboo plantation established; 25 has. in Pauk khaung, Pyay District, Bago Division and 25 has. in Pyinmana, Nay Pyi Taw, managed by their respective rural communities;
- 50 hectares bamboo plantation in Yedashe village, Kawhmu, Yangon Division, of which 10 has for *Bambusetum* with 26 species managed by the Forest Research Institute (FRI) and 40 hectares community-based plantation managed by villagers under the Community Forestry Instruction Programme (CFIP,1995);
- 10 hectares natural bamboo forest managed by FRI located in Ngalaik Reserve, Pyinmana, Nay Pyi Taw, Myanmar;
- 10 hectares trial planting of bamboo species in dry-zones of Tatkone, Nay Pyi Taw (supported by Myanmar Government funding); and
- 30 hectares of natural Hmyin (*Dendrocalamus strictus*) bamboo forest in Pyay District, Bago Division, handed over to rural villagers under CFIP.

The ex-post evaluation confirmed that the project strategy was sound, given the information available and circumstances at the time the project was developed. The logical framework matrix (LFM) captured the project strategy and design, such that the LFM can be used as an effective monitoring and performance framework. This was demonstrated by the positive impacts provided by the project to its intended beneficiaries and stakeholders through the provision of training courses/seminars/workshops for government implementers and the rural people in 3 project sites. The rural population was further exposed to the means, methods, management, establishment of bamboo plantations and natural bamboo forests, including value-added bamboo by-products, within the framework of the project. They had ample opportunities to increase their income by adopting the guidelines and directives provided in various publications of the project. These opportunities were not available to them during the pre-project situation.

At present, despite the influence of external factors, e.g. political will of government to support bamboo sector and willingness of partners in development, three (3) project outcomes for target beneficiary groups were identified, to wit:

- Stakeholders are collaborating and building linkages – Close collaboration was a necessary part of the project implementation plan through the conduct of its inception workshop/seminar in early 2003, and as a result they began to build and establish linkages, share ideas and generate inspiration for follow-up work. It is worthwhile mentioning that after project termination in March 2007, the FD and FRI staffs are still around to assist rural folks as part of mainstreaming process, and in particular the Le Lu Aing and Yedashe villages had increasing number of members and their income shares in the IGGs. These income-generating initiatives of rural communities would not have taken place if it were not for the ITTO project bringing stakeholders together.
- Good information base on bamboo has been developed – The project outputs generated a dearth of data and information (e.g. 29 technical reports/manuals and guidelines) about bamboo resources in Myanmar that did not either exist before or was scattered around different locations or places. At present, two (2) bamboo publications, e.g. Manual on Bamboo Forest Management (in Myanmar language) and Bamboo Shoot Products Manual (in Myanmar language) were always sought for by the general public, particularly those retired government officials from FD and military sector, to be used as basic references in their participation in CFIP strategy, whereby unproductive and idle public lands are opened or allowed for developmental activities through the involvement of private sector/individuals (personal communication with Dr. San Winn, 2009).
- Training-of-trainers (ToT) – The project was successful in ToT involving government implementers and rural folk, and in developing targeted course design and documentation for future use, thereby allowing in-house staffs from FD and FRI to lead in the conduct of local training courses for rural folks/communities instead of relying on the services of outside experts. In fact, a continuing in-house training program or capacity-building exercises for local FD and FRI staffs is in place to ensure efficient and effective transfer of bamboo technologies to its beneficiaries (personal communication with Dr. Nyi Nyi Kyat of FRI, 2009).

The project was concluded more than 2 years ago, and it has been observed that Myanmar Government has continuously supported the bamboo sector development with local community participation through the CFIP. As mentioned above, the government financed the 10 hectares trial planting of bamboo in dry zones areas of Tatkone, Nay Pyi Taw, including the 30 hectares natural Hmyin (*Dendrocalamus strictus*) bamboo forest management in Pyay District, Bago Division, and the 40 hectares community-owned bamboo plantation in Yedashe village, Kawhmu Township, which were all handed over to the local communities under the CFIP. These financial and policy support of Myanmar government were very encouraging to the project's sustainability.

## **Lessons Learned:**

There are a number of lessons learned from this project, as indicated or broken down into different categories or aspects, which should be taken into consideration when designing similar projects in the future, to wit:

### **A. Project Management**

1. The project organization and structure were appropriately created following a collaborative method of project governance and involving a wide variety of stakeholders in the project design and implementation. Outstanding project results or outputs were achieved through multi-sectoral linkages under the guidance of the Project Steering Committee (PSC) and direct supervision of the national project manager.
2. The PSC monitored and evaluated the progress reports and accomplishments every 6 months interval providing regular feedback to all stakeholders to enhance project activities and outputs. This meant the project was continuously improved and ensured the project activities were targeted towards the needs and requirements of beneficiaries.
3. The project staff turn-over is a significant risk, especially involving national project manager, but when it is unavoidable, efforts should be made to ensure that key knowledge is documented, key documents located and secured, and important contacts were passed on to organic staff. A specific case was the GIS-generated maps of the project sites, as mentioned in the project documents, cannot be located and/or produced and shared with other users for information and reference.

### **B. Technical Aspects**

1. A number of relevant information on bamboo, e.g. guidelines, manuals, reports, etc. have been produced and disseminated by the project to a wider audience/stakeholders that were necessary for the sustainability of project impacts.
2. On LFM, the indicator of success should have been better targeted to desired outcomes, and should be more specific than using the national level information, particularly for specific objective no. 2, in order to effectively measure the project outcomes at the end of the project.
3. The project risks were easily identified, especially at the level of government support and direction, and considered its consequent implications towards the sustainability of project.

### **C. Government Policy**

1. The government's CFIP strategy of opening up degraded and idle public lands for private investors or individuals has consequently increased the coverage of bamboo plantation areas under this project indicating continued support on bamboo sector development to alleviate poverty of rural communities.

2. The establishment of bambusetum in Yedashe village, Kawhmu Township, with 26 bamboo species was planted intentionally to serve as show window for general public awareness, and eventually promote the introduction of more bamboo species in Kawhmu rather than just a single dominant species of Wa Pyaut (*Oxytenanthera nigrociliata*) in said project area.

#### **D. Executing Agency and Stakeholders Involvement**

1. The key project strategy is the direct involvement of rural communities in the proper utilization and management of bamboo resources through capacity-building activities undertaken by the FD, to acquire and adopt new technologies and methods in bamboo plantation establishment and natural bamboo forest management. Some other villagers outside the project areas were also motivated to replicate at their own initiatives and welfare the bamboo plantation schemes under the CFIP strategy considering their inherent traditional know-how and expertise on bamboos.
2. The prominent feature of the bamboo project was the formation of the PSC and the Project Advisory Committee with FD senior officials and other stakeholders from other government agencies and non-government agencies (NGOs) closely collaborating 2 times in a year, to provide advise and direction for the project. The frequent fraternization of senior officials, project staff and relevant parties during meetings and trainings further ensure camaraderie and good will between and among stakeholders in the interest of project sustainability.
3. It is worth mentioning that great care was considered at the project planning phase in 2003 and onwards to avoid any deviation between the planned and actual implementation of the project. All relevant parties or stakeholders in FD's central and field offices, including rural folks, were informed through channels and actively involved in different project phases.
4. The physical distance between project sites and existing rough roads connecting them, with poor tele-communication facilities hampered the project implementation especially during rainy season, including the non-availability of socio-economic specialist at the end of the project, which served as unforeseen factors that affected specific project outcomes mentioned in B.2 above.

#### **Conclusions:**

The following conclusions in the whole evaluation process of the project are shown below, to wit:

- 1) A number of outstanding bamboo R & D researches and findings focused on plantation management and production of edible bamboo shoots, including value-added bamboo products, e.g. bamboo curtains, woven, mat-ply bamboo board, bamboo handicraft and furniture for rural communities had been done and documented through guidelines, manuals and reports. The project produced a dearth of information and data on bamboo resources, such as the 29 technical papers/reports which were all very comprehensive and impressive, however, none of them have been published in any of the international journals, periodicals and newsletters (e.g. INBAR) for wider distribution and utility.



- 2) Bamboo demonstration areas of the project had expanded in 3 sites from 100 hectares to 150 hectares, with component bamboo species from planned 10-15 species to 26 species planted (in bambusetum area), in view of continued support of Myanmar government on bamboo sector development to alleviate poverty of rural people through the CFIP strategy.
- 3) The project was collaboratively governed and the budget was spent within the limits through the PSC at its inception phase (in 2003) until the project completion. Close collaboration between and among key stakeholders enabled them to build linkages and share information and updates in the interest of proper project management and sustainability aspects.
- 4) The project strategy was sound and selected outputs appropriate, as indicated in the LFM and this meant that there was no need to revise the project logframe. Together with the unexpected government support to bamboo sector development through the CFIP as the project was implemented, a significant number of activities were achieved at the level of outputs than originally envisaged. Likewise, project activities were constantly improved based on feedbacks and updates at the PSC meetings conducted twice a year.
- 5) A stronger political leadership is needed to safeguard the positive impacts of the project in the future, aside from the continuous implementation of CFIP strategy, but also the formulation of a long-term national bamboo development strategy and action plan as a "road map" for all stakeholders to follow and adhere to.
- 6) Finally, the project has been found successful in improving the conditions of target beneficiary groups or IGGs in a cost-effective manner, with the exception of Ledi village group in Pauk khaung Township that could still change for the better or improve over time with invigorating encouragement and less competitiveness from implementers and co-workers.

### **Recommendations:**

The following recommendations for future actions will further support the sustainability of project benefits and help further development of the bamboo sector in Myanmar, such as:

- 1) The bamboo industry should be promoted further by the government through FD in collaborative partnership with private enterprises and cottage industries, and with rural communities' active participation to sustain the gains of this project.
- 2) Key stakeholders group should continue working together towards the preparation of a framework concerning the long-term national bamboo development strategy which will guide and support all future action plans of the bamboo sector.
- 3) There is still significant need in Myanmar for information and trainings on all aspects of bamboo sector requiring continued assistance of donor community like ITTO, including dissemination of information or public awareness programme that require

improvement, i.e. with enhanced and expanded extension services that are consistent with any agreed bamboo development strategy.

- 4) A number of bamboo demonstration plots located in dry zones and upper Myanmar regions should be encouraged and established to further develop and test systems for potential upscaling and replication.
- 5) Bamboo plantation establishment and natural bamboo forest management should be included as an integral part of the District Management Plan of the government through the FD.
- 6) A Section or Unit on bamboo should be created either in the FD or FRI hierarchy to mainstream the learning and best practices on improved bamboo technologies. The Unit should be tasked with responsibility of putting together and disseminating bamboo researches, analysis and other development news to rural community and industry stakeholders.
- 7) Bamboo forest survey should be undertaken to determine the existing and remaining bamboo growing stock, in collaboration with the GIS section of the planning and statistics division of FD. The GIS-based maps of these project sites and/or demonstration plots should come handy for easy reference and guide.
- 8) Strengthen key stakeholders' capacity through trainings and improved bamboo technologies by enhancing the planning, programming and implementation activities. In particular, rural people's capacities be developed and improved not only in technical aspects, but also through skills development, e.g. simple book-keeping, recording, filing and accounting procedures, which are prerequisites for organizing farmers' cooperatives or IGGs
- 9) Specific guidelines could be developed for bamboo in terms of harvesting practices and associated regulations towards developing quality standards and achieving certification as a tool for future marketing efforts especially for high-value markets.
- 10) The importance of regional networking with neighboring countries in ASEAN should also be emphasized and pursued to exchange and share the wealth of bamboo information and technologies generated by this project for future marketing strategies and collaborative partnerships. For instance, the project can link with the existing "Bamboo Networks" established in ASEAN to enhance and harness the best available bamboo science and technologies for sustainable development of the people and the environment of the region.

## PART II MAIN TEXT

### 1. INTRODUCTION

The ITTO through the Committees on Economic and Market Intelligence, and Forest Industry at their 41<sup>st</sup> Session in November 2007 in Yokohama, Japan had decided to conduct an ex-post evaluation of the Project PD 146/02 Rev.1 (I) to determine how well the project served its purpose and to draw up lessons learned, experiences gained and recommendations to improve the implementation of future projects.

In particular, the project identification details are shown below:

- (a) Title - Promoting Sustainable Utilization of Bamboo through Community Participation in Sustainable Forest Management
- (b) Serial Number - ITTO Project PD 146/02 Rev.1 (I)
- (c) Implementing Agency - Forest Department, Ministry of Forestry
- (d) Host Government - Union of Myanmar
- (e) Project Cost - Myanmar Government's Contribution: 1,309,620 Kyats  
ITTO Contribution : 453,256 US\$  
(Donors: Japan and Republic of Korea)

The project was prepared and submitted in accordance with ITTO objectives as set out in Article 1 of the International Tropical Timber Agreement (ITTA, 1994), as indicated below:

- (c) To contribute to the process of sustainable development.
- (f) To promote and support research and development with a view to improving forest management and efficiency of wood utilization as well as increasing the capacity to conserve and enhance other forest values in timber producing tropical forests.
- (i) To promote increased and further processing of tropical timber from sustainable sources in producing member countries with a view to promoting their industrialization and thereby increasing their employment opportunities and export earnings.

The project was also submitted in compliance with the following goals established by the Committees on Reforestation and Forest Management, and the Forest Industry under the ITTO Yokohama Action Plan (2002-2006), such as:

Goal 1: Support activities to secure the tropical timber resource base.

- (5) Access opportunities for, and promote development of non-timber forest products and forest services, which can improve the economic attractiveness of maintaining the forest resource base.

- (7) Encourage and assist members as appropriate:

To develop innovative mechanism and relevant legislative frameworks, including incentives and market-based instruments to secure and expand, where appropriate, which address.

Goal 2. Promote sustainable management of tropical forest resources.

- (5) Monitor and assess the environmental, social and economic costs and benefits of forest plantation development and utilize the information to promote, where appropriate, new plantations within the ITTO Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests.

- (10) Encourage and assist Members, as appropriate:

- To improve the productive capacity of natural forest, where appropriate, through intensified silvicultural practices, better utilization of lesser-used species, promotion of non-timber forest products, guided natural regeneration, enrichment planting and reforestation.
- To implement R & D activities in the management of secondary tropical forests, restoration of degraded forest forests and rehabilitation of degraded forest land, taking into consideration ITTO guidelines.
- To establish and manage forests for multi-use in close co-operation with local forest owners and communities living in the forest areas.

Moreover, the project was submitted in line with the priorities established by the Committee on Forest Industry, particularly with the following concerns:

Goal 2. Improve Industry's Efficiency of Processing and Utilization of Tropical Timber from Sustainable Sources.

- (5) To the extent possible, given the Organization's primary focus on timber, develop, publish and disseminate techniques and technologies on product development and on utilization efficiency of non-timber forest products.

- (8) Encourage Members and assist, where appropriate:

- To formulate R & D proposals that assist with the piloting and commercialization of improved and/or innovative utilization methodologies, including reduction of losses and increased use of residues and recycling.
- To participate in international standards activities related to forest products; and undertake research into wood properties and end use requirements, with particular attention to the properties and availability of lesser-used species and timber plantation species and the potential markets for them.

## **2. EVALUATION SCOPE, FOCUS AND APPROACH**

The primary purpose of this evaluation was to provide a concise project diagnosis to pinpoint the successful and unsuccessful outcomes, the reasons for successes and failures and the project's contribution towards the achievement of ITTO/ITTA Objectives, and to further draw lessons learned and experiences gained that could be used to improve future projects.

The following are the specific Terms of Reference (ToR) for the evaluation, to wit:

- i. To assess the project's design and contribution to the achievement of their respective objectives.
- ii. To assess the achievement of the project's outputs and specific objectives.
- iii. To evaluate the impact and relevance of the Projects, detailing their impact on development and specific objectives, as stated in the project documents.
- iv. To determine the effectiveness of technology transfer to target groups, if applicable.
- v. To assess the overall post-project situation for the projects, including conditions of their intended direct and indirect beneficiaries.
- vi. To define and assess unexpected effects and impacts, either harmful or beneficial, and present the reasons for their occurrences.
- vii. To analyze and assess implementation efficiency, including the technical, financial and managerial aspects.
- viii. To assess the overall sustainability of the projects after completion, and include appropriate recommendations to safeguard the continuing of their positive impacts, and enhance utilization of the technologies (if applicable) and other results developed by the projects.
- ix. Taking into account the results of the evaluation, make an overall assessment of the projects' relative success or failure, to summarize the key lessons learnt; and identify any issues or problems which should be taken into account in designing and implementing similar projects in the future.
- x. To assess the overall cost of the projects with original budget provisions, and their respective linkage with the overall results.
- xi. To prepare the evaluation report in accordance with the references for the Project Evaluation Report, as contained in the ITTO Manual for Project Monitoring, Review and Evaluation (3<sup>rd</sup> edition, 2008).
- xii. To assess the projects' contribution to the relevant ITTA objectives (1994) and relevant ITTO Action Plan.

- xiii. To prepare one or more articles for each project, for possible publication in the ITTO Tropical Forest Update, in consultation with the editor, containing an overview of the projects and summarizing the lessons learned from the evaluation work. Appropriate photographs should be provided, if possible.

In addition to the above, it is requested to make an in-depth analysis of the outputs of the project and its actual intended situation after project completion, with particular emphasis on:

- Developed technical guidelines for sustainable management of bamboo forests and quality production of bamboo products and its development.
- Established bamboo production cooperatives based on improved processing technologies and marketing in Mandalay and Bago Divisions and their roles in increasing income of rural communities in the areas.
- Gained technique on bamboo growing, tending and harvesting in a sustainable means by rural people, and their involvement in the works of bamboo products manufacturing activities.
- Gained advanced technologies by those who are living by bamboo industry; bamboo shoots, handicraft, chop-stick, furniture, etc. to improve their products; from low to high quality products.
- Increased incomes of bamboo grower and manufacturer because of government encouragement, and available opportunities for raw bamboo and value-added production.
- Stronger bamboo industry in Myanmar and their international market because of regular supply of raw bamboo with improved qualities and diversified bamboo products.

The ex-post evaluation of Project PD 146/02 Rev. 1 (I) was undertaken on July 26, 2009 to August 1, 2009 by the Consultant (Dr. Antonio C. Manila of the Philippines) through close coordination and assistance by the Forest Research Institute (FRI), one of forestry agencies/institutions under the FD of Myanmar. As mentioned earlier, the FD is the executing agency of the project under the Myanmar Government. The detailed program, itinerary of travel (IT) and important personalities met and interviewed during the mission are attached herewith, as Annexes A & B. This Report presents the findings, conclusions and recommendations of the evaluation, which was done approximately two (2) years and three (3) months after the completion of the project on March 31, 2007.

At the outset, an initial evaluation phase through familiarization with the project and its context, logical framework, including its work and financial plan, was done by revisiting the project objectives, intended beneficiaries and outcomes, and how these were linked with the higher order objectives of ITTO. The LFM was used to a great extent in this evaluation as yardstick for project monitoring and performance framework.

The reference documents dispatched by ITTO included the basic project document, progress/monitoring reports, completion and technical reports and a number of publications produced by the project. These reference materials served as important guides in the project evaluation process, including other relevant technical information, e.g. available GIS-generated maps of project sites/areas, financial audited reports by independent firm and publications which were provided by the EA during the evaluation period. Moreover, cross-checking of data/information and clarifying contextual concerns were done through follow-up actions via email communications after the mission.

The evaluation was done using a combination of personal interviews of former project staff and members of rural communities (e.g. especially those income generation group members), field visits to demonstration areas and experimental sites for natural and plantation bamboo forests and an exhaustive review of the project reports and publications. The field visits and discussions among direct and indirect project beneficiaries further enhanced the consultants' understanding of the project details and its comprehensive analysis and evaluation.

### **3. PROJECT FACTS**

In Myanmar, the contribution of bamboo to rural population, which comprised about 75% of the total population or 38 million people in 1997-2000, is quite large and varied ranging from food, shelter and energy to their total income. The bamboo resources and other non-timber forest products (NTFPs) are abundant (covering approximately 963,000 hectares), and composed of more than 90 bamboo species with an annual production of about two (2) billion pieces for all sorts of production. However, only about an average of 2% is the contribution of NTFPs to the total forestry earnings during the same period (1997-2000) basically due to lack of technical know-how on the different uses of bamboo.

Thus, the promotion of research and development (R & D) activities on bamboo forest management is of paramount importance and immediately needed to help conserve the remaining natural forests of the country, and at the same time enhance the living standards of the rural communities. Likewise, the implementation of a variety of techniques on value-added or production of semi-finished bamboo products will further create huge employment opportunities for rural people with corresponding effects in alleviating their poverty.

As mentioned earlier, the incidence of poverty is quite high in predominantly rural communities in Myanmar which eventually leads to people's encroachment into existing natural forest areas, thereby converting them into other land-uses at a faster rate of degradation and destruction. To address this scenario or alleviate the poverty of rural people, the technical know-how on sustainable bamboo forest management and quality production of various bamboo by-products are needed. For instance, with improved technological introduction on bamboo products, as shown in neighboring countries (through INBAR Newsletters), poor upland farmers with small land holdings are able to at least double their income from bamboo manufacturing and eventually moved them out from extreme poverty.

This scenario prompted the Forest Department to solicit ITTO's support and eventually submitted this important project proposal. The project was finally approved in the 32<sup>nd</sup> Session of the International Tropical Timber Council (ITTC) Meeting at Bali, Indonesia

in 2002 covering a period of 48 months or 4 years duration. It commenced operations on January 1, 2003 until December 31, 2006, and requested for a no-cost extension of 3 months or until March 31, 2007 to complete the preparation and submission of all projects documents and requirements.

The total project budget approved by the ITTC was US\$ 453,256.00, with in-kind contribution or counterpart funding from the Government of Myanmar a total of local currency Kyats 1,309,620.00.

The project's overall R & D activities on bamboos at the field levels were carried out by FRI through its Director, who was designated in-concurrent capacity as the National Project Manager (NPM). As discussed earlier, the FRI is one of the government's agencies under the supervision of FD. It is emphasized that the FD is the EA of the bamboo project responsible for organizing, executing and reporting all its activities, with clear guidance from the PSC, chaired by the Director General of the Planning and Statistics Department of the Ministry of Forestry, with members representing the ITTO, Myanmar Timber Enterprise (MTE), Forest Products Joint Venture Cooperation (FPJVC), Myanmar Timber Merchants Association (MTMA) and Directors of FD Headquarters.

The strategy adopted in carrying out the different R & D activities in the field was done by classifying the bamboo researches into three (3) major topics, such as a) Bamboo Forest Management, b) Bamboo Products Development and Processing, and c) Bamboo Products Extension and Marketing, and transforming them into 3 project sections/units headed by a corresponding Deputy Project Manager (DPM).

The development objective of the project is to enhance the socio-economic benefits of bamboo to rural communities through their active participation in sustainable management and utilization of bamboo forests. In this connection, this bamboo project also contributed to SFM in Myanmar.

The specific objectives of the projects are the following:

- (a) To develop and disseminate technical guidelines for sustainable management of bamboo forests and quality production of bamboo products.
- (b) To increase income of rural communities in Mandalay, Bago and Yangon Divisions through the establishment of bamboo production cooperatives based on improved processing technologies and marketing.

The following reported outputs were found completed, as discussed with the project staff in relation to the above two specific objectives:

- Research work focused on bamboo plantation management and production of edible bamboo shoots, and that management, processing and utilization of selected bamboo species were carried out completely;
- Publications of technical manuals/guidelines on plantation management, harvesting, processing and utilization of bamboo were undertaken and completed;
- Six (6) training courses on bamboo plantation management and utilization were implemented and the reports on these in-house training courses for rural communities were published;



- Publication of a technical report on the 2004 assessment of the economic and socio-cultural characteristics of the villagers in the project sites and their potential of bamboo development implemented.
- Establishment of three (3) bamboo products production groups in three (3) project sites completed.
- Identification and installation of appropriate processing technologies equipment for production of quality bamboo products was completed in two (2) pilot production plants in the project sites.
- Project implementation strategy seminar was conducted in early 2003 to ensure the participation of the key project personnel and the local communities.
- Conducted two (2) national workshop/seminar/fora with technical papers presented by national and international bamboo experts, on the development of the bamboo sector and the proceedings of both seminars/fora were compiled and published.

#### **4. FINDINGS AND LESSONS LEARNED**

##### **4.1 Findings**

The framework of this bamboo project was built on the premise that forest communities are active partners in development and eventually empowered to manage their resource base, especially bamboo resources and associated ecosystems. The provisions of technical know-how and business skills through trainings of targeted rural folks consequently will generate local employment and income to reduce poverty incidence, and at the same time, conserve the remaining natural bamboo stands mixed with other vegetation, both commercial trees and NTFPs. Thus, a properly designed project is a fundamental prerequisite to its successful implementation at the national and field levels. Since bamboo is used in myriad ways from cradle to coffin, it is very significant for the socio-economic amelioration of the rural communities as well as the improvement of environmental conditions. Bamboo is rightly called as 'friend of the people' by the Chinese and 'green gold' or 'poor man's timber' by the Indians, and it further needs more focused attention for its sustainable management and utilization in the long term. The project was executed successfully achieving almost all outputs, except for a few missing concerns.

In accordance with ITTO's Project Formulation Manual (3<sup>rd</sup> edition, 2008), the specific objectives are attained only when the project outputs are fully achieved and the assumptions fulfilled. In particular, the project's LFM indicated that specific objectives nos. 1 and 2, with corresponding outputs were achieved based on timely schedules and logistical support, except for the missing socio-economic studies in 2006 and the sustainability aspect of the Ledi village project site, Pauk khaung after 2 years of project completion which had depicted its inadequacies.

**4.1.1 Significant Achievements** - The following are the most significant achievements of the project based on its LFM:

**a. Output No. 1:** Two demonstration plots covering 10 commercial bamboo species in 100 hectares established.

**Achievements:**

- (i) Gathering of information and establishment of research strategy undertaken/completed in 2004.
- (ii) Research work focused on bamboo plantation management and production of edible bamboo shoots and that of management, processing and utilization of selected bamboo species carried out and completed.
- (iii) A very significant project total output of 150 hectares of natural bamboo stand and bamboo plantations established and managed with 26 bamboo species, as compared to a planned 100 hectares of 10-15 bamboo species, broken down as follows:
  - 50 hectares bamboo plantation; 25 has. in Pauk khaung, Pyay District, Bago Division and 25 has. in Pyinmana, Nay Pyi Taw, established by their respective rural communities;
  - 50 hectares bamboo plantation in Yedashe village, Kawhmu, Yangon Division, of which 10 has for Bambusetum with 26 species managed by the FRI and 40 has. community-based plantation managed by villagers under the CFIP strategy in 1995;
  - 10 hectares natural bamboo forest managed by FRI located in Ngalaik Reserve, Pyinmana, Nay Pyi Taw;
  - 10 hectares trial planting of bamboo species in dry-zones of Tatkone, Nay Pyi Taw (supported by Myanmar Government funding); and
  - 30 hectares of natural Hmyin (*Dendrocalamus strictus*) bamboo forest in Pyay District, Bago Division, handed over to rural villagers under CFIP.

**b. Output No. 2:** Technical manuals for plantation, management, harvesting and processing of bamboo prepared and published by the project.

**Achievements:**

- (i) Implementation of research work on management, processing and utilization of selected bamboo species was completed.
- (ii) A total of 29 manuals/guidelines/technical & training reports had been produced and published, as shown below:
  1. Proceedings of Project Strategy Seminar (in Myanmar language);
  2. Report on International Training Workshop on Small Bamboo Daily Product Processing Technologies and Machines (in English language);

3. Report on Training on Bamboo Products Processing and Bamboo Forest Management in Hainan, Sichuan and Zhejiang Provinces (in English);
4. Bamboo Charcoal and Vinegar Making Technique & Utilization (in Myanmar);
5. Manual for Bamboo Forest Management (in Myanmar);
6. Notes on Market Information, Channel Intelligence and Network Development (in Myanmar);
7. Guidelines on Formation of Bamboo Products Producer Groups and Bamboo Products Co-operatives (in Myanmar);
8. Bamboo Plantation and Bamboo Products, Training Course No. 1 (in English);
9. Bamboo Plantation Establishment, Bamboo Forest Management and Bamboo Products Production, Training Course No. 2 (in English);
10. Bamboo Products, Training Course No. 3 (in English);
11. Training Workshop on Natural Bamboo Forest Management, Training Course No. 4 (in English);
12. Bamboo Plantation and Bamboo Forest Management, Training Course No. 5 (in English);
13. Bamboo Products Processing and Furniture Making, Training Course No. 6 (in English);
14. Investigation on Chemical, Physical and Mechanical Properties of Some Myanmar Bamboo Species (in English);
15. Study on the Socio-economic Characteristics of Rural People in Pauk khaung and Kawhmu Townships (in English);
16. Current Market Situation of Bamboo Shoot in Myanmar and Market Expansion Potential (in English);
17. Bamboo Products Market Survey in Myanmar (in English);
18. A report on "Workshop-cum-Seminar on Poverty Alleviation through Bamboo-based Development: Policies, Strategies and Stakeholders" (in English);
19. A report on "International Training Workshop on Bamboo Handicraft, Bamboo Weaving and Furniture Processing Technologies" (in English);
20. National Forum on Sustainable Teak and Bamboo Development in Myanmar (in English);

21. Report on International Training Workshop on Bamboo and Rattan Sustainable Management in Developing Countries (in English);
22. Report on International Training Workshop on Bamboo Propagation, Management and Harvesting: Methods, Policy Issues and Strategies (in English);
23. Report on Training on Bamboo Cultivation and Bamboo Shoot Processing in Thailand (in English);
24. National Consultant (Bamboo Management) Termination Report (in English);
25. National Consultant (Bamboo Processing) Termination Report (in English);
26. National Consultant (Bamboo Products Marketing) Termination Report (in English);
27. Second National Forum on Sustainable Bamboo Development in Myanmar (in English);
28. Handbook on Bamboo Properties in Myanmar (in English); and
29. Bamboo Shoot Products in Processing Manual (in Myanmar).

**c. Output No. 3:** Technological transfer for project staff and rural communities on bamboo plantation, management and utilization was undertaken or conducted.

**Achievements:**

- Ten (10) project team members attended the international training seminars/workshops on bamboo conducted either in China or India. Reports on each training (study tours) submitted by the participants and published.
- Six (6) training courses/sessions about bamboo plantation management and utilization were conducted by FD-FRI for rural people/communities in 3 project sites (Le Lu Aing, Pyinmana; Ledi, Pauk khaung; Yedashe, Kawhmu), among others.
- Reports on each in-house training course were prepared and published.

**d. Output No. 4:** Economic and socio-cultural characteristics of Pyinmana, Mandalay Division and Pauk khaung, Bago Division and the potentials of bamboo development assessed and completed.

**Achievements:**

- Assessment of economic and socio-cultural characteristics of rural people in Pauk khaung and Kawhmu Townships and their potential for bamboo development implemented in 2004.

- Results of economic and socio-cultural characteristics in project sites presented in the 2<sup>nd</sup> National Forum in 2006, and published the results/proceedings as technical report for the project in March 2007.
- e. Output No. 5:** Two (2) bamboo production groups or income generating groups were organized and operated to produce edible bamboo shoots and bamboo products.

**Achievements:**

- Organized three (3) bamboo products production groups or Income generating groups (IGGs) in Ledi, Le Lu Aing and Yedashe villages completed in 2005.
  - Identification and installation of appropriate technologies equipment for the production of quality bamboo products at 2 pilot production plants in Ledi and Le Lu Aing villages completed.
  - Bamboo shoot market survey and marketing strategies completed in 2005 and bamboo products market survey was also conducted and completed in December 2006.
  - Quality bamboo products produced, such as bamboo hat, bag, curtain, table mat, sofa, dining table & chairs, room divider & side table, including bamboo woven-mat ply-board were produced.
- f. Output No. 6:** Two (2) national workshops covering cultivation, harvesting, processing, socio-economy, marketing and policies for the production of bamboo products were conducted.

**Achievements:**

- Project Implementation Strategy Seminar to ensure the participation of key project personnel and local communities conducted in June 2003.
- Two national workshops/fora on the development of the bamboo sector were conducted and successfully completed in 2004 and 2006.
- Publication and distribution of the workshops proceedings completed.

**4.1.2 Impacts and Effects**

The project brought together key stakeholders concerned with natural bamboo stands and bamboo plantation management, including the production of bamboo shoots and value-added bamboo products. Before the project there was little communication efforts between various government agencies, private sector, non-government organizations (NGOs) and rural folks about bamboo issues, and there was very little information available about bamboo, its industry and problems. At present, despite the influence of external factors, e.g. political will of government to support bamboo sector and willingness of partners in development, three (3) project outcomes for target beneficiary groups were identified, to wit:

- Stakeholders are collaborating and building linkages – Close collaboration was a necessary part of the project implementation plan through the conduct of its workshop/seminar in early 2003, and as a result they began to build linkages, share ideas and generate inspiration for follow-up work. It is worthwhile mentioning that after project termination in March 2007, the FD and FRI staffs are still around to assist rural folks as part of mainstreaming process, and in particular the Le Lu Aing and Yedashe villages had increasing memberships and income shares in their IGGs. These income-generating initiatives of rural communities would not have taken place if it were not for the ITTO project bringing stakeholders together.
- Good information base on bamboo has been developed – The project outputs generated a dearth of data and information, e.g. 29 technical reports/manuals and guidelines about bamboo resources in Myanmar which did not either exist before or was scattered in different institutions. At present, two (2) bamboo publications, e.g. Manual on Bamboo Forest Management (in Myanmar language) and Bamboo Shoot Products Manual (in Myanmar language) were always sought for by the general public, particularly those retired government officials from FD and military sector, to be used as basic references in their participation in CFIP strategy, whereby unproductive and idle public lands are opened or allowed for developmental activities through the involvement of private sector/individuals (personal communication with Dr. San Winn, 2009).
- Training-of-trainers (ToT) – The bamboo project was successful in ToT involving government implementers and rural folk, and in developing targeted course design and documentation for future use, thereby allowing in-house staff from FD and FRI to lead in the conduct of local or in-house training courses for rural folks/communities instead of relying on the services of outside experts. In fact, a continuing in-house training program or capacity-building exercises for local FD and FRI staff is in place to ensure efficient and effective transfer of bamboo technologies to its beneficiaries (personal communication with Dr. Nyi Nyi Kyat of FRI, 2009).

However, the continuity of these positive outputs in a post-project situation may change when key people are transferred or moved out through promotion or other causes, such that close cooperation, established linkages and training programs will also be negatively affected through time.

The contribution to the project objectives of the desired outputs and assumptions has been achieved, as mentioned in Section 4.1 above. The availability and adoption of generated bamboo guidelines and publications of improved technologies generated through R & D activities had contributed significantly to specific objectives nos.1 & 2. Unfortunately, the lack of meaningful engagement within Ledi village group in Pauk Khaung Township after its establishment in 2005 coupled with minimum level of cooperation or understanding among implementers and members served as a major barrier to their continuing IGG activities after project termination. The gloomy scenario in Ledi village was brought about by weak organizational feature and partnership among members and implementers, as there were constant changes of officers in the IGG leading to dwindling memberships over time with their own vested interest. The weak organization also happened when a number of private entrepreneurs came in to

compete and at the time when the prices of bamboo products were at its minimum level. This was further exacerbated when the implementers took the cudgel of continuing the production activities of the IGG and became a competitor themselves.

Likewise, specific objective no. 2 had outcome indicators for socio-economic studies in 2006, which were realistically a long-term aim, but was not addressed by the project. The socio-economic scenario of the IGGs in 2006, as indicated in the LFM, would gauge the immediate effects on the income levels of rural communities as expected to be achieved by the project. Thus, recognizing that socio-economic studies were not undertaken, the impacts on rural income could not be ascertained.

While the project generally made good progress towards the specific objectives, the government priority related to bamboo & NTFPs' development, on-ground application of CFIP and limited institutional capacity of rural people, were the most significant barriers preventing greater progress towards the development objective. As such, follow-up actions to the project have encountered some constraints, e.g. insufficient funding or institutional support because of other policy priorities. Bamboo is of lesser priority for government compared to Teak (*Tectona grandis*) and other hardwoods. Nevertheless, the project impacts demonstrated a modest contribution to the development objective. Not so much with direct increase to the national economy, but through indirectly the diversification of value-added bamboo products and skilled opportunities for rural people.

In accordance with ITTO's project formulation manual (3<sup>rd</sup> edition, 2008), the assumptions mentioned concerning external factors exerting influence on the project have to be proven real or true before the project objectives can be deemed achieved. There were 2 key assumptions identified in the LFM that had noteworthy impacts on the project, such as:

- willingness of private sector and rural communities to adopt new technologies and products to diversify local and export markets – It is appropriate to assume at the time of the project design that private sector (e.g. handicraft/cottage industries) may not adopt the improved technologies and rural people who adhere to the traditional way of doing their handicrafts, among others. This initial reluctance to engage and collaborate has initially threatened the success of the project. But, in the end the collaborative implementation of the project helped to alter their sentiments. Now, the positive attitude of rural people in Le Lu Aing and Yedashe villages are the driving force behind a range of excellent follow-up initiatives, such as procuring a generator from their savings to operate the processing technologies' equipment donated to them by the ITTO and introduce the planting of other suitable bamboo species for its edible shoots and by-products.
- Government continued support on bamboo sector development – The political will of government is often translated into relevant policy measures aimed at ensuring integrated development of the bamboo sector. In fact, the on-ground application of CFIP strategy had substantially increased the bamboo demonstration areas established by the project, i.e. from 100 hectares to 150 hectares over 4 years of implementation with the involvement of rural

communities. Again, this was appropriate to assume at the time when the project was designed.

However, the success indicators for specific and development objectives reflected only a small portion of the expected range of project impacts. In particular, the indicators for development and specific objective no. 2 represented longer terms or time to attain for the project, as these targets can only be verified at the national levels, e.g. export earnings from bamboo products increased from 2% to 5% of total export of forest products, or the contribution to 2 project sites increased to 200% by year 4. As such, the listed outputs could only have expected to make a humble contribution to these objectives even though they are fully consistent with the project strategy. Another indicator under the development objective was the formulation of a long-term national strategy for bamboo development, which was not delivered by the project.

Although the project did not face many unexpected effects, except for some research trials for site-species matching and spacing experimentation and the repeated flooding or inundation of experimental plots in Kawhmu-bambusetum site, but all of these issues have been addressed immediately through the PSC. The publication of the remaining project reports/manuals/handbooks had to be done and completed during the 3-month no-cost extension of the Project, which was approved by the ITTO.

The impact of project outputs on the physical environment of the project sites was also very positive as bamboo plantations increased its establishment from 100 hectares to 150 hectares comprising of 26 bamboo species rather than 10-15 commercial bamboo species as indicated in the project design, including natural bamboo forest managed and conserved by rural communities under the CFIP.

There were positive project effects through the conduct of training courses designed for government implementers and the rural people in 3 project sites which promoted their collaboration towards plantation development for bamboos, including value-added bamboo products in their IGG activities. It was observed that Le Lu Aing IGG members were mostly into bamboo weaving and handicrafts, while some community participants in Ledi village residing proximal to bamboo demonstration site were into bamboo shoots and culms business venture, as part of their training programs. Other community members were also influenced by those who attended the trainings through technology transfer and demonstration of quality finished products. Thus, the rural population was further exposed to the means, methods, management, establishment of bamboo plantation and natural bamboo forests within the framework of the project. A few community members interviewed had ample opportunities to increase their income by adopting the bamboo guidelines and directives given in various publications of the project. These opportunities were not available to them during the pre-project situation.

#### **4.1.3 Sustainability**

The project was concluded more than 2 years ago, and it has been observed that Myanmar Government has continuously supported the bamboo sector development with local community participation through the CFIP strategy. In fact, the government financed the 10 hectares trial planting of bamboo in dry zones areas of Tatkone, Nay Pyi Taw, including the 30 hectares natural Hmyin (*Dendrocalamus strictus*) bamboo forest in Pyay District, Bago Division, and the 40 hectares community-owned bamboo



plantation in Yedashe, Kawhmu Township, which were all handed over to them under the CFIP. These financial and policy support of government were very encouraging to the project's sustainability.

The 6 in-house trainings of rural communities and their implementation of the IGG activities showed positive efforts towards sustainability, except in Ledi village, Pauk khaung area where the FD and its staff intervened and competed with rural community efforts resulting into disarray of IGG activities and membership. On a positive note, this situation can still be salvaged as more rural people came and showed interest during the evaluation and personally continued on with their bamboo plantation development and production of pickled-bamboo shoots.

It is worth mentioning that in the project implementation of 4 years, there were also different people who handled the project, as the NPM, due to personnel movement in the hierarchy of government. Although this came about, but the field officers were always assigned from FD and FRI to build on with the management of project sites and mainstream the learning into its system of governance. Moreover, to address the institutional requirement of bamboo sector development, there must be a Unit/Section within FD to handle all concerns about bamboo and further institutionalize this aspect within the bureaucracy.

The project staff turn-over is a significant risk and when it is unavoidable, efforts should be made to ensure that key knowledge is documented, key documents located and secured, and important contacts were passed on to organic staff/officers.

#### **4.1.4 Process of Project Formulation and Implementation**

The original bamboo project proposal was prepared and submitted to ITTO by Dr. San Win, who was formerly assigned at FD. His research works revolved mostly on bamboos, hence he maybe considered as the "bamboo man" of the country. The selection of project sites and bamboo species have been made through his previous exposures or experiences to field conditions of the country, the R & D researches on bamboo and interactions with rural communities. Although he is now connected with the Ministry of Forestry, but would still extend valuable assistance to the project.

##### **4.1.4.1 Stakeholders Involvement**

In early 2003, a project implementation or inception plan was conducted to ensure the participation of key project personnel and local communities involved, and as a result they began to build and grow linkages, share ideas and generate inspiration for follow-up works. A core team or group sits as members of the PSC for the project, by providing direction and decision-making process, which are eventually implemented by FD. The PSC is a collegial body with members from different collaborating agencies, including NGOs and other sectors, who represented their mandates towards bamboo forest management and the corresponding business aspect of the commodity. As the outputs were implemented, feedback mechanism through monitoring progress and impacts were also gathered by the project, and included in the next planning and budgeting cycle or year of operations, which were noted and approved by the PSC.

It is often emphasized that projects involving rural communities and other stakeholders be part of the strategy for bamboo conservation and sustainability, and it followed that the duration, scope and pilot sites' selection should be done in consultation with them. The multi-sectoral stakeholders' participation was critical during project formulation and implementation, and equally important was the involvement of experts in socio-economic aspects, business development and marketing to provide the balance towards intended outcomes. It was noted further that the sociology consultant, as indicated in project documents, was not able to undertake socio-economic studies in 2006, to show the outcome indicators for specific objective no. 2.

In the same manner, all stakeholders who participated in every aspect of the project framework planning and implementation became "owners" of the project, including the rural people in 3 sites where bamboo forest management and production of value-added products were conducted.

#### **4.1.4.2 Project Design**

The ex-post evaluation confirmed that the project strategy was sound, given the information available and circumstances at the time the project was developed. The LFM captured the project strategy and design, such that the LFM can be used as an effective monitoring and performance framework. This was demonstrated by the positive impacts provided by the project to its intended beneficiaries and stakeholders. It is worth mentioning that the conduct of training courses/seminars/workshops that were designed for government implementers and the rural people in 3 project sites had gradually promoted and enhanced their collaboration towards their IGG activities. The rural population was further exposed to the means, methods, management, establishment of bamboo plantation and natural bamboo forests, including value-added bamboo products, within the framework of the project. Other community members were influenced by those who attended the trainings through technology transfer and demonstration of quality finished products. They have ample opportunities to increase their income by adopting the guidelines and directives provided in various publications of the project. These opportunities were not available to them during the pre-project situation.

The project design was also found to be appropriate as the project's outputs generated wide-ranging positive impacts and effects to its target beneficiaries, which contributed positively towards the project's specific and development objectives. Skills, knowledge and capabilities have been upgraded as a result of the project across technical and processing technologies, trainings/workshops/fora and relevant government institutions. The improved collaboration and information generated as a result of the project supported further development of the bamboo sector.

Cognizant of the project design of the bamboo project and its arrangement relative to the vertical cause/effect logic set forth in LFM, the project aptly identified the outcomes (e.g. improved bamboo technologies and technical guidelines) that were needed to achieve the desired impacts (i.e. increased contribution of bamboo sector to the national economy), the outputs (e.g. trainings conducted and socio-economic data gathered and analyzed) which were required to achieve the desired outcomes as mentioned above, including the different activities that must be carried

to achieve the desired outputs, and finally the inputs needed to carry out the activities of the project. Thus, the project design was found appropriate with sufficient field operating staff producing all the outputs and backstop with timely activities as indicated in the LFM.

In the same manner, the horizontal logic which comprised four (4) columns in LFM tabular form are interrelated or inter-connected to each other by addressing the desired intervention at each level through measurable indicators, and shown with cost-effective method and source of information for verification purposes and key assumptions to be fulfilled in order to continue and sustain the intervention. The columns are as follows: 1<sup>st</sup> column refers to strategy of intervention, 2<sup>nd</sup> column indicates the measurable indicator, 3<sup>rd</sup> column refers to means of verification and 4<sup>th</sup> column as the key assumptions. The evaluation undertaken confirmed that the vertical and horizontal logic are sound and appropriate with the project design and strategy for the bamboo sector development.

The project work plan covered 4 years duration and approved at the beginning of the project, and any deviation or changes in activities and inputs were tabled and consequently approved by the PSC. The work plan was an important reference for project staff showing the expected timing of each activity, budget requirements and units/staff responsible for each activity, and then transformed into a Gantt Chart for easy guide. For example, the Gantt Chart showed that socio-economic surveys in project sites be done twice (in Year 2 as baseline and Year 4 as final output), but it was done only once (in 2004), and therefore the output indicators were found missing affecting the desired outcome at that level.

#### **4.1.4.3 Efficiency and Operational Aspects**

The project was collaboratively governed and the budget was within the limits. In addition, government's in-kind contribution for rural communities' bamboo plantation in public lands through CFIP strategy meant that significantly more activities at the level of outputs were drawn than originally envisaged (please refer to Section 4.1.3 above). The project organization and structure were appropriate with various levels of coordination, e.g PSC and the project management within FD. Outstanding project results or outputs were achieved under the guidance of the PSC and direct supervision of the NPM at the field level.

The project staff was composed of 32 persons, of which 2 people (FD & FRI) was in-charge of administration, 12 personnel for implementation and research, 10 labor force, 3 national consultants and 5 international consultants. They were provided with an office space and supported with an ITTO vehicle (now assigned at FD) and a number of equipment, office supplies and materials. The strategy adopted in carrying out the project R & D activities was essentially following the three (3) sections, namely; bamboo forest management section, bamboo products development and processing section, and bamboo products extension and marketing section.

In terms of administrative procedures, the project followed Myanmar government office decorum and regulations, including financial and auditing procedures, with an independent firm (e.g. U Tin Win Group, CPA) conducting annual audit as required by the ITTO. An internal monitoring system of project's

progress in bamboo R & D and other activities were reckoned from the approved work and financial plan as affirmed by the PSC. Likewise, the PSC monitored and evaluated the progress reports and accomplishments every 6 months-interval providing constant feedback to stakeholders to enhance project activities and outputs. In the procurement procedures for goods and services using ITTO funds, the project followed ITTO Guidelines on Procurement. The recipient country commitment as project counterpart funding represented the in-kind contributions derived from salaries/wages of FD and FRI staff assigned or detailed in the project, office space and materials/supplies, among others.

Based on project WP, the budget was allocated among activities over time and a number of in-house and international trainings (e.g. study tours), workshops/seminars/fora were conducted for the purpose of capacity-building and disseminating bamboo R & D results, guidelines, manuals, reports, etc. for the information and reference guide of all stakeholders of the project.

#### **4.1.4.4 Effectiveness**

Many stakeholders were involved in the project from its inception until its completion in March 2007 and throughout the project duration the design and strategy had been the same and were found very effective in enhancing the bamboo growing stock of the country and promoting collaborative participation of rural people in bamboo forest management and bamboo by-products for income generation. The project's success hinged on being able to achieve many outcomes through a number of activities, e.g. provision of technical support and trainings for the implementers and rural communities, and therefore there was no need to change or revise the LFM. The on-going project can continue building-on its existing institutional arrangement and mechanism to address a few concerns related to missing outcomes, e.g. socio-economic conditions of project sites after completion and skills training to progress into enterprise-oriented communities, including the mainstreaming of project learning.

#### **4.1.5 Project Proposal Appraisal Process**

The failure of the project, if any, could be anchored and determined from the development objective, i.e. "to enhance the socio-economic benefits of bamboo through rural communities' participation in a sustainable manner". This particular phrase or quotation means that there is an existing and on-going socio-economic activity by the rural people involving bamboo and its by-products, though it was on their traditional way of doing things, and needed to increase their income or living standards through trainings and improved technologies from researches. In this regard, baseline information about bamboo R & D activities in natural and plantation management and the socio-economic data on project sites are required to come up with guidelines, manuals and reports.

However, aside from the missing output indicators about the socio-economic data and the long-term national bamboo strategy in 2006, there was also the formation of cooperatives in each project site, and from Myanmar government policies there were little efforts or lessons/experiences on cooperative movement in the country. Bamboo is considered of lesser priority by the government compared to Teak and other hardwoods. Besides the trainings for rural folk were all technical trainings on bamboo growing and

establishment, and none were dealing with skills development, e.g. simple book-keeping, recording, filing and accounting procedures, which were prerequisites in organizing farmers' cooperatives or IGGs. Even the socio-economic studies during the project termination was not carried out, or were not given due attention, to warrant a good analysis of income levels of rural folk in the study sites at the end of the project (December 2006).

Thus, the ex-post evaluation confirmed that a number of missing activities and outputs that were planned, but were overlooked or not accomplished by the project, had significantly affected the overall success and attainment of project objectives, particularly its impact on the income levels of rural communities after 4 years of implementation.

## **4.2 Lessons Learned**

There are a number of lessons learned from this project, as indicated or broken down into different categories or aspects, which should be taken into consideration when designing similar projects in the future, to wit:

### **A. Project Management**

1. The project organization and structure were appropriately created following a collaborative method of project governance and involving a wide variety of stakeholders in the project design and implementation. Outstanding project results or outputs were achieved through multi-sectoral linkages under the guidance of the PSC and direct supervision of the national project manager.
2. The PSC monitored and evaluated the progress reports and accomplishments every 6 months interval providing regular feedback to all stakeholders to enhance project activities and outputs. This meant the project was continuously improved and ensured the project activities were targeted towards the needs and requirements of beneficiaries.
3. The project staff turn-over is a significant risk, especially involving national project manager, but when it is unavoidable, efforts should be made to ensure that key knowledge is documented, key documents located and secured, and important contacts were passed on to organic staff/officers.

### **B. Technical Aspects**

1. A number of relevant information on bamboo, e.g. guidelines, manuals, reports, etc. have been produced and disseminated by the project to a wider audience/stakeholders that were necessary for the sustainability of project impacts.
2. On LFM, the indicator of success should have been better targeted to desired outcomes, and should be more specific than using the national level information, particularly for specific objective no. 2, in order to effectively measure the project outcomes at the end of the project.

3. The project risks were easily identified, especially at the level of government support and direction, and considered its consequent implications towards the sustainability of project.

**C. Government Policy**

1. The government's CFIP strategy of opening up degraded and idle public lands for private investors or individuals has consequently increased the coverage of bamboo plantation areas under this project indicating continued support on bamboo sector development to alleviate poverty of rural communities.
2. The establishment of bambusetum in Yedashe village, Kawhmu Township, with 26 bamboo species was planted intentionally to serve as show window for general public awareness, and eventually promote the introduction of more bamboo species in Kawhmu rather than just a single dominant species of Wa Pyaut (*Oxytenanthera nigrociliata*) in said project area.

**D. Executing Agency and Stakeholders Involvement**

1. The key project strategy is the direct involvement of rural communities in the proper utilization and management of bamboo resources through capacity-building activities undertaken by the FD, to acquire and adopt new technologies and methods in bamboo plantation establishment and natural bamboo forest management. Some other villagers outside the project areas were also motivated to replicate at their own initiatives and welfare the bamboo plantation schemes under the CFIP strategy considering their inherent traditional know-how and expertise on bamboos.
2. As mentioned earlier, the prominent feature of the project was the formation of the PSC and the Project Advisory Committee with FD senior officials and other stakeholders from other government agencies and non-government agencies (NGOs) closely collaborating 2 times in a year, to provide advise and direction for the project. The frequent fraternization of senior officials, project staff and relevant parties during meetings and trainings further ensure camaraderie and good will between and among stakeholders in the interest of project sustainability.
3. It is worth mentioning that great care was considered at the project planning phase in 2003 and onwards to avoid any deviation between the planned and actual implementation of the project. All relevant parties or stakeholders in FD's central and field offices, including rural folks, were informed through channels and actively involved in different project phases.
4. The physical distance between project sites and existing rough roads connecting them, with poor tele-communication facilities hampered the project implementation especially during rainy season, including the non-availability of socio-economic specialist at the end of the project, served as unforeseen external factors that affected specific project outcomes mentioned in B.2 above.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Conclusions**

The following conclusions in the whole evaluation process of the project are shown below, to wit:

- 1) A number of outstanding bamboo R & D researches and findings focused on plantation management and production of edible bamboo shoots, including value-added bamboo products, e.g. bamboo curtains, woven, mat-ply bamboo board, bamboo handicraft and furniture for rural communities had been done and documented through guidelines, manuals and reports. The project produced a dearth of information and data on bamboo resources, such as the 29 technical papers/reports which were very comprehensive and impressive, however, none of them have been published in any of the international journals, periodicals and newsletters (e.g. INBAR) for wider distribution and utility.
- 2) Bamboo demonstration areas of the project had expanded in 3 sites from 100 hectares to 150 hectares, with component bamboo species from planned 10-15 species to 26 species planted (in bambusetum area), in view of continued support of Myanmar government on bamboo sector development to alleviate poverty of rural people through the CFIP strategy.
- 3) The project was collaboratively governed and the budget well managed through the PSC at its inception phase (in 2003) until the project completion. Close collaboration between and among key stakeholders enabled them to build linkages and share information and updates in the interest of proper project management and sustainability aspects.
- 4) The project strategy was sound and selected outputs appropriate, as indicated in the LFM and this meant that there was no need to revise the project logframe. Together with the unexpected government support to bamboo sector development through the CFIP as the project was implemented, a significant number of activities were achieved at the level of outputs than originally envisaged. Likewise, project activities were constantly improved based on feedbacks and updates at the PSC meetings conducted twice a year.
- 5) A stronger political leadership is needed to safeguard the positive impacts of the project in the future, aside from the continuous implementation of CFIP strategy, but also the formulation of a long-term national bamboo development strategy and action plan as a "road map" for all stakeholders to follow and adhere to.
- 6) Finally, the project has been found successful in improving the conditions of target beneficiary groups or IGGs in a cost-effective manner, with the exception of Ledi village group in Paukhaung Township that could still change for the better or improve over time with invigorating encouragement and less competitiveness from implementers and co-workers.

## 5.2 Recommendations

The following recommendations for future actions will further support the sustainability of project benefits and help further development of the bamboo sector in Myanmar, such as:

- 1) The bamboo industry should be promoted further by the government through FD in collaborative partnership with private enterprises and cottage industries, and with rural communities' active participation in order to sustain the gains earned by this project.
- 2) Key stakeholders group should continue working together towards the preparation of a framework concerning the long-term national bamboo development strategy which will guide and support all future action plans of the bamboo sector.
- 3) There is still significant need in Myanmar for information and trainings on all aspects of bamboo sector requiring continued assistance of donor community like ITTO, including dissemination of information or public awareness programme that require improvement, i.e. with enhanced and expanded extension services that are consistent with any agreed bamboo development strategy.
- 4) A number of bamboo demonstration plots located in dry zones and upper Myanmar regions should be encouraged and established to further develop and test systems for potential upscaling and replication.
- 5) Bamboo plantation establishment and natural bamboo forest management should be included as an integral part of the District Management Plan of the government through the FD.
- 6) A Section or Unit on bamboo should be created either in the FD or FRI hierarchy to mainstream the learning and best practices on improved bamboo technologies. The Unit should be tasked with responsibility of putting together and disseminating bamboo researches, analysis and other development news to rural community and industry stakeholders.
- 7) Bamboo forest survey should be undertaken to determine the existing and remaining bamboo growing stock, in collaboration with the GIS section of the planning and statistics division of FD. The GIS-based maps of these project sites and/or demonstration plots should come handy for easy reference and guide.
- 8) Strengthen key stakeholders' capacity through trainings and improved bamboo technologies by enhancing the planning, programming and implementation activities. In particular, rural people's capacities be developed and improved not only in technical aspects, but also through skills development, e.g. simple book-keeping, recording, filing and accounting procedures, which are prerequisites for organizing farmers' cooperatives or IGGs.



- 9) Specific guidelines could be developed for bamboo in terms of harvesting practices and associated regulations towards developing quality standards and achieving certification as a tool for future marketing efforts especially for high-value markets.
- 10) The importance of regional networking with neighboring countries in ASEAN should also be emphasized and pursued to exchange and share the wealth of bamboo information and technologies generated by this project for future marketing strategies and collaborative partnerships. For instance, the project can link with the existing “Bamboo Networks” established in ASEAN to enhance and harness the best available bamboo science and technologies for sustainable development of the people and the environment of the region.

## ANNEX A

### TRAVEL PROGRAMME RE: EX-POST EVALUATION OF PD 146/02 Rev.1 (I) IN MYANMAR

Date	Place/Travel	Remarks
July 26, 2009 (Sunday)	Arrival in Yangon	Met at Yangon International Airport, U Zaw Win Myint from FRI-Yezin Overnight at Royal Park Hotel, Yangon
July 27, 2009 (Monday)	Land travel with FRI-ITTO vehicle to Nay Pyi Taw and FRI-Yezin	<p>(a) Arrived and took lunch in Nay Pyi Taw by 1400 hrs Accompanied by U Zaw Win Myint (Local counterpart) and Dr. Thaug Naing Oo of FRI</p> <p>(b) Courtesy call by 1600 hrs to Dr. Nyi Nyi Kyaw, Director of FRI, and discussed the revised Itinerary of Travel (IT) for the field visits</p> <p>(c) Dinner meeting and courtesy call by 1830 hrs to former Project staff at FRI-Guest House</p> <p>(d) Overnight at FRI-Guest House, Yezin</p> <p>(e) Desk review of project information and documents for both projects and discussion</p>
July 28, 2009 (Tuesday)	<p>Land travel from Yezin to Forest Department, Nay Pyi Taw</p> <p>From FD-Nay Pyi Taw to Lelu-aing Village of Pyinmana</p> <p>Travel back to FRI-Yezin by 1700 hrs</p>	<p>Courtesy call to Deputy Director General of Forest Department, Colonel Aye Myint Maung and his staff. Discussions on the IT and purpose of ex-post evaluation of PD 146/02 Rev.1 (I)</p> <p>Field visit to Le Lu Aing village of Pyinmana to view the bamboo handicrafts and interviewed members of the income generating group (IGG) formed by the Project</p> <p>Interviewed Prof. Ohn Winn, Former Director of FRI and concurrent National Project Manager of PD 146/02 Rev.1 (I). Desk reviews/discussions of project information/data and documents</p> <p>Visited FRI-Storage room where bamboo splitting machines (3 units imported from China) were kept, which were planned for donation to Le Lu Aing IGG. However, there was no electricity in the said village to run the machines. Thus, all bamboo handicrafts were done by hand/manual type</p>

Date	Place/Travel	Remarks
July 29, 2009 (Wednesday)	Land travel with FRI vehicle from Yezin to Moeswe Village, Pyinmana Township  Then to Forest Dept., Pyay District	Stop-over at the FRI bamboo plantations (since 1984, with 5 bamboo species) and ITTO bamboo plantation of 6 acres, 5 x 5 spacing established in 2003 (with billboards-photo documentation)  Stop-over along main road re: baskets of bamboo shoots collected from natural bamboo forests by rural folks/children; 1 basket of shoots (photo) = kyat 2,000  Courtesy call to FD Officials at Pyay District; Stay-overnight at FD-Guest house in Pyay (adjacent to Irriwaddy River)
July 30, 2009 (Thursday)	Land travel from Pyay to FD-Paukkhaung and Ledi village  From Ledi village, Paukkhaung to Yangon	Stop-over at Ledi village of Paukkhaung, and visited the following: a) 25-acres CFI-bamboo shoots collection area, b) Interviewed the Ledi IGG members organized in 2004, c) Bamboo species and spacing trials (2 acres), and d) 50-acres gap planting of bamboos within South Nawin Reserved Forest.  Overnight in Park Royal Hotel, Yangon
July 31, 2009 (Friday)	Land travel from Yangon to Yedashi village of Kawhmu Township	(a) Visited the 10 hectares Bambusetum/Research Plot (b) Interviewed the Yedashi village-IGG members for physical protection purposes of community-owned bamboo plantations  Overnight in Park Royal Hotel, Yangon
August 1, 2009 (Saturday)	Departure from Yangon	Arrival at Ninoy Aquino International Airport, Philippines

## ANNEX B

### PERSONS/OFFICIALS MET DURING EX-POST EVALUATION OF PD 146/02 Rev.1 (I) IN MYANMAR

#### A. Ministry of Forestry

1. Dr. San Win Joint Secretary, National Commission for Environmental Affairs, Nay Pyi Taw
2. Prof. Ohn Winn Pro-rector, University of Forestry, Nay Pyi Taw

#### B. Forest Department

1. Col. Aye Myint Maung Deputy Director General, Nay Pyi Taw
2. U Tin Tun Dir., Nature & Wildlife Cons. Div, Nay Pyi Taw
3. U Aung Than Win Deputy Director, Pyay Dist. West Bago Division
4. U Tin Win Asst. Director, Pyay Dist., West Bago Division
5. U Win Bo Staff Officer, Pyay Dist., West Bago Division
6. Daw Ei Sandi Sett Range Officer, Pyay Dist., West Bago Division
7. U Pho Cho Staff Officer, Pyay Dist., West Bago Division
8. U Tin Maung Win Staff Officer, Pauk khaung Tsp, Pyay District
9. U Zaw Zaw Naing Staff Officer, Kawhmu Tsp, Yangon, West Dist.

#### C. Forest Research Institute, Yezin

1. Dr. Nyi Nyi Kyat Director, FRI-Yezin
  2. Dr. Thaug Naing Oo Staff Officer, FRI-Yezin
  3. U Ohn Lwin Asst. Director, Planning & Extension, FRI-Yezin
  4. U Khin Maung Oo Deputy Director, Admin/Finance, FRI-Yezin
  5. U Tin Maung Aye Asst. Director, Utilization/Regulation, FRI-Yezin
  6. U Zaw Win Myint Range Officer, FRI-Yezin
- Local Counterpart for ITTO PD 146/02 Rev.1 (I)  
Ex-Post Evaluation Mission

#### D. Rural People/Folk

1. U Shwe Kyi Former Chair, Le Lu Aing Village, Pyinmana
2. U Thu Kha Present Chair, Le Lu Aing Village, Pyinmana
3. U Hla Myint Secretary, IGG-Le Lu Aing Village, Pyinmana
4. Daw San Da Win Accountant, IGG-Le Lu Aing, Pyinmana
5. Daw Yin Myaw Ohn IGG Member, Ledi Village, Pauk khaung Tsp.
6. U Sein Tun IGG Member, Kawhmu-Yangon Division

\* \* \*