



# PROJECT COMPLETION REPORT

PD 199/03 Rev.3(F)

**Strengthening National Capacity and Regional Collaboration for Sustainable Use  
of Forest Genetic Resources In Tropical Asia**



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## **PROJECT COMPLETION REPORT**

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## **Acronyms**

APAFRI	Asia Pacific Association of Forestry Research Institutions
APFORGEN	Asia Pacific Forest Genetic Resources Programme
CBD	Convention on Biological Diversity
DANIDA	Danish International Development Agency
FAO	Food and Agriculture Organization United Nations
FGR	Forest Gene Resources
FRIM	Forest Research Institute Malaysia
ITTA	International Tropical Timber Agreement
ITTO	International Tropical Timber Organization
IPGRI	International Plant Genetic Resources Institute (currently known as Bioversity International)
NFP	National Focal Point
NGO	Non Governmental Organization
NRE	Ministry of Natural Resources and Environment, Government of Malaysia
PTC	Project Technical Committee
TWG	Technical Working Group
UNCED	United Nations Conference on Environment and Development
UNFF	United Nations Forum on Forests

## **Preface**

The International Tropical Timber Organization (ITTO) funded a three-year Project entitled Strengthening National Capacity and Regional Collaboration for Sustainable Use of Forest Genetic Resources in Tropical Asia (ITTO PD 199/03 Rev.3(F)) in years 2006-2009. The Project was implemented by FRIM in collaboration with APAFRI and Bioversity International.

This ITTO Project has seven national partners, namely Cambodia (Department of Forestry and Wildlife), India (Indian Council for Forestry Research and Education), Indonesia (Research and Development Centre for Biotechnology and Forest Tree Improvement), Malaysia (Forest Research Institute Malaysia), Myanmar (Forest Research Institute, Yezin), Philippines (College of Forestry and Natural Resources, University of Philippines, Los Baños), and Thailand (Royal Forest Department). The Project has been a major activity of an Asia-Pacific regional network on forest genetic resources, Asia Pacific Forest Genetic Resources Programme (APFORGEN), which has 14 member country organizations.

The overall achievement of this three-year Project was rather significant. This was indicated by the number of activities organized, both at the national level in the seven participating countries, as well as at the regional level in Asia Pacific; and number of publications produced. Due to substantial savings from not engaging project staff originally budgeted, the Project was granted two extensions with no additional funding. The extensions, totaling 18 months, had enhanced further the overall quality of the project outputs contributing towards fully achieving the project objectives.

On behalf of Forest Research Institute Malaysia (FRIM), I wish to acknowledge all the assistance received from ITTO Without its financial support, this Project would have not been implemented and successfully completed. Appreciation and thanks too, to the two collaborating agencies: Asia Pacific Association of Forestry Research Institutions (APAFRI) and Bioversity International, for their numerous invaluable inputs which guided the Project towards its successful completion. FRIM is also indebted to the Ministry of Natural Resources and Environment, Government of Malaysia, for its support in the course of implementing this Project

**Dato' Dr Abd Latif Mohmod**  
**Director General**  
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The guidance and support from the members of the Project Technical Committee: Director General of FRIM, the representative from the Ministry of Natural Resources and Environment, Government of Malaysia, and the representative from ITTO, are also gratefully acknowledged.

The contributions of the National Focal Points in the various national level and regional level activities of this Project were crucial for the successful completion of this Project. Thanks also due to the many other colleagues in the seven participating countries who had contributed directly and indirectly to the various activities of this Project.

We also wish to thank the many colleagues in FRIM, Bioversity International and APAFRI, who had contributed time and efforts towards the successful compilation and publishing of the various reports of this Project, including this final Project Completion Report.

**Sim Heok-Choh**  
**Officer-in-Charge of the Project**  
**Forest Research Institute Malaysia**  
for **Technical Working Group**



## Executive Summary

This Project responded to a need expressed by APAFRI members to increase information exchange and national capacity in rapidly developing scientific and technical areas, such as biodiversity assessment and conservation methodologies. It was also a follow-up to a recommendation by the Southeast Asian workshop on forest genetic resources (FGR), held in Thailand in 2001, which specifically recommended that International Plant Genetic Resources Institute (IPGRI) currently known as Bioversity International, in collaboration with APAFRI, should take a leading role in developing a regional programme to strengthen work on conservation and sustainable use of FGR in the region.

Several countries in the Asia Pacific region have already taken steps to implement sustainable forest management in practice and there was a need to promote conservation and management of FGR *per se* within this process.

The Project focused on strengthening information sharing and national capacity on conservation and sustainable use of FGR in seven countries in tropical Asia: Cambodia, India, Indonesia, Malaysia, Myanmar, Philippines and Thailand.

Originally approved for three years starting from February 2006 till January 2009, the Project executed by FRIM in technical collaboration with APAFRI and IPGRI, was allocated USD343 400 by ITTO. By the end of 2008 when most of the project activities were completed, there was a balance of funds which prompted FRIM to request for extension with no additional funding. The balance was accumulated from substantial saving from not engaging the Project Coordinator and the Administrative Personnel originally budgeted. Savings were also accumulated from carrying out most of the logistics of organizing meetings and training courses by staff members of the three agencies, as well as the compilation and editing of the publications. Two extensions, totaling 18 months, were then granted with no additional funding, to utilize these rather substantial savings for additional activities which further improved the quality of the outcomes and outputs from this Project.

With the successful completion of the Project, all the originally planned and also a number of additional activities had been executed, and the objectives were considered satisfactorily achieved. The Project had organized a number of regional meetings and training workshops, including one international symposium; and had published five proceedings/reports. The intended situation after project completion originally postulated had generally been achieved with enhancements in various aspects such as capacity and capability, awareness, commitments, and information sharing and exchange.

Forestry professionals in the region had recommended that this project should be continued with an expanded scope to address emerging issues such as impacts of climate change on FGR. In addition, participation in this Project should be extended to other countries in the Asia Pacific region, including non ITTO member countries. There was also strong support that regional mechanism, such as APFORGEN, should continue to play the leading and coordinating role in developing and subsequently executing project activities.



## 1. Project Identification

### 1.1 Context

In 1992, after the Convention on Biological Diversity (CBD) was signed at the United Nations Conference on Environment and Development (UNCED), the global interpretation for sustainable forest management was extended to cover biodiversity and other environmental services provided by forest ecosystems. The international dialogue on forest management and sustainable development continued throughout the 1990's (Intergovernmental Panel on Forest 1995–1997; Intergovernmental Forum on Forest 1997–2000) and currently the United Nations Forum on Forests (UNFF) is leading this process. In 1994, the second International Tropical Timber Agreement (ITTA) was negotiated to follow up the 1983 ITTA and to outline new objectives to enhance sustainable management of tropical forests. The 1994 objectives highlighted, among other issues, the role of forest management in sustainable development and encouraged member countries to develop national policies for sustainable utilization and conservation of tropical forests and their genetic resources

Several countries in the Asia Pacific region have taken steps to implement sustainable forest management in practice and many of them are now in the process of developing and testing criteria and indicators for sustainable forest management. There is a need to promote conservation and management of FGR *per se* within this process. Several countries in the Asia Pacific region have signed both, CBD and ITTA. Improved conservation and management of FGR would help the countries to fulfil their commitments as agreed under these agreements. While the agreements recognise that countries have sovereign rights over their own biological resources, it also assigns them the responsibility for conserving their biological diversity and urges them to use the biological resources in a sustainable manner. Countries are also urged to enhance technical and scientific cooperation, training and information exchange on conservation and sustainable use of biological diversity. Achieving these goals is a challenging but essential task that will not only maintain biological diversity for future generations but also productivity and ecological functions of tropical forests under changing climatic conditions in the future.

It is widely recognised that sustainable forest management cannot succeed without a broader forest sector planning process and intersectoral policy dialogue. The forest sector planning process has already been carried out in many countries and though various approaches exist, the planning efforts are based on similar principles and approaches. The need to conserve and manage FGR has long been recognised in international dialogue on forests but no global action plan has been developed for this purpose. For agricultural crops, the Global Plan of Action for the Conservation and Use of Plant Genetic Resources was adopted in 1996 but FGR issues were explicitly excluded from it. In November 2001, an International Treaty on Plant Genetic Resources for Food and Agriculture was adopted in Rome but FGR were not included in this agreement.

### 1.2 Origin and Problem

The Asia Pacific Association of Forestry Research Institutions (APAFRI) and the Bioversity International (formerly known as the International Plant Genetic Resources Institute (IPGRI)) are collaborating in building capacity of their national partners to conserve and sustainably use tropical FGR in the Asia Pacific region. Forest Research Institute Malaysia (FRIM) is closely involved in this effort as it is a host institute for the APAFRI Secretariat, and it has considerably high research capacity on tropical FGR. FRIM also has a long experience on international collaboration and policy-making on FGR with one of its staff having served as a member on the FAO Panel of Expert on Forest Gene Resources.

This Project responded to a need expressed by APAFRI members to increase information exchange and national capacity in rapidly developing scientific and technical areas, such as biodiversity assessment and conservation methodologies. This was also a follow-up to a recommendation by the

Southeast Asian workshop on FGR, held in Thailand in 2001, which specifically recommended that IPGRI (now known as Bioversity International), in collaboration with APAFRI, should take a leading role in developing a regional programme to strengthen work on conservation and sustainable use of FGR in the region.

In February 2002, APAFRI, IPGRI and FRIM initiated a consultation process with their partners in Asia. The objective of this preliminary process was to identify those partner institutions and countries, which were willing to commit their own resources for the development and implementation of a regional programme. The consultation also aimed at identifying specific country-based research and development needs on conservation and use of FGR.

By August 2002, a total of 14 countries have indicated their strong interest in the programme and provided valuable feedbacks. The countries included: Bangladesh (Bangladesh Forest Research Institute), India (Indian Council for Forestry Research and Education), Nepal (Department of Forest Research and Survey; Tree Improvement and Silviculture Component), Pakistan (Pakistan Forest Research Institute), Sri Lanka (Forest Department), Cambodia (Department of Forestry and Wildlife), Indonesia (Research and Development Centre for Biotechnology and Forest Tree Improvement), Lao PDR (Forest Research Centre), Malaysia (Forest Research Institute Malaysia), Myanmar (Forest Department), Philippines (College of Forestry and Natural Resources), Thailand (Royal Forest Department; Kasetsart University), Vietnam (Forest Science Institute of Vietnam) and PR China (Research Institute of Forestry and Research Institute of Tropical Forestry, both under the Chinese Academy of Forestry).

The consultation, feedbacks and the earlier recommendations have been used as a basis for formulating this Project. The results of the consultation process were presented during a regional workshop held in Kuala Lumpur, Malaysia 15–18 July 2003, which was organized jointly by APAFRI, IPGRI and FRIM in technical collaboration with the FAO Forestry Department. Participants from all 13 countries (including the 7 countries participating in this Project) were present and participated in developing a concrete work plan for the regional programme.

## 2. Project Objectives and Implementation Strategy

Tropical forests host most of the terrestrial biodiversity in the Asia Pacific region. The forests are not only important for the region's wood-based industries but also for billions of rural people. In addition to fuel wood and traditional medicines, forests provide a significant amount of foods that supplement what is obtained from agriculture, thus increasing food security. Forests also alleviate poverty by providing income-generating opportunities through various wood and non-wood forest products. However, the forests and FGR are threatened by deforestation, forest fragmentation and habitat degradation as a result of unsustainable harvesting of forest products and the conversion of forests to agricultural lands and urban development. Human activities are reducing forest genetic diversity at unprecedented rates and forest degradation also reduces food security and the income-generating capacity. This genetic diversity is needed by farmers, foresters and breeders to manage forest species with desired characteristics for the benefit of present and future generations.

Although the importance of FGR conservation is recognized in many countries in the Asia Pacific region, establishment of national FGR programmes has been hampered by lack of policy-makers' commitment and limited national capacity to conserve and manage FGR. Therefore national efforts on FGR are weak as compared to respective activities on agricultural sector to conserve and manage crop genetic resources. Also, national efforts on FGR are not very well integrated into national forest programmes and policies. There is a need to create a formal national mechanism and bring together various stakeholders so that they can together discuss and develop conservation strategies and action plans for conservation and sustainable use of FGR. Strong national FGR programmes can increase policy-makers' awareness and increase their long-term commitment and support to carry out FGR conservation. This will also facilitate development of national capacity to conserve and sustainably use FGR. Operational national FGR programmes are also essential building blocks for regional collaboration to enhance conservation and management of forest genetic diversity.

Sustainable management of FGR requires information on phenomena and processes that are very complex in nature and this pinpoints the need for a more holistic approach in forest research and management, both regionally and at national level. In many cases, countries are spending their scarce national resources for studying similar problems while lacking information on what has already been studied and implemented elsewhere. Information on various issues related to FGR often remains localised in a country concerned. This fact is rarely due to countries intention to keep the information for themselves but rather because they are unable to identify a proper channel to disseminate the information. Increased availability of information is necessary to develop better practices and policies.

A regional programme with a holistic scope to the conservation and management of FGR can alleviate these obstacles in the Asia Pacific region. Through networking, it is possible to avoid duplication of efforts and to gain synergy among collaborating countries, institutions and other stakeholders. Regional collaboration promotes partnership and more efficient use of limited resources. Networking can enhance the dialogue between scientists, managers and users, and increase interaction between different sectors at national level that is a necessary pre-condition before sustainable forest management can be operational in its true meaning.

### 2.1 Project Strategy

The Project operates at both national and regional levels for two reasons. Firstly, national capacity on FGR conservation and management needs to be strengthened so that countries can fulfil their commitments to utilise biological resources in sustainable manner. Secondly, natural distribution ranges of several important tropical timber species extend over many countries and subsequently distribution of forest genetic diversity does not respect national and administrative borders. Therefore, regional approach is essential to ensure that conservation efforts are effective and implemented in well-coordinated way over large geographical areas.

Establishment of national FGR task forces or Working Groups was chosen as an appropriate strategy to initiate and facilitate the development of more formal national FGR programmes, which is often a lengthy process. Even at national level, it is common that stakeholders do not share a common vision for FGR conservation. Thus organizing these national workshops and establishing the task forces are important instruments in developing this vision. The task forces also play a key role in coordinating work on FGR within the countries. Presently, various efforts are being carried out without proper linkages among national stakeholders and the results of various projects remain unknown for wider audience. More importantly, information is not compiled into a single source so that it would be readily and easily available for policy-makers while revising policies on natural resources management. Other stakeholders would also benefit from increased information availability.

International efforts on FGR highlighted the importance and usefulness of regional mechanisms to implement and coordinate regional efforts for increased FGR conservation and sustainable use. Experiences from other regions demonstrated that regional programmes are highly efficient in promoting FGR conservation in individual countries as well as developing regional efforts in this regard. In this proposal, the establishment of a regional FGR programme was a strategic choice that followed the remarkable results achieved by other regions using this approach, e.g. the European Forest Genetic Resources Programme (EUFORGEN) and the Sub-Saharan Forest Genetic Resources Programme (SAFORGEN).

## **2.2 Target Beneficiaries**

The Project brought together various stakeholders in the participating countries and there are four major groups of target beneficiaries. The Project provided **policy-makers** a concrete way to partly fulfil their commitment to international agreements, such as CBD and ITTA. The policy-makers would also be able to demonstrate concrete steps towards sustainable forest management. The Project attempted to provide information for policy-makers to develop more meaningful policies for biodiversity conservation and establish better linkage between the national efforts on FGR and the national forest programmes, which are already in place, in various forms and capacities, in most countries.

**Forest research institutions** in the participating countries would be able to increase their institutional capacity to conduct research on FGR to support sustainable forest management. Their staff will directly benefit from increasing interaction with colleagues in other countries and will contribute to improvement of their technical and scientific skills. The programme activities would also help the national research institutions to increase public awareness on conservation and sustainable use of FGR. Subsequently, this will also facilitate the institutions' attempts to secure long-term funding for their work from the policy-makers in respective countries and improve their capacity to contribute to policy formulation at national level.

**Local communities and NGOs** would benefit from the outputs of the proposed Project both directly and indirectly. They have been invited to participate in national workshops and meetings organised to discuss various conservation activities among large group of national stakeholders. During the Project implementation, local people have been asked to participate in development and implementation of conservation efforts, such as establishment and management of *in situ* conservation areas, and collection of germplasm for research and other purposes, for example. Increased *in situ* conservation efforts for selected priority timber species will also enhance the conservation of other important forest species providing non-wood forest products (e.g. fruits, medicinal plants, bamboo, rattan etc.). As a long-term benefit, local communities will benefit from the improved policies on natural resources management and their implementation.

**Government forestry departments and private forest companies** would also benefit from the Project and subsequent projects to be developed at later phases. They would be engaged in the development of conservation strategies and action plans so that they, being often in charge of implementing sustainable forest management in the field, can improve their operations. Forestry departments and

companies can also address practical research and development needs, which scientists and policy-makers may not be aware.

### 2.3 Technical and Scientific Aspects

Results of an earlier ITTO Project, 'Planning practical and cost-effective strategies for genetic resources conservation of commercial tree species in tropical Asia and the Pacific (PD 31/94 Rev. 1 (F))' were published by ITTO and the Regional Centre for Forest Management (RCFM, later merged to FRIM) in 2000 to provide an overall review on the status of FGR conservation in selected countries in the region. This ITTO Project also developed some guidelines for *in situ* and *ex situ* conservation of tropical timber species as well as operational plans for five countries to enhance FGR conservation. The operational plans proposed future actions for improving enabling conditions both *in situ* and *ex situ* conservation of tropical timber species. Majority of the proposed actions were related to capacity building across the countries. The proposed actions included:

- Establishment of a national mechanism to coordinate efforts and to ensure effective collaboration among stakeholders in a given country.
- Review and revise policies for genetic conservation as part of sustainable forest management.
- Institutional strengthening.
- Human resources development.
- Information dissemination and establishment of databases (e.g. species conservation status, *in situ* and *ex situ* conservation efforts).
- Encourage participation of local communities in FGR conservation.
- Increase public awareness on the importance of FGR conservation.

However, the implementation of these operational action plans has been slow and operational national mechanisms, i.e. national FGR programmes, have not yet been established. This was partly due to a lack regional mechanism that could support and provide guidance for countries in their efforts to increase FGR conservation. In Southeast Asia, for example, the sub-regional workshop on conservation and use of FGR (Thailand 2001) revealed that policy-makers often have limited understanding of the importance of FGR conservation and subsequently, their commitment to support this work is limited. Thus, FGR conservation was mainly implemented through short-term donor-funded projects without proper linkage to national forest programmes or policies and long-term sustainability of FGR conservation efforts was questionable in many cases. At regional level, the Southeast Asian FGR workshop strongly recommended that there was an urgent need to increase regional networking in this regard to coordinate the implementation of national efforts as well as support capacity building. Similarly, the consultation process APAFRI and IPGRI carried out in 2002 among 14 Asian countries indicated that there is a need to increase national capacity on FGR conservation as well as regional collaboration.

One reason for insufficient implementation of the operational plans has been an incomplete understanding of the urgency and importance for FGR conservation due to a lack of compiled and up-to-date data on FGR both at national and regional levels. This situation does not only hamper revision of relevant policies and practical implementation of conservation efforts but also usefulness of scientific research. As the overall situation is largely unknown, research priorities are set in a way that they reflect interests of individual scientists or institutions instead of holistic and well-coordinated research planning at national and regional level. Subsequently, countries would be wasting funds and human resources while carrying out over-lapping activities a result of limited regional coordination and cooperation.

### 2.4 Social Economic Aspects

One of the benefits of the Project would be the positive impact on the social economic aspects of the countries concerned especially for those communities, which are more dependent on forest resources

for their livelihood. In recent years it has been much harder for forest-dependent people to use local forests and their products, owing to deforestation, logging and other population pressures. In many countries plans to protect FGR have failed to address the needs and knowledge of local forest-dependent communities. Hence participation by local communities is essential for conservation efforts to be effective. Local communities, especially those dependent on forests for their livelihood have an interest in protecting it. Conversely they may be keen to clear forest to expand agriculture production as a process of development. Hence the sharing and dissemination of information via the APFORGEN network programme in strengthening national capacity could assist in increasing local communities understanding and involvement in the conservation and sustainable use of the FGR.

A better and coordinated management of FGR would lead to greater assurance of a sustainable livelihood for those forest-dependent communities. On a larger perspective the countries would benefit in having an established framework for the management of FGR.

## **2.5 Environmental Aspects**

The communications and information flow enabled the countries to better coordinate and manage their forest resources essential for implementing the sustainable national forest policies via the network established. Forest genetic resources information, which is part and parcel of sustainable forest management, will be better disseminated via the APFORGEN network to the countries of the region, hence accelerating the ability of countries to implement forest policies sensitive to the environmental needs. Global climate change makes conservation of FGR an even more urgent task. It is possible to increase the long-term use of trees and other forest species for carbon sequestration only if the evolutionary potential of forest species has been safeguarded.

## **2.6 Risks**

The existing capacity to conserve and manage FGR varied considerably among the seven countries participating the Project. This needs to be taken into account while initiating and carrying out the Project activities. Based on this fact, it would be realistic to assume that the progress the countries would be able to make during the Project would also vary. The existing capacity reflected policy makers' earlier support for the forest sector in general and the success of the Project would be dependent on what level policy-makers would be interested in maintaining their support for the forest sector. Efforts have been made during the Project to increase policy-makers awareness on the importance of conservation and sustainable use of FGR. These efforts would be expected to increase policy-makers' long-term commitment to FGR work in various countries.

## **2.7 Project Implementation Strategy**

The Project focused on strengthening information sharing and national capacity on conservation and sustainable use of FGR in seven countries in tropical Asia namely, Cambodia, India, Indonesia, Malaysia, Myanmar, Philippines and Thailand even though 14 countries have expressed their keen interest to participate in the programme and 13 of these were represented in the regional workshop held in Kuala Lumpur, Malaysia on 15–18 July 2003. The criteria for selecting these seven countries were: i) they are ITTO member countries, ii) they are tropical timber producing countries, iii) they have great diversity in forest resources, iv) they need assistance in improving information-flow and better management on FGR conservation, v) all except for Myanmar have participated in the July 2003 workshop and all are keen to collaborate work on FGR conservation and management. The Project would assist the setting up of national FGR task forces or working groups to facilitate and coordinate the establishment of national FGR programmes in these countries. Following earlier recommendations, APAFRI, Bioversity and FRIM also established and coordinated a regional programme providing technical support for the establishment of national FGR programmes in these ITTO countries and, at



post-project phases, also in other countries in the Asia Pacific region. This programme would be developed in technical cooperation with the FAO Forestry Department.

This Project lasted for three years and during this period various national stakeholders, including policy-makers, have been brought together to discuss and develop strategies and action plans on FGR conservation and use. Experiences and lessons learnt during this Project would be used for facilitating similar efforts in other ITTO member and non-member countries in the Asia Pacific region.

At the regional level, the Project proposed to set up a platform to increase regional collaboration on FGR, i.e. the APFORGEN. Individual countries joining the Programme would nominate a National Coordinator. After the July 2003 workshop 6 countries (China, India, Indonesia, Malaysia, Philippines and Thailand) have nominated the National Coordinators for APFORGEN. The other countries have subsequently nominated theirs. This was seen as a commitment by the participating countries for this FGR programme. APFORGEN would be overseen by a Steering Committee including National Coordinators from all participating countries who would act as formal representatives of their countries. National Coordinators also act as a link between the APFORGEN Secretariat and various national institutions carrying out work on FGR. Such a structure would ensure that information flow for the programme would continue via the APFORGEN secretariat that was set up.

## 2.8 Project Objectives

### *Development objective*

The Project aims to develop national and regional capacity to conserve and sustainably use FGR and information sharing in tropical Asia.

### *Specific objectives*

**Specific objective 1.** To develop a regional programme to coordinate national activities and support selected countries in their efforts to implement conservation of FGR for sustainable use

*Regional programme here refers to a regional mechanism, consisting of and representing various national programmes and relevant regional and international organisations, to promote and enhance conservation and sustainable use of FGR in tropical Asia-Pacific countries. The regional programme (APFORGEN – Asia Pacific Forest Genetic Resources Programme) is open to other countries in the region to participate in the activities at their own costs. Relevant information to enhance conservation of FGR as well as project outputs have been made available and disseminated to other countries in the region that have expressed their interest in APFORGEN.*

**Specific objective 2:** To develop a regional mechanism and capacity for sharing information on conservation and use in seven selected Asian member countries of ITTO.

*Capacity here refers to human resources, institutional capacity and information and knowledge. The seven Asian countries participating in the Project (Cambodia, India, Indonesia, Malaysia, Myanmar, Philippines and Thailand) are tropical timber producing member countries of ITTO and would be used as models for expanding similar activities of the regional programme, APFORGEN to other countries in the Asia-Pacific region.*



### 3. Project Performance (Project Elements Planned and Implemented)

#### Specific Objective 1

##### Output 1.1: Regional Programme for FGR conservation and sustainable use developed

Activity	Planned	Implemented
1.1.1	Assess regional status of FGR conservation and provide recommendations for policy makers in the participating countries	A meeting held in conjunction with the Asia Pacific Forest Genetic Resources Programme (APFORGEN) National Coordinators' Meeting, in Dehradun, 15–16 April 2006, discussed and reviewed the current status of FGR conservation and management in these countries. The countries presented country reports, which also included a review of current national policies and strategies for FGR conservation and management.
1.1.2:	Identify lead organisations	Seven lead organizations had been identified: <ul style="list-style-type: none"> <li>• Cambodia Department of Forestry and Wildlife</li> <li>• Indian Council of Forestry Research and Education</li> <li>• Biotechnology and Tree Improvement Centre Indonesia</li> <li>• Forest Research Institute Malaysia</li> <li>• Myanmar Forest Research Institute</li> <li>• University of Philippines Los Baños</li> <li>• Royal Thai Forest Department.</li> </ul> <p>The National Focal Points nominated are as listed in Annex III.</p>
1.1.3	Establish the APFORGEN Secretariat	The Secretariat was hosted by the APAFRI Secretariat at the FRIM Kepong Campus. Computers and a few other pieces of budgetted equipment were purchased.

##### Output 1.2: Support provided to countries to implement conservation of FGR

Activity	Planned	Implemented
1.2.1	Organize national FGR workshops to identify stakeholders, assess capacity-building needs, to review the progress made in FGR conservation	National workshops were held as: <ul style="list-style-type: none"> <li>• Philippines – 6 February 2007</li> <li>• Indonesia – 1 March 2007</li> <li>• India – 11 July 2007</li> <li>• Cambodia – 12 February 2008</li> <li>• Myanmar – 26 February 2008</li> <li>• Thailand – 12 March 2008, and</li> <li>• Malaysia – 30 July 2008.</li> </ul> <p>The proceedings of these seven national consultative workshops were compiled into a single volume and published in early 2010.</p>
1.2.2	Set up national FGR task forces	The NFPs were responsible for setting up national task forces and coordinating national level activities.

1.2.3	Organise task force meetings to develop/revise national FGR strategies and to facilitate the establishment of national FGR programme	The national consultative workshops provided the necessary platform to develop task forces and related activities. (ref: Activiti 1.2.1). Further more Indonesia has set up a national APFORGEN Secretariat and has convened a few national stakeholders meetings/ workshops on FGR conservation and management.
1.2.4	Assess national research and development needs for improved genetic conservation	Discussions during the national consultative workshops provided the required assessments.

**Output 1.3:** Status and information of FGR conservation and use documented in the countries

Activity	Planned	Implemented
1.3.1	Collect information on FGR conservation and use (including <i>in situ</i> and <i>ex situ</i> of priority species).	Information were presented in national reports submitted regularly over the duration of the Project. These were compiled into the proceedings published under this Project. A Mid-term Review was conducted in 5–7 September 2007 to take stock of progress, and identify gaps.
1.3.2	Prepare national reports	NFP submitted and presented national reports regularly over the duration of the Project. These were compiled into the proceedings published under this Project.

**Specific Objective 2**

**Output 2.1:** Regional mechanism for FGR information sharing established.

Activity	Planned	Implemented
2.1.1	Collect relevant FGR information with the help of national task forces (species conservation status, <i>in situ</i> and <i>ex situ</i> conservation efforts etc).	Information were presented in national reports submitted regularly over the duration of the Project. NFPs had also presented these information during the meetings and workshops and complied into the five publications produced by this Project.
2.1.2	Develop a regional database on FGR conservation and make it accessible through APFORGEN website	Information and data as reported by the NFPs were uploaded onto the APFORGEN website. These information and data, as well as all pdf files of all the publications, have also been made available on compact discs.
2.1.3	Publish and disseminate FGR information	Five publications were compiled and printed: 1. Proceedings of the Asia Pacific Forest Genetic Resources Programme (APFORGEN) National Coordinators Meeting and the International Tropical Timber Organization (ITTO) Project PD199/03 Rev.3 (F) Update, Dehradun, India, 15–16 April 2006; 2. Proceedings of the Mid-term Review Meeting in Bogor, 5–7 September 2007; 3. Status in seven South and Southeast Asian countries;

		4. National consultative workshops of seven South and Southeast Asian countries; and 5. Proceedings of International Symposium on Forest Genetic Resources held 5–8 October 2010.
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**Output 2.2:** Capacity building needs for FGR conservation developed

Activity	Planned	Implemented
2.2.1	Assess and prioritise capacity-building needs	Capacity-building needs were assessed and prioritised during the individual national consultative workshops organized in the seven participating countries. This information has also been published in the proceedings.
2.2.2	Develop national capacity-building strategies in collaboration with national task forces	The NFPs had developed the national capacity-building strategies and reported in their national reports.
2.2.3	Coordinate regional collaboration and monitor progress made in FGR conservation and use in participating countries	Discussions and national reports presented during the <i>Project Mid-term Review &amp; APFORGEN National Coordinators Meeting, 5–7 September 2007, Bogor, Indonesia</i> provided fairly good insight into the progress made in FGR conservation and use in participating countries. The proceedings were compiled and published in August 2008.

**Output 2.3:** Human resources and institutional strengthening increased

Activity	Planned	Implemented
2.3.1	Organise short-term training courses on FGR conservation methods for researchers	Training Workshop on Forest Biodiversity: Conservation and Management of FGR, Kuala Lumpur, Malaysia 11–16 June 2007, held in collaboration with Bioversity International.
2.3.2	Organise short-term training courses on FGR management to managers and field staff	Training Workshop on Forest Biodiversity: Conservation and Management of FGR, Kuala Lumpur, 7–11 July 2008 and in Coimbatore, India, 6–9 July 2010

**Additional activities**

The Project, terminated in January 2009 after its originally agreed duration of three years, and was extended for another 18 months with no additional allocation from ITTO. The original budget was modified accordingly to allow for expenditures to be incurred for the proposed activities during the extension.

Three major activities were organized during the 18-month extension:

1. *International symposium on forest genetic resources*, Kuala Lumpur, 5–8 October 2009: a total of 63 participants from 19 countries attended the four-day symposium with 39 technical presentations. A compilation of extended abstracts was published in early 2010.

2. A Training Workshop on Conservation and Sustainable Utilization of FGR was successfully held from 5–9 July 2010. The training workshop, hosted by the Institute of Forest Genetics and Tree Breeding in Coimbatore, India, was attended by 21 participants.
3. A side-event on *FGR in Asia and the Pacific* during the XXIII IUFRO World Congress and also poster display (national posters of the seven participating countries).

### Outputs of the Project: Publications



Proceedings of Asia Pacific Forest Genetic Resources Programme (APFORGEN) National Coordinators Meeting and ITTO Project PD 199/03 Rev. 3(F) Update, Dehradun, India, 15–16 April 2006



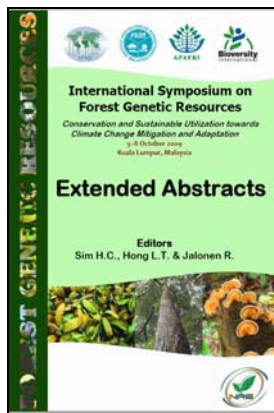
ITTO Project PD 199/03 Rev. 3(F) Mid-term Review and the Asia Pacific Forest Genetic Resources Programme (APFORGEN) National Coordinators Meeting, Bogor, Indonesia, 5–7 September 2007



Status in seven South and Southeast Asian countries



National Consultative Workshops of Seven South and Southeast Asian Countries



Extended Abstracts of the International Symposium on Forest Genetic Resources, Kuala Lumpur, Malaysia, 5–8 October 2009

Compilation on Compact Disc



# APFORGEN

Asia Pacific Forest Genetic Resources Programme



**INCEPTION WORKSHOP**  
Kepong, Malaysia  
15-18 July 2003



**National Consultative Workshops of Seven South and Southeast Asian Countries**



**APFORGEN NATIONAL COORDINATORS MEETING**  
Dehradun, India  
15 – 16 April 2006



**Status in seven South and Southeast Asian countries**



**APFORGEN NATIONAL COORDINATORS MEETING**  
Bogor, Indonesia  
5-7 September 2007

## APFORGEN NATIONAL COORDINATORS' (SEA) MEETING, 29-30 NOV 2004

- Cambodia
- Indonesia
- Malaysia
- Myanmar
- Thailand
- Vietnam

## APFORGEN NATIONAL COORDINATORS' (SA) MEETING, 13-14 JUN 2005

- Bangladesh
- India
- Nepal
- Pakistan
- Sri Lanka

## APFORGEN priority species information sheets



*Acacia mangium* Willd.



*Pinus merkusii* Jungh et de Vriese



*Azadirachta indica* A. Juss.



*Pterocarpus indicus* Willd.



*Dalbergia cochinchinensis* Pierre. ex Laness.



*Shorea leprosula* Miq.



*Eusideroxylon zwageri* Teijsm. & Binnend.



*Tectona grandis* L.f.



*Hopea odorata* Roxb.



**FGR National Posters**

Asia-Pacific Forest Genetic Resources



**CONSERVATION AND SUSTAINABLE UTILIZATION OF  
FOREST GENETIC RESOURCES IN ASIA AND THE PACIFIC**



(An ITTO Funded Project)

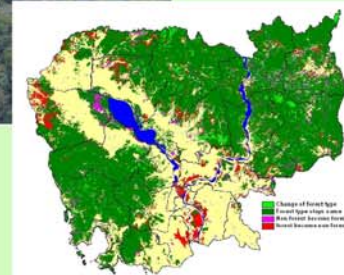
**CAMBODIA**

**Current status and challenges**

- 23 protected areas under MoE (national parks, wildlife sanctuaries, etc.)
- 10 protected forests under FA/MAFF
- 19 seed sources production

**Challenges**

- Shifting cultivation (*by ethnic people*)
- Illegal cutting (*by local people*)
- Forest land encroachment (*by powerful and rich people*)
- Agriculture expansion
- Economic land concession
- Social land concession



**National priorities**

- Forest Demarcation
- Community Forestry Development
- REED Initiative
- Forest Training and Extension
- Forest Tree Plantation
- Forest Partnership
- Agro-Forestry Initiative
- Forest Law Enforcement

**Policy and institutional support**

- Forestry law
- Government's statement on forest
- Forest policy
- National Forest Programme
- Other legislation support documents
- Activities concerned strong supported from FA/MAFF



**National Focal Point**

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Phnom Penh, Cambodia  
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Asia-Pacific Forest Genetic Resources



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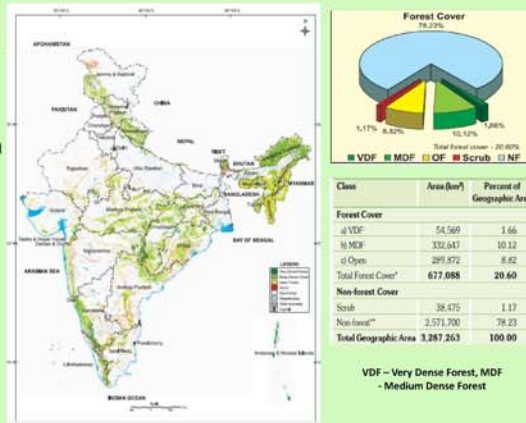
**INDIA**

**Current status and challenges**

- 7th largest country in area – 328.73 million ha
- 2nd largest human population – > 1.00 billion
- 2.5% of the world's geographical and 1.8% of the forest area
- 16% of the world's population and 18% of domestic cattle population
- 8% of world's biodiversity, and one of the 12 mega biodiversity countries – two global terrestrial biodiversity hot spots: the North-eastern States and the Western Ghats
- Forest types: tropical, sub-tropical, temperate, alpine and sub-alpine forests
- **In-situ conservation:** Biosphere Reserves – 14, National Parks – 97 (38,199.47 km<sup>2</sup>), Wildlife Sanctuaries – 508 (118,236.94 km<sup>2</sup>), Tiger Reserves – 29 (38,620 km<sup>2</sup>)
- **Ex-situ conservation:** Numerous botanical gardens, arboreta, herbal gardens, clonal repositories, plant herbarium, provenance trials, seed orchards

**Challenges**

- Pressure on forests for wood and non-wood products
- Pressure on forests for non-forestry use
- Sustainable forest management
- Involvement of local communities in FGR conservation



**National priorities**

- Increase forest cover and conservation of existing forests, to reach 1/3 of area under forest.
- Ensuring ecological balance through conservation of biological diversity, forest genetic resources, and soil and water management.
- Increase productivity and efficient utilization of forest produce, and substitution of wood.
- Increase community involvement in forest genetic resources conservation and management Improvement of species using traditional and biotechnology methods

**National institutes and species in focus for FGR development and improvement**

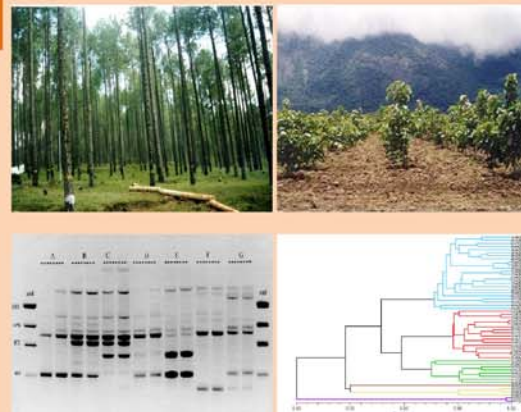
ICFRE, with its nine strategically located institutes, has programmes for FGR conservation and management focusing on the following species:

Eucalypts, *Shorea robusta*, *Dalbergia sissoo*, Poplars, Himalayan pines, *Tectona grandis*, *Acacia sp.*, *Azadirachta indica*, *Ailanthus excelsa*, *Tecomella undulata*, *Gmelina arborea*, Bamboos, *Dipterocarpus sp.*, *Albizia procera*, *Santalum album*, *Pterocarpus santalinus*, *Casuarina sp.*, *Dalbergia latifolia*, *Acacia catechu*, *Adina cordifolia*, Tropical pines, *Leucaena leucocephala*, *Pinus roxburghii*, *Picea smithiana*, *Abies pinraw*, *Salix sp.*, *Populus sp.*, *Cedrus deodara*

**Policy and institutional support**

**National Forest Policy 1988**

- Achievement of sustainability of all types of forests.
- Provisions for maintenance, conservation and enhancement of bio-diversity of forest ecosystems.
- Maintenance and enhancement of forest resource productivity.
- Increase in the extent of forest and tree cover.
- Optimization of forest resource utilization



**National Focal Point**

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Indian Council of Forestry Research and Education  
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Asia-Pacific Forest Genetic Resources  
**CONSERVATION AND SUSTAINABLE UTILIZATION OF  
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**INDONESIA**

**Current status and challenges**

National Secretariat of the Asia Pacific Forest Genetic Resources Programme (APFORGEN) was established at the end of year 2003 through a consultative process with the Asia Pacific Association of Forestry Research Institutions (APAFRI) and The International Plant Genetic Resources Institute (IPGRI)

**Secretariat Activities**

- Meetings held by National Coordinator of APFORGEN, discusses the problems which are inherent in managing Genetic Resources Conservation involving related stakeholders
- Published the results of Genetic Resources Conservation activities in the form of flyers and newsletters regularly
- Conducted some pilot projects on Genetic Resources Conservation and Management for some local communities in Blitar, Gunung Kidul and Cilacap
- Published a Guideline on Forest Genetic Resources Conservation and Management at Village Level

**National Partners Coordination**

Conducted workshops and meetings involving research institutes, universities, private practitioners and NGOs with a view to expand and strengthen networks at the national level.



**National priorities**

Some institutions define their own priority based on their objectives:

- Centre for Biotechnology and Forest Tree Improvement defined 60 forest tree species for conservation and tree improvement purposes;
- DG of Forest Protection and Nature Conservation determined 22 plant species that are being conserved.

Ministry of Forestry is in the process of defining a national priority on Forest Tree Species in 2010.

**Policy and institutional support**

1. Act (Undang-Undang) 5/1994 stipulated on 1 August 1994 – Ratification of the Convention on Biological Diversity;
2. Government Regulation (Peraturan Pemerintah) 44/1995 stipulated 30 December 1995 on Plant Breeding;
3. Minister of Forestry Decree 1 /2010: National Forest Tree Seed Procurement



**National Focal Point**

**Centre for Plantation Forest Research & Development**  
 Forestry Research and Development Agency, Ministry of Forestry  
 Jl. Gunung Batu 5 Bogor, Indonesia,  
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Asia-Pacific Forest Genetic Resources



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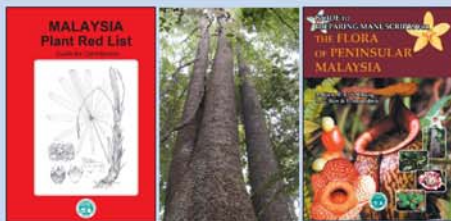
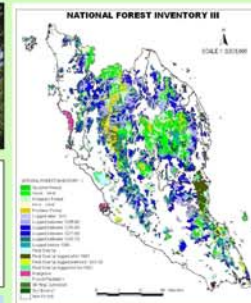
**MALAYSIA**

**Current status and challenges**

- Malaysia's rich and diverse tropical rainforests have been recognised internationally as a depository of megadiversity of both flora and fauna and act as a large storehouse of untapped genetic resources.
- These forests contain about 15,000 species of higher plants, 1,000 of vertebrates, >6,000 of butterflies and moths and 20-80 thousand of invertebrates.
- Forest cover estimated to be 18.35 million hectares (ha) or 55.9% of the total land area:
  - 10.81 million ha – Permanent Reserve Forests for sustainable utilisation,
  - 4.15 million ha – Totally Protected Areas,
  - 3.39 million ha – state or alienated land.
- Genetic diversity information of plant species is currently available for major timber species in the families Dipterocarpaceae, Leguminosae and Thymelaeaceae.

**Challenges**

- Documentation, threat assessment and generation of genetic diversity information of Malaysia's vast forest genetic resources (FGRs).
- Integration of genetic diversity component in national biodiversity conservation plan.
- Balance between FGRs conservation and industrial/ agricultural production.
- Effective implementation and enforcement of policies and legislation.
- Participation of indigenous communities in FGR conservation debate and policy development.
- Research findings and policy-maker communication.
- Public awareness on the importance of FGR conservation.



Linking the gaps between conservation research and conservation management of rare dipterocarps: A case study of *Shorea lumutensis*

Soon Leong Lee<sup>a</sup>, Kevin K.S. Ng<sup>a</sup>, Leng Guan Siew<sup>a</sup>, Chai Ting Lee<sup>a</sup>, Norwati Muhammad<sup>a</sup>, Naoki Tani<sup>b</sup>, Yoshihiko Tsumura<sup>b</sup>, Jariko Koskela<sup>c</sup>

**National priorities**

- Documentation, threat assessment and generation of genetic diversity information of Malaysia's FGRs.
- Integration of genetic diversity component in national plant conservation strategies.
- Integration of genetic diversity component in forest rehabilitation and plantation programmes.
- Human resource development for FGR conservation.
- Involvement of indigenous communities in FGR conservation.
- Public awareness on the importance of FGR conservation.
- Linking the gaps between conservation research and conservation management of FRGs.
- Linking the gaps between researchers and policy makers on FGR conservation.
- Capitalise the strengths of biodiversity for commercialise discoveries in natural products.

**Policy and institutional support**

**Policy & Legislation**

- Article 74(2) of the Malaysia Constitution.
- Land Conservation Act 1960.
- National Forestry Council 1972.
- Protection of Wildlife Act 1972 (amended 1976 and 1988).
- Malaysian Timber Industry Board Act 1973.
- Environmental Quality Act 1974 (amended 1985).
- National Forestry Policy 1978 (revised 1992).
- National Parks Act 1980 (amended 1983).
- National Forestry Act 1984 (amended 1993).
- Malaysian Forestry Research and Development Board Act 1985.
- National Policy on Biological Diversity 1998.
- National Biotechnology Policy 2005.
- Biosafety Act 2007.
- International Trade in Endangered Species Act 2008.

**Institutional support**

Ministry of Natural Resources and Environment;  
 Ministry of Plantation Industries and Commodities;  
 Forest Departments of Peninsular Malaysia, Sabah and Sarawak;  
 Forest Research Institute Malaysia;  
 are the main agencies/institutions responsible for FGR conservation and sustainable utilization.



**National Focal Point**

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Asia-Pacific Forest Genetic Resources  
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**MYANMAR**

**Current status and challenges**

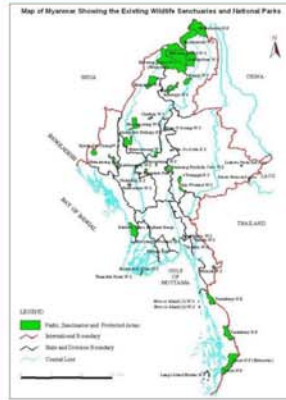
Country's land areas	676 580 Km2
Forest covered areas	353 747 Km2 (52%)
Reserved forest areas	114 995 Km2 (17%)
Public protected forest	26 799 Km2 ( 4%)
Protected Area System	31 945 Km2 ( 5%)
Total areas of PFE	173 739 Km2 (26%)

The Plant genetic resources in Myanmar are as follows:

Plants	11800
Bamboo	120
Rattan	50
Shrubs	1696
Orchids	841

**Challenges**

1. insufficient human resource in the field of FGR C&M
2. inadequate knowledge of plant species diversity and *ex situ* conservation
3. limited financial resources for FGR C & M



Conservation of Teak

**National priorities**

- Organization of National Task Force for FGR C&M
- National Strategy for plant conservation
- Selection of priority species

**Policy and institutional support**

FGR C & M supported by the following six imperatives of National Forest Policies:

- |                       |                      |
|-----------------------|----------------------|
| 1. Protection,        | 2. Sustainability,   |
| 3. Basic needs,       | 4. Efficiency,       |
| 5. Participation, and | 6. Public awareness. |

In Myanmar, five institutions under the Ministry of Forestry are actively involved in FGR C&M.

1. Planning and Statistics Department (PSD);
2. Forest Department (FD)– Forest Research Institute (FRI) and the Nature and Wildlife Conservation Division;
3. Myanmar Timber Enterprise (MTE);
4. Dry Zone Greening Department (DZGD); and
5. National Commission on Environmental Affairs (NCEA)



**National Focal Point**

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Asia-Pacific Forest Genetic Resources

## CONSERVATION AND SUSTAINABLE UTILIZATION OF FOREST GENETIC RESOURCES IN ASIA AND THE PACIFIC



(An ITTO Funded Project)

### PHILIPPINES

#### Current status and challenges

- Only 0.8 M ha of pristine forest remains; 7.2M ha (24%) are classified as forest lands.
- Included as one of megadiversity countries but also a biodiversity hotspot.
- 99 critically endangered and 187 endangered plant species.
- Upland population of >20M experiencing massive poverty.



#### National priorities

- A National Biodiversity Strategy and Action Plan (NBSAP) with 6 major strategies and 17 thrusts.
- 206 conservation priority areas and species conservation priorities collectively known as the Philippine Biodiversity Conservation Priorities (PBCP)
- A total of 99 protected areas with an aggregate area of 2.9M ha have already been proclaimed under NIPAS

#### Policy and institutional support

- **Republic Act No. 7586** (National Integrated Protected Area System Law) - provides for the establishment and management of protected areas in the Philippines.
- **Republic Act No. 9147** (the Wildlife Resources Conservation and Protection Act)
- **Executive Order No. 578** (Policy of the State on Biological Diversity)



#### National Focal Point

**Enrique L. Tolentino, Jr.**

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University of the Philippines Los Baños, Philippines  
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# Asia-Pacific Forest Genetic Resources

## CONSERVATION AND SUSTAINABLE UTILIZATION OF FOREST GENETIC RESOURCES IN ASIA AND THE PACIFIC



(An ITTO Funded Project)

### THAILAND

#### Current status and challenges

Current (2006) forest area is estimated at 158 652.59 sq. km or 30.92% of the country's land area.

**In situ conservation** – national parks and wildlife sanctuaries, forest parks, non-hunting area, and biosphere reserve.

**Ex situ conservation** – plantation stands, genebanks, clone banks, gene conservation plots, botanical gardens and arboreta, tree improvement plots, clone banks, progeny tests, provenance trials, clonal tests and seed orchards with more than 30 species. The main species are *Tectona grandis*, *Pinus* spp., *Eucalyptus* and *Acacia*.

#### Challenges



- Update FGR status including finding out better germplasm
- Extensively support better germplasm to tree farmers
- Establish network/partnership between stakeholders
- Share knowledge and germplasm within regional networks

#### Forest Biodiversity

> 2,000 species of Flora & Fauna endemic only to THAILAND

#### Tree Improvement

**Indigenous Tree Species:**  
*Tectona grandis*  
*Dialium cochinchinensis*  
*Aquilaria crassna*  
*Chukrasia* spp.  
*Persea gracilis*  
*Asarictandra indica*  
*Casuarina equisetifolia*  
*Gluta usitata*  
*Phyllanthus emblica*

**Exotic Tree Species:**  
*Eucalyptus* spp.  
*Acacia* spp.  
*Casuarina junghuhniana*  
*Pinus cambana*



#### National priorities

Priority	Forest cover		Forest quality		Forest productivity		Forest sustainability	
	Target	Current	Target	Current	Target	Current	Target	Current
1. Increase forest cover to 40% of land area	40%	30.92%	High	Low	High	Low	High	Low
2. Increase forest quality	High	Low	High	Low	High	Low	High	Low
3. Increase forest productivity	High	Low	High	Low	High	Low	High	Low
4. Increase forest sustainability	High	Low	High	Low	High	Low	High	Low

Target to increase forest cover to 40% of land area: protected forests for nature conservation, recreation and environmental protection (25%), and economic forests for production of timber and non-timber goods (15%).

The target is to bring the forest cover to 40% of the country area

Forest Genetic Resources Conservation and Management Programme (FORGENMAP 2002) formulated several priority actions for the conservation of FGR of indigenous tree species in Thailand, for example studying the status of in situ and ex situ conservation, strategies of FGR conservation, and research needs regarding some of the priority species.

#### Policy and institutional support

- ##### Thailand National Forestry Policy
1. Establish long term guidelines for environmental protection, and harmonized utilization of forest resources and other natural resources
  2. Promote role and responsibility sharing among various government agencies and the private sector
  3. Increase public and private sectors participation in forest management and reforestation
  4. Improve efficiency in timber production and utilization
  5. Conserve and protect natural environment
  6. Raise public awareness and instil positive attitude
  7. Support efficient forest resources conservation and utilization
  8. Promote wood energy through energy plantations
  9. No other land use permitted on steep slope of 35% or more
  10. Establish guidelines to tackle shifting agriculture, forest fires, forest clearing by the hill tribe minorities, etc.
- The Thai Royal Forest Department and several universities and private enterprises such as Kasetsart University (KU), Forest Research Centre of KU, Chiang Mai University, Khon Kaen University, the Social Research Institute of Chulalongkorn University, Mahidol University, the Forest Industry Organization, Thai Cement Company Limited, Phoenix Pulp and Paper Company Limited, and the Kitti Plantation Company Limited, are actively pursuing these policies to achieve the desired targets:

#### Summary of major stakeholders involving in FGR in Thailand

Name of the Organization	Management			Admin. status	Utilization
	Active Factor	Policy maker	Technical support		
Royal Forest Department- RFD	✓	✓	✓	-	-
National Park, Wildlife and Plant Conservation Department- DNP	-	✓	✓	✓	-
Department of Marine and Coastal Resources- DMCR	✓	✓	✓	-	-
Faculty of Forestry, Kasetsart University	✓	-	✓	-	✓
Forest Restoration Research Unit, Chiangmai University	-	✓	✓	-	✓
Thai Plywood co., Ltd.	✓	✓	✓	-	✓
Regional Community Forest Training Center for Asia and the Pacific- RECOTFC	-	✓	✓	-	-
Non Government Organization- Community leaders in Northeast & South	-	-	-	-	✓
Biodiversity Office, Ministry of Natural Resource and Environment	-	-	-	✓	-

Source: RFD (2008)

#### National Focal Point

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 Royal Forest Department, Thailand  
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#### 4. Project Outcomes, Target Beneficiaries Involvement

This Project was designed such that at the time of completion:

- National FGR task forces or working groups would have initiated a process to establish formal national FGR programmes.
- Capacity-building needs, as related to FGR conservation and use, would be prioritized and long-term strategies developed on how to improve national capacity in each sub-area: human resources, institutional capacity, policies and information.
- Activities of the national task forces/working groups would also increase the policy makers' commitment and the availability of national and external funding for implementing the strategies.
- Awareness on the importance of FGR would be increased in the countries and research and management skills on FGR conservation and sustainable use would be improved.
- Countries would have also assessed the status of FGR conservation and use this as the basis to develop new initiatives to enhance FGR conservation as well as to implement sustainable management of FGR in practice.
- At regional level, a collaborative mechanism would be in place and continue to support countries in the Asia Pacific regions in their efforts to increase conservation and sustainable use of FGR.
- National and regional information on FGR would be more easily accessible and widely disseminated to facilitate future activities.

These expected outcomes have all been generally realized as indicated by the various reports submitted by the NFPs of the seven participating countries, and which have been updated a number of times over the short duration of this Project. In addition, for a few other countries which did not participate in this Project, but similar outcomes had been reported when they presented their national status during the APFORGEN meetings and workshops.

While, in some cases, indicative evidences were scanty and insufficient to substantiate the various claims of enhancements over the years, there was a very strong indication that this Project had achieved one of its most critical objectives of increasing awareness on the importance of FR conservation and sustainable utilization. This had contributed substantially to their national obligations and commitments for various international treaties and conventions such as CBD.

The regional network, APFORGEN, also benefited from the lifted profile aided by the Project activities, organized in the region, which were of high relevancy to the network.

The most significant outcome of this Project could be the very committed involvement of the NFPs from the seven countries demanded by the various activities planned under this Project. These had been evidenced by the quality of most of the national reports submitted to the Project, as well as the very successful national consultative workshops.

However, the Project has been plagued with the constant challenges of frequent organizational changes and staff movements since its inception. These changes resulted in changes of some countries' NFPs, disrupting continuity of some of the Project activities, and hampered the timeliness of achieving the objectives.



## 5. Assessment and Analysis

When developing the Project proposal, colleagues in Bioversity International and APAFRI had gone through a very thorough process of literature search, consultations and surveys. The rationale had been well researched and Project activities formulated with inputs from many colleagues from the three collaborating agencies: FRIM, Bioversity International and APAFRI. A number of international agencies active in the region and interested in FGR conservation and sustainable utilization, such as FAO and DANIDA, had also contributed to the process.

The FAO Panel of Experts on Forest Gene Resources has played a major role in providing recommendations and priorities on management of FGR at global level and continuously highlighted the importance of FGR and their conservation. The Panel has recommended that capacity of national institutions to carry out work on FGR should be strengthened and that this work should be closely linked to planning and implementation of national programmes.

However, in the Asia Pacific region, national FGR programmes were not well established. This Project was thus formulated to address this situation which was causing considerable bottlenecks to conservation and management of FGR in several countries in this region. The national FGR workshops of the Project have brought together stakeholders in the respective countries to better coordinate FGR conservation and management activities, thus removing some of the bottlenecks and duplication.

A major hurdle that has been grossly underestimated when formulating project was the wide disparity of forestry research capacity and capability among the participating countries. This has contributed to the large differences, in terms of quality and quantity, in the outputs from the NFPs which also contributed to the differences between the planned and implemented project activities.

The Project's original allocation from ITTO was USD343 400, however, the Project only managed to spend less than half of this allocation by the end of 2008, more than two-third through the project duration. The rather substantial balance was mainly due to the saving from the decision of not engaging the Project Coordinator and the Administrative Personnel. (One Project Coordinator was only engaged for three months. Procedural difficulties and other logistical problems have prevented us from hiring another Coordinator). Substantial savings from carrying out most of the logistics of organizing meetings and training courses as well as compilation and editing of the five publications by staff members of the three agencies, also contributed to the rather large balance after completing most of the project activities. Two extensions, totaling 18 months, had been granted with no additional fund from ITTO, to utilize the rather substantial saving for additional activities which further improved the quality of the outputs from this Project.

While there was little external influence that had impacted on the successful completion of this Project, frequent organizational structural changes which led to drastic staff movements had disrupted the smooth execution of project activities. Some countries had changed their NFPs more than once, and these had affected the continuity of commitments and quality and quantity of promised inputs.

The largest group of beneficiaries of this Project would be the young foresters and forestry researchers of the seven participating countries, as well as those from the other member countries of APFORGEN. When designing the training courses, the main focus and objective was to introduce the subject matter of FGR conservation and sustainable utilization to young professionals, those below 40 years of age, in forestry. Three such courses had been organized with assistance from institutions in Malaysia and India. Each of these training courses had received overwhelming response, and each time the organizers had to limit the number of participants to achieve the desired impact. The International Symposium held in 2009, which was attended by 63 forestry professionals with 40 technical presentations, had contributed substantially to achieving the Project's Development Object of *developing national and regional capacity to conserve and sustainably use FGR and information sharing in tropical Asia*.

The Project has compiled and published five proceedings/reports, as well as several brochures and posters. The proceedings/reports, in both printed and digital (on compact discs) formats had been distributed freely to all the collaborating agencies, the donors, partners and local hosts, and the seven participating national agencies. These publications had also been widely distributed in regional and international events held during the past years.

The sustainability of the Project had been discussed several times. All the participating agencies were of the opinion that this Project should be continued. Several international and regional networks/agencies active in FGR shared the same view too. A few countries, such as China, Fiji and PNG, currently not participating in the Project, had expressed their interest in participating should the Project gets a second phase with an expanded scope to also cover subtropical Asia. Countries like Vietnam and Laos, which are not ITTO member countries, had also indicated their desires to participate. However, few concrete ideas of how to proceed from here, and what (scope) to be proposed, had surfaced. APFORGEN has been tasked to continue the role of coordinating future projects with the assistance of FRIM, APAFRI and Bioversity International. Bioversity International, had during the first half of 2010, conducted a survey to gather inputs for developing a proposal.

Roles and responsibilities of the Executing and Collaborating Agencies, as well as the NFPs of the participating institutions, had been clearly stipulated and conveyed to all parties concerned during the Project introduction workshop in 2006. Disparity in capacity and capability among the participating institutions may lead to differences in quantity and quality of the desired outcomes and outputs. However, while there were also few other hitches here and there during the Project duration, most of the planned Project activities were executed smoothly according to the original schedule. These, owed much to the commitments and support rendered by all the institutions involved, which had contributed tremendously to the successful completion of this Project.

## 6. Lessons Learned

The smooth execution of Project activities which contributed to the successful completion of the Project hinged heavily on the very thorough project designing and planning processes. While developing the original project proposal, FRIM, the Executing Agency, together with the two Collaborating Agencies: APAFRI and Bioversity International, had completed a regional survey and the results were discussed during a few regional meetings. The views and suggestions gathered from these discussions were valuable inputs for developing the proposal.

Additional views and suggestions were also gathered from the seven potential participating national institutions to improve an initial draft of the project proposal prepared by colleagues in the three agencies: FRIM, APAFRI and Bioversity International. Getting their views before requesting for commitments and endorsing the proposal granted the institutions the sense of ownership which could commit support from these institutions crucial to the successful completion of the Project. The Project Technical Working Group maintained regular communication with the NFPs nominated by the participating national institutions and the NFPs are constantly reminded about their promises and commitments. All these contributed to the smooth execution of the various activities.

More thorough understanding of the differences in capacity and capability could certainly improve the planning and scheduling of Project activities, which would ensure the timeliness of the execution of these activities and also enhance further overall quality and quantity of the outputs.

Consultations with international and regional networks were found to be beneficial to the planning and execution of this Project. FAO Forestry Department, Danish International Development Agency (DANIDA) and Secretariat of Pacific Community (SPC) had provided constructive comments which directly and indirectly enhanced the overall planning and execution of this Project.

Maintaining regular communication with the donor agency, ITTO, besides the scheduled Project Technical Committee Meetings, has provided crucial guidance to execute the Project and manage all related activities.

Engaging and involving a number of other institutions in executing the Project activities enhanced the overall outcomes and outputs of the Project. For example, two institutions: the University Putra Malaysia and the Institute of Forest Genetics and Tree Breeding in Coimbatore, India, had assisted in hosting and conducting two successful training courses. In addition, limiting the age of participants to the training courses had prompted the participating institutions to nominate young junior staff members. This contributed to achieving the objectives of this Project in capacity building.

Documenting the outputs of the Project regularly by compiling and publishing the various proceedings and national reports provided the necessary profile uplifting for this Project. These publications, and also brochures and posters prepared by the Executing Agency with materials submitted by the NFPs, have been distributed through the networks of APAFRI and Bioversity International, as well as during regional and international events such as the Asia Forest Week (Hanoi 2008) and XXIII IUFRO World Congress (Seoul 2010).

Frequent and drastic organizational structural changes which often involve shifting of personnel had resulted in changes in nominated NFPs from a few countries. These changes although could be rather disruptive to the smooth execution of the Project, are often unforeseeable and could not be avoided.

It was fortunate that during the duration of this Project, all the three agencies had sustained their commitments and there were no changes in their representatives to the Technical Working Group. This had ensured that all the Project activities were executed accordingly to the original work plans, and the whole Project was managed effectively and efficiently.



## 7. Conclusion and Recommendations

The Project was originally approved for three years starting from February 2006 till January 2009, with an allocation from ITTO of USD343 400. However, the Project managed to save substantially from the decision of not engaging the Project Coordinator and the Administrative Personnel. (One Project Coordinator was only engaged for three months. Procedural difficulties and other logistical problems have prevented us from hiring another Coordinator). Substantial savings from carrying out most of the logistics of organizing meetings and training courses as well as compilation and editing of the five publications by staff members of the three agencies, also contributed to the rather large balance after completing most of the project activities by end of 2008. Two extensions, totaling 18 months, were then granted with no additional fund from ITTO, to utilize these rather substantial savings for additional activities which further improved the quality of the outcomes and outputs from this Project.

With the successful completion of the Project, all the originally planned and also a number of additional activities had been executed, and the objectives were considered satisfactorily achieved. The major outcomes and outputs of the Project include:

### *Outcomes:*

- NFPs for the seven participating countries actively involved in contributing to regional FGR programmes.
- Participating countries had assessed capacity-building needs, as related to FGR conservation and use, and would stimulate long-term strategies to be developed on how to improve national capacity in each sub-areas, i.e. human resources, institutional capacity, policies and information.
- Activities of the national task forces/working groups increased the policy makers' commitment.
- Awareness on the importance of FGR increased in the countries and research and management skills on FGR conservation and sustainable improved.
- Countries had regularly reported on the status of FGR conservation and initiatives developed and enhanced in as well as the implementation of sustainable management of FGR in practice.
- At regional level, a collaborative mechanism (APFORGEN) had been enhanced to continue supporting countries in the Asia Pacific regions in their efforts to increase conservation and sustainable use of FGR.
- National and regional information on FGR had been made more easily accessible and widely disseminated to facilitate future activities.

### *Outputs:*

- An introductory meeting of the NFP on this Project was held in conjunction with the Asia Pacific Forest Genetic Resources Programme (APFORGEN) National Coordinators' Meeting, in Dehradun, 15–16 April 2006.
- A Mid-term Review was conducted in Bogor, 5–7 September 2007.
- Three FGR training Workshops:
  - Kuala Lumpur, Malaysia, 11–16 June 2007
  - Kuala Lumpur, Malaysia, 7–11 July 2008
  - Coimbatore, India, 5–9 July 2010
- National workshops were organized by the NFPs in the seven participating countries:
  - Philippines – 6 February 2007
  - Indonesia – 1 March 2007
  - India – 11 July 2007
  - Cambodia – 12 February 2008
  - Myanmar – 26 February 2008
  - Thailand – 12 March 2008, and
  - Malaysia – 30 July 2008.
- *International symposium on forest genetic resources*, Kuala Lumpur, 5–8 October 2009
- A side-event on *FGR in Asia and the Pacific* during the *XXIII IUFRO World Congress 2010* and also poster display (national posters of the seven participating countries)

*Publications:*

- Proceedings of the Asia Pacific Forest Genetic Resources Programme (APFORGEN) National Coordinators Meeting and International Tropical Timber Organization (ITTO) Project Update, Dehradun, India, 15–16 April 2006.
- International Tropical Timber Organization (ITTO) Project Mid-term Review and Asia Pacific Forest Genetic Resources Programme (APFORGEN) National Coordinators Meeting, Bogor, Indonesia, 5–7 September 2007.
- Forest Genetic Resources Conservation and Management – Status in seven South and Southeast Asian countries, 2009.
- Forest Genetic Resources Conservation and Management – National consultative workshops of seven South and Southeast Asian countries, 2009.
- Extended Abstracts: International symposium on forest genetic resources – conservation and sustainable utilization towards climate change mitigation and adaptation, 5–8 October 2009.

Other outputs include the national posters prepared by the seven NFPs and these were displayed during the XXIII IUFRO World Congress in Seoul, 23–28 August 2010. All the publications of the Project were also available in digital format on compact discs.

During the execution of the Project it was evident that there were FGR conservation and management activities in the region. However there was no definite focus of commitment of countries towards FGR conservation and management in the region. Many of the national FGR conservation and management activities were part of an overall forest or natural resources conservation strategy. FGR conservation activities were also generally not well coordinated in some countries. Hence there is an urgent need for such countries to address this issue. With the imminent impact of climate-change on biodiversity and the forest resources it is necessary for countries to put more effort and focus in the conservation and management of FGR. It was also pointed out by the participating countries that the process of information flow and exchange of FGR matters was inefficient especially among countries in the region. A regional framework such as APFORGEN could facilitate this process. It was also pointed out that this Project together with the activities of APFORGEN has stimulated a better flow of FGR information amongst countries in the region. The general consensus was that APFORGEN should continue to function even after the termination of the Project.

The pool of human resources in FGR conservation and management in the region is very limited. This is especially critical in the some countries (e.g. Cambodia and others). The training workshops of the Project have helped to impart the knowledge needed in this area. However, some of the trainees on returning to their country have been assigned to other duties owing to shortage of manpower. This is one issue that countries in the region need to address urgently to manage their FGR.

Feedbacks from various sources expressed that:

- This Project had generally achieved its intended objectives of capacity building, as well as enhanced information exchange and sharing.
- This Project should be continued with an expanded scope to address emerging issues such as impacts of climate change on FGR.
- Participation in this Project should be extended to other countries in the Asia Pacific region, including non ITTO member countries.
- Regional mechanism, such as APFORGEN, should continue to play the leading and coordinating role in developing and subsequently executing project activities.

**Responsible for the Report**

**SIM, Heok-Choh**  
**Officer-in-Charge of the Project**

**November 2010**



## Annex I. Project Financial Statement

Project No. PD199/03 Rev.3(F)

Period ending on: Oct 2010

Component	Approved Amount (A)	Expenditures To-date			Unexpended Amount (E) { A - D }
		Committed (B)	Expended (C)	Total (D) { B + C }	
<b>I. Funds managed by Executing Agency</b>					
10. Project Personnel					
11. Project Coordinator	5,000	0	4,985	4,985	15 Approved Amount 72000, Transfer 12000 to Item 28 and 6000 to Item 33a
12. Administrative Assistant	0	0	0	0	0 Approved Amount 18000, Transfer 12000 to Item 28a and 6000 to Item 33b
19. Component Total:	5,000	0	4,985	4,985	15
20. Sub-contracts					
21. National FGR workshops for 7 countries	35,000	0	29,077	29,077	5,923
22. Annual National FGR Task Force Meeting for 7 countries	0	0	0	0	0
23. Training course: FGR conservation for researchers	10,000	0	9,626	9,626	374
24. Training course: FGR Management for managers & field staff	20,000	0	18,251	18,251	1,749 Approved Amount 8000, Add 12000 from Item 32
25. Collection, collation and preparing reports on FGR status for 7 countries	5,500	0	0	0	5,500
26. Regional FGR workshop	10,000	0	10,614	10,614	-614

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27.	Enhancing APFORGEN Web site and FGR database	5,000	1,000	0	1,000	4,000	
28.	Mid Term Review Meeting	12,000	0	7,604	7,604	4,396	
28a.	End-of-Project Workshop	40,000	0	37,141	37,141	2,859	
28b.	International Forest Genetic Resources Symposium	35,000	0	27,948	27,948	7,052	
28c.	Proposed IUFRO world Congress Side Event and Associated Activities	23,000	1,000	19,505	20,505	2,495	
29.	Component Total:	195,500	2,000	159,767	161,767	33,733	
30.	Duty Travel						
31.	Coordinator and APAFRI/IPGRI staff to participate in National FGR workshops & Task Force meetings in 7 countries	8,000	0	11,220	11,220	-3,220	
32.	Coordinator & APAFRI/IPGRI, FRIM staff to organize regional FGR research training course in 2 countries and national FGR management training course for 7 countries	0	0	0	0	0	Approved Amount 12000, Transfer 12000 to Item 24
33.	Coordinator, APAFRI, IPGRI/FRIM staff to organize regional FGR workshop	6,000	0	5,951	5,951	49	
33a.	Coordinator, APAFRI, IPGRI/FRIM staff to organize FGR Mid-term Review meeting	6,000	0	2,875	2,875	3,125	
33b.	Coordinator, APAFRI, IPGRI/FRIM staff to organize Proposed Symposium	5,000	0	6,828	6,828	-1,828	
33c.	APAFRI, IPGRI/FRIM staff to organize IUFRO Side-Event and Activities	10,000	0	8,845	8,845	1,155	
39.	Component Total:	35,000	0	35,720	35,720	-720	
40.	Capital Items						
41.	LCD Projector	3,500	0	3,295	3,295	205	

42.	Digital camera	1,000	0	1,281	1,281	-281
43.	Computers & servers	10,500	0	13,139	13,139	-2,639
49.	Component Total:	15,000	0	17,715	17,715	-2,715
50.	Consumable Items					
51.	Stationery & meeting/workshops needs	3,000	1,000	5,542	6,542	-3,542
52.	Development & maintenance of APFORGEN website	2,500	1,500	0	1,500	1,000
53.	Country reports of FGR status, strategies & action plans	3,000	1,000	0	1,000	2,000
54.	Proceedings of 7 national and 1 regional FGR workshops	18,500	1,000	10,941	11,941	6,559
59.	Component Total:	27,000	4,500	16,483	20,983	6,017
60.	Miscellaneous					
61.	Sundry	8,000		7,986	7,986	14
62.	Technical support for publication (editing)	2,000	2,500		2,500	-500
63.	Postage, utilities and part-time staff for meetings, workshops, etc.	3,000	0	2,751	2,751	249
69.	Component Total:	13,000	2,500	10,737	13,237	-237
Sub-Total:		290,500	9,000	245,407	254,407	36,093
<b>II. Funds retained by ITTO</b>						
60.	Miscellaneous					a/
61.	Sundry					a/
62.	Refund of Pre-Project Costs					a/
63.	Contingencies					a/

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69. Component Total:					a/
70. ITTO Monitoring & Administration					a/
71. Monitoring and Evaluation					a/
72. Administrative/Programme Support					a/
79. Component Total:					a/
Sub-Total:		-	-	-	a/
99. GRAND TOTAL:					

Note: Budget Components are those detailed in the Project Document.

a/ Funds retained and accounted for by ITTO - details not available with Executing Agency.

**Annex II. Project Cash Flow Statement**

Project No. PD 199/03 Rev.3(F)

Period ending on: Oct 2010

Component	Amount	
	in USD	RM
<b>A. <u>Funds received from ITTO:</u></b>		
1. First installment	70,000	259,506
2. Second Installment	86,000	296,591
3. Third installment	31,000	110,175
4. Fourth installment	31,000	110,175
5. Fifth installment	36,000	115,641
<b>Total Funds Received:</b>	<b>254,000</b>	<b>892,088</b>
<b>B. <u>Expenditures by Executing Agency:</u></b>		
10. Project Personnel		
11. Project coordinator	4,985	18,480
12. Administrative Personnel	0	0
19. Component Total:	4,985	18,480
20. Sub-contracts		
21. National FGR workshops for 7 countries	29,077	99,783
22. Annual National FGR Task Force Meeting for 7 countries	0	0
23. Training course: FGR conservation for researchers	9,626	33,082
24. Training course: FGR Management for managers & field staff	18,251	59,865
25. Collection, collation and preparing reports on FGR status for 7 countries	0	0
26. Regional FGR workshop	10,614	39,347
26a. FGR Mid-term Review meeting	7,604	26,679
27. Enhancing APFORGEN Web site and FGR database	0	0
28a. International Forest Genetic Resources Symposium	37,141	129,994
28b. Proposed training course on C& M of FGR	27,948	97,819
28c. Proposed IUFRO world Congress Side Event and Associated Activities	19,505	68,268
29. Component Total:	159,767	554,837
30. Duty Travel		
31. Coordinator and APAFRI/IPGRI staff to participate in National FGR workshops & Task Force meetings in 7 countries	11,220	37,530

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32.	Coordinator & APAFRI/IPGRI, FRIM staff to organize regional FGR research training course in 2 countries and national FGR management training course for 7 countries	0	0
33.	Coordinator, APAFRI, IPGRI/FRIM staff to organize regional FGR workshop	5,951	22,061
33a.	Coordinator, APAFRI, IPGRI/FRIM staff to organize FGR Mid-term Review meeting	2,875	10,088
33b.	Coordinator, APAFRI, IPGRI/FRIM staff to organize Proposed Symposium		
33c.	APAFRI, IPGRI/FRIM staff to organize Training Courses	6,828	21,851
33c.	APAFRI, IPGRI/FRIM staff to organize IUFRO Side-Event	8,845	30,958
39.	Component Total:	35,720	122,488
40.	Capital Items		
41.	LCD Projector	3,295	11,308
42.	Digital camera	1,281	4,499
43.	Computers & servers	13,139	40,738
49.	Component Total:	17,715	56,545
50.	Consumable Items		
51.	Stationery & meeting/workshops needs	5,542	19,486
52.	Development & maintenance of APFORGEN website	0	0
53.	Country reports of FGR status, strategies & action plans	0	0
54.	Proceedings of 7 national and 1 regional FGR workshops	10,941	36,600
59.	Component Total:	16,483	56,086
60.	Miscellaneous		
61.	Sundry	7,986	26,062
62.	Technical support for publication (editing)	0	0
63.	Postage, utilities and part-time staff for meetings, workshops, etc.	2,751	8,802
69.	Component Total:	10,737	34,864
	Total Expenditures To-date:	245,407	843,300
	Remaining Balance of Funds (A-B):	8,593	48,788

Notes: (1) Amounts in U.S. dollars are converted using the average rate of exchange when funds were received by the Executing Agency  
 "(2) Total Expenditures To-date (in local currency) should be the same as amount shown in Sub-Total of column (C) of the Financial Statement."

**Annex III. National Focal Points for the Project (Updated January 2010)**

	<b>Organizations Participating in the Project</b>	<b>National Focal Point</b>	
		<b>Nominated in 2006</b>	<b>Active till 2010</b>
<b>1</b>	Forestry and Wildlife Science Research Institute Forestry Administration (formerly known as Department of Forestry and Wildlife) # 40 Preah Norodom Blvd., Phnom Penh CAMBODIA	Mr. Sok Srun	Mr. Chann Sophal
<b>2</b>	Indian Council of Forestry Research & Education Room No. 129, ICFRE Building P.O. New Forest, Dehradun – 248006, INDIA	Mr. Mudit Kumar Singh	Dr. G.S.Rawat
<b>3</b>	Center for Plantation Forest Research and Development Forestry Research and Development Agency Ministry of Forestry, Jl. Palagan Tentara Pelajar Km 15 Purwobinangun, Pakem, Sleman Yogyakarta 55582, INDONESIA	Dr. Nur Masripatin	Dr. Bambang Trihartono
<b>4</b>	Forest Research Institute Malaysia (FRIM), Kepong, 52109 Kuala Lumpur, MALAYSIA	Dr. Lee Soon Leong	Dr. Lee Soon Leong
<b>5</b>	Forest Research Institute Yezin, MYANMAR	Mr. Thuang Naing Oo / Lwin Ko Oo	Mr. Aung Zaw Moe
<b>6</b>	Silviculture & Resources Rehabilitation Division Institute of Renewable Natural Resources, College of Forestry and Natural Resources University of the Philippines Los Baños College, Laguna, 4031, PHILIPPINES	Dr. Enrique L. Tolentino Jr.	Dr. Enrique L. Tolentino Jr.
<b>7</b>	Forest and Plant Conservation Research Office National Park, Wildlife and Plant Conservation Department 61 Phaholyothin Road, Chatuchak, Bangkok 10900 THAILAND	Mr. Vichien Sumantakul	Dr. Suwan Tangmitcharoen