



SOCIO-ECONOMIC ASSESSMENT: IN THE USE OF REEF RESOURCES BY LOCAL COMMUNITY AND OTHER DIRECT STAKEHOLDER

A Research Report

Submitted to : NOAA

Submitted date : October 24, 2005

Author team :

D. Lydia Napitupulu, Siti Nurwati Hodijah and
A. Cahyo Nugroho

Editor : Kiki Anggraini

Prepared by :



TERANGI

The Indonesian Coral Reef Foundation

Jl. Kompleks Ligamas indah Blok E2 / No.11, Jakarta Selatan 12760

Phone: (62-21 7994912) Fax: (62-21 7973301)

E-mail: terangi@cbn.net.id, Website: www.terangi.or.id

FOREWORD

Since formed in 1999, TERANGI has been focused in coral reef conservation at Seribu Islands. Despite the high potential of nature resources at Seribu Islands, we understand that there is a lack of awareness and capability of local community in conserving and managing their nature resources. Based on that we believe that we should gain information regarding to the status of nature resources at Seribu Islands (ecological survey on coral reef), and also seeking information that could describe the relationship between local community to their resources (the socioeconomic assessment).

We hope that this socioeconomic assessment that facilitated by NOAA, could deliver a baseline data that could be used as a recommendation to local authority on how is the nature resources at Seribu Islands should be managed and how we will involve the local community in that effort. We are aware that there were several weaknesses in this socioeconomic assessment that we conducted, but we believe that from this assessment's result we had a useful as baseline study and early description on how the local community used their potential nature resources at Seribu Islands, and that other areas/sites could compare and take lessons from our assessment.

Yours sincerely,
TERANGI Foundation

CONTENT

Foreword	2
Content	3
List of Tables	5
List of Figures	7
Executive Summary	9
Chapter I : INTRODUCTION	10
A. Background	10
B. Problems	13
C. Research Objective	14
D. Research Output	15
E. Research Activities	15
F. Research Schedule and Team	19
G. Weakness and Limitations	21
H. Report Outline	22
Chapter II : GENERAL DESCRIPTION OF SERIBU ISLANDS	23
A. Geographic Condition	23
B. Social Demography	25
C. Education Level	27
D. Livelihood	29
E. Profile of Southern Seribu Islands Sub-district	31
F. Profile of Northern Seribu Islands Sub-district	50
Chapter III : CORAL REEF USED	72
Characteristic of Coral Reef Users	72
A. Indirect Coral Reef Users	72
B. Direct Coral Reef Users	86

Chapter IV : PERCEPTIONS ON THE NATURAL RESOURCES OF SERIBU ISLANDS	98
A. Natural Resources Benefit	98
B. Threats and Level of Coral Reef Exploitation	102
C. Natural Resources Condition	107
D. Programs and Activities	113
E. Formal and Informal Access to the Coral Reef	117
F. Local Tradition Related to Coral Reef	119
 Chapter V : CONCLUSION	 121
A. Seribu Islands Community Profile	121
B. Types of Livelihood and Income Amounts	122
C. Types of Coral Reef Used by the Local Community	122
D. Community Perceptions on Their Natural Resources	123
E. Level of Coral Reef Used	126
 Acknowledgement	 127
References	128
Attachment	129

LIST OF TABLES

Table 1. Data Sampling	18
Table 2. Research Schedule	19
Table 3. Number, Density, and Percentage of Population Year 1998, 2002, and 2004	25
Table 4. Number of Population Based on Age Year 2004	27
Table 5. Number of School Buildings in Seribu Islands Year 2004	28
Table 6. Number of Population Percentage Based on Education Level Year 2004	29
Table 7. Percentage of Livelihood of Inhabitants in Seribu Islands Year 2002	30
Table 8. Main and Additional Livelihoods	35
Table 9. Diversity of Livelihoods	41
Table 10. Livelihood Types of Respondents	49
Table 11. Livelihood Types and Income Sources	55
Table 12. Percentage of Main and Additional Livelihoods of Respondents	56
Table 13. Income Sources of Main Respondents	62
Table 14. Main and Additional Livelihoods of Main Respondents	63
Table 15. Household Income Sources in Harapan Village	69
Table 16. Main and Additional Livelihoods of Respondents in Harapan Village	70
Table 17. Household Regular Expenses in Harapan Village	71
Table 18. Profile of <i>Palele</i> in Seribu Islands	74
Table 19. Profile of Marine Products Merchants in Seribu Islands	77
Table 20. Profile of Other Occupation in Seribu Islands	79
Table 21. Profile of Mariculture Fishers in Seribu Islands	81
Table 22. Profile of <i>Juragan</i> in Seribu Islands	84
Table 23. Profile of Marine Ornamental Collectors in Seribu Islands	87
Table 24. Profile of Food Consumption Fish Fishers in Seribu Islands	91
Table 25. Profile of Coral Miners in Seribu Islands	95
Table 26. Profile of Tourism Workers in Seribu Islands	96

Table 27. Perception of Respondents on Natural Resources Benefit	98
Table 28. Perception of Respondents on Natural Resources Benefit in Relation to the Fish Stock	99
Table 29. Perception of Respondents on Natural Resources Conservation	101
Table 30. Perception of Respondents on Natural Resources Condition	108
Table 31. Household Dependence Level to the Coral Reef, and Existing Law Enforcement	124

LIST OF FIGURES

Figure 1. Map of Seribu Islands	24
Figure 2. Education Level of Main Respondents	32
Figure 3. Livelihood of Main Respondents	33
Figure 4. Income Amounts of Respondents	34
Figure 5. Education Level of Respondents	39
Figure 6. Main Livelihood Types of Respondents	40
Figure 7. Additional Livelihood Types of Respondents	41
Figure 8. Income Amounts of Respondents	42
Figure 9. Education Level of Main Respondents	46
Figure 10. Main Livelihood Types of Respondents	47
Figure 11. Income Amounts of Respondents	48
Figure 12. Additional Livelihood Types of Respondents	49
Figure 13. Education Level of Respondents	52
Figure 14. Main Livelihood Types of Respondents	53
Figure 15. Incomes Amounts of Respondents	54
Figure 16. Education Level of Main Respondents	59
Figure 17. Main Livelihood Types of Respondents	60
Figure 18. Incomes Amounts of Respondents	61
Figure 19. Education Level of Main Respondents	66
Figure 20. Main Livelihood Types of Respondents	67
Figure 21. Incomes Amounts of Respondents	68
Figure 22. Food Consumption Fish Catching Techniques	90

EXECUTIVE SUMMARY

To date, socioeconomic information of Seribu islands has been collected in the form of demography data, which consists of population density, age proportion, education level, island facilities, occupation, etc. However, there is relatively rare information and detail description on coral reef utilization by the local community. We believe that data on coral reef utilization by local community is needed as useful information that could give input in resources management.

Based on that, TERANGI, facilitated by NOAA, conducted the socioeconomic assessment at Seribu Islands. The socioeconomic survey has aim to collect information on; 1). Demographic profile (social and economic condition) of local community in Seribu Islands, 2). Identifying and measure the used pattern of reef resources by local community and other direct stakeholders, 3). Gaining information on the perception of local community and direct stakeholders of their nature resources. The survey was conducted between August to October 2004 to all eleven populated islands within Seribu Islands.

This socioeconomic research is categorized as descriptive research, with no early hypothesis. For this research, data is collected by two methods. Primary data collection, which collects data directly from the field by interview and field observation; and secondary data collection, which collects data from literature study (reports, scientific journals, books, and other documents from the library, related institutions, and internet search). Interviews were done using techniques as household interview, key informant interview, in-depth interview, and Focus Group Discussion (FGD). Method of sampling selection used is *stratified-random sampling*. Sampling is randomly collected from every populated island to represent each island. The amount of sampling is 10% from total household population in Seribu Islands.

The results of this socioeconomic survey are including the demographic profile of local community, the description on the coral reef used by direct and indirect users, and the perception of direct stakeholders on the natural resources at Seribu Islands.

The demographic profile of local community at Seribu Islands supports the common perception that stated Seribu Islands is an urbanized area, as shown from high variation of livelihoods. For example, other than become fishermen, many of the inhabitants are working as civil servant, private sector employee, and entrepreneur.

The most common livelihood in Seribu Islands is fishers, which food consumption fish fishers are the highest. Other fishery livelihoods include are mariculture, ornamental coral and fish fishers, coral mining, investors, ornamental coral and fish suppliers, and collectors. Main livelihood types in Seribu Islands that describe as 'others' are considered as common occupations for the community in Seribu Islands. Some of these occupations are: civil servant, private sector employee, teacher, religious teacher, daily need merchant, and various kinds of service and labor (taxi operator, cleaning service worker, room boy, massage service, government cleaning service, etc.).

If the two sub-districts are compared, then the coral reef used level by fishers in Northern Seribu Islands Sub-District is higher than the Southern Seribu Islands Sub-District. The reason is that because the sea waters condition in Southern Seribu Islands is not supportive, so many of the fishers from the villages of Southern Seribu Islands, are involved in a large-scale muroami enterprise that fish in outside Seribu Islands.

The community knowledge concerning coral reef benefit is sufficiently high. However, it is not easy to implement their knowledge of conservation to the daily life. This is happen, as they have to face the fact of their low income, which force them exploiting the existing natural resources.

CHAPTER I

INTRODUCTION

A. BACKGROUND

Indonesia is the largest archipelagic state in the world with around 17,508 islands. Comprising 14 percent of the Earth's surface (about 81,000 km), Indonesia has the longest coastline in the world, stretching 95,181 km. It also has a sea area of about 5.8 million square km, representing approximately 70% of its total territory (Tomascik *et.al.*, 1997). Consequently, Indonesia has rich marine ecosystems. Several marine ecosystems found in Indonesia's water are beaches, sand dunes, estuaries, mangroves, coral reefs¹, seagrass beds, coastal mudflats, tidal forests, algal beds, and small island ecosystems.

Coastal and marine area can generate valuable economic potentials, like mineral and coals, renewable energy resources, source of nutrients, and medical extracted from coral reefs. Coral reefs give a lot of advantages, some of which are preventing coastal abrasion, acting as habitat for marine biota, supporting fisheries for consumption, and tourism.

Human activities have threatened coral reef ecosystem. Overfishing has been the biggest threat for coral reefs in Southeast Asia, followed by destructive fishing and irresponsible coastal development. Irresponsible coastal development destroys mangrove ecosystem by deforestation, damages coral reefs by coral mining and dredging, produces sedimentation flowing through the river to the sea (Burke, L., E. Selig & M. Spalding, 2002).

Massive demographic and economic growth taking place in Jakarta Metropolitan Area have created environment-related coastal problems. Inland-oriented development has resulted coastal area being neglected. Furthermore, the land development creates bad impact to coastal area.

¹ Indonesia is placed in 11th position in the world in term of total marine area (291.500 km²) and 1st position in the world with the largest reef area (51.020 km²), followed by Australia with 48.950 km² reef area and Philippines with 25.060 km² reef area.

Seribu Islands in Jakarta Bay, which is located adjacent to the Jakarta City, is one of many examples where coastal area suffers from impact of development from the land. Rehabilitation effort in Seribu Islands was initiated through declaration of status area of becoming administrative district in 2001. Through the new status, the sustainable coastal resource management is expected to be prioritized.

1. NATURAL RESOURCES POTENTIAL IN SERIBU ISLANDS

Seribu Islands means 'thousand islands'. There are currently 105 islands in all, with average height less than three m from sea surface (UNESCO, 2000). In 2000, population in Seribu Islands was recorded 17,973; dispersed in 11 populated islands (Sensus Penduduk, 1997 cited in LAPI-ITB, 2001). Due to its vicinity to Jakarta City, many areas in Seribu Islands have been dredged for landfill, and thousands of hectares around the bay have been transformed into fishponds, luxury residences, and industrial zones. Some islands have national park wildlife refuges; others have been developed as tourist resorts or residential communities for Jakarta. Past studies have shown that Seribu Islands has huge potential of natural resources.

Coastal ecosystems that can be found in Seribu Islands are mangrove, seagrass beds, and coral reef. Mangrove vegetation in Seribu Islands is found in Rambut Island, Bokor Island, Untung Jawa Island, Lancang Island, Peteloran Island, Penjaliran Barat Island, and Penjaliran Timur Island. Seagrass is found in shallow water near beach. Coral reefs range in shallow water to deeper water. Common marine biotas found in coral reef and become main catch are groupers, snappers, lobster, and cuttlefish. Macroalgae, also known as seaweed, becomes an important source of mari-culture for local community.

In mining sector, further offshore, to the northwest of the reef tract, a major oil field exists and oil is being extracted. Crude oil has been successfully explored from Seribu Islands offshore, supported by facilities built in Pabelokan Island. Seribu Islands is also a huge tourist attraction. During the weekends, tourists from Jakarta visit the area, making the islands tend to be very crowded. Tourism development is relatively high in Seribu Islands. There are approximately 44 areas developed for tourism. There are some resorts on islands that provide up market accommodation, restaurants, and marine tourism activities, for example Sepa

Island, Kotok Island, Matahari Island, Putri Island, and Pantara island (Sudin Pariwisata Jakarta Utara, 2000 *cited in* LAPI-ITB, 2001).

Seribu Islands also hosts some protected areas categorized in Wildlife Reserve: Rambut Island, Bokor Island, Peteloran Barat Island, Penjaliran Timur Island, and the National Park: Seribu Islands Marine National Park (TNKpS).

Seribu Islands Marine National Park (TNKpS) lies off the north of Seribu Islands. It has around 108.000 ha area and encompasses 15% of the total area of Seribu Islands. There are three villages within the Seribu Islands Marine National Park: Villages of Panggang Islands, Villages of Kelapa Islands, and Villages of Harapan Islands (Departemen Kehutanan dan Perkebunan, Dirjen PKA, Balai Taman Nasional Kepulauan Seribu, 1999/2000).

2. PROBLEMS IN NATURAL RESOURCES USE IN SERIBU ISLANDS

Its proximity to Jakarta City brings advantages and disadvantages to Seribu Islands. The advantages include facilities and easy access from Jakarta City, while the disadvantages make Seribu Islands receive bad impacts and characteristic problems of megapolitan city. One of the problems is the high population growth rate in Jakarta and Seribu Islands, while there are limited spaces available. This condition also threatens sustainability of coastal and marine resources in Seribu Islands.

Pollution is amongst serious problems threatening natural resources in Seribu Islands. Pollution comes from mainland, Jakarta, and surrounding islands. Several major coastal rivers transporting sediments, sewage, agricultural and industrial effluents, and solid waste flow into Jakarta Bay. The bay is recorded to receive 19 river flows from Jakarta City (UNESCO, 2000). Pollution from main island consists of industrial and household sewage, and sedimentation which flows through river to the sea. Pollution from surrounding islands consists of household sewage discarded to surrounding waters, and oil pollution from vessels and mine. Sand and coral mining for house construction also contributes to coral reef damage.

Coral reef baseline data assessment initiated by UNESCO and P20-LIPI (Research and Development Center for Oceanology-Indonesian Institute of Science) in 1985

and 1995 shows there are significant degradation of coral reefs condition, caused by pollution.

The high population growth rate increases utilization and used of coral reefs and other coastal ecosystems. There is also competition in the use of natural resources. High competition leads to unsustainable fishing practices in coral reef utilization, such as destructive fishing by using bombs to get bigger yield, the use of potassium cyanide to catch ornamental fish, etc. Low income in community also contributes to coral mining and dredging for free and cheap material for house construction.

Previous studies show that 75% of population in Seribu Islands work as traditional fishermen who are fully dependent from nature. Economic problem has resulted them catching fish in unsustainable manner. For example: the installation of *bubu* -a woven bamboo cage for catching fish -which uses corals as weights, and *muroami* fishing that often steps on corals to lead the fish to the net. These practices cause damage to coral reef. Destructive fishing (by using bombs and potassium cyanide or '*potas*') is also widely practiced in Seribu Islands as well as in many coastal areas in Indonesia.

The use of natural resources in Seribu Islands has not been fully optimized nor has it brought significant effect for community's economy. On the contrary, the use of coral reef resources is still far from sustainable and tends to damage the ecosystem. Latest development shows that local community starts to take role to support tourism, by establishing homestays, restaurants, food stalls, and boat rentals in Untung Jawa Island and Panggang Island. Recently in Pramuka Island, a community-based dive operator was established for tourists. One of obstacles from this community-based tourism is there are still lack of capacity and significant role from community. Not to mention they still have to compete with resort islands which are operated by big professional entrepreneurs.

B. PROBLEMS

Natural resources management in Seribu Islands has not showed optimal coordination and synergy among stakeholders. Data on ecology is required to support conservation effort in managing coastal natural resources (mangrove,

seagrass, coral reef). Socioeconomic information, which explains relationship between community and coastal ecosystem, is also required. We need to describe the relationship and dependency of community to natural resources, their roles, and if possible, the relationship between community and damaging coastal ecosystem.

To date, socioeconomic information has been collected in the form of demography data, which consists of population density, age proportion, education level, island facilities, occupation, etc. Information on potential of natural resources has been fully conducted in Seribu Islands by LAPI-ITB (Affiliation of Science and Industry - Bandung Technology Institute) in 2001. Community prosperity planning which encompasses public facilities, occupation, and community expectation has also been fully conducted in 2002 by Laboratory of Anthropology Indonesia University. However, there is still lack of complete information on coral reef utilization by community.

Currently, data of socioeconomic condition has been compiled in the form of demography data, not specifically describing coastal resources management in deeper context. Complete data on coral reef utilization by community is needed for management bodies, especially for government officials. This information is required to act as input for management (in this case Seribu Islands District and Seribu Islands Marine National Park) to design management plan based on the condition in community.

C. RESEARCH OBJECTIVE

The objectives of this socioeconomic research are to collect information on:

1. Developing a demographic profile (social and economic condition) of local community in Seribu Islands
2. Identifying and measure the used pattern of reef resources by local community and other direct stakeholders
3. Gaining information on the perception of local community and direct stakeholders of their nature resources

D. RESEARCH OUTPUT

1. Demographic profile of local community in Seribu Islands
2. Information and description on coral reef utilisations by local community in Seribu Islands
3. Information on local community and other direct stakeholders' perceptions on the benefit, used value, threats, and conservation of the coastal ecosystems

E. RESEARCH ACTIVITIES

1. RESEARCH METHOD

This socioeconomic research is categorized as descriptive research, with no early hypothesis. For this research, data is collected by two methods. Primary data collection, which collects data directly from the field by interview and field observation; and secondary data collection, which collects data from literature study (reports, scientific journals, books, and other documents from the library, related institutions, and internet search).

Primary data collection is conducted based on Socioeconomic Manual for Coral Reef Management, published by IUCN (The World Conservation Union), AIMS (Australian Institute of Marine Science), GCRMN (Global Coral Reef Monitoring Network), and NOAA (National Oceanic and Atmospheric Administration-U.S. Department of Commerce). Furthermore, survey guidelines are also taken from SocMon SEA (Socioeconomic Monitoring Guidelines for Coastal Managers in Southeast Asia), published by WCPA (World Commission on Protected Areas), NOAA, World Fish Center, and GCRMN.

Primary data collection is done by quantitative and qualitative method, conducted in three ways:

1. Household interview

It uses semi-structured questionnaire to collect quantitative data, with open-ended and close-ended questions. The questionnaire consists of 44 pages, divided into several topics: household profile, occupation, income,

activities related to coral reef, and perception of community in respect to natural resources in Seribu Islands.

2. In-depth interview and key-informant interview

The aim of in-depth interview is to gain further information upon particular thing based on basic information collected from household survey. In-depth interview is conducted in formal or non-formal way to the key-informants in community, representative of occupation, government institutions, and other stakeholders directly related to coral reef utilization. In this survey, in-depth interview is conducted to nine occupations with direct contact to coral reef²: fisherman catching fish for food consumption, fisherman catching ornamental fish (marine ornamental collector), mariculture fisherman, supplier, fish seller, coral miner, and tourism worker.

Governement officials and private companies are also asked for inputs in separate questionnaire.

3. Primary data collection is done not only to households but also to other community groups who are related to coral reef utilization. This qualitative data collection will be done through Focus Group Discussion (FGD). Focus Group Discussion (FGD) is conducted to gain specific information from selected groups which share common background to talk about problems occurred in community. FGD was done through conducting discussion in a group with similar characteristic members. In this survey, FGD is conducted to four coral reef users group: fisherman catching fish for food consumption, firsherman catching ornamental fish (marine ornamental collector), ornamental fish supplier, and other marine biota supplier.

To produce valid qualitative data, observation technique is used to examine situation, condition, and activities related to research; to re-check and cross-check collected data.

² Key informant is community figure or person who is considered capable in giving basic information about character of local community and condition of natural resources in Seribu Islands. Key informant can be ward chief, village head, religious leader, members of village administration, members of youth organisation, woman figure, and other members of community organisation. Interview with key informant is to gain basic information before conducting household survey.

2. SURVEY LOCATION AND QUANTITATIVE SAMPLING

Socioeconomic survey encompasses 11 populated islands, dispersed in two sub-districts in Seribu Islands; each consisted of six villages (kelurahan). Eleven designated populated islands are:

1. Sub-district of Southern Seribu Islands:
 - A. Village of Untung Jawa Island
 - 1). Untung Jawa Island
 - B. Village of Tidung Island
 - 2). Tidung Besar Island
 - 3). Payung Island
 - C. Village of Pari Island
 - 4). Pari Island
 - 5). Lancang Island
2. Sub-district of Northern Seribu Islands
 - A. Village of Panggang Island
 - 6). Panggang Island
 - 7). Pramuka Island
 - B. Village of Kelapa Island
 - 8). Kelapa Island
 - 9). Kelapa Dua Island
 - C. Village of Harapan Island
 - 10). Harapan Island
 - 11). Sebira Island

The household survey is conducted in 11 populated islands in Seribu Islands. Sampling for this survey is household unit. Method of sampling selection used is *stratified-random sampling*. Sampling is randomly collected from every populated island to represent each island. The amount of sampling is 10% from total household population in Seribu Islands. This is called *rule of thumb*.

Theoretically, the bigger the sampling the more accurate it would be. However, since the time and money were limited, 10% of total household population was considered adequate. If total household population in an island is less than 300,

collected sampling would be 30. For example, total household population is 200 (<300), collected sampling is 30. This is to fulfill the assumption that collected sampling is distributed normally (Bowen, Earl K. & Martin K. Starr, 1982).

Table 1. Data Sampling

Village	Household Unit	Collected Sampling	Valid Sampling
Untung Jawa Is.	360	38	38
Tidung Is.	1096	112	112
Pari Is.	543	55	52
Panggang Is.	1200	120	100
Kelapa Is.	1500	165	160
Harapan Is.	398	61	49
Total	5097	551	511

Total collected sampling is 551 (more than 10% of the amount of household units in Seribu Islands). However, valid sampling is 511 (approximately 10% from the whole amount of household units in Seribu Islands). Valid sampling is normally caused by incomplete answers in questionnaire, making it difficult to analyze.

F. RESEARCH SCHEDULE AND TEAM

1. RESEARCH SCHEDULE

Activities done during the survey can be seen in this table below:

Table 2. Research Schedule

Activity	Time
Literature study (secondary data collection)	April - August 2004
Household survey, key informant interview, FGD, in-depth interview, and field observation in Village of Panggang Islands (Panggang Island and Pramuka Island)	August - September 2004
Household survey, key informant interview, FGD, in-depth interview, and field observation in Village of Kelapa Islands (Kelapa Island and Kelapa Dua Island), and Harapan Island	August - September 2004
Household survey, key informant interview, FGD, in-depth interview, and field observation in Sebira Island	August 2004
Household survey, key informant interview, FGD, in-depth interview, and field observation in Village of Untung Jawa Islands (Untung Jawa Island)	October 2004
Household survey, key informant interview, FGD, in-depth interview, and field observation in Village of Tidung Islands (Tidung Island and Payung Island)	September - October 2004

Table 2 continue

Activity	Time
Household survey, key informant interview, FGD, in-depth interview, and field observation in Village of Pari Islands (Pari Island and Lancang Island)	September - October 2004
Data entry and data re-check	November 2004 - January 2005
Data analysis phase I	January - March 2005
Interview to related stakeholders	January - February 2005
Data analysis phase II	March - June 2005
Discussion and report writing	July - September 2005

2. RESEARCH TEAM

The team for this survey is divided into two teams:

1. Core team, consists of seven people with various educational backgrounds (biology, economy, anthropology, fishery). The core team helps in the process of formulating research design to data analysis
2. Supporting team consists of two people with anthropology and economy background, and government agencies (Head of Seribu Islands National Park and officials from Administrative District office)

For data collection in the field, the team is helped by field surveyors. Field surveyors will collect data directly from the field. The team of field surveyors also come from various educational backgrounds as in core team and supporting team (names of the whole team members are attached).

G. WEAKNESS AND LIMITATIONS

There are several weaknesses and limitations found during the process of socio-economic survey in Seribu Islands, that describe here:

1. The lack of government officials' role. In survey planning, the team had discussion with government officials related with Seribu Islands to ask for their inputs. They had contributed some inputs regarding questionnaire design for household survey. However, during the field activities they were not actively involved. This was partly because of government officials' engaged activities. In another way, it is also important to keep the research objective and neutral by not involving government officials, concerning respondents may have responded differently
2. Large amount of household sampling (551 respondents representing 10% of the amount of total households in Seribu Islands) required more surveyors consequently
3. The questionnaire that we made was not facilitated more detail information on the level of coral reef used by local community. For example we could not compare the level of coral reef used between food consumption fish fishermen with ornamental fish fishermen. In this case, we can not say that one of them is depending more to coral reef than the other, cause we did not have the data on the level of coral reef used, to compare.
4. There were too many questions in the questionnaires (93 main questions and could be more if respondents had more than one occupation). This happened because many issues were trying to be exposed. There were also some additional questions from government agency, while researcher also wanted to gain detailed information from respondents. Due to the high amount of questions, it took more time to conduct interview and respondents were likely to get bored with the long process

5. Invalid questionnaire result. Not every parts of in the questionnaire were answered. It could possibly happen because of respondents' weariness and unwillingness in answering questions, and also might be caused by the lack of noticulous of the field surveyors while doing the interview

H. REPORT OUTLINE

This report consists of several chapters:

Chapter I consists of background, problems, research objectives, research activities, weakness and limitations, and report outline. Research activities consist of methods, sampling, and location.

Chapter II consists of general description of survey location, such as demography, education, occupation, villages profile and history of each island.

Chapter III consists of data and analysis of coral reef utilization in Seribu Islands. Analysis consists of characteristic description of indirect coral reef users (suppliers, collectors, middlemen, tourism workers, fish sellers, and mariculture fishermen) and direct coral reef users (fishermen catching fish for consumption, marine ornamental fishermen, and coral miners). This chapter also describes data and analysis about fishing frequency, fishing volume in coral reefs, and community perception. Perception is how the community and related stakeholders perceive coastal resources in Seribu Islands.

Chapter IV consists of analysis of local community and direct stakeholders perception on their natural resources (the condition of the natural resources, the threat to natural resources, etc.).

Chapter V consist of discussion and conclusion.

Chapter VI consist of epilogue.

CHAPTER II

GENERAL DESCRIPTION OF SERIBU ISLANDS

A. GEOGRAPHIC CONDITION

Administrative District of Seribu Islands is a region comprises of 105 small islands, extending across 80 km in the north of Jakarta Bay. These small coral islands are lay not more than three meters above the sea level. Seribu Islands Marine National Park (TNKpS), which located north part of Seribu Islands, is covering thrid quarter of the islands in Seribu Islands. While Seribu Islands consists of several islands, only 11 of them are inhabited. The rest are natural conservation area, island owned by government institutions, resort islands, fish-culture places, private islands, and vacant islands.

There are two sub-districts in Seribu Islands area, Southern Seribu Islands Sub-District and Northern Seribu Islands Sub-District. The details are as follows:

1). Southern Seribu Islands Sub-District is located in Tidung Island.

Consists of three villages;

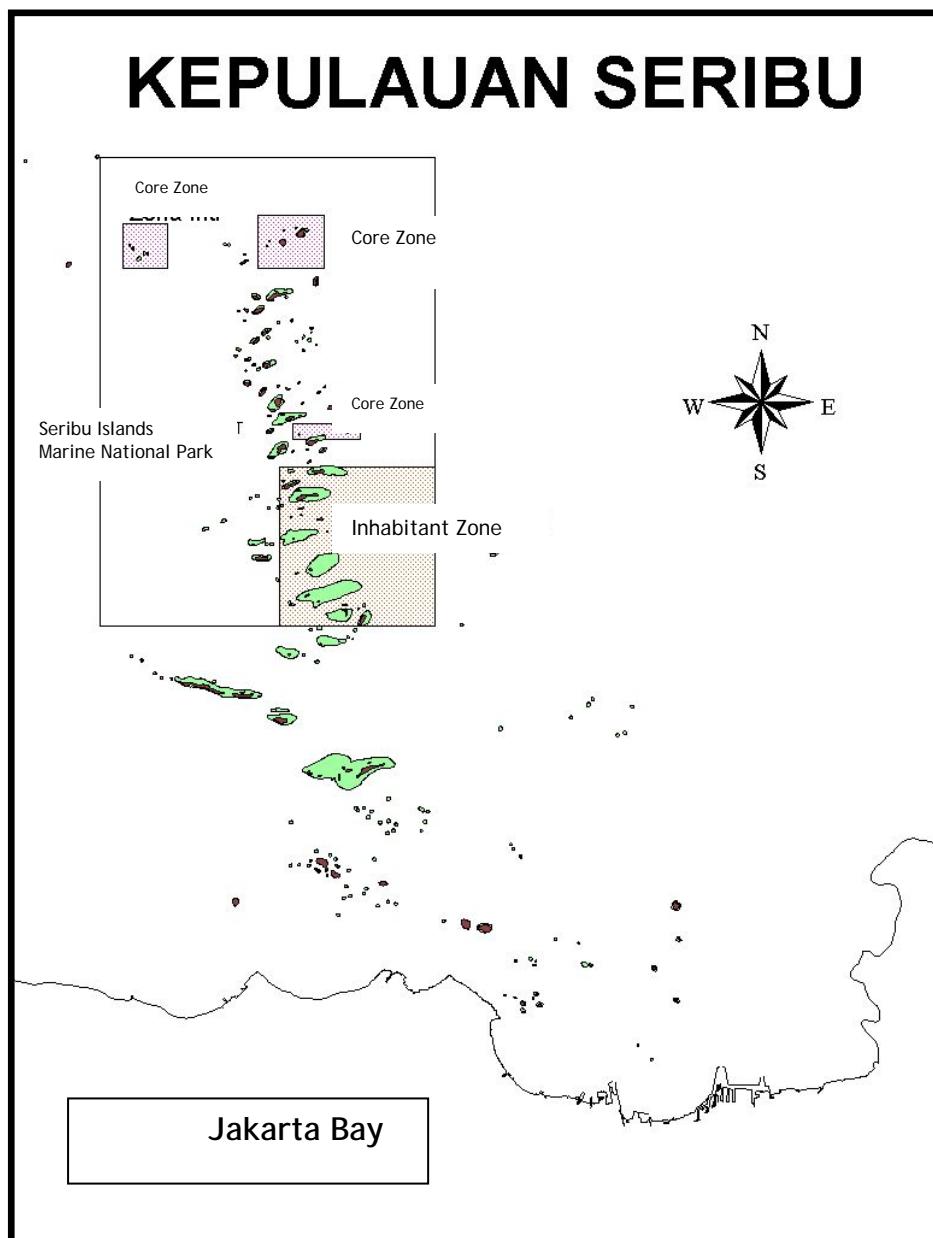
- Tidung Island Village (covering Tidung Besar Island and Payung Island)
- Pari Island Village (covering Pari Island and Lancang Island)
- Untung Jawa Island Village (covering Untung Jawa Island)

2). Northern Seribu Islands Sub-District is located in Panggang Island.

Consists of three villages;

- Kelapa Island Village (covering Kelapa Island and Kelapa Dua Island)
- Harapan Island Village (covering Harapan Island and Sebira Island)
- Panggang Island Village (covering Panggang Island and Pramuka Island)

Figure 1. Map of Seribu Islands



B. SOCIAL DEMOGRAPHY

Table 3 describes that the most populated island at the north part of Seribu Islands is Kelapa Island. While at the south part, Tidung Island is the most populated one. But the highest density island is Panggang Island (number of population compares to the island area). The highest population growth rate year 2001-2004 is Pari Island, followed by Harapan Island and Untung Jawa Island (Table 3). From the age sector, there is a tendency that the higher age group is having lesser members (Table 4).

Table 3. Number, Density, and Percentage of Population

Year 1998, 2002, and 2004

Village and Island	Area (ha)	Number of population			Population density			Percentage of population growth	
		1998	2001	2004	1998	2001	2004	1998-2001	2001-2004
Panggang Island Village	62.1	3983	4217	4395	64	68	71	5.87	4.22
Panggang Island	9	3107	3275	3391	345	364	377	5.41	3.54
Pramuka Island	16	876	942	1004	55	59	63	7.53	6.58
Untung Jawa Island Village	102.85	1491	1593	1717	14	15	17	6.84	7.78
Untung Jawa Island	40.1	1491	1593	1717	37	40	43	6.84	7.78
Harapan Island Village	244.72	1624	1859	1924	7	8	8	14.47	3.50
Harapan Island	6.7	1283	1313	1418	192	196	212	2.34	8.00
Sebira Island	8.82	341	546	506	39	62	57	60.12	-7.33
Kelapa Island Village	258.47	4679	4892	n.a	18	19	n.a	4.55	n.a
Kelapa Dua Island	1.9	309	317	n.a	163	167	n.a	2.59	n.a

Table 3 continue

Village and Island	Area (ha)	Number of population			Population density			Percentage of population growth	
		1998	2001	2004	1998	2001	2004	1998-2001	2001-2004
Tidung Island Village	106.9	3437	3874	4086	32	36	38	12.71	5.47
Tidung Besar Island	50.13	3337	3752	3966	67	75	79	12.44	5.70
Payung Island	20.86	100	122	120	5	6	6	22.00	-1.64
Pari Island Village	94.57	1259	2007	2132	13	21	23	59.41	6.23
Pari Island	41.32	526	621	702	13	15	17	18.06	13.04
Lancang Besar Island	15.13	733	1386	1430	48	92	95	89.09	3.17
Total of Seribu Islands	869.61	16473	18442	n.a	19	21	n.a		

Sources : Monographic Data of Untung Jawa Is. Village, January - June 2004

Monthly Report of Pari Is. Village, August 2004

Monthly Report of Tidung Is. Village, August 2004

Monthly Report of Panggang Is. Village, July 2004

Monthly report of Harapan Is. Village, July 2004

Establishing RT/RW of Seribu Islands Administrative District Year 2001

The number of population in Seribu Islands, based on age group collected from each village, shows that the highest age group is 0-14 years (14.17%). It followed by 5-9 years of age group (13.03%) and continued with the smaller percentages toward higher age group (see Table 4).

Table 4. Number of Population Based on Age Year 2004*

Age	Number	%
0 - 4	2020	14.17
5 - 9	1857	13.03
10 - 14	1528	10.72
15 - 19	1462	10.26
20 - 24	1280	8.98
25 - 29	1188	8.33
30 - 34	1042	7.31
35 - 39	849	5.96
40 - 44	788	5.53
45 - 49	640	4.49
50 - 54	530	3.72
55 - 59	368	2.58
60 - 64	273	1.92
65 - 69	221	1.55
70 - 74	129	0.91
75 and above	79	0.55

* Excluding Kelapa Island.

Sources : Monographic Data of Untung Jawa Is. Village, January - June 2004
 Monthly Report of Pari Is. Village, August 2004
 Monthly Report of Tidung Is. Village, August 2004
 Monthly Report of Panggang Is. Village, July 2004
 Monthly Report of Harapan Is. Village, July 2004

C. EDUCATION LEVEL

Formal education facilities are provided in Seribu Islands, although not all the islands or villages have it (Table 5). In general, almost all villages have buildings for kindergarten to junior high school. Senior high school only presents in Pramuka Island i.e. SMUN 69. Apart from general senior high school, there is vocational senior high school in Tidung Island.

Table 5. Number of School Buildings in Seribu Islands Year 2004

Village	Number of Schools						
	KG	Elementary or the same level		Junior High or the same level		Senior High or the same level	
		Public	Private	Public	Private	Public	Private
Panggang	6	3	1	1	-	1	-
Kelapa	-	1	1	-	-	-	-
Harapan	-	1	1	1	-	-	-
Untung Jawa	1	1	-	1	-	-	-
Pari	1	2	2	1	-	-	-
Tidung	2	4	1	1	1	1	-
Total	10	12	6	5	1	2	0

Sources : Monographic Data of Untung Jawa Is. Village, January - June 2004

Monthly Report of Pari Is. Village, August 2004

Monthly Report of Tidung Is. Village, August 2004

Monthly Report of Panggang Is. Village, July 2004

Monthly Report of Harapan Is. Village, July 2004

It seems that education is concerned as 'expensive things' for Seribu Islands people, as education facilities are lack in some islands, low frequency of inter-island transportation, and high price for transport fare. This circumstance is the caused of the low quantity of senior high school graduates and even diploma holders and bachelor degree holders.

Based on Table 6, there are 60.04% inhabitants categorized as 'uneducated/uneducated yet' and 'elementary undergraduate'. Elementary graduates are 24.55%. Only 6.07% are graduates from senior high school, while only 1.88% can finish their diploma or university level. In general, people which suspend their education are being absorbed to marine industry as fishers.

Table 6. Number of Population Percentage Based on Education Level

Year 2004*

Category	Percentage
Uneducated/ uneducated yet	38.61
Elementary undergraduates (suspend & in process)	21.43
Elementary/ Islamic elementary graduates	24.55
Junior High Graduates	7.46
Senior High Graduates	6.07
Diploma holders/ Bachelor degrees	1.88

* Excluding Kelapa Island

Sources : Monographic Data of Untung Jawa Is. Village, January - June 2004
 Monthly Report of Pari Is. Village, August 2004
 Monthly Report of Tidung Is. Village, August 2004
 Monthly Report of Panggang Is. Village, July 2004
 Monthly Report of Harapan Is. Village, July 2004

D. LIVELIHOOD

Main livelihood for people in Seribu Islands, according to the data from year 2000, is fishers (69.36%). It is followed by merchants (10.39%) and other livelihoods (Table 7). Fishers are the majority of livelihood in Seribu Islands and its villages. The highest number of people who works as fishers is in Pari Island Village(84.51%) and followed by Panggang Village. While village that has the lowest number of fishers is Harapan Island Village(48.62%).

Table 7. Percentage of Livelihood of Inhabitants in Seribu Islands Year 2002

No	Livelihood	Village						Amount
		Panggang	Untung Jawa	Kelapa	Harapan	Tidung	Pari	
1	Fishers	1746	289	1254	477	651	589	5006
		81.70%	64.37%	64.81%	48.62%	63.95%	84.51%	69.36%
2	Merchant/ labour	47	48	302	205	90	58	750
		2.20%	10.69%	15.61%	20.90%	8.84%	8.32%	10.39%
3	Military/ Police	2	12	3	0	0	2	19
		0.09%	2.67%	0.16%	0.00%	0.00%	0.29%	0.26%
4	Civil Servant	194	55	59	14	124	25	471
		9.08%	12.25%	3.05%	1.43%	12.18%	3.59%	6.53%
5	Private Sector / Entrepreneur	17	17	113	0	117	9	273
		0.80%	3.79%	5.84%	0.00%	11.49%	1.29%	3.78%
6	Service	22	3	56	15	14	12	122
		1.03%	0.67%	2.89%	1.53%	1.38%	1.72%	1.69%
7	Others	109	25	148	270	22	2	576
	Total	5.10%	5.57%	7.65%	27.52%	2.16%	0.29%	7.98%
		2137	449	1935	981	1018	697	7217

Source: Monographic Data of Villages in Seribu Islands, January-June 2002 *in* LPEM (2003)

E. PROFILE OF SOUTHERN SERIBU ISLANDS SUB-DISTRICT

1. VILLAGES OF UNTUNG JAWA ISLANDS

a. GENERAL DESCRIPTION OF THE AREA

The area of Untung Jawa Island Village consists of 15 small islands which only one of them is inhabited i.e. Untung Jawa Island. Untung Jawa Island is the nearest inhabited island from Java Island. This near distance has made the island named as Untung Jawa Island, as it means ‘lucky to be close from Java’. This geographic advantage has led this island to have a fast improvement and development, as shown by the establishment of several piers and harbors.

At the southern part of Untung Jawa Island, there are three transportation piers that used as the in and out point for inhabitants and tourists (especially in weekend). One of them is owned by Transportation Department. This pier is made of concrete and it used as mooring quay place for ferries, or named as Betok Boat, which travel to Ancol, Jakarta or to other islands like Tidung Island and Kelapa Island. Other pier is the mooring quay for wooden boat which travels to Tanjung Pasir, Tangerang. While the last pier is used for tourists who visit Untung Jawa Island.

At the eastern part, there are harbors for mooring quays place for fishers' boats and boats from resort islands that visit the Untung Jawa for shopping. This harbor is made of stacks of stones that seem a bit destroyed by the wave, most likely during the east monsoon. Other place in the eastern part is a pier made of wood and concrete which used by local people to send logistics to Untung Jawa Island.

Tourism activities in Untung Jawa Island are well developed as shown by several guest houses or homestays, even though it just a simple type. To make a construction, local people seem to exploit stones and sand that present in their yard and not exploit the coral from the sea. The road in Untung Jawa Island is clean and well preserved. However, the mangrove vegetation at Northwestern

part of the island is not in a good thick condition, as it is covered by a lot of garbage waste.

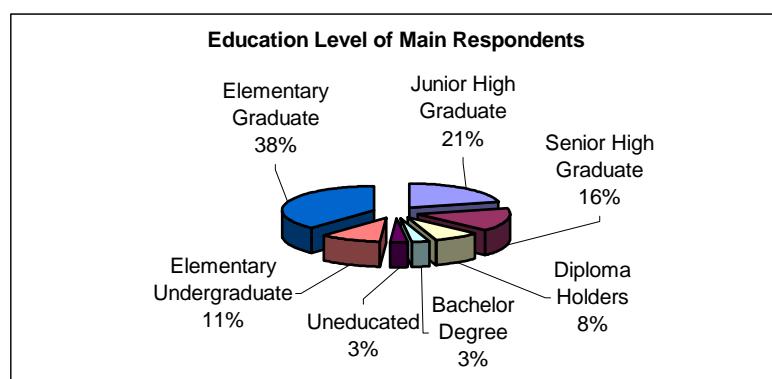
b. DEMOGRAPHY

1). Age, Sex, and Education Level

The survey has shown that each household in Untung Jawa Island consists of 4.68 family members. From 38 main respondents as surveyed, five of them are women (13%). This is confirmed by local social leader who says that the number of men is higher than women. The average rate of respondents is 44 years; with the oldest is 75 and the youngest is 22. On average, respondents have lived for more than 32 years; with the longest is 74 years and the most present is a year.

Respondents taken from Untung Jawa have elementary or lower education level for 45% while, in junior high 23%, senior high 22%, and diploma and bachelor degree holders for 10%. Most of the population (52%) has elementary and lower education level. (See Figure 2).

Figure 2. Education Level of Main Respondents



According to Untung Jawa Island Village Council, the low number of people who continue their study to university level is hindered by financial issues. Amongst the university educated people, most of them prefer to study in Java as in Jakarta (Jakarta national University, Uhamka, and National Islamic Institute). Some of them are going for Islamic education school (pesantren). Almost half of it, Untung

Jawa students prefers to go to senior high schools located in Java. Last year, only five of them prefer to go to SMU 69 which located in Pramuka Island.

2). Tribes, Religion, and Languages

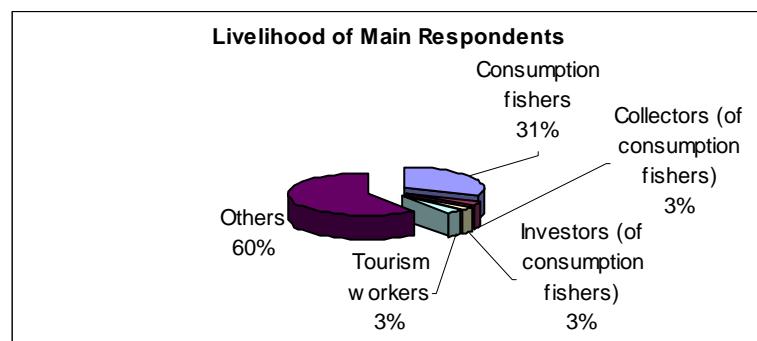
Untung Jawa Island is dominated by Betawinese tribe. Other tribes are Bugis, Madurese, and Javanese who come from Tanjung Pasir area. The entire Untung Jawa inhabitants are Moslems. The Betawinese domination has influence the use of Bahasa Indonesia. The language is enriching by Betawinese dialect.

3). Livelihood

Based on the survey data, there are 22 people who have a livelihood related to coral reef used, and there are 38 people who have a livelihood that not related to coral reef or called as 'others'.

Most of the respondents (61%) do not have main livelihood that related to coral reef used (Figure 3). Other livelihoods that categorized as 'others' are merchant, labour, teacher, school headmaster, servant, garbage picker, nurse, cleaning service (at Jakarta Province Sanitation Service), civil servant, washing service, water taxi, and entrepreneur.

Figure 3. Livelihood of Main Respondents



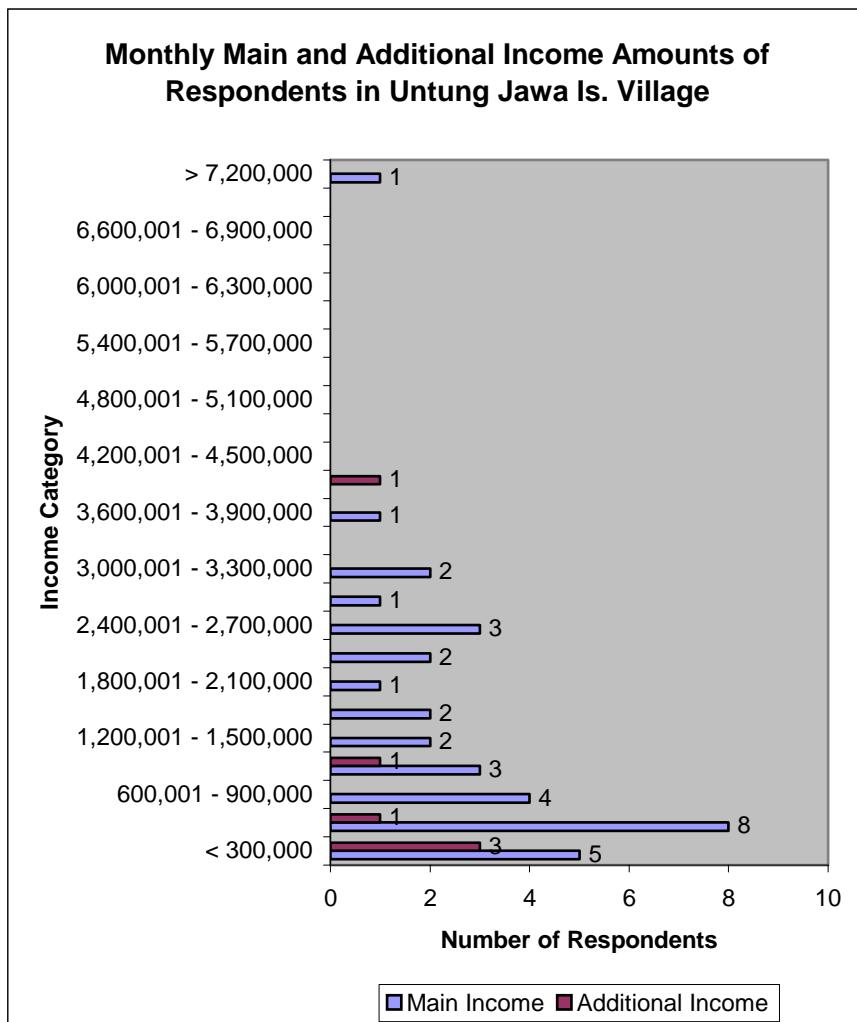
Based on the interview of some of the local social leaders, the main livelihood of people in Untung Jawa Island is fishers with the percentage of 60 to 80%. Other main livelihoods are civil servants (10 to 20%) and merchants (10 to 20%).

The interesting fact is that none of the people in Untung Jawa claimed that providing rooms for tourists is their livelihood, even for main or additional. In fact, there are a lot of people who renting their house as a place to stay for tourists. Beside, Untung Jawa Island is one of the main tourist sites for the Seribu Islands District.

4). Income

Amount of income that comes from main livelihood is varied but, majority declared that their incomes are less than Rp 900,000 per month. There is one person who claimed to have income of Rp 7,200,000 per month (Figure 4).

Figure 4. Income Amounts of Respondents



A minor part of respondents is having an additional livelihood which two of them have additional livelihood related to coral reef (Table 8).

Table 8. Main and Additional Livelihoods

No.	Livelihood	Main respondents		Households	
		Main	Additional	Main	Additional
1	Consumption fish fishers	11	1	11	7
2	Mariculture fishers	0	0	0	0
3	Ornamental fish and corals fishers	0	0	0	0
4	Collectors	1	0	1	0
5	Supplier	0	0	0	0
6	Investors	1	1	1	1
7	Marine products merchants	0	0	0	0
8	Coral miner	0	0	0	0
9	Tourism worker	1	0	1	0
10	Others	21	4	24	13
11	Unemployed/ No income	0	0	0	0
TOTAL		35	6	38	21

Based on the survey, in general, the main respondents are the economic backbone of the family, as their income is the main source of household income. There are only three households that stated that their main income is not come from the main respondents. And from the 38 households, there are seven households that have family members who work as consumption fishers. In proportional, most of the families have additional income outside from the fishery sector.

5). Expenses

The survey describes that monthly regular expense is for food consumption which have average of Rp 934,210 per family. Educational expenses are high. At least 20 families stated that their expense for education is Rp 458,175 per month. Regarding the fact that the survey was conducted in a new school term so, it is possible that the amount is not a monthly regular expense. Other expenses are for paying debt or credit in average of Rp 337,045.

c. PUBLIC INFRASTRUCTURE

Untung Jawa Island has four piers and one hardor. Education facilities and infrastructures provided are one elementary school building and one junior high school building. Health facility is public clinic center (puskesmas) which completed by houses for doctors and nurses. Information facilities are phones, radios, TVs, and 24 hours electricity access. While other facilities and infrastructures are road, water tank, inn, restaurant, and waste bin.

2. VILLAGES OF TIDUNG ISLANDS

a. GENERAL DESCRIPTION OF THE AREA

Administratively, Tidung Island Village is encircled by Karang Beras Island in the north, Laki Island in the south, and Payung Island in the east. Islands that include in Tidung Island Village are Tidung Besar Island, Tidung Kecil Island, Payung Besar Island, Payung Kecil Island, Laki Island, and Karang Beras Island. From all these islands, only Tidung Besar and Payung are used for inhabitants. While Tidung Kecil is used as cultivation centre and Job Training Centre for Jakarta Province Agriculture Service. Boat travel from Tidung Besar Island to Payung Island takes about 30 minutes.

History and Condition of the Island

Tidung Besar Island⁸

The earliest tribe who inhabits Tidung Island (it means Tidung Besar Island) is unidentified. The present inhabitants of Tidung Island are descendants of Mandarese, Javanese, Banten, and Malaysian. Based on oral history, once there were a group of pirates who committed crimes in Sumatra, Malaysia, to Seribu Islands. To eradicate the pirates, Kingdom of Malaysia was assigning a commander with a nick name of Black Commander. The pursuit has happened until reaching

⁸ This history is an annex of Welfare Plan for Community in Administrative District Area of Seribu Islands. Anthropology Laboratory, Department of Anthropology, Faculty of Social and Political Sciences University of Indonesia. Year 2002.

their hiding place or 'lindung' place in Seribu Islands. And for that moment, the island was called as Tidung Island. After eradicating the pirates, The Black Commander decided to stay on the island and not return to his country.

In present, economic activities of Tidung people are focus on muroami fishers' activity with catching period of 3 to 4 months in a catching season of 2 to 3 times a year. This activity could cause an almost vacant island as almost all of the family heads are gone. Housewives lefted are working as merchant, selling food for their daily needs. Four years ago, people in Tidung Island were focused in seaweed culture but, this activity was not going well so they went back focusing on fish catching.

Based on the informations gathered, people of Tidung Island have never felt that they are harming the coral reef. They considered that fishers from outside of Tidung Island are the real destroyers which use bombs and potassium poisons. The examples for this are fishers from tangerang, Indramayu, and Panggang Island.

Tidung Island is highly populated island. Open-green spaces are limited as new housings are emerged. This situation is harming the supply of freshwater, as some of the people who lived across the shore and near the ocean are experiencing this difficulty. There is a community in the west tip of Tidung Island called Kampung Baru or New Kampoong. This community is developed by people originally came from other islands. The constructions here generally are made of wood and have a bamboo wall.

A lot of new housing development is predicted to have impact on coral and sea-sand uses. Coral taken for construction is mainly massive life form called 'batu penunggul'. Corals of this category are *Porites* and *Favites*. For some public facilities construction development, sea-sand and batu penunggul are used occasionally.

Payung Island⁴

It was named Payung Island as its shape is like an umbrella (payung = umbrella). This island is officially owned by Department of Transportation, Navigation Unit. In this island, there is a lighthouse for guiding boats in preventing become aground. The lighthouse establishment is related to the island's history. The earliest inhabitants in this island are civil servants for the Dutch Colonial Government who were assigned to watch the lighthouse. The lighthouse and other supporting constructions are developed by the Dutch Colonial Government in 1870. The lighthouse was replaced by a new one in 1975, while others constructions are remained.

After the lighthouse was present, people start to come to inhabit around the island. In the earliest days, this new comer was come from Mandar, South Sulawesi. Nowadays, immigrants are come from mainland like Banten, Tangerang, Java, and other part of Seribu Islands i.e. Panggang Island, Pari Island, or Tidung Island. Population is increasing fast since 1990.

The main livelihoods of people in Payung Island are muroami fishers and daily fishers. As daily fishers, they catch the fish in shore waters area using traditional line, net, and bubu (cage).

b. DEMOGRAPHY

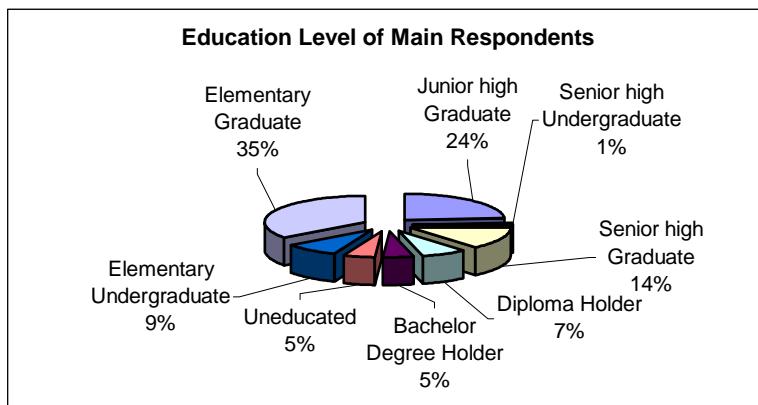
1). Age, Sex, and Education Level

There are 112 main respondents which represent the whole households in this island. 51 of them are men and 61 are women (more than half of the respondents are women). Most of the main respondents is head of the family and the rest are wives of the head of the family. Majority of the main respondents (49%) have

⁴ This history is an annex of Welfare Plan for Community in Administrative District Area of Seribu Islands. Anthropology Laboratory, Department of Anthropology, Faculty of Social and Politic Sciences University of Indonesia. Year 2002.

elementary education or lower (Figure 5). The average age of main respondents is 39, with the oldest is 75 and the youngest is 16 years.

Figure 5. Education Level of Respondents



On average, the main respondents have lived for more than 34 years, with the longest is 75 years and the earliest is two years. From the informations gathered during interviewing the local social leaders, it is said that there are seasonal inhabitants who work as merchants (about 10 to 20 people) in this village. Every year, these merchants who came from Cirebon and Kuningan, West Java come to Tidung Island to sell clothes for Ied (Islamic) Celebration. Citizen movement is also occurred by marriage. People from Jakarta who married to the islanders are live in the city or vice versa. But this number of migration is not high.

The local social leader stated that almost all school-age children are attending elementary school. There is also an increase of education level where some families could afford to pay their child to go to school in Jakarta, even though their livelihood is just traditional line fishers. A lot of senior high graduates extending their education to Religious (Islamic) University as this kind of school are cheaper than public and private universities.

On the education level point of view, Tidung Island is different from other islands in Seribu Islands as this place has Elementary Islamic School (Madrasah Ibtidaiyah), Junior High Islamic School (Madrasah Tsanawiyah), and Senior High Islamic School (Madrasah Aliyah). And still according to the local social leaders, since 1980s education has become priority in the families.

2). Tribes, Religion, and Languages

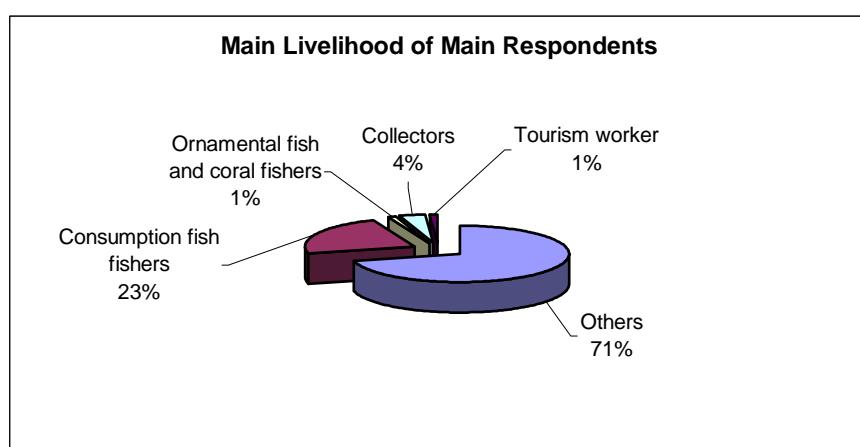
Tribes in Tidung Island Village are Mandarese (from Sulawesi), Sundanese from Banten, Malay, Betawinese, Javanese, and Batak. Sundanese is the highest inhabitants, reach to 70% while other tribes combined are only 30%. Religion practiced is Islam. Language used is Bahasa Indonesia in Pulau Seribu dialect.

Payung Island inhabitants are comprised of Mandarese, Bugis, Bangka, and Serang. Most of the inhabitants are Moslems. Languages used daily are each tribe local language and Bahasa Indonesia in islander dialect.

3). Livelihood

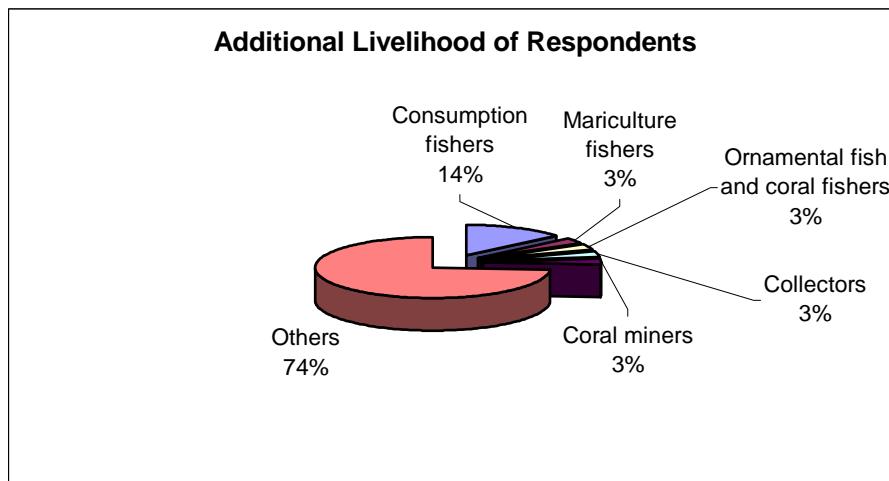
From 69 respondents who gave information concerning their job, 71% stated that they do not have a work related to fishery industry (Figure 6). Their works are as civil servants, merchants, labour (i.e. washing service, cleaning service, and carrier), teacher, and boat's captain.

Figure 6. Main Livelihood Types of Respondents



From all the respondents who have additional income, 25% of them are related to fishery sector (Figure 7). Other additional incomes mentioned are labour, duck farming, teacher, and even neighborhood chief.

Figure 7. Additional Livelihood Types of Respondents



Livelihood variation in main and additional incomes for main and additional respondents is shown in Table 9. In general, profession mentioned as 'others' is dominant amongst respondents. However for every household, a livelihood related to fishery sector is as important as other livelihoods.

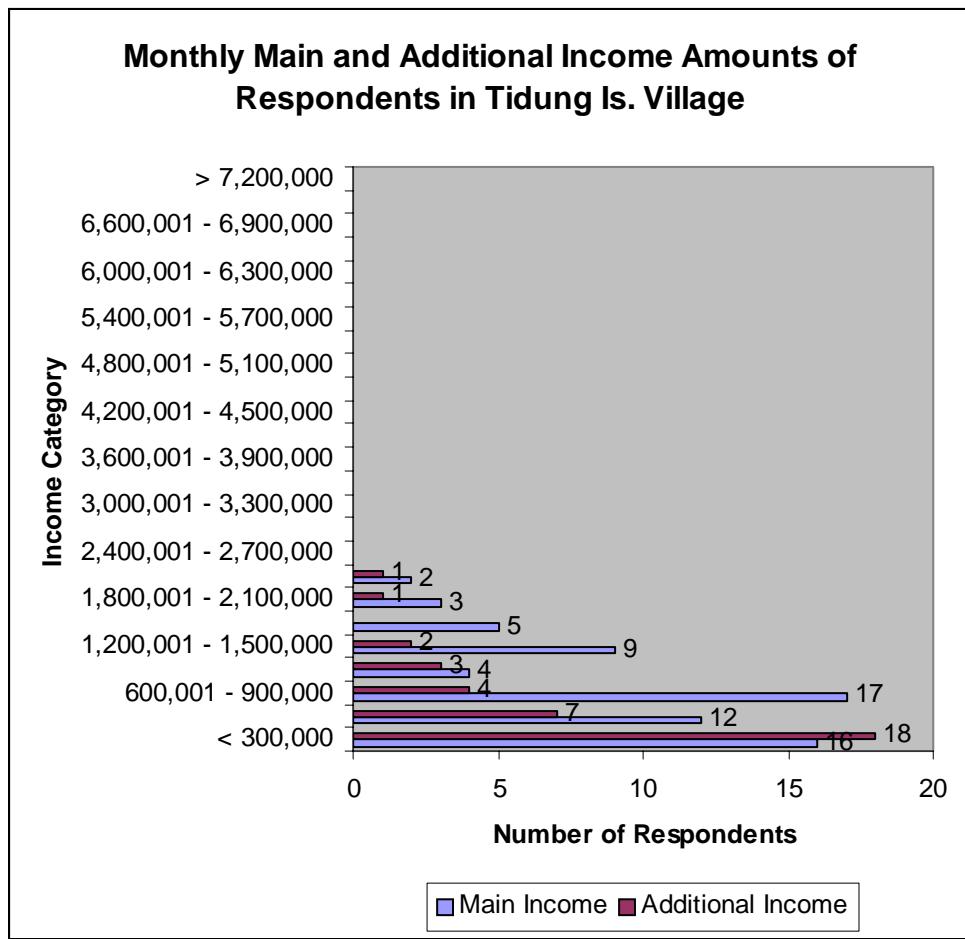
Table 9. Diversity of Livelihoods

No.	Livelihood	Main respondents		Households	
		Main	Additional	Main	Additional
1	Consumption fish fishers	16	5	50	19
2	Mariculture fishers	0	1	1	2
3	Ornamental fish and corals fishers	1	1	1	1
4	Collectors	3	1	4	1
5	Supplier	0	0	1	0
6	Investors	0	0	0	0
7	Marine products merchants	0	0	0	3
8	Coral miner	0	1	0	0
9	Tourism worker	1	0	2	0
10	Others	48	26	51	43
11	Unemployed/ No income	0	0	0	0
T O T A L		69	35	110	69

4). Income

Amount of incomes generated from main livelihood are varied. But none of them have income more than Rp 2,400,000 per month. Most of them have income of Rp 900,000 per month. In general, the amounts of additional incomes are lower than main income (Figure 8).

Figure 8. Income Amounts of Respondents



5). Expenses

Monthly regular expense is for meals; with average expense per household is Rp 639,000. Expense for education is also high, with expense average of Rp 306,000 per month. The survey was conducted in early school term so, the education expense is noted as high.

Other expenses are for paying debt or credit, with the average expenses are Rp 253,000 per month. At the non-regular expenses, there are high variations of the lowest expense to the highest. For instance, house-care expense is varied from Rp 3,000 as the lowest to Rp 10,000,000 as the highest. Other example is boat construction or boat care expense. The lowest expense is Rp 10,000 and the highest is Rp 10,000,000.

c. PUBLIC INFRASTRUCTURE

In general, the housings in Tidung Island are considered as good, compare to other inhabitant islands around. Most of the houses are made of bricks, tiled floor and clay roof. Only few of inhabitants in western part have a wooden house. The environment could also consider as good. There is a road made of cone blocks with 1 to 2 m wide. The neighborhood landscape is neat and makes this island looks nice. However, people there tend to discard waste to the sea and make the shoreline area looks dirty. There is no waste treatment facility in Tidung Island.

For health facilities, there are one fully equipped public clinic center (puskesmas), local maternal clinic (posyandu), and ambulance boat which added recently. These facilities are provided for people who need a quick access to visit hospital.

Trading in Tidung Island is consider as developing, with indicators of shops and stalls which sell various needs are increase. Sukun (related species to jackfruit) crackers and ciremai (name of fruit) sweets tradings are still present but, sometimes the supply of raw materials are limited.

3. VILLAGES OF PARI ISLANDS

a. GENERAL DESCRIPTION OF THE AREA

Pari Island Village is consists of 10 small islands with two of them are inhabited islands. In 1967, Research and Development Center of Oceanology, of Indonesian Institute of Science (P2O-LIPI) was developed a research station in Pari Island. Nowadays, this research station is called as UPT Pari Island. Pari Island has been selected as research center for its natural resource diversity, and so are the other

islands around. Lancang Island is one of the two inhabited islands in Pari Village. Most of the inhabitants are work as trawl fishermen, cage fishers, and net fishers.

History and Condition of the Island

Pulau Lancang⁵

Majority of the inhabitants in Lancang Island is a Bugis tribe, and they blend in with other inhabitants from Java, Madura, and Sunda. All the people are Moslems. There are two history versions concerning the island was named after. The first version said that once upon a time there was a pirate who lives in the island. He was called 'Lancang'. Uncomfortable with the pirate present, local people set up a plan to eradicate him.

The second version said that there was a person who comes from mainland to the island looking for firewood. During his journey back to the mainland, there are many fish that come after him while he was sailing. Under his observation, he found out that the fish are trying to eat kind of white bees which live in the firewood taken. The insect is called 'Klenceng'. People then name the island after the insect's name. But the word 'Klenceng' then becomes 'Lancang'.

Current inhabitants of Lancang Island are descendants from Bantenese and Bugis. Migratory process of Banten people was started in 1945. In 1960s the migration was increasing. Bugis people are mostly occupying the eastern side of the island, while people from Tangerang are occupying western side. The tribe differences are not matters to them as they consider themselves as one big family, islander family. Apart from that, there are also Sundanese and Javanese ethnic groups that live in the island. Most of them are merchants.

⁵ This history is an annex of Welfare Plan for Community in Administrative District Area of Seribu Islands. Anthropology Laboratory, Department of Anthropology, Faculty of Social and Politic Sciences University of Indonesia. Year 2002.

Pulau Pari⁶

This island is named after Pari (ray) fish as its shape looks like it. From eastern side of the island to the western part, this island has shape like the winged-body of ray fish. Middle part of the island that located in the south side has shape like the tail of ray fish. And the northern part of the island has shape like the head of ray fish. There are vacant islands near by. They are Tikus Island, Kudus Island, and Kongsi Island.

Before inhabited by people, the island was a forest with coconut trees and coarse grass as dominant vegetations. During Japanese invasion, many people from Karang Asem, Kramat, and Kronjo (Tangerang) were refuged to this island avoiding force labour. Until 1945, there are only six citizen houses; two in the western part, two in the eastern, and two in the middle part. They were exploiting coconut trees and sell the products to Tangerang.

After the Independence Day, more immigrants came from Tangerang coastal area. Starting in 1992, people start to work on the seaweed farming. The successfulness of this seaweed culture is attracting immigrants from Sumatra, Krawang, Brebes, and Indramayu to stay and learn the seaweed culture.

b. DEMOGRAPHY

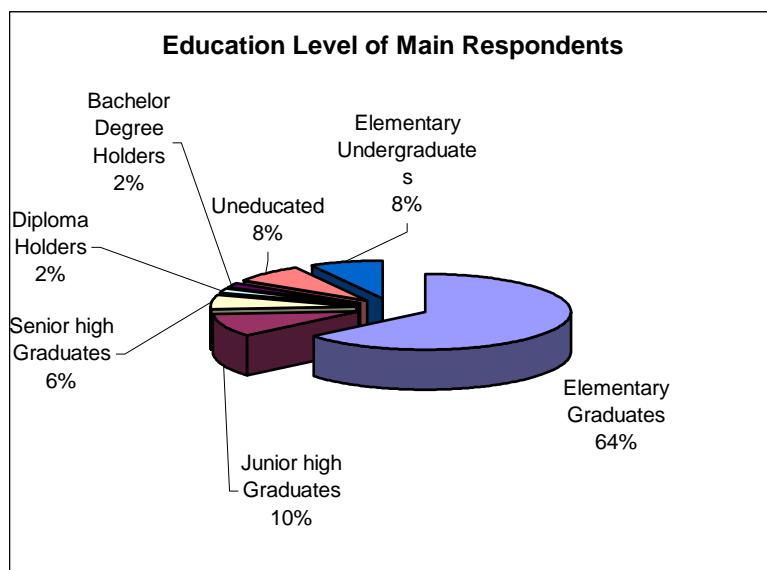
1). Age, Sex, and Education Level

There are 52 main respondents that represent every household. 44 of them are men and eight are women. There are 33 respondents who have main livelihood related to coral reef used. Majority of main respondents are elementary graduates or lower (Figure 9). The average age of main respondents is 44 years and has lived for 26 years to more. Respondent who lived there for 50 years is the longest period of inhabitant, and the shortest period is one year.

⁶ This history is an annex of Welfare Plan for Community in Administrative District Area of Seribu Islands. Anthropology Laboratory, Department of Anthropology, Faculty of Social and Politic Sciences University of Indonesia. Year 2002.

Based on the information gathered from local social leader, there is one interesting fact about education. Many of the junior high students are come from West Java as there is no tuition fee in Pari Island's school. The only payment required is for registration fee.

Figure 9. Education Level of Main Respondents



According to the local social leaders, number of people migration (both come and go) is around 5% from total inhabitants. Most of the immigrants are people who come to Pari Island from Jakarta. This flow of migration is increase since year 2003.

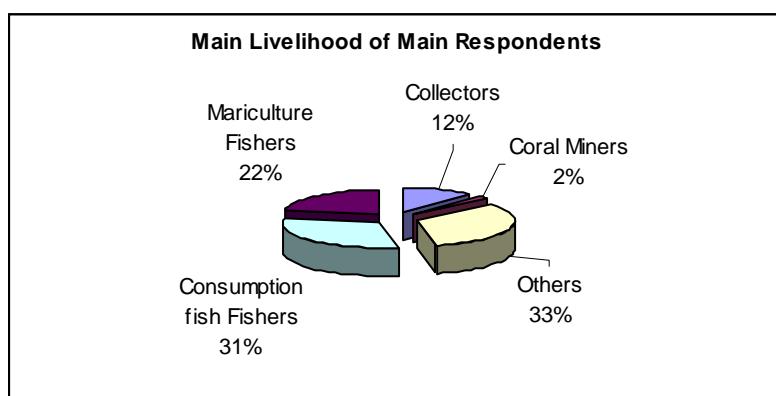
2). Tribes, Religion, and Languages

Inhabitants in Pari Island are originally from Tangerang (50%) and Sulawesi (50%). They are tribes of Bone, Madurese, Javanese, and Sundanese. Most of them are Moslems. Language used is Malay with islander dialect.

3). Livelihood

From 49 respondents who provide information concerning their main livelihood, most of them are having livelihood related to coral reef used (Figure 10). There are 16 people (33%) who work in other field, as day-to-day-pay employees in research institution, teachers, employees who work for fuel supplier company, farmers, civil servants, labours, traditional medicine (jamu) vendors, merchants, masseurs, used-items sellers, etc.

Figure 10. Main Livelihood Types of Respondents

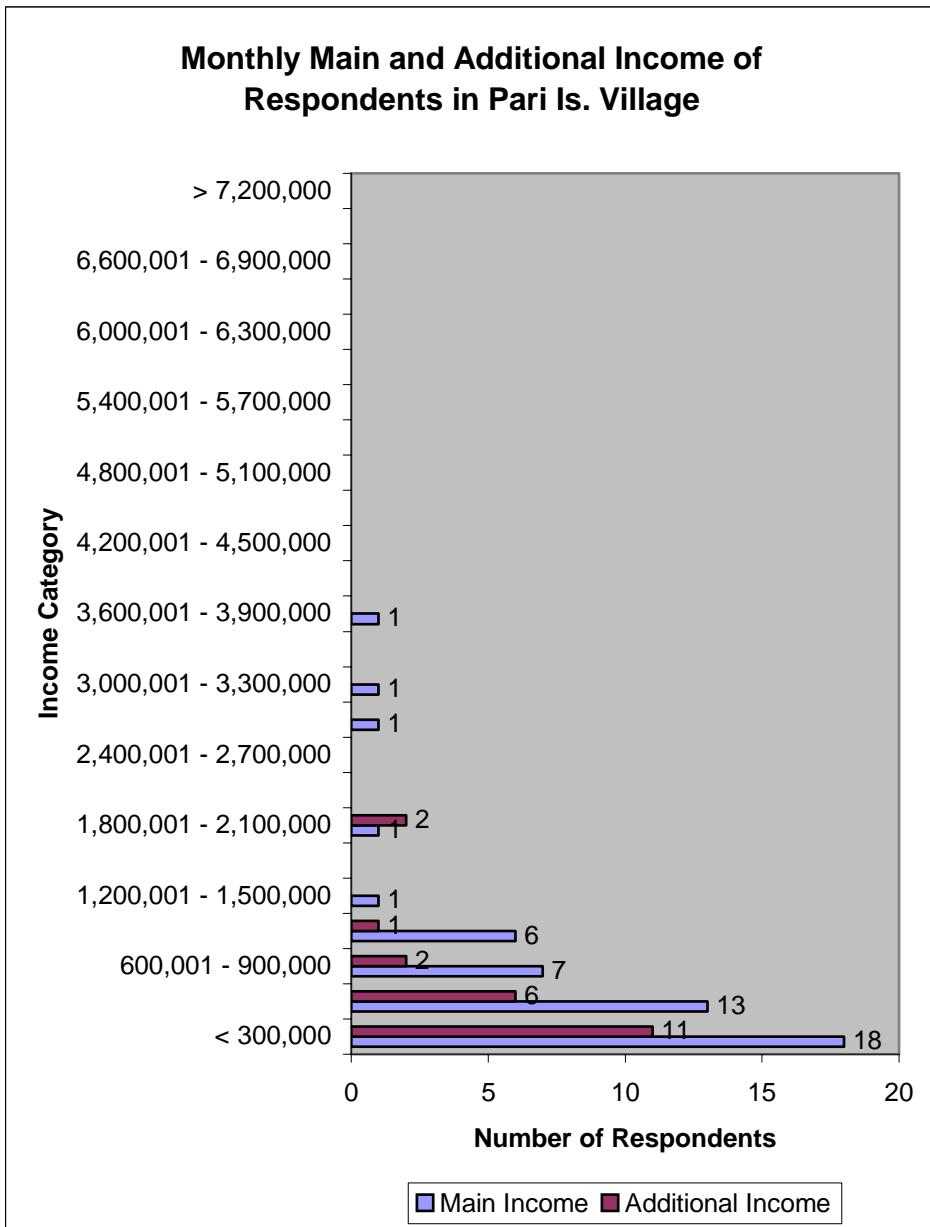


Main livelihood in Lancang Island is fishers, particularly fix-trawl fishers. Main livelihoods in Pari Island are seaweed culture, line fishers, merchants, and construction labours. Second livelihood in Lancang Island and Pari Island is civil servants and private sectors.

4). Income

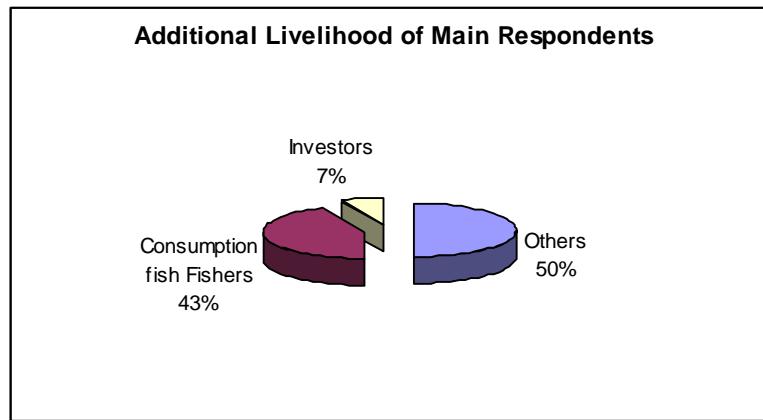
Based on the households' survey, the amounts of incomes generated from main livelihood are varied. Most of them are having income less than Rp 600,000 per month. The highest income is Rp 3,900,000 that stated by one respondent (Figure 11).

Figure 11. Income Amounts of Respondents



Half of the additional livelihoods of main respondents are related to coral reef used (Figure 12).

Figure 12. Additional Livelihood Types of Respondents



For almost all the respondents, additional income is lower or as many as their main income. In general, households surveyed in Pari Island Villageshow that they are dependent enough to livelihoods that related to coral reef used i.e. consumption fish fishers, mariculture fishers, collectors, investors, and coral miners (Table 10).

Table 10. Livelihood Types of Respondents

No.	Livelihood	Main respondents		Households	
		Main	Additional	Main	Additional
1	Consumption fish fishers	15	6	19	14
2	Mariculture fishers	11	0	13	1
3	Ornamental fish and corals fishers	0	0	0	0
4	Collectors	6	0	6	0
5	Supplier	0	0	0	0
6	Investors	0	1	0	1
7	Marine products merchants	0	0	0	0
8	Coral miner	1	0	1	0
9	Tourism worker	0	0	0	0
10	Others	16	7	13	17
11	Unemployed/ No income	0	0	0	0
TOTAL		49	14	52	33

5). Expenses

Based on the survey data, meals expense is the monthly highest expense with average of Rp 534,804 per family. Education expense is also higher than average income. The average amount for this expense is Rp 303,833 per month which

means that most of the households' income is used for this post. One thing to be considered is that the survey was taken in the early new term of school.

The average amount of expense for paying debt and credit is Rp 140,389 for some of the households that provide the information. Expense for buying or constructing a boat is varied, with Rp 20,000,000 as the highest and Rp 150,000 is the lowest.

c. PUBLIC INFRASTRUCTURE

Facilities and infrastructures in Pari Island Village are one Elementary School building in Pari Island and one in Lancang Island, one Junior high School in Pari Island which shares the same building with the Elementary School, and there is one far-distance class of Junior high School, one Kindergarten building, and one Islamic school building.

Facilities and infrastructures for health are doctor's houses even though there is no regular doctor and the existing one is keeping replaced by a new one, one nurse's house, one public clinic center building, and one public maternal service.

Facilities and infrastructures for communication are electricity, phone, internet access, radio, TV, and newspaper. Facilities and infrastructures for social activities are religious houses, freshwater access, waste bin, road, water container, bank/ credit service, inn, one mosque, one smaller mosque (musholla), police office, wave breaker dam, and water duct.

F. PROFILE OF NORTHERN SERIBU ISLANDS SUB-DISTRICT

1. VILLAGES OF PANGGANG ISLANDS

a. GENERAL DESCRIPTION OF THE AREA

Based on Government Performance of Seribu Islands Sub-District Area Report (2001) *in Hodijah* (2003), Panggang Island Village consists of 13 islands. They are: Pramuka Island, Panggang Is., Karya Is., Kotok Kecil Is., Kotok Besar Is., Opak Kecil Is., Karang Congkak Is., Karang Bongkok Is., Gosong Air Is., Semak Daun Is., Air Is., Peniki Is., and Karang Beras Is. Only two of them are inhabited i.e. Panggang

Island and Pramuka Island. Panggang Island Village is centered in Panggang Island, while Pramuka Island is the capital of Regional Government of Seribu Islands Administrative District.

Administratively, as it shown in the Map of Seribu Islands, Panggang Island Village is bordered by Pari Island Village in the south and Tidung Island Village in the Southwest, in the north with Harapan Island Village and in the Northwest with Kelapa Village. On the Northeast, Panggang Island Village is bordered with Java Sea and in the Southeast with Untung Jawa Village.

History and Condition of the Island

Panggang Island⁷

Panggang inhabitants are consists of multy ethnic groups. They are descendant tribes of Bugis, Butonese, Bone, Mandarese, Bantenese, Bangka-Belitung, Sundanese, and Javanese. According to the oral history, the inhabitants were come after the Krakatoa Mt. eruption in 1883. It said that at that time, Panggang Island was inhabited. The migration process that lead to the settlement is concerning with their livelihood as fishers. Migration boom to this island was taking place in early independence era. Tribes like Bugis, Buton, and Mandar were move avoiding regional conflict, Kahar Muzakar's rebellion, in South Sulawesi. Inhabitants from Sunda and Java are come in relation to trading and marriage as most of them are not fishers.

Pramuka Island⁸

This island was named as Elang Island before it was inhabited. Many people refuse to live here as the superstitious said that the island's oblique-shape could give a bad luck for the inhabitants. In 1972, North Jakarta Mayor released a decree that stated Pramuka Island as island for settlement. After this decree, step by step,

⁷ This history is an annex of Welfare Plan for Community in Administrative District Area of Seribu Islands. Anthropology Laboratory, Department of Anthropology, Faculty of Social and Politic Sciences University of Indonesia. Year 2002.

⁶ This history is an annex of Welfare Plan for Community in Administrative District Area of Seribu Islands. Anthropology Laboratory, Department of Anthropology, Faculty of Social and Politic Sciences University of Indonesia. Year 2002.

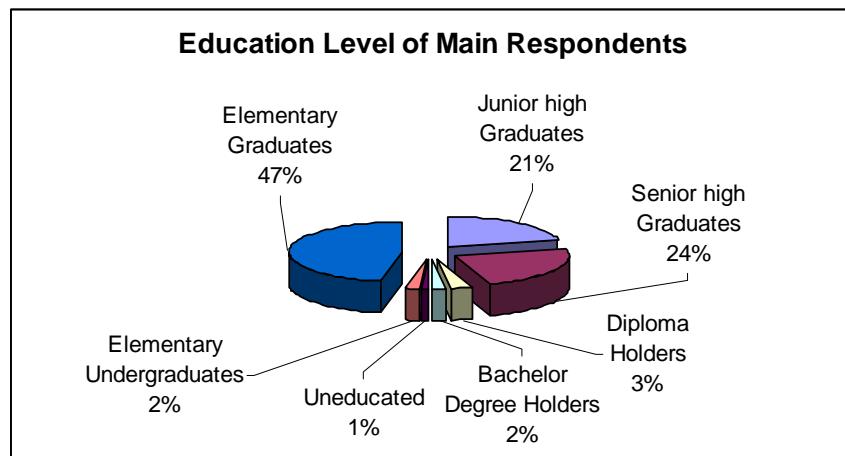
people start to inhabit this island. Almost all the inhabitants here are come from Panggang Island, where it is too crowded in Panggang Is. This island then called as Pramuka Island, as this island is a place for scout's camping ground. (Pramuka = scout).

b. DEMOGRAPHY

1). Age, Sex, and Education Level

From 100 main respondents, 88.9% are men and 11.1% are women. The average age of respondents is 39 years. Based on education level, 49% are Elementary Graduates or lower, 21.4% are Junior high level, 24.5% are Senior high level, and 5.1% are Diploma and Bachelor Degree Holders. On average, the respondents have lived for 32 years, with the longest is 75 years and the most recent is a year ago.

Figure 13. Education Level of Respondents



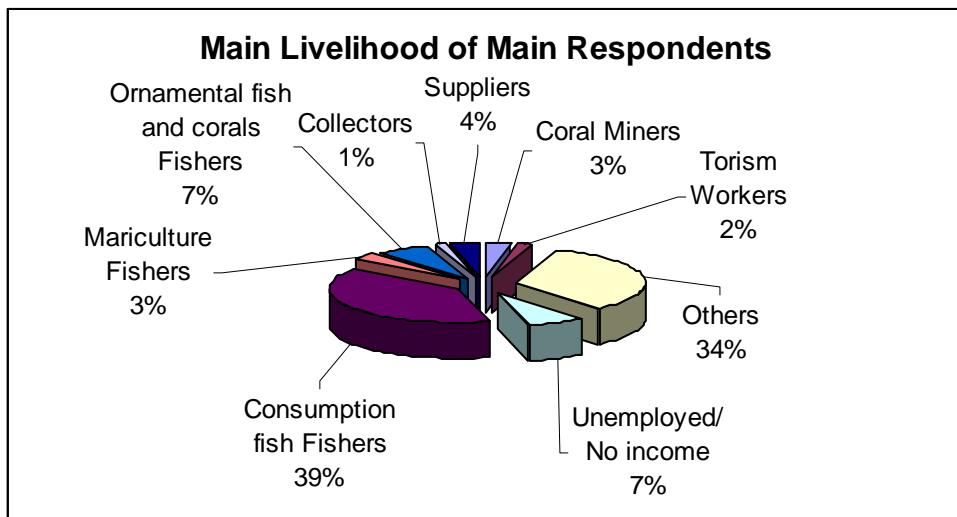
2). Tribes, Religion, and Languages

Inhabitants stated that most of the people there are islanders. However, some information gathered noted that actually they are from many ethnic groups i.e. Betawinese, Bugis, Javanese, and Sundanese that mainly come from Banten. Most of them are Moslems. Daily language used is a combination of Malay and Betawi and enriched by Bugis, Javanese, and Sundanese languages. This combination forms a unique Panggang Island Village language and called as islander language.

3). Livelihood

There are a lot of main respondents who have livelihood related to coral reef i.e. 59%. Type of livelihoods in this village is consumption fish fishers (39%) and others (34%). Main respondents who are not working mostly are women.

Figure 14. Main Livelihood Types of Respondents

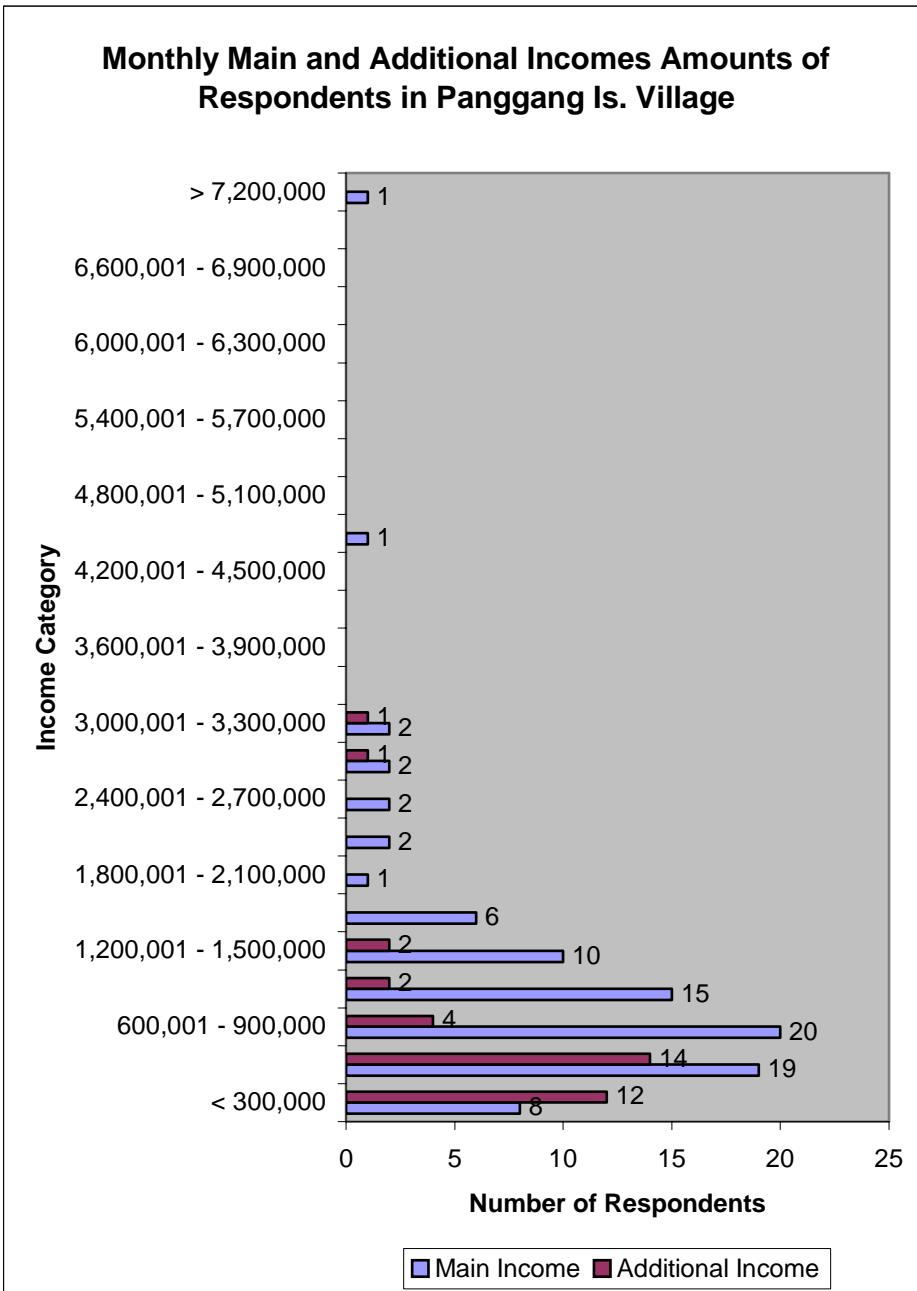


4). Income

Most of the working respondents have a bigger main income than the additional. Most of the Panggang Island Village inhabitants are working as fishers. Based on the catching tools used, there are three kinds of fisher i.e. net fishers, cage fishers, and ornamental fish fishers. Other livelihoods are tourism workers, collectors (of fish and other marine products), daily need stall owners, coral miners, seaweed culture farmers, and civil servants (teachers and government employees). Having a stall or becoming trader and construction labour are some of the additional livelihood for the inhabitants. However, these types of works are concerned to be main livelihood for others.

Some of sources stated that it is difficult to assume the percentage of inhabitants who work as fishers, as this kind of work is depend on many factors i.e. season, technology, and tool availability.

Figure 15. Incomes Amounts of Respondents



In general, main livelihood of respondents is a main income for the household. There are 35% respondents who have additional livelihood. There are two households which have two kind of additional livelihood. First household is having livelihood as mariculture fisher and other, while second household is having livelihood as ornamental fish and corals fisher.

Table 11. Livelihood Types and Income Sources

Livelihood	Main respondnets		Households	
	Main	Additional	Main	Additional
Consumption fish Fishers	38	7	39	9
Mariculture Fishers	3	1	2	3
Ornamental fish and corals Fishers	7	4	9	4
Collectors of consumption fish	1	0	1	0
Supplier	4	0	4	0
Investors	0	0	0	0
Marine products Merchants	0	1	0	1
Coral Miners	3	1	0	3
Tourism Workers	2	1	2	2
Others	34	21	39	27
Unemployed/ No income	7	0	0	0
Total	99	36*	96	45**

* One respondent has two additional livelihoods.

** Two households have two additional income sources.

Most of the consumption fish fishers have additional livelihood that not related to coral reef used.

Table 12. Percentage of Main and Additional Livelihoods of Respondents

Main Livelihood	Additional Livelihood					
	Consumption fish fishers	Mariculture fishers	Ornamental fish fishers	Marine products merchants	Coral miners	Others
Consumption fish Fishers	5.9	5.9	11.8	5.9	5.9	64.7
Mariculture Fishers	50.0		50.0			
Ornamental fish Fishers	50.0					50.0
Collectors						
Suppliers						100.0
Investors						
Marine products Merchants						
Coral Miners						100.0
Torism Workers	100.0					
Others	33.3					66.7
Unemployed						

5). Expenses

As in other village, monthly regular expense is for meals. According to the data collected from respondents, this expense is started from Rp 453,209 to Rp 1,375,089. Average expense for education is Rp 319,000. This amount is considered as big, regarding the tuition fee is not much expensive. However, the survey was taken in a new term of school so, a non-regular education expenses (books and administration fee) are likely to be calculated.

Only 38.4% households from 99 respondents have saving, with the average monthly amount of Rp 220,684. Expenses for paying debt and credit are Rp 121,996 while expenses for clothing, foot wear, and head wear are Rp 331,250 on average. However, only a few households that has post for this expense. Other regular expense mentioned is for electricity (some mentioned for cigarettes and paying a house rent). Other expense is Rp 57,919 on average.

Non regular expense that has been prioritized is for health and medical, housing, long lasting item, and boat constructing or repairing. Other expenses mentioned by respondents are for education, child birth, and business capital.

c. PUBLIC INFRASTRUCTURE

Panggang Island Village is having the most fully-eqquiped facilities and infrastructures amongst other villages. That is because Panggang Island Village is the nearest place to Seribu Islands Administrative District office. In education sector, Panggang Island Village has Elementary School building, Junior high School building, and Senior high School Building.

Panggang Island Village also well provided with doctor's houses, and public clinic center, with 24 hours electricity. At present, there is a hospital building on progress. Inhabitants could access information and communication via mobile phone, TV, radio, and newspaper. Telephones only owned by government offices and some telecommunication stalls, using antenna instead of cable line.

Other facilities and infrastructures are public waste bin, road, freshwater supply, bank, and inns owned by government, private sector, or local community.

2. VILLAGES OF KELAPA ISLANDS

a. GENERAL DESCRIPTION OF THE AREA

Kelapa Island Village is consists of two inhabited islands i.e. Kelapa Island and Kelapa Dua Island. However, Kelapa Island is near to and has road access to Harapan Island. Inhabitant in Kelapa Island is considered to be crowded while the land there is limited so, there are many houses that taking place projected to the sea. To overcome the increase of boats number, there are two piers that have been developed i.e. west and east piers.

In Kelapa Dua Island there is one pier in the southern part of the island. School kids from Kelapa Dua Island have to go to school in Kelapa Island which would be a

problem during west monsoon season. For that reason, the community has asked government to have a school in this island.

History and Condition of the Island

Kelapa Island⁹

Oral history said that the origin inhabitants of Kelapa Island are some from Banten. According to the story, someone named Adam who lives in Banten died before getting married and the corpse was buried in Banten. Some years later, he was found in Kelapa Island with new identity and married to a woman from Bantenese-Mandarese tribe. They have seven childs and lived in Kelapa Island. People named this 13.090 square meter island as Kelapa Island where there were many coconut trees. (Kelapa = coconut).

In present, there are many immigrants who lived in this island. They are from Sundanese, Javanese, Minangese, and Makassarese tribes. They stay for trading business or getting married with locals.

Kelapa Dua Island¹⁰

Kelapa Dua Island is originally from Bugis tribe who works as sailor. Earlier, they were occupying other island i.e. Genteng Island. They move to Kelapa Dua Island as Genteng Island was planned to be use by the owner. 95% of the inhabitants are Bugis tribe while the rest are Javanese and Sundanese who lived there because they are married to locals.

⁹ This history is an annex of Welfare Plan for Community in Administrative District Area of Seribu Islands. Anthropology Laboratory, Department of Anthropology, Faculty of Social and Politic Sciences University of Indonesia. Year 2002.

¹⁰ This history is an annex of Welfare Plan for Community in Administrative District Area of Seribu Islands. Anthropology Laboratory, Department of Anthropology, Faculty of Social and Politic Sciences University of Indonesia. Year 2002.

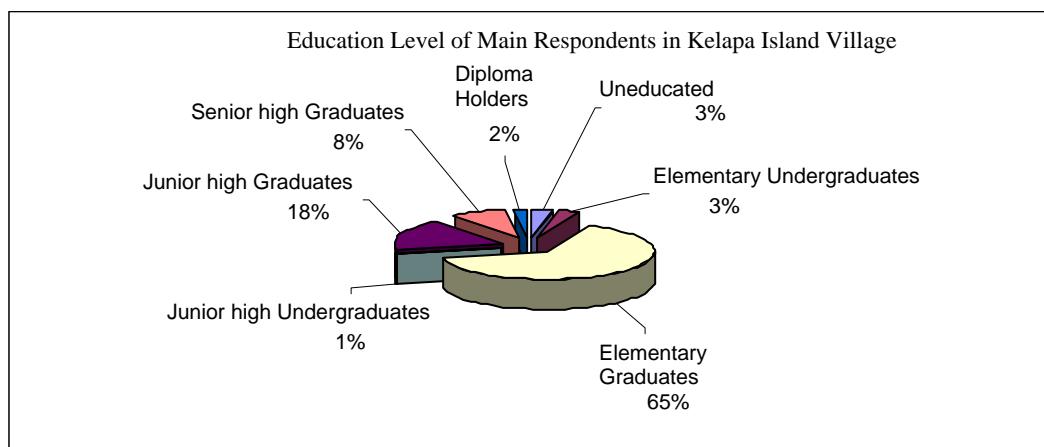
b. DEMOGRAPHY

1). Age, Sex, and Education Level

From 160 main respondents, almost half of them are women. The average age is 39 years and has lives for 31 years on average. The most recent who stays is four years while the longest is 70 years.

In education level sector, 71% of them are elementary level or lower, 19% are junior high level, 8% are senior high and 2% are diploma holders (Figure 16). There is no bachelor degree or above.

Figure 16. Education Level of Main Respondents



People migration flow is higher for visitors rather than moving out, even though the number is not significant. Most of the inhabitants are from Banten and work as fishers. There are migrants who stay permanently in the island and there are also those who stay periodically. These periodic migrants are dominant which happens when the marine resources are abundant. In general, people who migrate outside are people who have higher education and seek job outside or for marriage reasons.

2). Tribes, Religion, and Languages

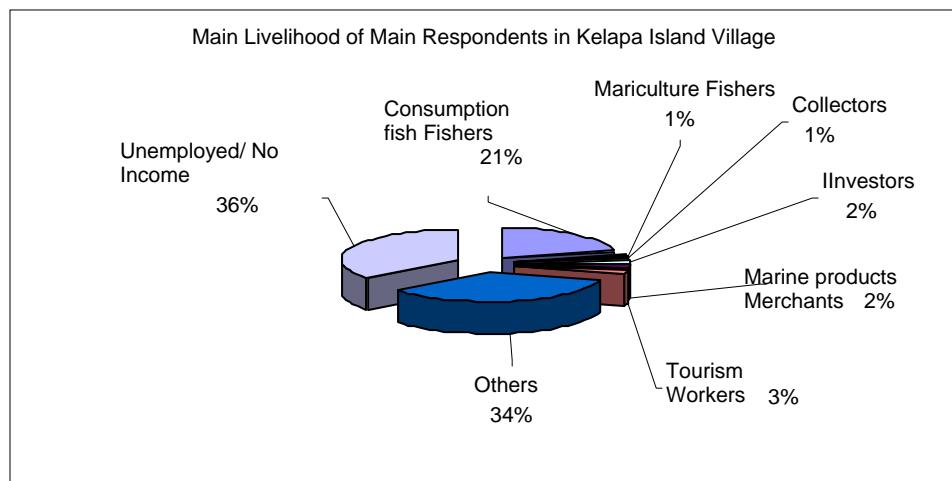
Most of the tribes here are Bugis, Sundanese (Banten) and Mandarese. Almost all of the origin inhabitants are related by blood line. Language used is a combination of Betawinese and Sulawesi with other influence from Malay. Almost all of them are Moslems.

3). Livelihood

Main respondents who have livelihood related to coral reef are only 30% (Figure 17). Majority types of livelihood for main respondents in this village are consumption fish fishers (21%) and 'others' (34%). Most of the main respondents who have not had main or additional livelihood are women.

According to the local social leader, people above 20 years of age are working in resort islands and governments employees (district, sub-district, or village).

Figure 17. Main Livelihood Types of Respondents

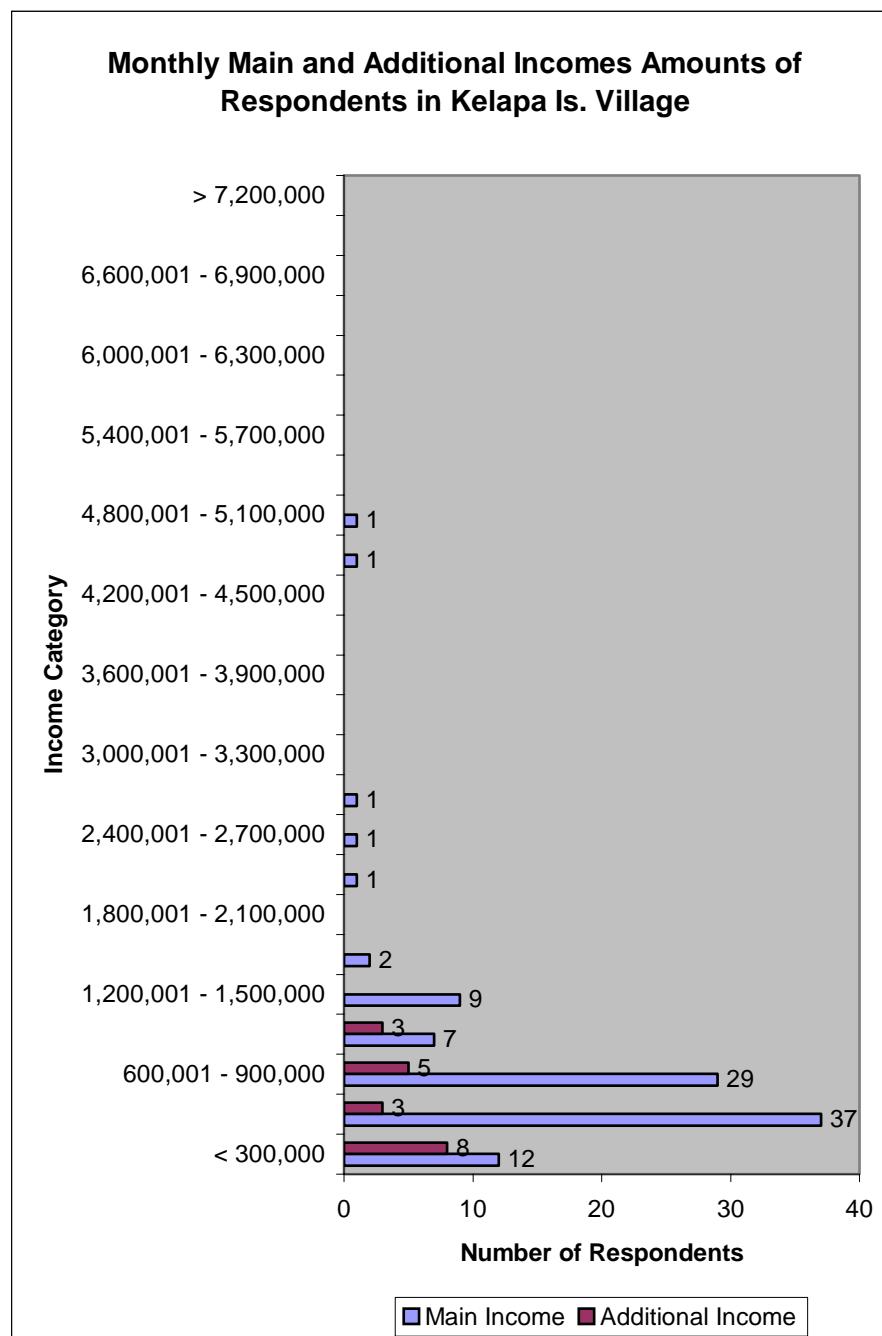


4). Income

77% respondents in Kelapa Island have main income about less than Rp 300,000 to Rp 900,000, which means that only few of the inhabitants have main income above Rp 900,000 (Figure 18). One respondent claimed to have main income of Rp

5,100,000 as a daily needs stall owner. And there are two fishers who claimed that they have income above Rp 2,700,000.

Figure 18. Incomes Amounts of Respondents



On the Table 13 below, it shows that 58% households are having main income from activities related to coral reef used; and almost half of them (46%) are consumption fish fishers.

From 160 respondents, only 18 or 11% who have additional income. Two of these are having additional income as consumption fish fishers and 'others'; while one respondent is having additional income as marine products merchant and 'others'.

Table 13. Income Sources of Main Respondents

Livelihood	Main respondents		Households	
	Main	Additional	Main	Additional
Consumption fish Fishers	34	4	72	14
Mariculture Fishers	1	0	1	0
Ornamental fish and corals Fishers		0	0	0
Collectors (of consumption fish)	2	0	3	0
Supplier		0	0	0
Investors	3	0	4	1
Marine products Merchants	3	2	2	3
Coral Miners		0	0	0
Tourism Worker	5	0	9	5
Others	55	12	66	50
Unemployed/ No Income	57	0	0	0
Total	160	18	157	73*

** Three households are having two additional income sources.

Four out of five consumption fish fishers who have additional livelihood are working as construction worker, brick maker, and entrepreneur (Table 14). There also a respondent who has main livelihood unrelated to fishing but has additional livelihood as a consumption fish fisher. There are five respondents who do not have main livelihood but have additional livelihood as boat construction worker and merchant.

Table 14. Main and Additional Livelihoods of Main Respondents

Main Livelihood	Additional Livelihood			
	Consumption fish Fishers	Marine products Merchants	Coral Miners	Others
Consumption fish Fishers	1	0	0	4
Mariculture Fishers	0	0	0	0
Ornamental fish and corals				
Fishers	0	0	0	0
Collectors	0	0	0	0
Suppliers	0	0	0	0
Investors	0	0	0	0
Marine products Merchants	0	0	0	1
Coral Miners	0	0	0	0
Tourism Workers	0	0	0	0
Others	3	0	0	4
Unemployed	0	2	0	2

5). Expenses

Meal expense is the regular prioritized expense, with the average of Rp 628,000 per month. Average expense for education is Rp 232,501; while for clothing, foot wear, and head wear is Rp 140,670 per month. There is a possibility that education expense is high concerning a non-regular education expense i.e. administration fee at the new school term, uniforms, books, etc.

Only 29.38% households surveyed that have saving, with average amount Rp 93,574 per month. There is interesting fact here. One respondent claimed to save regularly every month even that the amount is just for Rp 1,000. Average expenses for paying debt and credit are Rp 216,855. There are a lot of respondents who claimed to have other expenses i.e. electricity and water bills.

Non-regular expense which has been prioritized is for health sector (34 respondents stated this). This is also an interesting fact where health is prioritized by both who have higher and lower incomes.

Apart from health sector, respondents also have a non-regular expense for house care and boat construction or care. House care expense could reach to Rp 60,000,000 and for boat to Rp 50,000,000.

c. PUBLIC INFRASTRUCTURE

Facilities and infrastructures provided in Kelapa Island, which also functioned as Kelapa Island Villagecapital, are one Elementary School building, one Islamic Elementary School building, one public clinic center building, one maternity hospital, doctor's boarding house, one mosque, one telecommunication stall, electricity from two generators, water purifier or resource osmosis, one harbor, cone block road, and one inn.

3. VILLAGES OF HARAPAN ISLANDS

a. GENERAL DESCRIPTION OF THE AREA

Harapan Island Village is consists of two inhabited islands i.e. Harapan Island and Sebira Island. Harapan Island is located near Kelapa Island and connected with small asphalt road. Sebira Island is furthest island in Seribu Islands. Sebira Island area is 4 hectare and the landwater found there is purely fresh as there are many big trees present.

Western part of Sebira Island is the place for boats' mooring quay from other islands. Fishers come to Sebira Island for fishing by using cage. At the southern part, there is one new pier that consists of two lines for boat entry. It was made of coral rocks mixed by stream rocks and wrapped by wire. The length of the pier is 50 meter towards the sea. To anticipate a big wave that reach to the pier, Sebira Island people were started to plant mangroves seed along the pier.

According to the information from local social leaders, northern part of Sebira Island is bordered with Bangka-Belitung Islands. In the west, Sebira Island is bordered with Lampu Hitam a big coral boulder, and the furthest border is Lampung area in Sumatera Island. In the south, Sebira Island is bordered by Kelapa Dua and Dua Islands. In the east, Sebira Island is bordered with Kalimantan Island. At the Indonesian map, it is shown that Sebira Island is closer to Sumatera than

Jakarta Bay. It is close to Bangka-Belitung and Lampung areas. Sebira area is not included in Seribu Islands Marine Park even though administratively, this island is still part of Seribu Islands Administrative District.

History and Condition of the Island

Harapan Island

Harapan island inhabitants are immigrants from Kelapa Island as these two islands are so near. Previously, this island is called Palemparan Island, a condition that describes transfer of people from Kelapa Island to Harapan Island regarding the density that present. As well as Kelapa Island, most of the inhabitants in Harapan Island are from Bantenese and Mandarese tribes. In 1960s the island's name was changed from Palemparan Island to Harapan Island. As its name, government wishes that this island could bring hope for the inhabitants. (Harapan = hope).

Sebira Island

According to the local social leaders, in 1972, Sebira Island is owned by Transportation Department. In 1975, people started to come and asked permission to the navigation officer for fishing. At that time, Sebira Island is a thick broad forest. As the time goes by, Sebira Island becomes inhabited island.

At present, people there claimed Sebira Island as their ancestor's land, while actually it is still owned by Transportation Department. Inhabitants in Sebira Island do not have any right or land certificate in this island. It is not an easy job to manage inhabitants in Sebira Island. And this is lead to the natural resources conservation issue. A job that supposed to be handled by navigation office could not perform the task properly. At first, Transportation Department only gives permit for fishing and doing business in the island but now it becomes an inhabited island.

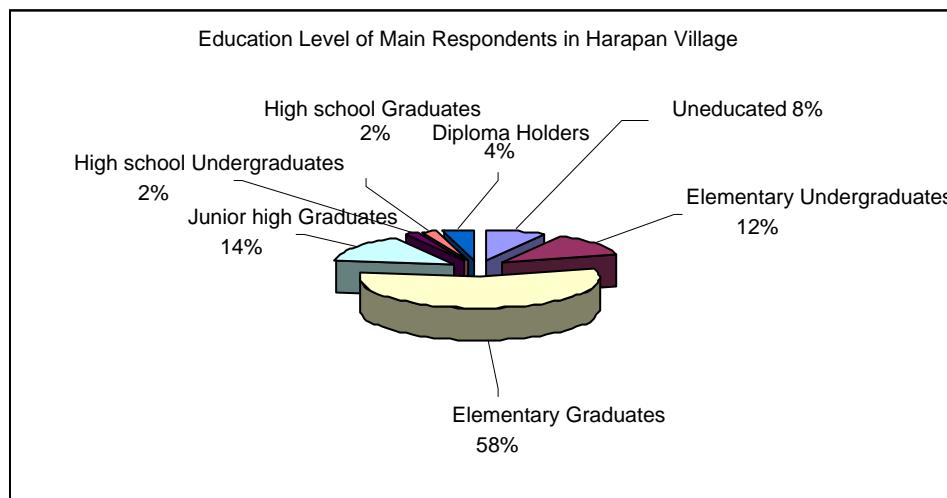
b. DEMOGRAPHY

1). Age, Sex, and Education Level

From 49 main respondents, 61.22% are men and 38.78 are women. The average age is 42 years and has lived for 27 years on average. The longest people who lived there is 67 years while the most recent is a year ago.

Education level in Harapan Island Village is low enough, mostly are Elementary level. The rest are 14.29% Junior high School, 4.08% Senior high School, and 4.08% Diploma Holders (Figure 19).

Figure 19. Education Level of Main Respondents



2). Tribes, Religion, and Languages

Tribe of Harapan Island is Betawinese. However, most people claimed that Harapan Island origin people are a Mandarese man who married to a woman from Banten. All the inhabitants are Moslems. Language used is Bahasa Indonesia with islander dialect.

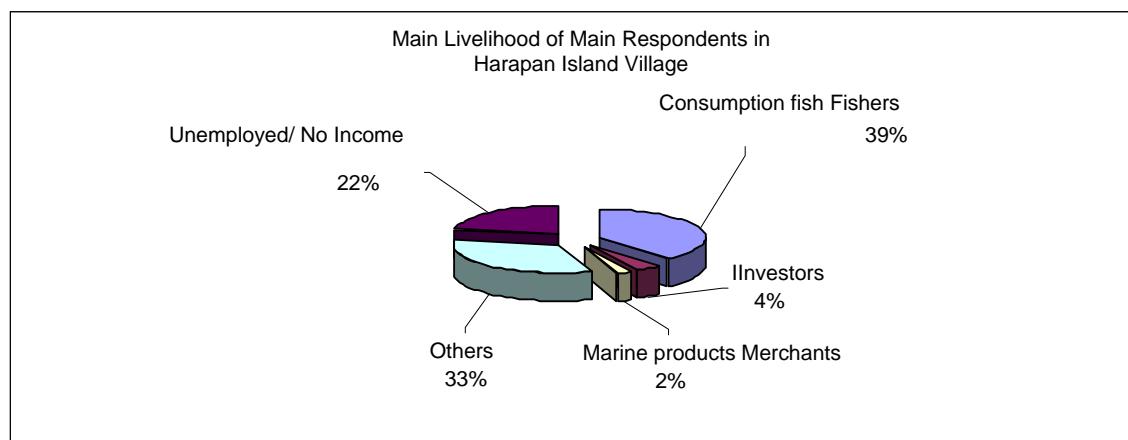
Most of the Sebira Island inhabitants are from Bugis tribe (90%), and the rest are Sundanese and Javanese who came from Central Java, Lampung, Bandung, Serang,

Mauk, Tangerang, etc. All the Sebira Island inhabitants are Moslems. Languages used are Bahasa Indonesia and Bugis. Bugis language is used by older people while younger generation uses Bahasa Indonesia.

3). Livelihood

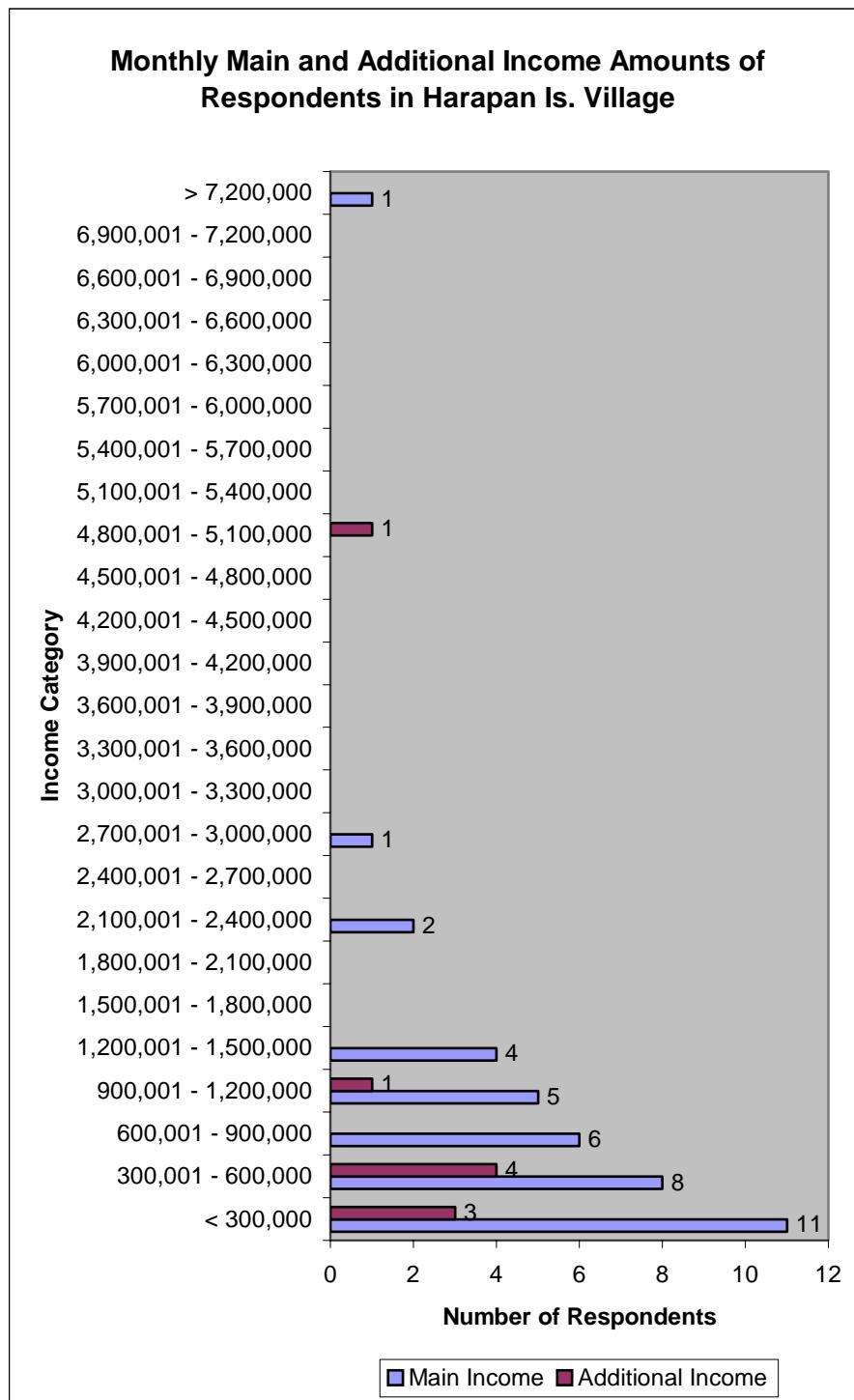
Around 44.9% respondents are having main livelihood related to coral reef used i.e. consumption fish fishers, investors, and marine products merchants (Figure 20). Respondents who have livelihood as 'others' are 32.65%, while respondents who do not have main livelihood are 22.45%. In general, respondents who do not have main and additional livelihoods are women.

Figure 20. Main Livelihood Types of Respondents



Most of the respondents (65.8%) have main income around less than Rp 300,000 to Rp 900,000 per month (Figure 21). There is one respondent who have main income of Rp 7,200,000 per month and work as consumption fish fisher. There is another one respondent who have main livelihood as consumption fish fisher which give main income of Rp 1,000,000, but have additional income of more than Rp 4,800,000 from mariculture activity.

Figure 21. Incomes Amounts of Respondents



In Table 15, it is shown that only 20% respondents have additional livelihood. Their additional incomes mostly are not related to fishing activity, instead it is categorized as 'others'. Around 64.58% of main livelihoods are related to coral reef

used, which almost all of them are consumption fish fishers. There is one household that have two additional incomes i.e. as consumption fish fisher and investors.

Table 15. Household Income Sources in Harapan Village

Livelihood	Main Respondents		Households	
	Main	Additional	Main	Additional
Consumption fish Fishers	19	1	29	7
Mariculture Fishers	0	1	0	1
Ornamental fish and corals Fishers	0	0	0	0
Collectors (of consumption fish)	0	0	0	0
Suppliers	0	0	0	0
Investors	2	1	1	2
Marine products Merchants	1	0	1	0
Coral Miners	0	0	0	0
Tourism Workers	0	0	0	0
Others	16	7	17	11
Unemployed/ No Income	11	0	0	0
Total	49	10	48	21*

*One household have additional income from two livelihoods.

There are four consumption fish fishers who have additional livelihood as 'others' i.e. as construction workers and boat makers. There is one respondent who have main livelihood unrelated to coral reef used but have additional livelihood as consumption fish fisher (Table 16).

Table 16. Main and Additional Livelihoods of Respondents in Harapan Village

Main Livelihood	Additional Livelihood			
	Consumption fish fishers	Mariculture fishers	Investors	Others
Consumption fish Fishers	0	1	0	4
Mariculture Fishers	0	0	0	0
Ornamental fish and corals Fisher	0	0	0	0
Collectors	0	0	0	0
Suppliers	0	0	0	0
Investors	0	0	0	1
Marine products Merchants	0	0	1	0
Coral Miners	0	0	0	0
Tourism Workers	0	0	0	0
Others	1	0	0	2
Unemployed	0	0	0	0

4). Income and Expenses

According to the data gathered, 76% respondents are having income around less than Rp 300,000 to Rp 1,200,000 on the latest month (July). There are eight respondents claimed that their highest income could reach around Rp 1,200,000 to Rp 1,500,000 per month. However, it is a worrying fact to know that almost 50% of respondents have their lowest income under Rp 600,000 per month.

As for the expenses, almost half of the respondents have expenses less than Rp 600,000 per month. There are 13 out of 48 respondents who have regular expense under Rp 600,000 per month. And there are 11 people who claimed that their highest expense is above Rp 1,200,000.

From the 44 people who provide information, regular prioritized expense is for meal with average of Rp 474,000. Other expenses mentioned are electricity, cigarette, cooking oil, and kerosene.

Table 17. Household Regular Expenses in Harapan Village

	Meals	Education	Clothing, foot wear, and head wear	Tax & insurance	Saving	Credit and Debt	Others
Average	473,977	255,841	121,429	875	114,44	102,632	110,190
Lowest	25,000	5,000	20,000	250	10,000	5,000	12,000
Highest	1,500,00	0	1,000,000	500,000	1,500	300,00	650,000

Non-regular prioritized expense for the respondents is for buying or repairing a boat. The expense amount is around Rp 10,000,000, with the maximum is Rp 90,000 and the minimum is Rp 45,000 (based on the year 2003 data).

c. PUBLIC INFRASTRUCTURE

Infrastructures developed in Harapan Island are one Elementary School building, one Junior high School building, one Islamic School building, and one public clinic center building. Communication equipments are limited as there is no phone line there. To have a communication facility, people have to use telecommunication stall service which also have a copy machine. Electricity is provided for 24 hours using diesel power. Other infrastructure is cone block road with 1.5 meter wide.

A freshwater well and water purifying site are also present in Harapan Island, which managed by Jakarta Province Mining Service and used by Kelapa Island people. In health sector, there is one puskesmas. However, there is no housing for doctors so, the doctors are staying in a rent house.

In Sebira Island, there are one Elementary School building, nurse's house, medical clinic, electricity, sport facilities (badminton field, volley field, and table tennis). There is also one public clinic center. Transportation Department has one lighthouse.

CHAPTER III

CORAL REEFS USED

CHARACTERISTIC OF CORAL REEF USERS

Majority of community in Seribu Islands works as fisherman, with high dependency on the sea. Some occupations have high dependency directly on coral reefs, as the habitat of specific targeted fish.

The high dependency causes coral reefs keep being used and has led to over exploitation. Economic dependency on coral reefs is also found in community that depends on reefs indirectly.

Indirect coral reef users are those who work with other workers who have direct relationship with coral reef. In other words, indirect coral reef users need direct coral reef users to get their economic benefit. Suppliers and investors (*juragan*) are occupations included in this category. Direct coral reef users are those who extract directly marine biota (fish, corals, etc.) from the reefs. Occupations belong to this category are food consumption fish fishers, ornamental fish fishers, *bubu* (bamboo cage) fishers, muro-ami fishers, and coral miners. People who work as dive guide are those who have direct relationship with coral reef, while ticket sellers and hotel employees are those who have indirect relationship with coral reef, but they still depend on reefs for living.

A. INDIRECT CORAL REEF USERS

1. Collector for Food Consumption Fish (*Palele*)

Palele (collector) is a local word referring to people who have high capital, working to buy and collect fish from fishermen. The capital can be in the form of money or equipment to store and transport the fish. In Seribu Islands, upon collection to *palele*, fish will be sold to fish markets in Jakarta or Tangerang. Collector is considered as second level in consumption fish trade, acts as middleman between fishermen and bigger traders.

In this survey, there were 16 people respondents who worked as *palele*, found in 5 villages from 6 villages in Seribu Islands. This occupation was found mostly in Pari Island Village. This occupation was not found in Harapan Island Village despite of there were many fishermen who collected marine ornamental fish in this village.

In general, *palele* is in the business for long time. Only very few work for less than five years. In recent years, there are not many people who choose to work as *palele*, compared to other occupations. This is because this occupation needs big capital to start with.

There are variety of fish collected by *palele*, generally are fish for consumption like fusiliers, spanish mackerels, red snappers, indian mackerels, 'selar' fish, frigate mackerels, and groupers . Some variety of groupers like baramundi, flowery, and 'lodi' cods are common collected fish that have sufficient high prices of buying and selling. For instance, baramundi cod could reach a selling price up to Rp400,000 per kg.

Period of transaction is varied, with most people sold everyday in a month. Few sold once in a month. There was one *palele* in Village of Tidung Island who did transaction in higher volume than other *palele* - even could collect fusiliers up to 20 tons for one transaction. However as a whole, there was no big difference in volume between one *palele* to another in doing the transaction. One remarkable thing was three *palele* in Kelapa Island didn't use boat in doing their businesses like other *palele* in other islands.

Business orientation was for local market and national market. Nett income varied, mostly under Rp 1.000.000 (around US \$ 100) per transaction. Among *palele* being interviewed, there were various answers regarding tendency of income. Some *palele* stated that their income had increased; some said it stayed static, and some experienced decreasing in income.

Table 18. Profile of *Palele* in Seribu Islands

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
Number of respondents	1 (1% of household sample)	3 (3% of household sample)	Not present	5 (4% of household sample)	6 (12% of household sample)	1 (3% of household sample)
Average of experience (year)	19	8		9	12	5
Collected Fish	<p>Collected fish are: Spanish mackerel (tenggiri) 500 kg; price Rp15K/ kg</p> <p>Frigate mackerel (tongkol) 200 kg; price Rp8K/ kg</p> <p>Fusilier (ekor kuning) 500 kg; selling price Rp 15K/ kg</p> <p>Rabbitfish (baronang) 800 kg; selling price Rp20K/ kg</p> <p>bulak 150 kg; selling price Rp800/ kg</p> <p>Red snapper 30 kg; selling price Rp20K/ kg</p> <p>Trading periode: 8x/</p>	<p>Collected fish are: Grouper (kerapu bintang); selling price Rp120K/ kg</p> <p>Fusilier (Ekor kuning); selling price Rp10K/ kg</p> <p>Red snapper Rp15K/ kg</p> <p>Pomfret (Bawal); selling price</p> <p>Baramundi cod (Kerapu bebek); selling price Rp350K</p> <p>everyday; 5x/ month</p>		<p>Collected fish are: Frigate mackerel (tongkol); selling price Rp7K-10K</p> <p>Grouper (Lodi); selling price Rp12K/ kg</p> <p>Red snapper (Lodi); selling price Rp12K/ kg</p> <p>Flowery cod (Kerapu macan) Rp60K/ kg</p> <p>Baramundi cod (Kerapu bebek); selling price Rp400K/ kg</p> <p>Abalone; selling price Rp45K/ kg</p> <p>Volume varied i.e. ekor kuning,</p>	<p>Collected fish are: Spanish mackerel (tenggiri); selling price Rp22K/ kg</p> <p>Anchovies (Teri); selling price Rp5K/ kg</p> <p>Grouper (Lodi); selling price Rp110K/ kg</p> <p>Indian mackerel (Kembung); selling price Rp10K/ kg</p> <p>Frigate mackerel (Tongkol) Rp10K/ kg</p> <p>Squid; selling price Rp13K/ kg</p> <p>Volume varied, from 5 - 700 kg in</p>	<p>Collected fish are: Rabbitfish (Baronang) 30 kg; selling price Rp33K/kg</p> <p>Red snapper 20kg; selling price Rp21K/kg</p> <p>Grouper 200kg; selling price Rp15K/ kg</p> <p>Spanish mackerel (Tenggiri) 300kg; selling price Rp12K/ kg</p> <p>Fusilier (Ekor kuning) 50kg Rp12K/ kg</p> <p>Trading periode: 2x/ month</p>

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
	month			one collector claimed to gain 5kg/ 10 days while other claimed to gain 20 tons Trading periode: almost everyday in each month, 12x/ year	a single collection Trading periode: 15 to 23 days in each month (almost everyday in each month)	
Income and trend	Use oneself 's boat Average nett income per trading Rp500K; 8x trading per month	No boat use Average nett income per trading Rp200K and 900K. Trading is around once in 3 days to 20x per month (almost everyday)		Everyone use boat; equal between oneself's and other people's boat Average nett income per trading Rp70K to Rp1 million	Everyone use boat; only one collector use other people's boat Average nett income per trading Rp60K to Rp2 millions	Use other people's boat Average nett income per trading Rp300K; 2x trading per month
	Local market target oriented	Local market target oriented		Local and national market target oriented	Local and national market target oriented	Local market target oriented
	Income trend decreasing	Income trend is increasing for one collector and decreasing for two collectors		Income trend: one claimed increasing while others claimed decreasing or static	Income trend: two collectors claimed increasing while the rest are decreasing or static	Income trend is increasing

2. Marine Products Merchants

People with this occupation were very limited. The household survey found only one member of family in 4 villages worked as marine products merchants. In this survey, no respondent was found in Pari Island and Untung Jawa Island Villages. Average experience of respondents is quite long i.e. six years; ranging from 6 months to 21 years.

According to the survey, it is shown that all only sell one type of food material product (raw and processed). The marine products include fresh sea cucumber, anchovies, squid, and salted fish (raw material); and fish crackers, roasted fish wrapped in banana leaf, jerked fish, 'empek-empek', and 'otak-otak' (processed material). Most of the materials are bought from other parties, not self-collected or self-processed.

Generally, they are trading around Seribu Islands but sometime they go to Jakarta and Bogor for trade. Trading activity is performed everyday. From income point of view, there is only one large-scale trader while others are small-scale. Large-scale trader could have net income up to Rp50,000,000 per month with trading area covering Jakarta and Bogor. Other small-scale traders that only sell their products in Seribu Islands are having income not more than Rp1,000,000 per month.

Total of respondents that claimed that their income relatively increasing are equal with the total respondents that claimed decreasing, and static.

Table 19. Profile of Marine Products Merchants in Seribu Islands

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
Number of respondents	3 (3% of household sample)	5 (4% of household sample)	3 (8% of household sample)	2 (2% of household sample)	Not present	Not present
Average of experience (year)	4	3	19	9		
Trading activity	Each has one commodity: fish cracker, fresh sea cucumber Commodity is bought from other party Trade location is in Panggang Island (at oneself's house) Trading activity is everyday Local market target oriented	Each trade one commodity: raw marine products (anchovies, squid), processed food (mpek-mpek, otak-otak, shrimp cracker, roasted fish wrapped in banana leaf, salted fish) Commodity is bought from other party Trade location is in Kelapa and Harapan Islands Trading activity is everyday (4 respondents) and every 2 days (1 respondent) Local market target oriented	Each has one commodity: salted fish Commodity is collected by oneself Trade location is outside Kep. Seribu (Jakarta, Bogor) Trading salted fish Trading activity is once in every week or every 2 weeks (1 respondent) or daily (1 respondent) Local and national market target oriented	Each trade one commodity: processed rice with fish (bacang ikan), salted fish, jerked fish Commodity is collected by oneself (2 respondents) and bought from other party (1 respondent) Trade location is in Tidung, Payung, U. Jawa, and Pramuka Islands Trading strategies: door to door, receive order, consignment with merchants in other islands Trading activity is everyday/ almost everyday		

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
				target oriented		
Income	<p>Buying price of fish cracker material is Rp5-6K/ kg; selling price Rp15K/ kg; buying price of fresh sea cucumber Rp12K/ kg selling price Rp17K/ kg</p> <p>Routine nett income: Rp500K - Rp1million/ month</p> <p>Income trend relatively static</p>	<p>Buying price Rp4K/ kg, selling Rp500/ each (processed squid), buying price Rp3K/ kg selling Rp12K/ kg (indonesian oil sardine cracker)</p> <p>Routine nett income: Rp150K - 300K/ month</p> <p>Income trend relatively decreasing or static</p>	<p>Buying price of selar fish Rp2 - 3K/ kg, selling price Rp8 - 9K/ kg</p> <p>Routine nett income: Rp800K and Rp50million/ month</p> <p>Income trend relatively increasing</p>	<p>Buying price of raw material Rp1K selling price Rp2K (fish cracker, jerked fish, seaweed sweets, seaweed candy), grouper salted fish have selling price of Rp7K</p> <p>Routine nett income: Rp140K - Rp500K</p> <p>Income trend relatively increasing (2 respondents) or decreasing (1 respondent)</p>		

3. Other Occupations

Apart from the occupations mentioned above, there are other occupations of respondents which are not related to fishery. These others occupations were found mostly in Tidung Island Village, and least in Harapan Island Village. Respondents with other occupations generally work around Seribu Islands.

From interview results, respondents with this category didn't have occupations related with coral reef, but in daily life they made use of coral reef by digging sand and corals for construction materials (for private use or selling). The amount of corals taken from the sea varied between $1m^3$ to $50m^3$ in a single yield. It is difficult to make comparison for the yield as respondents often use other measurement units (sack, chunk, handcart, or kilogram).

Table 20. Profile of Other Occupations in Seribu Islands

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
Number of respondents	58 (58% of household sample)	81 (72% of household sample)	20 (41% of household sample)	96 (86% of household sample)	15 (71% of household sample)	27 (71% of household sample)
Average of experience (year)	7	8	9	9	10	14
Occupation type	All work in Kep. Seribu 10 persons are related to coral reef ecosystem used: watch and guard the coral reef, using boat to transport ornamental fish, boat captain. Exploiting sea sand (31 persons), exploiting coral (12 persons) Coral exploited: 1-20m ³ ; or in a sack measurement (20 & 30 sacks)	All work in Kep. Seribu; while the rest work outside Kep. Seribu 8 persons are related to coral reef ecosystem used: to create education curiculum, controlling coral miners. Exploiting sea sand (27 persons); exploiting coral (9 persons) Coral exploited: 6-30 m ³	95% work in Kep. Seribu; claimed to also work outside of Kep. Seribu 1 person is related to coral reef ecosystem used: transferring knowledge for students Exploiting sea sand (9 persons); exploiting coral (6 persons) Coral exploited: 10-50 m ³ ; there is measurement in kg, 300-500kg; there is measurement in wagon, one wagon	All work in Kep. Seribu; only one claimed to also work outside of Kep. Seribu 1 person is related to coral reef ecosystem used: fishing; coral mining, monitoring coral position to avoid bump accident; fish as commodity; controlling. Exploiting sea sand (36 persons), exploiting coral (15 persons) Coral exploited: around 6-50m ³	93% work in Kep. Seribu; the rest work outside of Kep. Seribu 8 persons are related to coral reef ecosystem used: fishing; coral mining, monitoring coral position to avoid bump accident; fish as commodity; controlling. Exploiting sea sand (36 persons), exploiting coral (15 persons) Coral exploited: around 6-50m ³	88% work in Kep. Seribu; the rest work outside of Kep. Seribu 2 persons are related to coral reef ecosystem used: Dive operator; coral reef watcher. Exploiting sea sand (4 persons), exploiting coral (1 person) Coral exploited: 4-6 pieces

4. Mariculture Fishers

Respondents who worked as mariculture fishers were found mostly in Pari Island, where one fourth of household sampling had at least one person with this occupation. However, this occupation was not found in Untung Jawa Island.

Seaweed culture was the most common mariculture, followed by fish culture (groupers, pomfrets, and snappers). Respondents had been in this occupation for long time.

a. Fish Culture

Production from fish culture varied from 50 kg in one yield to 1000 fish with average weight 1,5 kg each (total biomass was 1,5 ton). Fish culture in Kelapa Island was relatively new, but in term of the scale it was the biggest from all islands. As the respondents were employees instead of the owners, there was no detailed information about the profit gained from fish farming. However, there was tendency of increasing in production. This condition can trigger likewise activity to be created in the future.

There was not much information could be obtained about trade value of fish from fish culture to measure incentive created from fish culture activity, compared with normal fishing activity. According to the information obtained from the survey, trade value for groupers reached Rp 70.000 (US\$ 7) and Rp 110.000 (US\$ 11) per fish. Information from two respondents stated that the capital for fish culture was not big, and neither was the yield. For example, the nett income from yield every seven-month was Rp2000.000 (US\$ 200).

b. Seaweed Culture

Seaweed culture was more popular than fish culture which required big capital. The most common seaweeds being cultivated in the area were "red seaweed" and "bottle-green seaweed".

Production scale varied between 5 kg to 3 tons in each yield. Yield period was every 30-40 days. Market price varied between Rp5000/kg (US\$ 0,5) to Rp 15.000/kg (US\$ 1,5). Almost all seaweed farmers said that the production was decreasing despite there were some supports from various organizations or institutions.

In general, the proportion of community who worked as mariculture fishers was relatively small despite one of strategies of economic development in Seribu Islands was mariculture. Based on interview result, the scale of mariculture was not necessarily big to obtain profit. This was proven by many mariculture fishers that had been working in small-scale marine culture for long time period.

Table 21. Profile of Mariculture Fishers in Seribu Islands

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
Number of respondents	6 (6% of household sample)	3 (<1% of household sample)	1 (<1,8% of household sample)	5 (4% of household sample)	14 (27% of household sample)	Not present
Average of experience (year)	8,5	< 1	31	8	13,5	
Mariculture type	1 person has grouper culture; 5 persons have seaweed culture	Snapper (1 person) and silver pomfret (2 persons)	Grouper	2 persons have grouper culture; 3 persons have seaweed culture	All have seaweed culture	
Mariculture activity profile: <u>fish culture</u>	Average harvest around 50kg; highest production is 600kg (no information regarding number of harvest in certain period)	Snapper: As employee Harvest 4x/month @ 500kg/month Local market target oriented Average nett	Harvest in every 7 month, production: 300 unit As owner Have assistant Local market target oriented	Harvest once, 32 unit One as owner and one as employee Local market target oriented		

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
	<p>Culture enterprise is owned by oneself, no additional assistance</p> <p>Seed from hatchery</p> <p>Local market target oriented</p> <p>Nett income per harvest Rp15K</p> <p>Production relatively stable</p>	<p>income Rp15 million</p> <p>Production relatively stable</p> <p>Silver pomfret:</p> <p>As employee</p> <p>Harvest 2x/year @ 1,000 fish with weight of 1.5 kg</p> <p>International market target oriented</p> <p>No information regarding income of enterprise</p> <p>Production relatively increasing</p>	<p>oriented</p> <p>Selling price Rp70,000/unit</p> <p>Average nett income Rp2 million</p> <p>Production relatively increasing</p>	<p>Selling price Rp110K/ unit</p> <p>Average nett income: Rp3,5 million</p> <p>Production relatively decreasing</p>		

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
Mariculture activity profile: seaweed culture	<p>Harvesting periode around once a month to 4x/ year (i.e. every 3 month)</p> <p>Production scale varied around 100-200 kg/ harvest to 1-3 ton/ harvest.</p> <p>Highest production is 3 ton, while the lowest is 50 kg.</p> <p>All enterprises are owned by oneself and assisted by family and friend</p> <p>Average selling price Rp500/ kg</p> <p>4 of 5 claimed that production relatively decreasing</p>			<p>Seaweed types are green and bottle green</p> <p>Harvest 1x/ month @ 5 kg to 100 kg</p> <p>All as owners</p> <p>Selling price around Rp7K to Rp48K</p> <p>Average nett income around Rp50K to Rp700K</p> <p>Having assistants</p> <p>Production relatively decreasing</p>	<p>Harvest 1x/ month or every 40 days</p> <p>Average production 20kg/ harvest to 1,500kg/ harvest</p> <p>Highest production could reach 5x average production</p> <p>Selling price varied Rp 3K to 15K/ kg</p> <p>Income varied Rp60K to Rp1,2 million/ month</p> <p>All respondents are mariculture owners</p> <p>Having assistants</p> <p>Production relatively decreasing</p>	

5. Investors (Juragan)

The households which had one member of family worked as owner of enterprise or investors (called juragan) were mostly found in Harapan Island. *Juragan* rented or sold boats, and provided catching tools like ‘payang’ net and fish aggregating device (FAD) for fishing consumption fish. Fishing boats were normally used for fishing within Seribu Islands.

Some investors used their private money to fund the enterprise. However, the majority of them borrowed money from other people; mostly from their relatives. The profit was shared to people who loaned them the money. They categorized their enterprises as small-scale enterprises. This opinion was supported from the regular income they got. Monthly income varied among owners. In Harapan Island, average monthly income from 11 respondents was Rp 1.800.000 (US \$ 180). However, because the amount of samplings is very few, this average value has high standard of deviation. Respondents have equal opinions about their incomes, whether it's increasing, decreasing, or static.

Table 22. Profile of *Juragan* in Seribu Islands

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
Number of respondents	Not present	5 (4% of household sample)	11 (29% of household sample)	Not present	1 (2% of household sample)	3 (8% of household sample)
Average of experience (year)		7	11		2	2
General		Boat and net rent activity Capital from saving Work area in Kep. Seribu, no outside of Kep.	Feri boat, payang/mayang net, FAD rent activity. Capital from relative (especially from parents)		Feri boat rent for transportation Private capital Work area in Kep. Seribu	Boat rent activity Private capital Work area in Sumatra (2 persons) and in Kep.

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
		Seribu	and parents in law) Work area in Kep. Seribu: around Sebira Is., Intan widuri, Semar, Muara Kamal. Only one person work outside of Kep. Seribu			Seribu
Service sector		Income is sharing equally Small scale activity Local market target oriented Fishing activity varied, from everyday to some times per week or month	Income is sharing equally or 'campatale' type Activity scale: artisanal and small scale Local market target oriented Fishing activity is everyday or some times per week or month, depend on fishing season			Income is sharing equally

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
Income		Average income Rp2.4 million/month, around Rp650K to Rp5 million Highest income Rp7 million Income relatively decreasing	Average income Rp1.8 million/month, around Rp500K to Rp8 million Highest income Rp10 million Perception of income trend is varied, one claimed decreasing while the rest claimed increasing or static		Income Rp1 million/month, the highest Rp2 million and the lowest Rp500K Income relatively increasing	Average income Rp2.5 million, with Rp7 million as the highest Income relatively increasing (1 person) and decreasing (2 persons)

B. DIRECT CORAL REEF USERS

1. Marine Ornamental Collectors

There are very few people in Seribu Islands who work as marine ornamental collector. In this survey, there were only two islands (Panggang and Tidung) from where this occupation was found. Collections of ornamental corals and fish were more common in Panggang Island while in Tidung Island the collection of abalones.

Ornamental corals were collected by using tools such as hammer. The collection area was not only limited in Seribu Islands, but also had expanded to some areas in Sumatera (Lampung, Bangka, Belitung). Collection was done daily with 15 to 30 corals in each collection activity (300-600 corals per person monthly). Ornamental fish taken from coral reefs were clownfish (family Pomacentridae), surgeonfish (family Acanthuridae), butterflyfish (family Chaetodontidae), angelfish (family Pomacanthidae), etc. The amount of fish collected was various, different for each fish family. Ornamental fish and other marine biota were collected by using net,

scoop, etc. Collectors from Panggang Island were known to use potassium for catching ornamental fish.

Other marine biota beside corals and fish were sea cucumbers and 'ronggeng' shrimp. The collection activity for sea cucumbers were less often than for 'ronggeng' shrimp, which could reach six times a week with average yield between 4-5 shrimps each time.

The income for collectors in Village of Panggang Island varied from Rp 250.000, (US\$25) to Rp 3.600.000 (US\$ 36), with average income Rp 1.600.000 (US\$ 160). In Tidung Island Village, income varied from Rp 135.000 (US\$ 13,5) to Rp 1000.000 (US\$100). The highest income had ever recorded in Tidung Island was Rp 13.500.000 (US\$ 1350).

All collectors used boat in their activities. The majority of respondents said that the collection amount was decreasing.

Table 23. Profile of Marine Ornamental Collectors in Seribu Islands

Item	Panggang Village	Tidung Village
Number of respondents	15 (15% of household sample)	2 (2% of household sample)
Average of experience (year)	10	3
Collection activities	<p>Products collected:</p> <p>2 persons have ornamental coral 9 persons have ornamental fish 1 person has marine biota 1 person has ornamental fish and marine biota 2 coral and ornamental fish</p> <p>Coral:</p> <p>'Kolang-kaling', 'seroja', acropora, green and brown 'babut', plate coral types</p> <p>Collection area: in Kep. Seribu, Lampung, Bangka, Belitung.</p> <p>Collection activity is everyday or depend on</p>	<p>Type of biota collected: abalone</p> <p>Collection area: Payung Is.</p> <p>Hand fishing, everyday. 1 to 4 kg harvest per day.</p>

Item	Panggang Village	Tidung Village
	<p>the order. Number of collected 15 - 30 pieces. Using hammer and chisel.</p> <p>Ornamental fish Doctor, clown, butterfly, 'pelong', 'klon', red-white, 'giru', 'tompel', 'balong', zebra, 'keling ijo', 'onde-onde', and 'monyong' fish.</p> <p>Highest catch volume is red-white fish 200-300 fish/ day; the lowest is 'monyong' fish 1 fish/day.</p> <p>Marine Biota Types collected are sea cucumber and 'ronggeng' shrimp.</p> <p>Sea cucumber collection is more rarely than 'ronggeng' shrimp which could reach 6x/ mg, 4-5 pieces per collection</p> <p>Ornamental fish and marine biota collection are using scoop net and other tools. Using boat; mostly other people's boat.</p>	
General	<p>Local, national, regional markets target oriented</p> <p>Using boat; mostly other people's boat</p> <p>Nett income varied around Rp250K to Rp3.6 million/ month, with mean of Rp1.6 million</p> <p>Collection trend relatively decreasing</p>	<p>Artisanal scale for local market</p> <p>Using oneself's boat</p> <p>Average nett income per month Rp135K (11kg/ day collection) and Rp1 million (4 kg/ day collection).</p> <p>Highest nett income Rp13.5 million</p> <p>Collection trend relatively decreasing</p>

2. Food Consumption Fish Fishers

This is the major occupation in Seribu Islands. Based on collected data, 42% or respondents fished in coral reefs, 53% went to open sea, and the rest caught fish in estuaries.

The proportion of households which one of family members was fisherman, varied among 6 villages in Seribu Islands (37% in Untung Jawa Island Village and 74% in Harapan Island Village).

Respondents had have this occupation for various of time, between 14 years (Pari Island) and 27 years (Untung Jawa Island). There was assumption that this profession was getting unpopular for younger generation in Untung Jawa Island. Different situation was found in Pari Island, where average work period for respondents was 14 years.

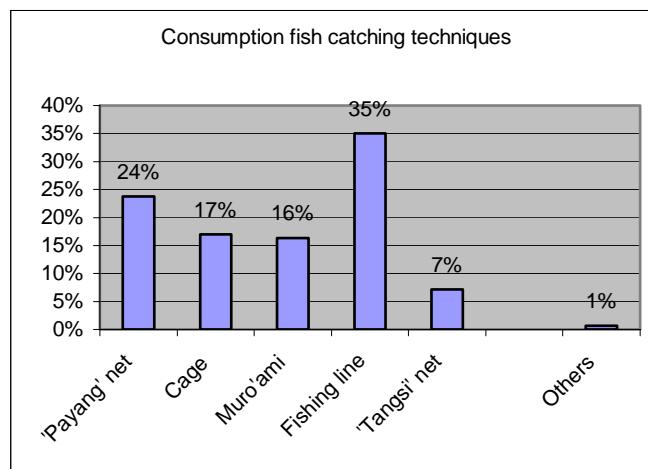
In general, the percentage of fishers who fish within the area of Seribu Islands was bigger than those who fished outside the islands (except for Tidung Island). About 50% of fishers from every island fished within the area of Seribu Islands. In Panggang Island and Kelapa Island Villages, much bigger percentage of fishers (90% and 80%) fished within the islands. The biggest percentage of fishers who fished outside the islands was from Pari Island (50%), followed by Tidung Island (42%). This is because those two islands are located adjacent to mainland Jakarta, thus the quality of water is poor, so fishing activity is concentrated to areas outside Seribu Islands.

The boats used by fishers had various machine powers. The biggest power mentioned by respondents was 300 horsepower (HP). The type of boats used for most fishers in Untung Jawa was rowing boat or sailing boat without machine. This is contradictive to preliminary assumption that the method in Untung Jawa Island was more modern due to its vicinity to Jakarta city.

The most common tool used for catching fish was fishing line (35%). Fishing line was widely chosen because it's effective, handy, and cheap. Apart from fishing line, 'payang' net was the second tool commonly used by fishers. Furthermore,

'payang' net was commonly used by ethnic group from Bugis in Sebira Island and Pari Island. Other catching tool used was *bubu* (17%), which was installed on to corals and using corals as weight.

Figure 22. Food Consumption Fish Catching Techniques



The domination of use of catching tools was different in each village. In Untung Jawa, the dominant catching tool was cage or *bubu* (93%), muroami in Tidung Island, fishing line in Panggang Island, 'tangsi' net in Pari Island, and 'payang' net in Harapan Island and Kelapa Island. Some of the tools like cage, muroami, and 'payang' could cause damage to coral reef if not used carefully.

In general, respondents categorized their catches as traditional-scale catch (fishing with traditional tools, income from selling was used for daily life). In Panggang Island however, almost half of respondents was subsistent fishers. In Tidung Island, 39% was small-scale fishers. Majority of respondents were fishing in group except in Pari Island where 69% of fishers worked individually.

The income varied from Rp 5000 (US\$ 0,5) per day for fishers who worked in daily basis, to Rp 1000.000 (US\$ 100) per week for fishers who worked in weekly basis. Survey result showed that fishers who work in daily basis received less income than those who worked in weekly basis or longer.

The type of fish caught by fishers was various, from coral reef fish and pelagic fish to other marine biota like squid and crabs. Coral reef fish that became target of catch were from family of Serranidae (groupers) and Lutjanidae (snappers). In general, volume of catch from fishing inside Seribu Islands was smaller than from outside Seribu Islands. This is possibly because the scale and catching tools are bigger and more modern for fishing outside Seribu Islands.

Volume of catch varied from only 1 kg or less (for each fish species) to 1000 kg (small anchovy by fishers in Kelapa Island). Some respondents didn't provide complete information about volume of catch; it was difficult to make comparison of catching intensity.

Market price varied from only Rp 500 (US\$ 0,05) per kg to Rp 1.500.000 (US\$150) per kg (parrotfish-Family Scaridae). However, there was different market price for same type of fish. Fishers only mentioned range of price (for example Rp12.000 - Rp 25.000). Price difference was also found for other fish such as fusiliers, anchovies, and groupers.

More than 50% of respondents from each village (except Tidung Island 47%) stated that volume of catch was decreasing.

Table 24. Profile of Consumption Fish Fishers in Seribu Islands

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
Number of respondents	55 (55% of household sample)	87 (53% of household sample)	40 (74% of household sample)	70 (63% of household sample)	27 (52% of household sample)	14 (37% of household sample)
Average of experience (year)	19	19	17	19	14	27
Operational area: OUTSIDE or INSIDE Kep. Seribu?	90% INSIDE, 10% OUTSIDE, 1 person INSIDE and OUTSIDE	89% INSIDE, 6% OUTSIDE, 4% INSIDE and OUTSIDE	85% INSIDE, 8% OUTSIDE, 8% INSIDE and OUTSIDE	55% INSIDE, 42% OUTSIDE, 3% INSIDE and OUTSIDE	50% INSIDE, 50% OUTSIDE	50% INSIDE, 36% OUTSIDE, 14% INSIDE and OUTSIDE
General	Operation area: Pari to Sebira Is.	Operation area: Bira Is., Jokong Is., Dua Is.,	Operation area: Sebira Is., Jokong Is., Dua Is.,	Operation area: Tidung Is., Penjaliran Is.,	Operation area: Panggang Is., Lancang Is.,	Operation area: Rambut Is., Peniki Is.,

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
	<p>Habitat: coral reef (often called: grouper) and deep sea (often called: fusilier; while fusilier actually is reef fish)</p> <p>Boat: motor boat 7-180 PK. 59% owned by oneself</p> <p>Catching tools: 60% use fishing line. There are combinations with 'payang' net, muroami, and cage. There is one uses 3 types of tools ('payang' net, cage, fishing line)</p> <p>Collection scale: 51% subsistence. One person is industrial scale.</p> <p>Ussually sold to collectors around neighborhood.</p> <p>Group: 55% in group</p>	<p>Pabelokan (Minyak Is.), Pemagaran, Kotok Is., Sebirals. to Lampu Hitam and Lampu Putih. Also around resort islands (Matahari and Pelangi Is.)</p> <p>Habitat: coral reef and deep sea.</p> <p>75% DAILY fishers</p> <p>Boat: motor boat 7-180 PK. 57% owned by other party.</p> <p>Catching tools: 'payang' net, 30% (48%), 20% fishing line.</p> <p>Not many (4 persons) use more than one tool.</p> <p>Collection scale: 68% artisanal. From non-daily fishers, almost half of them are small scale.</p> <p>Group: 91% in group</p>	<p>Pantara Is., Panggang Is., Sebaru Is., Sumatra waters. Also around resort islands e.g Pelangi Is., Putri Is..</p> <p>Habitat: coral reef (lodi/ grouper, other grouper), deep sea (trevally, pomfret, 'tengket', white snapper, squid) and mud (trevally, pomfret)</p> <p>Boat: moto machine with various power from 12-300PK. Mostly don't have boat.</p> <p>Catching tools: 50% 'payang' net, 30% cage, 4% muroami, 10% fishing line dan 5%</p> <p>Collection scale: 62% artisanal, 35% small scale, 3% industrial scale.</p> <p>Catching volume trend: 65% (of 38 persons) stated relatively decreasing</p>	<p>Sebira Is., Payung Is., Kongsi Is., Dua Is., Natuna waters</p> <p>Habitat: coral reef and ocean. Only one stated sea grass bed habitat.</p> <p>Boat: 43% owned by oneself, 57% owned by other party. Small dingy to 60 persons capacity</p> <p>Catching tools: (30%), fishing line, cage. Mostly 46% muroami, 44% fishing line.</p> <p>One catching tool 41%. Only one person claimed to use more than one tool.</p> <p>Collection scale: 39% small scale, 36% artisanal</p> <p>DAILY: 53%</p>	<p>Kelapa Is., Pari Is., Eretan Is., Bokor Is., Tikus Is., Kotok Is, Karang Hantu</p> <p>Habitat: coral reef. Only one in deep sea.</p> <p>Boat: mostly rowing or sailing boat with no machine; if used it would be around 5-33PK; 62% owned by oneself.</p> <p>Catching tools: 'tangsi' net (30%), fishing line, cage. Mostly use only one catching tool (41%); 14% use 3 types</p> <p>Collection scale: 70% artisanal, 26% subsistence, 1 person is small scale.</p> <p>DAILY: 77%</p> <p>Nett income Rp10K/ day (Rp240K/ month) for daily fishers; Rp1 million/ week is the highest for weekly fishers.</p>	<p>Dapur, Damar, Bokor Is., Bidadari Is., Air Is. Non-island location: Widuri, Karang Muara Sembelar, Edam, pedicab FAD, ferry port.</p> <p>Habitat: coral reef</p> <p>Boat: majority owned by other party</p> <p>Catching tools: 93% cage, 57% cage and fishing line, one person cage, fishing line, and 'tangsi' net.</p> <p>Collection scale: 86% artisanal, 14% small scale.</p> <p>Group: 64% in group. One person sometime alone and sometime in group.</p> <p>Nett income is varied: Rp100K/ day (daily fishers);</p>

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
	Catching volume trend: 85% stated relatively decreasing	Catching volume trend: 92% stated relatively decreasing		Catching volume trend: 47% stated relatively decreasing	The lowest income is around half of average income. Catching volume trend: 84% stated relatively decreasing	Rp3 million/periode for weekly fishers. The highest income is around 1.5-3x average income; the lowest income is around 10% to 100% of average income Catching volume trend: 50% stated relatively decreasing

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
INSIDE Kep. Seribu	<p>Operation area: Pari to Sebira Is.</p> <p>Collected types: reef fish (fusilier, 'pisang-pisang', 'uli-uli') and pelagic fish (indian mackerel, indonesian oil sardine, jacks trevally).</p> <p>Catching volume: up to 100 kg in a single trip. Highest catch around Sept-Nov, lowest catch July - August</p>	<p>Collected types: frigate mackerel, trevally, indian mackerel, lemuру, pomfret, anchovies, treadfin bream, grouper (in coral reef) and frigate mackerel (deep sea)</p> <p>Catching volume: trevally and anchovies could reach 1,100 kg. 'Lodi' grouper is less than 10 kg. Highest catch around May-June, lowest July-August</p>	<p>Collected types: anchovies, pomfret, trevally. Pomfret is dominnat enough.</p> <p>Catching volume: trevally could reach 500kg. Highest catch October, lowest May-June</p>	<p>Operation area: Tidung Is., Payung Is., Panggang Is., Kongsi Is., Sebira Is.</p> <p>Collected types: frigate mackerel, jacks trevally, 'cendro', fusilier, 'comok', indian mackerel, rabbitfish, red snapper. Also shellfish types i.e. crab, squid. Frequently mentioned is frigate mackerel</p> <p>Catching volume very low, around 1 - 26 kg</p>	<p>Operation area: Lancang Is., Kelapa Is., Bokor Is., Tikus Is., Pari Is, Karang bongkok, Kotok Is.</p> <p>Collected types: ray, 'cendro', anchovies, shark, squid, 'papaitan', 'tambang', grouper, jacks trevally, rabbitfish, sea catfish, indonesian oil sardine.</p> <p>Average catching volume is around 1 to 11 kg. The highest for one species is 300 kg (July); during famine season could reach zero.</p>	<p>Operation area: Rambut Is., Untung Jawa Is., Pari Is., Peniki Is., Dapur Is., Sebira Is.</p> <p>Collected types: grouper, red snapper, reef cod grouper, rabbitfish, spanish mackerel, jacks trevally, 'sunu' grouper, 'lodi' grouper.</p> <p>Catching volume: Average is not more than 15 kg for every species. In fact for only 1 - 2 kg. Highest and lowest catches are varied amongst fishers</p>
Selling price	<p>Lowest selling price is fusilier Rp5-7K/ kg, while highest is grouper Rp150-350K</p>	<p>Lowest selling prices are anchovies and trevally Rp2.500/ kg; the highest is parrotfish Rp1.5 million/ kg. Fishers stated that pomfret selling price is around Rp60K to Rp105K.</p>	<p>Lowest selling price is anchovies Rp2.500/ kg; the highest is parrotfish Rp1.5 million/ kg. Fishers stated that pomfret selling price is around Rp12K -Rp25K/ kg</p>	<p>Lowest selling price is fusilier Rp7K to Rp15K/ kg, the highest is grouper Rp100K/ kg</p>	<p>Lowest selling price is 'tambang' fish Rp500/ kg, ray Rp2K; the highest is shark Rp20K</p>	<p>Lowest selling price is fusilier Rp10K/ kg, the highest is 'sunu' grouper Rp80K/ kg</p>

3. Coral Miners

There were 6 households which had member of family who worked as coral miners. Generally they worked only around their residence area, except one person said that he worked "around Seribu Islands".

Some coral species became the target for this mining activity. Corals were collected by digging, hammering, and chipping using tools such as hammer, sack, and boat.

Table 25. Profile of Coral Miners in Seribu Islands

Respondents per island	Number of respondents
Panggang Island	3
Pramuka Island	1
Tidung Island	1
Lancang Island	1
Total of respondents	6

From the table above, for a glimpse it looks like collectors are not found in every island. However from the in-depth interview with key-informants, there were at least 3 people from each populated island who worked as marine ornamental collectors. Collected corals were sold or used for house construction.

The lowest income from coral mining was recorded Rp 100.000 (US\$ 10) per month, and the highest income was Rp 1.300.000 (US\$ 130) per month. Collectors worked daily or based on orders. Four collectors said that income was decreasing, two collectors said the income remained static.

4. Tourism Workers

There are many kind of activities of tourism workers, either directly related to coral reefs or not. From the survey result, occupations that had direct contact with coral reefs were dive guide, glass bottom boat operator, and some recreational fishing activities. Occupations with no direct contact with coral reefs were hotel employee, home stay owner, travel agent, etc.

From the survey, there was at least one person in the family who worked as tourism worker. This occupation was found mostly in Kelapa Island Village. Respondents were recorded as employees in tourism industry. There was only one respondent who owned tourism operator.

Tourism activities in Seribu Islands, especially in populated islands, were focused for local tourists' consumption. Workers from Kelapa Island mostly worked in resort islands, where tourism activities were focused for international tourists.

Table 26. Profile of Tourism Workers in Seribu Islands

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
Number of respondents	3 (3% of household sample)	15 (9% of household sample)	Not present	2 (2% of household sample)	Not present	1 (3% of household sample)
Average of experience (year)	N.A.	5		21		N.A.
Occupation type	As employee (2 persons), tourist guide (1 person) Activity related to coral reef used: swimming (2 persons), snorkeling (3 persons), diving (2 persons), fishing (1 person), inn (3 persons)	As employee Activity related to coral reef used: Snorkeling (1 person), diving (2 persons), jetski (1 person), fishing (4 persons), canoe/boat (2 persons), banana boat (3 persons), sailing (1 person), galss-bottom boat(1 person), sun bathing (1 person), restaurant (1 person), flora and fauna (1 person), inn (3 persons)		As employee Activity related to coral reef used: fishing (1 person), inn (2 persons),		As employee No activity related to coral reef used

Item	Panggang Village	Kelapa Village	Harapan Village	Tidung Village	Pari Village	Untung Jawa Village
	canoe/ boat (1 person), inn (1person)					
Tourist	Local tourist is dominant (2 persons), foreigner (1 person)	Local tourist is dominant (8 persons), foreigner (5 persons)		Local tourist is dominant		Local tourist is dominant
	All NEVER supply marine products	All NEVER supply marine products				NEVER supply marine products

CHAPTER IV

PERCEPTION ON THE NATURAL RESOURCES OF SERIBU ISLANDS

A. Natural Resources Benefit

According to the survey result concerning perception level of Seribu Islands people, most of the respondents in each village stated that they are gaining benefit from natural resources and getting valuable knowledges regarding the role of natural resources around them. These answers are reflected when they were asked about how important coral reef is for their live. Almost all people (93.26%) stated that coral reef is important to protect the land from storms, and they (93.06%) also agree that deteriorated coral reef will cost any suffer to the community.

Table 27. Perception of Respondents on Natural Resources Benefit

No	Statement	Do Not Know	Strongly Disagree	Disagree	Doubt	Agree	Strongly Agree	Total of Respondents
1	Coral Reef is important to protect the land from storms							
	Panggang Is. Village	0	2	1	3	70	24	100
	Kelapa Is. Village	0	0	2	6	90	66	164
	Harapan Is. Village	0	0	1	4	22	26	53
	Tidung Is. Village	2	0	4	7	40	59	112
	Pari Is. Village	0	0	1	2	35	14	52
	Untung Jawa Is. Village	0	0	0	0	17	21	38
	Total	2	2	9	22	274	210	519
	Percentage	0.39%	0.39%	1.73%	4.24%	52.79%	40.46%	100%

Table 27 continue

No	Statement	Do Not Know	Strongly Disagree	Disagree	Doubt	Agree	Strongly Agree	Total of Respondents	
2	Deteriorated coral reef will cause any cost to the community								
	Panggang Is. Village	0	3	1	4	70	22	100	
	Kelapa Is. Village	0	0	4	2	77	81	164	
	Harapan Is. Village	0	1	1	4	21	26	53	
	Tidung Is. Village	0	2	2	5	49	54	112	
	Pari Is. Village	0	0	2	3	28	19	52	
	Untung Jawa Is. Village	0	0	1	1	13	23	38	
	Total	0	6	11	19	258	225	519	
	Percentage	0	1.16%	2.12%	3.66%	49.71%	43.35%	100%	

However, even though they know much about the benefit of coral reef, but none of them knows about the entire benefit of coral reef. This is reflected as some respondents (28.49%) stated that coral reef existence is not related to the fish stock, and many of them (43.50%) stated that mangrove existence is also not related to the fish stock. And 45.54% respondents stated that coral reef only has benefit as a fishing ground and diving.

Table 28. Perception of Respondents on Natural Resources Benefit in Relation to the Fish Stock

No	Statement	Do Not Know	Strongly Disagree	Disagree	Doubt	Agree	Strongly Agree	Total of Respondents	
1	Future fishing will be better if we over exploiting the coral reef								
	Panggang Is. Village	0	13	61	8	13	5	100	
	Kelapa Is. Village	0	31	78	16	24	12	161	
	Harapan Is. Village	0	17	22	8	4	2	53	
	Tidung Is. Village	0	44	38	21	5	4	112	
	Pari Is. Village	0	7	33	8	2	2	52	
	Untung Jawa Is. Village	1	12	12	1	2	10	38	
	Total	1	124	244	62	50	35	516	
	Percentage	0.19%	24.03%	47.29%	12.02%	9.69%	6.78%	100%	

Table 28 continue

No	Statement	Do Not Know	Strongly Disagree	Disagree	Doubt	Agree	Strongly Agree	Total of Respondents	
2	If mangrove is not protected, there will be no fish to catch								
	Panggang Is. Village	3	2	11	19	28	13	76	
	Kelapa Is. Village	1	7	22	36	70	24	160	
	Harapan Is. Village	0	7	8	9	16	14	54	
	Tidung Is. Village	2	11	11	36	40	12	112	
	Pari Is. Village	0	0	11	11	19	11	52	
	Untung Jawa Is. Village	0	1	7	5	19	6	38	
	Total	6	28	70	116	192	80	492	
	Percentage	1.22%	5.69%	14.23%	23.58%	39.02%	16.26%	100%	
3	Coral reef is important only as a fishing ground and a diving site								
	Panggang Is. Village	1	5	38	18	32	4	98	
	Kelapa Is. Village	1	5	45	20	73	18	162	
	Harapan Is. Village	0	1	15	8	19	11	54	
	Tidung Is. Village	2	5	28	27	25	25	112	
	Pari Is. Village	0	3	25	4	19	1	52	
	Untung Jawa Is. Village	1	5	17	7	5	3	38	
	Total	5	24	168	84	173	62	516	
	Percentage	1%	5%	33%	16%	34%	12%	100%	

The survey also provides general description from the community concerning the natural resources surround them. They have a great expectation that the natural resources surround them could support their life through the next generations. This answer is reflected as 94.16% respondents strongly agree/ agree that they wish the next generation could have benefit from mangrove and coral reef.

However this answer does not indicate that they will do such an extreme things like restricting the fish catching. 37% respondents claimed that they are disagreeing with the restriction and 50.97% agree that fishing should be restricted in certain areas. According to the local social leaders from Untung Jawa Island and Pari Island Villages, there is a perception in the community concerning that the fish and other marine biota stocks will never be vanished even under heavy over used. However, most of them (61%) agree on development restriction in coastal area, therefore the natural resources could be protected. Only 19% has a reverse answer.

Table 29. Perception of Respondents on Natural Resources Conservation

No	Statement	Do Not Know	Strongly Disagree	Disagree	Doubt	Agree	Strongly Agree	Total of Respondents
1	I want the next generations could have benefit from mangrove and coral reef							
2	Panggang Is. Village	0	1	1	4	60	31	97
	Kelapa Is. Village	0	0	1	4	84	72	161
	Harapan Is. Village	0	0	1	1	29	23	54
	Tidung Is. Village	0	7	1	7	54	43	112
	Pari Is. Village	0	0	1	1	33	17	52
	Untung Jawa Is. Village	0	0	0	0	14	24	38
	Total	0	8	5	17	274	210	514
	Percentage	0	1.56%	0.97%	3.31%	53.31%	40.86%	100%
2	Fishing should be restricted in certain areas							
3	Panggang Is. Village	0	7	29	18	29	17	100
	Kelapa Is. Village	1	11	45	17	58	29	161
	Harapan Is. Village	0	5	18	11	12	8	54
	Tidung Is. Village	0	17	33	12	28	21	111
	Pari Is. Village	0	0	22	5	15	10	52
	Untung Jawa Is. Village	0	1	3	9	13	12	38
	Total	1	41	150	72	155	97	516
	Percentage	0%	8%	29%	14%	30%	19%	100%
3	We suppose to support development restriction in some coastal areas so the next generations could have natural environment							
4	Panggang Is. Village	0	1	16	9	49	24	99
	Kelapa Is. Village	0	1	34	33	69	25	162
	Harapan Is. Village	0	5	9	14	18	6	52
	Tidung Is. Village	1	5	9	30	30	37	112
	Pari Is. Village	0	0	15	10	21	6	52
	Untung Jawa Is. Village	0	0	4	5	18	11	38
	Total	1	12	87	101	205	109	515
	Percentage	0%	2%	17%	20%	40%	21%	100%

B. Threats and Level of Coral Reef Exploitation

The survey result concerning people perception is not always the same as they have been implemented. This point is emerging from each islands local social leader's testimonies and from qualitative data of intensive interview and group discussion. According to the information from the local social leaders, it appears difficult to implement the perception of people concerning knowledge and expectation regarding natural resources. This is happening as the present socio-economic situation is difficult. Limited area in the island which could not support the inhabitant's growth rate and economical uncertainty are causing a huge problem in housings. To meet this need, people was doing self-reclamation to extend the land by using corals and sand. In fact, to get land sand i.e. legal mountain rock from the mainland could cost them 5 times higher than taking sand and corals from their environment. And the price is higher for islands far from mainland.

However, not all of the perception and implementation are in contradiction, as people also have positive contribution. There are some other factors concerning specific feature and characteristic in each areas and islands which give impacts and threats on coral reef existance.

1. Perception of People in Southern Seribu Islands Sub-District

Based on the interviews with local social leaders and group discussion, there is awareness amongst people that recognize the detoriation of natural resources around them will give them a severe impact. Nevertheless, the threat on natural resourcs is still happening like as their daily activities are polluting the environment. Water pollution is the main pollution that this people obtain, as islands in Southern Seribu Islands Sub-District are close to mainland. Water pollution is coming from husehold and big industrial wastes around Jakarta and Tangerang. The forms of wastes are both solid (garbage) and liquid (chemical). Physically, the pollution impact could be seen as the water quality is so unclean. According to the local social leaders, plastic waste is causing the failure respiration in mangrove that could lead to death.

Activities that have affecting the existing natural resources condition, particularly coral reef, are destructive fishing and corals and sand minings. Corals and sand minings for construction purposes are a common practice as other materials like river stone is difficult and expensive.

Information transfer activity concerning prohibition of corals and sand minings has been conducted continually, yet according to some respondents, the information was not provided by the experts. Appart from that, some of the respondents consider the information transfer or socialization activities would not cause any benefit if it is not followed by law enforcement for the lawbreaker. In the other hand, the community also considers that they have a full right of the natural resources that surround them.

Generally, rules and regulations concerning natural resources used are written on the billborads across the islands, yet it is less effective as people tend to not mind and understand. And still according to the local social leaders, people consider coral reef will have a self recovery after it has been heavily exploited. They will realize that their assumption is wrong after the destruction is having an impact on them. People in Pari Island Village consider that the law enforcement will run effectively if the law enforcement officers are individuals recruited from the community.

Fishers in Southern Seribu Islands Sub-District also understand that destructive fishing like using explosive material and poison could cause destruction on the coral reef. According to the respondents, fishers from Untung Jawa Island and Payung Island have never use any destructive catching tools like muroami, explosive material, or poison to fish. Fishers from Payung Island have a proverb of: *Feeling full today, tomorrow our kids can not eat* which prevents them from destructing the coral reef around. According to the fishers from Untung Jawa and Payung Islands, it is outsider fishers who practice destructive fishing in their environment. Fishers from Lancang and Pari Islands are also claimed that they are never using poison for fishing activity.

Based on the interviews, it could be summarized that destructive fishing practices, like muroami or trawl, are carry out by fishers from outside Seribu Islands (for example: from Tangerang). Destructive fishing practices using explosive material

and poison generally practiced by fishers outside of Seribu Islands and Panggang Island.

2. Perception of People in Northern Seribu Islands Sub-District

As people in the Southern Seribu Islands Sub-District, most of people in the Northern Seribu Islands Sub-District have also recognize the possible impact on them if the natural resources around them are deteriorated. However the threats are still going on as they keep practicing the destructive fishing.

Coral reef used in Panggang Island Village is mainly carrying out by the community. Consumption fish and ornamental fish fishers are the foremost community groups which use the coral reef intensively. Ornamental fish fishers are collecting ornamental fish and marine biota as requested by supplier; however the fishing frequency is frequent. Beside, corals and sand minings for construction purposes are a common practice as Panggang Island is the most inhabited island in Seribu Islands. The high density of inhabitants in Panggang and Kelapa Islands is also causing pressure to the coral reef and other ecosystem due to household waste i.e. unorganic garbage like plastic, etc.

Coral reef used by Kelapa Island Village people for fishing is concerning as high. However they acclaimed that they never practice any destructive fishing like using trawl and explosive material, and such things are only practiced by outsider fishers i.e. from West Java. This thing could happen as Kelapa Island Village waters are openly accessed by fishers from outside.

As for Harapan Island Village people, their main perception of the coral reef is as the place or house for the fish. If coral reef is deteriorated then the fish stock will be diminished. Poison (potassium cyanide) using could destroy corals and diminishing the fish which live around so, fishers would get any difficulties in fishing around the shore and have to sail far for fishing. Sailing far for fishing is related to the higher cost of fuel.

According to the interviews with local social leaders in Harapan Island, it is known that coral reef used activities, practiced by fishers and miners, in the island are

considered to be moderate. It is also admitted that corals used are dead corals and the level of coral mining is not intensive as construction work frequency is low (average number of once in a year). Corals use for house foundation purpose or floating-net ballast is not employ anymore and it is replaced by cone block.

According to the youth leader in Sebira Island, people awareness on natural resources conservation is sufficient enough. For cutting down a tree, people have to ask for permission from the smaller neighborhood chief who will pass this information to the bigger neighborhood chief. People are also aware that corals mining could cost them any suffer as there will be no wave barrier to protect them.

There is a perception that corals taken are dead ones, while corals that could function as wave barrier are strong corals that live in the gorge to the deep sea. This perception makes people consider the coral reef around Sebira Island is not in severe condition, even the mining is exist. However, according to the navigation officer in Sebira Island area, coral mining activities are sufficiently high. This is proved by the lighthouse condition that can not stand upright anymore as the result of corals and sand minings throughout the island i.e. from the land toward the chasm. Beside, mangrove logging activities are causing sea water infiltration to the island. This has caused an impact of malaria occurrence recently.

Nowadays, coral reef use which carrying out by people outside Seribu Islands is rare, even coral reef fishing and sand mining were practiced by fishers from Tangerang and Tasikmalaya. In present, both Sebira Island's inhabitants and outsiders have to inform if they plan to fish outside the settled waters border, and they have to inform the tools used to fish. Trawler and explosive material are mainly used by fishers from Tangerang and Indramayu, and they will be detained by law enforcement officer if they were caught in the act. Sebira Island people have had awareness to report any destructive activities practiced by outsider fishers.

3. Perception of Stakeholder on the Threats and Level of Natural Resources Exploitation in Seribu Islands, and on the Natural Resources Management

Experience is also take part in constructing their perception concerning the importance of conservation. The Sepa Resort Island official stated that the implementation of conserving natural resources should be settled between local

community and the company. This case was emerging as the national park official had ordered them to plan mangrove in Sepa Island. At that time, the Sepa Resort Island official had perception of mangrove as dirty, not beautiful, and will cover the white sand or will become mosquito nest. Nowadays, natural resources conservation becoming important, as it could protect the island and become a selling point to the tourist.

A well-preserved corals does not always mean that it is strictly prohibited to use or taken as the corals are also have a direct economical value. This perception is come from AKKII, the association of coral reef exporters. As for the implementation, the corals can not be exploited inadvertently concerning their status as protected animal.

Almost all the stakeholders stated that natural resources should be preserved, and it is shown in their programs and activities that have orientation on it. Even though not all of the stakeholders are having knowledge about natural resources, specifically coral reef in Seribu Islands, they are still considering a good management of natural resources is needed.

Zonation management set up by Seribu Islands Marine National Park is considered as ineffective and rigid for some stakeholders. According to the NGO called Kalpataru, the ineffective management conducted by the national park is concerning the socialization factor. They consider the socialization that has been performed by the marine national park is still lacking particularly concerning to which one could be taken and which not.

UPT and Sepa Resort Island official state other opinions concerning the management. They think the work that has been conducted by the marine national park is too rigid. They wish that the marine national park activities should be performed in a flexible ways. This is different from the local government administration, which has the same awareness and programs of marine protected area, yet the government has not performed it rigidly.

According to the stakeholders, an ideal form of marine protected area should be rehabilitate and protect the corals' growth. This activity could be performed by

asking the community to take part on the management. However according to the tourism service, management activity should also involve other stakeholders like NGO and government, and implemented with honesty and goodwill. This informant's perception is only based on government's project oriented. Apart from that, implementing a management system required a term of references amongst the stakeholders.

C. Natural Resources Condition

Through this survey, the respondents were also asked concerning the present natural resources condition with the condition of 10 years earlier. Most of the respondents in Seribu Islands (63.11%) stated that the mangrove ecosystem condition has been decreased, and some of them (15.31%) stated that the condition is remaining the same. 15.08% respondents stated that they do not know about the present mangrove ecosystem condition. These respondents are people who lived with no mangrove ecosystem around them.

Most of the respondents (72.35%) are also consider the coral reef condition is decreasing comparing to 10 years earlier. 11.96% stated that the condition is static and 9.22% stated that they do not know. Only 6.47% respondents stated that the coral reef condition around them is improving.

Most of the respondents (46.36%) are stated that sea grass bed ecosystem condition in Seribu Islands has been decreased compare to the condition 10 years earlier. 29.55% stated that the condition is static and 18.42% stated that they do not know about the condition. Only 5.67% stated that the sea grass bed ecosystem is improving.

The same tendency is also arise on people's perception concerning freshwater condition in their island.

Table 30. Perception of Respondents on Natural Resources Condition

No	Natural Resources Condition	Do Not Know	Static	Improved	Decreased	Total of Respondents
1	Mangrove					
	Panggang Village	11	5	0	8	24
	Kelapa Village	17	24	10	105	156
	Harapan Village	4	11	6	28	49
	Tidung Village	26	17	6	63	112
	Pari Village	4	8	2	38	52
	Untung Jawa Village	3	1	4	30	38
	Total	65	66	28	272	431
	Percentage	15.08%	15.31%	6.50%	63.11%	100%
2	Coral Reef					
	Panggang Village	8	9	3	77	97
	Kelapa Village	12	20	11	118	161
	Harapan Village	7	9	5	30	51
	Tidung Village	10	14	7	80	111
	Pari Village	7	7	2	36	52
	Untung Jawa Village	3	2	5	28	38
	Total	47	61	33	369	510
	Percentage	9.22%	11.96%	6.47%	72.35%	100%
3	Sea Grass Bed					
	Panggang Village	12	46	0	37	95
	Kelapa Village	33	36	7	81	157
	Harapan Village	13	7	2	22	44
	Tidung Village	20	31	14	43	108
	Pari Village	7	18	2	25	52
	Untung Jawa Village	6	8	3	21	38
	Total	91	146	28	229	494
	Percentage	18.42%	29.55%	5.67%	46.36%	100%

Table 30 continue

No	Natural Resources Condition	Do Not Know	Static	Improved	Decreased	Total of Respondents
4	Fresh Water					
	Panggang Village	6	26	5	60	97
	Kelapa Village	33	36	7	81	157
	Harapan Village	3	12	8	26	49
	Tidung Village	7	53	4	47	111
	Pari Village	5	18	8	21	52
	Untung Jawa Village	4	20	8	6	38
	Total	58	165	40	241	504
	Percentage	11.51%	32.74%	7.94%	47.82%	100%

The quantitative data compiled from the community via questionnaire is not far from qualitative data collected from intensive interviews with local social leaders. Key leaders in Untung Jawa Island stated that the present natural resources condition is not the same as 10 years earlier. This is mainly caused by the increase number of fishers (increasing fishing activities) and coral reef deterioration. Coral reef deterioration is caused by destructive fishing (using explosive material or poison), pollution, and corals mining. Mangrove vegetation condition is decreasing about 5% each year, coral reef is significantly decreasing to 75% compare to the 10 years earlier, and fish caught is decreasing to 20%.

Respondents who lived in Tidung Island and Panggang Island are not completely understand concerning mangrove ecosystem condition so, most of them answer as 'do not know'. According to the respondents in Panggang Island, the coral reef condition in Panggang Village area is entering the stage of apprehensive. One of the informers said that actually people of Panggang Island realized about the impact that they created to the coral reef. The coral reef deterioration condition has affecting on their income if it compares to the years before. However there is a perception that said "*the sea is belong to the God so, it could be owned together*", which make people tend to not care in preserving the coral reef. And as always, economical difficulties have always put people in a dilemmatic situation.

Based on the interviews with some local social leaders, it is known that the coral reef condition in Kelapa Island has also been deteriorated. Ornamental fishing

fishers from outside Kelapa Island somehow cause this decline, which use poison. The coral reef deterioration is also caused by coral mining activities. The coral reef condition in Harapan Village is also decreasing, which caused by the using of muroami, explosive materials, and potassium poison in fishing activities; and also coral mining for construction purposes.

1. Perception of Stakeholders on Natural Resources Condition in Seribu Islands

Stakeholders are having almost the same perception concerning natural resources specifically coral reef in Seribu Islands. The Kalpataru-NGO and exporters stated that the coral reef condition is deteriorated. However, exporters claimed that they received the information from the fishers who stay mainly on the sea. Tourism sector also claimed that they do not know about the coral reef condition in Seribu Islands. This indicates that tourism service activities have not touched the marine tourism especially deep-sea panorama.

UPT Pari Island official that claimed the coral reef condition in Seribu Islands is generally in well condition especially in the core and buffer zones states other perception. Southern Seribu Islands is deteriorated while the only well condition coral reef present in this area is in Tikus Island.

According to the UPT official, not all the coral reef condition in Seribu Islands is deteriorated. Severe deterioration is present in the southern part except in Tikus Island, while condition in the northern part is considered as good.

a. Perception of People in Southern Seribu Islands Sub-District

Generally, people in Southern Seribu Islands Sub-District are not fully comprehend regarding to the area borders and zonations in Seribu Islands Marine National Park. This is possibly caused as their island and waters are not included to the marine national park so, their knowledge concerning it is very low.

Stakeholders involved in regulating coral reef used around Untung Jawa Island is government officials i.e. BKSDA (Natural Resources Conservation Body), Forestry Department, and Husbandry, Fishery, and Marine Service of DKI Jakarta. Local government of Seribu Islands Administration is continuously conducting information

transfer concerning laws that related to coral reef management, but apparently the rate of people engagement concerning coral reef used is still low.

Other stakeholders involved in the coral reef used in Tidung Island, as well as direct and indirect, are Fishery Service and Tourism Service of Seribu Islands Administration, Village Council, LETS (Economic Institution of Tidung Welfare), and universities (IPB, ITB, UT, UI, and Trisakti). LETS is the institution organized by Seribu Islands Administrative District which offering loan to the community. There is also an NGO called KIH (Green Indonesia Club) which take part in transferring information concerning environmental preservation through environmental education in schools.

Natural resources preservation activities in Tidung Island have not been implemented seriously. The existing regulations are only written in billboards. Activity related to the environment issue is limited to the housing environment i.e. Clean Friday Program which only lasted for few weeks. Government's planned programs which have impact on the community concerning coral reef used are information transfer program and training of coral reef preservation, however there is no actual action after these programs ended.

In Pari Island, there is not many stakeholders involved in regulating coral reef used. However, there is institution called Pokmaswas (Group of Community Watch) in this island where people are actively taking part to assist government in watching all activities concerning security in the land and the sea. This institution has 20 members from community in Seribu Islands. The members will inform officer concerning activities that could harm security. There is also UPT for Pari Island Competency Development Studio under Indonesian Science Institution - Oceanology Development Centre) which has a research site and training centre in Pari Island. However this UPT does not have any programs that directly touch the community, except for some small programs which involved community in environment education and ecotourism.

b. Perception of People in Northern Seribu Islands Sub-District

Government institutions related to the natural resources issues in Northern Seribu Islands Sub-District are Local Government of Seribu Islands Administrative District, Seribu Islands Marine National Park, and Husbandry, Fishery, and Marine Service of DKI Jakarta.

Apart from government institutions, NGO role in Panggang Island has been recognized by the community. NGOs that have community program i.e. Bina Lestari Foundation, KIH, and Terangi. Bina Lestari Foundation is an NGO formed by local community in Panggang Island Village, which has objective to raise community awareness concerning the impact of coral reef deterioration. However, this organization has not working actively recently. Other local institution has been formed by Husbandry, Fishery, and Marine Service of DKI Jakarta, is Marine Protected Area Management Institution. The members of this organization are people from Panggang Island Village, which have activities in coral reef preservation and coral transplantation.

Other institutions apart from the government which play role in Kelapa Island Village area, even though they do not have particular program concerning environment issue, are HMPS (Seribu Islands University Student Group), Walhi, and KIH. Recently, the community has also developed a system concerning Community Watch called Siswasmas which working on various issues like natural resources deterioration, drugs controlled, brawls, etc.

In present, people in Kelapa Island Village consider that they have been involved in government program planning, and also have been asked to participate in trainings concerning coral reef preservation and tourism related programs (i.e. dive guide training). Seribu Islands Administrative District official is starting to cooperate with people and NGOs to design activities that support tourism sector. Tourism sector that would be developed is a marine tourism activity that related to under water (coral reef) panorama.

In Harapan Island Village, there is a planned program concerning direct and strategic coral reef resources used, which designed by government institution. However these programs are only sectoral related. For example, there is grouper

cultivation program using keramba organized by Husbandry, Fishery, and Marine Service of DKI Jakarta.

There is also a community watch system or Siswasmas, which formed to watch the community-based marine resources used. However this system has not been functioned effectively. NGO role like Walhi, in coordination with Marine National Park has conducted information transfer concerning coral reef preservation. Environment Ministerial Office (KLH) and local government of DKI Jakarta have also conducted mangrove plan program. However, there is no further action concerning mangrove nourishment so, there are many mangrove died after. Sebira Island Village Council is also known to have awareness concerning the existing natural resources preservation. However, this council is not popular amongst other community groups.

Coral reef used and management activities conducted by stakeholders were executed based on different purposes. However, the vision concerning natural preservation amongst stakeholders are not much different; but in the program implementation, activities and practices somewhat different from or even against the community.

Data gathered from the interviews with the following stakeholders have given a general description concerning their perception on natural resources, how they have worked and experiences that they have to this date.

D. Programs and Activities

There are some institutions, which represent the stakeholders in Seribu Islands i.e. Kalpataru Foundation, Sepa Resort Island, UPT Pari Island, Tourism Service, and AKKII (Association of Corals and Ornamental Fish Collectors). They have different vision and activities in Seribu Islands area; however they have a similarity in aspect of environment.

Kalpataru Foundation has a clear vision to preserve the environment and managing natural resources used for community welfare. In the other hand, the Marine National Park has almost similar visions i.e. protection, preservation, and used (particularly used in marine tourism sector). In the exporter point of view, they

are having an eye to business profit from selling the corals and ornamental fish abroad. However, not all of the exporter's activities are exploiting the natural resources. According to AKKII, the association for the exporters, corals mining is carrying out based on the quota system. The quota system was made for restocking purpose where the implementation is cooperated together with LIPI as the legal scientific authority that set up the quota.

Vision and mission are reflected in policies, programs, and activities conducted in the field. Policies and programs executed by stakeholders are various which have various scales also. Large-scale policy like zonation system made by Seribu Islands Marine National Park, which has been legalized since January 27th 2004, is dividing the area into some zones. The zones are: core zone, buffer zone, used zone, tourism zone, and inhabitant zone. According to the head of the Marine National Park, inhabitant zone is the most open and flexible zone for some activities i.e. for mariculture/ cultivation, fishing, etc. Inhabitant zones in Seribu Islands Marine National Park are Pramuka, Panggang, Kelapa, Kelapa Dua, and Harapan Islands.

Other programs conducted by other stakeholders are covering tourism promotion and activities, to activity related in community outreach such as corals transplantation, women empowerment, and diving training. Other programs are activities that combine education aspect, ecological aspect, and tourism aspect, which conducted by UPT in Pari Island.

Activities concerning ecological and tourism aspects are not only conducted by government official, but also conducted by resort island. According to the Sepa Island manager, there is a slight change of vision in their program that is not only emphasizing in business aspect; however this program becomes the number one program for the resort. In the past, they consider the mangrove ecosystem as something to be avoided or diminished. However, it is changing now. They now consider it as an important factor in preserving their resort island from wave action. This year, Sepa Island plans to replanting 2,000-3,000 mangrove trees, which the execution is involving various stakeholders including their guests. According to the Sepa Island manager, this conservation activity needs a lot of fund. And to make it continuously happen, they have to bring as many visitors as they can. Minimum numbers of 30 visitors, which usually are visitors from

company or tour groups, can only execute this program. Other ecological sound program in Sepa Island is turtle rearing.

The corals and ornamental fish traders are having almost similar activities that have been regulated in AKKII program. For this activity, the entrepreneurs are acting as investors to set up corals culture in Panggang Island. According to the research and development manager of AKKII, this activity becomes a blessing in disguise concerning their company license. One of the requirements to extend the three-year company license is with conducting this kind of culture activity.

1. Perception of Stakeholder on Natural Resources

Stakeholders are having almost the same perception concerning natural resources specifically coral reef in Seribu Islands. The Kalpataru-NGO and exporters stated that the coral reef condition is deteriorated. However, exporters claimed that they received the information from the fishers who stay mainly on the sea. Tourism sector also claimed that they do not know about the coral reef condition in Seribu Islands. This indicates that tourism service activities have not touched the marine tourism especially deep-sea panorama.

UPT Pari Island official that claimed the coral reef condition in Seribu Islands is generally in well condition especially in the core and buffer zones states other perception. Southern Seribu Islands is deteriorated while the only well condition coral reef present in this area is in Tikus Island.

Experience is also take part in constructing their perception concerning the importance of conservation. The Sepa Resort Island official stated that the implementation of conserving natural resources should be settled between local community and the company. This case was emerging as the national park official had ordered them to plan mangrove in Sepa Island. At that time, the Sepa Resort Island official had perception of mangrove as dirty, not beautiful, and will cover the white sand or will become mosquito nest. Nowadays, natural resources conservation becoming important, as it could protect the island and become a selling point to the tourist.

According to the UPT official, not all the coral reef condition in Seribu Islands is deteriorated. Severe deterioration is present in the southern part except in Tikus Island, while condition in the northern part is considered as good.

A well-preserved corals does not always mean that it is strictly prohibited to use or taken as the corals are also have a direct economical value. This perception is come from AKKII, the association of coral reef exporters. As for the implementation, the corals can not be exploited inadvertently concerning their status as protected animal, and AKKII has made a quota regulation to support this.

2. Perception of Stakeholders on Natural Resources Management

Almost all the stakeholders stated that natural resources should be preserved, and it is shown in their programs and activities that have orientation on it. Even though not all of the stakeholders are having knowledge about natural resources, specifically coral reef in Seribu Islands, they are still considering a good management of natural resources is needed.

Zonation management set up by Seribu Islands Marine National Park is considered as ineffective and rigid for some stakeholders. According to the NGO called Kalpataru, the ineffective management conducted by the national park is concerning the socialization factor. They consider the socialization that has been performed by the marine national park is still lacking particularly concerning to which one could be taken and which not.

UPT and Sepa Resort Island official state other opinions concerning the management. They think the work that has been conducted by the marine national park is too rigid. They wish that the marine national park activities should be performed in a flexible ways. This is different from the local government administration, which has the same awareness and programs of marine protected area, yet the government has not performed it rigidly.

According to the stakeholders, an ideal form of marine protected area should accommodate the rehabilitation and protection for the corals' growth. This activity could be performed by asking the community to take part on the management. However according to the tourism service, management activity

should also involve other stakeholders like NGO and government, and implemented with honesty and goodwill. This informant's perception is only based on government's project oriented. Apart from that, implementing a management system required a term of references amongst the stakeholders.

E. Formal and Informal Access to the Coral Reef

Informal regulation concerning community used right of the coral reef in Southern Seribu Islands Sub-District was not discovered. There should be an existing regulation in village or neighborhood levels, however no initiative was performed by the community or village official to tracking down or compiling this issue.

There are some local government regulations identified by the correspondent i.e. Perda No. 8 year 1980. This local government regulation is a regulation that forbidding the use of potassium cyanide poison, and corals and sand minings for any reason. Perda No. 11 year 1998 is a regulation concerning the use of materials taken from the sea. Other local government regulation is regulating the sand mining, which explain that sand allowed to take is the sand in a 100m distance from shore toward the sea. There is also another law dated year 1990 from Forestry Department, which forbidding corals and sand minings for commercial purpose. Nowadays, the community has asked the government to revise the law and regulation.

Other formal regulation is the restriction in using corals for government constructions. Regulation declared by Husbandry, Fishery, and Marine Service of DKI Jakarta is restricting the uses of bombs in fishing and semi-permanent cage (bagan tancap) around the shore. However, according to the correspondent, the regulations are only written in billboard with no law enforcement that supporting it.

In Northern Seribu Islands Sub-District, access to the coral reef is also limited by National Park zonation area. People have regret concerning the zonation process, as they were not actively included in the process. Fishers consider that their activity to have a livelihood is becoming limited.

Most of the people in Northern Seribu Islands Sub-District consider the transformation of Seribu Islands to administrative district is limiting their activities especially in the coral reef used regulations sector. According to one of the correspondents, government regulations concerning coral reef used are not developed by clear implementation in the field. Most of the regulations implemented by stakeholders are considered as 'floating' by fishers. People feel that there is no clear coordination amongst officials from services involved in the field. Lack of law enforcement has made people awareness in obeying the rules becomes low.

In the other hand, the community in Northern Seribu Islands Sub-District is also regretting the lack of informal regulations amongst them concerning the community right in exploiting the coral reef. Therefore, every fisher from other islands in Seribu Islands and outsider fishers could fish freely in Seribu Islands area without restricted by any regulations or certain area borders. This is also supported by the thought of "The sea is belong to the God so, it is owned together".

In Kelapa Island Village, there is an agreement that stated that the community would execute fishers who use bombs or potassium poison. The execution could be in form of burning or sinking the boat used by the fishers. However in reality, fishers from Panggang Island who use potassium poison around Kelapa Island waters are free from any execution.

According to the correspondent in Harapan Island Village, fishers disobey regulations concerning area zonation borders in the Marine National Park. The fishers still fishing in the Core and Buffer zones i.e. in Penjaliran and Belanda Islands. If the Marine National Park officials caught them in the act, penalty given is only in form of fine or unwritten warning. According to the correspondent, the Marine National Park officials are allowing fishers to fish in Protection Zone as long as they would not use bombs. However, fishers who fish around resort islands usually are being pushed out.

Informal regulation in Harapan Island Village is allowing the community to perform corals and sand minings that taken from 250m distance off the shore, and it is only for private house construction purpose, and also no minings along the shore line. This regulation has been discussed and approved by the Marine National Park

authority, as the community there is considered too poor to buy the construction materials.

In general, there is no informal regulation that controlled issues related to access and monitoring of coral reef used in Sebira Island. There is no participation from the community concerning coral reef management. So it could be said that people in Sebira Island have not settling down their problems and conflicts concerning coral reef management yet.

According to the navigation officer of Transportation Department in Sebira Island, the increase of immigrant in this island had made the inhabitants feel as they owned the island. Automatically, violation in corals mining is frequently occurs. There was an agreement made between navigation official and the community. The community has to ask for permission to take the corals and fishing. There was also an agreement that said if the community obtained the catch yield of 100kg, then the navigation official would get 10kg per boat. However, all of those agreements are not working anymore, as the community refused it. Nowadays, there is an informal regulation amongst the community. Whoever banning the people from mining the corals will become the enemy of the community, therefore navigation official does not have any authority anymore.

Actually, if navigation official could show the temporary-stay license and company license that has been applied by the community, then it is shown that the community does not have any right to stay or own the Sebira Island. Floating-net activities and corals mining have decreased coral reef condition around Sebira Island. The mining activity is performed depend on the season. During east monsoon, corals mining are performed in the west part of the island and vice versa.

F. Local Tradition Related to Coral Reef

Tradition related directly to the coral reef in Untung Jawa Island was not discovered, however the community has tradition to clean up the village every Friday. In reality, not much people is taking part in this activity due to their tight schedule.

Community tradition in Tidung Island is performing ritual when the chief of merchant boat is leaving the home. During this certain time, people in the house could not ask the sailing destination, as it is considered as a bad luck.

Apart from that, there are some beliefs amongst Tidung Island community i.e.:

- No fish ordering as it would lead to no fish caught
- Performing praying ceremony for a new boat
- Praying certain verses before fishing
- Boat making has to be adjusted to specific form in a certain rituals.

Before 1975, there was *ruwatan* or sea ceremony tradition in Panggang Village, which held every once a year. This ritual is considered as gratitude ceremony by drifting goat's head as a gift to the sea. After 1975, this activity is considered as opposing Islamic teachings.

Also in Kelapa Island, the sea ceremony was also performed there. Usually the ceremony is accompanying with wayang pupet show and ronggeng dance, and charity ritual where people walk around the kampong performing sholawat verses. This is a regular activity every year in Month of Maulud (3rd month in Islamic lunar calendar). This activity is performed to get blessings for the owners. However this tradition is considered opposing Islamic teachings after some times.

Old tradition or ritual in Harapan Island Village is the restriction to ask fishers concerning their sailing destination. This tradition has been replaced by a small gathering activity or reciting Qur'an before the fishers are going for sailing.

CHAPTER V

CONCLUSION

The socioeconomic research in Seribu Islands, which using household survey, in-depth interview, and focus group discussion methods had presented some conclusions as describe below:

A. Seribu Islands Community Profile

Inhabitants of Seribu Islands who contribute as research samples are generally coastal community with urban characteristic that spend most of their live in there. The community characteristics are shown from the main respondent working profiles. This profile supports the common perception that stated Seribu Islands is an urbanized area, as shown from high variation of livelihoods. For example, many of the inhabitants are working as civil servant, private sector employee, and entrepreneur. This variation means that all access; which could improve capability, skill, and capacity level of individual or community; are open. Information and communication facilities are the main tools in improving their economic issues.

Other urbanized characteristic is shown in specialization of livelihood of certain individuals. These individuals are exchanging their livelihood outcome based on their skill and need. In general, these livelihoods are not subsistence oriented anymore but slightly move toward profit market oriented. This condition could lead to high natural resources used activities in reaching the work target or income based on the varied needs of each household. However the used activities have a few obstacles for example, unpredictable natural conditions that cause limited and unpredictable catching yield. Other factors are high operational cost and capital needed to run the enterprise to a bigger scale.

Inhabitants in Seribu Islands are consisting of various ethnicities. The main ethnic are Mandar (originated from Sulawesi) and Banten (West Java), which then collided into one new identity (without ever referring to their origin identity) as islander or 'Orang Pulo' as they called it.

B. Types of Livelihood and Income Amounts

The most common livelihood in Seribu Islands is fishers, which consumption fish fishers are the highest. Other fishery livelihoods include are mariculture, ornamental coral and fish fishers, coral mining, investors, ornamental coral and fish suppliers, and collectors.

Main livelihood types in Seribu Islands that describe as 'others' are considered as common occupations for the community in Seribu Islands. Some of these occupations are: civil servant, private sector employee, teacher, religious teacher, daily need merchant, and various kinds of service and labor (taxi operator, cleaning service worker, room boy, massage service, government cleaning service, etc.).

The income amounts of inhabitants in Seribu Islands are sufficiently equal with their expenses. Based on the quantitative survey, the income amounts of Seribu Islands inhabitants are under Rp900,000 per month; as this number is the total amount of main and additional incomes.

Compare to the national level i.e. income per capita, the prosperity level in Seribu Islands is considered as relatively low. The national income per capita in year 2003 is Rp9,600,000 or Rp800,000 per month while; for 2004 is Rp10,600,000 or around Rp883,000 per month.

This prosperity level is causing loan and credit activities become common in Seribu Islands. For them, to survive by depending on the natural resources should be followed by certain strategies. And these loan and credit activities are the excellent strategy to help them survive. According to the survey, the community main expense priority is for food and followed by paying the debt or credit.

C. Types of Coral Reef Used by the Local Community

Various stakeholders with various interests perform coral reef used in Seribu Islands. First group is the one that has economic motive i.e. consumption fish fishers, mariculture practitioners, ornamental coral and fish fishers, coral miners, investors, merchants, ornamental coral and fish suppliers, and collectors. Second group is the one that has economic motive from outside of the community of Seribu

Islands. This group consists of resort entrepreneurs, marine tourism operators, mariculture entrepreneurs, and ornamental coral and fish suppliers. The last group is the one that has not always something to do with economic motives i.e. government and NGOs. In general, the interdependence between fishers and coral reef are sufficiently high i.e. more than 50%. This high number mainly found in Kelapa, Tidung, and Pari Villages.

Geographic condition of Seribu Islands, which consists of vast small islands, is also affecting the existing natural resources used level. This condition is present in almost every island where the land is limited and unable to provide housing need. In the end, this condition leads to a great coral and sand mining level for beach reclamation and for construction material to provide community housing.

D. Community Perception on Their Natural Resources

In general, almost all respondents in each village have understood the benefit of coral reef i.e. as land protection from the storm, fishing site, and diving. More than 70% respondents in Panggang Island and Untung Jawa Island Villages are agree that development performed in coastal area should be restricted to prevent the coral reef degradation while; only 46% in Harapan Island Village is agree with the idea.

The community knowledge concerning coral reef benefit is sufficiently high. However, it is not easy to implement their knowledge of conservation to the daily life. This is happen, as they have to face the fact of their low income, which force them exploiting the existing natural resources. A good example for this case is when the community performs coral and sands mining for construction material to build a house, as the result of high price of construction material in the city/ main land.

According to the survey data, fishers' activities related to coral reef used is fewer than 50%, with Harapan Island Village as the highest number. However, from the information gathered from interviews with local social leaders, it is mentioned that coral reef used is intensively occurring in household level. This used is occurring in the high-density villages where coral reef is taken for construction material. The

high-density villages are Panggang Is., Kelapa Is., and Pari Is. Villages, which show a significant high-density growth during the last few years.

If the opinion from local social leaders is analyzed by highlighting household dependence level to the coral reef and existing law enforcement, with score from 1 to 5, the result analysis are as follow:

Table 31. Household Dependence Level to the Coral Reef, and Existing Law Enforcement

Village	Extractive Coral Reef Collecting and Establishing Regulation	Highest Score	Actual	Percentage
Untung Jawa Island	<ul style="list-style-type: none"> Coral taken is coral that live in front of the house area for housing foundation. Law enforcement is conducted by PHPA (forestry dept.) in tourism area and village authority however; it is concerning as mild or light. 	5	2	40
Tidung Island	<ul style="list-style-type: none"> Coral for housing foundation is taken directly from the sea. No law enforcement. 	5	3	60
Pari Island	<ul style="list-style-type: none"> Coral for housing foundation is taken directly from the sea. Law regulation and enforcement are present in a family mode. 	5	3	60
Panggang Island	<ul style="list-style-type: none"> Coral is taken directly from the sea based on buyer's order. No law enforcement. 	5	3	60
Kelapa Island	<ul style="list-style-type: none"> Coral is taken directly from the sea and it is not based on buyer's order. No law enforcement. 	5	3	60
Harapan Island	<ul style="list-style-type: none"> Coral reef used is relatively low. 	5	1	20
Total		30	15	50

Local social leader perception, which worrying the coral reef used level is at its tolerance line, could be proved by quantitative data. Most of the Seribu Islands community stated that natural resources condition i.e. coral reef and mangrove is

declining comparing to 10 years earlier; and this condition also contributes to the decreasing of catching amount.

The condition that presents high level of community dependence to the coral reef and mild law enforcement in Seribu Islands is becoming very apprehensive particularly in the future. One of the problems that should be solved is improving the sea transportation facilities. Other issue is fisher prosperity in particular or Seribu Islands community in general. Efforts to increase the fisher prosperity i.e. decreasing fishing operational cost and monitoring fish selling price to prevent the fishers from a big financial loss as they are the flagship of the fishery trade.

Ecological condition like sea waters and coastal ecosystem conditions is also affecting community life. Southern Seribu Islands Sub-District, which located in Jakarta Bay and near the mainland of Jakarta Metropolitan City, has to deal with big city problems. The main problems that came from Jakarta and its suburb area are population booming and household and industrial wastes residue. These problems are affecting the sea waters condition particularly around Untung Jawa Island and Pari Island Villages. Only in Tidung Island Village, the sea waters is still relatively in a good condition comparing to the two other villages; as Tidung Island Village is located at far north.

Northern Seribu Islands Sub-District, which consists of Panggang Is., Kelapa Is., and Harapan Is. Villages, is also has problems that threatened their coastal ecosystem. High-density population as there is no more eligible island to be inhabited is the main problem for islands in this sub-district. The high-density level particularly in two villages i.e. Panggang Is. and Kelapa Is. Villages is causing coral mining activities for beach reclamation to provide housing. Apart from that, the community livelihood as fishers is highly dependent on nature condition; and as the competition is higher in coral reef used and other coastal ecosystem, the economic level becomes lower. This leads to senseless coral reef used activities e.g. fishing by using explosive material and potassium cyanide poison, which practiced to obtain a lot of yield in a quick and easy work without considering the sustainable of the existing natural resources.

E. Level of Coral Reef Used

If the two sub-districts are compared, then the coral reef used level by fishers in Northern Seribu Islands Sub-District is higher. The reason is that because the sea waters condition in Southern Seribu Islands is not supportive; and urges the fishers particularly from Tidung Is. and Pari Is. Villages to fish outside the sub-district. Many of the fishers from the two villages are involved in a large-scale muroami enterprise that fish in Bangka and Belitung sea waters.

In Untung Jawa Island Village, as the area is the nearest from Jakarta, not many of the inhabitants are working as fishers. Member of the community who have this occupation had conducting in for 14 to 27 years, which means that number of new fishers is very low. Most of the Untung Jawa community is having occupation related to tourism and other enterprises.

Fishers are the most professions in Seribu Islands, which has direct contact to the sea. This profession is distribute in every village with the highest percentage is in Kelapa Island Village. Most of the fishers have fishing area inside Seribu Islands (around 80 to 100%). Majority of Seribu Islands fishers is operating in deep-sea waters and followed by the coral reef. Collection or catching scale is mostly artisanal and followed by subsistence scale (for providing household daily need). Industrial and small scales are a non-dominant category.

ACKNOWLEDGEMENT

TERANGI Foundation would like to thank all that had been cooperated and supported to this socioeconomic research activity. Special acknowledgment for Kabupaten Adm. Kepulauan Seribu (Seribu Islands District) and Taman Nasional laut Kepulauan Seribu (Seribu Islands Marine National Park), which provide valuables advise and input to this research; and to NOAA (National Oceanic Atmospheric Administration) that had supported this research with funding and research design manual (based on their publicity on the socioeconomic manual/guidelines for coral reef management).

Other parties that we would like to express our gratitude for providing information and input for the research are: Bapekab (District planning body of Seribu Islands), Dinas Peternakan, Perikanan, dan Kelautan DKI Jakarta (Farming, fishery and marine division of Jakarta Province), AKKII (Indonesian Coral, Shell, and Ornamental Fish Association), and other stakeholders that kindly helped us in delivered information that useful for this research/survey. We also would like to thank our core team, supporting team, and field surveyors, which conducting the research appropriately, and also Seribu Islands community that had been very supportive and cooperative in the field.

References

- Bowen, Earl K. & Martin K. Starr. 1982. *Basic Statistics for Business and Economics*. McGraw-Hill Inc., USA: xvii + 730 p.
- Bunce, L., P. Townsley, R. Pomeroy & R. Pollnac. 2000. *Socioeconomic Manual for Coral Reef Management*. AIMS, Townsville: xi + 251 p.
- Bunce, L. & B. Pomeoroy. 2003. *Socioeconomic Monitoring Guidelines for Coastal Managers in Southeast Asia: SocMon SEA*. WCPA, Townsville: 82 p.
- Burke, L., E. Selig & M. Spalding. 2002. *Reefs at Risk in Southeast Asia*. World Resources Institute, Washington: 72 p.
- Departemen Kehutanan dan Perkebunan, Dirjen PKA, Balai Taman Nasional Kepulauan Seribu. 1999/2000. *Buku Informasi: Kawasan Taman Nasional Laut Kepulauan Seribu*. Departemen Kehutanan dan Perkebunan, Dirjen PKA, Balai Taman Nasional Kepulauan Seribu, Jakarta: iii + 30 p.
- Kelurahan Pulau Harapan. 2004. *Laporan Bulanan Kelurahan P. Harapan Juli 2004*.
- Kelurahan Pulau Panggang. 2004. *Laporan Bulanan Kelurahan P. Panggang Juli 2004*.
- Kelurahan Pulau Pari. 2004. Laporan Bulanan Kelurahan P. Pari Agustus 2004
- Kelurahan Pulau Tidung. 2004. *Laporan Bulanan Kelurahan P. Tidung Agustus 2004*.
- Kelurahan Pulau Untung Jawa. 2004. *Data Monografi Kelurahan P. Untung Jawa Januari - Juni 2004*.
- Kabupaten Adm. Kepulauan Seribu. 2001. *Pemantapan RTRW Kabupaten Administratif Kepulauan Seribu Tahun 2001*.
- Laboratorium Antropologi FISIP UI. 2002. *Lampiran Laporan Akhir: Penyusunan Rencana Kesejahteraan Masyarakat Wilayah Kabupaten Administrasi Kepulauan Seribu*. Jurusan Antropologi FISIP UI, Depok: 217 p.
- LAPI-ITB. 2001. *Laporan Akhir Pengelolaan Laut Lestari: Pendataan dan Pemetaan Potensi Sumberdaya Alam Kepulauan Seribu dan Pesisir Teluk Jakarta*. LAPI ITB: vii + 93 p.
- LPEM-UI. 2003. *Penyusunan Rencana Ekonomi Wilayah Kabupaten Administrasi Kepulauan Seribu*. LPEM-UI, Jakarta: ix + 96 p.
- Tomascik, T., A.J. Mah, A. Nontji & M.K. Moosa. 1997. *The Ecology of the Indonesian Seas: Part One*. Periplus Editions, HK: 642 p.
- UNESCO. 2000. *Reducing Megacity Impacts on the Coastal Environment: Alternative livelihoods and Waste Management in Jakarta and the Seribu Islands*. Coastal Region and Small Island Papers, UNESCO, Paris: 59 p.

Attachment 1. List of Core Team Members

No.	Name	Expertise
1.	Kiki Anggraini S.Si.	Biologist, Project Coordinator
2.	Lydia Napitupulu, MSc.	Environment, Natural Resources, and Development Economist
3.	Siti Nurwati Hodijah, M.Sos.	Coastal and Marine Anthropologist
4.	Yunaldi Yahya, S.Pi	Marine and Fishery Scientist
5.	Mohammad Syahrir, S.Pi	Coral Reef Ecology Scientist
6.	Nugroho Susilo, S.Pi	Resource Management and Facilitator
7.	Agustinus Cahyo Nugroho, S.Sos.	Anthropologist, Project Assistant

Attachment 2. List of Supporting Team Members

No.	Name	Expertise
1.	Yossa A.P. Nainggolan, S.Sos.	Anthropologist
2.	Farma Mangunsong, SE	Economist
3.	Oktovianus Rusmin, S.Sos.	Anthropologist
4	Ir. Sumarto	Head of Seribu Islands Marine National Park (TNKpS)
5	Blessmiyanda	Head of public wealthiness and marine division of Seribu Islands District
6	Ir. Wawan	Farming, fishery, and marine division of Jakarta Province

Attachment 3. List of Field Survey Team

No	Name	Academic Background
1	Agustinus Cahyo Nugroho, S.Sos.	Anthropologist, Project Assistant
2	Yossa A.P. Nainggolan, S.Sos.	Anthropologist
3	Farma Mangunsong, SE	Economist
4	Yunaldi Yahya, S.Pi	Marine and Fishery Scientist
5	Nugroho Susilo, S.Pi	Resource Management and Facilitator
6	Safran Yusri	Undergraduate student from Biology Department at University of Indonesia
7	Alfrido	Undergraduate student from Biology Department at University of Indonesia
8	Budhi	Undergraduate student from Anthropology Department at University of Indonesia
9	Niniek	Undergraduate student from Anthropology Department at University of Indonesia
10	Dwi	Undergraduate student from Anthropology Department at University of Indonesia

11	Ranti	Undergraduate student from Anthropology Department at University of Indonesia
12	Fatma	Undergraduate student from Anthropology Department at University of Indonesia
13	Yenni	Undergraduate student from Anthropology Department at University of Indonesia
14	Winnie	Undergraduate student from Anthropology Department at University of Indonesia
15	Nofive	Undergraduate student from Faculty of Fisheries and Marine Science at Bogor Agricultural University
16	Idris	Undergraduate student from Faculty of Fisheries and Marine Science at Bogor Agricultural University
17	Ruslan	Undergraduate student from Faculty of Fisheries and Marine Science at Bogor Agricultural University
18	Agdalena	Undergraduate student from Faculty of Fisheries and Marine Science at Bogor Agricultural University
19	Beni	Undergraduate student from Faculty of Fisheries and Marine Science at Bogor Agricultural University
20	Guntur	Student from Faculty of Economy at University of Indonesia
21	Destra	Student from Faculty of Economy at University of Indonesia

Attachment 4. List of Field Survey Team at Villages of Panggang Islands

No	Nama	Jabatan
1	Nugroho Susilo, S.Pi	Leader of survey team
2	Oktovianus Rusmin, S.Sos	surveyor
3	Safran Yusri	Surveyor
4	Idris	Surveyor
5	Fatma	Surveyor
6	Nofive	Surveyor

Attachment 5. List of Field Survey Team at Villages of Kelapa Islands

No	Nama	Jabatan
1	Niniek	Leader of survey team
2	Kiki Anggraini, S.Si.	Project coordinator
3	Farma Mangunsong, SE	surveyor
4	Ranti	Surveyor
5	Yenny	Surveyor
6	Ruslan	Surveyor
7	Budhi	Surveyor
8	Guntur	Surveyor
9	Dwi	Surveyor
10	Destra (Menggantikan Kiki Anggraini)	Surveyor

Attachment 6. List of Field Survey Team at Sebira Island

No	Nama	Jabatan
1	Agustinus Cahyo Nugroho, S.Sos	Leader of survey team
2	Yunaldi Yahya, S.Pi	Surveyor
3	Ningrum	Surveyor

Attachment 7. List of Field Survey Team at Villages of Tidung Islands

No	Nama	Jabatan
1	Safran Yusri	Leader of survey team
2	Dwi	Surveyor
3	Victo	Surveyor
4	Alfrido	Surveyor
5	Ningrum	Surveyor
6	Yenny	Surveyor
7	Ruslan	Surveyor

Attachment 8. List of Field Survey Team at Villages of Pari Islands

No	Nama	Jabatan
1	Ranti	Leader of survey team
2	Yossa A.P. Nainggolan, S.Sos.	surveyor
3	Agdalena	Surveyor
4	Beni	Surveyor
5	Niniek	Surveyor
6	Winnie	

Attachment 9. List of Field Survey Team at Untung Jawa Island

No	Nama	Jabatan
1	Agustinus Cahyo Nugroho, S.Sos	Leader of survei team
2	Lydia Napitupulu, MSc.	surveyor
3	Nofive	Surveyor

Attachment 10. The List of Literatures From Secondary Data Search

No.	Title	Author	Note	Type of Book
1.	Potensi Ekonomi Kep.Seribu: Penelitian Transportasi Penumpang, Barang dan Pariwisata. Th. 2001	BPS		HC
2.	Penyusunan Rencana Ekonomi Wil. Kab.Adm. Kepulauan Seribum. Th.2003	LPEM	Final report	HC
3.	PENGELOLAAN LAUT LESTARI: Pendataan dan Pemetaan Potensi Sumber Daya Alam Kep.Seribu dan Pesisir Teluk Jakarta.	Kerjasama - Pemerintah Provinsi Khusus Ibukota Jakarta Badan Pengendalian Dampak Lingkungan Daerah dengan - Lembaga Afiliasi Penelitian Industri ITB	Final report	HC
4.	<i>Reducing megacity impact on the coastal environment. Alternative livelihoods and waste management in Jakarta and the Seribu Islands</i>	UNESCO	Pilot project report	HC
5.	Kerusakan Terumbu Karang di Gugusan Kepulauan Seribu Semakin Parah	Biro Humas dan Protokol Peop.DKI Jakarta	Article	HC
6.	Upaya Tercepat Pulihkan Ekosistem Terumbu Karang	--	Article	HC
7.	Pembuatan Peta Potensi dan Rencana	Kerjasama: - Lembaga	Preliminary report	HC

	pemanfaatan Budidaya Laut di Kel.P.Kelapa.	<ul style="list-style-type: none"> - Penelitian IPB dan Dinas Peternakan, Perikanan dan Kelautan Prop. DKI 		
8.	Pembakuan Kebijaksanaan Pengelolaan Sumber Daya Alam Kelautan DKI Jakarta.	Lembaga Afiliasi Penelitian dan Industri ITB	Preliminary report	HC
9.	Penyelenggaraan & Sarasehan Program Cinta Laut tentang Mamalia Laut dan Penyu. Pulau Bidadari	<p>Kerjasama:</p> <ul style="list-style-type: none"> - Yayasan Nasional Bina Samudra dengan - Kelompok Spesialis Penyu - Kelompok Spesialis Cetacea - Kelompok Spesialis Sirenia dan - Ikatan Sarjana Oseanologi Indonesia 	Final report	HC
10.	Program Pembinaan dan Pengembangan Cinta Laut.	Yayasan Nasional Bina Samudra (YNBS)	Book	HC
11.	Penyelenggaraan Sarasehan program Cinta Laut untuk Gerakan Pramuka. Pulau Pari	<p>Kerjasama:</p> <ul style="list-style-type: none"> - Yayasan Nasional Bina Samudera dengan - Kwarda Gerakan Pramuka Daerah Khusus Ibukota Jakarta 	Final report	HC
12.	Survei dan Penurunan Terumbu Karang Buatan di Kep. Seribu	Unit Pelaksana Teknis Baruna Jaya Badan Pengkajian	Technical report	HC

	Prop.DKI Jakarta	dan Penerapan Teknologi		
13.	Rencana Pengelolaan Taman Nasional Laut Kepulauan Seribu	Taman Nasional Kepulauan Seribu	Article	HC
14.	Pengembangan Kesehatan Maritim Indonesia	Trisakti Community Health Centre (TCHC) Univ. Trisakti	Proposal	HC
15.	Taman Nasional Kepulauan Seribu. Edisi 02/BNKpS/2002	Redaksi Buletin Taman Nasional Kepulauan Seribu	Journal	HC
16.	Taman Nasional Kepulauan Seribu. Edisi 02/BNKpS/2002	Redaksi Buletin Taman Nasional Kepulauan Seribu	Journal	HC
17.	Taman Nasional Kepulauan Seribu. Edisi 03/BNKpS/2002	Redaksi Buletin Taman Nasional Kepulauan Seribu	Journal	HC
18.	Warta ISOI. No. 16 Oktober-Desember 2002	Redaksi Warta ISOI	Journal	HC
19.	Warta ISOI. No. 17 Januari-Maret 2003	Redaksi Warta ISOI	Journal	HC
20.	Warta ISOI. No. 18 April-Juni 2003	Redaksi Warta ISOI	Journal	HC
21.	Banten dan DKI sepakat soal Kepulauan Seribu Diserahkan Ke Pusat	Antara	Article	SC
22.	Pemaparan Hasil Survey PHBS di Kepulauan Seribu	Promosi Kesehatan.com	Article	SC
23.	PENGEMBANGAN KEGIATAN WISATA PADA PULAU PERMUKIMAN DI KEPULAUAN SERIBU	Ir. Arti Soepardi & Yani Adriani, ST. Pusat Penelitian Kepariwisataan Institut Teknologi Bandung	Article	SC
24.	TAMAN NASIONAL LAUT KEPULAUAN SERIBU	kawasan <i>KONSERVASI. Forest Watch Indonesia</i>	Article	SC
25.	'Pemerintah harus beri sanksi tegas pelaku pencemar air laut' Tuesday, May 25, 2004	Reported by : Press Release	Article	SC
26.	Tiga Negara Bangun Kawasan Konservasi	Dikutip dari: <i>Suara Pembaruan</i> , March 7,	Article	SC

	Laut. Wednesday, 23 June 2004	2004		
27.	Mengenal Karang Lebih Dekat	Sumber : Ditjen Pesisir dan Pulau-pulau Kecil	Article	SC
28.	Polisi Periksa Pencemaran Lingkungan di Pulau Seribu	Detik	News article	SC
29.	EKOSISTEM PULAU-PULAU KECIL DI INDONESIA DAN PENGELOLAAN SUMBERDAYA ALAMNYA GUNA PEMBANGUNAN BERKELANJUT	Johannes M.S. Tetelepta	Papers	SC
30.	Kerusakan Lingkungan Dua Pulau Terancam Tenggelam	Gatra.com	News article	SC
31.	<i>Kepulauan Seribu sebagai Kawasan Wisata</i> - Pembuangan Sampah di Teluk Jakarta	Bob Hutabarat, KCM	Article	SC
32.	Kajian Pengembangan Paeiwisata Bahari di Kel. Pulau Kelapa Kec. Kep.Seribu Utara, Kab.Adm.Kepulauan Seribu, Daerah Khusus Ibukota Jakarta	Azril Aziz– Program Pasca Sarjana IPB Bogor	Tesis, 2003	HC
33.	Valuasi Ekonomi Terumbu Karang Kep.Seribu	Biqwanto Situmorang– Program Pasca Sarjana IPB Bogor	Thesis	HC
34.	Partisipasi Masy. Dalam Pengelolaan	Budiyanto, – Program Pasca Sarjana IPB	Thesis	HC

	Ekosistem Mangrove Pulau Kecil Berpenghuni (Studi kasus si P.Lancang Besar, Kel. P.Pari, Kec.Kep.Seribu Selatan, Kab.Adm.Kep.Seribu, DKI Jakarta)	Bogor		
35.	Kajian Gender Dalam Pengelolaan Sumber Daya Pesisir Dan Laut di Pulau Untung Jawa	Weni Wulansari – Program Pasca Sarjana IPB Bogor	Thesis	HC
36.	Analisis Kebijakan Perubahan Fungsi Cagar Alam Pulau Rambut Menjadi Suaka Margasatwa	Ade Suryanda – Program Pasca Sarjana IPB Bogor	Thesis	HC
37.	Persepsi dan Sikap Siswa 69 Pulau Pramuka terhadap Pelestarian Pemanfaatan Ekosistem Sumberdaya Pesisir Dan Lautan	M. Nurdin Matondang Seribulan– Program Pasca Sarjana IPB Bogor	Thesis	HC
38.	Kebijakan Pengelolaan Terumbu Karang Di Perairan Kel. Pulau Panggang Kep. Seribu DKI Jakarta	Agus Priyono– Program Pasca Sarjana IPB Bogor	Thesis	HC
39.	Pengelolaan Lingkungan Pulau-pulau Kecil dengan Pengembangan Eko-Wisata (Wisata Alam): Kajian Peranserta Masyarakat (Studi Kasus: Taman Nasional Laut Kepulauan Seribu)	M.Yuana– Program Pasca Sarjana IPB Bogor	Thesis	HC
40.	Partisipasi Masyarakat dalam Pengelolaan Ekosistem Terumbu Karang secara	Rita Nirmala– Program Pasca Sarjana IPB Bogor	Thesis	HC

	berkelanjutan (Kasus Di Kelurahan Pulau Panggang Kab. Adm. Kepulauan Seribu)			
41.	Kaji Tindak Pelestarian Potensi Sumberdaya Alam dan Hayati Kelurahan Pulau Kelapa Kepulauan Seribu Melalui Pemberdayaan Masyarakat	Lembaga Pengabdian Masyarakat Universitas Terbuka (LPM UT) (data dari Kehati)	Activity report	HC
42.	Kaji Tindak Pelestarian Potensi Sumberdaya Alam dan Hayati Kelurahan Pulau Kelapa Kepulauan Seribu Melalui Pemberdayaan Masyarakat	Lembaga Pengabdian Masyarakat Universitas Terbuka (LPM UT) (data dari Kehati)	Research report	HC
43.	Program Pendampingan Sosial Pemberdayaan Komunitas Pesisir Melalui Pelestarian Keanekaragaman Hayati di Kepulauan Seribu	Sekretariat Bina Desa dengan Yayasan KEHATI	Final report	HC
44.	NELAYAN DAN KETIDAKPASTIAN : Kajian tentang Strategi Kelompok Nelayan Mayang dalam menghadapi ketidakpastian di Pulau Kelapam Kepulauan Seribu, Jakarta	Yayan Indriatmoko, Jurusan Antropologi FISIP UI	Thesis	HC
45.	Penyusunan Rencana Kesejahteraan Masyarakat Wilayah Kabupaten Administrasi Kepulauan Seribu	Laboratorium Antropologi, FISIP UI	Final report	HC
46.	Kegiatan Monitoring Pelaksanaan Program Raskin di Kabupaten	- Ir. Ernany Dwi Astuty, M.Si - Drs. Darwin	Yearly report	HC

	Administrasi Kepulauan Seribu	Syamsulbahri, M.Sc.		
47.	Konservasi Alam Menuju Pemberdayaan Masyarakat Nelayan Kepulauan Seribu	MAYANG – Yayasan KEHATI	Activity report	HC
48.	Pemantapan rencana tata ruang wilayah Kab. Adm. Kep. Seribu	Kerjasama : - Badan Perencanaan Pembangunan Daerah Prop. DKI Jakarta - Lembaga Penelitian Institut Teknologi Bandung	Final report	HC
49.	PEMBERDAYAAN MASYARAKAT NELAYAN (Studi Kasus Pelaksanaan Program Pendampingan Sosial di P. Tidung Kec. Kepulauan Seribu Kodya Jakut oleh Sekretariat Bina Desa / INDHRRRA Jakarta)	La Ode Taufik Nuryadin	Thesis	HC
50.	Potensi Perikanan dan Kelautan	Sudin Perikanan dan Kelautan Adm. Kep. Seribu Prop. DKI Jakarta	Yearly report	HC
51.	Peraturan Daerah DKI Jakarta no.11 tahun 1988 tentang Ketertiban umum dalam Wilayah DKI Jakarta		Book	HC
52.	PP Rep.Indonesia No.8 tahun 2003 tentang Pedoman Organisasi Perangkat Daerah		Book	

53.	Keputusan Meneg Lingkungan Hidup No. 04 th. 2001 tentang Kriteria Baku Kerusakan Terumbu Karang		Book	HC
-----	---	--	------	----

Note:

HC = *Hard Copy*

SC = *Soft Copy*

