Report of Ex-post Evaluation

PD 386/05 Rev.1 (F)

Technological Development for the Production of Planting Materials to Support Sustainable Plantation of Bali Indigenous Species through Community Participation (Indonesia)

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44RFM-4d
3 September 2010

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LIST OF ACRONYMS

GOI	Government of Indonesia
IFAP	Indonesia Forestry Action Programme
ITTA	International Tropical Timber Agreement
ITTC	International Tropical Timber Council
ITTO	International Tropical Timber Organisation
PET	Project Evaluation Team
PIT	Project Implementation Team

PART I: EXECUTIVE SUMMARY

1. Background Information about the project

The ITTO Project PD386/05 Rev.1 (F) was conceived to provide technical support for establishing plantations in the Province of Bali by using the Province's indigenous tree species. Since 2003, the Provincial Government of Bali has embarked on rehabilitating the Province's degraded forests with Bali's indigenous species under the Bali Greening Program with limited success, because of the inability of the local forestry organizations to provide good quality planting materials such as seedlings; and the lack of technical support for establishing plantations.

The Province's degraded forests rehabilitation program was part of the Government of Indonesia's (GOI) initiatives to address forest deforestation and degradation nationally, under the Indonesia Forestry Action Programme (IFAP)

The Project's Specific Objective was to identify and implement suitable technology for producing high quality planting materials from Bali's indigenous species, which can be used to establish plantations with community participation.

The Development Objective was to support the tree planting program of the Provincial Government of Bali as a way of empowering the local economy, and improving the environmental conditions of the Province.

The Project Agreement was formally signed on 1st February 2006, with an original duration of 36 months (from May 2006 to April 2009). However, there was an extension of four months to August 2009, at no additional cost to the ITTO, to enable the completion of some Project activities which had been delayed due to unanticipated logistical challenges and unpredictable weather conditions.

The Project's main Expected Outputs were:

Output 1: Developing suitable technology for Bali indigenous species.

Output 2: Maintaining the seed orchards established under the previous ITTO Project PD 137/02.

Output 3: Developing and disseminating technical guidelines developed from the project to farmers and other project stakeholders.

Output 4: Updating the Forest Land Use map of the Bali Provincial Government.

Output 5: Producing and distributing quality planting materials from Bali's indigenous species.

Output 6: Establishing 2,500 hectares of plantation on farmers' land with Bali's indigenous species.

Output 7: Developing and demonstrating suitable agro forestry models which can be adopted by the farmers to suit their own circumstances.

Output 8: Developing a suitable monitoring system which can be applied to the established plantations on the farmers' lands.

The total Project budget was $USD1, 674,174, of which the ITTO contributed $USD597, 512, and the GOI contributed $USD1, 076,662 in cash and in-kind.

The Project's implementation strategy involved:

- further developing and applying the propagation techniques developed under previous ITTO project PD 137/02;
- effectively involving the community (particularly the farmer groups) so as to improve the capacity of local government and the local community in carrying out successful reforestation and rehabilitation of degraded land;
- addressing the issue of unavailability of good planting materials for Bali's indigenous species through providing information on the available seed sources within Bali;
- maintaining the seed orchards established under the previous ITTO project;
- developing propagation techniques for some of the difficult-to-propagate indigenous species;

- improving the existing propagation and seedling production facilities;
- developing suitable agro forestry models for the local farmers;
- improving the skills of the local farmers in plantation establishment through training workshops;
- improving the operational capacity of the local government in support of the rehabilitation of degraded forest lands, through updating the forest land use map so that planning can be carried out more effectively;
- developing a suitable monitoring and evaluation system for the established plantations; and
- providing a model of successful plantation.

The Project was executed by the Provincial Forestry Service of Bali with the assistance of the Tree Seed Regional Centre for Bali and Nusa Tenggara; and national experts from Gajah Mada University in Yogyakarta, University of Udayana Bali in Denpasar and the Centre for Forest Biotechnology and Tree Improvement in Yogyakarta.

The main target beneficiaries were the farmer groups who provided their land for the establishment of the plantations.

The PET found that the Project's Specific and Development Objectives were fully consistent with the objectives of the International Tropical Timber Agreement (ITTA) 1994. Specifically, the Project's Development and Specific Objectives related to the following ITTA 1994 objectives:

(c) To contribute to the process of sustainable development;

(d) 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; and

(j) To encourage members to support and develop industrial tropical timber reforestation and forest management activities as well as rehabilitation of degraded forest land, with due regard for the interests of local communities dependent on forest resources.

In terms of ITTO's structure, the Project was related to ITTO's Committee on Reforestation and Forest Management, whose roles and responsibilities are concerned primarily with the sustainable management of the natural forest resource base for tropical timber.

The PET also found that the Project's objectives met the objectives of the ITTO's Yokohama Action Plan, 2002 to 2006, specifically, the goals of ITTO's Reforestation and Forest Management Committee which aim to support activities that secure the tropical timber resource base; and promote sustainable management of tropical forest resources.

2: The Purpose of the Evaluation

The ITTO commissioned the ex-post evaluation to provide a concise diagnosis of the Project, so as to point out the successful and unsuccessful outcomes, the reasons for successes and failures, and the Project's contribution towards ITTO's Objective 2000, and to draw lessons that can be used to improve similar projects in the future.

The PET comprising of Dr Hosny El-Lakany from Canada and Dr Kwame Asumadu from Australia visited Bali, Indonesia from 3rd to 10th August 2010 to evaluate the Project. The actual duration of the evaluation was six days.

3: The Scope of the Evaluation

The evaluation methodology used by the PET involved a review of Project documents provided by the ITTO to the consultants prior to travel to Bali which included:

- Project progress reports;
- technical reports and guidelines;

- Minutes of the Project Steering and Technical committees;
- the Project Completion Report; and
- the Project Final Report

In addition, the consultants also conducted interviews and had discussions with the PIT including relevant officials and staff at The Bali Provincial Forestry Service, The Regional Tree Seed Centre for Bali and Nusa Tenggara, the Ministry of Forestry of the Republic of Indonesia and Udayana University in Denpasar.

The PET also visited Project sites in East, North and West Bali, and interviewed and also had discussions with farmers and farmer groups, as well as verified some of the documented Project activities and outcomes.

Conclusions of the Evaluation

The PET found that the Project inputs were used efficiently and cost-effectively to implement the activities in the Project's Work Plan. All Project activities were undertaken successfully.

The PET also found that the Project's Specific Objective was achieved through developing technology for producing high quality planting materials from six Bali indigenous species, and distributing them to 66 farmer groups for planting on their land in East, North and West Bali, covering a total area of 2,670 hectares.

The Project's Development Objective was achieved through:

- encouraging research in the development of new methods and techniques in the germination and propagation of the selected six indigenous species of Bali;
- updating the provincial land use map;
- engendering interest among the farmers in East, North and West Bali in planting the six selected indigenous species on their farms; and
- knowledge transfer through training and workshops in planting the indigenous species.

The Project's results were also disseminated effectively through publishing and distributing several technical publications in both English and Bhasa Indonesia, for the benefit of the local farmer groups. In addition, a number of discussion groups, seminars, workshops and training sessions were held to disseminate the project results to key stakeholder groups and the target beneficiaries.

The PET found significant evidence, through interviews with farmers and discussions with project officials, which indicated that the Project has been sustainable post-completion.

Evidence from field visits, discussions and interviews with a wide cross section of the Project's stakeholders also confirmed the Project's significant and important impacts. In East, North and West Bali, the Project has engendered a high level of interest among the farmers in planting the selected indigenous species. Several farmers indicated to the PET their preparedness to plant more trees if seedlings were made available to them.

4: Evaluation Recommendations and Conclusions

For the ITTO

In the view of the PET, the Project presents an excellent example of a good community-based and participatory tree-planting program and recommends that:

- the ITTO should consider documenting and publicising the Project as a useful and functional model for other ITTO producer member countries in how the planting of indigenous species can be successfully incorporated into existing agro forestry systems already familiar to the end user farmers; and
- the ITTO should consider favourably any follow-up project the Government of Indonesia submit s, provided the new project aims to:
    - build on the outputs of the completed Project;

- expand the objectives of the completed project to research further the various agro forestry systems used by the completed Project, with the view to recommending the system(s) that may provide optimum outcomes for the farmers; and
- develop an evaluation program and monitoring system for the established plantations.

For the Country

Given the environmental challenges of the Eastern part of the Island of Bali such as shortage of water the PET recommends that:

- the Bali Provincial Government and the Government of Indonesia should consider assisting the farmers to address this challenge. The PET found that with its drier climate, the shortage of water was a major limiting factor to the successful planting of trees in Eastern Bali;
- the national and provincial government should consider providing on-going resources to enable the PIT to:
  - maintain and update regularly the project database;
  - continue monitoring the trees on the farmers lands;
  - use the farmers lands as demonstration plots for on-going research, to update and provide information in support of tree planting on the Island;
  - facilitate the establishment of community nurseries as a way of addressing some of the logistical challenges the project faced initially; and
  - maintain the existing locally-based extension services, which have contributed substantially to the Project's success and sustainability post-completion;
- the GOI should consider formulating a follow up project to the ITTO focusing on evaluating the agro forestry systems employed by the Project, as well as research on the monitoring of the trees on the farmers' lands; and
- the GOI should consider continuing to raise awareness of the environmental, cultural and socio-economic importance and/or benefits of planting indigenous species on the island.

Based on the review of Project documents, field visits and discussions with relevant stakeholders, the PET concluded that:

- the Project was executed efficiently;
- the Development and Specific Objectives of the project were achieved;
- sustainability or continuation of the project post-completion is very good now and promising for the future; and
- the Project provides a good demonstration model of participatory community-based agro forestry activity, and should be publicised to other ITTO member countries.

PART II

1. Project Context

Since 2003, the Provincial Government of Bali has embarked on rehabilitating the Province's degraded forests with Bali indigenous species, under the Bali Greening Program, with limited success because of the:

- inability of the local forestry organizations to provide good quality planting materials such as seedlings; and
- lack of technical support for establishing plantations.

The ITTO Project PD386/05 Rev.1 (F) was therefore conceived to provide technical support for establishing plantations in the Province using Bali's indigenous tree species.

The Province's degraded forests rehabilitation program was part of the Government of Indonesia's initiatives to address forest deforestation and degradation nationally under the Indonesia Forestry Action Programme (IFAP) whose objectives were:

- protection of forest ecosystems;
- sustaining multiple goods and services provided by forests for the benefit of present and future generations; and
- ensuring the proper consideration of the views and expertise of all people affected and involved in forest-related activities.

Indonesia's forestry sector strategic plan (Renstra 2005-2009) had four goals as follows:

- improved quality and productivity of the national forest resource;
- reduced rate of forest resource degradation;
- implementation of efficient, fair and sustainable forest management system; and
- increased contribution of the nation's forest resources to the national economy and the community's prosperity.

Six programmes underpinned the strategic plan and focused on:

- forest and land rehabilitation;
- forest protection and nature conservation;
- optimization of forest function and utilization;
- consolidation of pre-conditions for forest resource management;
- institutional development ; and
- promotion of community services.

1.1: Project Objectives

The Project's Specific Objective was to identify and implement suitable technology for producing high quality planting materials and plantation establishment, by using Bali's indigenous species with community participation.

The Development Objective was to support the tree planting program of the Provincial Government of Bali as a way of empowering the local economy, and improving the environmental conditions of Bali.

1.2: Project Implementation

The Project Agreement was formally signed on 1st February 2006, with an original duration of 36 months (from May 2006 to April 2009). However, there was an extension of four months to August 2009 at no additional cost to the ITTO, to enable the completion of some Project activities which had been delayed due to unforseen logistical challenges and unpredictable weather conditions.

1.3: Expected Project Outputs

The main expected Project outputs were the following:

Output 1: Developing suitable technology for Bali indigenous species.

Output 2: Maintaining the seed orchards established under the previous ITTO Project PD 137/02.

Output 3: Developing and disseminating technical guidelines developed from the project to farmers and other project stakeholders.

Output 4: Updating the Forest Land Use map of the Bali Provincial Government.

Output 5: Producing and distributing quality planting materials from Bali's indigenous species.

Output 6: Establishing 2,500 hectares of plantation on farmers' land with Bali's indigenous species.

Output 7: Developing and demonstrating suitable agro forestry models which can be adopted by the farmers to suit their own circumstances.

Output 8: Developing a suitable monitoring system which can be applied to the established plantations on the farmers' lands.

1.4: Project Inputs

The total Project budget was $USD1, 674,174. The ITTO contributed $USD597, 512 with the balance of $USD1, 076,662 contributed by the Government of Indonesia (GOI) in cash and in-kind.

1.5: Project Strategy

The Project's implementation strategy involved:

- further developing and applying the propagation techniques developed under previous ITTO project PD 137/02;
- effectively involving the community (particularly the farmer groups) so as to improve the capacity of local government and the local community in carrying out successful reforestation and rehabilitation of degraded land;
- addressing the issue of unavailability of good planting materials for Bali's indigenous species through providing information on the available seed sources within Bali;
- maintaining the seed orchards established under the previous ITTO project;
- developing propagation techniques for some of the difficult-to-propagate local species;
- improving the existing propagation and seedling production facilities;
- developing suitable agro forestry models for the local farmers;
- improving the skills of the local farmers in plantation establishment through training workshops;
- improving the operational capacity of the local government in support of the rehabilitation of degraded forest lands, through updating the forest land use map so that planning can be carried out more effectively;
- developing a suitable monitoring and evaluation system for the established plantations; and
- providing a model of successful plantation.

1.6: Target Beneficiaries Involvement

The Project's executing agency, the Provincial Forestry Service of Bali, was assisted by the following organisations:

- the Tree Seed Regional Centre for Bali and Nusa Tenggara; and

- national experts from Gajah Mada University in Yogyakarta, University of Udayana Bali in Denpasar and the Centre for Forest Biotechnology and Tree Improvement in Yogyakarta.

The main target beneficiaries were the farmer groups who provided their land to be used for establishing the plantations. The following project benefits were expected to flow to the farmer groups:

- making available to them high quality planting materials from Bali's indigenous species which were unavailable and difficult to obtain;
- enhancing the capacity and improving the skills of the local farmers in plantations establishment through training workshops and extension services, to assist them in integrating the planting of local indigenous species with exotic species on their land; and
- developing suitable agro forestry models for the local farmers, involving the planting of exotic and indigenous species and food and other cash crops.

1.7: The ITTO/ITTA Context

The PET found that the Project's Development Objective of supporting "the tree planting program of the Provincial Government of Bali as a way of empowering local economy and improving the environment of Bali" was fully consistent with the objectives of the ITTA 1994.

Similarly, the Project's Specific Objective of identifying and implementing "sustainable technology for the production of high quality planting materials and plantation establishment by using Bali indigenous species with community participation" was also fully consistent with the objectives of the International Tropical Timber Agreement (ITTA) 1994.

Specifically, the Project's Development Objectives and Specific Objectives related to the following ITTA 1994 objectives:

(c) To contribute to the process of sustainable development;

(d) 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; and

(j) To encourage members to support and develop industrial tropical timber reforestation and forest management activities as well as rehabilitation of degraded forest land, with due regard for the interests of local communities dependent on forest resources.

In terms of ITTO's structure, the PET found that the Project was related to ITTO's Committee on Reforestation and Forest Management, whose roles and responsibilities are concerned, primarily, with the sustainable management of the natural forest resource base for tropical timber.

The PET also found that Project's objectives also met the objectives of the ITTO's Yokohama Action Plan, 2002 to 2006, as well as the goals in the Action Plan for the ITTO's Reforestation and Forest Management Committee. The goals of this committee in this Action Plan were to:

- support activities to secure the tropical timber resource base; and
- promote sustainable management of tropical forest resources.

The relevant specific Actions in the ITTO's Yokohama Action Plan, 2002 to 2006 are:

- (4): Promote the conservation, rehabilitation and sustainable management of threatened forest ecosystems, *inter alia* mangroves in collaboration with relevant organizations;
- (7): Encourage members and assist them, where appropriate, to assess the current and potential productivity of major tropical forest types, taking into account the need to promote future growth and effective regeneration, and
- (10): Encourage members and assist them, where appropriate, to improve the productive capacity of natural forests, where appropriate, through intensified silvicultural practices, better utilization of lesser-

used species, the promotion of non-timber forest products, guided natural regeneration, enrichment planting and reforestation;

2: Evaluation Scope and Focus

The ITTO commissioned the Ex-Post Evaluation to provide a concise diagnosis of the Project, so as to point out the successful and unsuccessful outcomes, the reasons for successes and failures, and the Project's contribution towards ITTO's Objective 2000, and to draw lessons that can be used to improve similar projects in the future.

The Ex-Post Evaluation's scope of work required the consultants to analyse and assess the Project o determine:

1. its overall role and contribution in light of sectoral policies, development programmes, priorities and requirements to achieve sustainable management of forest resources in Indonesia;
2. the current management status of forest plantations within the project's area of influence, the effectiveness of the project's implementation and its effectiveness in promoting sustainable plantation management as defined in the ITTO Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests and the ITTO Guidelines for the Restoration, Management and Rehabilitation of Degraded and Secondary Tropical Forests;
3. the contributions of the specific studies in various disciplines (genetic conservation, cloning, ecology, socio-economy, silviculture, rehabilitation, stands dynamics, plant materials production, etc.) prepared by the project to the development of forestry in the project's area of influence;
4. the results and potential impact of the applied research conducted by the project on the application of plantation establishment/management practices and its contribution to the overall forestry-related knowledge in the country;
5. the impact of project activities on the livelihoods of target populations;
6. the effectiveness of dissemination of project results;
7. the overall post-project situation in the project's area of influence;
8. the unexpected effects and impacts, either harmful or beneficial, and the reasons for their occurrences;
9. the cost efficiency in the implementation of the project, including the technical, financial and managerial aspects;
10. follow-up actions in order to enhance uptake of project results;
11. the project's relative success or failure, including a summary of the key lessons learnt; and the identification of any issues or problems that should be taken into account in designing and implementing similar projects in the future;
12. evaluation of the overall contribution of the four projects to plantation establishment/management in the tropics and to the restoration, management and rehabilitation of degraded and secondary tropical forests;
13. evaluation of the overall impact on and relevance of the project for the Executing Agency, the forest industry sector and local communities being served in Indonesia;
14. evaluation of the overall attainment of the objectives and to assess the overall effectiveness of the project; and
15. evaluation of the overall appropriateness of the costs and cost structure and use of resources within the four projects.

The scope of work also required the consultants to make recommendations on:

1. the need for similar projects in the future;

2. innovative approaches/designs for projects aiming at promoting plantation establishment and management in the tropics and at the restoration, management and rehabilitation of degraded and secondary tropical forests;
3. appropriate target groups, e.g. countries, government, organizations, forestry sector, local communities;
4. the organizational arrangements of such projects;
5. follow-up and evaluation practices; and
6. further actions needed to sustain or increase the intended effects on sustainable management of forest resources and Objective 2000 and to draw conclusions which may be of relevance to other ITTO projects.

The PET comprising of Dr Hosny El-Lakany from Canada and Dr Kwame Asumadu from Australia visited Bali, Indonesia from 3rd to 10th August 2010. The actual duration of the evaluation was six days.

3: Evaluation Methodology

The evaluation methodology used by the PET involved:

- a review of the:
    - Project document;
    - Project progress reports;
    - technical reports and guidelines;
    - Minutes of the Project Steering and Technical committees;
    - the Project Completion Report; and
    - the Project Final Report
- interviews and discussions with the Project Implementation Team (PIT) including the relevant officials and staff at The Bali Provincial Forestry Service, The Regional Tree Seed Centre for Bali and Nusa Tenggara, the Ministry of Forestry of the Republic of Indonesia and Udayana University ; and
- field visits to East, North and West Bali for interviews and discussions with farmers and farmer groups.

Detailed itinerary including the scheduled meetings and individuals who attended are at Appendices 1 to 5.

4: Findings and Lessons Learned

4.1: Efficiency

Efficiency relates to an assessment of:

- how the project inputs were used and the project activities in the Project's Work Plan were undertaken to produce the Project outputs in a cost-effective manner; and
- the quality of the outputs produced.

Based on the review of the Project's documentation, as well as discussions and interviews with the farmer groups in West, North and East Bali who participated in the Project, the PET concluded that the Project was implemented efficiently, with the Project inputs applied as outlined in the Project Budget and Work Plans to produce the achieved outputs.

All the Project activities described in the Project Document were undertaken successfully. The six months extension approved by the ITTO, without additional cost to the Project Budget, was to enable the completion of some delayed Project activities resulting from:

- logistical challenges of having to supply planting materials to farmers located in remote areas and accessible by difficult roads; and

- unpredictable seasonal conditions relating to the late fruiting of seed trees and delayed onset of the rainy and dry seasons.

4.2: Effectiveness

Effectiveness relates to an assessment of the Project's achievements i.e. the outputs, and how the outputs contributed to the Specific and Development Objectives.

After reviewing all Project documents and having discussions and interviews with the relevant Project team members and the farmer groups, the PET concluded that both the Project's Developmental Objective and the Specific Objective were substantially achieved.

The Project achieved its Specific Objective through developing technology for producing high quality planting materials from selected six Bali indigenous species, and distributing them to 66 farmers groups for planting on their land in East, North and West Bali. (The total area of farmers' land planted with seedlings generated from the Project was 2,670 hectares, covering four districts in East Bali and one district each in West and North Bali.

The Project's Development Objective was achieved through:

- encouraging research in the development of new methods and techniques in the germination and propagation of Bali's indigenous species;
- updating the provincial land use map;
- engendering interest among the farmers in East, North and West Bali in planting the six identified indigenous species on their farms; and
- knowledge transfer through training and workshops in planting the indigenous species.

4.3: Effectiveness by Outputs

4.3.1: Details of Outputs Achieved by the Project

Output 1: Developing suitable technology for the selected Bali indigenous species.

The Project identified 3 seed stands and 20 sites for 50 mother tree seeds from seven regions throughout Bali and Lombok Islands, and developed technology for producing high quality planting materials (seedlings) from 6 selected indigenous species, which were then planted on farmers' lands in six districts in West and East Bali. The six species were *Dysoxylum densiflorum, Alstonia scholaris, Planchonia valida, Manikara kauki, Fagara rhetsa and Wrightia pubescens.* The technology developed largely involved improved seed germination techniques for the six indigenous species described above. In addition, the PIT reported that the Project successfully developed propagation method for some of the species (e.g. tissue culture propagation for selected clones of *Wrightia pubescens*) which is now being refined and improved through research at The Regional Tree Seed Centre for Bali and Nusa Tenggara.

Output 2: Maintaining the seed orchards established under the previous ITTO Project PD 137/02.

The previous ITTO Project PD 137/02 established seed orchards for three species (*Alstonia scholaris, Planchonia valida and Dysoxylum desiflorum)* at Ekasari Village in Jembrana District of West Bali. The new project continued with the maintenance of the seed orchards through thinning, to ensure they continue to provide seeds for on-going planting activities on farmers' land. The Project also upgraded the access road (a total of 1.3 kilometres) to the nursery at Sumberklampok.

Output 3: Developing and disseminating technical guidelines developed from the project to farmers and other project stakeholders.

The Project produced and distributed a total of 12 guidelines on seed handling and planting techniques for the selected six species for use by farmer groups and other stakeholders. These guidelines are available in both English and Bhasa Indonesia. In addition, the Project organised one regional workshop on seed propagation techniques, which was attended by 18 farmer group leaders from six districts.

Output 4: Updating the Forest Land Use map of the Provincial Government of Bali.

The Project carried out physical and economic surveys and produced a map of the sites where plantations were to be sited in six districts across Bali, and distributed them to the local forestry service. In addition, a workshop on updating the land use plan for Bali was held, and was attended by 30 participants. The land use plan will be used by the local authority in the planning and implementation of land rehabilitation and reforestation activities in Bali. The Project also used the map to identify areas for distributing planting materials, as well as locating permanent sample plots.

Output 5: Producing and distributing quality planting materials from the selected Bali indigenous species.

The Project identified 6 indigenous species (*Dysosylum species in* Karangasem and Tabanan Districts, *Manilkara kauki* in Buleleng District, *Fagara rhetsa* in Gianyar, Badung and Buleleng Districts, *Wrightia pubescens* in Buleleng District, *Planchonia species* in Jembrana District and *Alstonia scholaris* in Jembrana District and South Sumatera Province) as being suitable for planting in West, North and East Bali. A total of 1,133 kilograms of seeds were collected from the selected six species, which produced 1.1 million seedlings for distribution to the farmer groups in East, North and West Bali.

Output 6: Establishing 2,500 hectares of plantation on farmers' land with the selected Bali indigenous species.

The Project successfully planted seedlings of the selected six indigenous species on a total of 2,670 hectares on farmers' lands in six districts in West , North and East Bali covering Karangasem, Bangli, Klungkung, Tabanan, Jembrana and Buleleng districts. There were 66 farmers groups involved. However, it should be noted that although the Project planted seedlings on more than 2,670 hectares, they are not in the form of traditional monoculture tree plantations. The plantations established by the Project involved incorporating the planting of seedlings from the selected six indigenous Bali species into existing agro forestry systems already being used by the farmer groups.

Output 7: Developing and demonstrating suitable agro forestry models which can be adopted by the farmers to suit their own circumstances.

The PET found that the PIT implemented the Project by using four existing agro forestry models already being used by the farmers. These systems are based on site conditions, tree species, land tenure systems and the interests of the farmers in West, North and East Bali. Model 1 was an intercropping system involving a mix of the indigenous species as well as the other species already being planted by the farmers. Model 2 involved planting the indigenous species along farm boundaries as wind breaks with the rest of the land planted with a mixture of the species preferred by the farmer. Model 3 involved intercropping the indigenous species with other crops such as chillies, beans, cotton, tobacco, maize etc. Model 4 involved planting the indigenous species along the contours on sloping land to assist in reducing soil erosion.

Output 8: Developing a suitable monitoring system which can be applied to the established plantations on the farmers' lands.

The Project has developed, and continues to maintain a comprehensive database of all the farmers and farmer groups, as well as the local extension officers (who are government employees). The database includes individual telephone numbers and enables on-going contact and monitoring of the farmers and their progress with the tree planting activities.

4.4: Dissemination of Results

The PET found that the PIT disseminated the project results effectively. Several technical publications were prepared and published in both English and Bhasa Indonesia for the benefit of the local farmer groups. In addition, a number of discussion groups, seminars, workshops and training sessions were held to disseminate the Project results to key stakeholder groups and the target beneficiaries.

4.5: Project Sustainability

The PET found significant evidence, through interviews and discussions with farmers and project officials, which supported the conclusion that the Project has been sustainable post-completion. The evidence included the following:

- there was a high level of pre-project sensitization and training of both extension officers and the farmers groups by the PIT prior to the Project's implementation;
- the farmer groups the PET visited at Yehembang, Tukadaya, Ekasari and Pajarakan villages in West and North Bali and Sukadana, Tulamben and Kubu villages in East Bali were all well organized, with established ground rules on how decisions relating to on-going project activities such as obtaining seeds and seedlings from the Provincial Forestry Service of Bali, are to be made;
- the farmers and their group leaders were very well informed about the Project and its importance to them including its cultural and/or spiritual and socio-economic benefits;
- every farmer the PET visited in East, North and West Bali was able to identify the trees which they have been planted on their farms from the Project's seedling stock;
- the nursery established for the project is still functional and was being used by the community. The PET was informed that the management of the nurseries established through the Project has been devolved to the communities, and were being used to produce seedlings of additional species. At the Sumberklampot nursery in North Bali, the PET observed that the nursery was been used to produce Maleluca seedlings for the local farmers;
- the farmer groups continue to show a keen interest in planting the local species. During the field visits, several farmers enquired about how to obtain additional seedlings for on-going planting;
- there was evidence that the Provincial Forestry Service of Bali was continuing to provide extension services to the farmer groups in support of their planting and maintenance activities;
- some of the farmer groups have started their own community nurseries, whereas others were investigating with the Provincial Forestry Service of Bali how best to start their own nurseries;
- locally-based extension officers continue to be involved with the farmers, and accompanied the PET during the field visits to farmers in East, North and West Bali;
- the farmers the PET visited confirmed that the Provincial Forestry Service of Bali continues to provide seeds to them from the seed orchard established from the earlier ITTO project, to help them with their community nurseries;
- planting of trees under the ITTO Project has been integrated into existing agro forestry systems, which guarantees steady income for the farmers;
- the Project continues to maintain an up-to-date database of all the farmer groups including individual mobile telephone numbers, which enables on-going contact and monitoring of the Project's progress;
- through and Agreement between the GOI and the farmers (based on Bali Traditional law Awila Awila), the farmers at Ekasari village in West Bali are allowed to use government land for the production of food crops (maize, chili, and peanuts), cash crops such as tobacco, as well as animal fodder and plant trees in exchange for maintaining the seed orchards. This would guarantee sustainable maintenance of the seed orchard;
- the was evidence that the farmers are convinced of the economic, cultural and/or spiritual values of planting the indigenous Bali species selected through the Project;
- as the trial plantings were on farmers lands, the results are directly applicable and relevant to the farmers in terms of tree planting; and

- The Regional Tree Seed Centre for Bali and Nusa Tenggara and the Bali Provincial Forestry Service continue to maintain an interest in the Project through on-going research and supply of seeds to the farmers for nursery establishment.

4.6: Impact and Effects

Evidence from field visits, discussions and interviews with a wide cross section of the Project's stakeholders confirmed the Project's significant and important impacts. In East, North and West Bali, the Project has engendered a high level of interest among the farmers in planting the selected indigenous species. Several farmers indicated to the PET their preparedness to plant more of the selected indigenous species if seedlings were made available to them. Others indicated their willingness to establish their own community nurseries, and distribute the seedlings amongst themselves, if the Bali Provincial Forestry Service continued to provide them with seeds.

Further evidence for the increased interest in using the selected indigenous species for plantation establishment and rehabilitation activities relates to the on-going research work by The Regional Tree Seed Centre for Bali and Nusa Tenggara on improving the seed germination techniques for the selected indigenous species. The Centre informed the PET that it was using seeds from the mother trees identified by the ITTO project to establish a seed orchard on Lombok Island. The Centre also informed the PET that Bali indigenous species from the Project were being planted in West Kalimantan for land reclamation purposes.

At the Provincial level, the PET assessed that the Project has had the following impacts:

- the Bali indigenous species selected from the ITTO Project have been re-introduced as part of the Province's degraded forest rehabilitation program;
- the farmers in West, North and East Bali have accepted to grow the indigenous species for economic, cultural and/or spiritual reasons in addition to the exotic species they are currently planting;
- the Province's capacity and skills in developing high quality planting materials such as seedlings from the selected indigenous species, have been enhanced; and
- The Regional Tree Seed Centre for Bali and Nusa Tenggara has developed an interest in on-going research in improving seed germination techniques and other methods of propagation such tissue culture, for the selected indigenous species.

At the community (farmer) level, the PET assessed that the Project's impacts include:

- continuing interest among the farmers in planting the selected indigenous species, in addition to the fast growing exotic species such as teak and Albizia; and
- a high level of awareness about the environmental and also the socio-economic and cultural and/or spiritual benefits of planting the selected indigenous trees.

5: Lessons Learned

In the view of the PET, they key lessons learned from evaluating this Project are that:

- a good extension program, as well as training and awareness raising of the trainers, is an essential pre-requisite for the successful implementation of a community-based project such as this one;
- embedding the planting of indigenous species into existing agro forestry systems guarantees acceptance by the farmers, and therefore the Project's long term sustainability;
- maintaining an up-to-date database of all the participants, particularly the farmers, the farmer groups and the extension officers is essential for the success of community-based projects;
- understanding, capitalizing and harmonizing the cultural values of the community is essential for the success of community-based projects. The PIT understood the cultural and/or spiritual importance of the selected indigenous species to the farmers, and used this information skillfully to gain their acceptance in adding these species to the fast growing exotic species they were already planting on their farms;

- understanding the community dynamics i.e. the hierarchy, decision-making and the functioning of the farmer groups as well as their relationships with one another, was critical for the Project's success; and
- proper planning, including aligning the supply of seedlings and provision of logistical support to fit with seasonal factors i.e. planting season, was very critical. For example, during the project implementation, seedlings were at times supplied during the off season when the farmers were not planting due to shortage of water.

6: Recommendations

6.1: For the ITTO

In the view of the PET, the Project presents an excellent example of a good community-based and participatory tree-planting program and recommends that:

- the ITTO should consider documenting and publicising the Project as a useful and functional model for other ITTO producer member countries in how the planting of indigenous species can be successfully incorporated into existing agro forestry systems already familiar to the end user farmers; and
- the ITTO should consider favourably any follow-up project the Government of Indonesia submit s, provided the new project aims to:
    - build on the outputs of the completed Project;
    - expand the objectives of the completed project to research further the various agro forestry systems used by the completed Project, with the view to recommending the system(s) that may provide optimum outcomes for the farmers; and
    - develop an evaluation program and monitoring system for the established plantations.

6.2: For the Country

Given the environmental challenges of the Eastern part of the Island of Bali such as shortage of water the PET recommends that:

- the Bali Provincial Government and the Government of Indonesia should consider assisting the farmers to address this challenge. The PET found that with its drier climate, the shortage of water was a major limiting factor to the successful planting of trees in Eastern Bali;
- the national and provincial government should consider providing on-going resources to enable the PIT to:
    - maintain and update regularly the project database;
    - continue monitoring the trees on the farmers lands;
    - use the farmers lands as demonstration plots for on-going research, to update and provide information in support of tree planting on the Island;
    - facilitate the establishment of community nurseries as a way of addressing some of the logistical challenges the project faced initially; and
    - maintain the existing locally-based extension services, which have contributed substantially to the Project's success and sustainability post-completion;
- the GOI should consider formulating a follow up project to the ITTO focusing on evaluating the agro forestry systems employed by the Project, as well as research on the monitoring of the trees on the farmers' lands; and
- the GOI should consider continuing to raise awareness of the environmental, cultural and socio-economic importance and/or benefits of planting indigenous species on the island.

7: Conclusions

Based on the review of Project documents, field visits and discussions with relevant stakeholders, the PET concluded that:

- the Project was executed efficiently;
- the Development and Specific Objectives of the project were achieved;
- sustainability or continuation of the project post-completion is very good now and promising for the future; and
- the Project provides a good demonstration model of participatory community-based agro forestry activity, and should be publicized to other ITTO member countries.

Figure 1 Trees of Indigenous species introduced into existing farming systems (Bali)

Figure 2 Trees of Indigenous species introduced into existing farming systems (Bali)

Figure 3 Indigenous tree species planted on field borders alternated with fast growing introduced species (Teak)

Figure 4 Indigenous tree species planted in small wood lots mixed with introduced species (teak)

Figure 5 Seed orchard of indigenous species

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Figure 6 Seed orchard managed by local communities

Figure 7 Seed orchard managed by local communities

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APPENDICES

Appendix 1

ITINERARY

DRAFT ITINERARY FOR THE EX-POST EVALUATION OF PD 386/05 Rev.1 (F) IN BALI: - 3RD TO 10TH AUGUST 2010

CONSULTANTS: PROFESSOR HOSNY EL-LAKANY AND DR KWAME ASUMADU

DATE	TIME	ACTIVITY
Tuesday, 3RD August		Professor El-Lakany and Dr Asumadu arrive in Bali. Meeting between Professor El-Lakany and Dr Asumadu to discuss the conduct of the two ex-post evaluations
Wednesday, 4th August		1. Initial Meeting with Ms Magdalena Hehakaya and other relevant Indonesian Officials. 2. Examination of project records, including interviews and discussions with relevant officers.
Thursday, 5th and Friday 6th August		1. Professor El-Lakany and Dr Asumadu travel by car to the Project Site with the Project Manager, Ms Magdalena Hehakaya for a visit to the project. 2. Meetings with farmer groups 3. Return to Bali.
Saturday, 7th August		Review of information and preparation of initial report by Professor El-Lakany and Dr Asumadu.
Sunday, 8th August		Review of information and preparation of initial report by Professor El-Lakany and Dr Asumadu.
Monday, 9th August		Wrap-up meeting.
Tuesday, 10th August		Professor El-Lakany and Dr Asumadu depart from Bali

Appendix 2

OPENING MEETING, DENPASAR, BALI, 4TH AUGUST 2010

NAME	ORGANISATION
Agung Suryawan	Udayana University (Extension Specialist)
I Putu Darwika	Forestry Service of Bali
Laksmi Pratiwi	Project Secretary
Suratman	Forestry Service of Bali (Project Field Coordinator
Magdalena Hehakaya	Forestry Service of Bali (Project Manager)
Iwan Nurwanto	Regional Tree Seed centre for Bali and Nusa Tenggara
Wayan Darma	Forestry Service of Bali
Hosny El-Lakany	University of British Columbia, Canada
Kwame Asumadu	Asumadu Pty Ltd

Appendix 3

WRAP UP MEETING DENPASAR, BALI, 9TH AUGUST 2010

NAME	ORGANISATION
A A Ngurah Buana	Head, Forest Service of Bali
I Putu Darwika	Forestry Service of Bali
Suratman	Forestry Service of Bali (Project Field Coordinator
Magdalena Hehakaya	Forestry Service of Bali (Project Manager)
Iwan Nurwanto	Regional Tree Seed centre for Bali and Nusa Tenggara
Wayan Darma	Forestry Service of Bali
Hosny El-Lakany	University of British Columbia, Canada
Kwame Asumadu	Asumadu Pty Ltd

Appendix 4

FIELD TRIP TO WEST AND NORTH BALI, 5TH AUGUST 2010

JEMBRANA DISTRICT

YEHEMBENG VILLAGE, SUB-DISTRICT OF MENDOYO

NAME OF FARMERS GROUP: BANU AMERTHA

FARMER GROUP LEADER: I WAYAN NERDEN

TUKADAYA VILLAGE, SUB-DISTRICT OF MELAYA

NAME OF FARMERS GROUP: SANTHI PALA

FARMER GROUP LEADER: DRS. KETUT ARDANA

EKASARI VILLAGE, SUB-DISTRICT OF MELAYA

NAME OF FARMERS GROUP: WANA TRISAD ANGGALASARI

FARMER GROUP LEADER: NYOMAN KARDI

NORTH BALI - BULELENG DISTRICT

PAJARAKAN VILLAGE, SUB DISTRICT OF GEROGAK

NAME OF FARMER GROUP: BAJUL JAYA

FARMER GROUP LEADER: KETUT SADRA (MANAGERS OF THE SEED ORCHARD)

Appendix 5

FIELD TRIP TO EAST BALI, 6TH AUGUST 2010

KARAGASEM DISTRICT

SUKADANA VILLAGE, SUB-DISTRICT OF KUBU

NAME OF FARMERS GROUP: GUNUNG AGUNG

FARMER GROUP LEADER: NYOMAN SUPARSA

TULAMBEN VILLAGE, SUB-DISTRICT OF KUBU

NAME OF FARMERS GROUP: PULASARI

FARMER GROUP LEADER: WAYAN TELEMAN

KUBU VILLAGE, SUB-DISTRICT OF KUBU

NAME OF FARMERS GROUP: SUKA KARYA

FARMER GROUP LEADER: KADEK SUPARTA