

# **EX-POST EVALUATION REPORT**

**ITTO Project PD 35/99 Rev.4 (I)**

**Performance Evaluation of  
Export Wood Furniture in relation to Strength and  
End-use Applications Using Established Test Standard  
(The Philippines)**

Prepared for the ITTO

by

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## **Acronyms**

CFIFI	:	Cebu Furniture Industries Foundation Inc.
CFIP	:	Chamber of Furniture Industries of the Philippines
DENR	:	Department of Environment and Natural Resources
FFTC	:	FPRDI Furniture Testing Center
FMB	:	Forest Management Bureau
FPRDI	:	Forest Products Research and Development Institute, Department of Science and Technology of the Philippines
GOP	:	The Government of the Philippines
ICI	:	Interior Crafts of the Island
IFMA	:	Illolo Furniture Manufacturers Association
ITTA	:	International Tropical Timber Agreement
ITTO	:	International Tropical Timber Organization
LFM	:	Logical Framework Matrix
PTC	:	Project Technical Committee
YPO	:	Yearly Plan of Operation

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## Executive Summary

1. This report presents the results of the ex-post evaluation of Project PD 35/99 Rev.4 (I) "Performance Evaluation of Export Wood Furniture in Relation to Strength and End-use Applications using Established Test Standards" that has been conducted by Dr. Hiras Sidabutar for ITTO. The Terms of Reference of the evaluation appears as Annex 1.

### 2. Rationale of the Ex-post Evaluation

- The Committees on Economic Information and Market Intelligence, and Forest Industry decided at their Thirty-seventh Sessions in November 2005 that an ex-post evaluation for Project PD 35/99 Rev.4 (I) should be carried out to establish how well the project served its purposes and to draw up recommendations for future action.
- The primary purpose of the ex-post evaluation is to provide an in-depth diagnosis of the project as to point out the successful and unsuccessful outcomes, the reasons for successes and failures, and the contributions of the project towards the achievement of ITTO's Objective 2000, and to draw lessons that can be used to improve similar projects in the future.

### 3. Project Identification and Context

- Project budget :

Government of the Philippines	: US\$ 227,900
ITTO (Donor: Japan)	: US\$ 139,999
Total	: US\$ 367,899

- Duration : 18 months plus 12 months of extension
- The project was consistent with selected objective of ITTA 1994 and was strongly linked with Goals 1, 2 and 3 of the ITTO Libreville Action Plan, with Action 3 of Goal 1; Action 3 of Goal 2; and Action 4 of Goal 3.

### 4. Evaluation Scope, Focus and Approach

- The main purpose of the ex-post evaluation is to learn lessons and draw conclusions for future projects; to establish the extent to which the results in terms of outputs, achieved objectives, impact and sustainability of the project intervention have been

achieved; and draw conclusions and recommendations for similar interventions in the future.

- The evaluation involved the review of project document, YPOs, minutes of PSC meetings, bi-annual progress reports, technical and financial reports, completion report and other relevant technical documents as well as meeting and discussion with the former project key personnel, national expert and Officials of FPRDI, the Executing Agency as well as FMB, the ITTO Focal Point of the Philippines.
- A visit was paid to Cebu City to interview one of the primary beneficiaries of the project, Interior Crafts of the Island, a designer/manufacturer/exporter of furniture products.
- The Terms of Reference required that special emphasis be given to the following aspects:
  - The results of tested various types of furniture from the Philippines timber;
  - Generated data and information on the static, fatigue and impact strength and performance of the individual prototype chairs, tables, stools, cabinet doors and table drawers from tropical timber;
  - Identification, inspection and classification of wooden furniture prior to testing; and
  - Testing prototype furniture using electro-pneumatic testing machines/equipment following standard test procedures.

## **5. Origin of the Project**

The project was proposed to address the observed problem facing the furniture industry of the Philippines which was the declining export revenues due mainly to inadequate mechanization, poor and inadequate performance of furniture in actual service.

## **6. Development, Specific Objectives and Outputs**

As defined in the project document, the objectives and outputs of the project were:

### Development Objective:

To generate data and information on the strength and performance of furniture from tropical timber by employing established test standards. Promote the

standardization of performance tests for wood furniture to enhance their competitiveness in the global market.

Specific Objectives:

- i) To test and evaluate the static, fatigue, and impact strength of export wood furniture under high levels and rapid rates of loading that occur occasionally, and under repeated movement or applications of load occurring during daily use.
- ii) To determine the initial damage and damage propagation and ability to withstand acceptable miss-use and demonstration of sufficient residual strength. Recommend design improvement to upgrade the performance and quality of furniture products export.

Outputs:

- i) Data and information on the static, fatigue and impact strength and performance of the individual prototype chairs, tables, stools, cabinet doors and table drawers from tropical timber generated and known.
- ii) Types of furniture damaged identified. The extent of damage propagation known and evaluated for specific kind of furniture. Designs that would improve strength and stability of furniture identified and recommended/disseminated to manufacturers.

The objectives and outputs could have been defined more explicitly to clearly picture the cause-effect relationship of the key problem to be addressed which was the lack of information on quality elements required for identifying measures to improving quality and competitiveness of wood furniture export. Suggested project elements and LFM are presented in Annex 4.

## **7. Findings**

- i) The project design was somewhat weak as it was formulated without full adherence to the ITTO Manual for project formulation, first edition. The weak design was evident from the lack of coherence of defined project elements and the weak LFM.
- ii) The LFM presented in the project document could not be used to fully gauge achievement of the project and necessitated the employment of the intended situation to prevail after project completion elaborated in the project document to help in the assessment of project achievement.

- iii) The overall objective was achieved through deliverance of the outputs defined. This was possible due to the fact that the project was well implemented and successfully completed.
- iv) The successful completion of the project was attributable to the timely supply of inputs in terms of quantity and quality, capable management of operations and financial resource, and support by target beneficiaries.
- v) The project results have been widely disseminated to target beneficiaries and created awareness of the need to perform quality test of furniture products before placing them in the market or exporting. Furniture producers and exporters have continuously sent samples of furniture to FFTC for testing and undergoing modifications of design and construction as needed.
- vi) FFTC has been established by FPRDI and tasked to sustain the positive impact of the project by providing test service on a day to day basis at affordable cost.
- vii) There is a growing need of producers and exporters of wood furniture for conducting tests other than the structural tests the FFTC currently capable of servicing. In this light, FFTC will have to equip itself with additional machineries and equipment.
- viii) The project has significantly contributed to the achievement of ITTO's objectives in various ways by enhancing the capacity of the furniture industry to produce quality products and improve competitiveness in the global market, promoting and transferring of improved technologies and implementing applied research and development on furniture production process.

## **8. Conclusions and Recommendations**

### **a. Project Design**

- The project was formulated without strict adherence to the ITTO Manual for project formulation, first edition. The cause-effect of the key problem to be addressed was not clearly exhibited with the aid of a problem tree and resulted in the weak coherence of project elements thus weak vertical logic.
- To ensure a sound project design, there is a need for any proponent to formulate a project proposal in strict adherence to existing ITTO Manual for project formulation. There is a need for an ITTO focal point to establish and function a strong and professional national screening house to assist in assessing proposal before its submitting it to ITTO and Expert Panel.

b. LFM versus Project Achievement

- A strong coherence of project elements facilitates development of a sound LFM. The LFM of this project was somewhat weak as the indicators of outputs and objectives were less specific, not measurable and without time bound. The LFM could not fully serve as an effective tool for measuring achievement of the project.
- To be effective as a tool for measuring achievement LFM must be sound; indicators of defined outputs and objectives must be specific, measurable, applicable, realistic and time bound; means of verification are specific and most likely available; and assumptions must be realistic.

c. Project Achievement

- Planned outputs and overall objective of the project has been fully achieved despite the somewhat weak project design. The LFM, combined with the intended situation expected to prevail at project completion, were used as a total to assess achievement.
- There is a need for a proponent, the national clearing house and ITTO Expert Panel to ensure that expected outcomes after project completion are adequately elaborated in the project proposal as they are also a useful tool for assessing achievement.

d. Unexpected Effects and Impacts

- The project required extension in time for one year: six months to complete the tedious testing and another six months to disseminate results of the project to target beneficiaries. The project had concentrated only in the structural testing of various furniture. Other tests like flammability testing of fabrics and foams, analysis of lead content of finishing material, formaldehyde emission of glues and textiles, corrosion test, etc. were not considered in the project.
- There is a need to: i) exercise vigilant planning of activities dealing with time consuming activities and to make realistic assumption in order to reduce risk; ii) there is a need for the FFTC to increase its testing capability in order to serve the growing demand for other tests by the furniture industry for which investment on manpower as well as machinery and equipment is urgently needed; ii) integrate dissemination of project results into the project design with allocation of sufficient budget to implement disseminating activities.



e. Sustainability

- After the project completion, results/outputs of the project were widely disseminated to target beneficiaries. The management and operation of the testing facilities was continued by FFTC which caters the evaluation and performance testing of furniture.
- In order to sustain benefits of a project, there is a need to identify and define one year before project completion what critical activities to continue and how the activities will be implemented in terms of institutional and financial arrangements.

f. Stakeholder Involvement

- The project had been formulated and implemented with the involvement of stakeholder especially manufacturers of exporters of furniture products which proved as one of the key success factors of project completion.
- If a project is to be successful at all, there is a need to ensure the involvement of stakeholder in the formulation and implementation stages of a project. The proponent, national clearing house and ITTO Expert Panel are to pay greater attention to stakeholder analysis section of the project proposal.

g. Efficiency and Operational Aspects

- The project had been implemented and completed successfully mainly due to the timely supply of inputs, capable operational and financial management and support by target beneficiaries.
- To successfully implement and complete a project involving laboratory testing, careful selection of project key personnel including consultant and research assistant, timely acquisition, installation and calibration of the primary testing machines and equipment, as well as close cooperation with ITTO and target beneficiaries are indispensable.

h. Effectiveness of Technology Transfer

- The project had successfully transferred the furniture testing technologies to target groups through the various means including participation to exhibition, conduct of awareness seminar on furniture testing, production of printed information and materials as well as radio and television interviews.
- As technology transfer of any technologies to target groups are required for sustaining benefits of a project it is strongly advisable to consider taking in activity on technology transfer as the essential activity of any project.

- i. Contribution to ITTA 1994 and ITTO Action Plan
- The project had significantly contributed to the achievement of ITTA 1994 and ITTO priorities in various ways by achieving its overall objective which was to enhance quality of wood furniture export and improve competitiveness of the furniture industry.
  - Relevance of a proposed project to ITTO's mandate and policies as well as to host country's development policies and priorities should remain as the pre-requisite for any project and be clearly elaborated in any project proposal.

## **1. INTRODUCTION**

### **1.1. Rationale of the Ex-post Evaluation**

The Committee on Economic Information and Market Intelligence and the Committee on Forest Industry, at their Thirty-seventh Session in November 2005, decided that an ex-post evaluation for Project PD 35/99 Rev.4 (I) should be carried out to establish how well the project served its purposes and to draw up recommendations for future action. The decision of the Committees was based on the Council Decision ITTC (XXVIII)/20 of 30 May 2000 which specifies the criteria for selection of projects to be ex-post evaluated. The primary purpose of the ex-post evaluation is to provide an in-depth diagnosis of the project as to point out the successful and unsuccessful outcomes, the reasons for successes and failures, and the contribution of the project towards the achievement of ITTO's Objective 2000, and to draw lessons that can be used to improve similar projects in the future. Annex 1 sets out the terms of reference for the ex-post evaluation.

### **1.2. Project Identification and Context**

Project serial number	:	PD 35/99 Rev.4 (I)
Project title	:	Performance evaluation of export wood furniture in relation to strength and end-use applications using established test standards
Host country	:	The Government of The Philippines (GOP)
Budget	:	Total US\$ 367,899 ITTO US\$ 139,999 (Donor: Japan) GOP US\$ 227,900
Duration	:	18 months; extended for 12 months

The Specific Objectives of the project were:

- (i) to test and evaluate the static, fatigue, and impact strength of export wood furniture under high levels and rapid rates of loading that occur occasionally, and under repeated movement or applications of load occurring during daily use; and
- (ii) to determine the initial damage and damage propagation and ability to withstand acceptable miss-use and demonstration of sufficient residual strength, and to recommend design improvement to upgrade the performance and quality of furniture products for export.

Given the Specific Objectives, the project was consistent with the following objectives of ITTA 1994:

- a) to enhance the capacity of members to implement a strategy for achieving exports of tropical timber and timber products from sustainably managed sources by the year 2000;
- 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; and
- g) to promote increased and further processing of tropical timber from sustainable sources in producing member countries with the view of promoting their industrialization and thereby increasing their employment opportunities and export earnings.

The project was also related and strongly linked to the ITTO Libreville Action Plan considering that the standardization of test for wood furniture would support marketing methods in the furniture industry sector. Having a uniform and standard test would not only help and enhance marketing methods but it will also support market opportunities for furniture products. In addition, the project was particularly consistent with Goals 1, 2 and 3; Action 3 of Goal 1; Action 3 of Goal 2; and Action 4 of Goal 3 of the Forest Industry under Libreville Action Plan respectively defined as follows:

Goal 1 : Promote increased and further processing of tropical timber from sustainable sources.

Goal 2 : Improve marketing and standardization of tropical timber exports.

Goal 3 : Improve efficiency of processing of tropical timber from sustainable sources.

Goal 1 Action 3

Assist in the promotion and transfer of new and/or improved techniques and technologies.

Goal 2 Action 3

Prepare and implement research and development projects marketing trials, marketing methods and opportunities.

#### Goal 3 Action 4

Assist in the promotion, transfer and adoption of new and/or improved techniques and technologies through publications and other media, workshops, seminars and fellowships.

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

### **2.1. Evaluation Scope and Focus**

The main purpose of the ex-post evaluation is to learn lessons and draw conclusions for future projects. The ex-post evaluation should establish the extent to which the results, in terms of Outputs, achieved Objectives, impact and sustainability of the Project intervention have been achieved and draw conclusions and recommendations for similar interventions in the future.

The author assessed all aspects of Project PD 35/99 Rev.4 (I) from its inception to the situation after its completion covering administrative and financial matters, organization, communication, consultation and cooperation, technical matters, effectiveness and impact, and relevance to ITTO.

The evaluation placed particular emphasis on:

- the results of tested various types of furniture from the Philippine timbers;
- generated data and information on the static, fatigue and impact strength and performance of the individual prototype chairs, tables, stools, cabinet doors and table drawers from tropical timber;
- identification, inspection and classification of wooden furniture prior to testing; and
- testing prototype furniture using electro-pneumatic testing machines/equipment following established standard test procedures.

### **2.2. Evaluation Approach**

The evaluation involved:

- the review of project document, YPOs, minutes of the Project Technical Committee meetings, bi-annual Progress Reports, Technical Report, Financial Report, Completion Report and other relevant documents;
- meeting and discussion with the Project Leader and National Expert of the project at the Forest Products Research and Development Institute (FPRDI) at Los

Banos, Laguna, the Executing Agency, as well as with Officials of FMB, the ITTO Focal Point of the Philippines; and

- visit to Cebu City to interview one of the primary beneficiaries of the project which was a member company of CFIP (Chamber of Furniture Industries of the Philippines).

The key stages of the evaluation include:

i) Clarification and analysis of the project design

- This was carried out through discussion with the Executing Agency, especially with Project Key Personnel. It was fortunate for the author that both the Project Leader and National Expert were available and assisted in the evaluation.
- The project design was assessed using the ITTO Manual for Project Formulation, first edition as the framework with special attention to the logical framework.

ii) Project performance was assessed by:

- Analyzing achieved Objectives and Outputs in light of the logical framework matrix (LFM).
- Studying the project work plans and associated budgets against actual implementation and spending.
- Assessing impact and sustainability of the project through visit to one of the beneficiaries.

Dr. Hiras Sidabutar (CV appears as Annex 5) was tasked by ITTO to carry out the ex-post evaluation. One senior staff of FPRDI, For. Victor E. Revilleza was assigned by the Executing Agency to fully assist in the evaluation at the institution's own costs.

### **3. PROJECT FACTS**

#### **3.1. Origin**

Furniture is one of the major exports of the Philippines, earning about US\$ 200 million annually and accounting 1% of the world export of furniture. It grew faster than the world average at 23% in the later part of 1980s, and started to decline in the 1990s to about 0.7% in market share. In 1997, export of wood furniture amounted to only US\$ 124.44 million. The decline in export earnings was attributed to the limited supply of timber species traditionally used for furniture and to poor and inadequate performance of furniture in actual service, resulting to the premature failure and low product quality. The latter problem could be attributed to the inadequate mechanization of the industry and the lack of actual strength and performance testing of the manufactured products. Actually, in the Philippines, furniture of any type was marketed without passing any kind of test particularly on their strength and stability. Both the manufactures and buyers/end-users had no idea or information on how long and how stable a dining chair, a sala set, a table drawer, a cabinet door and other types of wood furniture would last in actual service.

Project PD 35/99 Rev.4 (I) was primarily aimed at providing reliable data and relevant information on the above mentioned problems/issues and to help upgrade furniture products and contribute to the modernization of the industry. Its origin was the observed problem facing the wood furniture industry in the Philippines.

#### **3.2. Development Objective**

As defined in the project document, the development objective was to generate data and information on the strength and performance of furniture from tropical timber by employing established test standards. Promote the standardization of performance tests for wood furniture to enhance their competitiveness in the global market. Recommend innovative designs to improve their strength and performance in service. This defined development objective, as will be discussed later on in appropriate section, appears to be somewhat vague in light of the key problem to be addressed and the specific objective of the project.

#### **3.3. Main Problems to be Addressed**

As indicated in Section 3.1, problems to be addressed were:

- The decline in export earnings caused mainly by the limited supply of timber species traditionally used for furniture and by the poor and inadequate

performance of furniture in actual service resulting to the premature failure and low product quality; and

- The poor and inadequate performance of furniture was attributed to the inadequate mechanization of the industry and the lack of actual strength and performance testing of the manufactured products.

### **3.4. Specific Objectives and Outputs**

The Specific Objectives of the project as defined in the project document were:

- i) To test and evaluate the static, fatigue, and impact strength of export wood furniture under high levels and rapid rates of loading that occur occasionally, and under repeated movement or applications of load occurring during daily use.

#### Output:

The only output defined was "Data and information on the static, fatigue and impact strength and performance of the individual prototype chairs, tables, stools, cabinet doors and table drawers from tropical timber generated and known".

- ii) To determine the damage and damage propagation and ability to withstand acceptable miss-use and demonstration of sufficient residual strength. Recommend design improvement to upgrade the performance and quality of furniture.

#### Output:

One single output was defined as "Types of furniture damage identified. The extent of damage propagation was known and evaluated for specific kind of furniture. Designs that would improve strength and stability of furniture identified and recommended/disseminated to manufacturers".

### **3.5. Project Rationale**

There was a need to promote export earnings from wood furniture products for which furniture product quality should be improved by enhancing performance of furniture in actual service. In order to enhance performance there was a need to conduct testing of actual strength and performance using established procedures. Data obtained from the testing would be used as the basis for making recommendations on design and quality improvement.

### **3.6. Project Duration**

The project commenced in May 2002, planned for 18 months. It was granted by ITTO two extensions each for six months without additional funds. The first extension was from November 2003 to April 2004 and the second extension was from May to



October 2004. The first extension was necessary to complete planned activities on testing of furniture products while the second extension was devoted specifically for dissemination of project results.

### **3.7. Budget**

The total budget of the project amounted to US\$ 367,899. The contributions of ITTO and GOP were US\$ 139,999 and US\$ 227,900, respectively.

### **3.8. Executing Agency**

FPRDI (Forest Products Research and Development Institute) of the Department of Science and Technology was the sole agency executing the project yet with close consultation with the FMB (Forest Management Bureau) and the CFIP (Chamber of Furniture Industries of the Philippines) and collaboration with members of CFIP.

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

### **4.1. Findings**

#### **a. Project design and Contribution to Achievements**

The project is a small one having budget less than US\$ 400,000 and duration shorter than two years. It was formulated in accordance with the ITTO Manual for project formulation, first edition, published in 1992. Under this first edition of manual, it was not clear how a small project should be formulated: either must strictly adhere to the manual or enjoys special treatments by not fully adhering to the complete sections of the manual. Strictly adhering to the manual, it was evident that the problem analysis was not aided by a problem tree and an objective tree resulting in unclear cause-effect relationship and unclear means-ends relationship and consequently the weak vertical logic.

Normally there are at least two outputs under one specific objective. If a specific objective could be achieved by delivering one output only, the specific objective is in fact the same as the output thus the specific objective is practically reduced to become the output itself. Therefore, the specific objective could have been defined as "to enhance performance of furniture in actual service through improvement of design and construction", while the development objective could have been defined explicitly as "to contribute to the promotion of wood furniture export". This re-defined specific objective was consistent with the main problem to be addressed (see Section 3.3) and attainable using the data and information generated through the testing activities (Outputs 1 and 2) as the basis for recommending

innovative designs and modifications. The project had, in fact, achieved the re-defined Specific Objective. The project has been able to improve quality of furniture products by providing the beneficiaries technical measures to improve design and construction in order to pass structural test standards.

To properly gauge achievement of the project, the logical framework matrix (LFM) should have been employed. However, the indicators presented in the LFM at the levels of objective and output were not measurable, thus less useful for gauging achievement of the project. In light of the weak LFM, attempt was made to evaluate, qualitatively, achievement of the project by comparing the results of the project to the intended situation after project completion as elaborated in the project document which was:

- various types of furniture from Philippine timbers have been tested and evaluated on their strength and stability simulating normal functional use as well as acceptable miss-use following established test standards;
- various types of wood furniture with their corresponding sets of design utilizing specific species of tropical timber had been found to have satisfactorily passed the required strength level corresponding to the specific type of use; and
- manufacturers and exporters would be able to test samples of their furniture and be able to know immediately whether it passes the strength and performance levels specified by the standard or not.

Available technical documents pointed out to the fact that the above intended situations indeed prevail after the project completion. Using the LFM, it was not possible to accurately gauge achievement of the development objective. It was defined somewhat vague and overlap with the specific objectives. The indicator included in the LFM did not help assess actual achievement of the development objective. Considering the information on project justification, the development objective could have been defined as “to contribute to the promotion of wood furniture exports”, and this objective would be achievable in light of the re-defined specific objective “to enhance performance of furniture in actual service through improvement of design and construction”. If the development objective were “to contribute to the promotion of furniture exports” then total export value of furniture could have been used as the indicator. It should be noted that the key problem to be addressed was “the poor and inadequate performance of furniture in actual service”

whose effect was the declining export earnings. Therefore, the development objective should have been to reverse the declining export earnings situation.

According to the Bureau of Export Trade and Promotion, Department of Trade and Industry of the Philippines, the total export value of wood furniture in 1997 was US\$ 124.44 million and increased to US\$ 275,487 million in 2006. The project could have contributed to this increased value through improved quality of wood furniture export which were consistent with the redefined specific and development objectives of the project. Suggested project elements and LFM for purpose of clarification of the above argument on the weakness of vertical logic and LFM are presented in Annex 4.

b. Post versus Pre-project Situation

It can be categorically stated that the situation after project completion was very important and informative particularly to the furniture designers, manufacturers, exporters, importers, retailers and users. Impacts of the project on target beneficiaries occurred as expected:

- The designers and manufacturers are able to identify the strength and weakness of their products hence assisting in redesigning or making innovations to improve product quality. They can assure a consistent quality of their products and provide guaranteed reliability to end-users;
- The importers and retailers of furniture are assured that their products have met specific standards as claimed by the manufacturers; and
- The end-users and consumers are assured that they are getting what they have paid for. They have the all-out feeling of comfort and knowing that the products they purchase are strong, durable, safe and of high quality.

This post-project situation was cross-checked through the interview with the designer/manufacturer/exporter in Cebu City that confirmed the prevailing situation.

In contrast with the post-project situation, the pre-project conditions were:

- There was a lack of actual strength and performance testing of furniture products;
- In fact, furniture of any types were marketed without passing any kind of test particularly on their strength and stability; and
- Manufacturers/buyers/end-users had no idea or information on how long and how stable a type of furniture product would last in actual service.

c. Achievement of the Project's Outputs and Specific Objectives

Two Outputs were defined, one under each of the Specific Objectives (see Section 3.4). As it was defined, Output 1 had been fully achieved. Data and information on static, fatigue and impact strength on different kinds of furniture were generated using established test standards. Output 1 and the testing process were fully reported in the Final Technical Report. Output 2, as it was defined, had been fully achieved. Data and information on the extent of damage propagation for specific kind of furniture were generated and reported in the Final Technical Report. As planned outputs had been fully delivered, the Specific Objectives must have been achieved if the defined outputs were thought sufficient to fully achieve the specific objective. It is important to note that only one output was specified under each of the Specific Objectives defined.

All outputs designed to achieve the project objectives were successfully delivered with little delay resulting to the extension of the project in time for six months to complete planned activities without additional funds. As the outputs were fully delivered, the specific objectives were also fully achieved. Data and information on the structural testing (static, fatigue and impact test) of solid wood export furniture from Philippine tropical timbers using established test standards under high and rapid rates of loading that occur occasionally during daily use were established. Causes of damages that occurred during the testing of various furniture samples were assessed and evaluated and corresponding innovative designs and modifications were formulated and recommended to the intended beneficiaries.

As has been touched upon elsewhere in previous sections, the vertical logic of the project was weak as the problem analysis was not structured using a problem tree technique. The specific objectives could have been defined as one specific objective to capture the key problem to be addressed. Likewise, the development objective was not clearly defined to reflect the effect of the key problem to the trade sector and to the society.

The horizontal logic of the project was also weak. The indicators of the objectives and outputs were not measurable thus could not help in accurately measuring achievement of the Specific Objectives defined. The assumptions made were valid as they posed no problem to the implementation process. The delay in project completion was due to the longer time than expected to perform individual tests; the delay was not attributable to the assumptions made.

d. Unexpected Effects and Impacts

The project has accomplished extra achievement without additional cost to ITTO. The promotion and dissemination of the project results/outputs to its target beneficiaries was undertaken using the savings of the project. Seminars in the five furniture areas in the Philippines were conducted. This was done in cooperation with the Chamber of Furniture Industry of the Philippines (CFIP), Iloilo Furniture Manufacturers Association (IFMA), the CFIP Negros Chapter in Bacolod City, the CFIP Pampanga Chapter in Mabalacat, Pampanga and the Cebu Furniture Industries Foundation Inc. (CFIFI) in Cebu City. The seminars were held from 22 September to 8 October 2004 and were attended by 138 participants from 98 furniture firms or companies representing the owners, managers, production supervisors, consultants, marketing staff, designers and machine operators.

The project had concentrated only in the structural testing of various furniture which including static, fatigue, impact and drop test to evaluate the strength and durability of furniture. Other tests like flammability testing of fabrics and foams, analysis of lead content of finishing materials, formaldehyde emission of glues and textiles, corrosion test, etc were not considered in the project.

One foreign owned testing laboratory in the Philippines called Bureau Veritas (BV), was catering all the above mentioned tests for the furniture industry. However, their closure recently and transferring their testing services to China, furniture exports and buying agents that were customers of BV are now having problems where to avail of these testing services, the cost of bringing the test samples to China would be very prohibitive to them. Their option is to look for another testing laboratory in the Philippines that could offer all the test protocols needed by the buyers. The exporters and buying agents want a one-stop-shop laboratory. FFTC (FPDRI Furniture Test Center) was approached regarding the problem but it can only offer structural testing of furniture. However, with the other laboratories of FPRDI, it can cater the other test like lead and formaldehyde tests. For the other test like corrosion and flammability testing, manpower capability building and laboratory facilities establishment are needed by FFTC so it can offer a complete testing services that are now badly needed by the furniture industry.

The closure of the furniture testing operated by the Bureau of Product Standards (BPS) of Philippines has also created unexpected impact in the operation of FFTC. All the customers of BPS on furniture testing are now availing the services of FFTC. Hence, FFTC could not accommodate all the customers especially the very

limited number of testing machines that FFTC has, it operates on the first-come-first-serve basis. Purchase of the additional testing machines like the Upright Chair Test Machine and General Purpose Single Cylinder Test Machines is necessary to accommodate all the customers and eliminate backlogs in testing.

e. Sustainability

After the project completion, results/outputs of the project were disseminated to the furniture manufacturers, buyers and exporters through seminars and various technology transfer schemes. The management and operation of the testing facilities was continued by FFTC headed by the former Project Leader; FFTC caters the evaluation and performance testing of furniture.

FPRDI has initiated the following activities in order to maintain the sustainability of the operation of FFTC after the project completion:

- In order to assure the customers of FFTC for reliable and competent test results, FFTC applied for ISO/IEC 17025 Laboratory Accreditation. Once, the accreditation of FFTC is awarded, test results generated by FFTC would be acceptable worldwide and the technical competence of the laboratory including the laboratory staff to conduct furniture testing services will be established.
- FFTC personnel attended local and international training to upgrade their competence and skills in furniture testing and implemented laboratory housekeeping and proper maintenance and operations of testing machines.
- FFTC through the Department of Science and Technology (DOST) Grants-in-Aid program upgraded their laboratory facilities to provide additional testing services to their customers. New testing machines and ancillary equipment were acquired from FIRA. These are the Drawer Cycling Test Machine, Horizontal Fatigue Test Machine, Stability Test Rig and Loading Disc. Three more testing machines namely: Chair Swiveling Test Machine, Arm Durability Test Machine and Chair Front Edge/Side to Side Durability Test Machine are scheduled to be purchased in 2010.
- FFTC upgraded their of data acquisition controls using Compact Data Acquisition System (DAQ) and computer software (LAB View 8.6) from

National Instruments of Singapore to eliminate and/or minimize the uncertainties in data acquisition and recording during testing.

The visit to Interior Crafts of the Islands (ICI) in Cebu City, one of the beneficiaries of the project, confirmed the sustainability of the project after its completion. Since 2004 to present, ICI is sending prototype furniture samples to FFTC for performance testing. The Production Manager of ICI discussed the importance of furniture testing to their company in designing their products which are mostly exported abroad. The company does not mind paying the testing fee and the cost of air freight in sending their prototype furniture sample(s) from their factory in Cebu City to FFTC in Los Banos. What is important to ICI is that the result of the test facilitates them to evaluate and assess the performance of their product when put to use. Hence, they can identify whether they need to make more improvements to their product structural design.

In order to safeguard the continuing positive impacts of furniture testing developed by the project, the following measures are recommended:

- Strengthen linkage with furniture manufacturers and associations;
- promotion of FFTC testing services;
- test reports must be released on time;
- testing machines and other ancillary equipment must be well maintained to avoid machine breakdown that could cause delay in testing furniture
- testing machines must be calibrated regularly;
- regular training of laboratory personnel to upgrade their skills and competence in furniture testing;
- expansion of testing services; and
- reasonable testing fee.

f. Stakeholder Involvement

During the formulation process, the FPRDI had a dialogue with the President and members of the Board of CFIP. The significance and objectives of the project were presented and discussed. After a thorough discussion, the CFIP was impressed of the project objectives and expected outputs and indicated their strong support to the project proposal.

The members and non-members of CFIP are the primary beneficiaries of the project. The participation of some of these beneficiaries, furniture manufacturers and

exporters, was on the fabrication of prototype chairs, stools, tables, cabinet doors and drawers for actual strength and performance tests. These firms are located in Metro Manila area and some are in the provinces. They produce different types of furniture for various intended uses; they supplied to the project both the original and modified test furniture products. At present, the firms that supplied the test furniture have already benefited from the output of the project since they already modified some of the design and construction methods by using or adapting the recommended innovations made by the project. They were able to realize and observe that the modified chairs, for instance, performed very satisfactorily compared to their original test samples submitted for testing.

Dissemination of project results to the furniture industry was carried out in collaboration with regional branches of CFIP (see Section 4.1.h) with strong participation of its members.

g. Efficiency and Operational Aspects

The Executing Agency did not encounter serious problems on project financial management and administration. Realignment of the approved budget to cover other necessary expenses during the implementation of the project was done with the approval of ITTO. All project personnel including the hiring of National Expert and International Consultant with clearly defined Terms of Reference were approved by ITTO.

Delayed caused in the execution of the project due to the procedure and duration of tests being done for individual type and class of furniture resulted to request for six months extension of the project without additional funding was approved by ITTO and was finished on time. Recommendations and decisions made during all the Project Technical Committee meetings like the implementation of promotion and dissemination of project results/outputs for six months to the furniture manufacturers in the Philippines were all satisfactorily addressed by the Project Leader.

The project published and submitted to ITTO one Final Technical Report and Completion Report. The Technical Report elaborates in the test standards used, test machines used, the methodology employed, data and information generated through the furniture testing, data interpretation and conclusions as well as recommendations of the project. The Completion Report was prepared in accordance with existing ITTO format and elaborates on background information about the project,



achievements, target beneficiaries involvement, lessons learned from the project and recommendations for improving efficiency and effectiveness of future similar projects. During the course of project implementation, one Yearly Plan of Operation (YPO), three bi-annual progress reports and two yearly financial audit reports were timely submitted to ITTO. Employment of project personnel (the Project Leader, National Expert, International Expert) and purchase of capital items were made in compliance with established ITTO rules and procedures.

Two installments of funds, US\$ 80,000 and US\$ 42,200, respectively, were made by the ITTO in time upon request by the Executing Agency. Two yearly financial audit reports and one final audit report had been prepared by registered independent public accountant, submitted to ITTO and approved.

The project commenced in May 2002 planned for 18 months until October 2003. Due to the delayed completion of testing activities, project implementation was extended for six months until April 2004. Three PTC meetings were held during the project implementation; the second meeting in January 2004 decided to extend the project for six months, subject to ITTO approval, in order to complete all planned activities.

After the completion of the project, the PTC decided that the project outputs and outcomes were to be disseminated to the beneficiaries using the savings in the budget in the amount of US\$ 24,044.59. The duration of this activity was from May to October 2004. This decision was made at the second meeting of the PTC in January 2004. Sources of the savings included unspent funds for duty travel and consumable items and the contingency component of budget released by ITTO.

In summary, the project was implemented in high compliance with ITTO rules and procedures, technically and administratively. The implementation process was well documented with all supporting documents neatly filed at the office of the former Project Leader whom is senior scientist of FPRDI and Head of the FFTC (FPRDI Furniture Testing Center).

#### h. Effectiveness of the Technology Transfer to Target Groups

In order to disseminate and promote the results/outputs of the project, several technology transfer activities were undertaken to reach the target beneficiaries and other stakeholders. The methods used were:

i) Participation to exhibition

The participation of the project to the two prestigious International Furniture Exhibitions namely: Philippine International Furniture Show that was held in Angeles City and the Cebu International Furniture and Furnishing Exhibition in Cebu City, and to the 14<sup>th</sup> Annual Technology Fair Exhibition during the 2003 National Science and Technology Week celebration held at the Philippine Trade and Training Center (PTTC) in Manila was an effective strategy in promoting furniture testing. Furniture manufacturers, local and foreign buyers, buying agents, designers, government policy makers, politicians, students and other professional who came to see the exhibitions were able to see and learned the importance of furniture testing in assuring product quality and safety by evaluating the performance of the product. Participation to exhibition was a good venue for FPRDI to promote their testing services.

ii) Conduct of awareness seminar on furniture testing

The awareness seminar on furniture testing that were held from 22 September to 8 October 2004 to the five furniture producing areas was also one effective approach in promoting furniture testing in the Philippines. The five seminars were able to attract 138 participants from 98 furniture companies representing the owners, managers, production supervisors, consultants, marketing staff, designers and machine operators.

The participants of the seminars on "Performance Evaluation of Expert Wood Furniture in Relation to Strength and End-use Applications Using Established Test Standards" held in five furniture producing areas in the Philippines (Manila, Iloilo City, Bacelod City, Cebu City and Pampanga) expressed the following reactions and recommendations:

- Furniture manufacturers from Cebu, Iloilo and Bacalod Cities which are situated in the Visayas region of the country and supplies around 70% of the total exported furniture all agreed that performance testing of furniture is a very relevant action to undertake by every furniture manufacturer to enhance their growth and global competitiveness in the light of the increasing competition in the global market. They also share the same lament of not having a furniture testing facilities that would cater to their testing needs in the region when time comes that their buyers require them to do so. The burden of bringing their furniture samples to Manila or

Los Banos discourages them to have their products to undergo performance testing. They hoped that FPRDI with the assistance of ITTO or other funding agency would soon establish a furniture testing center in their region; and

- Other manufacturers also suggested that the FPRDI – Furniture Testing Center (FFTC) should be a “one stop laboratory for furniture testing”. It should cater not only the strength, durability and stability test for furniture but also the other test requirements of buyers like flammability test for upholstery materials like fabrics and foam, evaluation of finishes adhesives, etc.

iii) Production of printed information materials

News articles, brochures and videos were produced to promote furniture testing. Although these media could not answer questions or solve individual problems, they are good media that could reach more intended beneficiaries than test reports and seminars.

iv) Radio and TV interviews

The Project Leader after the completion of the project was interviewed several times in different national radio and TV programs. Through these interviews, not only the target beneficiaries of the project was reached throughout the whole archipelago of the Philippines but also all the other people who have listened and watch the program and make them aware of the importance of furniture testing.

i. Rationale for Achieving the Objectives

Despite the weaknesses of the vertical and horizontal logics of the project, there was no doubt that the project was implemented satisfactorily. Available documents with the Executing Agency and discussions with the former Project Leader as well as National Expert all indicated that implementation of the project went smoothly.

As it was defined, the Outputs were fully delivered and the Specific Objectives completely achieved. Available evidence also pointed out to the achievement of the Development Objective.

As the logical framework was less appropriately developed, it was less useful as a tool for gauging achievement of the project. Using envisaged intended situation

after project completion as elaborated in the project document as the “benchmark” it could be concluded that the objectives of the project were achieved fully and successfully (see also Section 4.1.a).

A suggested logical framework as an alternative to existing one (see Annex 4) could have been employed in measuring achievement of the project. Even using this suggested logical framework one can conclude that the Outputs and Specific Objective have been fully achieved.

j. Project Proposal Appraisal Process

The proposal, the project elements and logical framework in particular, could have been strengthened prior to implementing the project. If this were done, assessment of project achievement would be a straightforward undertaking by applying directly the indicators to assess achievement documented in the relevant means of verification and in light of the assumptions listed in the LFM.

k. Outputs versus Actual Intended Situation

- *The results of tested various types of furniture from the Philippine timbers*
  - Following established test procedures and using technically equipped and appropriate testing machines, the strength, durability and stability of wood furniture were determined. The modification of the design, construction methods and the strengthening/upgrading of the structure of furniture particularly on joint fastenings and on proper attachment of corner blocks and stretchers greatly improved the strength and overall performance of furniture.
  - The project has successfully shown that furniture testing is capable of providing information required for quality, strength and performance so that competitiveness of furniture from tropical timbers maybe assured in the global market.
  
- *Generated data and information on static, fatigue and impact strength and performance of the individual prototype chairs, tables, stools, cabinet doors and table drawers from tropical timber*
  - Generated data and information were used to determine level of quality of individual prototype furniture by comparing observed values to the values specified under particular test standards employed. Failing products to meet the specified values shall be assessed as regards their causes of failing.

- After a thorough assessment and evaluation of the cause, innovative design or modifications were recommended to improve the strength and performance thus quality of the furniture.
- *Identification, inspection and classification of wooden furniture prior to testing*
  - During the conduct of the testing, all furniture samples gathered from furniture manufacturers were given identification or code numbers. This includes the sample number, the type of furniture and the company where the furniture came from. For example, ED Pascua-CH-01: ED Pascua is the name of the company, CH is the code for chair and 01 is the chair sample number.
  - The furniture were classified as chair, table, stool, drawer and cabinet. Prior to testing, these furniture were inspected for initial dimensions, presence of defects, moisture content and other matters that could affect the result of the test.
- *Testing prototype furniture using electro-pneumatic testing machines/equipment following standard test procedures*
  - The test machines used during the testing were supplied by FIRA (The Furniture Industry Research Association) from the United Kingdom. These machines are pneumatically (movements of the machine components were controlled by air supplied by an air compressor using valves and cylinders) and electro-pneumatically controlled (movements of the machine components were controlled by air supplied by air compressor and electricity using valves and cylinders).
  - The standard test procedures employed by the project were established test standards of ISO (International Organization for Standardization), BS (British Standards) and EN (European Standards).

In essence, the actual intended situation was over and above the outputs delivered by the project. The enthusiasm and favorable environment for both members and non-members of CFIP numbering about 3,000, inclusive of those registered and unregistered with BIP (Board of Investments of the Philippines) created by the project through deliverance of the outputs are remarkable and invaluable impact of the project.

I. Contribution to ITTA 1994 and ITTO Libreville Action Plan

The project has contributed significantly to ITTA 1994 by enhancing the capacity of the Philippine furniture industry to export better quality products and improve competitiveness in the global market, by promoting research and development that improved processing technologies for furniture products and by promoting increased and further processing in an efficient manner in the Philippines thereby increasing employment opportunities and export earnings.

By achieving its planned outputs and objectives, the project has contributed to achievement of ITTO objectives and priorities as defined in the ITTO Libreville Action Plan. The project had assisted in the promotion and transfer of improved technologies in the furniture industry of the Philippines by implementing research and development on the processing of quality furniture products and by disseminating the improved technologies to target beneficiaries nationwide as well as utilizing them to assist the furniture industry in building up stronger competitiveness in the global market.

**4.2. Lessons Learned**

- a. The project was formulated with the participation of the CFIP and its members, the primary beneficiaries of the project. They were well informed of the objectives of the project and had indicated their full support for implementation of the project. As it turned out, one of the key success factors of the project was the strong involvement of the furniture manufacturers and exporters in the formulation and implementation of the project.
- b. The project was addressed to the furniture producers, exporters and users on the poor and inadequate data and information on the performance of furniture in actual service and low product quality. While the rationale of the project was quite strong, its analysis was somewhat weak, performed without the aid of a problem tree. Cause-effect relationships were not clearly demonstrated. Consequently, the project elements defined did not explicitly reflect the core problem to be addressed, its main causes and sub-causes thus resulted in the weak vertical logic of the project.
- c. The weak vertical logic of the project had made it difficult to develop a sound logical framework matrix (LFM). The indicators of outputs and objectives defined at the output and objective levels were less specific, immeasurable and without time bound.

The weak LFM has hampered its use as an effective tool for assessing project achievements.

- d. The intended situation expected to prevail after project completion was well elaborated in the project document. In the absence of a sound LFM, the intended situation was proved useful as a benchmark against which overall achievement of the projects could be assessed.
- e. Despite the weak design and LFM of the project, it was implemented satisfactorily and fully achieved its overall objectives. The satisfactory operation could be attributed mainly to the strong operational management by the Project Leader and his frequent dialogue with the personnel involved including the International Consultant, National Consultant and laboratory technicians and the full support of the beneficiaries as well as Head of the Executing Agency.
- f. Another key success factor of project implementation was the timely and sufficiently procured inputs of the project including the timely acquisition and installation of the primary testing machines, the proper and effective calibration of the test machines by FIRA engineer, adequately trained technicians to perform laboratory testing, timely and smooth transfer of project funds by the ITTO and timely supply/procurement by the beneficiaries of prototype furniture required for the testing.
- g. The outcomes of the project had been widely disseminated to the beneficiaries nationwide. Participation of the project in prestigious International Furniture Exhibitions, conduct of awareness seminars on furniture testing and production of printed information materials as well as Radio and TV interviews proved as an effective strategy in disseminating and promoting the project results/outcomes as they were attended by different stakeholders including furniture manufacturers, exporters, users, foreign buyers, government policy makers, politicians, students and other professionals concerned with furniture industry.
- h. Establishment of FFTC by the Executing Agency is commendable. It is an effective strategy to sustain the impacts of the project. FFTC continuously keeps close contact with the primary beneficiaries and provides testing service to beneficiaries upon request. Therefore, presence of the Center must be sustained and its capacity strengthened and expanded in order to provide everlasting services needed by the furniture industry.

- i. The assumptions made held true during the project duration thus did not interfere with implementation of the project. The first six-month extension of the project was due to the technical reason, i.e. the rigorous and tedious process of testing of the prototypes of furniture while the second extension for six months was granted by ITTO after project completion, devoted solely for dissemination of the project results.

## **5. CONCLUSION AND RECOMMENDATIONS**

### **a. Project Design**

- The project was formulated without strict adherence to the ITTO Manual for project formulation, first edition. The cause-effect of the key problem to be addressed was not clearly exhibited with the aid of a problem tree and resulted in the weak coherence of project elements thus weak vertical logic.
- To ensure a sound project design, there is a need for any proponent to formulate a project proposal in strict adherence to existing ITTO Manual for project formulation. There is a need for any ITTO focal point to establish and function a strong and professional national screening house to assist in assessing proposal before submitting it to ITTO and Expert Panel.

### **b. LFM versus Project Achievement**

- A strong coherence of project elements facilitates development of a sound LFM. The LFM of this project was somewhat weak as the indicators of outputs and objectives were less specific, not measurable and without time bound. The LFM could not fully serve as an effective tool for measuring achievement of the project.
- To be effective as a tool for measuring achievement, LFM must be sound; indicators of defined outputs and objectives must be specific, measurable, applicable, realistic and time bound; means of verification are specific and most likely available; and assumptions must be realistic.

### **c. Project Achievement**

- Planned outputs and overall objective of the project has been fully achieved despite the somewhat weak project design. The LFM, combined with the intended situation expected to prevail at project completion, were used as a tool to assess achievement.



- There is a need for a proponent, the national clearing house and ITTO Export Panel to ensure that expected outcomes after project completion are adequately elaborated in the project proposal as they are also a useful tool for assessing achievement.

d. Unexpected Effects and Impacts

- The project required extension in time for one year: six months to complete the tedious testing and another six months to disseminate results of the project to target beneficiaries. The project had concentrated only in the structural testing of various furniture. Other tests like flammability testing of fabrics and foams, analysis of lead content of finishing material, formaldehyde emission of glues and textiles, corrosion test, etc. were not considered in the project.
- There is a need to: i) exercise vigilant planning of activities dealing with time consuming activities and to make realistic assumption in order to reduce risk; ii) there is a need for the FFTC to increase its testing capability in order to serve the growing demand for other tests by the furniture industry for which investment on manpower as well as machinery and equipment is urgently needed; ii) integrate dissemination of project results into the project design with allocation of sufficient budget to implement disseminating activities.

e. Sustainability

- After the project completion, results/outputs of the project were widely disseminated to target beneficiaries. The management and operation of the testing facilities was continued by FFTC which caters the evaluation and performance testing of furniture.
- In order to sustain benefits of a project, there is a need to identify and define one year before project completion what critical activities to continue and how the activities will be implemented in terms of institutional and financial arrangements.

f. Stakeholder Involvement

- The project had been formulated and implemented with the involvement of stakeholder especially manufacturers of exporters of furniture products which proved as one of the key success factors of project completion.
- If a project is to be successful at all, there is a need to ensure the involvement of stakeholder in the formulation and implementation stages of a project. The proponent, national clearing house and ITTO Expert Panel are to pay greater attention to stakeholder analysis section of any project proposal.

g. Efficiency and Operational Aspects.

- The project had been implemented and completed successfully mainly due to the timely supply of inputs, capable operational and financial management and support by target beneficiaries.
- To successfully implement and complete a project involving laboratory testing, careful selection of project key personnel including consultant and research assistant, timely acquisition, installation and calibration of the primary testing machines and equipment, as well as close cooperation with ITTO and target beneficiaries are indispensable.

h. Effectiveness of Technology Transfer

- The project had successfully transferred the furniture testing technologies to target groups through the various means including participation to exhibition, conduct of awareness seminar on furniture testing, production of printed information and materials as well as radio and television interviews.
- As technology transfer of any technologies to target groups are required for sustaining benefits of a project it is strongly advisable to consider taking in activity on technology transfer as the essential activity of any project.

i. Contribution to ITTA 1994 and ITTO Action Plan

- The project had significantly contributed to the achievement of ITTA 1994 and ITTO priorities in various ways by achieving its overall objective which was to enhance quality of wood furniture export and improve competitiveness of the furniture industry.
- Relevance of a proposed project to ITTO's mandate and policies as well as to host country's development policies and priorities should remain as the pre-requisite for any project and be clearly elaborated in any project proposal.

## Annex 1

### Terms of Reference for Ex-Post Evaluation

PD 35/99 Rev.4 (I) "Performance Evaluation of Export Wood Furniture in Relation to Strength and End-use Applications Using Established Test Standards"

No.	Task	Locus in the Report
i.	To assess the projects' design and contribution to the achievement of their respective objectives.	4.1.a
ii.	To assess the achievement of the projects' outputs and specific objectives.	4.1.a; 4.1.b
iii.	To evaluate the impact and relevance of the projects, detailing their impact on development and specific objectives as stated in the project documents.	4.1.b; 4.1.c; 4.1.l
iv.	To determine the effectiveness of technology transfer to target groups if applicable.	4.1.h
v.	To assess the overall post-project situation for the projects, including the conditions of their intended direct or indirect beneficiaries.	4.1.b
vi.	To define and assess unexpected effects and impacts, either harmful or beneficial, and present the reasons for their occurrences.	4.1.d
vii.	To analyze and assess implementation efficiency, including the technical, financial and managerial aspects.	4.1.g; 4.1.f
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.	4.1.e
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 future.	4.2.a – i
x.	To assess the overall cost of the projects with original budget provisions, and their respective linkage with the overall results.	4.1.g
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.	-

xii.	To assess the projects' contribution to the relevant ITTA objectives (1994) and relevant ITTO Action Plan.	4.1.l
xiii.	To prepare one or more articles for each project, for possible publication in the ITTO Tropical Forest Update (TFU), 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.	Separate doc.
	<p>In addition to the above, the consultant 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:  PD 35/99 Rev.4 (I) "Performance Evaluation of Export Wood Furniture in Relation to Strength and End-use Applications Using Established Test Standard":</p> <ul style="list-style-type: none"> <li>• The results of tested various types of furniture from the Philippines timber;</li> <li>• Generated data and information on the static, fatigue and impact strength and performance of the individual prototype chairs, tables, stools, cabinet doors and table drawers from tropical timber;</li> <li>• Identification, inspection and classification of wooden furniture prior to testing; and</li> <li>• Testing prototype furniture using electro-pneumatic testing machines/equipment following standard test procedures.</li> </ul>	4.1.k

## Annex 2

### Ex-post Evaluation Mission Programs for Projects PD 35/99 Rev.4 (I) and PD 34/99 Rev.2 (I)

15 July 2009, Wed	Arrival of Consultant at Manila
16 July 2009, Thu	Entry conference at FMB Office in Manila Departed Manila for Los Banos Opening meeting at FPRDI Office with OIC, Director, Key Officials and former Project Key Personnel
17 July 2009, Fri	Meeting with Project PD 35/99 Rev.4 (I) former Project Key Personnel Departed Los Banos for Cebu City
18 July 2009, Sat	Visit to furniture manufacturer/exporter Visit to Lumber manufacturer/trader
19 July 2009, Sun	Departed Cebu City for Manila
20 July 2009, Mon	Visit to Bureau for Product Standards (BPS) and Association of Structural Engineering of the Philippines (ASEP) Departed Manila for Los Banos
21 July 2009, Tue	Meeting with Project PD 35/99 Rev.2 (I) Key Personnel and National Consultant
22 July 2009, Wed	Meeting with Project PD 35/99, continued Meeting with Project PD 34/99
23 July 2009, Thu	Wrap-up meeting with FPRDI Key Officials and Projects Key Personnel Departed Los Banos for Manila
24 July 2009, Fri	Exit conference at FMB Office in Manila Departed Manila for Jakarta

## Annex 3

### List of Persons Met

Event/Name	Office/Position
<b><u>Entry Conference at FMB (July 16, 2009):</u></b>	
Zosimo I. Pedron	Administration, FMB
Virginia Angeles	Administration, FMB
Ana Rose Df Opena	CBFMD, FMB
Mayumi Quintos Natividad	FED, FMB
Nonito M. Tamayo	NFMD, FMB
Isabelita V. Austria	PPMSD, FMB
John G. Jaramillo	Legal Div., FMB
Jesus A. Javier	Reforestation Div. FMB
<b><u>Opening Meeting at FPRDI (July 16, 2009):</u></b>	
Felix B. Tamolang	OIC, Office of Director
Wilfredo M. America	OIC, Office of DY Director
Robert Natividad	Chief, MPPDD
Rico J. Cabangon	Chief, MPED
Cecile B. Zamora	Chief, TSS
Francisco G. Lapitan	Chief, SMSS
Victor G. Revilleza	Head, FFTC
<b><u>Visit to Cebu City (17-18 July 2009):</u></b>	
Gene Soler	Interior Crafts of the Island Product Developments, OIC
<b><u>Wrap-up Meeting at FPRDI (July 23, 2009):</u></b>	
Felix B. Tamolang	OIC, Office of Director
Rico J. Cabangon	Chief, MPED
Fransisco G. Lapitan	Chief, SMSS
Victor G. Revilleza	Head, FFTC
Claire Palunday	Project Staff
<b><u>Exit Conference at FMB (July 24, 2009):</u></b>	
Jesus A. Javier	Chief, Reforestation Div. FMB
Ana Rose Df Opena	CBFMD, FMB
Lourdes C. Wagan	Chief, Forest Land-use Div. FMB
Alejandro R. Sibucan, Jr.	Economist, FMB
Nonito M. Tamayo	NFM Div. FMB
Victor G. Revilleza	Sr. Science Research, FPRDI
Marlo D. Mendoza	OIC, Director, FMB

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