

ARAFURA AND TIMOR SEA ECOSYSTEM ACTION (ATSEA) PROGRAM



Socio Economic Baseline Study at East Nusa Tenggara, Papua (Indonesia), and Timor Leste

This baseline study of socio-economics of local peoples along the coastal and small islands in the ATS (Arafura and Timor Seas) was conducted to gather the socio-economic profile in order to have a good overview and to formulate the best development planning

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Preface

This Socio Economic Base line Study at East Nusatenggara, Papua (Indonesia) and Timor Leste is conducted as well as cooperation between UNOPS - ATSEA Project dan PT. Plarenco based on Contract Number UNDP/GEF/ATSEA/SCFS/07/XI/2011.

This survey report is final report to provide and present 100 percent of progress of this study. This report consists of four chapter, such as chapter 1 as an introduction chapter, profile general of coastal socio-economic as a second chapter, methodology as a third chapter, the fourth chapter is as a result report of site survey chapter and the last is as a recommendation chapter.

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Team Study of PT. Plarenco



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Chapter 1. INTRODUCTION

1.1. Background

The Arafura and Timor Seas (ATS) are rich in living and non living resources, such as fish and oil and gas. The seas are semi-enclosed by the four nations of Indonesia, Timor Leste, Australia, and Papua New Guinea and many coastal peoples rely in the marine resources for livelihoods, food security and sustenance.

The ATS represents a portion of the coral triangle in the South East Asian waters. They have the highest biodiversity in the world, and represent important habitat for many marine species, such as whales, dugong, and turtles. The high productivity of the ATS has allowed human populations to exist along the coast of the littoral nations, relying upon marine resources for sustenance, food security and livelihood.

With the expanding coastal populations, urbanization and the effects of climate change, the future of the ATS region is uncertain. As the coastal populations increase, resources are strained, leading to destructive fishing practices, as well as social struggles. With limited alternative economic opportunities, survival necessitates fishing practices that exploit the ATS region.

The marine resources of the ATS are also strained by pressure for outside coastal communities. Large-scale fisheries (foreign and domestic) are largely illegal, unregulated, and unreported (IUU). Economic losses from IUU fisheries have been estimated at 170 million USD per year. Pollution from both sea and land negatively affects the coral reefs, mangrove forest, and seagrass bed, damaging important habitat for marine life.

According to Part IX of the United Nations Convention Law of the Sea (UNCLOS), the resource of semi-enclosed sea, such as ATS, is to be cooperatively managed by the littoral nations. In June 2002, representatives from Indonesia, Timor Leste and Australia formed the Arafura and Timor Sea Export Forum (ATSEF). ATSEF is a nonbinding forum to foster collaboration between government and non-government organization from the representative nations, in the pursuit of the sustainable use of the living resources of the ATS.

To accomplish the goals set out by ATSEF, the Arafura and Timor Seas Ecosystem Action Program (ATSEA Program) was created. ATSEA is the mechanism by which ATSEF will identify the root of the problems facing the



ATS. ATSEA will complete Trans-boundary Diagnostic Analysis (TDA) across national borders, allowing the ATS ecosystem to be seen as a whole, thus allowing ATSEF to identify the most effective cooperative methods for ecosystem and resources management. Information collected by ATSEA will ensure that future projects are in accordance with the biophysical, socio-economic and environmental needs of the local and general areas in the ATS. Accordance to the ATSEA Program itself, the baseline study of socio-economics of local peoples along the coastal and small islands in the ATS should be conducted to gather the socio-economic profile in order to have a good overview and formulate the best development planning.

1.2. Objectives

The objective of this study as preparing socio-economic profile dealing with anthropology and or statistical analysis, such as government administration, population demographics, religion and traditional practices, education, employment (local livelihood), health, poverty, welfare status, GDP, ethnic groups and languages, traditional resources management (role, stakeholders, institutional), coastal governance aspect, potret of coastal resources, related sector in coastal development and climate change issues and related problem.

1.3. Output

The output of this study is a document and thematic map of each issue. Socio-economics profile itself dealing with several informations, such as:

- Government administration,
- Population demographics,
- Religion and traditional practices,
- Education,
- Employment (local livelihood),
- Health, poverty, and welfare status,
- GDP,
- Ethnic groups and languages,
- Traditional resources management (role, stakeholders, institutional),
- Coastal governance aspect,
- Potret of coastal resources,
- Related sector in coastal development, and
- Climate change issues and related problem..



1.4. Scope of Works

The scope of works of this baseline study is as the follows:

- (i) Conduct the baseline survey fieldwork (qualitative and quatitative)
- (ii) Gathering information's dealing with livelihood characteristic of the coastal community and coastal and marine resources in the village sample.
- (iii) Gathering information showing household income covering fishing and non-fishing sources as well as baseline information on other socio-economic indicators such as education, health etc.
- (iv) Gathering information in relation to demographic structure in the village sample.
- (v) Identify and analyze issues, potential aspect and problems of socio-economic related with climate changes issues.
- (vi) Identify and analyze issues of coastal governance, related sector, and local institutional (stakeholders, main issues and role).
- (vii) Summarize and analyze basic data of socio-economic and environment.
- (viii) The overall output will cover finding that related to economic, social and biophysical aspect in the village sample should be provided as a "Final Report".

1.5. Location of the Study

Location of this baseline study are eastern coastal of East Nusa Tenggara, eastern coastal of Timor Leste and southwestern coastal of Papua.



Chapter 2. PROFILE GENERAL OF COASTAL SOCIO-ECONOMIC

Territory of a regional development should be based on the state of potential, issues and problems that exist (natural resources, human resources, infrastructure, socio-economic, and so on) are identified interrelated in order to support the assessment process of present condition, so that policies, strategies and development programs that will be optimally applied may be able to answer the real issues and problems.

Coastal areas as a union territory have various functions. A regional position itself is as a rapid area development. The functions of the other 4 (four) basic functions of coastal areas could be identified among the densely populated district, industrial compact, solid service and so on, which can be found almost everywhere around the coastal areas in Indonesia.

The number of functions assigned to the coastal region is increasingly significant influence, both positive and negative impacts. Positive influence that can be enjoyed by them is the increasing number of infrastructure development which in turn will enhance regional economic growth. While the negative effects that can arise is that more and more interests that utilize the coastal region. The more opportunities and increase the utilization overlap which in turn have an impact on the reduction in carrying capacity of the coastal environment.

It's a wise effort when in development efforts of coastal villages, beginning with needs assessment process against potential base is owned by the coastal villages. It is important to be done so that the basic functions mentioned earlier really give the true sense of community around coastal areas.

Assessment efforts should be directed more to the effort to see the potential, issues and basic problems that occur on coastal communities and neighborhoods, so it can guide decision makers to make policy direction, strategy and development program that really completely in accordance with local conditions in the future. Although there is no standard agreement on the definition or limits the preparation of profiles, but important to implement the development program that can be accepted by all actors at the coast.

Based on our understanding, preparing profiles of coastal communities can be summed up as follows:





- (1) The process of collecting data and information on coastal and marine areas is emphasized to identify the parameters of socio-economic and cultural community.
- (2) The results of data collection and information is expected to describe / illustrate in more real to the condition of coastal communities.
- (3) Profiling coastal communities is an attempt to describe objectively the condition of coastal communities through various surveys and studies and analysis of issues and problems.

A few of things that should be considered in the preparation of socio-economic profile of coastal communities are as follows:

- (i) Preparation of a good profile of coastal communities, is that profiling does not refer to the approach in an administrative one community alone, but refers to an approach that includes more than one administrative region (with many communities). Therefore, we need a profile that describes the real condition of coastal communities in comprehensive and objective.
- (ii) The condition of the data and information on coastal communities are still owned by institutions / sectors, while they are still overlapping between sectors, so that data and information needs to be synchronized / organized in order to be used easely for each user.
- (iii) The availability of data and information is still very lacking, so it is necessary to collect data and information. In this case, the profile of

coastal communities prepared to facilitate the provision of data and information are valid and accurate to be used for coastal zone management plan and improving the welfare of coastal communities.

The nature and characteristics of coastal communities is strongly influenced by the type of their activities, such as fishing effort, fishery ponds, fishery product processing enterprises, and coastal agricultural that are predominantly carried out by them. Therefore, the discussion of the characteristics of the public beach / coast is focused on the group.

Coastal communities have traits or certain characteristics typical / unique. This property is closely associated with the nature of business in the fishery itself. Due to the nature of the fishing effort is strongly influenced by factors such as environment, season and market, then the characteristics of coastal communities are also affected by these factors.

One of the natural resources of the fishery that is very prominent is that of sustainability or success of these efforts is very dependent on environmental conditions, especially water. This situation has very important implications for social and economic living conditions of coastal communities. Life of coastal communities to be highly dependent on environmental conditions and are vulnerable to environmental damage, particularly pollution, due to industrial waste and oil spills, for example, can shake the foundations of social and economic life of coastal communities. Pollution in the Java coast some time ago, for example, has led to the production of shrimp ponds fell drastically. This certainly has great consequences on the lives of farmers pond.



Another characteristic that is particularly striking among coastal communities, particularly fishing communities, is their dependence on the season. Dependence on the greater this season for the small fishermen. In the fishing season is very busy fishermen go to sea. In contrast, the activities of fishing season peceklik be reduced so that many fishermen are involuntarily unemployed.

This condition also has major implications on the socioeconomic conditions of coastal communities in general and the fishermen in particular. They may be able to buy expensive items such as chairs, tables, cabinets, and so on. Conversely, in a bad season their incomes dropped dramatically, so that their lives are also getting worse.



In general, fishermen's income fluctuates greatly from day to day. On one day might get a very high catches, but the next day could have been "empty". The catch, and in turn the income of fishermen, is also greatly influenced by the number of fishermen operating in a fishing area (fishing ground). In densely populated areas like the northern coast of Java, for example, has an overfishing. This resulted in the volume of the catch of the fishermen to be getting smaller, so that ultimately will affect their earnings.

The above conditions also helped encourage the emergence of certain patterns of relationships are very common among fishermen and fish farmers. The pattern of these relationships is patron-client relationships. Due to the bad economic situation, the small fishermen, laborers fishermen, small fish farmers and farm workers are often forced to borrow money and goods of daily living needs of the skipper or the collectors (boss). Consequently, the borrower is to be bound by party bosses, or merchants. Attachments include a requirement to sell to the merchant or the skipper. The pattern is not symmetrical relationship is of course very easily turn into a tool of dominance and exploitation.

Social stratification is very prominent in the community of fishermen and fish farmers were stratified based on the mastery of the means of production. In fishing communities, generally there are three strata groups:

- (1) The first Strata and the most are those who have motor boats equipped with the fishing gears. They are usually known by a large or



modern fishermen. Usually they do not go to sea. Fishing operations handed over to someone else. Labor used quite a lot, can be up to two or three decades.

- (2) The second Strata are those who have boats with outboard motors. In this stratum is usually the owner is involved leading to go to fish. Workers who participate may exist but are limited and often a family member only.
- (3) The third Strata are fisher workers. Despite the small fishermen can also double as laborers, but many workers that do not have the means of production, only their labor itself.

Its very often when big fisherman also doubles as collectors. However, usually there are collectors who are not fishermen, so the trader is a class of its own. They usually occupy a dominant position when dealing with small fishermen.

Fish farmers in the community, social stratification based on the mastery of production equipment is also prominent. Similar to the existing social strata in the society of fishermen, fish farmers community also consists of three dominant social strata, namely: (1) the highest Strata are those who master the pond area, (2) the medium Strata that has a pond area was / is small, and (3) the lower strata are the managers / workers.



For the fishermen, the mastery of the means of production was highly correlated with their cruising in making arrests. Those who operate using a motor boat, for example, can make arrests and marketing as well as in areas very far away. While the small fishermen who use boats without motors only capable of operating in an area or areas near the beach / coast alone.

The nature of fishing effort also led to the emergence of specific patterns in terms of togetherness among the family members of fishermen. For the small fishermen, for example, they often depart late afternoon and then come back the next day. There is also departing early in the morning, then again in the afternoon or evening. While those who operate a motor boat can leave the house for weeks or even months.



Another aspect to be considered at the public beach is the activity of women and children. In this society, generally women and children also work for a living. The women (parents and children) often worked as a fish trader, both fresh fish and processed fishes. They also perform the processing of fish, both small-scale at home to be sold alone or as workers in the fish processing business. Meanwhile, boys are often already involved in fishing activities. This is partly caused many fishermen's children are not in school.

Another characteristic of fisheries conducted by the coastal communities are dependent on the market. Unlike rice farmers, fishermen and fish farmers are highly dependent on market circumstances. This is because the commodities



produced by them had to be sold can only be used to meet the necessities of life. If that is the traditional rice farmers can live without selling their products or just sell a little, then the fishermen and fish farmers have to sell most of the results. Or traditional as any small fishermen and fish farmers, they had to sell most of the results in order to meet the necessities of life.

The above characteristics have very important implications, namely the fishing community is very sensitive to price. Changes in fishery product prices greatly affect the socioeconomic conditions of fishing communities.



Chapter 3. METHODOLOGY

3.1. Data Collecting Method

The data collected consists of data biophysical, socioeconomic and institutional culture in coastal areas and issues of coastal communities through secondary and primary data retrieval.

The preparation of the profile of coastal communities will be more effective when done using the RRA approach (rapid rural appraisal). RRA is one of approaches used to obtain information quickly by looking visually and based on professional judgment of people doing with this method of extracting information.

Secondary data collection will be done by using the method of literature surveys, where data and information that people want and thorough drawn from various literature, both quantitative (statistics, raw data, etc.) and qualitative (analysis, etc.). This secondary data and information can come from various institutions, both government agencies such as provincial / regency / city government, relevant agencies, statistic biro, and so on, as well as non-governmental institutions such as NGOs, universities, and so on.

List of data required by this study, both primary or secondary data, can be displayed as the follows:.

1. Secondary Data
 - a. Data base village statistics (population, income, infrastructure, etc.)
 - b. Land use data
 - c. Data of natural resources (land, mangroves, rice fields, etc.)
 - d. Other ecological data (environmental setting)
 - e. The economic productivity of agriculture, industry, etc.
 - f. Constraints of development

2. Primary Data
 - a. Socio-Economic Issues
 - b. Ownership of land and agriculture, fisheries
 - c. Institutional
 - d. Type of agriculture, farming systems
 - e. Income of the population and other socio-economic measures
 - f. The issue of development and social
 - g. Major development actors (government, private, local)
 - h. Institutional formal, informal



- i. Indigenous traditions associated with the development

3. Natural Resources

- a. The main source of livelihood
- b. Primary production (fisheries, coastal agriculture, etc)
- c. The use of labor
- d. Use of agricultural inputs
- e. Dependence on natural resources of forests, mangroves, etc.
- f. Preservation of natural resources and environment

3.2. Data Analysis Method

In general, the analysis that will be used is quantitative and qualitative analysis. These parameters are analyzed using quantitative analysis of parameters such as population, income and expenditure patterns of the community, as well as the parameters area. While the qualitative analysis is widely used to discuss the social and cultural parameters, such as potential conflicts, the level of participation in education, the perception of natural resources, and so forth.

The results of quantitative analysis and is then narrated kualitatif descriptively to describe the socio-economic and cultural conditions, such as population, education, religion, health, livelihood, infrastructure conditions, income and expenditure patterns, land tenure, and so on. In addition, also described about the issues that developed in coastal areas. From the data collected, especially the nature of time series, can be analyzed from the development trend of socio-economic development of quality culture from year by year.





Chapter 4. GENERAL RESULT OF SITE SURVEY

4.1. Strategic Issues and Problems

Survey conducted in three areas in parallel, where the Study Team is divided into 3 (three) teams to identify potential issues and socio-economic problems of coastal communities. All three places are:

- (1) District Merauke, Papua Province
- (2) South Central Timor and Kupang regency, East Nusa Tenggara Province
- (3) Lautem District and the District of Bobonaro, the National Democratic State of Timor-Leste.

Overall, some common issues and problems that can be found in all three survey areas are:

- (i) Both of the three regions have efforts to preserve and maintain the sustainability of environmental and natural resource potential contained in its territory, and almost all people know the importance of environmental and natural resource use that must be used optimally and sustainably, because of the understanding that the lives and livelihoods they are very dependent on the presence of natural resources and environment in the region.
- (ii) The three areas are generally very much hope that they are able to increase the capacity and capability of fishing effort being made to increase fish production area.
- (iii) Coastal communities in Papua, Nusa Tenggara and East Timor is hoping that he does fishing effort can help their lives and livelihoods for the better. Fisheries resources can be one resource to meet the adequacy of protein intake and food security to support improvements in community nutrition. Therefore, it is important to every head region in all three areas can encourage the growth and development of fisheries are capable of providing economic added value for society, and some things that need to be done is to improve the quality and price competitiveness of fish production resulting fishermen, as well as encourage and increase investment in fisheries in order to increase revenue (PAD) which is very useful for the regional economy.



- (iv) The marine sector is still untapped and developed an optimal and sustainable, but this sector can provide huge employment potential and a strong potential to raise the dignity of coastal communities. Therefore, it is important to identify any potential investment and natural resource-based coastal and marine environment. One that can be done is to expand employment opportunities and work through the development of the marine sector-based agribusiness, natural resources and empower and coastal and marine environment into the potential for prospective businesses.
- (v) Limitations of human resources be the deciding factor was the low capacity and capability of coastal communities in efforts to use natural resources and coastal and marine environment in an optimal and sustainable in all three regions surveyed.
- (vi) The impact of the construction of a centralized lead and encourage the high dependence of coastal communities on government assistance, thus fostering self-reliance efforts of business and regional development needs to be done so that coastal communities able to get out of the slump and growing fairly and proportionately.
- (vii) The low interest of the community to develop the potential of marine as one of the main livelihood encourage low capacity and capability in exploiting the potential of coastal communities and marine natural resources in an optimal and sustainable.
- (viii) The optimal service can not be fulfilled yet to the community because of basic facilities and infrastructure for regional development are not yet available with either, such as transportation (land, sea and air), water supply, electricity, telecommunications, finance, markets, health and education.
- (ix) The limited financial resources in the implementation of marine development became one of the problems not yet developed the quality of coastal and marine areas in the survey.
- (x) System-based agribusiness and natural resources of coastal and marine environment has not developed properly, this can be seen from not fulfilling the completeness of agribusiness schemes, such as processing and marketing.
- (xi) Coastal communities meet the constraints of fishing, due to lack of capacity and capability of catching fish, because the fleet and fishing gear used is very simple and only operate a maximum around the waters two miles.

- (xii) Climate change presents another pressure for coastal communities, so the tendency is to do the fishing pattern becomes erratic, especially in terms of fishing season, which occurs as the seasons change climate change is happening.

4.2. General Information of Timor Leste

4.2.1. District of Lautem

Lautem located in the eastern part of Timor Island. The district is located about 248 kilometers by road to the east of Dili. The district is bounded on the north and east with Wetar Sea in the south with the Timor Sea, in the southwest to the districts of Viqueque, and in the northwest with the Baucau district. Lautem a population of 30,383 inhabitants (census 2010) and has about 1702 km² area.

Capital of Lautem is Lospalos. Lospalos word comes from two words namely "Loho and nutmeg, Loho means cattle sheds, nutmeg meant the garden so the word means Lospalos cattle sheds and garden", then said Loho and nutmeg into Lospalos replaced by people portugual used until now. Los Palos is the official language of Portuguese and Tetum.

Lautem almost entirely surrounded by sea, the sea north-Feto and Tasi Tasi southern ocean - Mane. These two seas surrounding the island of Jaco, and this is one reason why the island is considered a sacred island.

As one of the thirteen (13) districts of Timor-Leste consists of 1,702.33 km². This district also has two, the small island of Jaco, which consists of eight miles square area located at the eastern end, the sub-district and island Tutuala try Cutcha. City of Los Palos is the administrative and economic center and is located in the central district, which is easily achieved.

Lautem discrete geology and geography of the same traits that exist in most of East Timor. Central parts of the district consists of mountains and hills of south-west to north-east, from south to north coast beaches. To the north, the mountains close to the beach without a vast land. In fact, to the south, the mountain fell away from the sea, and there are coastal plain, the better for agriculture.

Lautem has a beautiful sand beach and the landscape is wild, mountainous, and the virgin. Many of the endemic birds of Timor Leste to live here.

Mountains and hills on the south coast is surrounded by marshes and the hilly land; on the north by the land sloping and hilly; in the eastern district





there Fuiloro highlands where the land is decreasing to the south. Plateau slope decreased to Lake Ira Lalaro, with the extent of about 2200 hectares.

In general, 20-30% of land in Lautem is farmland, 35% soil and 35% higher mountains. Most districts have land valleys and fertile soil ideal for farming. As agriculture is conducted didistrik traditional agriculture.

During the month of May to July on average there is rain about two times a week, and during the months of November through January on average there are heavy rains every day. During August to October the weather is hot and dry and no rainfall. Temperature on average was 31, with the highest temperature 34 degrees centigrade.

Ribeiraraumoco River, and Lake Ira Ralailaba Lalaro is the main source of water during the dry season.

4.2.1.1. Role of Customs

Lautem has three main tribes and each tribe had its own language such as: tribal Fataluku (Sub-district of Los Palos, Tutuala, and Lautem), tribal Makassai (Luro, Lautem, and Iliomar), and the tribe Makalero (Iliomar).

There are also regional groups in the area Luro Sa'ane above with language that is close to Makalero language. Tribes and tribal Fataluku Makassai are fighters and farmers, and not fishing. Dance of their culture is still maintained.

Most of everyday life Lautem population is animist, and animist beliefs. Offer animal blood as a sacrifice is a common occurrence in the villages. Also in terms of finding lulik (a carving representing the people who ward off evil spirits) in some villages. On the road to Com in Los Palos there is a traditional old cemetery which is estimated hundreds of years old. This cemetery was built for East Timor Leste were killed by the Portuguese.

In Tutuala there in a stone cave with images depicting ancient hunting scene, ancient symbols such as turtles and boats. Types of boats are described showing the background of the Austro-Easternesia (Southeast Asia), which is of other ethnic groups than in Melanesians or Papuans. We can only guess whether this person came by boat, or are they just draw a passing boat.

In sub-Lautem there are also houses relics of the Portuguese. This house is beautifully situated on a hill that looked into the Sea. In the present house in pugar back and be a luxury hotel.

In the utilization and management of natural resources especially the East Timor Leste people have local wisdom Lautem known as Tarabandu system.



To protect the environment, the people of East wearing "prohibition sign" (Horok, lulik) in order to prevent abuse of the land. The sign consists of dried leaves (ai resistant Maran), a bond of betel leaf (ho bua malus) or half coconut (nu'u sorin baluk), usually placed at the entrance of the residence or garden. In addition to demonstrating ownership of the land, the sign also prohibits the entry into the land of others and prevent any acts of theft. Horok or lulik also used to prevent destruction or to avoid behavior that could damage the environment, such as environmental destruction.

Traditional House Lautem a house on stilts with a four-pole three feet above ground level, rectangular-shaped with a slender tower roof. Roof-coated fibers, wood-walled, and furnished many windows that serve as daytime lighting. Originally, the main beam using iron wood, while the pole using eucalyptus wood tied together with ropes of rattan. The main building is called uma Lautem or dagada.

The primary role Chefe de Suco in resolving conflicts that occur in the community (local land dispute) is as mediator local / traditional.

4.2.1.2. Governance Structure

Administrative center in Lautem located in major cities in the sub-district of Los Palos Lospalos. All sectors of the administration have offices here, as well as the headquarters of the Police and Military. Each sub-district has a coordinator who represents the administration on the sub-district level. Lautem distributed within 5 (five) sub-districts, namely Iliomar, Lautém, Los Palos, Luro, and Tutuala.

Each sub-district were distributed in the village, the village is mentioned, which dikelolai by elected leaders (Chefe de Suco or village head). Each Suco consists of sub-village, called Aldeia or village, which also dikelolai by elected leaders (Chefe de Aldeia or Village Head).

In addition to its official language Portuguese and Tetum, in this district there are 5 languages, namely: Fataluko, Makasai, Makaler, Saaini, and Malua.

4.2.1.3. Climate

Timor-Leste has two annual seasons and three climatic zones are the influence of monsoon activity. The second season is tersubut Northwest monsoon (rainy season) from November to May and the South-West monsoon (dry season) from April to September with a short transition period in between.



Efforts to increase economic activity in Lautem through farming with the need to address the challenges of a dry climate, the soil is not fertile and mountainous topography that offers little flat land for large-scale agriculture. Rainfall in Lautem, as in the East, mostly occurred from November to April. Despite the countless mountain areas better, the entire region is still experiencing a long dry season, which at that time yellowed grass and fodder became scarce. In some tahunterakhir including in 2011, rain in East Timor, especially in Lautem too small or too late arrival.

Most major rivers stopped flowing since the lack of rainfall lately.

4.2.1.4. Natural Resources and Environmental

A. Forest Preserve

Lautem is one of the most wilderness areas in Timor Leste, and the forest area has been used as a Natural Protected Areas. Tutuala forest and Jaco Island both serve as a Natural Protected Areas.

Forests also are resources that are used by most residents. The resources taken from the forest include: wood, rattan, wood for fire, wild animals, namely deer, raccoons, possum, snake (cobra), wild pigs, chickens, mallard (a type of wild duck), wild Bali cattle, buffalo, monkeys , crocodiles, bees (honey).

B. Mangroves

Mangrove trees (Mangrove) occupies approximately 40% of coastal areas along the coast of Timor-Leste. On the south coast, there is a tendency to form small communities in muaramuara rivers and in swamps or marshy terrain.

Types of mangrove trees that exist throughout Timor-Leste panati include, Bruguiera, Rhizophora, and Pandanus.

C. Marine mammals

Along the coast of East Timor, including marine mammals Lautem there like Dugong, whales and dolphins. These marine mammals are often sacred, even the majority of East Timor Leste coastal communities, including in Lautem is considered as the ancestor who must be respected and should not be disturbed existence.



D. The animals creeping at Sea

In addition to marine mammals, some marine reptiles, like turtles, sea water crocodiles and sea snakes. Crocodiles Sea is one of the most sacred, because generally the people of Timor Island, including in East Nusa Tenggara, assume that the crocodile is the incarnation of the ancestor or ancestors of the people of Timor Island.

E. Environmental Conditions

No information is available regarding the environmental protection program, but there are many problems related to environmental matters in the district. For example, biodiversity in the sea, during the Indonesian occupation, fishermen using bombs in the sea.

Planting on the move, with the burning of forests and forest land to stimulate new growth of pasture in the dry season is a severe problem that requires urgent attention and consciousness because it is done extensively in some areas.

Garbage and waste from households is another major problem seen in this area.

4.2.1.5. Socio-Economic Conditions

A. Traditional Fishing

Communities on the coast along the 600 km coastline of Timor-Leste rely on fish for their livelihoods, including fishing large tuna, flying fish, coral and turtles in the waters depth. More than half of Timor-Leste fisherman, relying on fishing is the main source of their livelihood.

The main fishing areas in Lautem is Moro (Laivai, Com), Tutuala, Lore and Iliomar. Timor Aid has distributed fishing equipment provided by Ausaid, but only a few people who receive the fishing gear. While the purchase of fishing gear Atambua.

The main vessel is a boat for fishing, a small boat, thin and often rowed, and also a motor boat. Fishing is traditionally uses both the nets and fishing nets, and fishing activities are generally not extend more <3 nautical miles from shore. For the village Tutuala no Palalele system, and also there has been an ice factory.



B. Ownership of Land

Most of the traditional land tenure (private or shared) or government-owned. Most of the land traditionally used for agriculture as a livelihood. Government-owned land usually used for the garden such as coconut and teak wood.

C. Coastal agriculture

The main farming system in Lautem is a traditional farming with land clearing systems such as slash and burn. The size of agricultural land on average about 1-2 acres per family. Agriculture depends on both irrigation and rainfall. The main agricultural activities to plant corn, followed by rice.

In addition to corn and rice also are cassava, yams, taro and banana.

D. Livestock

This district has the potential for commercial farming activities. Livestock in this district are pigs, buffaloes, goats, cows and chickens.

E. Home Industry

E.1. Fabric

Fabric of Timor was originally created to meet the everyday needs as clothing and body armor cover, then evolving to the needs of indigenous (parties, ceremonies, dances, marriage, death, etc.), until now a formal dress and modern materials that are designed according to the development of fashion , also to meet the demands / needs of consumers.

E.2. Gin

Gin is one of the main menu of traditional rituals Timor Leste society. All the tribes here know the gin, expertly mix and distill gin topnotch in their respective areas. And gin it economical dimension. Many families in the village living from selling Lautem Moke or gin. Meet the everyday needs of gin considering raw materials easily available.

4.2.1.6. Infrastructure

A. Transportation

Transportation is not good. Many communities are still isolated due to road conditions. All the sub-district can be reached by vehicle, but many parts of



the damaged roads, landslides and mud sections, which are very difficult to impassable in the rainy season.

Roads in Lautem divided into three categories: asphalt, and soil krikil.

B. Water and Sanitation

Although most of the sub-district has more than one source of water, many water sources do not provide substantial benefits to society. Water systems that are in desperate need repaired. Many other areas have no water system at all and the family must get water from shallow wells, springs or rivers that are often far from their homes. Water is taken in this way is often not clean water, and there is likely to contain the number of E-coli in the water this high.

This problem is one of the greatest problems in the district. Water supply system using two methods:

- (i) Pipe pump for now this is good, but can not reach the house on high ground because the generator is very long and low ability.
- (ii) gravity pipeline serving only a few people because the pipe is damaged and some are missing.

At the time of the rainy season, sources easily be tainted by flood water and debris.

C. Electricity

Lautem whole community, especially people living in sub-districts and villages to provide electricity. One of the current development program is the installation of electrical installations with expectations on the date of 28 November 2011 all district and sub district was able to enjoy electrical energy.

D. Communication

One of government's priority is the development of communication systems. This can be seen in the presence of good communication between the district and village, this is because the network already built Timor Telecom and village in every district.

Comunidade Radio Los Palos (RCL) has done broadcasts on the communities in and around Los Palos in Lautem since May 2000. This station is an independent community radio station aims to give voice to the people and encouraging community participation in the means of communication and information media.



E. Irrigation System

Almost all existing irrigation systems in Lautem damaged or can not be worn and in need of repair that can be used effectively.

4.2.1.7. Education

At this time, schools are available ranging from kindergarten to university. Kindergarten and elementary school spread in every sub-district. There is only one high school in the district, situated in the town of Los Palos, which means difficult for people in the sub-district school. This school accommodates a limited number of students. And there is one school vocational agriculture in Lautem. While the university is still a long distance class.

Until now, the average level of public education Lautem still at primary school level. Although the educational services provided for free to the public until the senior secondary level.

Shortage of qualified teachers, also affects the quality of teaching and learning in Lautem.

4.2.1.8. Health

Main Community Health Centre is located in Los Palos and the main administration building and the dispensaries center. Lautem has three facilities namely health care: The hospital in Los Palos, in dietiap sub-district health centers, and auxiliary health centers at the village level.

Health services provided to society by cuma-cuma/gratis, in which case all expenses paid by the government of Timor Leste, including medical treatment abroad. The health sector has two administrative vehicles, one ambulance and ten motorcycles.

4.2.1.9. Human Resources

In general, human resources in disterik Lautem is still relatively low. This is evident from the level of education of the population still at primary school level. Almost 80% of the population of this gear is only finished elementary school and even still there who can not read or illiterate.

4.2.1.10. Gender

Especially girls prepared for their future as wives and mothers. Education boys are generally given a higher priority than girls.



Women in Lautem face numerous problems such as poverty and poor health.

Life expectancy on average for women is 48.4 years of East Timor, one of the lowest life expectancy in countries or regions that are less populated world. Must always be understood that women's health concerns related to socioeconomic circumstances.

Daily life of women in this district has a weaving Crafts, whose production was dressed shawl / scraf, bags, clothes, and purses. In general, all women in East Timor has the ability to weave.

Most of the maintenance work and the work of children in the home kitchen is borne by women, and women are also responsible for a large number of additional unpaid labor such as fetching water, taking and carrying wood, wash clothes and farm work. Most women in Lautem did not get to participate in paid employment outside the home.

4.2.2. Regional General Condition Survey in Lautem

4.2.2.1. Suco Tutuala

Tutuala is one of the sub district Lospalos located at the tip of Timor Leste. Tutuala majority of the population are descendants of Austronesian and Melaynesia, and also there is some mix of Portugal and Indonesia. Sub district Tutuala no stranger to the people of Timor Leste and the international tourists alike. almost all foreign tourists know of the existence Tutuala. Tutuala contained in the cultural and tourist attractions with huge potential, this attraction has a uniqueness that is different even from other regions. one of a very interesting tourist attraction is the island of Jaco, this island has a natural esthetic spesises and there are also some wild animals that live in the area. But an interesting thing in Tutuala is not just for its beautiful beaches, but there is a cave that contained mystical images that are considered sacred by local residents.

Tutuala word comes from the language of Tetum is made up of two words that mean the tutu-style pole and a mean one. Thus Tutuala words can be interpreted with a single pole.

Tutuala consists of two sub-villages, and Tutuala Mehara. Under the existing Mehara smaller village (village) Loikero, Porlamano and Poros. Under the existing village Tutuala Chailoro, Ioro, Petileti and Vero.

Suco Tutuala Chefe led by a village and assisted by sektrataris Suko. Council of Churches and traditional leadership has a leadership / authority in Tutuala, as well as other areas in East Timor. The church, which is basically



the Catholic church, has a big voice and a high position in society. They have the power to influence what programs are carried out because a lot of followers. When programs are implemented, the church became the main route for sharing information on the community. At least one Catholic and one Protestant church in Mehara Poros and Tutuala.

However, all policies and decisions are determined by the central government of Timor Leste. Chefi suco only act as adminstador only. (See Organizational Structure Governing Suco)

A. Livelihood

In general, people's livelihood is a traditional fishing village Tutuala. The fishermen received help from government such as machinery and ship in groups.

In addition there are several types of livelihood, such as farms, ranches, estates, environmental services and trade.

To support the family income of women in the village Tutuatala most countries is a migrant worker in Ireland as our workers (maids) Household.

A.1. Fishery

Fishermen in the village contained Tutuala maih are traditional fishermen and groups. Some fishermen has received help from the government in the form of the boats and engines.

The main vessel is a boat for fishing, a small boat, thin and often rowed, and also a motor boat. Fishing is traditionally uses both the nets and fishing nets, and fishing activities are generally not extend more <3 miles from shore.

A.2. Agriculture

The main agricultural activities to plant corn, followed by rice. In addition to the two commodities are also there Cassava, yams, taro and banana.

Farm income began in July after the rain after the rainy season. Agricultural activities in the sub district is paddy and maize crops only once a year, according to the season. At the end of the year, people began to plant seeds of paddy and maize crops, and from this corper hope will get great results. So as to meet the needs.



A.3. Livestock

Suco Tutuala have potential for commercial farming activities. Livestock in this Sucos are pigs, buffaloes, goats, cows, and chickens.

Communities rarely sell cows or to be eaten by themselves, they prefer to use it to store wealth little by little, which can then be taken to pay the dowry, and as a form of insurance against seasonal food shortages.

A.4. Plantation

Plantation sandalwood and teak.

A.5. Environmental Services

Development of environmental services in the form of rural tourism will bring some positive implications, such as reducing unemployment in the village, increasing public revenues, optimizing the carrying capacity of the development and preservation of the natural environment in rural areas. Development of rural tourism will also be beneficial in reducing urbanization from rural to urban areas and reduce the convergence of inequality between rural and urban. Efforts related to the development of rural tourism will become an alternative job that can be entered by the local community

B. Education

Schools in the sub district is limited to junior level. Most schools have a shortage of both teachers and learning tools.

C. Health

In general, facilities in the village Tutuala kesehatan repalatif better. Here there are health centers, health centers pembant, and posyandu and the medical personnel who are ready to serve residents who come for treatment. The cost of treatment becomes sole government of Timor Leste. People get better medical treatment free of charge domestically and abroad.

D. Market

There are two weekly markets that run on Tutuala, on Tuesdays and Saturdays. Tutuala village has no fixed market. The purchase occurred on the field, and the market certainly can not take place if it rains. In this market only a few agricultural crops are grown locally available. At this time, people depend on private transport to travel to Los Palos on market day, ie Saturday.



E. Tourism

Tutuala has great potential for tourism business development. This area has three beaches, the beach valu (which overlooks the island of Jaco), beaches and coastal Loikero Jonal. Of the three beaches that are only valu beaches can be reached by car.

Besides the beach there is beautiful scenery and cave with an overview of pre-history, which is said to describe the origin of Timor Leste.

To support tourism activity at the time of the Portuguese heritage of this house renovation into a hotel located right on the hill.

4.2.2.2. Suco Com

Suco Com is one of the coastal villages Lautem. Its population amounted to 3253 inhabitants (Census 2010) which consisted of 1539 women and 1524 souls souls of men and consisted of 645 families.

Suco is a pretty village which developed when compared with Tutuala village. Fishermen in the village Com is basically the same as the fisherman who is in another village, the traditional fishermen. Each day of fishing off the sea approximately approximately 3 hours and later. Followed by gardening and farming.

In the month of November to May they rely on seafood as the main livelihood, but if there is damage to the ship and the rainy season which causes the fishermen can not go down, they are farmers or ranchers pigs, cows, buffaloes, goats and chickens.

Natural conditions are not much different with cuso Com, as well as the socio-economic communities.

Suco Com has beautiful beaches and very clear. Many tourists visit the village Com in the future. In the village there are Com Com Resort lodging facilities such as Asari. Manpower and material resources of food has empowered the Com own village.

4.2.3. General Information District of Bobonaro

Bobonaro Distrito is one of the 13 districts of Timor-Leste which is the second most western district in the east of this island which is 149 km southwest of Dili. Amounted to 46 134 inhabitants (Census 2010). Bobonaro District consists of five sub-districts of Atabae, Balibo, Bobonaro, Cailaco, Lolotoi and Maliana.



Sabu Sea located north of Bobonaro. The district is bordered by the eastern sea Liquica, Ermera in the east, Ainaro in the southeast, and Cova-Lima to the south. In the west there is the province of East Nusa Tenggara Indonesia.

The capital of Bobonaro is the fourth largest city in East Timor, Maliana.

This district is a popular destination in Timor Leste, as the mountains and hot springs.

Besides the official language of Tetum and Portuguese Language bulk of the population can speak the language of Bobonaro Indonesisa.

4.2.4. Regional General Condition Surveys in the District of Bobonaro

Suco Batugade is one of the coastal village in the district of Bobonaro. Livelihoods of traditional fishing village is Batugade. Using ship is still a small boat using a paddle. Under these conditions fishermen never go away and only a few hours just to catch fish.

The catch is sold on papalele who came from neighboring villages such as Maliana, Balibo, Dili, Atabae and Bobonaro.

In the village there yet Batugade ice factory. The papalele using sea water and salt as a preservative tool that brought the fish to another city. There are some who use papalele ice originating from the city of Dili.

Aside from being a fishing community Batugade also farming, gardening, animal husbandry. In helping the family economy women weave conducting mat, bag and hat are materials raw from the leaves of palm trees that have been dried.

For health, education, and other businesses similar to other woods villages located in the coastal areas of East Timor.

One alternative to developing the people's economy is to develop rural tourism. With tourism development is seen as more respect and appreciation of the natural environment to culture.

Public transport and highway transportation are two issues that require serious attention of government. If the transportation needs handled properly by the government, its influence will be good for people's lives. People's economy could grow, creating a balance of income between regions, and poverty can be reduced.

4.2.5. Community Based Natural Resources and Environmental Management of Timor Leste

Tara bandu is a good tradition that needs to be conserved for the development of the life of the community. The environment can be guarded and the agricultural community can sustain the support of the lives of the village population.

Tara bandu is an adat custom that regulates the relationship between humans and the environment surrounding them. In the era of independence, communities everywhere are reviving the tarabandu ceremony to determine the times when it is forbidden to fell trees, to pick and collect the produce from plants in certain places that are considered to be sacred. Places that are considered to be sacred are those places from which many people derive their means of existence. For example, places around water sources or the forest that are ecologically useful to maintain water flows and avoid erosion. This is evidence that our ancestors had a high level of consciousness about environmental protection.

On 16 January 2003 in the suco of Irabin, which is located in the Subdistrict of Uartukarbau in the District of Viqueque, the community leaders; namely, the liurai and 4 dato in this suco together with the local community conducted a tarabandu ceremony. This was the first tarabandu ceremony conducted since the Portuguese period.

This suco has water sources that are very important not only for the livelihood of all of its members but also for many people in other places. In this suco there is located a water source – the Irabin River which flows through the territories of Irabere, Nabo Tarukasa, Giacai, Combere Comata, Baidubu (Subdistrict of Uatokarbau and the area of Maumua Tobolobe which is located in the Subdistrict of Homar, in the District of Lautem. Around 150 hectares of wet rice cultivation fields are watered from this river.

In this river, water falls create a small lake. The water is extraordinarily clear and very fresh. The view of the river is very beautiful. According to the local people, this place used to be rich in flora and fauna. But now the water is decreasing and so are the flora and fauna. Environmental destruction is the cause.

One day before the tarabandu ceremony, the local youths who are educated in Dili work together with the leaders to conduct an open discussion on the right of the community in relation to the environment and a suitable life. The implementers invited government officials such as the Director of Land and Property Pedro de Sousa and officials from the Environmental Protection and Forests Unit who spoke about the government's policy on land and environmental protections. Activists from the non-government organisations





Perkumpulan HAK, the Institut Sahe, Fundasaun Haburas and the sustainable agriculture network, HASATIL spoke about the need to utilise sustainable agricultural methods that protect the environment and the danger of large-scale capital investment in agriculture or natural resources such as water that would cause the community to have no rights over those natural resources. The adat leaders spoke about the traditional methods for the protection of nature.

Alesandre da Silva, the Liurai of Irabin, said in the discussion that the forests in this place where he was born used to be very dense and luxuriant. “It used to be that in my place, Uatubela, the forest was dense and provided water that can give life to our community. But after Indonesia came, we were forced from our birth places and now the forest has been felled and burned” he said. In his opinion, after Timor-Leste obtained independence, now is the time to respect the environment. “We [should] return the environment to what it used to be so that there is water and forest again to give us our livelihood” he said.

This environmental destruction happened because of the Indonesian occupation. In 1979, the people who fled to the mountains were forced to surrender because of huge bombing campaigns by the Indonesian military using sophisticated aircraft that were obtained from the United Kingdom and America. The people who came down from the mountains were subsequently forced to live together in a new place so that they could be easily controlled by the occupation forces. People who originated from Uatokarbau were forced to join the population from Baguia and all were located to the territory of Irabin that had previously been forest. They were forced also to cut down the forest to build houses as well as making gardens and wet rice cultivation fields to support their livelihood.

During the Indonesian occupation, some of the population felled the forest for shifting cultivation. “Shifting agriculture is a bad practice that must be abandoned. Do not, because of chasing a plentiful harvest in one season, cut down all the trees and not count the damage in the future” said Oscar da Silva, a youth from Irabin who is an activist from HASATIL.

The dato of Makaki said that their ancestors since the beginning respected the water and the forest that was considered lulik (sacred): “People valued these lulik places through offerings such as chickens, goats, pigs and buffalo. The water and the forest we respected. It was forbidden to damage them. From the water we get fish and water the rice fields. The forest gives us materials to build houses and give rain so that we can still cultivate in the growing season” he added.

The tarabandu ceremony is a form of respect that is observed by the people in relation to the water and the forest or the entire surrounding environment.



The people slaughter beasts as a symbol of the prohibition; that is, the ban on cutting trees. If there is a violation then the relevant person is imposed with a punishment in the form of an obligation to slaughter the same number of beasts slaughtered at the tarabandu ceremony.

The tarabandu of the Village of Irabin is conducted near waters of the Irabere River. The ceremony commences with hamulak (prayers) by the Liurai Alexandre da Silva in the uma lulik (adat/sacred house). Then the procession heads to the ceremonial place near the water source. Here, there is a head count of all the relatives – both those that are present and those who are not present. Everyone is given a siri or pinang leaf that means that everyone is participates in the ceremony. Those who are not in attendance are represented by those who are in attendance.

Subsequently, the sacrificial animals are slaughtered; namely, chickens, pigs and buffalo. The entrails of these animals are read by an adat elder to determine the people’s fate in the future. Important parts of the sacrificial animals are then offered to the souls of the ancestors and the Rain Nain (the land lord).

Marcel de Carvalho who is the Oan Mane of Irabin acts as the spokesperson in this ceremony. At the peak of the ceremony, he reaffirms the communal agreement that the things and the places that were worshipped by their ancestors as something that gives them life are now strengthened again. “Don’t damage, we value and love it. We will make green again the areas that are protected which include Satoma-Kailaku, Uatubela, Bua’a-Lakasoru, Uatubisoru and Hudilale”, he said.

He also gave the message that the people should not let their animals enter the river because the water is used by many people for drinking. “The pasture place is limited to below Taradiga. This is to guard the cleanliness of the water source” said Marcal de Carvalho. The ceremony ends with eating the meat of the animals that have been sacrificed in this ceremony. The meat is cooked by the women and is eaten with rice. The place smells of the aroma of spice that is called bantaka.

Hundreds of members of the Village of Fatumakerek in the Sub-District of Laclubar, District of Manatuto will soon conduct an adat (customary law) program; namely, the preservation of the traditional law tara bandu, the purpose of which is to protect against the illegal felling and burning of forest. This information was contained in a press release delivered to the office of the Editor of Timor Post on Saturday (26 June, 2004). It stated that in order to prohibit the habit in the community of felling as well as burning the forest, hundreds of members of the Fatumakerek village have conducted a program to develop the traditional law institution of tara bandu so that this law will regulate the occurrence of logging and burning of the forest.



The forest is a natural wealth commodity that the country needs to protect and conserve. Towards those ends, if either illegal logging or burning of the forest occurs, then eventually the wealth of the country will be destroyed so that future generations will suffer the consequences of what the present community does.

Erosion (landslides), drought and the spreading of respiratory infections are a result of the failure to conserve the forest of Timor-Leste at the present time. So, to avoid problems such as these, the participation of the community is hoped for very much.

The message of the former Bishop of the Diocese of Dili, Dom Carlos Filipe Belo, was referred to; namely, if one tree is felled, then 10 more should be planted. This message is a very honorable message delivered by Bishop Belo before he stood down from his position as the leader of the Catholic community in Timor-Leste. So observe the message of Bishop Belo in our daily lives to re-plant 10 trees if one is cut, the press release stated.

In the program, the Head of the Fatumekerek Youth said that tara bandu is traditional law that is very sensitive. In this regard, if, after this traditional law is made, forest logging still occurs, this will result in a very strong threat to the person's soul.

So to prevent this from happening, the community is asked for understanding and not to willfully cut or burn the forest. Aside from that, a representative of the agro-forest industry, Agustino X. Alves, in his speech said that tara bandu is not only the principle hope of the community but also of the government and NGO's with NGO's just doing the follow up from this activity.

The tara bandu referred to here was implemented after support from the international NGO's, namely, the CARE International Program, CBNRM-ET for Carbon Sequestration with their project managers, Dr. Marlon M. Cardinosa, Project Officer Joao dos Reis as well as several agro-forestry staff.

The tara bandu program was attended by communities from several aldeia (sub-villages): Laramera, Lesuata, Sasahe and included the participation of the Sub-District of Laclubar Administrator and adat (customary) leaders.

Fatumakerek village is one village in the District of Manatuto that has agricultural potential such as coffee, onions, peanuts, honey, potatoes, sandalwood and other timber. Unfortunately, the products from these resources are used only for daily food consumption and not taken to the market because the condition of the roads is very critical and the distance from the town center in the sub-district of Laclubar is far - 40 kilometers.

4.3. General Condition of East Nusa Tenggara

4.3.1. District of Middle Southeast Timor

Kualin and Kolbano Villages are two coastal villages that directly deal with the Timor Sea. To achieve both these villages travel time takes approximately 5 hours drive from the city of Kupang. Road infrastructure to the area quite well, although in certain areas the condition of roads were damaged and even almost cut off by landslides, especially when the survey team attempted to pass through the village of Oetuke. Hilly road conditions and landslides is what causes the Survey team just took the Villages of Kolbano and Kualin as a regional survey.



Figure Condition of the road to survey the area, good road (a) to survey the area, road improvements (b), and the avalanche path (c) to the area Oetuke

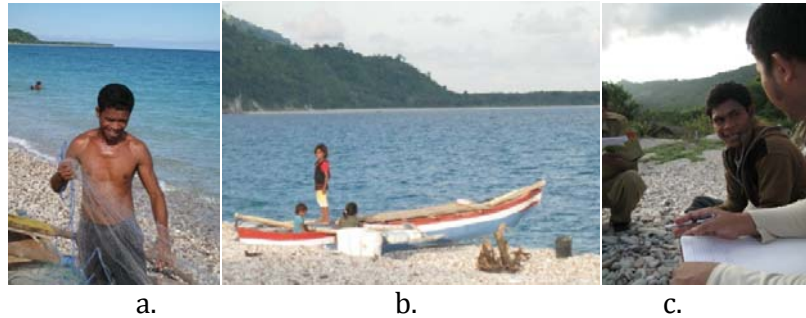
Respondents were drawn on average aged between 20-40 years. In general, the fishing fleet owned TTS was still a traditional fishing with a cruising range of about 5 km or less than 3 nautical miles. Fishing fleet consists of boats measuring 7 mx 0.5 mx 0.5 m which is operated with the aid of a machine ketinting 5 PK and rowing. Fishing fleet is usually done by 2-3 people fishing.



Figure of fishing gear and fishing fleet in the Village Kalbano



This type of fishing gear used is a net with different mesh sizes, including 1.25 inches, 1.5 inches to 2 inches. Average net fishermen have 3 units with a length of approximately 100 meters and a width of about 2.5 meters net. Fishing gear used is relatively still inadequate given the potential of fish resources in the waters of the Timor Sea which is quite large because it directly adjacent to the Indian Ocean.



a. b. c.
Figure of fishing gear, fishing fleets and fishing families in the village of Kalbano South Central Timor. Figure (a) is a fisherman Luwie (Kolbano) was cleaning fishing gear nets, image (b) type of fishing fleets and families Kolbano, and (c) is being interviewed fishermen Yanel

Fishermen in TTS was generally familiar with the three fishing seasons, namely:

- (i) The peak season occurring in the month of November to March
- (ii) Season famine that occurred in the month of April-July
- (iii) Season the transition that occurred in the month of August to October

The types of fish caught is quite varied, both pelagic and demersal. As for the types of pelagic and demersal fish caught include: fly fishing, nipi / cendro, song, sharks, young nose, head stones, machetes, machetes, milk, bamboo leaves, serisih, and stingrays.

Based on production volumes produced, the average fisherman in TTS was recalled a decline in production over the past 3 years to reach approximately 40 percent. In general, TTS fishermen do not know exactly the cause of the decline in productivity.

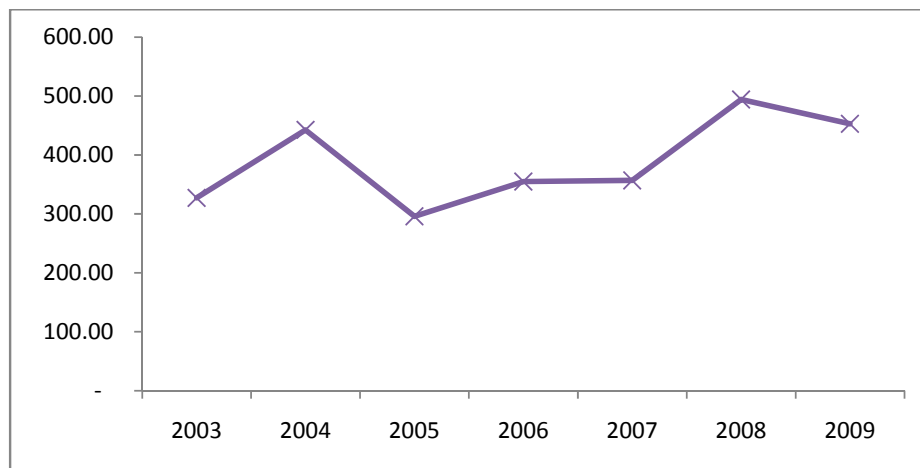
Price of the fish in general is also changing in accordance with the laws prevailing market. Sales of fish is done directly, because buyers just came from nearby villages surrounding it.

Fishermen used to sell fish caught per unit or per dozen tails in accordance with the big fish-small fish that are sold or per unit of buckets equals 16 pounds, so by converting units of volume to kilograms, then it can be obtained several prices per species of fish in the TTS , as follows:



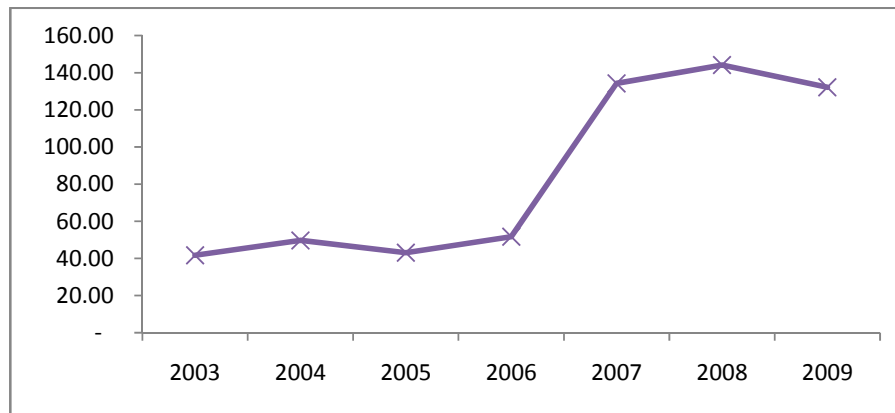
- (i) Fish-fly Rp.6000 Rp.7500 per kg
- (ii) Fish nipi / cendro Rp.6000-Rp.7500 per kg
- (iii) Fish song Rp.5000-Rp.6250 per kg
- (iv) Sharks Rp.5000 per kg
- (v) Fish young nose Rp.5000 per kg
- (vi) Fish head stone Rp.5000 per kg
- (vii) Fish-machete machete Rp.5000 per kg
- (viii) Milk fish Rp.5000 per kg
- (ix) Fish of bamboo leaves Rp.5000 per kg
- (x) Fish serisih Rp.5000 per kg
- (xi) Fish pari Rp.5000 per kg.

Based on the analysis of production trends in the fishery of Middle Southeast District seems that the production of pelagic-demersal fish and reef fish production in these districts has decreased in 2008-2009. Decreased production of both types of resources were allegedly also caused by a decrease in fishing results conducted fishermen in the East Sea waters. Complete picture of production trends pelagic-demersal fish and reef fish in the District of Middle Southeast Timor as complete as can be seen in following figures.



Trends in pelagic and demersal fish production in District of Middle Southeast Timor

Figure above shows that the trend of increase in pelagic and demersal fish production occurred during the period 2003-2009, although in 2004-2005 and in 2008-2009 a decline, however, the slope is likely to increase. Pelagic and demersal fish production in 2009 tended to decrease compared with 2008, where it is presumably an indication of decreased productivity due to fishermen who do pelagic and demersal fishing in the territorial waters of the Timor Sea.



Trends in reef fish production in District of Middle Southeast Timor

Figure above shows that the trend of increased production of reef fish in this district occurs during the period 2003-2009, although during the period 2003-2005 there was an increase and decrease in production and the positive trend in significant occurred in 2005-2008. Reef fish production in 2009 tended to decline compared with 2008, where it is presumably an indication of decreased productivity due to the fishermen who do fishing reefs in the waters of the Timor Sea region, in addition to the tendency of fishermen fishing performed around the coast.

4.3.2. District of Kupang

Socio-economic survey of fisheries in Kupang district conducted in two villages in the district Nekamese directly opposite the Timor Sea, such as Tasikona and Oepaha Villages. Respondents were drawn each represented by three main respondents, although there were also several respondents in the follow-up interview.

Both of villages are coastal village that directly deal with the Timor Sea. To achieve both these villages required travel time approximately 2 hours drive from the city of Kupang. Road infrastructure to the area is quite poor, in spite of the territory in the district is still good, but the infrastructure of the road towards the villages were damaged and most are still rocky, even Survey team must pass through the mouth of the river to get to the Village Oepaha. Hilly road conditions and landslides are also the cause of Survey team could only visit to the Village of Tasikona and Oepaha as a regional survey.



Figure Condition of the road to the survey, which surveyed the area view from the top of the hill (a), the road towards the village of Tasikona (b), the estuary of the river to the village of Oepaha (c)

Respondents were drawn on average aged between 20-50 years. In general, the fishing fleet owned by fishermen Kupang regency fishing is still relatively traditional with a cruising range of about 5-7 miles or approximately 3 nautical miles. Fishing fleet consists of boats measuring 7 mx 0.5 mx 0.5 m (boat canoe) and 7 mx 1 mx 0.8 m (boat Fiber) which is operated with the help of Johnson engines 15 PK, 5 PK ketinting and rowing. Fishing fleet is usually done by 3-4 people fishing.

This type of fishing gear used is the net, rod elongation and longline fishing. Fishing gear nets used diantaraya edged 1.25 inches, 1.5 inches to 2 inches. Longline fishing gear while fishing between 50-100 edged hook.



Figure of respondents from the village of Simon Luy Tasikona (a), fishing gear nets (b) and respondents from the village of Joshua Oepaha

Kupang regency fishermen also generally recognize three fishing seasons, namely:

- (i) The peak season occurring in the month of November to March
- (ii) Season famine that occurred in the month of April-July
- (iii) Season the transition that occurred in the month of August to October

The types of fish caught is quite varied, both pelagic and demersal fish and corals. The types of pelagic and demersal fish caught include: gergahing fish, mackerel, sharks, kahaka, Gois, and stingrays.



The reef fish caught fishing in Kupang district in the territorial waters of the Timor Sea are: grouper and snapper.

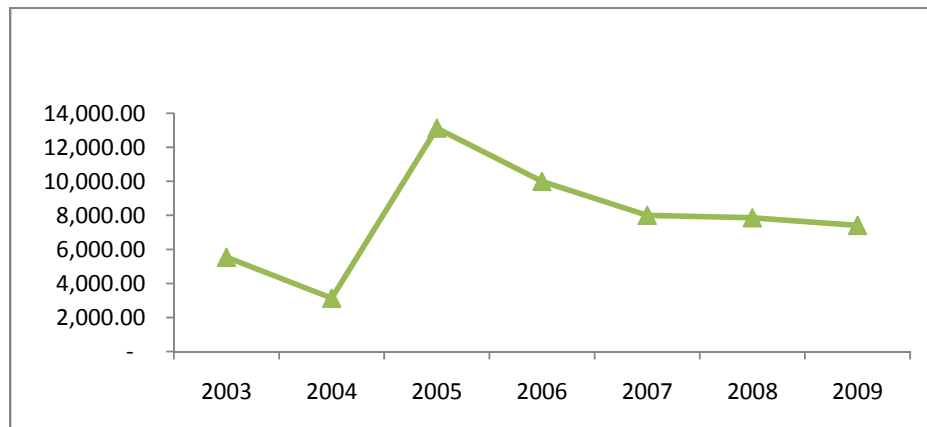
Based on production volumes produced, the average fisherman in Kupang district tells a decline in production over the past 3 years to reach approximately 30 percent. In general, fishermen Kupang also do not know exactly the cause of the decline in productivity.

Price of the fish in general is also changing in accordance with the laws prevailing market. Regional marketing products and Oepaha Tasikona fishermen are in the area around his village alone. However, specific to fish Mackerel, Grouper and Kakap, more brought to the city of Kupang, considering the price and the purchasing power of the city of Kupang is higher than the local community.

Fishermen Kupang regency usually also sell fish caught per unit or per dozen tails in accordance with the big fish-small fish that are sold or per unit of buckets equals 16 pounds, so by converting units of volume to kilograms, it can be obtained some of the price of each type of fish in Kupang district, which is as follows:

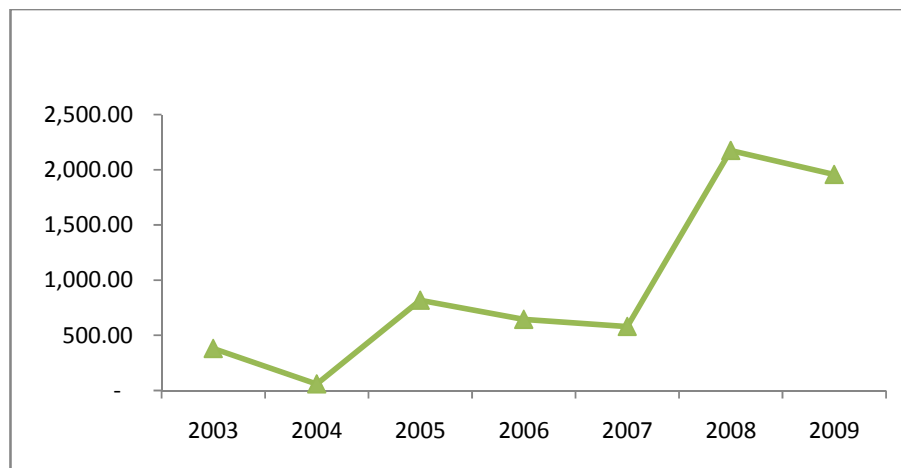
- (i) Fish gergahing Rp.15000 - Rp.17500 per kg
- (ii) Fish fillet per kg Rp.25000
- (iii) Sharks Rp.5000 per kg
- (iv) Fish kahaka Rp.5000 per kg
- (v) Fish Gois Rp.13000 per kg
- (vi) Fish pari Rp.4000 per kg
- (vii) Fish grouper Rp.10000 - Rp.30000 per kg
- (viii) Fish snapper Rp.15000 - Rp.20000 per kg

Based on the analysis of fishery production trends in Kupang regency, indicated that there has been a decline in pelagic and demersal fish production in the period 2008-2009. Decline in production also occurs in reef fish production in the same period. It also shows a decrease in both types of fish catches are that should be obtained around the waters of the Timor Sea. Complete picture of production trends in these counties can be seen in the following figures.



Trends in pelagic and demersal fish production in the District of Kupang

Figure above shows that there is a tendency of decline in pelagic and demersal fish production occurred during the period 2005-2009, the period 2003-2005 in spite of the fluctuations increases and decreases in production. Pelagic and demersal fish production in 2009 fishermen District of Kupang tended to decrease compared with 2008, where it is presumably an indication of decreased productivity due to the fishermen who do pelagic and demersal fishing in the territorial waters of the Timor Sea.



Trends in reef fish production in the District of Kupang

Figure above shows that there is an increasing production of reef fish in Kupang district during the period 2004-2008, during the period 2003-2007 despite fluctuations decrease, however, the slope is likely to increase. Pelagic and demersal fish production in 2009 tended to decline compared with 2008, where it is presumably an indication of decreased productivity due to fishermen who do pelagic and demersal fishing in the territorial waters of the Timor Sea.

4.4. General Condition of Merauke, Papua

Merauke regency has an area that is generally flat and marshy bertopografi along the beach with a slope of 0-3%, while towards the north from the country districts Tilt, Jagebob, Elikobel, muting and undulating topography Ulilin state with a slope of 0-8%.

Then based on the basic maps Merauke region is visible most of the plateau area located at an altitude of between 0-60 meters above sea level. Areas totally flat is located mostly on the southern and central regions. The area is a center for residents who started the business use of land for cultivation and the concentration of settlements.

These conditions are caused rawasannya coastal areas to natural disasters such as floods and tidal waves (tsunami), whether caused by windstorm or earthquake in the ocean sea. That is, natural disasters such as tsunami waves will be able to achieve a considerable distance from the shoreline, especially in some coastal areas with little beaches and mangrove forest ecosystems.

The main strategic issues relating to coastal and marine status in Merauke Regency, among others:

- (i) Decrease the potential of fishery resources;
- (ii) Lower populations of species economically important fish such as snapper china, kuro, gulamah, and shrimp;
- (iii) Illegal fishing still occurs in the waters off the coast (about 20 miles from the coast) which resulted in a decrease in the catch of local fishermen;
- (iv) Fish gastor is one of economically valuable fish species well and is still harvested in the swamps or rivers;
- (v) The ability of the economy and the skills of immigrants fishing is better than the local fishermen;
- (vi) The role of gender in family immigrant fishermen more focused and clear in comparison to gender in the family of local fishermen;
- (vii) Most of the fishermen catch consisted of fishermen immigrants, or it can be said that few local fishermen who are interested and have the courage to become a fisherman fishing;
- (viii) Program development of fishing communities are sourced from the Central Government and Local Government (either in the form of aid gear and boats as well as training activities) yet there appears to be sustainable, especially given to local fishermen;
- (ix) Guidance to local fishermen is better done by engaging them in a group chaired by fishermen settlers;
- (x) The fishery-based economy dominated by the fishermen settlers;
- (xi) The biggest difficulty faced by the fishermen, fishermen both migrants and local fishermen are limited absorptive capacity of the





- local market, except for some types of products are in demand by domestic tourists between islands;
- (xii) The development of markets outside the region is constrained by high transport costs;
 - (xiii) Marine tourism activities not already running, it first needs to be development of infrastructure and adequate human resources;
 - (xiv) Infrastructure and transportation facilities between the districts already available, although limited, inter-provincial transportation done by air and sea;
 - (xv) Types of services available and associated with fishing activities are still limited (eg repairs or modifications to the vessel engine / boat);
 - (xvi) The availability of fuel for fishing operations is still not smooth, is plagued with local regulations;
 - (xvii) Monitoring and enforcement of illegal fishing fisherman felt very slow, calculated from the time the information is given to do meninjau field; and
 - (xviii) Planning and management of fisheries programs help central and local government are less mature and is not sustainable.

Chapter 5. RECOMMENDATION

To set up the good community development in the coastal and marine area at Arafura and Timor Seas, need several pre-condition in order to avoid bias and mistake planning and development. Those pre-conditions are:

- (i) Each program of economic development of coastal communities should be planned and should be made based on the creation (opening) the market for products to be made or products that are already available.
- (ii) Planning the marine and fisheries sector economic development program should be based on the needs of the community who will receive assistance, taking into account the availability and management capabilities clearly differ between migrants and local communities.
- (iii) Development of physical ability and knowledge of local communities need to be carried out gradually through a process of apprenticeship in business activities carried out by local people.
- (iv) Planning and implementation of economic program to be done on an ongoing basis, with the alternative solution of (exit strategy) is clear.
- (v) Need to set up a cooperation between government institutions, both local and central to jointly conduct the absorption of marine and fisheries products produced by the local communities in all district of study area, so the process of increasing the economic capacity of each family of local communities (especially local fishermen) can be sustained.

Several recommendation related with developing local economic could be implemented based on several program as the follows:

- (i) Need cooperation between local government and the police and navy in the prevention of illegal fishing;
- (ii) Revitalization of fishing cooperatives in coordinating the marketing of fishery products;
- (iii) The program increased knowledge and skills of local fishermen (both men and women) through a process of apprenticeship in the activities of fishing, fish processing and product diversification, as well as the maintenance of engines and body of the ship in the company of fishermen fishing entrants;
- (iv) Maintain and preserve natural resources and the preservation potential of coastal and marine environment in order to keep





- providing benefits for the greater prosperity of the people in the region;
- (v) Utilize and develop the potential of natural resources and environment sector based optimal and sustainable marine;
 - (vi) Increasing production of natural resource use from the coastal and marine environment, through the adoption of utilization and processing technology;
 - (vii) Improving the welfare of society through business and investment development of products based on marine and fisheries;
 - (viii) Adequate levels of protein consumption and food security to support the improvement of public nutrition;
 - (ix) Encourage business growth and investment-based marine and fisheries that can provide added value to the community economic
 - (x) Improve the quality and price competitiveness of the production of results-based use of natural resources and environment that produced the local community;
 - (xi) Expanding employment opportunities and work through the development of agri-based utilization of natural resources and coastal and marine environment;
 - (xii) Empowering the natural resources and human resources of marine fisheries sector into a potential field of prospective business;
 - (xiii) Enhance institutional capacity of the productive efforts of local communities;
 - (xiv) Increasing the availability of supporting facilities and infrastructure;
 - (xv) Increasing innovation and dissemination of appropriate technologies competitive;
 - (xvi) Improving local access to banking and financial institutions
 - (xvii) Improving business results-based processing of natural resources and coastal and marine environment;
 - (xviii) Increasing efforts productive and competitive business empowerment to the community, through outreach, training and mentoring;
 - (xix) Develop cross-sectoral cooperation and inter-regional;
 - (xx) Develop systems and agribusiness-based marine and fisheries sectors in accordance with the environmental carrying capacity;
 - (xxi) Facilitating the development of agri-based partnership of marine and fisheries;
 - (xxii) Fostering the establishment of regional production centers;
 - (xxiii) Fostering community group of watcher;
 - (xxiv) Foster interest in the business community to develop productive and competitive economy as the field of business people;
 - (xxv) Improving the management and marketing community production; and

- (xxvi) Exercising continuous and sustainable control and supervision of natural resources and coastal and marine environment.

