

1. The Critical Situation of Coral Reefs and Coastal Areas in North Sulawesi

1.1 Functions and Value of Coral Reefs and Coastal Area

Coral Reefs are known to have high biodiversity and high biological productivities. Besides such characteristics, coral reefs have various functions such as natural disaster prevention, maintenance of ecosystem, mitigation of impact from human activities and supply of resources. These values which coral reefs have can be categorized into three: ecological, economic and social values.

It has been naturally learned from past experiences that the benefits from coral reefs lessen, if coral reefs environment deteriorates. In order to protect and conserve coral reef environment, there is a need to take the whole coastal area which is composed of coral reefs, sand beaches, rocky shores, mangroves, fishes, and others into consideration, because coral reef environment is the main part of coastal area in the Study Area, and coral reefs cannot be separated from coastal area in terms of ecological and physical mechanisms and systems.

Coastal areas, whose main component is coral reefs, have various functions and values as well. They supply resources to the coastal communities and support coastal people economically, ecologically and socially. The economic value of coastal areas in the Study Area is roughly estimated in monetary terms at Rp.34 trillion per year, or Rp.35.9 billion per km of shoreline length. This estimated economic value includes fish production, aquarium ornamental fishes, medicinal materials, construction materials, tourism and recreation, natural disaster prevention, and absorption of carbon dioxide, among other things.

Therefore, it is most important to protect and conserve the coastal area in order to minimize not only the economic loss but also the loss of social and ecological values. The local government needs to realize its responsibility to secure the benefits derived from the coastal area by the coastal communities.

1.2 The Serious Problems of Coral Reefs and Coastal Areas in North Sulawesi

North Sulawesi Province has vast length of coastal area, which is characterized by highly diverse and complex physical conditions, and is rich in coastal natural resources such as coral reefs, mangroves, and a variety of marine life (see Figure 1). The national marine protected area is established in Bunaken area in the province because of its high environmental and economic values. However, the coral reef conditions were assessed

by the Study Team using live coral cover as a proxy for coral community well-being and the results showed that the situation of coral reefs in the province is in a most critical situation (see Table 1 and Figure 2). A large portion (88% of total coral reefs or 195.8km²) of coral reefs is classified as “Poor” (live coral ratio:0-25%) including areas covered with seagrass and algae. Excellent conditions are spotted on the northern part of Manado Bay, in the southern part of Lembeh Island and the south side of Putusputus islands, which accounted for only 0.2% of the total coral reef area in the Study Area, or 0.4 km² in terms of size. Coral Reef Distribution map is shown in Figure 2. The present condition of coral reefs is caused mainly by human activities such as destructive fishing and coral mining.

Table 1 Cover Ratio of Live Coral in the Study Area

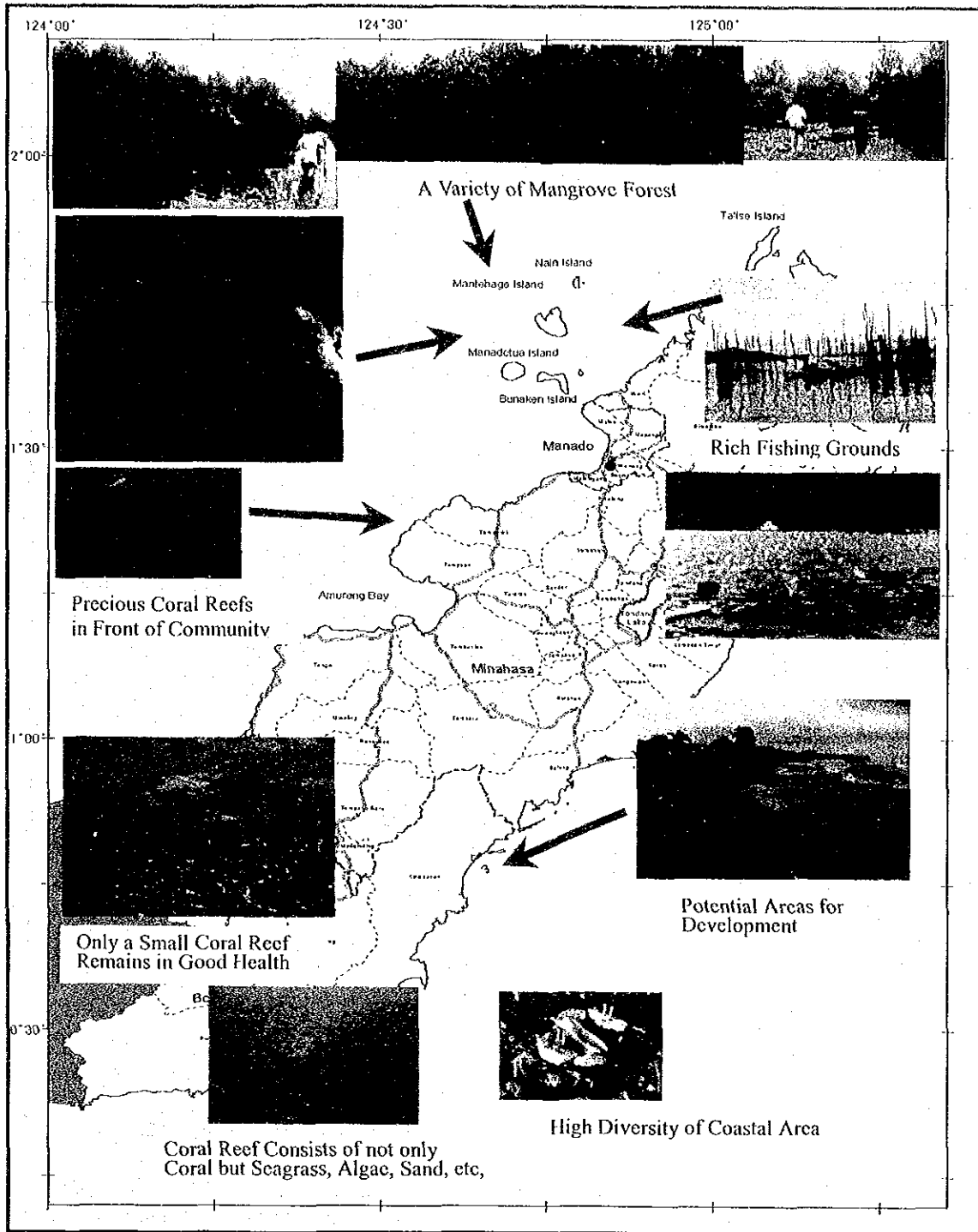
Classification Live coral ratio (%)	Poor 0 – 25 %	Fair 26 – 50 %	Good 51 – 75 %	Excellent 76 – 100 %	Total
Cover Area (km ²)	198.2	20.2	3.9	0.4	222.7
Cover ratio (%)	89.0	9.1	1.7	0.2	100

Source : JICA Study Team

Mangroves in the area are not in good condition in terms of size and density. A large area of mangrove exists in a few places, such as around Wori-Likupang, Arakan and Mantchage Islands. Mangrove trees have been traditionally used as firewood for daily cooking by coastal communities and also for scaffold of building construction in urban and rural areas.

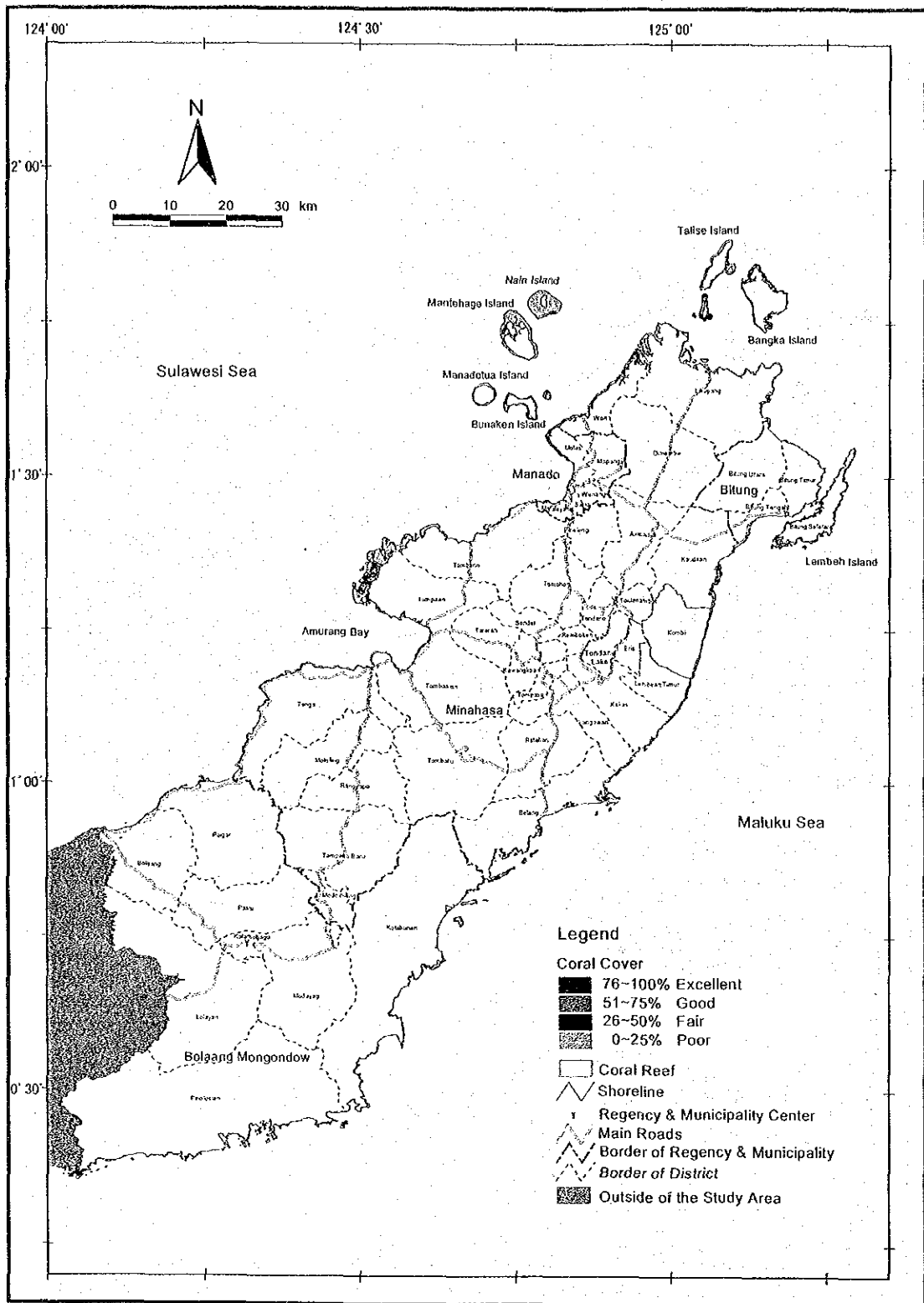
In the Study Area, several endangered species have been found such as *Dugong dugon*, sea turtles, coelacanth. *Dugong dugon* which is the only significant population remaining in Northern Sulawesi are seen in the southern main peninsular portion of Bunaken National Marine Park and in some areas where they are under considerable threat from humans. *Dugong dugon* has been trapped by set nets and consumed by the community people even in the national marine park area.

In such condition of coastal area, the Study result shows that a significant number of coastal village people recognize the decreased number of fish resources. If any actions were not taken immediately for the conservation of the coastal area in North Sulawesi, environmental deterioration would be accelerated in the near future, and it would be too late to take any measures to prevent the deterioration of fish resources and tourism resources, leading to its loss of social value. The depletion of coastal resources will cause an economic crisis in the area and deterioration of quality of life in North Sulawesi.



Source: JICA Study Team

Figure 1 Outlook of North Sulawesi



Source: JICA Study Team

Figure 2 Coral Reef Distribution

1.3 The Causes of Coastal Problems in North Sulawesi

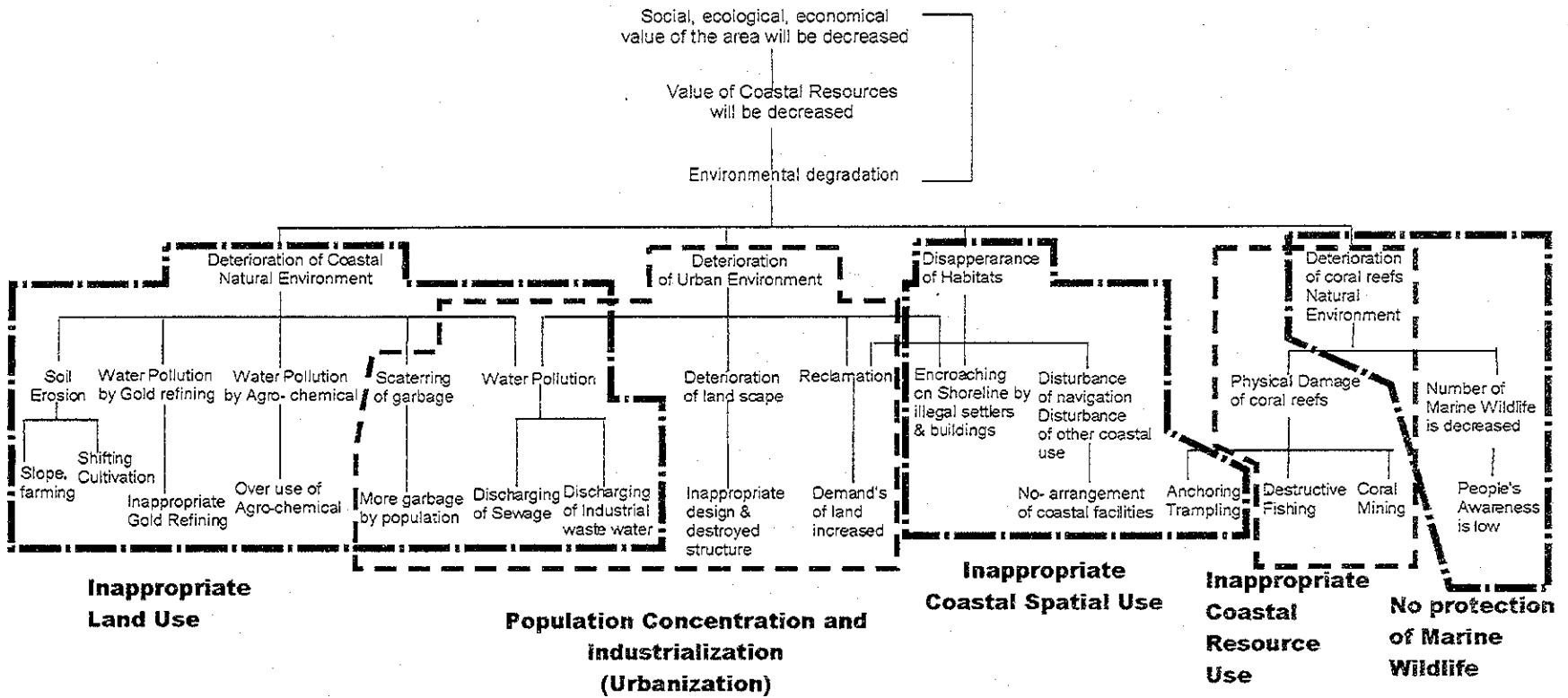
The condition of coastal areas in North Sulawesi is caused by various problems. The main cause of deterioration of condition is identified as human activities such as destructive fishing and coral mining. The Study found that there is no significant difference of these causes by area in the Study Area.

The structure of coastal problems in North Sulawesi is shown in Figure 3. Reasons behind these coastal problems can be divided into five:

- inappropriate coastal spatial use;
- inappropriate coastal resources use;
- inappropriate land use;
- population concentration and industrialization; and
- no protection of marine wildlife.

Causes of the above coastal problems are categorized from institutional and administrative viewpoints as follows:

- unclear functions of government agencies under a decentralization policy;
- lack of right persons for coastal management at responsible agencies;
- non- utilization of existing management resources of the central government;
- lack of necessary information and data for coastal management; and
- issues on national park management.



Source: Result of Provincial Steering Committee Meeting (compiled by JICA Study Team)

Figure 3 Structure of Coastal Problem in North Sulawesi (Cause – Effect Analisis)

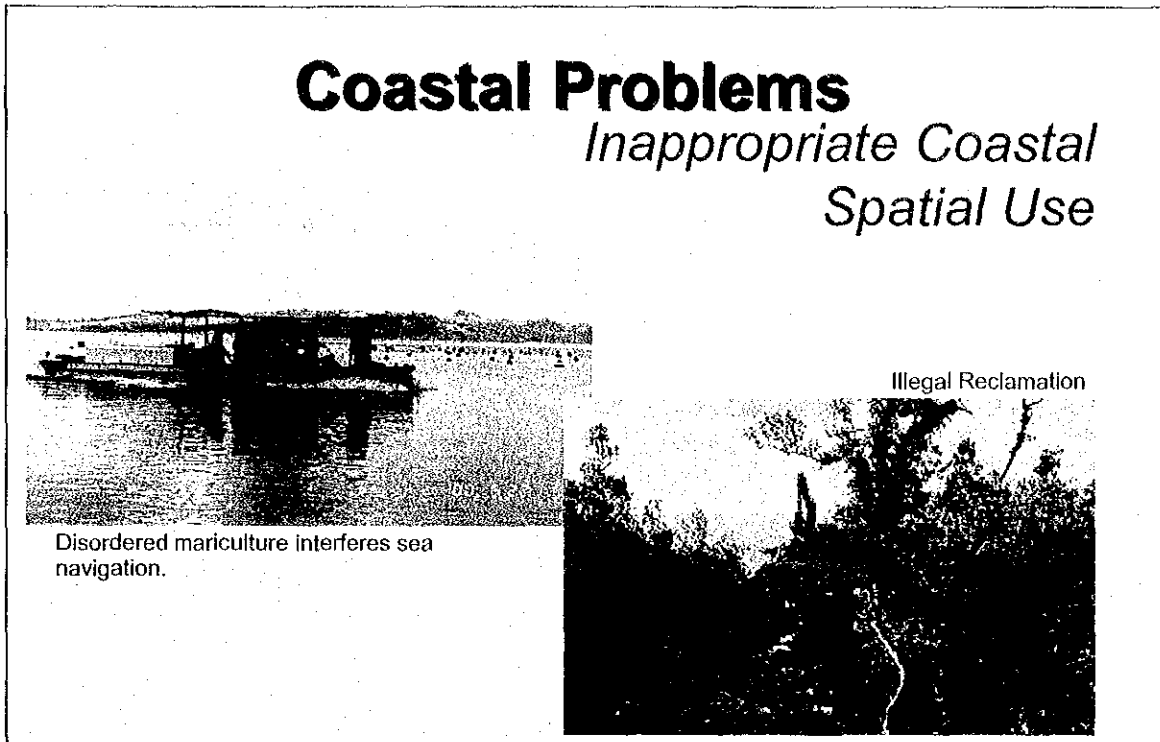


Photo : JICA Study Team

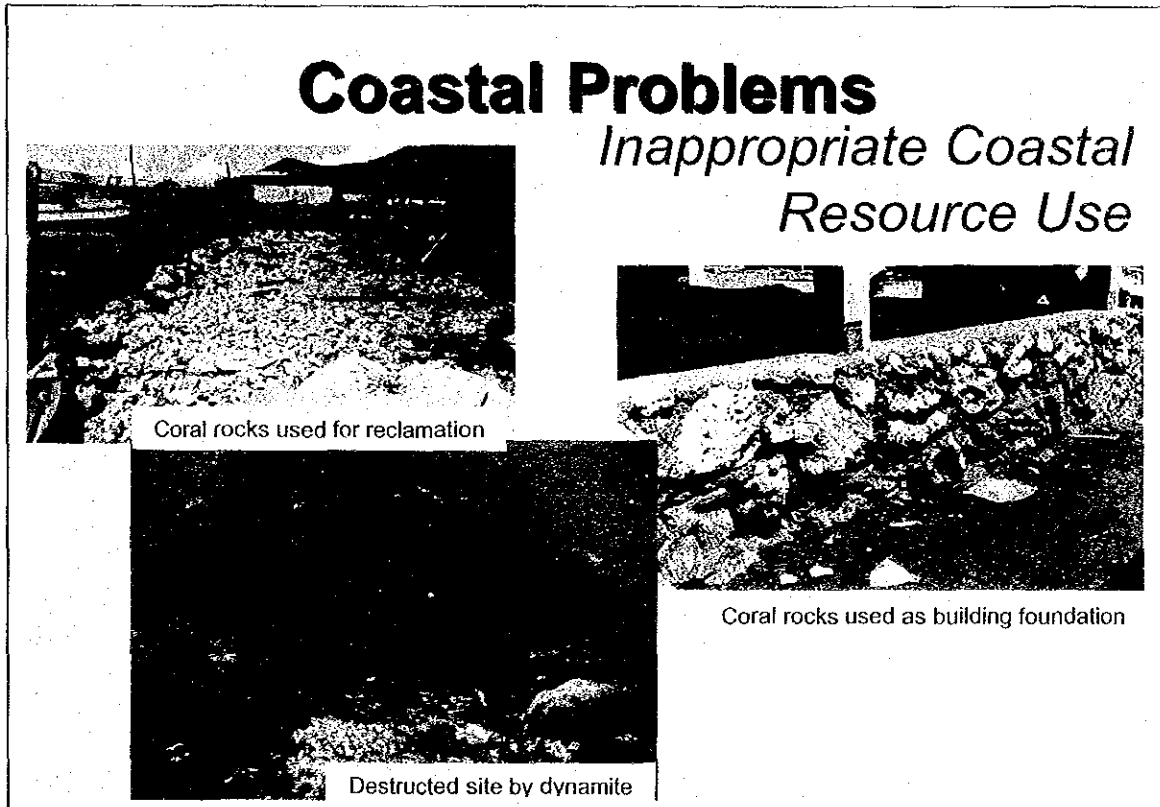


Photo : JICA Study Team

Figure 4 Identified Coastal Problems (1)

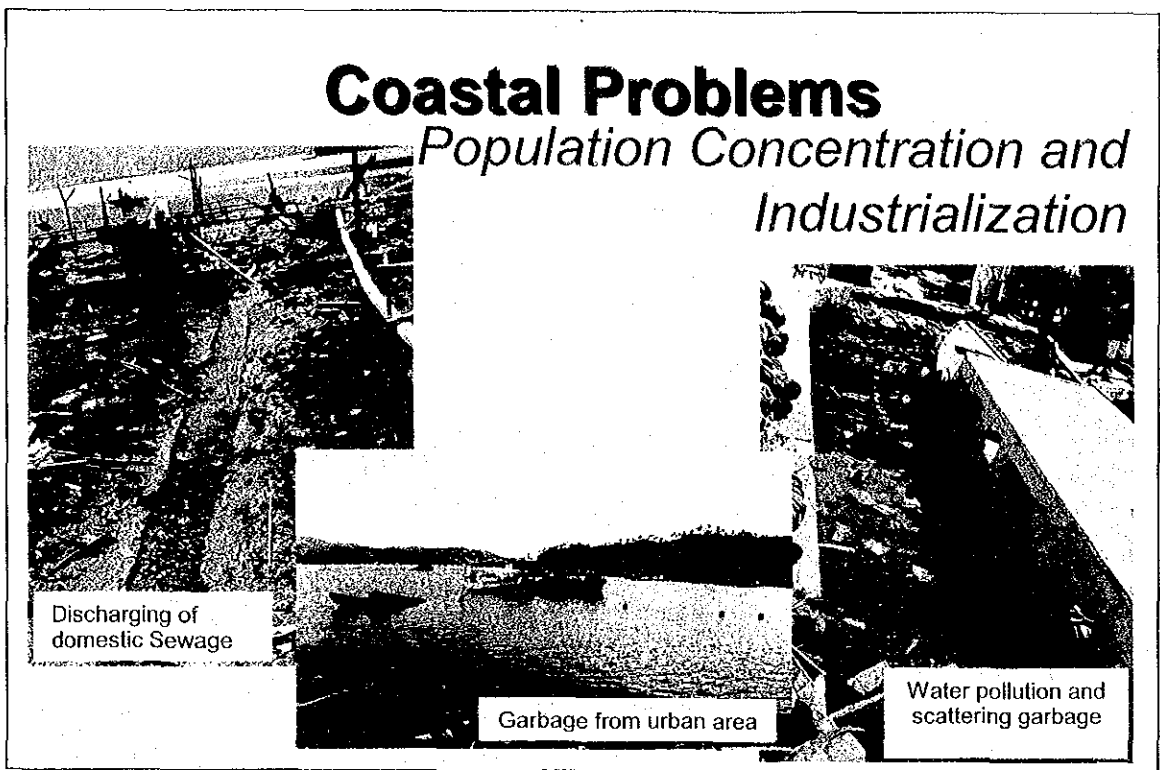


Photo: JICA Study Team

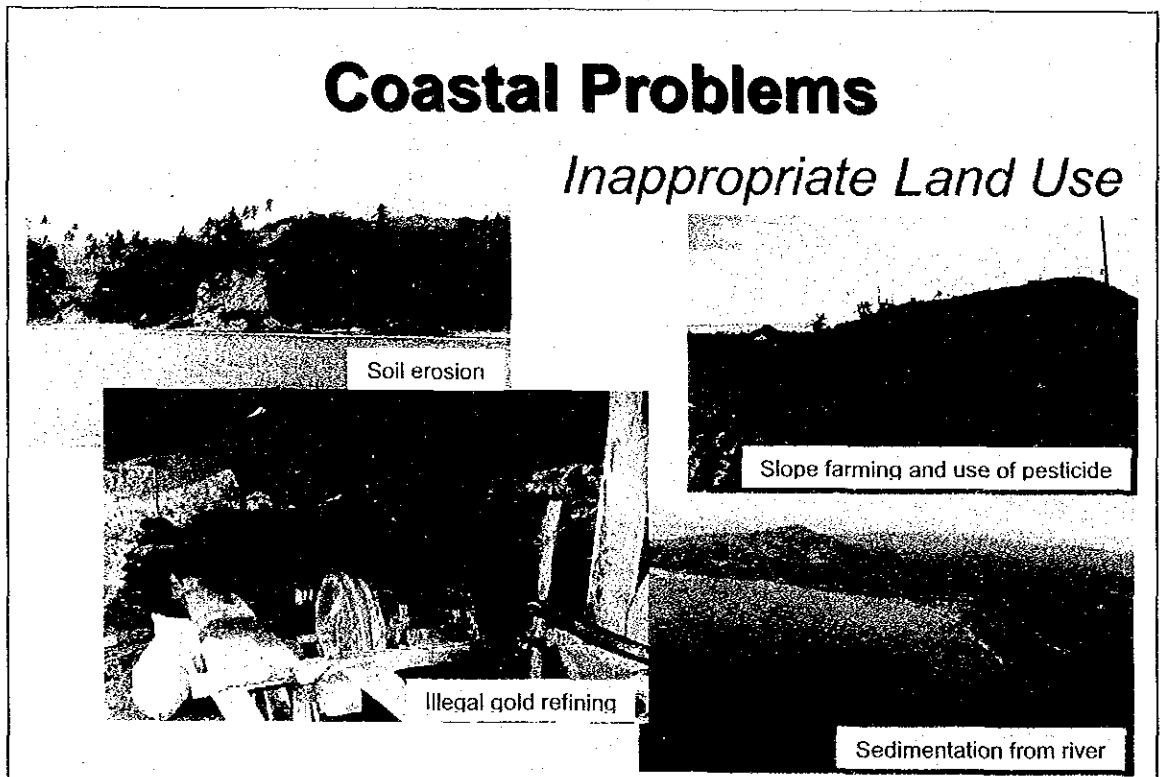


Photo : JICA Study Team

Figure 4 Identified Coastal Problems (2)

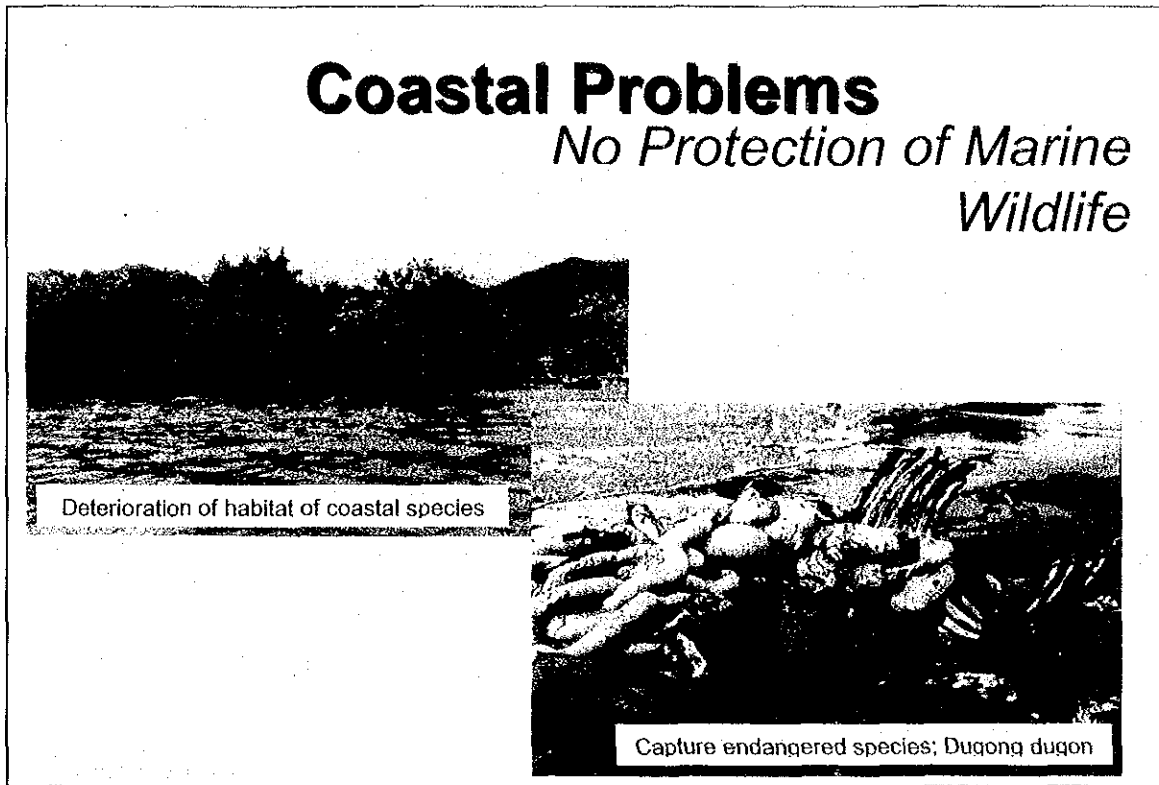


Photo : JICA Study Team

Figure 4 Identified Coastal Problems (3)

2. The Process of the Master Planning

2.1 Objectives of the Study

The objectives of the Study are mainly as follows:

- to formulate the master plan for coastal management in North Sulawesi through conservation and sustainable economic utilizations of the coastal area; and
- to find out an appropriate and workable implementation mechanism in coastal management in North Sulawesi by looking into existing recourse and capability, and by identifying the gaps to be filled.

2.2 Activities in the Study

The flow of the Study is shown in Figure 5. Major activities are summarized as follows:

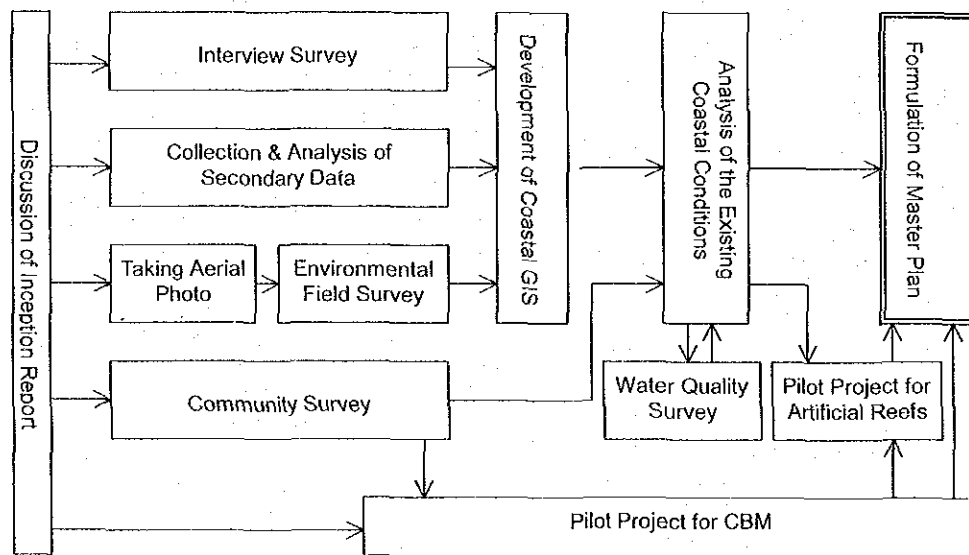


Figure 5 Flow of the Study

(1) Aerial Photography Survey

Aerial photography survey was carried to cover the Study Area from July to September 2000, which produced two scales of photographs as follows:

- 1:20,000 for coastal area (colored); and
- 1:50,000 for inland area (black & white).

In order to enhance the photograph reading, ground-truth and sea-truth surveys were carried out. These surveys were conducted at approximately 500 sites in inland areas for ground-truth and at approximately 500 sites in coastal water areas consisting of around 2,000 check points.

As a result, the distribution and condition of coastal resources were described in form of geographical information system (GIS).

(2) Coastal Natural Environment /Terrestrial Environment Survey

Coastal natural environmental survey and terrestrial environmental survey were conducted to identify the conditions of coastal environments. The data and information on coastal conditions such as shoreline forms, seagrass and algae, mangrove, coastal environmental impacts, land use and vegetations were obtained through secondary data collection, interview survey and field survey using Manta-tow method and direct observation from shoreline and boat. These results of the surveys were depicted on thematic maps by GIS.

(3) Rapid Coastal and Inland Community Surveys

At the beginning of the study, rapid coastal and inland community survey was conducted to analyze the knowledge, attitude and perception of community people towards natural resources use. The quantitative survey aimed to obtain village profiles and detailed socio-economic information of villages. The qualitative survey aimed to analyze the social anthropological aspect of people's behavior and perception by using focus group discussion and PRA (Participatory Rural Appraisal) methodology.

The survey was conducted from August to September, 2000 at 24 coastal communities and 5 inland communities. The results of the survey were used for selection of Pilot Project sites and for designing and monitoring the Pilot Project. Also, the results have greatly contributed to the formulation of the master plan in one way or another. One of the important results from the survey is the knowledge that people's awareness towards their environmental problems and issues is high; however, people do not have any ideas to manage their coastal area, although they were practicing traditional fishery resources management in the past.

(4) Development of Coastal Geographical Information System (GIS)

The Study followed a scientific approach to analyze the natural environmental condition of the area. Aerial photos were taken not only of the coastal water but also the inland area to aid in analysis of the natural conditions, which were further verified by several

scientific surveys carried out, and the data was then converted into GIS to produce thematic maps and enabled spatial analysis and coastal area zoning. This visual and spatial data is the most effective tool for evaluating environmental conditions and drawing up a management plan.

The geographic data should be maintained by the local governments/institutions in North Sulawesi Province for sustainable management planning after the completion of the Study.

(5) Water Quality Survey and Capacity Building for Local Laboratory

Responding to the request from the Central Steering Committee, the Study implemented a water quality survey, which was sub-contracted, with the Environmental Management Center (EMC) under BAPEDAL located in Jakarta. The purpose of the survey is to identify the situation of water pollution in some critical areas such as rivers, which are vulnerable to gold refining activities, and urban coastal areas that have accumulated pollution materials. Water samples and sediment samples were taken at rivers and river mouths of the basin where the gold refining factories exist, and at some points on the coastal areas of Manado and Bitung ports.

For other purposes of the Water Quality Survey, EMC provided technical support to the local laboratory under the Ministry of Industry and Ministry of Health to build their capacity to analyze water quality during the survey.

(6) Implementation of Pilot Project for Establishment of Community Based Coastal Management (CBCM)

One of the main components of the master plan is to set up Community Based Coastal Management in the Area. The idea of CBCM is very sound; however, the theoretical model sometimes would not work in the reality due to many hidden conditions of the local situations. The Study, therefore, decided to implement the Pilot Project of CBCM as an operational research in the Study area to find the most appropriate implementation mechanisms, and reflected the result of the Pilot Project to the master plan.

In North Sulawesi, the important and fortunate factor is that there is a CBCM project being implemented with USAID support. The project called Coastal Resources Management Project (the local name is Proyek Pesisir) commenced in 1997 and has been showing a good example of community based coastal management. The project is well designed and is showing significant results, so that the Study decided to adopt these approaches and strategies from Proyek Pesisir and made it more applicable, adoptable, and affordable to the local government to implement by themselves.

The Pilot Project has been implemented since December 2000 in four villages, Manado Tua Dua, Raprap, Basaan and Basaan-1, and it has been showing to be a great success in each village and has certainly contributed to community empowerment, to strengthen community autonomy and also to raise people's awareness and participation. One of the significant strategies taken in the Pilot Project is to use extension officers not only from outside the villages but also from inside the villages. This enabled the Extension Officers (EOs) to fit in easily in the communities and shortened their period of adjustment. EOs had 10 days crash training on the integrated coastal management and through the daily activities and monthly meetings, they developed their capacity as EOs during the first 6 months of the Pilot Project implementation.

Community based artificial reef trials have been implemented in order to improve fishing grounds for communities and provide opportunity to introduce the sense of importance of a collective fishery resources management by the community. Artificial reef installed at 15m deep in the Pilot Project site was designed and planned by the Study Team, and was made and set up by the community people. After a month of setting up an artificial reef in a Pilot Project village, the artificial reef has already been covered by fouling organisms and hundreds of juvenile fishes, lobsters, and shrimps have started living comfortably at their new habitat. According to the monitoring survey that was conducted after a month, 15 species of fishes and shrimps are identified inside and surrounding the artificial reef.

(7) Creation of Supplemental Video for CBCM

The Study created an educational material of CBCM combined with presentation of the study process. A 23-minute video program to explain CBCM was made. The video was made in Indonesian language, and aimed to raise awareness of not only community people but also any stakeholders related with coastal area management. The video program shall be duplicated into VHS tapes and VCD, and distributed to all related government agencies from regency level to the central level.

(8) Public Relations Activities

The Study Team has also been carrying out public relations activities energetically through the Study period. Major activities are as follows:

- Publication of Newsletters;
- Contest of the Study symbol;
- Development of an Internet Study Homepage, <http://www.intecoreef.com>;
- Advertisements and articles in newspapers and TV news programs;
- Interviews in TV news programs and newspapers;

- Participation in international conferences and seminars as guest speaker; and
- Participation in the exposition "North Sulawesi Province Development Fair" as exhibitor.

The newsletters and Internet homepage are used for advocating not only coastal management to related stakeholders but also to the public in general.

2.3 Working Together with Related Local Governments and Other Agencies

The Study organization is shown in Figure 6. The Study Team is composed of 17 experts who have different specialties. Ministry of Marine Affairs and Fisheries (DKP) is the counterpart agency on the Indonesian side at the central level. The local counterpart agency is Planning, Research, and Development Agency North Sulawesi Province (BAPELITBANG), which facilitated the smooth implementation of the Study. Indonesian side established two steering committees: National Steering Committee and Provincial Steering Committee.

The National Steering Committee consisted of seven agencies, including North Sulawesi Provincial Government which served as vice-chairperson of Provincial Steering Committee, and had the following functions:

- to show direction of the Study at national level; and
- to clearly state coastal management in the national policy.

On the other hand, the Provincial Steering Committee composed of 16 agencies had the following functions:

- to provide ideas for formulation of the master plan; and
- to coordinate and prepare implementation of the master plan.

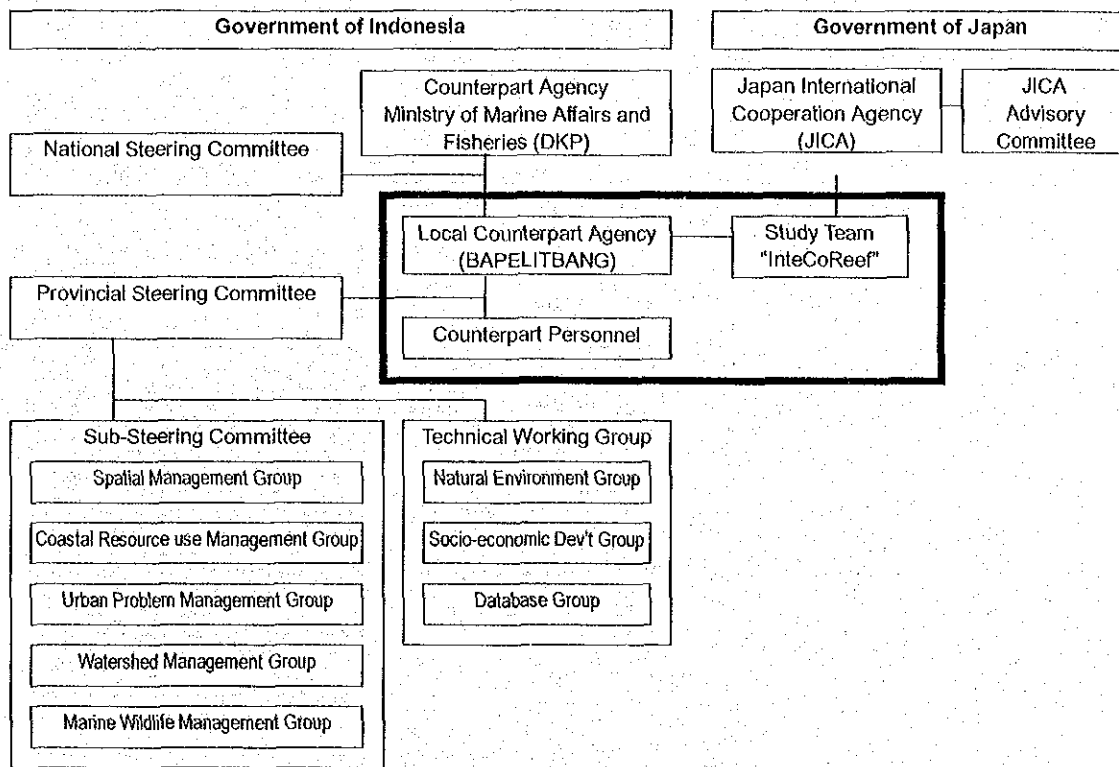


Figure 6 Study Organization

The Study took a participatory approach to formulate the master plan and had involved not only the counterpart agency but also other related governmental agencies for discussions and decision-making process (see Figure 7). During the first phase, three Technical Working Groups, namely, the Natural Environment Group, the Socio-economic Development Group and the Database Working Groups, representing 13 agencies including local agencies, academic institutions and NGOs were established and these working groups gave input to the situational analysis of the area in the Phase I. During the second phase of the Study, Sub-Steering Committees consisting of five groups were established by Provincial Steering Committee to participate in analysis and discussion together with the Study Team and to contribute in the formulation of management unit plans. Also, the Study Team had daily contacts with other projects, donor agencies, NGOs, and academic institutions for collaboration in many aspects of the Study.

Through the participation in the process of master planning, local agencies began to build their capacity to formulate coastal management plan, to understand their role and function in coastal management, and to have ownership of the master plan.



Interview Survey in cooperation with University



The Master Plan formulated by with Local Governments concerned



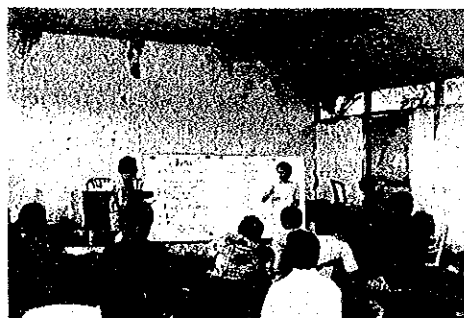
A lot of meetings held at Municipalities and Regencies



Technical skills transferred to local people through the Study



Surveys conducted with high technology and professional analysis



Activities at communities in close cooperation & coordination with other donors.

Figure 7 Scene of the Study

2.4 Cooperation with Foreign Donors and Local Academies

Donor agencies such as the Asian Development Bank (ADB), the World Bank and the United States Agency for International Development (USAID) have already started several coastal management projects and programs such as the Coral Reef Rehabilitation and Management Project (COREMAP), Marine Resource Evaluation and Planning (MREP) and *Proyek Pesisir*. They have accumulated knowledge and experiences through the implementation of projects and programs. The Study Team exchanged

information and opinion regarding coastal management with these agencies. Especially, there is close relationship with *Proyek Pesisir*, which provides human resources and training materials for the training program of Extension Officers of the Pilot Project. The exchange of information and opinion was on a daily basis. The Environmental Policy and Institutional Strengthening Indefinite Quantity (EPIQ/USAID) project also provided a lecturer for the seminar on Establishment of Provincial Protected Areas at Technology Transfer in January 2002. On the other hand, the Study Team cooperated with regard to park management zoning in Manado Tua II of Bunaken National Park with EPIQ/USAID.

This Study requires an understanding of the natural environment and socio-economic situations in North Sulawesi. There are academic institutes in North Sulawesi that conduct research work on natural environment and socio-economic activities. One of them, the Sam Ratulangi State University, has provided human resources for the effective conduct of this Study. For example, Sam Ratulangi State University and the Study Team jointly sponsored the workshop on Tourism and Coral Reef Management, which was held in August 2000.

3. The Scope of the Master Plan

3.1 The Importance of the "Integrated Plan" for Coastal Management

Emphasis is given to the necessity of a master plan for coastal management in order to secure the economic, ecological and social benefits from the coastal area. However, the important point is to take an approach of "integration" when formulating a master plan for coastal management because of the characteristics of the coastal area.

The coastal area locates between the sea and the land areas, so that the impacts are coming from both sides. Also, there are multiple stakeholders using the area and taking various benefits. The coastal management plan should integrate various areas, various impact sources, and various stakeholders into one and various management bodies need to be integrated in the plan as well.

Also, by the fact that some economic activities are taking place in the coastal area, those economic sectors that utilize the coastal area and its resources need to be taken into consideration in the master plan of coastal management. Examples are the fishery industry and coastal tourism industry. Therefore, the direction of the development of these economic sectors will give direct impacts on the coastal area and resources. Also, a proper coastal management will give direct benefits to these economic sectors as well. It is, therefore, important to integrate these economic aspects into the master plan of the coastal management

In order to ensure transparency and increase ownership, the Study was carried out in a participatory manner and the plan took shape with inputs from the local related government agencies, local university and community people. Through the process of formulation of the plan, local government raised the ownership of the plan. This process also contributed to the local decentralized governance, and also to raise the awareness of the importance of such plan among local government agencies and other stakeholders in the coastal area.

3.2 Goals and Objectives

(1) Goals

The overall goal of the integrated coastal management plan is:

To ensure balance between coral reef conservation and regional development through appropriate use of the coastal area and sustainable use of coastal resources, and to protect, conserve and rehabilitate natural environment effectively in the planning area.

(2) Objectives

The objectives of the master plan is:

At least, environmental conditions in coral reefs should be ensured at conditions of the year 2001, and should be restored in the near future.

The following can be expected through implementation of the master plan:

- Reduce poverty and empower small-scale fishers in the coastal area by generating income, diversifying income sources, and securing coastal resources;
- Establish coastal management mechanism in the local government agencies under the new policy of the local autonomy;
- Build the capacity of local government officers through routine work and training of coastal management;
- Provide incentive and opportunity for coastal community participation for the coastal management as a main party; and
- Build capacity of coastal communities, and ensure opportunity to give them a voice in the decision-making.

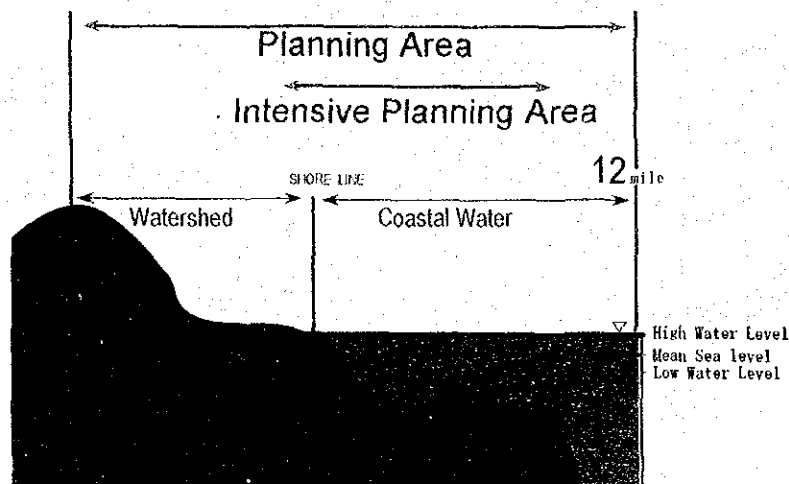
The integrated coastal management plan is new to Indonesia. The coastal area has particular characteristics and conditions in each area; however, the approaches and strategies used in the master plan can be applied in other areas. The expansion of the model in North Sulawesi would benefit Indonesia's coastal area management.

3.3 The Framework of the Master Plan

(1) Planning Area

The physical area of the master plan is shown in the map in the beginning page of this report. The total land area is 7,800 km², the provincial coastal water which is at 12 miles from shoreline is 11,240 km², and the length of coast is 1,056 km.

The planning area is shown in Figure 8. The planning area for the master plan is defined as coastal water up to 12 miles from shoreline (high-high water level) and the land area between highest tide to a part of land which is influenced by sea water.



Source: JICA Study Team

Figure 8 Planning Area

(2) Planning period

The target years of the master plan is divided into three phases as follows:

- Short-term : up to 2005 (= Target year of PROPENAS and POLDAS)
- Mid-term : up to 2010 (= Target year of RTRW Municipality and Regency)
- Long-term : up to 2015 (=Target year of RTRW Province)

The target years of the master plan is consistent with the target years of existing regulations of the development plans of the Indonesian government.

(3) Planning Issues

The planning issues of the coastal management master plan are as follows:

- To realize the appropriate spatial use of coral reefs including the coastal water spatial use and the land use.
- To realize the sustainable coastal resources use by achieving appropriate amount and manner of collecting resources according to the potentiality of resources.

(4) Planning Approaches

The planning approaches taken in the master plan in order to achieve the planning issues are as follows:

- Integration
- Problem-solving approach and preventive approach
- Scientific data based approach
- Bottom-up approach and top-down approach.

a) Integration

As it was mentioned before, it is important to take an integrated approach. Because there are many beneficiaries from coral reefs including government agencies and the private sector. The characteristics of coastal area are very diverse and complex so that various impacts have a connection with coastal problems, and coastal problems generate other functions that affect others.

In the Study, integration includes:

Conservation of Natural Environment and Regional Development:

Economic sectors utilizing the coastal area and its resources such as fishery industry and coastal tourism industry need to be taken into consideration in the master plan since their impacts are quite big.

Coral Reef and Other Ecosystem

Coral reef makes up just one of several ecosystems, and it is important to stress that there is a relationship among coral reef and other ecosystems such as seagrass ecosystem, sand beach ecosystem, mangrove ecosystem, tidal flat ecosystem and others.

The Sea and the Land

Land-based activities affect the coastal area directly and/or indirectly. Therefore, activities on the land also should be taken care of for conservation of coastal environment.

Governments, Community and the Private Sector

There are many and various coastal areas and resources users. Sometimes, there are conflicts among them. Therefore, related stakeholders should be considered in the master plan.

b) Problem-solving Approach and Preventive Approach

The master plan should not only be looking into existing problems to solve but also delving into problems which may occur in the future, to prepare measures for prevention of such predicted problems in the master plan.

c) Scientific Data Based Approach

It is important to have scientifically valid data in the formulation of a master plan for coastal area management, because only scientific data can show the reality of natural environment. The scientific data needs to be updated and any amendment has to be reflected in the master plan.

d) Bottom-up Approach and Top-down Approach

The coastal area should be managed not only by government agencies but also by existing users of coastal area including the private sector, academic institutions, and communities. Especially, the community should be the main management body in coastal management with support from government agencies in terms of legislation, technical support, physical infrastructure, and so on.

(5) Planning Strategies

The planning strategies taken in the master plan are four as follows:

- | |
|--|
| <ul style="list-style-type: none">• Coastal Management Zoning• Unit Based Management• Local Government Initiative• Community Based Coastal Management |
|--|

a) Coastal Management Zoning

There are many stakeholders existing in the coastal areas who are benefiting from utilizing coastal resources and space of the coastal area. Such present situation of the coastal area generates user conflict and impacts geographically, ecologically and socially. It is necessary that coastal spatial use plan at provincial and municipal/regency levels are established in order to coordinate among resource users, and minimize conflict arising from resource utilization.

Coastal Management Zoning is a guideline for coastal spatial use plan based on ecological and natural environmental points of view. The objectives of coastal management zoning are more specifically as follows:

- To preserve environmentally important and critical areas, and their unique features;
- To protect critical habitats, ecosystem and ecological processes;
- To separate conflicts of human activities; and
- To minimize effects of human use of the coastal area.

b) Unit Based Management

In the master plan, the Study proposes this concept of “Management Unit,” which corresponds to existing management problems and predicted issues. It involves categorizing management agencies by unit, classified by area of problem or by target problem. For example, coastal spatial use management unit is a unit to deal with coastal spatial use in order to minimize conflict. Coastal resources use management unit deals with all coastal resource use in order to achieve sustainable use of coastal resources and to minimize conflict among resource users. Each management unit involves related multi-sectoral agencies. Table 2 shows the scope, objectives, and management targets of each management unit.

Table2 Contents of Management Unit Plans

Management Unit	Scope of Unit Plan	Objectives	Management Targets
Coastal Spatial Use Management	spatial use based on geographic feature (areal basis)	appropriate coastal spatial use	use and occupation of shoreline and coastal water
Coastal Resources Use Management	utilization and collection of resources (target basis)	sustainable coastal resource use	fishery resources forest resources mineral resources
Urban Environmental Management	pollution load from urban area and inappropriate coastal urban area use (areal basis)	minimizing of pollution load and improvement of urban environment	water pollution garbage coastal structure
Watershed Management	pollution load from non-point sources in rural areas (areal basis)	appropriate land use	non-point pollution sources
Coastal Ecosystem and Marine Wildlife Conservation Management	protection of coastal ecosystem, marine wildlife (target basis)	protection of marine wildlife and its habitat	coastal ecosystem dugong sea turtles

Source: JICA Study Team

c) Local Government Initiative

In the past, North Sulawesi has suffered more from isolation and ineffective management due to inaccessibility to central government administration because of centralized form of government. Presently, a dynamic change in roles and functions of local government has been ready to occur in North Sulawesi since the implementation of decentralization policy in January 2001. Local governments now are expected to initiate coastal resources management by setting up new legislations and regulations, also to create new ideas and strategies in their coastal management.

d) Community Based Coastal Management

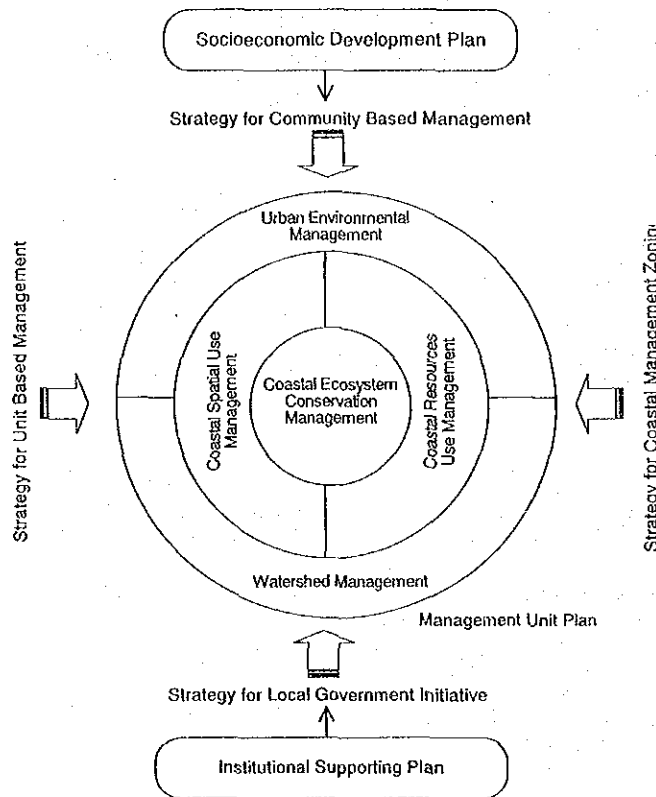
For managing the vast coastal area, the most effective and indispensable way is the so-called Community Based Coastal Management (CBCM). The idea is to let the users manage their area and resources since they are the ones who know the situation the most and can get benefits by managing the area. Although it should be kept in mind that CBCM is not a panacea for resource management, efforts should be made to encourage village-level control on coastal area and resources in North Sulawesi, and also to institutionalize CBCM in the form of a decentralized government administration.

CBCM needs a more dynamic partnership evolved between local communities and local government, and should also be complemented by the ability of the local government to provide enabling legislation and other assistance.

4. Solution of Coastal Problems toward Sustainable Coastal Use

4.1 The Overview of the Solutions

Solutions of coastal problems are explained in the master plan. The concept of master plan and the components of the master plan are shown in Figures 9 and 10.



Source: JICA Study Team

Figure 9 The Concept of Master Plan

The master plan is consisted of four major plans; namely. Coastal Management Zoning, Management Unit Plan, Institutional Supporting Plan and Socio-economic Development Plan. Coastal Management Zoning aims to identify the areas to be preserved and to be conserved based on the ecosystem conservation point of view. Coastal Management Zoning Maps are shown in Figures 11, 12, 13 and 14. Management Unit Plan is the key plan or the core plan based on management areas, targets and current administrative structure in the master plan. Management Unit Plan consists of five unit plans such as Coastal Spatial Use Management, Coastal Resources Use Management, Urban

Environmental Management, Watershed Management, and Coastal Ecosystem and Marine Wildlife Conservation Management. Institutional Supporting Plan is a complement plan to Management Unit Plan, and aims to build the institutional mechanism to implement Management Unit Plan. Socio-economic Development Plans is composed of Fishery Development Plan, Coastal Tourism Development Plan, and Improvement of Coastal Community Living Environment Plan. Socio-economic Development Plan aims to strengthen area economy to support coastal management and to contribute to poverty reduction in the coastal community.

Source: JICA Study Team

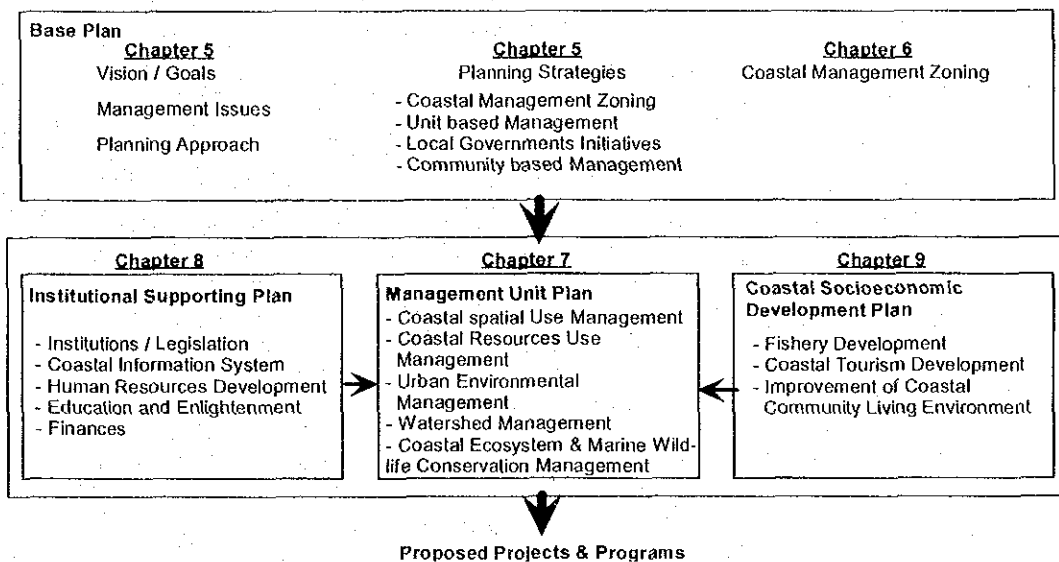


Figure 10 Structure of Coastal Management Plan in Main Report

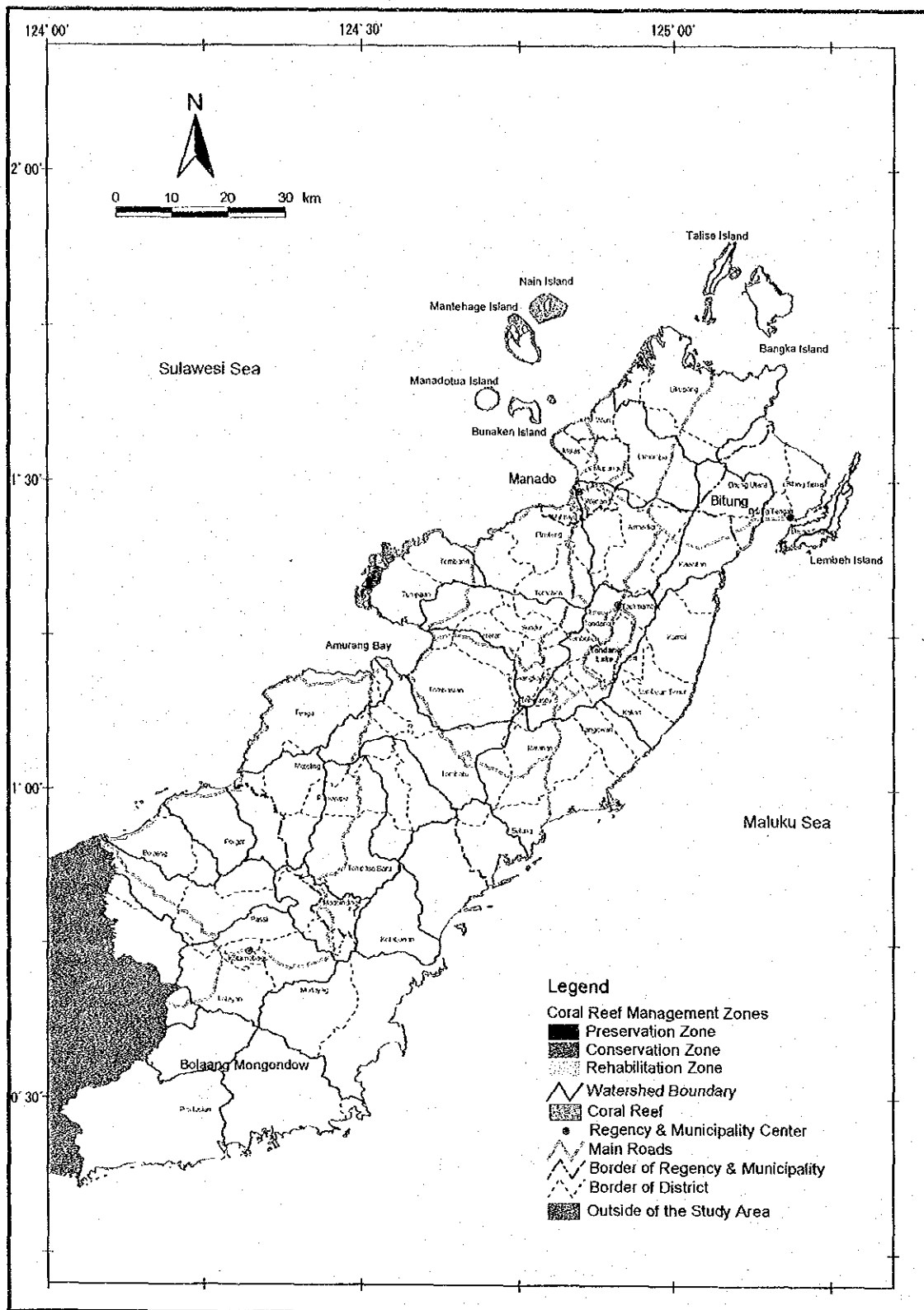


Figure 11 Coral Reef Coastal Management Zoning Map

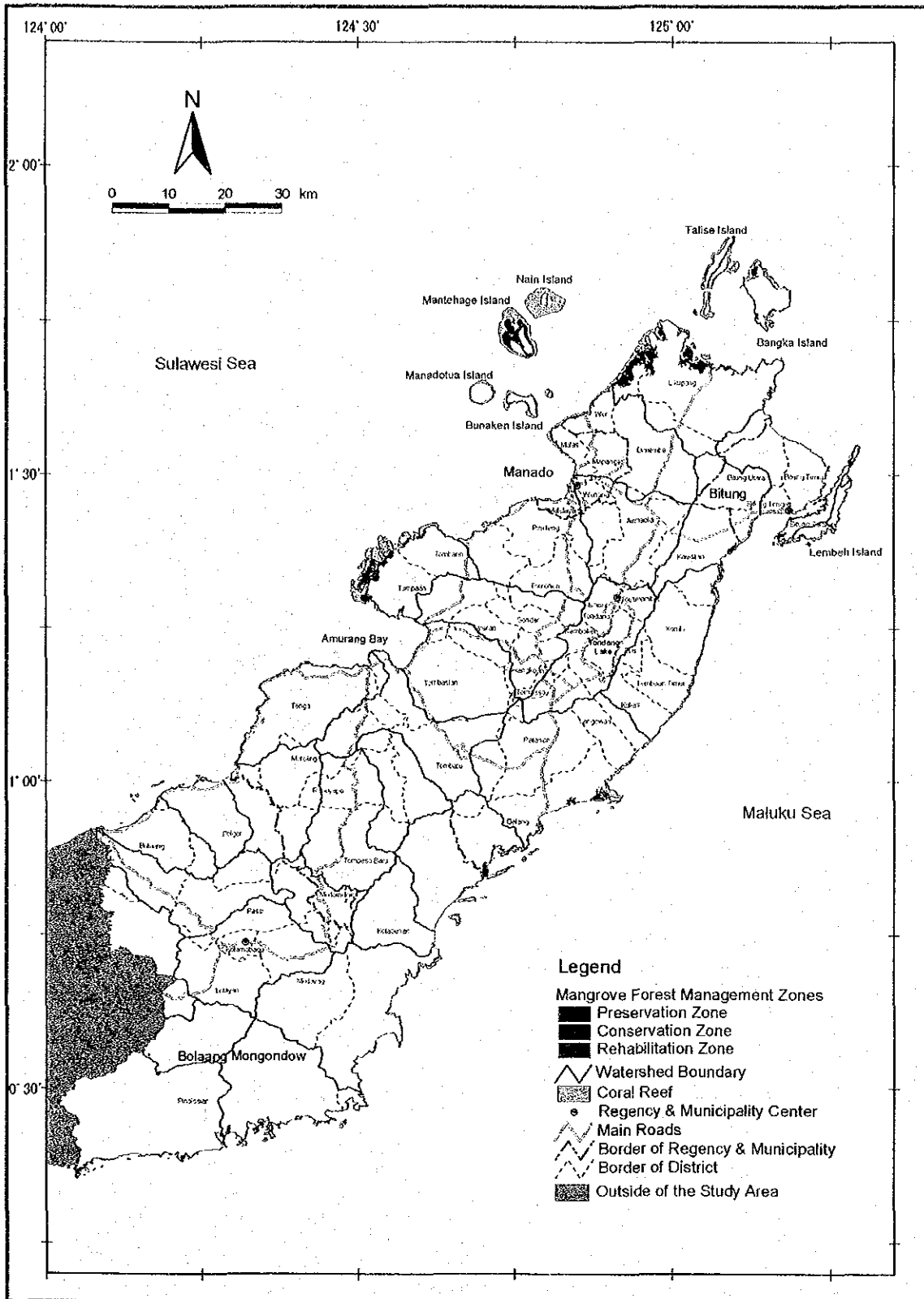


Figure 12 Mangrove Forest Management Zoning Map

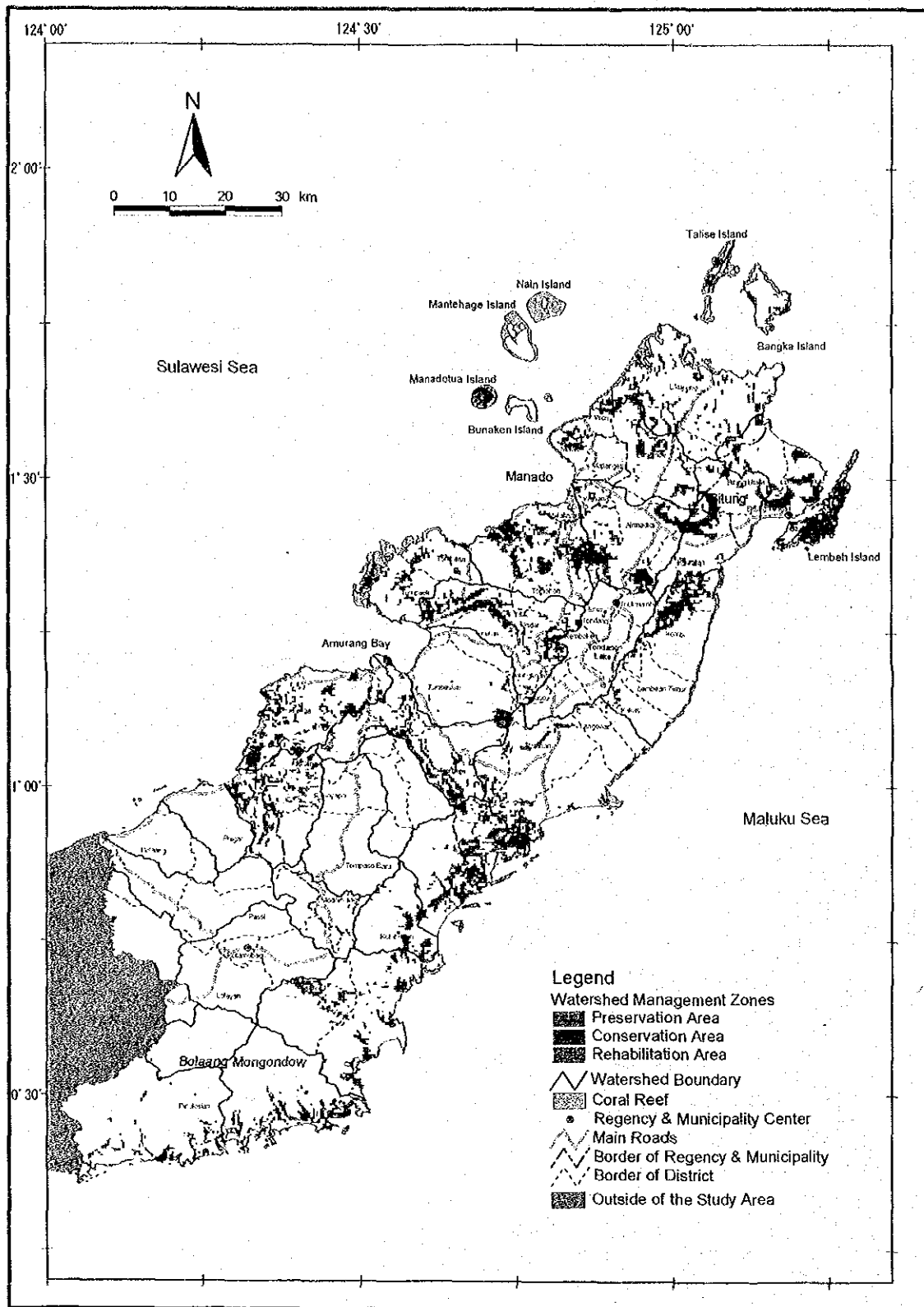


Figure 13 Watershed Management Zoning Map

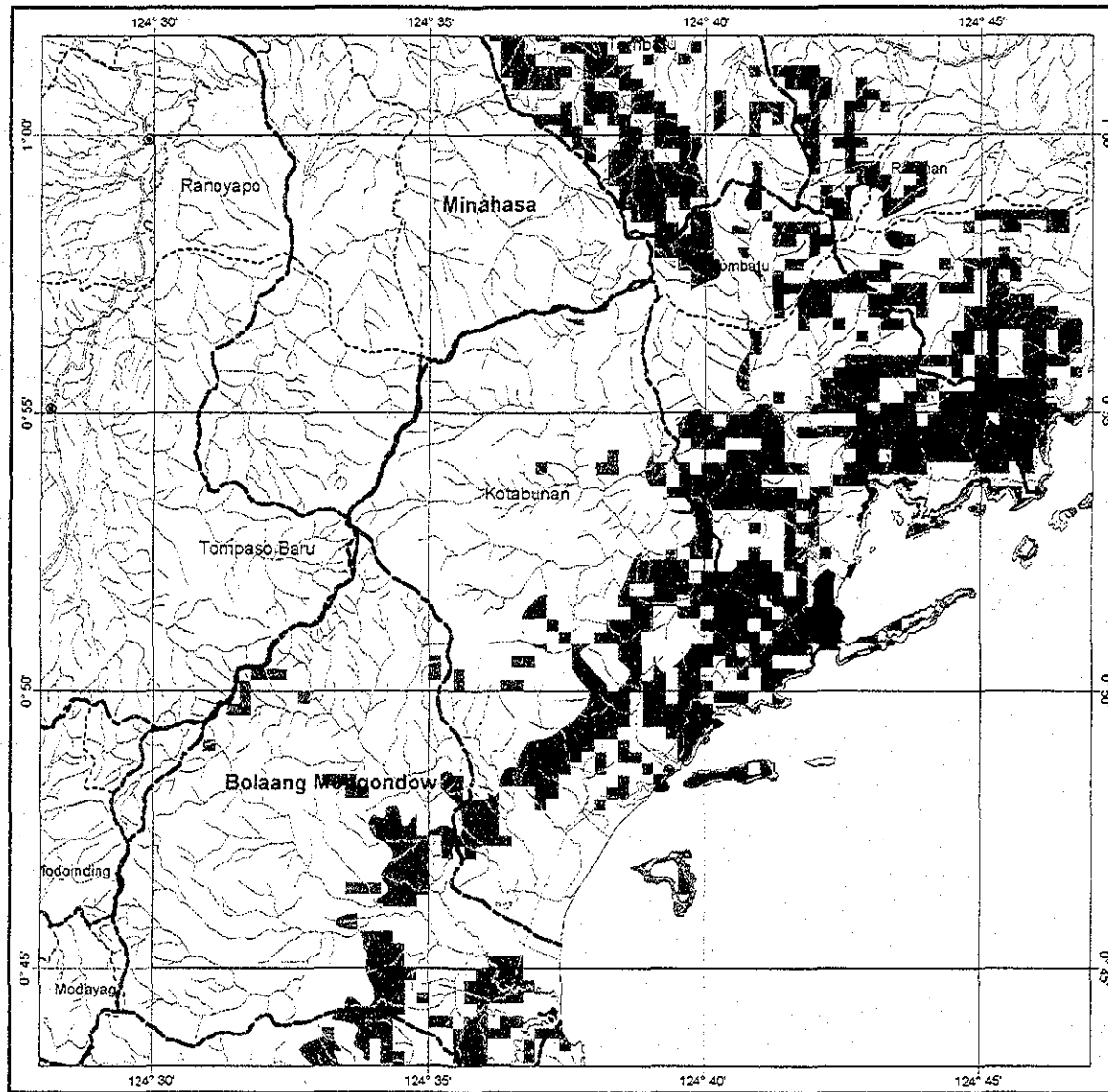
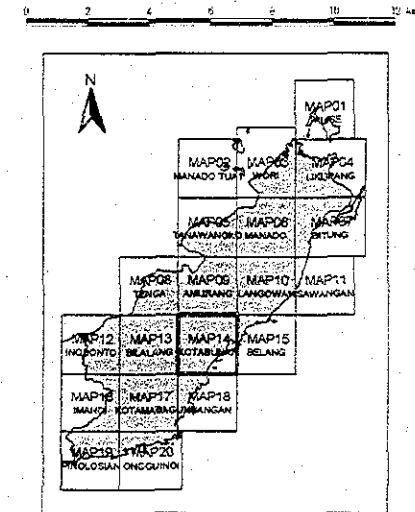


Figure 14 Example of Coastal Management Zoning (Belang Area)



Legend

- Coral Reef Management Zones**
 - Preservation Zone
 - ▨ Conservation Zone
 - ▩ Rehabilitation Zone
- Mangrove Forest Management Zones**
 - Preservation Zone
 - ▨ Conservation Zone
 - ▩ Rehabilitation Zone
- Watershed Management Zones**
 - ▨ Preservation Zone
 - ▩ Conservation Zone
 - ▨ Rehabilitation Zone
- ▨ Fair (Coral Cove 26-50%)
- ▩ Poor (Coral Cover 1-25%)
- ▨ Seagrass & Algae
- Sand
- △ Shoreline
- Coral Reef Area
- ▨ Watershed Boundary
- ▨ Rivers
- ▨ Main Roads
- ▨ Other Roads
- Provincial Center
- ⊙ Regency & Municipality Center
- ⊙ District Center
- ▨ Border of District
- ▨ Border of Regency & Municipality
- Area of the sheet of Topographic Map

4.2 Authorization of the Master Plan

The master plan, named “Integrated Coral Reef Management Plan in North Sulawesi”, which was prepared by the Study Team, has to be authorized by North Sulawesi Provincial Government in order to be implemented. The master plan should be legalized based on proposed “Provincial Law on Management and Sustainable Development of Coastal Area and Resources in North Sulawesi.”

Municipal and regency governments including Manado, Bitung, Minahasa, and Bolaang Mongondow are also expected to authorize their parts of coastal area in the master plan for formulation of coastal management plans at municipal and regency levels, which will be prepared by municipal and regency governments.

4.3 Clarifying the Roles of Related Agencies for Coastal Management

In order to implement a comprehensive and integrated coastal management in the area, it would be important to clarify local government agencies’ roles and functions in different levels. The proposed roles and functions of the different levels of government for coastal management are shown in Table 3.

Table 3 Proposed Functions of Each Government Agency for Coastal Management

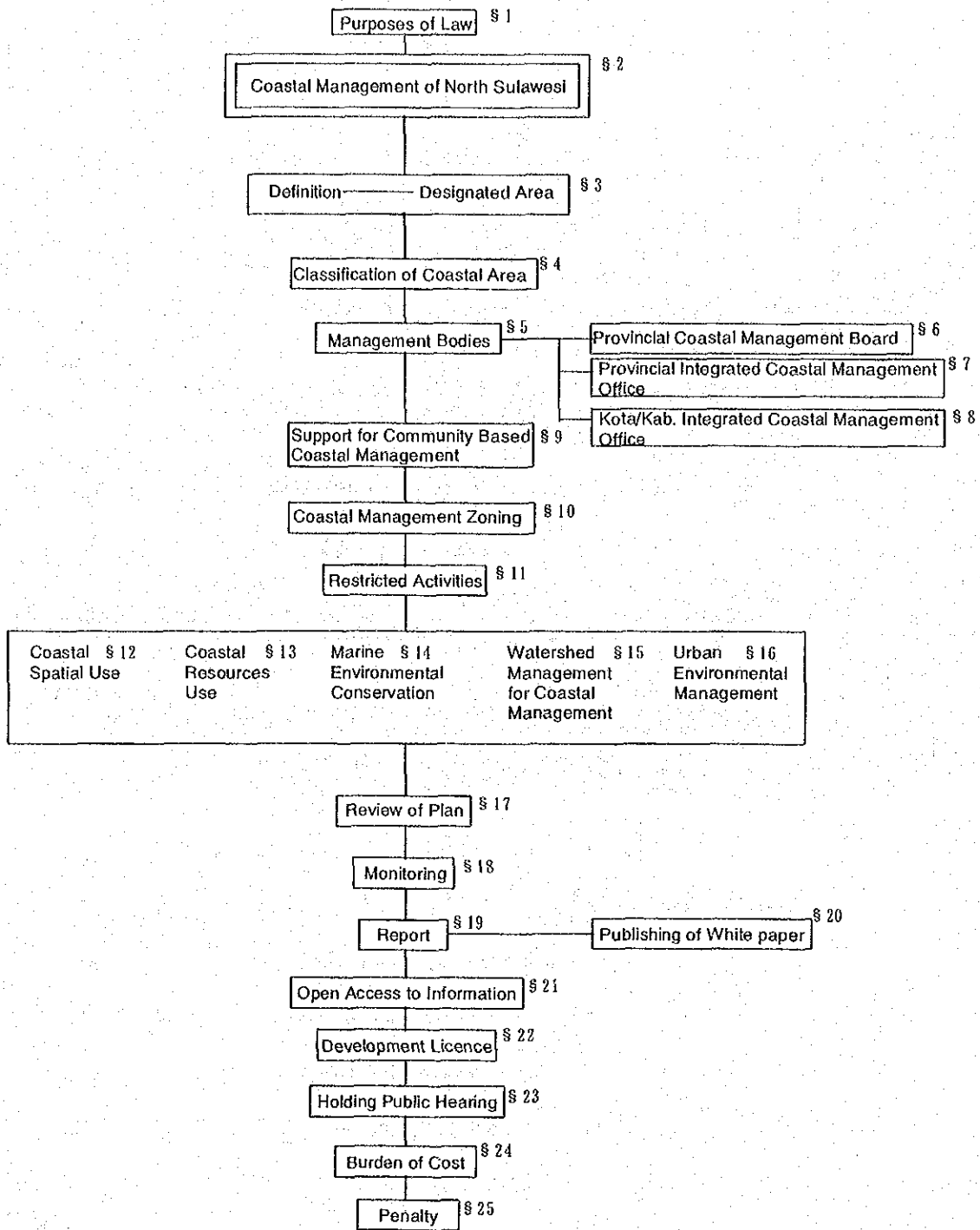
Government Agencies	Roles	Functions of Coastal Management
Central Government	<ul style="list-style-type: none"> • policy making • formulation of national plan • formulation of guidelines 	<ul style="list-style-type: none"> • establishment of national coastal management policy • establishment of national laws and regulations related to coastal management • formulation of technical guidelines including management zoning for coastal management • supporting capability building for local governments • human resources development • enlightenment and dissemination for conservation of coastal environment nationwide • coordination between provincial governments and central government agencies • research and development
Provincial Governments	<ul style="list-style-type: none"> • formulation of provincial coastal management plan • coordination among municipal and regency governments 	<ul style="list-style-type: none"> • formulation of provincial coastal management plan and guidelines • planning of coastal management zoning • establishment of provincial protected areas • provision of technical support for municipal and regency governments • operation of coastal information system • monitoring and assessment of coastal area conditions • issuance of coastal resources utilization license / permit within 3 – 12 miles • endorsement of coastal development license and permit for municipality and regency • monitoring and evaluation of programs/projects related to coastal management • evaluation and endorsement of EIA for BAPPEDA • human resources development
Municipal and Regency Governments	<ul style="list-style-type: none"> • formulation of action plan • implementation of coastal management plan 	<ul style="list-style-type: none"> • formulation of coastal management action plan • formulation of coastal use plan at municipal and regency levels • implementation of coastal management zoning • implementation of protected area management • monitoring of coastal management at municipal and regency level • coordination among villagers for spatial and resources use in coastal area
Village Governments	<ul style="list-style-type: none"> • planning and implementation of CBCM • Coordination among villagers 	<ul style="list-style-type: none"> • formulation of community coastal management plan • planning and implementation of community-based coastal management • registration of non-powered fishing boats

Source: JICA Study Team

4.4 Establishment of Provincial Coastal Management Law

There are so many existing regulations regarding coastal management in the different coastal related sectors. Some regulations even conflict with each other because of inconsistency. It is, therefore, necessary that a legal structure for coastal management be established in order to show unified coastal management policy and measures. Provincial Government should establish the “Provincial Law on Management and Sustainable Development of Coastal Area and Resources in North Sulawesi” for integrated coastal management.

The proposed “Provincial Law on Management and Sustainable Development of Coastal Area and Resources in North Sulawesi” consists of 25 articles. The structure is shown in Figure 15.



Source: JICA Study Team

Figure 15 Structure of Provincial Law on Management and Sustainable Development of Coastal Area and Resources in North Sulawesi

4.5 The Need for Provincial Integrated Coastal Management Office (PICMO) and Municipal/Regency (Kabupaten/Kota) Integrated Coastal Management Office (KICMO)

At present, coastal area use is controlled by sector-base and even management of coastal area is confused and is not effectively done due to the overlapping or the non-designation of responsibilities among agencies. It is desperately needed to establish the Provincial Integrated Coastal Management Office (PICMO) at the provincial level and the Municipal/Regency Integrated Coastal Management Office (KICMO) at municipal/regency level as a unified organization under "Provincial Law on Management and Sustainable Development of Coastal Area and Resources in North Sulawesi."

Objectives of establishment of PICMO and KICMOs are as follows:

- To conserve coastal environment and promote regional development through sustainable coastal resource use;
- To construct coastal management structure to minimize institutional and sectoral conflicts;
- To promote impartial coastal development based on the potentiality of provincial coastal areas; and
- To provide benefit for people through sustainable use of coastal areas.

Proposed roles of PICMO and KICMOs at provincial and municipal/regency levels are shown as shown in Table 4.

Table 4 Proposed roles of PICMO and KICMOs

PICMO	KICMO
<ul style="list-style-type: none"> • to formulate an integrated provincial coastal management plan • to establish guidelines for coastal management • to formulate a Provincial Coastal Spatial Use Plan • to establish environmental standards • to monitor coastal conditions including coastal resources • to endorse AMDAL to BAPEDALDA • to review development plans from developers and/or other government permits such as business permit and occupancy permit, and to issue development permit and/or license to developers and government agencies • to coordinate the different related agencies for coastal management at provincial and municipal/regency levels • to conduct an enlightenment program 	<ul style="list-style-type: none"> • to formulate integrated Municipal/Regency coastal management plans • to formulate a Municipal/Regency Coastal Spatial Use Plan • to monitor coastal conditions including coastal resources • to monitor coastal development projects • to conduct an enlightenment program

Figure 16 shows the positions of PICMO and KICMOs in the government organization.

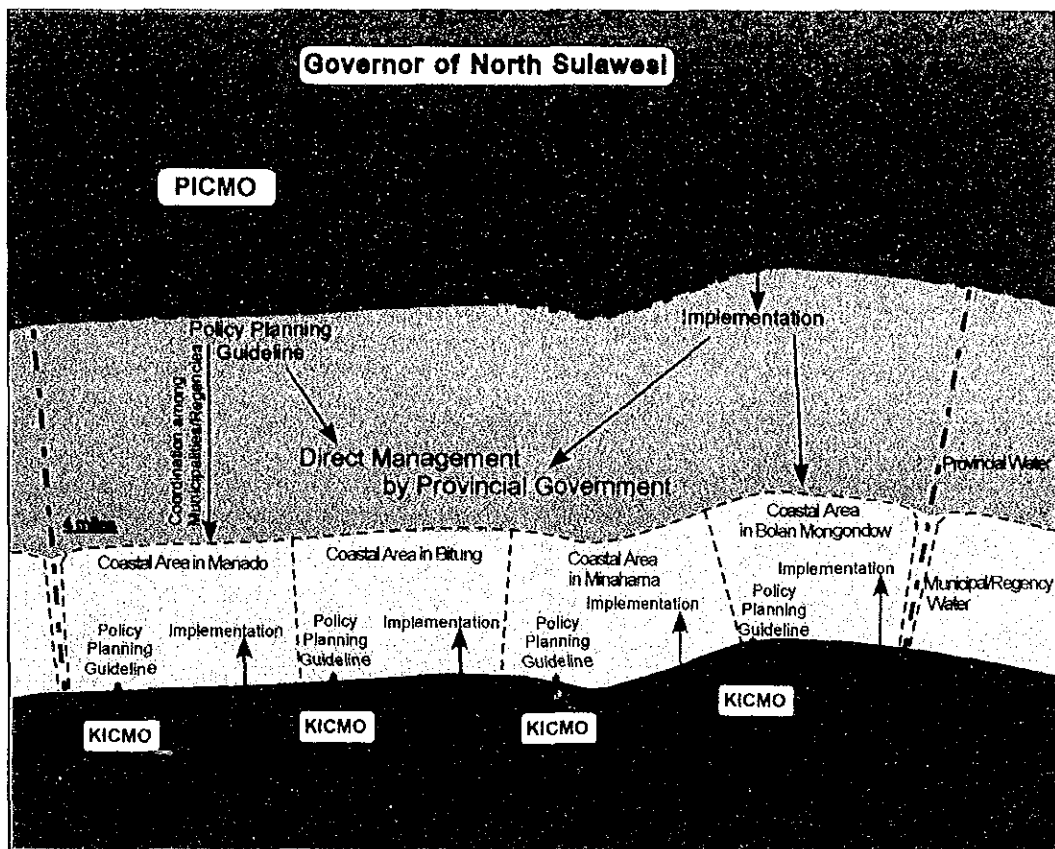


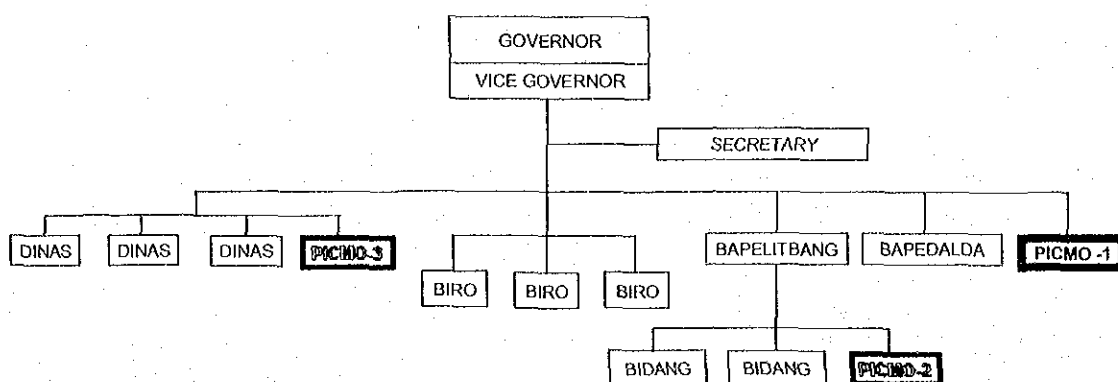
Figure 16 Positions of PICMO and KICMOs in the Administrative Structure

PICMO have several options to be located at different levels as follows:

- Alternative -1 (PICMO-1): Board level (*Badan*) – (the same as BAPELITBANG and BAPPEDA)
- Alternative -2 (PICMO-2): Division level under BAPELITBANG (*Bidan*)
- Alternative -3 (PICMO-3): Department (*Dinas*) Level

Figure 17 and Table 5 show several alternative status of PICMO and advantage and disadvantage of each one proposed. These options were discussed at Municipal/Regency meeting and Provincial and National Steering Committee meetings. Alternative-1 is recommended as suitable for coastal management in North Sulawesi according to Table 4.

Staff members of PICMO and KICMOs should have extensive capability for coastal management (see Table 5). It is required that around 10 competent persons should staff PICMO and each KICMO respectively.



Source: JICA Study Team

Figure 17 Alternative Status of Provincial Integrated Coastal Management Office

Table 5 Options for Establishment of PICMO

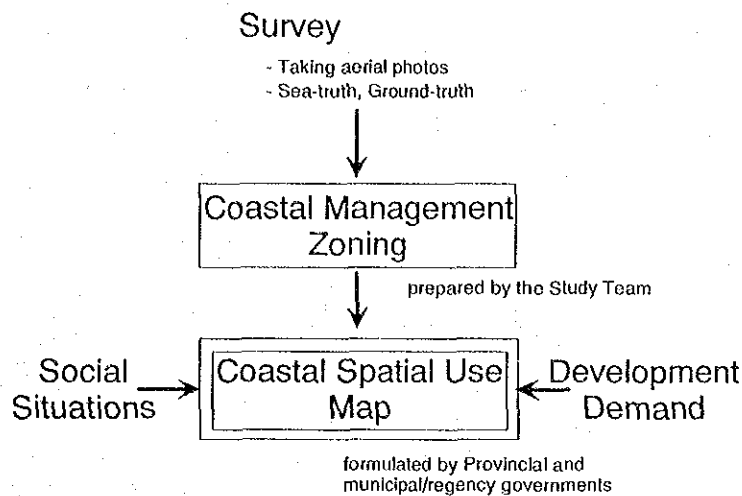
Status	Advantages	Disadvantage
Alternative-1 (PICMO-1) Board level (<i>Badan</i>)	<ul style="list-style-type: none"> • Technical support from planning to implementation can be provided to the Governor. • Plan can be formulated. • Projects can be implemented. 	Functions could conflict with that of BAPELITBANG
Alternative-2 (PICMO-2) Division level under BAPELITBANG (<i>Bidan</i>)	<ul style="list-style-type: none"> • Administrative tasks of related agencies can be coordinated. • Plans can be formulated. 	Projects cannot be implemented.
Alternative-3 (PICMO-3) Department Level (<i>Dinas</i>)	Projects can be implemented.	Sectoral coordination is difficult. Plans cannot be formulated.

Source: JICA Study Team

4.6 The Need for Formulation of Coastal Spatial Use Plan

Coastal Spatial Use Plan aims to minimize conflict among coastal users, and maximize potentiality of coastal area; therefore, it is important for the provincial and municipal/regency governments to establish a Coastal Spatial Use Plan based on the ecological situation and development potentiality of the area. The Provincial Coastal Spatial Use Plan should be established first, then following the provincial plan, Municipal/Regency Coastal Spatial Use Plan should be established. The reason for this is that environmental impacts affect not only one area or one regency but also the other areas and regencies as well through the flow of coastal water which passes the administrative boundaries. Therefore, municipal and regency governments should formulate detailed Coastal Spatial Plans from a wide range of viewpoints on coastal area.

Coastal Spatial Use Plan needs to consider Coastal Management Zoning prepared by the Study Team which shows identified important and critical areas from viewpoints of coastal natural environmental and ecosystem conservation, and also socio-economic demand and development direction (see Figure 18). It is important to strike a balance between social situations and development demand by discussion among stakeholders.



Source: JICA Study Team

Figure 18 Process of Coastal Spatial Use Plan

4.7 Human Resources Development for Coastal Management

The coastal management requires an integrated or comprehensive administration in the various fields and levels, so that present administrative ability of local governments to implement the master plan seems low due to the lack of competent human resources. It would not be an exaggeration to say that the success of coastal management of North Sulawesi would depend on securing competent government staff.

PICMO and KICMOs are key players for coastal management. Necessary skills or education levels for PICMO and KICMOs for implementation of the master plan are shown in Table 6.

At present, however, coastal management capability is not enough. In order to achieve improvement and development of management skills for local government staff, the following should be taken:

- to improve internal government human resources through on-the job and in-house training; and
- to appoint external human resources as local government staff such as those in local universities and central government.

Table 6 Necessary Specialties for Government Staff of PICMO

Management Units	Specialties
Law	Law
Coastal Information Center	GIS, Information management Statistics
Coastal Spatial Use Management	Land use planning/Spatial Planning Geography Physical oceanography Coastal engineering/Hydrology Resource use
Coastal Resources Use Management	Resource management Fishery/Marine biology Forestry/Botany
Urban Environmental Management	Urban planning Coastal engineering Pollution control Sanitary engineering
Watershed Management	Land use planning Agriculture/Soil engineering Forestry Civil engineering/River engineering
Coastal Ecosystem & Marine Wildlife Conservation Management	Ecology Zoology/Aquatic animals/Fishes/Marine biology/ Marine wildlife Coastal botany/plankton, seagrass Protected Area management Marine wildlife conservation/conservation biology

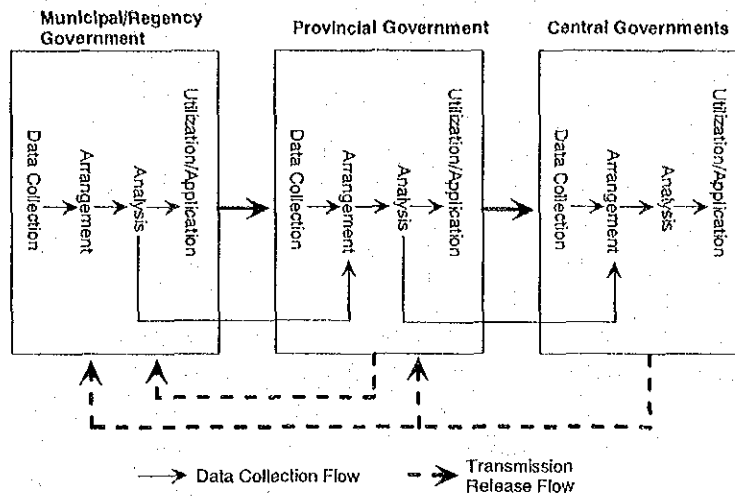
Source: JICA Study Team

4.8 Coastal Information System

Scientific and well-grounded information and data are indispensable for coastal management including planning, enforcement and evaluation. It is possible for anybody to point out coastal environmental problems, but at the same time, it is difficult to show any evidences. Rumors cannot be a basis for valid and effective management.

Coastal information system is shown in Figure 18. The procedure to establish coastal information system can be summarized as follows:

- Clarify necessary data/information regarding coastal management;
- Make simple and clear formats to collect data/information;
- Set up a mechanism to collect and compile data/information in an agency and among agencies;
- Have skills to analyze, value the data/information; and
- Then, use and apply.



Source: JICA Study Team

Figure 18 Coastal Information Flow

Table 7 shows items of necessary information for coastal management.

Table 7 Necessary Information for Coastal Management

Categories	Items
Spatial Use Management	<ul style="list-style-type: none"> • shoreline type • coastal use, infrastructure • beach erosion and sedimentation
Coastal Resource Management	<ul style="list-style-type: none"> • environmental conditions (shoreline forms, sea bed conditions, currents, tidal level and current, wave, water quality, coral reef seagrass beds, mangrove forest, nekton, benthos) • weather conditions • types and preservation of coastal resources • catch of fishes in weight by fish, by area, by fishing method, and fishing conditions • location of fishing ground, environmental conditions of fishing ground • fishing season • fishing methods and gears • number of fishing boats (type, size, with or without engine) • location of set-nets and facilities of fishery • location and production of mariculture • location and production of fishponds/shrimp ponds • number and structure of fishery workers • socio-economic conditions of households of fishermen
Watershed Management	<ul style="list-style-type: none"> • land use and vegetation • pollution sources (point and non-point sources) • watershed system, amount of rainwater, river water volume
Urban Environmental Management	<ul style="list-style-type: none"> • pollution sources (point and non-point sources, volume and quality) • coastal use, infrastructure
Coastal Ecosystem & Marine Wildlife Conservation	<ul style="list-style-type: none"> • number of endangered species • location and environmental conditions of habitats (nesting beach, spawning)

Source : JICA Study Team

Provincial Coastal Information Center

Provincial Coastal Information Center is expected to be established under BAPELITBANG and to be transferred to PICMO after establishment. Provincial Coastal Information Center should have functions of mainly data collection and analysis for use by decision makers and related agencies. The details are as follows:

- to formulate guidelines for data collection;
- to collect necessary data from related agencies including provincial government agencies, municipal/regency government agencies, academic institutes;
- to maintain Coastal GIS (developed by the Study Team);
- to transmit and release coastal information;
- to support decision makers and implementing agencies regarding coastal management for effective coastal management through data analysis; and
- to exchange information with other international organizations and research centers.

4.9 Indispensable Community Based Coastal Management

In the vast length of coastal area, it is not realistic to manage the area without the aid of users such as coastal community people and other users. Therefore, community participation in coastal management is indispensable with support from local agencies. According to the rapid coastal community survey done by the Study Team, coastal community people can identify coastal management problems and can give unexpected sophisticated answers for the reasons for these problems; however, they almost always do not have any ideas about how to manage or conserve their coastal area and resources.

In North Sulawesi, the role of community level coastal resource management is undermined due to diminishing of traditional management, and it has been replaced by open access regime, which is free access for all with uncontrolled entry for resource use and gives the economic incentives to users, and encourages the user to exploit as much of the resources as possible before others do. Introducing a new coastal management model in the area will somehow limit this open access regime, by establishing a sense that the user who manages the area will benefit the most. Especially, granting territorial boundaries and user rights in fisheries are supposed to be needed for controlling entry and the form of this entry system will require a series of discussions with all stakeholders involved in coastal resource management in the area.

There are some fishermen who even prefer open access regime because their coastal resources are very limited due to destruction of coral reefs and their environment and have

to go neighboring area or even sail long distances to catch fishes. Therefore, it would be important to introduce these user rights and territorial boundaries with much caution or to introduce them step-by-step; otherwise, there might be a risk of objections from community people and make it more difficult to introduce CBCM in some areas.

4.10 Securing Finances for Implementation

Although roles of local governments became more important and local agencies will implement many projects under the decentralized administration, the issue of local finance is imminent. It is natural for local government to tend to allocate limited budget for urgent matters and priority matters such as development projects or some infrastructure projects. Up to the present, a management project is not positioned in a priority area in the local agenda; however, it should be realized that cost for sustainable coastal use is significantly lower than rehabilitation work and recovery of lost benefits from destroyed coastal area.

It should be emphasized that the sustainable use of coastal area is far important for regional development. North Sulawesi's coastal area has a value of Rp. 19 trillion. And it is estimated that implementation of the master plan require Rp. 238,394 million, or US\$ 24 million. Therefore, it is the most cost effective for the provincial and municipal/regency governments of North Sulawesi to prepare a budget of Rp238,394 million to implement the master plan to get benefits worth Rp. 34 trillion.

There would be two ways for securing budget for implementation of the master plan such as "strategic use of limited financial sources" and "establishment of new financial sources revenue" as follows:

- **Strategic use of limited financial sources:** strategic priority and phased implementation; and
- **Establishment of new financial sources of revenue:** environmental tax, revenue from tourism, entrance fee of provincial marine park.

Table 8 Cost of Proposed Projects/Programs

Category	Initial	Maintaining (annual)
Coastal Spatial Use Management	2,012	0
Coastal Resources Use Management	49,229	51,537
Urban Environmental Management	2,770	2,350
Watershed Management	100	11,780
Coastal Ecosystem and Marine Wildlife Conservation Management	10,590	27,500
Institutions and Legislation	890	225
Coastal Information System	1,750	22,016
Human Resources Development	8,982	87,725
Education and Enlightenment	143	1,534
Finances	0	326
Fishery Development	3,060	3,400
Coastal Tourism Development	20,091	4,946
Improvement of Coastal Living Environment	4,390	0
	104,007	134,387
	238,394	

Source: JICA Study Team

4.11 Socio-economic Development for Coastal Management

Community initiative is indispensable if the coastal area is to be managed meticulously and suitably. However, coastal conservation cannot be forced upon coastal people who are economically weak and have no other livelihood alternatives other than to exploit natural resources. It is necessary to widen the income sources, to support livelihood improvement and to improve living environment for coastal people. The following are proposed in order to develop socio-economic situations of coastal community:

Fishery development

- establishment of community artificial reef
- promotion of marine culture including development of grouper culture and establishment of seaweed processing plant
- study and establishment of fund-raising and/or fee/levy collection system
- promote training and extension services for fishing communities
- enlightenment education for fisherman and fish farmers

Tourism development

- ecotourism type of development of Manado Tua Island
- establishment of Lembeh Provincial Marine Park
- establishment of Belang-Kotabunan Provincial Marine Park
- rationalization of the procedure and criteria for evaluation of the building and business permits in coastal area
- formulation and implementation of special program for cleaning and beautification in coastal tourism areas

- sharing of coastal management by tourism sector including financial support to management cost, day-to-day management work such as cleaning and beautification of the tourist areas, environmental monitoring, visitor education and services
- establishment of certification system for tourist guides and diving and boat operators

Improvement of Rural Coastal Community Living Environment

- formulation and implementation of development program on sanitation system for the rural coastal settlement and villages according to priority
- formulation and implementation of development program of water supply and other social infrastructure for small islands and communities in remote areas

5. Evaluation and Conclusions

5.1 Evaluation

(1) Technical Aspect

Indonesian Government adopted decentralization policy in 2000. In the master plan, local government initiative is one of several important approaches discussed, so that the master plan accords with Indonesian decentralization policy.

However, skills and capability of local government staff is not enough for appropriate coastal management. Therefore, human resource development programs are set to be carried out in the beginning of implementation phase in order to smoothen implementation of the master plan.

Integrated coastal management is a relatively new concept in Indonesia. However, individual and/or part of management technology are not new nor highly sophisticated ones. These technologies are rather basic and ordinary for government officers, so that the implementation of the master plan would not have difficulties from the technical viewpoint.

(2) Economic Aspect

Total value of coastal area in the Study Area is estimated at Rp. 34 trillion a year. However, net social loss will be 2.3 to 8.2 times in total during 25 years than the benefit to direct coastal users. The Study Team proposed 43 projects and programs in the master plan in order to manage coastal area appropriately. According to the cost benefit analysis, benefit will exceed management cost in 2006, if the master plan will be implemented.

(3) Social Aspect

The social aspect of the master plan can be evaluated as the most appropriate to the area and the acceptance of the projects and programs will be very high. Because the master plan took Community Based Management approach based on the result in Pilot Project sites wherein both operation and research were carried out in order to plan a realistic and applicable CBCM.

(4) Environmental Aspect

Coastal environment of the Study Area has been deteriorated by human activities. The master plan provides solutions to the coastal problems through conservation and rehabilitation of coastal area. Therefore, deteriorated coastal areas of North Sulawesi can be rehabilitated, if the master plan will be implemented immediately.

5.2 Conclusions

The Study conducted the first detailed scientific survey on the coral reef and other coastal environment in the area, and concluded that the coral reef conditions and other coastal environment are deteriorated to the critical level. If the destruction of the coral reefs continues, the negative impacts will be tremendous in the area. Specifically, the coastal communities are economically vulnerable and open to negative impacts from the environmental deteriorations, because their economic activities are depending heavily on the coastal area, especially on the amount of resources. Consequently, in the near future, it will be a big worry to have negative impacts on the North Sulawesi economy.

It is the most urgent and important strategies for recovering the condition of coral reefs and coastal environment to stop destructive activities on coastal area immediately and to start the practice of sustainable coastal resource use by coastal communities and also other stakeholders who are utilizing coastal resources.

The socio-economic benefits of coastal management is unaccountable, because if the destruction advanced and depleted the resources, it would not be possible to restore the environmental conditions for quite a long period of time and the effort required would be tremendous in terms of money and time.

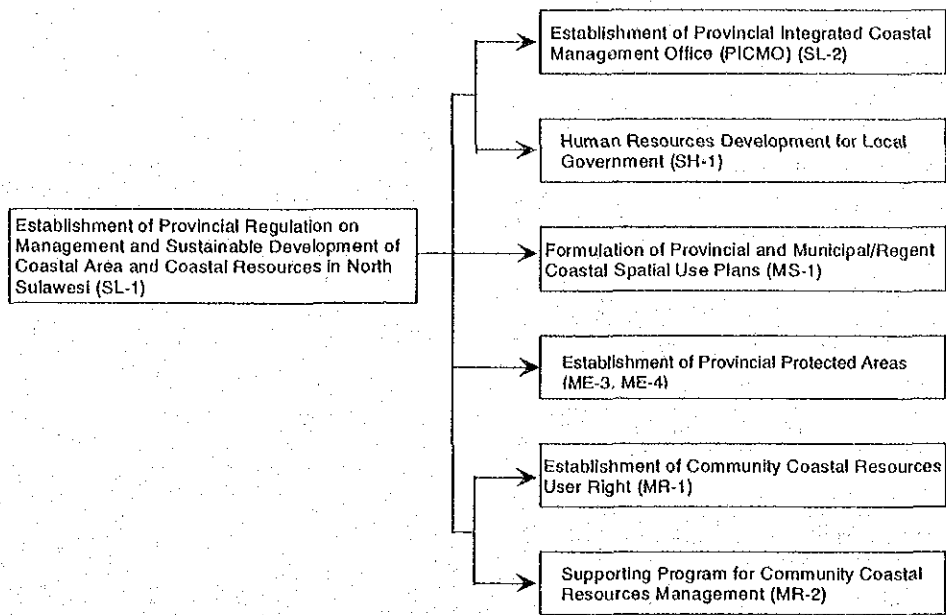
Recommendations for Priority Projects and Programs

The Study Team recommends that the following 6 points be considered by the local government agencies in North Sulawesi in cooperation with central government.

- 1) There is an urgent need to establish the coastal management regulations in North Sulawesi and to establish an office which will coordinate coastal management activities at the provincial and municipal/regency levels. These offices shall have roles to make policy and plan, make regulations, issue licenses, monitor, gather information, dispatch people, etc.. These measures could pave the way for smooth implementation of the master plan.
- 2) Human resource development should be duly considered by the local related government agencies in order to match the needs of implementation of the master plan. Formal and in-house training, on-the-job training for integrated coastal management should be planned by the government agencies according to their needs.
- 3) It is necessary that coastal spatial use plan at provincial and municipal/regency levels are established in order to have coordination among resource users, and minimize conflict arising from resource utilization. In order to make the coastal spatial use plan at each level, the plan needs to have a guideline from the ecological and natural environmental points of view. The Study prepared

a coastal management zoning, which is a guideline for coastal spatial use. Therefore, it is recommended that local agencies at different levels make their own coastal spatial use plan based on the management zoning.

- 4) The conserved coral reef in the Study Area is limited (only 0.2 % of total coral reef area). And the size of conserved area is not wide and the conservation effort is not at national level. There is a need to legally protect this limited conserved coral reef. Establishment of Provincial Protected Area is recommended in order to manage limited conserved coral reef appropriately based on local environmental and socio-economic situations. Protected area management at provincial level is a new concept.
- 5) It is recommended to stress the introduction of Community Based Coastal Management (CBCM) in the area. This CBCM is a participatory approach to the coastal management and this collective effort is the only means to be successful in the coastal management, which involves quite a long stretch of coast as a whole. This CBCM is also following the decentralization policy, which transfers responsibility to local government and makes possible the preparation and implementation of appropriate strategies and plans to meet local needs.
- 6) District level offices such as PMD office will have a key role to implement CBCM in their areas. It is important for local governments to establish a close working relationship with villages, even to the extent of implementing a project like CBCM together with the community.
- 7) The recommended priority projects to be implemented by the local government in the short, medium, and long terms are as shown in Figure 19.



Note: Enclosed in parenthesis is the project number corresponding to the list of projects/programs found at the end of this report.

Source: JICA Study Team

Figure 19 Priority Projects and Programs

6. Recommendations

One of the conclusions which this Study came up with after various surveys, studies, and discussions is that the situation of coastal area in North Sulawesi is in the very critical stage and needs to have some immediate actions to stop the deterioration of the coastal natural environment. If no actions are to be taken immediately, the coastal people who heavily depend on the coastal area and resources are going to be affected severely and directly, and as the consequence, the area's economy will be also deteriorate one way or another.

Under the new law of local autonomy, it is the local government responsibility to manage coastal area properly and protect coastal people's lives and livings, and also to contribute the area's sustainable development in the long run. In order the local government to achieve this new role and the new goal, the Study team would like to recommend the following seven items of actions, which the local government should consider to implement as soon as possible in order to achieve the proper management of coastal area by the local government initiative and efforts. As the first step, the recommendations are on the institutional arrangement, legislative arrangement and financial aspect of coastal management.

(1) Establishment of Provincial Regulation on Management and Sustainable Development of Coastal Area and Coastal Resources in North Sulawesi.

In the recent years, the local government gained their authorities on political decisions including management of coastal area in their administrative areas by Laws No. 22 and No. 25, 1999. It means that the local government responsibility on appropriate use of coastal area and resources by the existing stakeholders including coastal communities and private sector is now clear. The appropriate and sustainable use of coastal area does lead to reduction of poverty in the coastal area, also to improve the quality of living in the coastal communities, and finally to develop the North Sulawesi economy in the long run.

Therefore, it is important for the local government to have a legal framework for the coastal management in their areas. In this sense, we recommend to establish provincial coastal basic law on management and sustainable development of coastal area and coastal resources in North Sulawesi and make clear the each level of local government's responsibilities on coastal management and show the basic direction of coastal use in North Sulawesi.

a) Democratic Process for Making Coastal Basic Law

This coastal basic law called “ Provincial Regulation on Management and Sustainable Development of Coastal Area and Coastal Resources in North Sulawesi” needs to be processed in a democratic manner because “equity” and “ transparency” are the most important aspects of the law making process. In order to keep the democratic approach to make a law, as many as stakeholders have to meet and exchange their views and opinions for the formulation of coastal basic law. This coastal basic law will be legalized by the provincial parliament after various discussions and negotiations among and each stakeholders who share the common interests and getting own benefits in the coastal area.

BAPELITBANG will be a secretariat for the whole process and will have to disseminate all information necessary for making a law for coastal area to the each stakeholders and people in the province. The discussions among stakeholders need to reflect onto the law.

b) The Contents of the Coastal Basic Law

The coastal basic law should be based on the master plan of coastal management in North Sulawesi and should include the following contents.

- Making the responsibility of the existing Provincial Coastal Committee in North Sulawesi clear, which is the policy making body for appropriate coastal area management in North Sulawesi.
- Making each stakeholders responsibilities clear in the coastal management such as provincial government, regency/municipal government, community, and private sector.
- Establishment of Provincial Integrated Coastal Management Office (PICMO) and Kota/Kabupaten Integrated Coastal Management Office (KICMO), which are integrated offices of all related agencies in the coastal area and their expected function to make the management in the coastal area more efficient and effective.
- Legalization of Community Based Management (CBM) for coastal area. Also making local government responsibility clear to support coastal communities in the technical and financial aspects to implement CBM by the communities.
- Making coastal spatial use plan at provincial, regency/municipal, community level.
- Establishment of information dissemination system to the provincial people on policy of coastal management.

c) Keeping Consistency with Other Regulations

The coastal basic law planned to be established should have consistency among different level of same basic laws. Also the coastal basic law has to be consistent with other existing related laws and regulations from the country level to the

municipal/regency level laws and regulations. Therefore, it will be necessary to make adjustments among coastal basic laws in the different levels, and also consider other existing related laws and regulations for the formulation of the coastal basic regulation. In other words, the coastal basic regulation has be structured in order from the country level to the community level without any inconsistencies.

In order to achieve this orderly structured regulation system, some part of laws and regulations might need to be changed or abolished, therefore, a group of experts on local government regulations, and related administrative officers have to have a serious of discussions on making a proper coastal management regulation system. Especially, the provincial government has to pay attention to the national coastal basic regulation which is now in the process of establishment, and the provincial regulation needs to be consistent with the national law. Also planned municipal /regency coastal basic regulations in North Sulawesi province need to be consistent with the provincial coastal basic regulation in the context, contents, and terms, therefore, provincial government should open the information of the provincial coastal basic regulation and encourage the municipal/regency related government officers to participate the law making process at the province level.

(2) Establishment of Provincial Integrated Coastal Management Office (PICMO) and Kabupaten/Kota Integrated Coastal Management Office (KICMO)

One of the reasons which the coastal management has not been carried out in the area is that the responsible agencies are not clearly identified at provincial and municipal/regency governmental organizations. As the result, there are many coastal management problems are existing in North Sulawesi, and any measurements to solve these problems have not been taken seriously in the area.

It is, therefore, important to identify who is responsible for the coastal management in order to start taking actions to stop deterioration of the coastal environment. The important fact to consider is that the coastal management problems attribute to various reasons and the physical characteristics is influenced by both land and sea, the responsible agencies for the coastal management are various. Taking the fact into consideration, and the Study strongly recommend to have a unified office of all related agencies which are responsible for coastal management.

Therefore, we recommend to establish an office called Provincial Integrated Coastal Management Office (PICMO), which is responsible for coordination and implementation of coastal management and also Kabupaten/Kota Integrated Coastal Management Office (KICMO) should be established as well to be responsible for coordination and implementation of coastal management at municipal/regency level. PICMO and KICMOs should be working together to coordinate both level of local government

agencies in order to achieve an appropriate coastal management in the area. It is probably the most important and inevitable step for local government to realize effective and well functioned coastal management in the area, and it is the local government responsibility to achieve such coastal management in the area for the provincial people.

(3) Supporting for Provincial Coastal Management Committee

The Provincial Coastal Management Committee of which the chairperson is the governor of North Sulawesi province, has a key role for coastal management in North Sulawesi including legalization of the coastal provincial regulation. The agency which is identified as the secretariat of the committee is BAPELITBANG from the establishment of the committee. This role should be replaced by PICMO which is responsible for implementation of coastal management, however, the establishment of such office will need some time for the procedure. Therefore, BAPELITBANG should continue the committee's support in order to realize appropriate coastal management in the area until PICMO to be established. The following items are expected to be carried out by BAPELITBANG.

- to provide necessary information for the committee in order to make decisions on the sustainable use of coastal area and coastal resources in North Sulawesi;
- to support the committee to legalize the coastal basic law in the region; and
- to support the committee to establish PICMO.

(4) Community Based Coastal Management (CBCM)

It is clear that the coastal communities who heavily depend on the coastal area for their living should participate the coastal management. In other words, it is almost impossible to establish coastal area management without positive involvement of the prime user of the area, which are namely coastal community people. Although Community Based Coastal Management (CBCM) has been traditionally existing in North Sulawesi, as the fishing style and methods change and also as the social structure of the area changes, these traditional CBCM has been fading out from the area. It is, therefore, important to form an adequate CBCM which can be adaptable in the area.

The Study implemented a Pilot Project for CBCM in the four villages in North Sulawesi from October 2000 to February 2002 to see how things work in the field. The Study coordinated with USAID funded project called Coastal Resources Management Project (the local name is *Proyek Pesisir*) which has been implemented in the same area in the last 6 years. Also the pilot project involved local government agencies and local university in order to seek the most suitable form of CBCM and to find strategic approaches to

introduce such formed CBCM in the area. In the Pilot Project, the local government offices, local university, CRMP and NGOs coordinated together the training for extension officers which is the catalysis in the pilot communities. Also the environment base line survey and social base line survey were designed and implemented by these organization together with pilot project coastal communities.

The result of this operational research for implementation of CBCM showed that it is quite possible and successful for coastal communities to be responsible for making coastal management plans and its implementation. However, we should emphasize that CBCM cannot be implemented only by the coastal community participation but timely technical support from outside of villages are inevitable for establishment of workable CBCM.

The following items are expected as local government support for establishment of workable CBCM.

- to train Extension Officers who are selected from communities;
- to give technical support to the coastal communities to formulate coastal management plans;
- to give technical support to the coastal communities to implement their own coastal management plans; and
- to give partial financial support to the coastal communities to implement their own coastal management plans.

In North Sulawesi, a community empowerment project has been requested by the province to JICA in order to start CBCM in the area. Working together with CRMP up to the year 2003 when the project cease is also important for North Sulawesi from the view point of efficient resource mobilization.

(5) Making the Most Use of Output from the JICA Study

The Study developed Coastal Geographical Information System (GIS) through the study period based on the aerial photos taken in July to September 2000 together with various surveys and studies. The Coastal GIS content not only the natural environment of coastal area and resource information, but also land information and social and economic information as well. The developed Coastal GIS has been the important tool for the Study to analyze the existing conditions and also to make coastal management zoning.

The area study based of aerial photos which the JICA Study conducted is the first experience in Indonesia and such GIS information is important not only for planning of coastal management but also other planning and evaluations as well. This Coastal GIS is expected to utilize for developing coastal spatial management plans, other development plans, and Environmental Impact Assessment (EIA) in the area. This GIS is also

expected to be utilized not only by the local government in North Sulawesi but also national government in Indonesia and also foreign donors in order to achieve sustainable coastal use in the area.

Although the JICA Study proposed to establish coastal information center in the master plan, USAID funded project: CRMP and WWF are also planning to have same information center in their plans. Therefore, it is recommended the North Sulawesi government to coordinate the existing ideas of coastal information centers by examining the purpose, concept, and activities of each party's own plans.

(6) Strengthening the Relation with DKP and Foreign Donors

It would be beneficial for the provincial government to request both technical and financial supports to the central government especially to DKP in order to implement the master plan proposed by the JICA Study. The coastal management proposed by the Study can be a model in the country if the local government can materialize the implementation, and it would be adequate to expand the model throughout the country with adequate adjustments in each area. If the country can start coastal management throughout the country, it would make possible to realize the sustainable use of coastal resource in Indonesia and together with conservation of coastal environment, it would contribute to economic development in the country. From these reasons, it is reasonable for the central government to support implementation of this master plan by the local government.

In North Sulawesi, the significant fact is that the area has many foreign donors, which have been interested and invested much money for establishment of coastal management in the area in the past and in the present time as well. For example, USAID is supporting the Natural Resource Management Program (NRMP) including Coastal Resources Management Project since early 1990s. ADB and WB are also funding coastal management project called COREMAP in the last 10 years. It is very clear that the implementation of the master plan needs support from external resources such as bilateral donors and international funding agencies, therefore, the provincial and central governments should be encouraged to work on tapping resources from existing external resources for the implementation of proposed projects/programs.

(7) Local Government Initiative on Financing for Coastal Management

It is estimated to cost Rp. 238,394 million to implement all proposed projects/programs by the Study. It is recommended, therefore, to seek funds to implement seven (7) priority projects/programs first by the local government. It is remarkable progress and is a first step for some local government offices such as BAPELITGANG and Fisheries and Marine Affairs Office to budget Rp. 200 million and 750 million respectively for coastal

management in the 2002 fiscal year. These efforts should be encouraged more and the other local government offices who are related to coastal management should have their own budget line for the implementation of the projects/programs. Comparing the value of coastal area in the region estimated as Rp. 34 trillion, this money which is used for coastal management is small in terms of the amount but is significant in terms of the effects. Therefore, every related agency is expected to make efforts to create some budget for their own activities in coastal area.

Appendix

Proposed Projects and Programs

Appendix 1 Proposed Projects and Programs

Project Code	Project / Program Name	Implemented Schedule						Implementation Body (Main Execution Agency)	Costs (Mill. Rp.)	
		Short-Term				Mid-Term	Long-Term		Total	Operation Maintenance
		2002	2003	2004	2005	2006-2010	2011-2015			
MS	Coastal Spatial Use Management							2,012.0	0.0	
* MS-1	Formulation of Provincial and Municipal/Regent Coastal Spatial Use Plans						PICMO/KICMO, BAPELITBANG, etc.	1,810.0	0.0	
MS-2	Establishment of Coastal Development Permission System						PICMO/KICMO	202.0	0.0	
MR	Coastal Resources Use Management									
* MR-1	Establishment of Community Coastal Resources User Right						PICMONICMO	960.0	6,110.0	
* MR-2	Supporting Program for Community Based Coastal Management						PICMO, BAPELITBANG	44,962.4	29,893.0	
MR-3	Establishment of Coastal Fisheries Management Center						PICMO, Fishery Office	2,493.0	5,507.0	
MR-4	Installation of Community Artificial Reefs and Other FADs						Fishery Office	104.0	1,487.0	
MR-5	Community Production Mangrove Forest Development						Forestry Office	0.0	950.0	
MR-6	Ship Bypasses, Fishing and Coral Mining (Provision for alternative materials for supply boat without Coral Reefs)						PICMO/KICMO	370.0	0.0	
MR-7	Program on Fishery Resources Monitoring						PICMO, Fishery Office	340.0	7,150.0	
MR-8	Publication of White Paper for Coastal Resources						PICMO	0.0	440.0	
MU	Urban Environmental Management									
MU-1	Program on water pollution control in Manado						BAPEDALDA	400.0	150.0	
MU-2	Program on water pollution control in Bitung						BAPEDALDA	365.0	100.0	
MU-3	Program on Solid Waste Collection System in the Coastal Areas in Manado						Manado Municipality, Manado Port Authority	470.0	420.0	
MU-4	Program on Solid Waste Collection System in the Coastal Areas in Bitung						Bitung Municipality, Bitung Port Authority	425.0	420.0	
MU-5	Formulation and implementation of besetabek program for the coastal areas of Manado						Provincial/Manado Settlement/Regional Infrastructure, Manado Port Authority	555.0	630.0	
MU-6	Formulation and implementation of besetabek program for the coastal areas of Bitung						Provincial/Bitung Settlement/Regional Infrastructure, Bitung Port Authority	555.0	630.0	
MW	Watershed Management									
MW-1	Protection of Soil Erosion for Coral Reef Conservation						Forestry/Agriculture Office	0.0	11,780.0	
MW-2	Formulation of Water Pollution Control Plan for Rural Coastal Villages						PICMO/KICMO	100.0	0.0	
ME	Coastal Ecosystem and Marine Wildlife Conservation Management									
ME-1	Program on Coastal Environmental Monitoring						PICMO, BAPEDALDA	1,270.0	9,750.0	
ME-2	Patrol of Illegal Activities for Coastal Environmental Conservation						Water Police	1,940.0	8,450.0	
* ME-3	Establishment of Provincial Lintah Protected Area						PICMO, Bitung Municipality	3,720.0	4,700.0	
* ME-4	Establishment of Provincial Bitung - Kabilisan Protected Area						PICMO, Minahasa regency	3,660.0	4,600.0	
SL	Institutions and Legislation									
* SL-1	Establishment of Provincial Coastal Management Basic Regulation						PICMO	240.0	225.0	
* SL-2	Establishment of Provincial Integrated Coastal Management Office (PICMO)						Provincial Government	130.0	0.0	
SL-3	Establishment of Municipal and Regent Integrated Coastal Management Office (KICMO)						Manado, Bitung, Minahasa, BolaangMongondou	530.0	0.0	
SI	Coastal Information System									
SI-1	Establishment of Coastal Information Center						PICMO	1,750.0	8,560.0	
SI-2	Development and Maintenance of Coastal Provincial GIS						Coastal Information Center	0.0	13,436.4	
SH	Human Resources Development									
* SH-1	Establishment of Local Government Training Center						Provincial Government	5,490.0	6,950.0	
SH-2	Development of Coastal Management Course in Local Universities						San Raffaele University	2,834.0	0.0	
SH-3	Establishment of Extension Office Training Centers for CBCM						PICMO	658.0	1,822.5	
SE	Education and Enlightenment									
SE-1	Provision of Orientation for Environmental Education						Education Office	143.0	16.0	
SE-2	Training Program on School Teachers for Environmental Education						PICMO, Education Office	0.0	1,262.8	
SE-3	Training Program on Coastal Community Leaders for Community Coastal Management						KICMO	0.0	142.0	
SE-4	Provision of Awareness for Coastal Management for Local Government Officials						PICMO	0.0	63.0	
SE-5	Enlightenment Program on Coastal Users						PICMO/KICMO	0.0	50.0	
SF	Fisheries									
SF-1	Study and establishment of bio-diversity and fishery ecosystem system						PICMO/KICMO	0.0	326.0	
BF	Fishery Development									
BF-1	Development of Seafood Processing Factory						Fisheries office	2,700.0	3,400.0	
BF-2	Feasibility Study on Manufacture of Crustaceans						Fisheries office	300.0	0.0	
BT	Coastal Tourism Development									
BT-1	Establishment of Certification System for Coastal Tourism Operators						PICMO, Tourism office	466.0	0.0	
BT-2	Establishment of Tourist Center for Coastal Environmental Conservation						Tourism Office	1,393.5	1,204.8	
BT-3	Development of Hiking and Cycling Roads in Manado Taa Island						PICMO, Tourism office	18,231.5	3,681.0	
LE	Improvement of Coastal Living Environment									
LE-1	Supporting Program for Community Based Coastal Resources Management						PICMO/BAPELITBANG, Ministry of Health, etc.	4,240.0	0.0	
LE-2	Master Plan and Feasibility Study for Improvement of Water Supply and Other Social Infrastructure in Small Islands and Remote Area						PICMO/BAPELITBANG, Ministry of Health, etc.	100.0	0.0	

Note: Projects with * show priority projects/Programs

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