No. 5

TECHNICAL REPORT

ITTO PPD 95/04 [F]:
MODEL OF REHABILITATION AND SUSTAINABLE UTILIZATION OF MANGROVE FOREST AT LANGKAT, NORTH SUMATERA - INDONESIA

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
ABSTRACT

Model of Rehabilitation and Sustainable Utilization of Mangrove Forest at Langkat, North Sumatera – PPD 95/04 [F]. Mangrove forest is recognized having economics and ecological values and it has important roles for local, national and global development. North Sumatera mangrove forest especially Langkat District was one of the largest area of mangrove forest in Indonesia. Unfortunately the forest are degraded now. This pre-project attempt to find model of rehabilitation and sustainable utilization of mangrove forest in Langkat District and its adjacent and emphasizing in its management an conservation practices.

Development objectives of this pre-project is to assess and develop baseline data, responsible of each stakeholder involved in mangrove management and utilization policy, social and economics aspect of mangrove. The pre-project have the following two specific objective namely: [1] establish baseline data and [2] to develop a full project proposal.
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I. INTRODUCTION

Mangrove forest in North Sumatera province is about 85,393 hectares. Most of the forest (42.05% ≈ about 35,908 hectares) is located in Langkat district, and the others are diversified in 6 (six) districts: Deli Serdang, Asahan, Labuhan Batu, Tapanuli Tengah, Tapanuli Selatan, and Nias. Among the mangrove forest in Indonesia the North Sumatera has the highest quality in ecological, economical and social functions.

Recently, the largest part of the mangrove in the province is classified as degraded mangrove. This condition is caused by some factors such as: illegal logging, overlapping of space arrangement and conflict of utilization, and the weakness of capacity building (institution, policy and human resources and also the infrastructures). The Tsunami in the late of 2004 for example, is the very recent evident of the mangrove degradation impacts, where the whole coastal ecosystem is swept by the sea water flood in minutes, about 200,000 people were dead and thousands were disappeared, and million dollars sunk into the sea. Moreover, the environmental condition of coastal zone after the tsunami, is drastically drove in to the lowest point.

This proposal provided to meet the better condition of coastal environment and its function and benefit for surrounding communities in North Sumatera province. In general, program proposed is consist of some activities: data and information collection that will be used to perform database, problem identification, existing and potential benefits which gained and developed from mangroves resources, conflicts in mangroves management and utilization, institution capacity building, stakeholders involved in mangroves resources utilization and management, and the policies of local government about mangroves resources. The set of data will collected from printed mangroves data and publication for secondary data, and discussions and survey for primary data. All of data sets and information will be studied thoroughly using maps and satellite imagery to identify the main problems, and to define the best strategy for mangroves management and sustainable utilization in the area. The description of data collecting activities and its methods are detailed in this technical proposal.
II. DATA COLLECTION

2.1. Review Data of Mangrove Forest Condition

2.1.1. Review The Relevant Data

Type of data source:

- Local government reports: *Propinsi Sumatera Utara Dalam Angka* (North Sumatera in Figures); The monography of districts (Langkat, Deli Serdang, Asahan, Labuhan Batu, South Tapanuli, and Nias)
- Program Reports from *Balai Pengelolaan Daerah Aliran Sungai* (BP.DAS) Asahan-Barumun and BP.DAS Wampu Sei Ular
- Study/Survey Reports from LPP Mangrove (Magrove Foundation), Yasika Foundation, and JICA
- Report of Mangroves Management Evaluation at Karang Gading Reserve and East Langkat from Ministry of Forestry

Some documents which will be used for data source are mentioned below.

3. ODA and Directorate General of Fisheries Indonesia. 1993. Comparative Economics of Land Use Options in Mangrove Forest Areas on The Malacca Straits Coast of North Sumatra Province.


2.1.2. Data Collection, Verification and Analysis

The area of mangroves in North Sumatera is various, as mentioned below:
- Ditjen RLPS in cooperation with Faculty of Forestry-IPB (1999): total mangrove area is around 80,943.24 hectares (71,674 hectares are in forest area and 9,268 hectares in non-forest area), situated in 4 districts: Labuhan Batu, Asahan, Deli Serdang and Langkat. The condition of mangrove in those areas is classified as un-disturbanced to high disturbanced categories. In this report, total mangroves data in South Tapanuli, Nias and Mandailing Natal districts is excluded.

Conclusion about total of mangroves area in North Sumatera, based on the reports is approximated 85.303 hectares. But the forest status in 7 districts (Langkat, Deli Serdang, Asahan, Labuhan Batu, South Tapanuli, Mandailing Natal and Nias) are still need verification thoroughly.

Exploitation of mangroves in this area is also various both legally and illegally. Those are as material for charcoal production, daily using firewood, material for traditional cigarette production, poles for constructions, and land conversion for other uses, for example for mariculture, agriculture and housing.

2.1.3. Field Cheking Data

From field investigations, mangrove condition is strongly damage. This is because of over cutting activities especially for economic purposes. For charcoal production, is from Rhizophora and Brugiera woods are the best material. Their potency in the area is not more than 12 m3/hectare (diameter >10 cm). It has high negative impact for its sustainable benefit and species regeneration. Difficulties in supplying material source for charcoal production is one factor besides others. Local community have also cut the root of mangrove especially from Rhizophora and Bruguiera for such purposes, meanwhile, for firewood, they get the source from Avicennia and Xylocarpus granatum wood (see fig.1, 2, and 3).

Many kilns are found in several locations in Langkat district (see fig. 4, 5 and 6). Since 1996, the activities have already banned by the local government. But, because of the lack of job opportunities and the economy pressures, local
communities still run in this condition. Many ‘taukees’ (investors) from Medan and Langkat financed them for such operation. Then, woods sold and stored for taukee’s charcoal factory, and the products exported to Singapore and local markets in Medan with good price.

The leaves of *Nypa fruticans* is mainly use for leaves cigarettes (*rokok daun*) and thatched roof. Majority of ‘poor people’ in the coastal area use Nypa for their house constructing, especially for roofs and room walls materials. For leaves cigarettes (*rokok daun*), they used unripe leaves, and sold them to the factory in Tanjung Pura sub-districts. Factory owner stated that they mainly got the Nypa from their own plantation, and little part from local people’s production. The products is mainly exported to Penang (Malaysia) and Singapore, especially for chines ethnics. But more recently, the market of leaves cigarettes is significantly decrease because of its weaknes in competition with modern cigarette products. (Figures: 7, 8 and 9).

For fishery activities, many coastal mangroves areas are converted to mariculture (shrimp pond) locations. Most of them found in Langkat, Deli Serdang, Asahan and Labuhan Batu districts. In general, the intensive shrimp pond is operated and financed by private company or the personal, while semi-intensive and tradisional are by local people or middle finance owner. The condition of shrimp ponds are depicted in figure 10, and 11.

In Deli Serdang district, the mangrove conversion to agriculture and fishery is already extended dramatically into the Karang Gading reserve area using heavy machines, for example the excavatore for land clearing (see Fig. 12). In 1990s, total area of shrimp ponds reached up to 1826 hectares, and this sharply increasing was because of good price condition for shrimp at that time.

In general, based on development progress in North Sumatera in 1993, total mangrove conversion was around 11.233 hectares. And based on the Yayasan Pekat investigation (2000), about 3.932 of Langkat Timur/Karang gading reserve converted into several purpuses, such as: housing, palm oil plantation, shrimp ponds and paddy field.
Fig. 1. Damaged Mangroves forest mangrove yang rusak

Fig. 2. Degradation of wood capacity for charcoal industry

Fig. 3. Condition of public forest at Jaring Halus Village

Fig. 4. Kiln for charcoal production

Fig. 5. Kiln pattern near the villager houses

Fig. 6. Charcoal packing

Fig. 7. The condition of Nypa community

Fig. 8. “Cigarette paper” from Nypa leaves

Fig. 9. Nypa leaves for thatched roof

Fig. 10. Shrimp pond development

Fig. 11. Traditional shrimp pond

Fig. 12. Well arrangement of Traditional Shrimp Pond
Fig. 13. Public activity (graving the forest resources)

Fig. 14. Mangrove conversion into paddi fields (agriculture)

Fig. 15. ‘tanah timbul’ at Tapak Kuda beach situated in Langkat district

Fig. 16. Long-boat for public transportation rivers along mangrove forest area

Fig. 17. Birds which are caught by locals from mangroves area

Fig. 18. People grabs marine biotes at Koala Besar (Langkat district)
In 1994/1995 the government has the HPH licence to PT. INHUTANI IV with total mangrove area 25.480 hectares. Later, the licence was being ceased by the government through the Ministry decree No.11115/Menhut-IV/97, and its continuation has been given to PT Sari Bumi.

2.2. Data Information of Mangrove Management (Institution, Policies, Coordination Mechanism among Stakeholders)

2.2.1. Collect The Document of Mangrove Management Policies and Responsible Institution

Some policies connected with mangroves management in Indonesia are mentioned in several laws and or regulation, as follows:

- National constitution 1945 chapter 33 verse 3
- Law No. 5 year 1960 about Main Agrarian Affairs
- Law No. 9 year 1985 about Fishery
- Law No. 9 year 1990 about Natural Resources and Ecosystem Conservation
- Law No. 9 year 1990 about Tourism
- Law No. 24 year 1992 about Space Arrangement
- Law No. 5 year 1994 about Biodiversity Convention
- Law No. 6 year 1994 about Climate Changing Convention
- Law No. 23 year 1997 about Environment Management
- Law No. 22 year 1999 about District Government
- Law No. 41 year 1999 about Forestry
- Law No. 25 year 2000 about Propenas [National Development Planning]
- Law No. 7 year 2004 about Water Resources Management
- Government act No. 28 year 1985 about Forest Protection
- Government act No. 15 year 1990 about Fishery
- Government act No. 20 year 1990 about Water Pollution Monitoring
- Government act No. 27 year 1991 about Swamps
- Government act No. 35 year 1991 about Rivers
- Government act No. 18 year 1994 about Ecotourism Effort
- Government act No. 47 year 1997 about National Space Arrangement Plan
- Government act No. 68 year 1998 about Natural Conservation and Preservation Area
- Government act No. 27 year 1999 about Environment Impact Analysis
- Government act No. 25 year 2000 about Government and Province Authority as Autonomy Region
- Government act No. 34 year 2002 about Forest Arrangement and Forest Management Plan Arrangement, Forest Usage and Use of Forest Area

As a country with rich biodiversity, and to build the perception as independent nation, Indonesia Indonesian Government has ratified some result of International convention, such as:
- CITES Ratification through President Decree No. 43 year 1978
- Ramsar convention ratification through President Decree No. 48 year 1991
- Biodiversity convention ratification through Law No. 5 year 1994
- Climate Changing convention ratification through Law No. 6 year 1994
- UNCCD ratification
- Cartagena protocol (Biodiversity safety from biodiversity convention) ratification
- Kyoto protocol ratification

Nationally, institutions that responsible for mangrove forest management in Indonesia are:
1. Department of Forestry: responsible for technical procedures in managing mangrove forest, which include protection, conservation and preservation, rehabilitation, reforestation and usage.
2. Department of Marine and Fisheries: responsible in facilitating, establishment, and coordination of mangrove forest management as follow
up from fisheries activities, shore protection from erosion and natural
disaster, coastal region mitigation and coastal environment preservation.

3. Ministry of Environment: responsible in coordinating rules, guidance,
monitoring and implementation policies report evaluation and mangrove
forest ecosystem management.

4. Internal Affair Minister: has the authority in coordinating and guiding the
activities that linked with planning, implementation and controlling
mangrove forest ecosystem management in his area.

5. Department of Agriculture: responsible for technical guidance in
agriculture commodities management that associated with mangrove forest
ecosystem.

6. Department of Industry and Trade: responsible in providing information of
standard quality for raw materials, efficiency in usage of recycles products
from mangrove ecosystem production system.

7. Department of National Education: responsible for supporting education
programs based on knowledge of mangrove ecosystem.

8. Indonesia Science Institution: responsible in coordinating information for
development of technology knowledge that associated with mangrove
forest management.

9. National Development Planning Board (BAPPENAS): responsible in
coordinating monetary planning program that associated with mangrove
ecosystem management.

10. Ministry of Research and Technology: responsible for analyze and develop
research and technology for mangrove ecosystem management.

11. Department of Public Health: responsible in creating quality standard for
material processing, procedure for processing and quality supervision for
produce medicine with materials from mangrove.

12. Department of Public Work: responsible for developing facilitates in
mangrove forest.

13. Ministry of Culture and Tourism: responsible in developing tourism in
mangrove ecosystem.

14. Ministry of Information and Communication: has role in spreading
information about mangrove ecosystem.

15. National Land Institution: responsible in located and usage of area in order
to appropriate with on regional space arrangement planning (RTRW) and
regulations.
16. National Survey and Mapping Coordination Board (BAKOSURTANAL): responsible in coordinating mangrove forest inventories and collecting basic data that needed for Geographic Information System (GIS) development.

17. House of Representative (DPR): has an active role in implementation of mangrove ecosystem management trough policies and published law regulation.

18. Regional Parliament has an active role in implementation of mangrove ecosystem management trough policies and published regional law regulation.


From several departments that associated with mangrove ecosystem management, some departments are the main departments that have larger role and responsibilities in mangrove conservation and rehabilitation, which are: Forestry Department, Marine and Fisheries Affairs Department, Agriculture Department, Office of State Minister for Environment, and Department of Internal Affair.

(1) Department of Forestry
At national level Department of Forestry is the main department for mangrove forest conservation. Department of Forestry has large authority for forest areas include mangrove forest. This department consists of three directorate general:

- Directorate General of Land Rehabilitation and Social Forestry
  Directorate General of Land Rehabilitation and Social Forestry responsible for mangrove rehabilitation activities and public development program in order to gain participation support the mangrove management.

- Directorate General of Forestry Production
  Directorate General of Forestry Production responsible for preparing and managing mangrove forest product in production forest, and issue license for commercial gathering operation include mangrove exploitation for chips and other product.

- Directorate General of Forest Protection and Nature Conservation
  Directorate General of Forest Protection and Nature Conservation organize conservation forest and protection forest issues. This agency responsible in conservation of bio-diversity include mangrove.

- Forestry Planology Agency
  Responsible in planning the mangrove forest management in protection forest, production forest and conservation forest areas.
• Research and Forest Development and Nature Conservation Agency
  Responsible for supporting mangrove forest management through research and development of research result activities.

(2) Department of Marine and Fisheries Affairs

Department of Marine and Fisheries Affairs has high interest to mangrove ecosystem conservation in supporting fisheries activities and creation of clean and healthy shore area for public. In its operation the Department has echelon I units, which are:

• Directorate General of Fisheries Fishing
• Directorate General of Fisheries Farm
• Directorate General of Coastal and Small Islands
• Directorate General of Agency Capability Development and Marketing
• Agency of Marine and Fisheries Research

Directorate General of Coastal and Small Islands (P3K) is one of technical implementer unit in the Department that responsible for environment conservation and coastal resources. The Directorate generally has duties for establishment, management, waste control, rehabilitation, usage and mitigation of coastal area. Coastal ecosystem rehabilitation performs with approach for:

a. Support the fisheries farm and fishing.
   According to its function in supporting fertile water area, mangrove rehabilitation also performed in order to creating new habitat for replacing or as compensatory damage habitat. Rehabilitation in this category aimed to replace the coastal habitat that has damaged by conversion or other development activities.

b. Protect Coastal Areas that at risk for erosion and natural disaster.
   Many coastal areas in Indonesia are at risk for erosion because of continuous wave pressure and natural disaster that caused by tropical storm or tsunami. Erosion and this natural disaster can create losses socially such as damaged houses, school, village chief office and economically such as damaged road, fishpond and agriculture.

c. Coastal Area Mitigation Effort
   Rehabilitation of mangrove ecosystem performed at coastal areas that will suffer negative effect of development and natural processes. Rehabilitation to this area is purposed to avoid coastal area ecosystem damage because of
activities of physic development (jetty, breakwater, harbor, reclamation etc), waste or nature.

(3) Natural and Environment Ministry

Since 1992, Office of State Minister for Environment (now Ministry of Environment) encourages the effort of form a national strategy for mangrove conservation. State Minister Office for Environment also takes part in forming the national regulation for environment, biodiversity, and seasonal changes.

As the duty of Environment Ministry, Environmental Impact Assessment (AMDAL) launched with government regulation number 51, year 1993, as substitute for AMDAL regulation year 1987 and aimed for perform basic regulation of environmental which is law number 23 year 1997 about environmental management. Now government regulation number 51, year 1993 was perfected with government act number 27, year 1999.

Some opinions considerate that AMDAL process was not fully applied associated with forest management. So, the roles of Ministry of Environment in mangrove ecosystem management have not defined clearly. For example according to Report studies (19..) AMDAL processes have not performed before conversion of forest management especially for conversion forest.

BAPEDAL forming (since 2001 its function merged in State Minister Office of Environment) in 1990 made the Ministry of Environment has extra operational abilities especially with supervision of AMDAL process. But nowadays, AMDAL performed by each government institution that makes Ministry of Environment loose its authority and only role as coordinator.

(4) Internal Affair Ministry

In order to establish the mangrove ecosystem conservation Internal Affair Ministry also participated and issues Minister Instruction No. 26/1997 about protection of mangrove forest as green belt and forest corridor.

One of the programs of a new directorate general in Internal Affair Ministry (Directorate General of Region Development) is development of area capabilities according to its geographic position which include mangrove conservation.
(5) Agricultural Department

Agricultural Department has responsibilities for development of the agriculture production. This program will create problem in mangrove conservation that caused by land erosion, excessive use of pesticide and insecticide, and mangrove area conversion into rice field.

Agricultural Department has 6 directorate general which are:

- Directorate General of Agriculture Equipment
- Directorate General of Food Plant Production
- Directorate General of Horticulture Production
- Directorate General of Agriculture Production
- Directorate General of Agriculture Production Manufacturing and Marketing
- Directorate General of Plantation Production

In North Sumatera Province some institutions associated with management of mangrove ecosystem are: Forestry Service, Office of Nature Resources Conservation (BKSDA), Office of Riverside Area Management (BP.DAS), Marine and Fisheries Service, Environmental Service or Bapedalda, and Agricultural Service, Industrial Service and Transportation Service.

2.2.2. Analysis of Activities of Each Stakeholder

Some of law regulations and responsible institutions, and management analysis of activities that performed by some associated institutions with mangrove management can be seen at Table 1 and Table 2.

Based on Table 1 and Table 2, Department of Forestry in managing mangrove forest (at forest area and non forest area) has great roles and responsibilities and can be categorized as has main role. Other institutions that have direct responsibilities in mangrove ecosystem management (especially non forest area) are Department of Marine and Fisheries Affairs, Department of Internal Affair. Besides that for cross sector coordination role, Department of Internal Affair and Ministry of Environment has large role (main role).
Table 1. Regulation of Mangrove Forest Ecosystem Management

<table>
<thead>
<tr>
<th>No.</th>
<th>Type of Regulation</th>
<th>No./Year</th>
<th>Name of Regulation</th>
<th>Institution’s Authority</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Law</td>
<td>5/1965</td>
<td>Principal Law of Agrarian</td>
<td>Committee of Soil</td>
<td>Mangrove Ecosystem included in this law</td>
</tr>
<tr>
<td>2.</td>
<td>Law</td>
<td>5/1967</td>
<td>Principal Law of Forestry</td>
<td>Department of Forestry</td>
<td>Mangrove Ecosystem/ Mangrove Forest regulated based by status and it’s function as a area of forestry (forest area, non forest area)</td>
</tr>
<tr>
<td>3.</td>
<td>Law</td>
<td>5/1974</td>
<td>Principals of Region Government</td>
<td>Department of Internal Affair</td>
<td>Correlated with region government authority for recommendation/license of mangrove ecosystem usage</td>
</tr>
<tr>
<td>4.</td>
<td>Law</td>
<td>11/1974</td>
<td>Irrigation</td>
<td>Department of General Work</td>
<td>Correlated with regulation of river/irrigation canal (Mangrove ecosystem consist of river, channel)</td>
</tr>
<tr>
<td>5.</td>
<td>Law</td>
<td>5/1979</td>
<td>Village Government</td>
<td>Department of Internal Affair</td>
<td>Village authority and form of village government (associated with village government role with mangrove ecosystem management)</td>
</tr>
<tr>
<td>6.</td>
<td>Law</td>
<td>4/1982</td>
<td>Principal Rule of Bio-environment management</td>
<td>Minister of Bio-Environment</td>
<td>Establishment (management and environment controlling) and control (inspection, punishment and fine) activities of mangrove ecosystem</td>
</tr>
<tr>
<td>7.</td>
<td>Law</td>
<td>5/1989</td>
<td>Fisheries</td>
<td>Department of Agriculture</td>
<td>Fishing farm</td>
</tr>
<tr>
<td>8.</td>
<td>Law</td>
<td>5/1990</td>
<td>Conservation of Natural Resources and it’s Ecosystem</td>
<td>Department of Forestry</td>
<td>Conservation of natural resources and it’s ecosystem including mangrove ecosystem (forestry area)</td>
</tr>
<tr>
<td>9.</td>
<td>Law</td>
<td>9/1990</td>
<td>Tourism</td>
<td>Department of Culture and Tourism</td>
<td>Tourism activity (including natural tourism in mangrove ecosystem)</td>
</tr>
<tr>
<td>10.</td>
<td>Law</td>
<td>24/1992</td>
<td>Landscape</td>
<td>BAPENAS</td>
<td>Establishment, regulation and usage (mangrove ecosystem include protected area and developmental area) arrangement (TGHK and region landscape plan)</td>
</tr>
<tr>
<td>12.</td>
<td>Law</td>
<td>25/1999</td>
<td>Authority of District Government</td>
<td>Department of Internal Affair</td>
<td>Regulation of authority between central and regional government.</td>
</tr>
<tr>
<td>No.</td>
<td>Institution Name</td>
<td>Authorities (Duties and Responsibilities)</td>
<td>Description</td>
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</tr>
<tr>
<td>1.</td>
<td>Office of State Minister for Bio-environment</td>
<td>Responsible in management coordination, monitoring and evaluate implementation of national policy on mangrove management</td>
<td>Join resolution of: 1. Ministers of Forestry/Mining 2. Ministers of Forestry and Agriculture 3. Ministers of Forestry and Transmigration</td>
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<tr>
<td>2.</td>
<td>Ministry of Forestry</td>
<td>Responsible in establish technical procedures for mangrove forest management for protection, conservation, rehabilitation/reclamation and other usages</td>
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<tr>
<td>No.</td>
<td>Department/Office</td>
<td>Role/Responsibility</td>
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<td>5.</td>
<td>Department of Industry</td>
<td>Responsible in establish industry that use mangrove forest ecosystem resources (chip industries, fisheries industries)</td>
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<td>6.</td>
<td>Department of Internal Affair</td>
<td>Has authority in coordinating and directing the planning activities, implementation and control of mangrove forest ecosystem management in region level</td>
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<td>7.</td>
<td>Department of Agriculture</td>
<td>Responsible in establish (technical procedures) in agriculture commodities management that use mangrove forest ecosystem</td>
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<td>8.</td>
<td>Department of Education and Culture</td>
<td>Responsible for arranging education program about analysis/knowledge for mangrove ecosystem management</td>
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<td>9.</td>
<td>BPPT</td>
<td>Responsible in analysis and research development and management technology for mangrove ecosystem</td>
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<td>10.</td>
<td>BPN (Soil Committee)</td>
<td>Has direct responsibility in managing every side soil based on Region Landscape Planning and Laws</td>
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<td>11.</td>
<td>Department of Tourism</td>
<td>Associated with development of tourism (ecotourism) in mangrove ecosystem</td>
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<td>12.</td>
<td>Department of Transmigration</td>
<td>Associated with development of transmigrate settlement and forest opener</td>
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<td>13.</td>
<td>Office of State Minister for Housing and Region Development</td>
<td>Associated with area development for development and housing sectors</td>
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<tr>
<td>14.</td>
<td>Department of Marine and Fisheries</td>
<td>Responsible in directed and established (technical procedures) in fisheries commodities management that use mangrove ecosystem (fishpond, salt industries, supporting utilities for fish farm)</td>
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<tr>
<td>15.</td>
<td>Bakosurtanal</td>
<td>Associated with development and provide mangrove ecosystem spacial data</td>
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<td>16.</td>
<td>LIPI</td>
<td>Associated with coordinate information about science and technology development for mangrove ecosystem management</td>
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<td>17.</td>
<td>Parliament (DPR)</td>
<td>Associated with controlling function of activities for mangrove ecosystem management appropriate with laws and regulations.</td>
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</tbody>
</table>
2.2.3. Formulate and to Recommend the Tasks & Roles and Coordination Mechanism among Stakeholders

According to mangrove management policies in Indonesia, it is clear that the state and the landuse allocation of mangroves is the major concern/consideration points about the management responsibility and the coordination mechanism among stakeholders.

Management responsibility about the state of mangroves ecosystem as forest zones (reserve, production, and conservation forest) is under the Ministry of Forestry. Moreover, this ministry still has the responsibility for mangroves in non-forest area under the Act No. 41 year 1999 about Forestry, especially connected with its rehabilitation.

It is the fact that in practical, mangroves with non-forest cathegory is oftenly be allocated for marine culture development. In this state, the major responsibility is under the Ministry of Marine and Fisheries Affairs.

In the Otonomy era, that although the regional government’s function is significantly increasing in mangroves landuse allocation, but it is still in term of National laws and regulations, especially connected with the establishment of Provincial Space Arrangement Planning (RTRWP) and District/City Space Arrangement Planning (RTRWK). In regional development process, landuse allocated conversion can be allowed whenever sometimes connected with the development objectives and the effort to gain the high ‘PAD’ (regional profit income). Therefore, licence arrangement in regional must be considered in term of well coordination and it should be integrated with several development sectors, such as: Forestry, Marine and Fisheries affairs, Bappeda, and Environmental Agency. In National level, the arrangement is conducted through indepth studies about madates of each connected departments and Ministry of Natural Environment in order to harmonize the needs of central and regional development objectives. In this regards, the function of Home Affairs Department and Ministry of Natural Environment is highly significant.

Concerning with policies, stakeholders participation, and problems/challenges in mangroves management in National, provincial, and districts/cities level, there are several recommendations below:
1. The management of Mangroves forest (reserve, production, and conservation) is fully authorized by the Department of Forestry under National Law No. 41 year 1999, and No. 5 year 1990.

2. The management of mangroves forest with non forest zone status is under the Ministry of Marine and Fisheries Affairs authority, especially in conservation and rehabilitation for fishery-culture areas.

3. Enforcement/empowering the communities around mangroves area is under the coordination of several departments, there are: Forestry, Marine and Fisheries Affairs, Home Affairs, Industry and Trade, Natural environment, Koperasi and UKM, Agriculture, and Culture and Tourism department.

4. Regional government in providing RTRWP and RTRWK must refer to regulation about mangrove management, and closely connected with the national policy and laws: No. 41 year 1999, No. 5 year 1990, No. 24 year 1992, and No. 32 year 1990.

5. To improve and to better the coordination mechanism at national level, particularly in connection with: human enforcement in mangroves areas, socialization of mangrove management policies, rehabilitation and conservation, and also in data and information availability and accessibility. In this regard, both of the Ministry of Natural Environment and Home affairs are needed to perform the best function of coordination in mangrove management.

6. To improve the mechanism of mangrove management coordination at regional level (provinces and districts). This is the essential aspects to equilise the perception and its integration respectively. Regional government (Bappeda, Forestry, Marine and Fisheries affairs, and Environmental/Bapedalda agency) should demonstrate its participation highly. And also to involve the participation of several stakeholders, such as: universities, NGOs, tokoh masyarakat (local key persons), DPRD, privates and subdistrict/villages governments. But, the improvement of regulation’s socialization should be improved also to enhance the understanding about play-rule in mangrove management in Indonesia.

7. Problems and challenges of mangroves management in North Sumatera province need to be solved with well coordination mechanism, and stakeholders’ proactives participation in mangrove rehabilitation and conservation.
2.3. Mapping of Mangrove Distribution

2.3.1. Field Survey

Field survey conducted to provide the ground truthing of landcover, based on Landsat Imagery data year of 2000 in Langkat district that covered several villages, such as: Selotong, Tanjung Ibus and Kuala Besar, and Jaring Halus. The data of Mangrove vegetation coverage that generated from this image is moderately accurate, where the coverages distinguished by two categories: open or rare with open and rare mangrove.

Ground truthing also conducted to indentify the boundaries government administration and the state/polygons of reserve forest, production forest, shrimp pond and housing areas, and also the landuse within mangroves zones.

2.3.2. Mapping Process

Several base-maps are collected to develop sintetic Maps, such as: Landsat imagery (2000), geographic map [peta Rupa Bumi] of Bakosurtanal and Regional Government Administration Maps. Other supporting data is collected from BP DAS regions: Asahan Barumun, and Wampu Sei Ular.

2.3.3. Field Cheking and Map Finishing

The Map of Mangrove zones in North Sumatera Province developed using the result of field-check and information from several maps. Digitation and overlaying provided to figure administration border-line and land use (including: the distribution and coverages of mangroves).

2.4. Preparation of Final Proposal

2.4.1. Formulate to Draft of The Proposal

This proposal is provided inherently with ITTO’s document. Several data and information were used as the basis of its writing processes. In order to collect problems and issues (the basis problems/issues, potential generated problems/issues, and intervention needed) in depth discussion has already conducted intensively. Other inputs
are present and past of field experiences, management policies and stakeholders involved and or connected with mangroves management and utilization.

General and particular objectives define from the knowledge and understanding of the root problems and generated problems. The output defines with referring to general and particular objectives respectively.

The explanation of particular objectives used to provide clear expected output related with objectives respectively. In order to provide the programs, several of them are classified under each expected outputs.

The structure of organization committee developed vertically from government at central, provincial/regional, and district level. For efficiency, this five years project will be divided into 2 phases, there are: Phase I (operational planning from year of 2006 to 2007) and Phase II (Implementation, from year of 2008 to 2010). The project will be directed by the Directorate of Land and Forest Rehabilitation Development (Direktorat Bina Rehabilitasi Hutan dan Lahan), and implementing agency will be at regional level.

2.4.2. Conduct a Public Consultation

Two public meetings (workshops) already conducted in Medan (August 22, 2005) and Jakarta (September 15, 2005) in order to have valuable inputs for proposal revision and finalization. In detail, the workshop in Medan grasped several inputs from stakeholders (both at province and district level) such as: Bappeda, Forestry agency, BP DAS, BKSDA, Bapedalda, Marine and Fisheries affairs, universities, and NGOs). The results of Medan workshop then used for material in the workshop in Jakarta (central level).

The stakeholders invited in Jakarta workshop were: Forestry, Marine and Fisheries Affairs, Home Affairs departments and Ministry of Natural environment, NGOs and universities and LIPI.

2.4.3. Finalized the Project Proposal

Proposal finalization is provided through the indepth internal discussion at DG of LRSF. And the result was this the final proposal.
In detail, proposal finalisation chronology consists of activities, as mentioned below.

A. Workshop results are mentioned below:

1. Problems on mangrove management in North Sumatera province are illegal logging, land conversion, law weakness, the weakness of management institutions.

2. Strengthening and arrangement of boundaries between mangroves forest and non-mangroves forest.

3. Provide demo-sites of mangrove rehabilitation activities with integrated approaches.

4. Strengthening the capacity of mangrove management institution in North Sumatera.

5. Strengthening on data and information, and the community awareness.


B. Results and feedbacks of the Jakarta’s workshop are mentioned below:

1. Problem of mangrove management in East coast of North Sumatera are serious degradation, illegal logging, conversion, charcoal material supplies, and the weakness of law enforcement. While in west coast are wood cutting for construction materials and conversion for ponds.,

2. Key problems on mangrove management in North Sumatera are the weakness of stakeholders participation, the weakness of law enforcement, and lack in management plan.

3. Program of the ITTO is consist of: extension service for Sustainable Mangrove Management, Community awareness and Community participation, Training stakeholder, Pilot activities, Establishment Mangrove Information Center, Demarcation and zoning mangrove, Providing of strategic plan for mangrove development (level province), Management Plan (district), Micro Planning (Village) sustainable mangrove management for 4 pilot projects, Monitoring and Evaluation mangrove management, Feasibility study to establish a mangrove development fund in North Sumatera province
(4) Implementation strategies of ITTO project are: process implementation oriented, stakeholders participation, knowledge based management.

(5) On the recruitment of project organization staff, the candidates from regional forestry agency, BP DAS, and DG of LRSF will be selected with non-high standard level (special) procedures/requirements. In this condition, personal background notifications should be provided respectively.

(6) Law enforcement problems subject excluded from ITTO activities. But it is under the Forestry Agency’s responsibility.

(7) Educational program provided by the project is for both mangrove private and state forest stakeholders.

(8) Study exchange (or short training program) is a priority program on sustainable mangrove management activities programs.

(9) Need the research and establishment of genetic resources in each districts, and be included in districts management plan.

(10) The proposal must anticipates (concerns to) the formed of sustainable mangrove management units, such as: sylvofishery management, community mangrove forest, etc.

C. Meeting with working group/ITTO Panel and Bereau of International Cooperation and Investment, MoF held on September 21st at Manggala Wanabhakti Jakarta. The result is mentioned below:

(1) Budget standard for national expert/consultant is too low, therefore, it should be rearranged.

(2) Need revision on Forest Sector Policies and Programs subject in the proposal. Mangrove rehabilitation program/aspects should be included in both national and North Sumatera policies.

(3) How to reach the demarcation and zoning of mangrove forest is a main question since it contains high conflicts.

(4) The description of the “Origin (see 4/5)” is too long. Need to be shorter.

(5) This document is already referred to the ITTO orders. The achievement and the implementation of activities are based on process oriented.
(6) In Origin: chapter 1 (National Act No. 5/1957 replaced with National Act No. 41/1999), local government policy (to be included) from the Bupati (MOU) need as soon as possible.

(7) Curriculum Vitae of project formulator enclosed in appendices, includes: key staff, and national expert (2-3 pages).

D. On September, 30th 2005, the proposal draft was finalized on internal discussion of Directorate General of LRSF at Manggala Wanabhakti Building Jakarta. The discussion was conducted by Ir. Soetino Wibowo (Director General of LRSF, Ministry of Forestry) and staff. The result is mentioned below:

1. The ITTO proposal is already accommodated the solution for mangrove management problems in North Sumatera province, and will drives the harmony cooperation climate between the province and districts governments.

2. The Ditjen RLPS agreed with the proposal title: *Implementation of a Model of Local Community Stewardship for Rehabilitation and Sustainable Use of Mangroves in North Sumatra Province (Indonesia).*

3. Acccording to the instable condition of Indonesian economy, It is need an arrangement, that the counter bugget provided by the government will not excluded from 30% of the project financing. Therefore, it will be a great appreciation if there is a special consideration on budget component, especially for GOI counter budgeting.

As a continuation of its finalization progress, the budget component revision had already finished on October 4th 2005.
REFERENCES


ODA and Directorate General of Fisheries Indonesia. 1993. Comparative Economics of Land Use Options in Mangrove Forest Areas on The Malacca Straits Coast of North Sumatra Province.


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<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>AWB</td>
<td>Asian Wetland Bureau</td>
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<tr>
<td>BPDAS</td>
<td>Watershed Management Centre</td>
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<td>[Balai Pengelolaan Daerah Aliran Sungai]</td>
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<tr>
<td>BAKORSUTARNAL</td>
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<tr>
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<td>Government of Indonesia</td>
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<td>Forest Concession Company</td>
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<td>Non Government Organization</td>
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<td>[Rehabilitasi Lahan dan Konservasi Tanah]</td>
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RLPS  Directorate General of Land Rehabilitation and Social Forestry  
[Ditjen Rehabilitasi Lahan dan Perhutanan Sosial]

RTRWK  District City Space Arrangement Planning  
[Rencana Tata Ruang Wilayah Kabupaten]

RTRWP  Provincial Space Arrangement Planning  
[Rencana Tata Ruang Wilayah Propinsi]

UKM  Micro – Middle Enterprise  
[Usaha Kecil Menengah]