COMPLETION REPORT

ITTO PPD87/03 REV.2 (F)
IDENTIFICATION OF *GONYSTYLUS SPP* (RAMIN) POTENCY, DISTRIBUTION, CONSERVATION AND PLANTATION BARRIERS

CENTER FOR FOREST AND NATURE CONSERVATION RESEARCH
AND DEVELOPMENT, MINISTRY OF FORESTRY
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Implementing Agency

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Starting Date

January 2005- February 2006

Actual Duration

12 (twelve) Months

Actual Project Cost

US. $ 89,770

Photos in cover page by study team

PREFACE

Identification Of Gonystylus Spp (Ramin) Potency, Distribution, Conservation And Plantation Barriers: Ramin is one of the most important tropical species growing in peat swamp forest in Indonesia. Due to its high commercial value, this species has been excessively exploitated from its habitats. This over exploitation with insignificant effort to conserve this species has caused the reduction in its population and habitats in Sumatra and Kalimantan. Government has issued regulation on ramin exploitation by issuing a moratorium policy in 2001 followed by the inclusion of this species into CITES Appendix III in the same year. Later in 2004, this species is up-listed into CITES Appendix II. After this point, ramin growing stocks, distribution and conservation are not fully acknowledged and the recent status of its production is not available. ITTO has granted a financial assistant to the Government of Indonesia for identifying the status of ramin growing stock, population, habitat and plantation of ramin through the ITTO Pre-Project PPD87/03 Rev.2 (F).

Results indicated that ramin growing stocks has been decreased very rapidly. The moratorium policy has not been sufficient to prevent further loss of ramin growing stocks and their habitat, not only in production forest but also in conservation areas. Conservation effort is still insignificant in various forms of activities. Plantation trials have been conducted since several decades, however, result of the trials are not fully encouraging. Plantation barriers include the lack of sources of seeds, planting material, technology and incentive scheme for ramin plantation.

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PART I. EXECUTIVE SUMMARY

1.1. Background Information About The Project

1.1.1. Key Problems

Ramin (*Gonystylus spp*) is one of the most valuable timber species growing in peat swamp forests in Sumatra and Kalimantan. Its commercial value has driven this species to be over exploitation, not only in production forests but also in conservation areas such as in National Park, nature reserves and other protected areas. Over exploitation in production forests is worsened by the disobedience to the rules and regulation applying to the practices of silviculture.

This exploitation, legal and illegal, has caused great reduction on its growing stocks, population and habitats (Table 1.). Conservation efforts are still insignificant to save future generation of ramin. Even though, the establishment of conservation areas containing ramin habitat has been added in Kalimantan.

The key problems identified in the management of peat swamp forests in Sumatra and Kalimantan range from lack of supervision on the application of rules and regulation not only for the peat swamp forest area but also other forests concession. The uniqueness in the management of peat swamp forests area is the physical condition which cause some difficulty in field supervision at least with current management system.

Great reduction in growing stock, population and habitats of ramin in production forests have been described in Technical Report No. 1. The degradation of ramin habitat in its natural ranges has also been caused by the method of log transportation to outside forest area using water canals. The establishment of water canals has caused severe degradation in the habitat of ramin that cause extreme drought during the dry seasons which will in turn cause peat swamp forest fire. The fire diminish all existing vegetation in peat swamp forests. The fire has been recorded to occur almost annually in some areas in Sumatra and Kalimantan (Technical Report No. 2).

Plantation trials have been conducted since early 1970s, however the plantation trials are still limited to research scale and the success are still extremely limited. Several institutions have conducted the trials, such as Research Institution within the Ministry of Forestry, Universities and Forest Concessions including PT. Diamond Raya Timber, a private company and PT Inhutani (State owned forests company), (Technical Report No. 3).

Limitations or barriers in ramin plantation range from the limited sources of seeds and other planting materials, lack of nursery technology and lack of propagation technology. Stem cutting, leaf cutting and tissue culture have been developed but still limited to the lab scale. Beside the lack of technology in the plantation activity, institutional capacity and incentive scheme are not available to plant slow growing species such as ramin. Plantation of slow growing species like ramin should be conducted by the government or forest concessions with an incentive scheme (Technical Report No. 4).

Other problems related to ramin conservation and utilization is related to the implementation of government regulation on ramin domestic and international trade as stated in the CITES convention.

Table 1. The Distribution of Peat Swamp Forest Area in Indonesia in Different Time Periods and Estimated Log Production

No.	Province	Directorate of Forestry Planning 1983 (x1000 ha)	Forestry Planning Agency (Baplan) 2002 (x1000 ha)	Estimated log production in five provinces 1995-2004 (Directorate of Forestry Planning, MoF) (x1000 m^3)			
				95/96	98/99	2001	2004
1. Sumatra		3,304	2,517				
	Riau	2,222	1,657	2,430	1,307	1,410	11,4
	Jambi	397	524	844	482	2,036	13,0
	South Sumatra	684	335	589	285	1,866	N/a
2. Kalimantan		9,376	6,277*				
	West Kalimantan	3,731	2,052	1,675	1,368	120	29,2
	Central Kalimantan	5,491	4,225	5,435	4,214	593	1,066
	South Kalimantan	154	N/a	N/a	N/a	N/a	N/a
3. Central Sulawesi		486	N/a	N/a	N/a	N/a	N/a
4. Maluku		166	N/a	N/a	N/a	N/a	N/a
Total		13,333,					

* Exclude South Kalimantan
** See Technical Report #1

1.1.2. Specific Objectives and Outputs

The specific objectives of this pre-project are as follows:

1. To obtain base line data and information on potency, distribution, conservation and regeneration barriers

2. to write a full project proposal as a follow up action to the result obtained from the pre-project activities..

The Outputs of the pre-project are :

- Output 1.1. Complete data on ramin potency and conservation status

  1.1.1. Collect secondary data for potency, distribution and conservation
  1.1.2. Conduct field survey of ramin natural habitats in Sumatra and Kalimantan

- Output 1.2. State-of the Art-Review on plantation activities and related problems

  1.2.1. Collect data and information on plantation activities
  1.2.2. Identify ramin plantation barriers through literature reviews and field survey

- Output 2.1. A Full Project proposal

  2.1.1. Carry out a National workshop
  2.1.2. Prepare and submit a full project proposal

1.1.3. Project Strategy

Baseline data and information presented in each technical report and full project proposal and other project documents were obtained from several ways:

1. Field survey in four locations of ramin habitats in Sumatra and Kalimantan and discussion with key stakeholders, relevant government officials in Sumatra and Kalimantan, by both field team and National Experts. These survey and discussion were primarily aimed to collect existing and current data and information on distribution, conservation and plantation barrier.
2. Data and information regarding the plantation and plantation barrier were also obtained from interviews and discussion with relevant institutions and experts on ramin in research institutions, provincial forest services, non-government organizations such as LEI, CIMTROP, WWFI, etc, and forest concession.
3. Internal, consultative meetings within the Ministry of Forestry, especially with the Center for Forest and Nature Conservation Research and Development (CFNCRD) during the Technical Advisory Committee (TAC) meetings that held every three to four months.

1.1.4. Project Duration and Costs

The execution of the pre-project was planned for 12 (twelve) months starting from January 2005 through January 2006. Some technical barriers have resulted in slight delay in project implementation after signing the Project Document in December 2004. Some unspent fund was proposed to carry out a second National Workshop on The Policy Options for Conservation and Utilization of Ramin.

The Overall cost of the Project was US$ 89, 770 consisted of US$ 66,770 from ITTO and US$ 23,000 from the Government of Indonesia (GOI) through the Executing Agency, Center for Forest and Nature Conservation Research and Development (CFNCRD). The budget was allocated for Project management, National Expert and consultant, Duty Travel, Consumable Items and Miscellaneous. The Government of Indonesia has provided direct and indirect contribution to support salaries, honorarium, transportation costs, office spaces, vehicles and others for Project Management and field activities (Table 2.)

Project has invited the involvement of many stakeholders at the provincial and district level of government during the implementation of the Project, not only for the field survey but also during the workshop and seminar on September, 2005 and February, 2006.

The project has also invited and hired three National Experts, Dr. Tukirin Partomihardjo, form National Institute of Science, Dr. Istomo from Faculty of Forestry, Bogor Agricultural University, and Dr. Hilman Affandi from SEAMEO-BITROP. Two National experts are assigned to carry out some activities with the two months salary of US$ 4,000 (Four hundreds US dollars) and one national expert is assigned to formulate a full project proposal with the salary of US$ 3,000 for the period of two months.

Table 2. Project Budget and Contribution from the Government of Indonesia (in kind contribution)

Budget Component		Total
10. Project Personnel		0
20. Sub-contract		0
30. Duty travel		0
40. Capital Items		0
50. Consumable item		2,000
60. Miscellaneous		12,000
70. Executing Agency Management Cost		9,000
80. ITTO Monitor, Eva and Administration Cost		0
	81. Monitoring and Review	0
	82. Evaluation	0
	83. Program Support Cost	0
GOI Total		23,000

1.2. Project Achievement

1.2.1. Outputs Achieved

Output 1.1. Complete data on ramin potency and conservation status

1.1.1. Collect secondary data for potency, distribution and conservation

Intensive collection of data and information from published and unpublished literatures available in local forest district offices, research institutions, universities, private and state owned enterprises and local community as well as National Parks, Ministry of Trades and Industry, NGO, local traders, Association of forest product industries etc.

1.1.2. Conduct field survey of ramin natural habitats in Sumatra and Kalimantan

This consists of field visit or brief survey to the representative habitats of ramin species in Sumatra and Kalimantan to obtain brief information on natural regeneration at various stages (seeds, seedlings, sapling and pole stage).

The achievement of the output could be verified in some documents, such as technical reports, survey report, workshop reports and proceeding and other materials. Output 1.1. has been achieved and verified in the following technical report as listed below:

Technical Report No. 1: Growing Stock, Distribution, and Conservation of Ramin in Indonesia

Data and information on growing stock, distribution and conservation of ramin have been collected from five provinces in Indonesia: Riau, Jambi, South Sumatera, Central Kalimantan and West Kalimantan. The printed and unprinted materials were collected from various sources, such as provincial and district forest services, forest concessionaires, and Ministry of Forestry. Additional data and information were also collected through literature search from universities, NGO and other research institution.

Based on current existing data and information, status of Ramin growing stock, distribution and conservation as described in the technical report are summarized below:

(1). Ramin habitats have been severely degraded. Initial area of peat swamp forest in five provinces (Riau, Jambi, South Sumatera, West and Central Kalimantan) was approximately 12,526,000 ha (in 1983), recent satellite image interpretation showed the extent of peat swamp forest reduced to only 6,716,000 ha or 53.6 % from earlier area.

(2). Total growing stock of ramin in five provinces, assuming potential area for ramin remains 80%, and illegal logging 10%, is estimated to 14,757,221 m^3 or 11.3 % from initial growing stock (as1983). Habitat degradation reached 46.4 % from total area of 1983.
(3). Some studies showed that ramin seedlings in primary forest was quite abundance, varied from 166 – 4,000 seedlings per hectare, and less abundant for saplings that varied from only 20-217 saplings per hectare. In logged over areas the figure varied from 0 – 4,000 seedlings per ha and 0 - 480 saplings per hectare. In natural condition, the density of pole stage is usually lower than that of trees. Ramin at pole stage have been harvested for many purposes.
(4). Forest concessions have significant role in ramin conservation. This includes the application of silvicultural system, the establishment of conservation area for plant and wildlife conservation, and the establishment of ramin plantation in enrichment planting program.
(5). Conservation efforts to save ramin have been done through the addition of conservation areas, the buffer zone, forest fire prevention, the research trials related to artificial regeneration of ramin. Other important efforts include combating illegal logging and illegal trading of ramin.

Recommendations are as follows:

1. No more conversion of peat swamp forest especially with ramin abundance potency into other land uses.
2. A need to make accurate inventory on potency and distribution of ramin in the field to determine necessary steps in management and conservation of ramin.
3. Provide incentives to ramin potential forest concessions to operate with special regulations that ensure sustainability of ramin in its area.
4. Improve system in ramin trade to prevent illegal trading.
5. Real action to combat illegal logging and activities to prevent forest fires.
6. More control in conservation areas with ramin high potency .

Technical Report No. 2: Population and Natural Regeneration of Ramin

Data and information in this report are obtained from a brief field survey carried out in two separate locations: Berbak National Park, in the province of Jambi, Sumatra which represents a primary (virgin) forests and Sebangau National Park, in the province of Central Kalimantan, Kalimantan which represents logged over area (Secondary Forest). Additional data on ramin population and natural regeneration were also collected from other sources.

Based on the above collected data, it is indicated that ramin population and regeneration vary depending on the site and condition of forests. Results of this survey are described as follow: ramin in Berbak National Park, which represent primary and mature forest was dominant and the population was dominated by large and mature ramin trees. Ramin was in the first rank out of 36 forest tree species based on its value of the important value index calculated from overall species recorded. On the contrary, ramin was relatively rare in Sebangau National Park which represent a secondary (logged over area). In this forest, ramin was in the tenth rank out of 31 recorded forest tree species based on its value of the important value index and ramin trees were relatively small.

Natural regeneration indicated by the presence of seedlings and saplings was extremely poor in both site (Berbak National Park and Sebangau National park). The number of seedlings and saplings recorded from all plots was less than two. This poor natural regeneration is one of the primary threats to extinction of ramin species, even though earlier studies in other forests indicated rich of ramin natural regeneration. Other threats, especially to the remaining population are illegal logging, habitat degradation or conversion to other uses and frequent forest fires.

Recommendations are as follows:

1. It is recommended that a detail ecological studies on ramin population and regeneration be carried out.

2. A silvicultural prescription for ramin needs to be further improved and adjusted based on the biological characteristics of ramin and physical barrier.

3. It is recommended that the land use planning for ramin habitat, forest and conservation be identified and legally documented.

4. Rehabilitation of ramin habitat and de-canalization using 'tabat' (water blocking) be recommended to be further established.

5. Ramin slow growing causes poor investments interest to forest companies. Therefore, it is also recommended that an incentive scheme for rehabilitation and plantation of ramin be developed.

Output 1.2. State-of the Art-Review on plantation activities and related problems

1.2.1. Collect data and information on plantation activities

This activity includes collection all data and information on planting trials and large scale plantation carried out by private and state owned enterprises, universities and local research institution.

1.2.2. Identify ramin plantation barriers through literature reviews and field survey

Identification of regeneration (plantation) barrier was focused into the availability of planting materials (seed trees, mother trees and seed stand, storability of seeds and germination) and growth of post seedling stage. This includes a field visit to the sources of planting materials and nurseries.

The achievement of the output could be verified in some documents, such as technical reports, survey report, workshop reports and proceeding and other materials. Output 1.2. has been achieved and verified in the following technical report as listed below:

Technical Report No. 3 : Review and Current Status of Ramin Plantation Activities

Recent data and information on ramin plantation efforts and activities are a very important to develop ramin plantations in large scale. To collect these data and information, direct investigations including interviews to experts were conducted in four provinces, i.e. Riau, Jambi, West Kalimantan and Central Kalimantan. Additional data and information were also collected through literature search.

From this activity several findings are summarized below:

(1). Propagation technique of ramin has been developed by several research labs, but need further development.
(2). Field trials on ramin plantation have been conducted since several years. However, results are still insufficient.
(3). Forest concessionaires, research institute and universities have conducted the plantation trials both in Sumatra and Kalimantan .
(4). Effort to plant ramin has been consistently carried out by PT. Diamond Raya Timber, PT. Inhutani, and Regional Research Centers in Palembang (Sumatra) and Banjarbaru (Kalimantan).
(5). Types of planting trials conducted earlier were mixed planting with other species, enrichment planting and trials in non-peat sites.

Recommendations are as follows:

1. To disseminate the shoot cutting technology of ramin propagation as well as planting technique in the field, it is necessary to carry out short trainings for the users especially for the field level of staffs.

2. Because ramin is a slow growing species, it is necessary to find and to develop a technology in order to accelerate ramin growth rate.
3. The existing seed stands should be kept and saved, and seed orchards should be developed, either seedling seed orchard or clonally seed orchard.

Technical Report No. 4: Barriers in Ramin Plantation Activities

As a follow up action to the issuance of ramin logging moratorium policy, plantation activities should be widely promoted. However, there are several barriers in plantation of ramin. Survey to identify the barriers has been conducted in four provinces i.e. Riau, Jambi, West Kalimantan and Central Kalimantan.

The results indicated that some barriers in ramin plantation include: (1). Uncertainty of forest area allocated for ramin, (2). Unavailability of appropriate silviculture technique, (3). Unavailability of seed sources, (4). Irregular flowering and fruiting of ramin, (5). Short stability of seed, and (6). Lack of incentive to plant ramin at large scale.

The above barriers are needed to be overcame in order to promote ramin plantation and rehabilitation success in both Sumatra and Kalimantan

Recommendations are as follows:

Several programs and activities should be conducted to overcome the main barriers in ramin plantation activities:

1. The uncertainty of forest area status and law enforcement should be overcome through :
   a. Re-evaluate forest land use planning
   b. Develop a land tenurial system
   c. Enhance law enforcement and create a consistency on government regulation for sustainable forest management
   d. Study on institutional arrangement among stakeholders involved (local/central government, local community and private sector) in ramin plantation activities

2. Poorly implemented silvicultural technique should be overcome through:
   a. Conducting specific trainings to transfer knowledge and skill on ramin plantation activities
   b. Study on ramin propagation technique such as tissue culture and establish hedge orchards as sources of shoot cuttings
   c. Establish seed sources (seed stands and/or seed orchards)
   d. Study on growth and yield pattern of ramin
   e. Study on land preparation techniques for plantation
   f. Study on site manipulation of ramin species and mechanism of nutrient availability and study on fertilization and mycorrhizal fungi inoculation

3. Barrier in institutional and human resources capacity should be overcome through:
   a. Long term demonstration plot for ramin plantation is necessary with sufficient area size and distribution..
   b. Study a financial feasibility of establishment of ramin plantation forest
   c. Study plantation and management models of ramin and its impact on socio-economic condition of the surrounding community.
   d. Analysis environmental impact of establishment of ramin plantation forests, including carbon emission and sequestration

Output 2.1. A Full Project proposal

2.1.1. Carry out a National workshop

Two one day workshops were held in Bogor to raise more specific action plan to the identified problems on conservation, plantation and habitat rehabilitation. Related issues raised during the workshops were examined to be included into the full project proposal. Workshops were participated by MoF, research institution, forest districts, universities and private and state owned enterprises and NGO's.

2.1.2. Prepare and submit a full project proposal

Based on the data and information obtained from the pre-project a long with the priority action plan recommended from the workshop, a full project proposal was formulated and submitted to ITTO and other potential donors through the Government of Indonesia

The achievement of the output could be verified in some documents, such as proceeding and other materials. Output 2.1. has been achieved and verified in the following proceeding and project proposal as listed below:

Proceeding Seminar - Workshop I : Conservation and Development of Ramin Forest in Indonesia

A wide range of issues and recommendation raised during the workshop held in Bogor, 28 September 2005 were recorded. Some of the workshop highlights are:

1. Field actions need to be carried out to save remaining ramin from all types of logging
2. Prevention from forest fire need to bee carried out in advance during dry season
3. Rehabilitation and restoration of peat swamp forest need to be carried out especially through de-canalization
4. Silviculture practices and system need to bee improved in order to prevent further degradation of population and habitat.
5. Further development, for ramin plantation technology need to bee carried out.
6. Incentive scheme to promote Ramin plantation need to be developed.

Proceeding Seminar – Workshop II: Policy Option on the Conservation and Utilization of Ramin

Some of the workshop highlights are:

1. The need to carry out re-inventory of ramin production in peat swamp forest area, especially those managed by forest concession;
2. More supervision by Ministry of Forestry need to be carried out to concession who has received certification and who has ramin in their concession areas;
3. The combating illegal logging in both production forest and conservation areas need to bee consistently carried out;
4. Stop further conversion of peat swamp forest to other uses especially which have ramin population and habitat;
5. A special management needs to be developed for ramin;
6. Ex-situ and in-situ conservation of ramin need to be further promoted;
7. Rehabilitation of ramin habitats need to be enhanced;
8. Ramin substitution need to be promoted to reduce pressure on ramin exploitation

Full Project Proposal : The Prevention of Further Loss and the Promotion of Rehabilitation and Plantation of *Gonystylus spp* (Ramin) in Sumatera and Kalimantan

Gonystylus spp (Ramin) is one of the most valuable timber species in Indonesia. From the pre-project findings, it is indicated that ramin growing stock drastically decrease in last several years and its habitat rehabilitation and field plantation are very slow progressing. The causes are many. The great reduction of growing stocks is mainly due to over exploitation and unsustainable methods of its harvesting. On the other hand the slow progressing in rehabilitation of ramin habitats and plantation are due to lack of seed sources, lack of high quality seedlings and lack of incentive scheme for planting slow growing ramin. The enlisting of ramin in CITES Appendix has not been effective to prevent further loss or extinction of ramin since no substantial effort is taking place. The project, therefore, is aimed to contribute to the sustainable management of ramin forests by conducting several activities directed to prevent further loss of ramin and to promote rehabilitation of its habitat and field plantation. Specific objectives of the project are (1) : To prevent further loss of ramin habitat and population in Sumatra and Kalimantan through better practice of forest management. (2) : To promote rehabilitation and plantation of *G. bancanus* (Miq) Kurz. The Outputs are (1) Appropriate ramin methods of harvesting (silvicultural system used, chain of custody/log tracking method) are identified, (2). Ramin CITES implementation, especially on cutting and trading regulation is assessed, (3). Method of habitat recovery is identified, (4). A package of applicable seed production, seed and seedling treatment and other regeneration materials is developed, (5). The technology for vegetative propagation and tissue culture of ramin plus trees and genetically selected individual is identified and developed, (6). Plantation technology for ramin is developed, (7). An incentive scheme to promote plantation of slow growing species like ramin is formulated.

Other Reports

- Progress Report No. 01. Period cover by this report is from January 2005 to March 15, 2005
- First Bi-Annual Project Progress Report. Period cover by this report is from January 2005 to June 30, 2005

1.2.2. Specific Objective Achieved

Specific objectives (1) To obtain base line data and information on potency, conservation and regeneration barriers have been achieved and indicated by several documents described earlier. The achievement could be verified through the examination of several technical reports and policy draft.

The specific objective (2) to write a full project proposal "*The Prevention of Further Loss and the Promotion of Rehabilitation and Plantation of Gonystylus spp (Ramin) in Sumatera and Kalimantan*". This objective has been achieved. Contents are based on technical reportd and workshop proceedings.

1.2.3. Contribution to the achievement of the Development Objective

The achievement of two specific objectives as described above has contributed to the achievement of the development objective. Specific objectives: (1). To obtain base line data and information on potency, conservation and regeneration barriers. From this results policy on ramin could be formulated based on more accurate data and information policy drafts are in the process of consultation within the Ministry of Forestry.

The specific objective (2). To write a full project proposal for "*The Prevention of Further Loss and the Promotion of Rehabilitation and Plantation of Gonystylus spp (Ramin) in Sumatra and Kalimantan*".

The outputs of the pre-project that contain, among others, the base line data and information on potency, conservation and regeneration barriers. The baseline data and information and the key problems could be utilized to formulate and design action plan for sustainable management of peat swamp forest and its vegetation. Moreover, the identified key problems could also be used to set out a priority program for ramin forest management. The whole management of these areas could be improved by the presence of common understanding on the problems and improved coordination among stakeholders. The improved coordination and communication among stakeholder have been achieved through stakeholder meeting and workshop organized during this pre-project. The involved participation to the project meeting and workshop have been positive for future project implementation.

1.3. Target Beneficiaries Involvements

Information on ramin potency, distribution and conservation status both in production forest and conservation areas (national park, protected areas etc.) obtained from this pre-project will be used by the central government to draw national policy on ramin. One of them is either maintain the temporary ban on all logging activities for certain period of time or lift it up with immediate action to restore the potency. Currently only one logging concession in Sumatra is allowed to harvest ramin after passing the certification scheme toward the sustainable forest management from Indonesian Eco-labeling Institute. Also by using this information, the government (especially local) and companies could adjust the projection of ramin wood *production* and search alternative materials to substitute ramin

For local government and stakeholders, the recent information on conservation status is useful to promote the establishment of conservation sites for either protecting the remaining population in their original habitat (*in-situ*) or planting them elsewhere (*ex-situ*) for future use of plant genetic resources. This in-situ and ex-situ conservation activity is found limited due to its slow growing and lock of incentive scheme.

Information on the plantation barrier obtained from this pre-project is useful for the scientists from research institution and universities or for other plant growers to accelerate the search for scientific methods, techniques and approach to promote plantation success.

Wood industry (company) and local people gain benefit from this pre-project results such as information regarding current growing stock, the growth and regeneration capacity for each particular habitat. This information is essential to reorient the future market policy especially for wood industries whose materials are much dependent on ramin wood or ramin-based products for their export. At the same time, ramin forest and habitat will be able to regenerate naturally with sufficient time and space.

1.4. Lessons Learned

1.4.1. Development Lessons

Preliminary assessment on ramin status through this pre-project is absolutely appropriate. This pre-project has provided essential information toward the enhancement of ramin species and habitat recovery. The full project is developed based on sufficient and accurate data and therefore will significantly and effectively contribute to the recovery of ramin.

1.4.2. Operational Lessons

- Project Organization and Management

The operational activities of the project have been well carried out and in accordance with the proposed project organization and management as appeared in Workplan. The simple organization and Management consisted of Technical Advisory Committee, Project management Unit and National Experts and field team for collecting relevant data and information Workshop and discussion with relevant institutions have improved skill, knowledge and awareness and contribute to increasing awareness on the problem of ramin conservation and utilization.

- Project Documentation

In the operational activities of this pre-project, all activities are well documented, either during the field activities, meeting and workshops both in Jakarta and Bogor. Those documents were sent to relevant institutions. These documents are very useful and will be a reference point not only for the project evaluation but also for the implementation of its results and other findings.

- Monitoring and Evaluation, Quality of Project Planning

Monitoring and evaluation of the project progress was carried out concurrently with the consultative meeting with Technical Advisory Committee and the workshop, at which all progress and or problems raised during of the project activities were discussed. Results of field survey and reports of each activity were presented in the meetings organized by the Executing Agency facilitated by the project. The quality of the project planning, implementation and the achievement were evaluated and commented. The recommendations to improve the project achievement, the quality of the result presenting in each reports are improved through TAC meeting and these have been incorporated in the project technical report and could be treated lessons learned during the project implementation.

- Definition of roles and responsibilities of the involve institution

The institutions involved in the project implementation are Ministry of Forestry (MoF):

FORDA is responsible for the provision of appropriate technology to promote sustainable management of ramin forest and its habitat. No other specific institutions involved in the project management

- Action taken to avoid variation between planned and actual implementation

No significant different between planned and actual implementation of the pre-project, except the starting date of operational activities was slightly delay due to some administrative process.

- External factors that influenced the project implementation and that could have been foreseen and could not have been foreseen

No external factors that influenced project implementation.

1.5. Recommendations

For future project, it is recommended that:

1. A management structure be maintained consisting coordinator, secretary, and 1 – 2 staffs
2. Sufficient fund should be allocated for editing (proof reading) and review for each technical reports.
3. Communications facilities be provided
4. Consultative meeting and internal meetings be facilitated by the project
5. More funding for printing publication, reports.
6. The budget allocation for printing should put in each activity to avoid delay a printing.

PART II. MAIN TEXT

2.1. Project Results

2.1.1. Situation Existing at Project Completion as compared to the Pre-Project Situation

Recent status of ramin growing stock, conservation and plantation was not fully recorded. The valid recent data are not yet available after moratorium policy is issued. This pre-project has given valuable contribution to the decision makers to improve ramin forest management.

The pre-project has provided valuable contribution to the ramin forest. Some of the contributions are disseminated in relation to the following conditions:

1. Common understanding on the importance of ramin conservation and the problems in the management between stakeholders.

2. The awareness on the importance of recent data and information for decision making process on ramin management.

3. The importance of up-to-date data and information on the conditions of peat swamp forest and habitats to take filed action to save ramin.

4. The coordination among stakeholders formed and enhanced, and implemented during the project period and likely to continue after the project completion.

5. The recent data and information that have been collected from each activity of the pre-project will provide valuable contribution to the local government and other stakeholders, especially in the formation of short, medium and long term plan for ramin sustainable management.

6. To provide more complete and clear picture of the recent peat swamp forest condition in both Sumatra and Kalimantan.

7. To provide more secure on the land status, land tenure and the future plan of ramin forest management.

8. To provide and improve existing law and regulation to stakeholders which will be used to improve the management.

The above situations have clearly contributed to the specific objectives of this pre-projects: (1) to obtain baseline data, especially conservation and distribution of ramin, existing government policies and institution responsible to manage peat swamp forest, especially ramin. Growing awareness on the role of scientific and management authority of CITES in Indonesia. (2). to develop a full project proposal "*The Prevention of Further Loss and the Promotion of Rehabilitation and Plantation of Gonystylus spp (Ramin) in Sumatra and Kalimantan*".

2.1.2. Impact of the Pre-Project Results

Impact of the pre-project results on the sectoral programs

The most important impact of the pre-project results to the sectoral programs is the change of perception, orientation and priority options of the government and stakeholders on the current situation of the peat swamp forest in each location. The change of perception and priority options could be evaluated at least to the following aspects:

1. The economic importance of peat swamp forest, ramin and its habitat.

2. Potential contribution to and risk or potential lost as sources of income for national level community.

3. Potential loss of habitats, vegetations and environment.

4. The importance of law enforcement on the peat swamp forest management including ramin.

5. List of priorities to be carried out are available for further action.

Impact of the pre-project results on the Physical Environment

Impact of the pre-project to physical environment will be realized far after the project completion. Direct change of physical environment might occur on the land use system and management as a result from the project outputs and achievement: the availability of recent data and information peat swamp forest the threat to extinction not only ramin but also other species caused by repeated fire in peat swamp forest.

Impact of the pre-project results on the Social Environment and target beneficiaries

The slight change of social environment may occur after stakeholders awareness improved on the importance of sustainability of ramin production. This may contribute to the better condition of peat swamp forest management. The involvement of stakeholder and target beneficiaries in the meeting, workshops and other project activities may also improve awareness, skill, knowledge and perception. This could be expected to contribute to better management of the ramin forest. Disseminated information to stakeholders will also contribute to the change of the target beneficiaries awareness.

2.1.3. Project Sustainability

After the pre-project completion, several aspects below will be well maintained and continue to provide contribution to the community and other stakeholders as aspect of project sustainability after project completion. The central government will continue and conduct follow up action by utilizing the pre-project results, especially the following:

1. The complete recent data and information of peat swamp forest, ramin, and habitats in Riau, Jambi, South Sumatra, West Kalimantan and Central Kalimantan.

2. The severe impact of canalization to the environment.

3. Identified key problems, cause and effect to the sustainability of the peat swamp forest management, ramin species and its habitat.

4. The network that has been established through various meeting, workshops and other means of communication during the pre-project periods.

5. The future program and action plans as outlined in the project proposal.

The situation that may prevail after the project completion is those aspects that were not directly handled during the pre-project period, such as excessive exploitation and or illegal harvesting of ramin and ramin substitution to reduce pressure on ramin exploitation. The implementation of CITES convention was not specifically addressed. However, there are some indications that the implementation is still in adequate.

2.2. Synthesis of the Analysis

(a). Specific Objective	Realised
(b). Outputs	Realised
Output 1.1. Complete data on ramin potency and conservation status	Realised
Output 1.2. State of the Art Review on Plantation activities and its related Problems	Realised
Output 2.1. A full project proposal formulated	Realised
(c). Schedule	slightly delayed from the planned starting date
(d). Actual Expenditure	< 10% below planned and use for additional workshop
(e). Potential for replication	Modest potential
(f). Potential for scaling up	Significant Potential

PART III. CONCLUSION AND RECOMMENDATION

3.1. Development Lessons

This pre – project has provided a great opportunity to various stakeholders to discuss on ramin existing management. This was interest of the stakeholders to participate in the workshops and other meetings.

Based on the results of this pre-project, there are some lessons learned as follows:

1. Peat swamp forest throughout the country are in great degradation

2. This forest has contributed to the production of various direct and indirect products. The direct products are ramin and other valuable timber.

3. There are some policies and regulation on ramin exploitation and trade but are not fully implemented in the field.

4. The meeting and workshops organized during the pre-project has contributed to (1) the improvement of coordination between stakeholders involved in ramin forest management and (2) increase of stakeholders awareness on the importance of conservation and sustainable management.

5. Excessive exploitation and conversion of peat swamp forest to other uses are important issues and need to be put as priority action to be carried out for saving ramin habitat..

3.2. Operational Lessons

1. Baseline data on growing stock, distribution, conservation and plantation barriers have been collected. Even though the collected data need to be further verified before utilizing the data to formulate a strategic and detailed plan. The two workshops carried out during the pre-project have given contribution to the up-dating the data collected earlier. However, since the locations are no longer accessible and concession are not in operation, the very recent data are not available. Data collected are mostly before 2002. Lessons learned from this activity include the difficulty in obtaining data when only limited forest concession are in operation.

2. The involvement of stakeholders in the field activities, such as data collection is very helpful and has been contributed to the success in data collections, not only secondary data but also direct survey. This type of involvement is important for future project. For example, WWFI Kalimantan program which has provided valuable contribution on data collection in Sebangau National Park.

3. Peat swamp forest is a unique ecosystem. Its physical characteristics need to be further consideration in the formulating management plan, such as silvicultural system and harvest mechanism. Log transportation is mostly through water canals other than railway lorri. After harvest maintenance is difficult to be carried out since the accessibility is mostly poor after harvesting period and ramin is slow growing.

3.3. Recommendation for Future Projects

1. Identification:

Several key problems for ramin and its habitat (1). Over exploitation, (2). illegal logging, (3). Slow growing, (4). Poor implementation of rules/regulation and conservation, (5). Lack of seed sources,

(6). Poor plantation technology, (7). Poor propagation technology, (8). Lack of incentive scheme, and (9). Poor law enforcement.

2. Design:

The project design should be divided into two phases:

Phase 1. to develop propagation technology, provision of planting materials, develop incentive scheme. This is to promote the supply of planting material and scheme to enhance rehabilitation and plantation of ramin.

Phase 2. to scale up planting trials and plantation activities.

The outputs of the projects should be directed to (1) Appropriate ramin methods of harvesting (silvicultural system used, chain of custody/log tracking method) are identified, (2). Ramin CITES implementation, especially on cutting and trading regulation is assessed, (3). Method of habitat recovery is identified, (4). A package of applicable seed production, seed and seedling treatment and other regeneration materials is developed, (5). The technology for vegetative propagation and tissue culture of ramin plus trees and genetically selected individual is identified and developed, (6). Plantation technology for ramin is developed, (7). An incentive scheme to promote plantation of slow growing species like ramin is formulated.

3. Implementation:

For the implementation of the Project, several institutions other than Ministry of Forestry should involve, such as universities, regional research center, forest concession, and district forest services. Research organization and Non-Government Organization, such as WWFI and CIMTROP could also involve in the implementation. Commitment to participate in the promoting of ramin conservation and rehabilitation are already shown in various opportunity. Letters of intent to participate in the up coming project activities have been forwarded to the project and put in the project proposal.

4. Organization:

The institutions incorporated in the management structure should have clear role and responsibilities. The personnel involved in the project management should have sufficient allocated time to manage the project.

5. Management:

Project Management Structure, personnels and term of reference should be clearly described. Project Coordinator will play very importance role in the success and in the achievement of the project outputs, therefore he or she should have sufficient time allocated for the project. Field Project Manager located in the project site should also be established to enable efficient coordination and implementation of the project and coordination among stakeholders in the project sites.

Responsible for the Report

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