ITTO PPD 95/04 (F):
“MODEL OF REHABILITATION AND SUSTAINABLE UTILIZATION OF MANGROVE FOREST AT LANGKAT, NORTH SUMATERA”

COLLABORATION BETWEEN :
INTERNATIONAL TROPICAL TIMBER ORGANIZATION [ITTO]
AND
DIRECTORATE GENERAL OF LAND REHABILITATION AND SOCIAL FORESTRY,
MINISTRY OF FORESTRY - THE GOVERNMENT OF INDONESIA

Jakarta, October 2005
Executing Agency

Directorate General Of Land Rehabilitation And Social Forestry, Ministry of Forestry
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Host Government

The Government of Indonesia

Starting Date

April 2005- September 2005

Actual Duration

6 (six) Months

Actual Project Cost

US. $ 57, 656

Photos in cover page by Ir. Adi Triswanto, MSi.
Model Of Rehabilitation And Sustainable Utilization Of Mangrove Forest At Langkat, North Sumatra. Mangrove forests in Sumatra, including North Sumatra province are distributed mainly in eastern part of the island. In this province, the mangrove forests are distributed in three districts: Langkat, Deli Serdang and Tapanuli Tengah. As occurs in the other parts of the country, mangrove forests in North Sumatra province also face problems. The problems are related to social and economic activity in the area that mostly caused severe degradation in the ecological functions of the mangrove ecosystems. The degradation of North Sumatra mangrove forests has become one of the priority mangrove forests to be rehabilitated by Ministry of Forestry. International Tropical Timber Organization (ITTO) has granted financial assistance through Pre-Project 95/04 (F) to develop an appropriate model for rehabilitation and sustainable utilization of mangrove forests in Langkat, North Sumatra which covers not only Langkat district but also other districts surrounding the mangrove forests. The activities of the Pre-Project ranges from collecting baseline data, policy analyses, developing model and formulating a full Project proposal to develop model for rehabilitation and sustainable utilization of the mangrove forests. The outputs of the pre-project consisted of (1) Baseline data on mangrove of the whole province, (2). Existing Government policies on mangrove ecosystem management, (3) Recent maps of the mangrove forest area and non-forest area and (4) A full Project Proposal.
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**Responsible Person for the Report and Position**
PART I. EXECUTIVE SUMMARY

1.1. Background Information About The Project

1.1.1. Key Problems

Mangrove forest in Indonesia is approximately 9 million hectares and 4 million hectares of which are located inside state-forest and the rest are located outside state forest. Those located outside forest areas are distributed in community lands and other public lands. In Sumatra, mangrove forests are mainly distributed in East coastal zone from the North toward the South of the island. In the province of North Sumatra, mangrove forests are mainly distributed in the districts of Asahan, Deli Serdang dan Langkat (Table 1). From the total area of approximately 85,300 ha of mangrove forests area, 53,000 ha area are located and under government control (registered) and approximately 32,000 ha are located in community lands.

The key problems identified in the management of mangrove forests in the province of North Sumatra including Langkat are the degradation of the ecosystem. The degradation is mainly caused by various social and economic activities in the mangrove forests and its surrounding, which have contributed to illegal conversion of mangrove forests to other uses (brackish fish ponds and other agricultural activities), excessive exploitation, land use conflicts between communities and local government and low awareness on the function of mangrove ecosystems.

The mangrove forest land conversion to other land uses in North Sumatra province was recorded for about 11,233 ha (Technical Report No.2). The conversion of mangrove forest is mostly to brackish ponds (tambak) and other agricultural activities. The conversion to community residence and the establishment of estate crops is accounted for minor portion. The conversion to the brackish ponds may become a major threat for mangrove ecosystem, not only in North Sumatra province but elsewhere in Indonesia. The ponds are primarily used to produce a variety of fish, especially shrimps. This conversion is driven by the presence of high economic incentives for which shrimps as main product of the brackish ponds produces higher and more instant cash compared to other activities.

Table 1. The distribution of mangrove forest area in North Sumatra Province*

<table>
<thead>
<tr>
<th>No</th>
<th>Districts</th>
<th>Total area of mangrove</th>
<th>Total area</th>
<th>Ratio to total landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Registered</td>
<td>Not registered</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Nias</td>
<td>-</td>
<td>9,570</td>
<td>9,570</td>
</tr>
<tr>
<td>2</td>
<td>Tapanuli Selatan</td>
<td>2,910</td>
<td>0</td>
<td>2,910</td>
</tr>
<tr>
<td>3</td>
<td>Tapanuli tengah</td>
<td>-</td>
<td>1,800</td>
<td>1,800</td>
</tr>
<tr>
<td>4</td>
<td>Labuhan Batu</td>
<td>1,700</td>
<td>0</td>
<td>1,700</td>
</tr>
<tr>
<td>5</td>
<td>Asahan</td>
<td>11,870</td>
<td>2,253</td>
<td>14,123</td>
</tr>
<tr>
<td>6</td>
<td>Deli Serdang (serdang Bedagai)</td>
<td>11,800</td>
<td>8,500</td>
<td>20,300</td>
</tr>
<tr>
<td>7</td>
<td>Langkat</td>
<td>24,810</td>
<td>10,190</td>
<td>35,000</td>
</tr>
<tr>
<td></td>
<td>Total area</td>
<td>53,080</td>
<td>32,013</td>
<td>85,303</td>
</tr>
</tbody>
</table>

* Source: Review of data and information of mangrove forest ecosystem at North Sumatra Province, Draft report of ITTO PPD 95/94 (F), Model of Rehabilitation and sustainable utilization of mangrove forest at North Sumatra Province, May 2005
Over exploitation of mangrove forest in North Sumatra province is driven by the presence of high economic value products from the mangrove forests. The products extracted from the mangrove forest, especially in this province include large logs for wood construction, small diameter logs for charcoal, firewoods, various Nipah products and poles for building stagers and roof components.

The land use conflict in mangrove forest and community lands are mostly triggered by the community economic activity and unclear boundaries within and between community lands. The situation was frequently worsened by the lack of law enforcement along the coastal zones. The severe degradation of mangrove ecosystem in this area, as also occur in other areas in Indonesia, are lack of community awareness and lack of community capacity in mangrove forest management. Weak management capability of local and provincial also contribute to the destruction of mangrove forest in this area.

1.1.2. Specific Objectives and Outputs

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

1. To establish baseline data covering stock volume and condition of mangrove distribution, existing government policies, environmental, social economy and institution responsible for mangrove forest management

2. To develop a full project proposal for model of rehabilitation and sustainable utilization of mangrove forest in the province of North Sumatra.

The Outputs of the pre-project are :

1. Technical Reports which consisted of

1.1. Database of potency, condition and all aspects related to mangrove management in that area, including biophysical, socio-economic and institutional aspects.

Technical Report No. 1: Review of data and information of mangrove forest ecosystem at North Sumatra province.

1.2. The existing government policies (central/provincial and districts) including the role analysis of the responsible institutions


1.3. Thematic maps of mangrove forest in North Sumatra. This map contains at least the existing landuse system, topography and land suitability. The maps will be useful for planning, implementing and monitoring activities.

Technical Report No. 3: Mapping of Mangrove Distribution at North Sumatra Province
2. A Full Project Proposal

Technical Report No. 4: “Implementation of a Model of Local Community stewardship for Restoration and Sustainable use of mangrove in North Sumatra Province (Indonesia)” (A full project proposal).

3. Other Reports

Technical Report No. 5: Model of Rehabilitation and Sustainable Utilization of Mangrove Forests at Langkat, North Sumatra, Indonesia

Completion Report No. 6: Completion Report ITTO PPD95/04 (F): Model of Rehabilitation and Sustainable Utilization of Mangrove Forest at Langkat, North Sumatra-Indonesia

4. A Guideline for Project Managements, Expert, Consultant and equipment procurement and project proposed procedure.

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 and discussion with key stakeholders and relevant government official in North Sumatra province by both National and International Experts. These survey and discussion are primarily to collect biophysical information in the districts of Langkat, Deli Serdang and Tapanuli and then to verify existing data and information collected earlier to relevant stakeholders. Interpretation of satellite images was also carried to verify the total area and recent condition of the mangrove ecosystems.

2. Data and information regarding the policy analyses of mangrove forest management in the North Sumatra Province are obtained mostly from desk study, search through printed documents, websites and consultation with Bureau of Law and Regulation within the MoF, Ministry of Agriculture, Ministry of Marine and Fisheries, Ministry of Environment, Ministry of Domestic Affair and National Board of Land use (Badan Pertanahan National).

3. Internal, consultative meetings within the Ministry of Forestry, especially with the DG Land Rehabilitation and Social Forestry and regional and National Workshops that had been carried out in Medan and Jakarta, respectively.

1.1.4. Project Duration and Costs

The execution of the pre-project was planned for 6 (six) months starting from April through September 2005. Some technical barriers have resulted in slight delay in project
implementation after signing the Project Document in January 2005.

The Overall cost of the Project was US$ 57,656, consisted of US$ 50,166 from ITTO and US$ 7,490 from the Government of Indonesia (GOI) through the Executing Agency Directorate General of Land Rehabilitation and Social Forestry. The budget was allocated for Project management, National Expert and International Expert, 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 1).

Project has invited the involvement of many stakeholders at the provincial and district level of government during the implementation of the Project, Directorate General of Land Rehabilitation and Social Forestry (MoF), Bogor Agricultural University and other relevant institutions.

The project has also invited and hired one National Expert from Faculty of Forestry, Bogor Agricultural University, Dr. Nyoto Santoso and an International Expert (consultant) from Switzerland, Dr. Jame Gazana. The NE is assigned to carry out several activities with the monthly salary of US$ 1,200 (Twelve hundreds US dollars) and the International Expert is assigne to formulate a full project proposal with the salary of US$ 10,000 for the period of one month.

Table 2. Project Budget and Contribution from the Government of Indonesia

<table>
<thead>
<tr>
<th>Budget Component</th>
<th>ITTO Contribution</th>
<th>GOI Contribution</th>
<th>Total</th>
<th>Exist but not counted</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Project Personnel</td>
<td>14,800</td>
<td>12,000</td>
<td>26,800</td>
<td>Salaries for project personnel</td>
</tr>
<tr>
<td>30. Duty Travel</td>
<td>18,075</td>
<td>0</td>
<td>18,075</td>
<td></td>
</tr>
<tr>
<td>40. Capital Items</td>
<td>1,500</td>
<td>1,500</td>
<td>3,000</td>
<td>Computers, LCD ect</td>
</tr>
<tr>
<td>50. Consumable items</td>
<td>1,400</td>
<td>3,500</td>
<td>4,900</td>
<td></td>
</tr>
<tr>
<td>60. Miscellaneous</td>
<td>7,675</td>
<td>0</td>
<td>7,716</td>
<td>Office space, meeting rooms, vehicle</td>
</tr>
<tr>
<td>70. ITTO Mon, Eva, and Adm Cost</td>
<td>6,716</td>
<td>0</td>
<td>6,716</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>50,166</td>
<td>7,490</td>
<td>57,656</td>
<td></td>
</tr>
</tbody>
</table>

1.2. Project Achievement

1.2.1. Outputs Achieved

Database of potency, condition and all aspects related to mangrove management in the province of North Sumatra, including biophysical, socio-economic and institutional aspects have been collected. These cover not only Mangrove forest in Langkat, as originally planned, but also mangrove forests in whole North Sumatra province, which consists of 3 major districts at which large mangrove forest area are located: Deli Serdang, Asahan and Langkat
and Tapanuli with small portion of mangrove forest.

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:

Preliminary Report: Data collection, verification and analyses

Technical Report No. 1: Review of data and information of mangrove forest ecosystem at north Sumatra province.

Preliminary Report “Data collection, verification and analyses” contains data and information on the mangrove in six districts of North Sumatra: Tapanuli Tengah, Tapanuli Selatan, Asahan, Labuhan Batu, Deli Serdang and Langkat. The data and information were collected from field survey and discussion with local stakeholders including district governments. The data and information presented in the technical reports consisted of biophysical condition, social economic, existing policies on Mangrove forest management, stakeholders perception including local NGOs operating in the mangrove forests as well as the existing problems in mangrove forest management in each district.

Technical Report No. 1. Review of data and information of mangrove forest ecosystem at north Sumatra province contains more complete data and information on mangrove forests condition in North Sumatra provinces. The data and information have also been broken down into its districts of Tapanuli Tengah, Tapanuli Selatan, Asahan, Labuhan Batu, Deli Serdang and Langkat. In addition to those districts, district of Nias which is located in a separate island from Sumatra was also covered. In this technical reports, data and information on mangrove forest managements, local community, the utilization and existing problems in North Sumatra province and its districts were presented in more detail.

Output 1.2. The existing government policies (central/provincial and districts) including the role analysis of the responsible institutions has been achieved and could be verified using the document of technical report No 2. Policy analyses of mangrove forest management in North Sumatra province. The technical report described International level policy on the mangrove ecosystem management, national policy and sectoral policy on mangrove forest management. Institutions and other stakeholders involved in the mangrove management were also described in the technical report. Analyses of activities carried out by each stakeholders are also described in the reports. A number of existing policies on the mangrove managements have been sufficient to draw a feasible mangrove management plan and to be used and implemented in the field. However, community awareness and capacity, and law enforcement are still a major factor inhibiting field implementation.

Output 1.3. The production of thematic map of mangrove forest area (Mapping of Mangrove Distribution at North Sumatra Province) has been achieved and could be verified in the presented map. This map contains the existing land use systems, topography and land suitability of each mangrove forests in each district of North Sumatra province.

Output 2.1. A Full Project Proposal titled “Implementation of a Model of Local Community stewardship for Restoration and Sustainable use of mangrove in North Sumatra Province (Indonesia)” has also been achieved during the project duration. Dr. James Gazana, an International consultant hired by the Pre-Project, and his team has visited field
sites of some mangrove forest in Sumatra and identified specific problems faced in the management of mangrove forests in North Sumatra. The key problems, causes and effect to the whole management system have driven to the formulation of the project proposal. The proposal focuses on the implementation of model toward the restoration and sustainable utilization of mangrove forests, with specific to North Sumatra mangrove forests.

A wide range of issues and recommendation raised during the workshop held in Jakarta, 15 September 2005 has also been accommodated in the draft proposal. Some of the issues raised during the workshop are:

1. A great different phenomenon on the mangrove ecosystem condition between those located in east coastal zone and in west coastal zones. Mangrove ecosystem in east coastal zone has been severely degraded compared to those located in west coastal zone. This phenomenon indicates the different intensity of the mangrove utilization.

2. The degradation of ecosystem is primarily due over exploitation for wood charcoal, conversion to brackish and other types of fishpond and exploitation for wood construction.

3. Inactive operational management of the existing mangrove forest institutions in North Sumatra province. This is primarily due to the lack of local stakeholders involvement in formulating and constructing the whole management of the forest and conflict resolution.

4. The weakness or lack of law enforcement as identified earlier, even though the issue is not just for North Sumatra.

5. Lack of feasible long term plan for sustainable mangrove forest management in North Sumatra. It was recommended that the future project focus on the development of feasible long term plan for sustainable forest management in North Sumatra. The specific objectives of proposed project will be (1). To develop a process of stakeholder involvement along the coast line in the management of mangrove, (2). To implement a strategy for sustainable mangrove forest management in North Sumatra.

**1.2.2. Specific Objective Achieved**

Specific objectives (1) to obtain baseline data, especially stock volume, condition and distribution of mangrove in the project area, existing government policies, environment, social economic and institution responsible for the mangrove forest managements have been achieved and indicated by several documents described earlier. The achievement could be verified through the examination of several technical reports and thematic map. The specific objective (2) to develop a full project proposal for model of rehabilitation and sustainable utilization of mangrove forest at Langkat, North Sumatra has also been achieved. A full project proposal has been up scaled to wider region, not only mangrove forest in Langkat district but also mangrove forest a whole province of North Sumatra. The title is "Implementation of a Model of Local Community stewardship for Restoration and Sustainable use of mangrove in North Sumatra Province (Indonesia)".
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. The two specific objectives are: (1) to obtain baseline data, especially stock volume, condition and distribution of mangrove in the project area, existing government policies, environment, social economic and institution responsible for the mangrove forest managements (2) to develop a full project proposal for model of rehabilitation and sustainable utilization of mangrove forest at Langkat, North Sumatra.

The outputs of the pre-project that contain, among others, the baseline data and information on mangrove conditions, current situation and key problems identified including the existing policies will provide valuable contributions, not only to local government and stakeholders in the management of mangrove ecosystem in North Sumatra, but also for other mangrove forests in Indonesia. The baseline data and information and the key problems could be utilized to formulate and design a short, medium and long term plan for sustainable management of mangrove forest. Moreover, the identified key problems could also be used to set out a priority program in the short term action plan. The whole management of the mangrove forest in 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 could also be positive for future project.

1.3. Target Beneficiaries Involvements

Some of the target beneficiaries that involved in the pre-project include:

1. Directorate General of Land Rehabilitation and Social Forestry, Ministry of Forestry as central government representative has played an important role in the operational activities of the pre-project. The role ranges from facilitating various preparatory meeting, stakeholders meetings, workshop and maintaining communication between relevant institutions both in Jakarta and North Sumatra.

2. Provincial and District Government in North Sumatra, such as BAPEDA (Regional Planning and Development Agency), BAPEDALDA (Agency for Environmental Impact Assessment and Monitoring), Regional Office of Ministry of Environment, House of Representative of North Sumatra Province. These institutions have provided and shared valuable information on the existing policy and long term development plan for the district and provincial level of North Sumatra. These Agencies were invited and attended the workshops carried out in Medan, North Sumatra, 22 Agustus 2005.

3. Provincial Forest Services and local NGO (WALHI- Indonesian Environment Awareness Institute) have also shared data and information during the workshop.

4. District Governments, including District Forest Service and Regional Office for the Ministry of Marine and Fisheries of Deli Serdang, Asahan, Labuhan Batu, Tapanuli Tengah, Mandailing Natal, Nias and Langkat. These institutions have contributed valuable data and
information on biophysical, socio-economic and other relevant information on the mangrove forests in each respective district.

5. Regional Forestry Research and Developments of North Sumatra (Pematang Siantar). This institution has provided relevant data and information on the mangrove forests in North Sumatra, especially research results on mangrove.

6. Other institutions, but not listed, have also contributed to the operational activities of the pre-project and formulation of the full project proposal.

The collected data and information will be useful for stakeholders in the formulation of short, medium and long term plan for mangrove management in each district. Those data include a dept look of existing policies an regulation on the mangrove, social and economic conditions, conflicts raised among communities, exploitation and implementation of existing law. Common understanding on the mangrove ecosystem by stakeholders obtained from the workshops will be useful and will contribute to the sustainable management of mangrove forests in this area.

According to the law No. 41/1999 Management of mangrove forest in Indonesia is under Ministry of Forestry. The management include the management of mangrove forest both in non-state forests and state forest. However, in the era of decentralization, regional government (such as district government), the role of local government at district level become dominant to almost all aspects including state forests of all types. The existence of district forests, which was originally as representative of the central government will no longer functions as central government. Misinterpretation of decentralization law frequently occurs. In the management of mangrove forests of North Sumatra, this situation was neglected. Instead, the involvement of those stakeholders during the project periods received enthusiasm.

In the non-forest area of mangrove, the regional office of the Marine and Fisheries plays an important role, especially those related in the establishment of brackish ponds which accounted to have larger proportion of mangrove forest conversion other than for agricultural activities. The awareness and knowledge on the problems faced by mangrove ecosystem management increases through various meetings, workshops during the project period. This also include district forest services which also important to improve community awareness on the mangrove ecosystem and sustainable harvest of mangrove products such as nipah, wood for charcoal, poles and other stems for simple constructions.

1.4. Lessons Learned

1.4.1. Development Lessons

-The aspect of project design that highly contribute to the success in achieving the development objectives is the involvement of stakeholders and other target beneficiaries. The strong support from local government in data collection not only printed but also non-printed documents. The printed documents which were mostly collected directly through the collection of the materials from the relevant institutions, such as BAPPEDA, Bapedalda,
Regional office of Marine and Fisheries ministry, Provincial and district forest service are very valuable and made possible to obtain the data. The non-printed, which were collected through field survey have also been possible by the support from those stakeholders as also as target beneficiaries of this pre-project.

-The link between relevant sector have been strengthened through the pre-projects activities and communication, exchange of information have also become more intense. These conditions is achieved through regional meeting and workshop both in Medan and Jakarta. During the two workshop, relevant sectora have gathered and received a common understanding on the issues and problems faced in the management of mangrove forest, not only in forest area but also in non-forest area.

- The factors which mostly likely to contribute to the sustainability of the project after the project completion is a common understanding on the problems faced by the local community in relation to mangrove ecosystem functions and their responsibility to solve the problems in order to prevent further loss or further degradation of the mangrove. Other factors that mostly likely to contribute to the sustainability of the project after the project completion is the establishment of Mangrove Management Institution which function to provide recent data and information on mangrove conditions, and other services for mangrove ecosystem management. Mangrove Management Institution is not a government body, but act as a forum.

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 organization and Management consisted of Technical Advisory Committee, Project management Unit and National and International consultants (experts). The project implementation has also been improved through the establishment of regional contact point in North Sumatra, Provincial and district Forest Services. Even though this assignment is informal, this assignment is useful since the assigned representative was able to play its role satisfactorily and at the same time will improve skill, knowledge and awareness through the involvement during the project period. This involvement will also contribute to the capacity building for local government and community.

- Project Documentation

In the operational activities of this pre-project, all activities are well documented, either during the field activities, desk study, meeting and workshops both in Jakarta and Medan. Those documents were also disseminated to provincial and district government, provincial and district forest services and other 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 current field activities.
- **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. During the workshop and meeting all relevant stakeholders were invited to comment on the project activities, output and other achievement. 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 and these have been incorporated in the project document and could be treated lessons learned during the project implementation. This is also possible since the relevant sectors and stakeholders are invited to comments.

- **Definition of roles and responsibilities of the involve institution**

The institutions involved in the project implementation are Ministry of Forestry (Directorate General of Land Rehabilitation and Social Forestry, Division of Mangrove Management, Ministry of Marine and Fisheries and Local Government (provincial and districts):

DG of Land Rehabilitation and Social Forestry, Ministry of Forestry (especially Division of Mangrove Management) is responsible for the management of mangrove forest in state forest area under the Law No. 41/1999 and No. 5/1990. The management includes mangrove forest for reserve, for production of wood and non-wood and for conservation.

Regional Office of the Ministry of Marine and Fisheries is also having responsible for management of mangrove forest in non-forest area, with close coordination and collaboration with the Ministry of Forestry, Ministry of Environment, Ministry of Trade and Industry and local community. These offices responsibility is primarily on the conservation, rehabilitation of fish culture area and agricultural land, market of fish and agricultural products with close coordination with other offices. Ministry of Home Affair is responsible for the enforcement of law and regulation and empowering local community.

Regional Governments (Provincial and Districts) are responsible for formulating and designing Regional Land Use Plan at regional and district level that cover a whole areas including coastal and mangrove forests.

- **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 slight delay due to some bureaucratic process.
- External factors that influenced the project implementation and that could have been foreseen and could not have been foreseen

Factors that may influence project implementation are the emergence of landuse conflict between land owners and the conflict in the harvesting area in the mangrove forest not only in state forest area but also in non-forest area. This is especially true when the mangrove ecosystem functions failed to provide sources of income to local community or the harvestable products reduced due to the degradation of the mangrove forest. If excessive exploitation and illegal exploitation persist, the mangrove ecosystem in the area will also severely degrade. Severely degraded ecosystem will cause a failure to provide direct and indirect benefits to the local communities, which in turn will ignite various social conflict. At this point, the role of Regional Land Use Planning at district and provincial level become a crucial one. The products harvested from the mangrove in this area are woods for charcoal, firewood and simple construction, poles for building stagers and roof component, Nipah for certain kind of smoking materials, various kinds of fish and other products.

Lesson learned: Desa Jaring Halus would be a model of mangrove sustainable utilization by local people in the east coastal mangrove forest of Langkat.

1.5. Recommendations

It is recommended that Desa Jaring Halus, located in Langkat mangrove forest, be model for mangrove utilization and conservation, for which the awareness of the community in the village on the importance of mangrove forest for daily life is already existence.
2.1. Project Results

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

Mangrove forests of North Sumatra is among the most valuable resources in Indonesian mangrove. Local government, stakeholders and community have received direct and indirect benefits from the mangrove since long time. Recently, since no feasible long term plan and lack of coordination among stakeholders the potential resources of the mangrove forests have been exploited excessively and out of control. This has caused severely degradation of the ecosystem. Approximately 42% of mangrove forest in this area have been severely degraded and converted to other uses, especially brackish fishponds and agricultural lands. As also recorded that nearly 60% of the community in this area are fishermen.

The pre-project has provided valuable contribution to the mangrove ecosystem management of North Sumatra. Some of the contributions are disseminated to the following conditions:

1. Common understanding on the importance of mangrove forest and the problems in the mangrove ecosystem management in this area between stakeholders.

2. The awareness on the importance of data and information sharing between district government, central government and other stakeholders.

3. The importance of up-to-date data and information on the conditions of mangrove forest in each district.

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

5. The establishment of Mangrove Management Institution, as a forum for stakeholders to improve coordination and to promote a better condition of the mangrove forests.

6. 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 the mangrove forest management.

7. The map (thematic map) that produced an output of the pre-project could be important sources of information and guidelines to carry out field activities, especially for zoning of each land use, the establishment of physical boundaries, legal action etc.
8. To provide more complete and clear picture of the recent mangrove forest condition.

9. To provide more secure on the land status, land tenure and the future plan of each mangrove forest land in both non-forest area and forest area.

10. To provide existing law and regulation to stakeholders which will be used to improve ecosystem management.

The above situations has clearly contributed to the specific objectives of this pre-projects: (1) to obtain baseline data, especially condition and distribution of mangrove in the project area, existing government policies, environment, social economic and institution responsible of the mangrove forest managements (2) to develop a full project proposal for model of rehabilitation and sustainable utilization of mangrove forest at Langkat, North Sumatra has also been achieved.

### 2.1.3. 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 local government and stakeholders on the current situation of the mangrove ecosystem in each district. The change of perception and priority options on the mangrove ecosystem functions could be evaluated at least to the following aspects:

1. The economic importance of mangrove ecosystem.

2. Potential contribution to and risk or potential lost as sources of income for local community from mangrove ecosystem.

3. Potential social conflict on the land use planning and allocation

4. The importance of law enforcement on the mangrove ecosystem management

5. The specific requirement of mangrove forest composition to mitigate the potential disaster, such as tsunami in west costal zone.

**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 on the mangrove condition and thematic map produced during the pre-project. The change, however, may be ignited if social conflicts intensified.

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

The change of social environment may occur instantly after stakeholders meeting attended by the representative of the community. The awareness among community on the existing problems may increase. This may contribute to the better condition of mangrove ecosystem. The involvement of stakeholder and target beneficiaries in the meeting, workshops and other project activities may also improve community awareness, skill, knowledge and perception. This could be expected to contribute to better management of the mangrove ecosystem. Disseminated information to stakeholders and local community will also contribute to the change of social and the target beneficiaries awareness.

Regional Office of the Ministry of Marine and Fisheries will obtain the benefits of the project results, especially on the up to date data and information, which would be utilized to put in action program, such as in the management of brackish ponds that occupy larger proportion of mangrove in non-forest area.

2.1.4. 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 and district government will continue and conduct follow up action by utilizing the pre-project results, especially the following:

1. The complete data and information of mangrove forests in each district.

2. The thematic map to be used as field guide.

3. Identified key problems, cause and effect to the sustainability of the ecosystem

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

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 conflict resolution, excessive exploitation and or illegal harvesting of mangrove resources and alternative sources of
income necessary to minimize the rate of degradation.

2.2. Synthesis of the Analysis

(a). Specific Objective

(b). Outputs

Output 1.1. Database on potency, conditions, and all aspect related to mangrove management in the project area, including biophysical, socioeconomic and institutional aspects.

Realised

Output 1.2. Existing Government policies on mangrove forest management

Realised

Output 1.3. Thematic maps of the mangrove in the project area

Realised

Output 2.1. A full project proposal to ITTO

Realised

Output 2.2. Guidelines for Project Managements, Expert, Consultant and equipment procurement and project proposed procedure.

Realised

(c). Schedule slightly delayed from the planned starting date

(d). Actual Expenditure >10% above planned

(e). Potential for replication Modest potential

(f). Potential for scaling up Significant Potential
PART III. CONCLUSION AND RECOMMENDATION

3.1. Development Lessons

Based on the results of this pre-project, there are some points could be highlighted as follows:

1. Mangrove forest in North Sumatra, especially in Langkat District, is one of the most valuable mangrove forests in Indonesia.

2. This forest has contributed to community prosperity through the production of various direct and indirect products. The direct products are nipah leave for certain kind of smoking materials, woods of various size for charcoal, firewood and building construction, various types of fisheries products, agricultural products and other services.

3. There are a great number of opportunities for mangrove forest in North Sumatra to be further developed and sustainably utilized for community, since the high potential value of the ecosystem in term of the biophysical - and socio-economic condition.

4. There are a great number of existing policies and regulation on the mangrove forests, central, regional and local level issued by several institutions.

5. The meeting and workshops organized during the pre-project has contributed to (1) the improvement of coordination between stakeholders, communication from and to central and local governments and (2) increase of stakeholders awareness on the importance of ecosystem functions.

6. Several management authority deal with the mangrove management has been established earlier, but not fully function due to some limitation.

7. Excessive exploitation and conversion of mangroves forests to other uses are important issues and need to be put as priority action to be carried out.

8. Mangrove forest land conversion to other uses is high in North Sumatra. This has become a serious threat to the sustainability of the ecosystems.

9. Conflict of interest between stakeholders, such as Office for the Ministry of Marine and Fisheries, Ministry of Forestry and provincial and district government may exist. Therefore communication, coordination, Land Use planning are essential parts to be incorporated in the future Project.
3.2. Operational Lessons

1. The change of project coverage from Langkat district to whole North Sumatra province provide valuable advantages to establish management plan for whole districts.

2. Baseline data have been completely collected not only for Langkat as originally planned but for the whole North Sumatra province. Even though the collected data need to be further verified before utilizing the data to formulate a strategic and detailed plan.

3. The involvement of local stakeholders and district government on 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. Therefore this types of involvement is important for future project.

4. Community participation in the data collection are essential to obtain complete and reasonable data with certain degree of accuracy. This participation will also improve sense of belonging to the mangrove forests and increase awareness.

5. The community dependent on the mangrove ecosystem is high and this could be used as positive condition toward the sustainable management of mangrove.

6. The degree and form of mangrove degradation between mangrove forest located in west coastal zone and east coastal zone is different. This finding will be useful to examine further causes and effects on the mangrove forest degradation.
3.3. Recommendation for Future Projects

1. Identification:

Several key problems in North Sumatra mangrove forests have been identified. Those are (1) conversion to other uses (legal or illegal), (2) excessive or over exploitation of mangrove products, (3) illegal cutting, (4) Land uses conflict between institutions, community, (5) weak institution capacity to manage the mangrove forest. Several approaches need to be taken to improve the management. One of the approaches is Sound development and management approach that consist of process-oriented implementation, stakeholders participation and science-based development. This approach will be utilized in the future plan.

2. Design:

The project design should cover a whole mangrove forests in the province of North Sumatra, which consisted at least four major districts Deli Serdang, Asahan, Tapanuli and Langkat. This is because the large proportions of the mangrove forest are located in these four districts.

The outputs of the projects should be directed (1) to obtain more detail on baseline data to be used for planning formulation, (2) to establish Mangrove Information Center as a communication forum for mangrove management, (3) to improve local community capacity in mangrove forest management, (4) to promote the recovery of mangrove ecosystem, (5) to promote the formulation of long term planning for mangrove management, (6) to develop model for mangrove sustainable management and utilization.

3. Implementation:

For the implementation of the Project, several institutions other than Ministry of Forestry should involve, such us Regional office of the Ministry of Marine and Fisheries, Ministry of Home Affairs, provincial and district governments, Bapedalda and Bapeda.

4. Organization:

Both Executing and Implementing Agency should be under the Ministry of Forestry in collaboration with local stakeholders. Provincial and district Forest Services, Bappeda and NGO. 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 described as clear as possible. Project Manager plays very importance role in the success and in the achievement of the project outputs, therefore he or she should have sufficient time allocated to 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 site.

Responsible for the Report

Name: Ir. Adi Triswanto, MSi. Position: Project Manager

Date: