



**REGIONAL FISHERIES LIVELIHOODS PROGRAMME  
FOR SOUTH AND SOUTHEAST ASIA (RFLP)**

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**REGIONAL FISHERIES LIVELIHOODS  
PROGRAMME**

**BASELINE SURVEY IN TIMOR-LESTE**

**(GCP/RAS/237/SPA: Baseline Survey)**

**For the Regional Fisheries Livelihoods Programme for South and  
Southeast Asia**

**Prepared by**

**AMSAT INTERNATIONAL PTY LTD**

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## **LIST OF ACRONYMS**

BPR	Community Credit Bank (Bank Perkreditan Rakyat)
DFO	District Fisheries Office
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
FSA	Fisheries Livelihoods Project Survey Area
GSA	General Survey Area
IDI	In-depth Interview
INGO	International Non Government Organisation
MAF	Ministry of Agriculture and Fisheries
MFI	Micro-finance Institution
NDFA	National Directorate of Fisheries and Aquaculture
NGO	Non Government Organisation
RFLP	Regional Fisheries Livelihoods Programme
UN	United Nations
UNDP	United Nations Development Programme
UNTL	Universidade Nasional Timor Lorosa'e (Tetum) / Universidade Nacional de Timor-Leste (Portuguese)

In this report \$ refers to US Dollars

## **GLOSSARY**

**Aldeia:** Timorese term for a sub-village grouping. In terms of size, an aldeia can be equivalent to a dusun in Indonesia or a hamlet in English. Aldeias are not formalized divisions with administrative authority. Timor-Leste has a total of 2,225 aldeias all around the country.

**Fisheries Livelihoods Project Survey Area (FSA):**

The survey area covering the 5 subdistrict areas (Vemase, Atauro, Atabae, Suai and Pante Makasar) which are the main target areas for the Baseline Survey and for RFLP interventions.

**General Survey Area (GSA):**

The survey area covering 5 administrative districts (Baucau, Dili, Bobonaro, Covalima and Oecusse) which are the target districts for the Baseline Survey.

**Suco:** Sucos are the smallest administrative division. A group of sucos creates a subdistrict. According to the National Directorate of Statistics there are 442 sucos in the country. In terms of size a suco can be equivalent to a “desa”/“kelurahan” (administrative village) in Indonesia.

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## EXECUTIVE SUMMARY

This report is the product of a detailed baseline survey conducted in January to March 2011, focusing on the coastal small-scale fishers of Timor-Leste for the Regional Fisheries Livelihoods Programme (RFLP) of the UN Food and Agriculture Organization (FAO).

The RFLP programme is funded by the Kingdom of Spain over a period of four years and is operating in six South and Southeast Asian countries: Cambodia, Indonesia, the Philippines, Sri Lanka, Timor-Leste and Viet Nam. RFLP's outcome will be "*strengthened capacity among participating small-scale fishing communities and their supporting institutions towards improved livelihoods and sustainable fisheries resources management*". For the Timor-Leste this outcome will be achieved through delivery of five outputs at the national level: (i) Co-management mechanisms for sustainable utilization of fishery resources, (ii) Improved safety and reduced vulnerability for fisher communities, (iii) Improved quality of fishery products and market chains, (iv) Diversified income opportunities for fisher families, and (v) Facilitated access to micro-finance services for fishers, processors and vendors. This baseline study provides the current status of the five outputs in the five coastal districts in Timor-Leste where RFLP progress and impact can be measured. Therefore the primary purpose of this baseline study is to collect relevant data for programme monitoring and evaluation.

The baseline survey in Timor-Leste was conducted in five districts covering the specific subdistricts chosen as program areas for the RFLP in Timor-Leste. The districts/subdistricts surveyed are: Baucau district and its Vemase subdistrict, Dili district and its Atauro subdistrict, Bobonaro district and its Atabae subdistrict, Covalima district and its Suai subdistrict, and Oecusse district and its Pante Makassar subdistrict.

The primary stakeholders and target beneficiaries are: (i) coastal fishers, processors, traders and their families, their organizations and their communities, including the local authorities and, (ii) government organizations and institutions responsible for the administration, management and development of the coastal fisheries at local, district/province and national levels. Women are a key part of the target groups in the survey. It is expected that the outcomes of the five project program areas will be shared across the other countries of the RFLP program as the sixth output i.e. regional sharing of knowledge in support of livelihood development and reduced vulnerability for fisher communities and of sustainable fisheries resource management.

The survey methodology is mixed, combining qualitative and quantitative approaches. The qualitative approach included Focus Group Discussions (FGDs), In-depth Interviews (IDIs), observations and open interviews whilst the quantitative approach was conducted using questionnaires and quantitative data collection.

The stages of the survey included: (i) preliminary data collection and literature review, (ii) design of survey methodology, (iii) questionnaire design and interview questions design, (iv) statistical sampling design (v) presentation of designs to RFLP and field testing of questionnaires, (vi) field work and field survey, (vii) data entry and processing, (viii) preliminary analysis and workshop presentation to RFLP, (ix) data validation and final analysis and (x) finalising the baseline survey report.

The survey's random samples were designed to cover the larger areas of each district i.e. the General Survey Areas (GSA) and specific RFLP target areas at subdistrict level, i.e. the

Fisheries Livelihoods Project Survey Areas (FSA). The random samples for each subdistrict were also designed to provide comparisons between the district results and the subdistrict results. In total the locations surveyed in all five districts cover 13 subdistricts (including the five RFLP target subdistricts), 24 sucos/villages and 48 aldeias/hamlets. Preliminary data collection helped design the two-stage sampling based on the district/subdistrict location and fisheries-related households. The GSA random sample covers 406 respondents representing 406 households or livelihoods. The FSA random sample covers 330 respondents representing 330 households or livelihoods.

For the qualitative survey the respondent groups for FGDs, IDIs and open interviews were drawn from fisher groups, government officials, fish traders, fish processing groups, housewives and women's groups. The quantitative surveys with questionnaires targeted fishers, traders or heads of households in the fisheries areas.

Working with RFLP staff, the survey, which was conducted by Amsat International's field teams, also received support from the Ministry of Agriculture and Fisheries, particularly its district Fisheries Offices, and students from the Universidade Nacional de Timor-Leste as enumerators for the survey.

This report consists of two parts. The first part discusses the general findings and analysis of the survey while the second part discusses the specific findings and analysis separately for each district. Conclusions and recommendations are presented both in general for the whole combined survey and separately for each district with the focus on its subdistrict (FSA area). Although survey data is also presented for GSA (at district level) in the report, the analysis focuses mainly on the FSA area (at subdistrict level) since this is where the RFLP will conduct the program. Where relevant, the FSA results are also compared to the GSA results.

Although the characteristics of the respondents differ from district to district and from subdistrict to subdistrict some general characteristics can be described, as follows:

- the majority of respondents are at the productive age range of 30-44 years,
- household size of respondents is approximately 5-7 family members,
- the majority of respondents have not undertaken or completed elementary school. 24% of respondents have only elementary school education and only 16% have completed senior high school education. Bobonaro has the lowest education level achievement compared to other 4 districts surveyed,
- around 40% of the respondents have a second job generally as a farmer, animal/cattle breeder or labourer. Oecusse and Bobonaro are the districts where most respondents depend solely on fisheries for their livelihood,
- the majority (70%) of respondents have a monthly income between \$100-\$400.

For the purpose of evaluation and monitoring of the five RFLP outputs, 18 indicators of development had been defined for each district in the GSA areas and each subdistrict in the FSA areas.

Conclusions and recommendations are presented for the survey as a whole, but are further presented at a district/subdistrict level to facilitate localized planning and monitoring. The overall conclusions and recommendations are summarized here by RFLP output:

## Co-management

- The concepts and terminology of *co-management* were poorly understood. Few people had heard of it and much fewer understood the concept as collaborative government/community management of marine and coastal resources. Establishment and/or strengthening of appropriate community groups such as fisher groups and women's groups are needed to support mechanisms for marine resource co-management.
- There were no significant groups working with government to implement genuine co-management of marine and coastal resources. Fisher groups and women's groups were the most commonly identified. A small number of people were involved in savings and loan groups. Fishers cooperated amongst themselves as part of work systems and to qualify for government and NGO assistance. Training in technical skills and group management is recommended whilst providing exposure to experienced NGOs.
- There was very limited evidence/knowledge of village bodies responsible for marine resource management. With some exceptions, there was generally no functioning system of customary law related to marine resource management. It is recommended that the role of community leaders be actively developed in socializing co-management concepts and regulations through communication, training, and program leadership.
- There was clear separation of gender roles. Though not usually involved in fishing at sea, most women managed household finances and were commonly active in selling and processing. Thus their roles were more than domestic roles (cooking, cleaning, childcare). It is recommended that training be provided for women in (i) fish processing techniques to increase the durability and value of the catch and (ii) in managing finance when it relates to savings and loan activities for micro-finance development.
- Conflict between fishers was rare. Sporadic examples usually related to intrusion by fishers from other areas, disputes over destructive fishing techniques and harvest sharing. Resolution was readily achieved through community meetings, or the intervention of community leaders and/or the Fisheries Office. This strong base could be used to support co-management initiatives.
- In the context of co-management and other related RFLP outputs such as micro-finance provision it is recommended that the suitability of an increased role for cooperatives linking resource management and increased economic benefits, be investigated.

## Safety at sea

- Although fishers commonly experienced problems at sea, in general fishers regarded accidents, injury and death as part of the job, but also acknowledged the impact of negligence. Fatal accidents were rare and the level of concern was therefore quite low.
- Fishing was generally conducted close to shore in small rowboats. If larger boats and engines extend the fishing range, safety will become more problematic. It is recommended that, through socialization strategies, a better understanding of the risks and benefits of fishing further from shore be created i.e. that it will bring greater returns while requiring more serious attention to safety preparations.
- Safety equipment was considered expensive and not a priority. Therefore increased awareness of safety regulations and practices should be encouraged including the role

of avoidable negligence and sensible precautions. Training in the use of basic safety equipment, and programs to assist with access, should be implemented.

- Access to reliable/meaningful weather forecasts was an issue. Therefore improved access to weather information would be a good first step. This could be supported by access to inexpensive radios for fishers to monitor weather forecasts.

### **Post-harvest and marketing**

- Most fish was sold, in fresh unprocessed condition, to traders. Sale of fish was controlled by traders with up to three layers of intermediaries between the fishers and the consumers. There was little market power in the hands of fishers. They had few options for marketing their catch and little bargaining power. The specific supply chains that exist in each location should be further studied to identify opportunities for improved efficiency and returns.
- Ice was used for fish preservation by very few fishers. Ice was expensive, with Dili being the only real source of production. Methods of supporting ice production facilities should be investigated. Establishment of fish storage facilities should be examined in conjunction with ice production and marketing channels. A role may exist for cooperatives.
- Other forms of processing for preservation were uncommon due to lack of adequate skills, equipment and marketing opportunities. Quality was poor and packaging was seen as a problem. There should be a sustained and intensive program of training covering fish processing techniques, quality improvement, hygiene, product diversification, packaging and marketing.

### **Livelihoods enhancement and diversification**

- Fishing was conducted along the coast, in reef areas and occasionally in the deeper sea. Most fishing was conducted within sight of land, and usually within 2 km of the beach.
- Fishing was conducted year round with the lowest effort usually in December-February and July-August depending on the locations of the district/subdistrict.
- Fishers generally fished every day, for periods of 6-12 hours. Most fishers, fished in groups of 2-3 people using non-motorized wooden boats owned by themselves or their family. Hook-and-line was the commonest fishing method.
- Access to larger, powered boats and better equipment would increase their range and catch capacity and spread the fishing pressure to more diverse fishing areas. Fishers would benefit from training in more effective fishing techniques, which maximise catch and the benefit of larger, powered boats.
- Fishers can be assisted to increase the size and value of their catch, by supporting them in the procurement of adequate boats with engines. Assistance by way of grants and/or financing would be effective.
- While many types of marine life were caught and sold, including squid, prawns, crabs, snails and oysters, fish was the main target with sardines and snapper being the main species caught.
- Reef gleaning was common where suitable and involved the whole family.
- Monthly incomes range from less than \$100 (11%) to over \$600 (5%) but most earn between \$100 - \$300 (60%).

- About half the fishers also gained income from farming and some from seaweed farming. Therefore potential alternative livelihoods including farming and seaweed aquaculture can be encouraged with proper technical and marketing assistance.
- Changes in climate effecting the cycle of dry and wet seasons made fishing planning difficult. The changes impacted on levels of sea resources, locations of fishing grounds and fishing periods and created uncertainty in income generation. It is recommended that understanding of climate change and its impacts can be included in the training of fishers.

### **Micro-finance services**

- Financial institutions existed but were not well known and very few people (14%) used the services (savings and loan) of financial institutions. An NGO, Moris Rasik, provided micro-credit and was the best known.
- People did not borrow from financial institutions because they did not know the lender(s), they found it too difficult to apply for a loan, borrowing money was considered too expensive and they feared their inability to repay. Most preferred to borrow from family or friends.
- People also did not save with existing financial institutions because they did not know of the service in their area, they found the procedure too difficult, and they feared that savings at the financial institutions are not safe.
- Community understanding and attitudes to financial institutions and services must be improved in order to raise efficiency of livelihoods. Awareness programs should be coordinated and supported by government, the institutions and programs such as RFLP. Financial institutions should also be encouraged to provide services suited to the needs of fishers, or to better promote existing services. Loan capital should be specifically allocated to fishers.
- Fishers were generally very keen for access to micro-credit for capital (boats, engine, gear) and for working capital (for daily operations, both in fishing and in other second jobs such as farming) but also for children's education and for daily expenses.
- The potential for cooperatives to provide a practical source of finance should be explored and if appropriate, supported with training and capital.
- Training in the use of micro-finance services could be coupled with basic training in household financial management, especially for women who usually manage the family or household finance.

# 1 INTRODUCTION

## 1.1 Background

The Regional Fisheries Livelihoods Program (RFLP) in Timor-Leste is part of the FAO regional programme operating in six South and Southeast Asian countries, namely Cambodia, Indonesia, the Philippines, Sri Lanka, Timor-Leste and Viet Nam. The four-year programme aims to strengthen capacity among participating small-scale fishing communities and their supporting institutions to improve livelihoods and sustainable fisheries resources management. Major RFLP outputs will be:

- Co-management mechanisms for sustainable utilization of fishery resources;
- Improved safety and reduced vulnerability for fisher communities;
- Improved quality of fishery products and market chains;
- Strengthened and diversified income opportunities for fisher families;
- Facilitated access to micro-finance services for fishers, processors and vendors; and
- Regional sharing of knowledge in support of livelihood development and reduced vulnerability for fisher communities and of sustainable fisheries resource management.

The primary stakeholders and target beneficiaries are (i) coastal fishers, processors, traders and their families, their organizations and their communities, including the local authorities and; (ii) government organizations and institutions responsible for the administration, management and development of the coastal fisheries at local, district/province and national levels. A graphical illustration of how the inputs will contribute to the impacts is presented below:

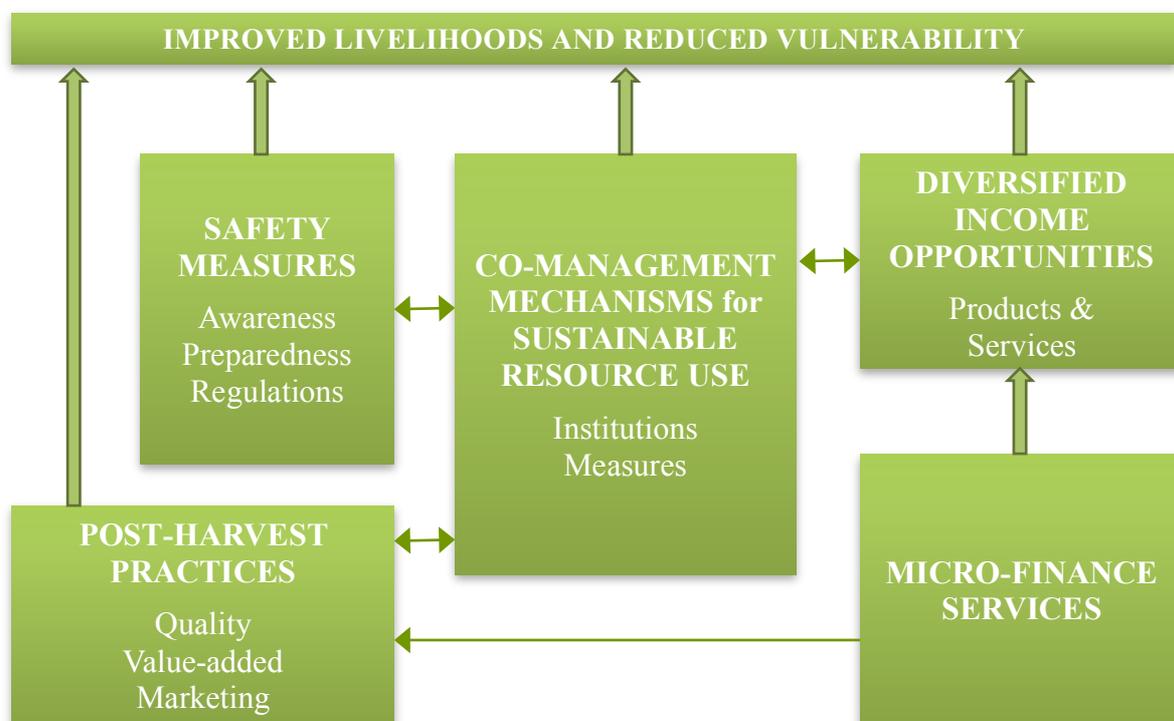


Figure 1-1. Factors to improve livelihoods (source: RFLP Project Document (2008))

## 1.2 Objective of Baseline Study

An essential first step in the implementation of the RFLP in Timor-Leste was the completion of a comprehensive Baseline Study.

The primary purpose of Baseline Study (BLS) was:

*to collect the data which will form the basis for programme monitoring and evaluation.*

In addition, the baseline survey provided the following functions:

- introduced the RFLP to communities and supporting institutions; and
- provided beneficiaries with an opportunity to influence the design and direction of RFLP activities.

Following on from and building upon the BLS, the RFLP Monitoring and Evaluation (M&E) system that will be developed for Timor-Leste will:

- Gather information about the current status of the fishery sector and the subsectors in which RFLP will work in order to validate activities and design work plans;
- Measure impact, assess progress, and create conditions to allow adaptive project management;
- Involve stakeholders in learning, thus building and maintaining commitment to the project;
- Highlight learned lessons and improve how the project is implemented;
- Highlight successes for the RFLP teams, national governments and target communities; and,
- Track inputs for audit.

As such the survey collected data relevant to each of the programs five components i.e.:

1. Co-management mechanisms
2. Safety at Sea and vulnerability reduction
3. Post-Harvest and Marketing
4. Livelihoods Enhancement and Diversification
5. Micro-finance services

## 1.3 Survey Locations

The survey was conducted in the five districts of Timor-Leste where the RFLP will be operating with particular emphasis on the following specific subdistricts i.e.:

1. Baucau district (Vemase subdistrict)
2. Dili district (Atauro subdistrict)
3. Bobonaro district (Atabae subdistrict)
4. Covalima district (Suai subdistrict)
5. Oecusse district (Pante Makasar subdistrict)

The location of these 5 districts with their 5 subdistricts can be seen in the map of Timor-Leste shown here.



Figure 1-2. Map of Timor-Leste (source: United Nations 2008)

## 1.4 Structure of the Report

The report consists of two parts written in nine chapters. Part A consists of Chapters 1 to 3 covering a general description of the study and an analysis of the survey results, summarised for all 5 districts and all 5 subdistricts. Part B covers individual results and analysis of each subdistrict of the RFLP area of geographic coverage, which are also accompanied by their district findings.

Contents of Part A:

- Chapter 1 introduces the RFLP and the purpose and locations of the Baseline Study. It also describes the broad structure of the report.
- Chapter 2 describes the survey Methodology.
- Chapter 3 presents the Concepts and General Analysis. In this Chapter results of the survey are divided into 2 categories:
  - the overall survey area, covering 5 districts with 406 respondents, labeled the *General Survey Area (GSA)*, and
  - the specific RFLP geographic coverage survey area, covering 5 subdistricts with 330 respondents, labeled the *Fisheries Livelihoods Project Survey Area (FSA)*.

## Contents of Part B:

- Chapter 4 to Chapter 8 describe individual district and subdistrict with their profiles of respondents and with the Results and Analysis:
  - Chapter 4: Baucau district and Vemase subdistrict
  - Chapter 5: Dili district and Atauro subdistrict
  - Chapter 6: Bobonaro district and Atabae subdistrict
  - Chapter 7: Covalima district and Suai subdistrict
  - Chapter 8: Oecusse district and Pante Makasar subdistrict.
- Chapter 9 covers Conclusions and Recommendations.

## 2 METHODOLOGY

The BLS employed a mixed-method approach, combining collection and analysis of both quantitative and qualitative data. The three main data collection methods employed were:

- (i) Survey (structured interview),
- (ii) Focus Group of Discussions (FGD), and
- (iii) In-depth Interviews (IDI).

The quantitative and qualitative methods were applied on two different timelines. The quantitative survey was implemented first with the qualitative activities being conducted several days later. In this way, the quantitative field team was able to provide the qualitative team with information-rich sites and identify suitable key informants. In addition, it enabled the study to obtain relevant, in-depth data and provided an opportunity to triangulate the findings i.e. to cross-verify and enrich data from different sources. The quantitative and qualitative approaches are described below. An alternative approach, in which the qualitative activities would have preceded the quantitative survey was also considered but the selected approach was deemed superior in the circumstances.

### 2.1 Quantitative

#### 2.1.1 Rationale and sample design

The direct purpose of the BLS was to gather baseline information at two levels:

- generally, on the five districts (which contain the five subdistricts in which the RFLP will conduct activities), and
- specifically, on the five subdistricts themselves.

This necessitated two separate, but overlapping, samples i.e.

- the General Survey Area (GSA) and
- the Fisheries Livelihoods Project Survey Area (FSA).

#### 2.1.2 General Survey Area (GSA)

To represent the total population of the five districts, with a confidence interval of  $\pm 5\%$  at a 95% confidence level, a sample of approximately 400 was indicated<sup>1</sup>.

Two-stage random sampling was undertaken with aldeias (hamlets) as the Primary Sampling Unit (PSU). Randomisation was achieved at aldeia level using randomisation software. In total 45 aldeias were selected across 29 sucos. In each aldeia 10-20 respondents were randomly selected:

1. The field team first created a list of households based on official information from the head of the aldeia and this list was verified in the field. In some cases lists of

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<sup>1</sup> See Appendix 1 for sample size and confidence interval calculations.

households were not available, so the field team visited the aldeia and made a simple map and list of households.

2. Randomisation was then achieved from the final list of households through a systematic random process:
  - First, the team selected a starting point using randomly selected tickets with numbers corresponding to individual households in the aldeia.
  - Next, households to be interviewed were selected based on an interval number, which was calculated by dividing the total number of all households by the target number in the actual survey, which varies from 10-20 per aldeia.
  - Each selected household was checked to ensure it contained adults (17 year +)
  - Within the household, the team focused on the adult with the most direct involvement in fisheries related activities, as this was the main focus of the survey questionnaires<sup>2</sup>.

### **2.1.3 Fisheries Livelihoods Project Survey Area (FSA)**

To represent the total population of the five subdistricts, with a confidence interval of  $\pm 5\%$  at a 95% confidence level, a sample of approximately 330 was indicated.

However, the location of the respondents identified through random sampling in the GSA provided a subset of only 254 respondents who were located in the FSA area (i.e. the 5 subdistricts). Therefore in order to achieve the 330 respondents needed, a boosting sample of 76 was required.

The boosting sample was obtained by an additional random process at subdistrict level following the same population list used with the initial pure random process, yet targeting the RFLP subdistrict sites. The same two-stage random methodology used for the GSA was used for boosting the FSA. The boosting process resulted in a total sample size of 330 with each subdistrict having more than 60 respondents. 60 respondents per subdistrict are considered the minimum sample to achieve comparable confidence intervals between subdistricts (approximately 10%). See Appendix 1 for sample size design and sample's confidence intervals.

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<sup>2</sup> A consequence of this was that the majority of survey respondents were male as, with few exceptions direct fishing activities are undertaken by men. Early attempts during trials to gain a higher proportion of female respondents were confounded as those respondents were unable to respond to the majority of questions and sought the inputs of the male partner. The role of women was addressed directly in the survey as women do have a significant role in related aspects such as fishing trip financing and fish processing. They are also frequently involved in buying and cooking fish and are/may be more aware of the nutritional value of fish and of preservation and processing technologies. As a result of the gender balance in the survey respondents, gender-disaggregated data was not appropriate across the full breadth of topics. Disaggregated data is presented for issues related to female fishers as heads of households and women roles in fisheries related activities as meaningful sample size is available. All data is supplied in the disk provided with this report and cross tabulations for gender-disaggregated analysis can be performed.

Table 2-1. Sample distribution for RFLP sites

District	Subdistrict	Without boosted sample		With boosted sample	
		Frequency	Percentage	Frequency	Percentage
Baucau	Vemase	20	7.8	66	20.0
Dili	Atauro	50	19.7	60	18.2
Bobonaro	Atabae	50	19.7	60	18.2
Covalima	Suai	54	21.3	64	19.4
Oecusse	Pante Makasar	80	31.5	80	24.2
Total		254	100	330	100

#### 2.1.4 Samples of General Survey Area and Fisheries Livelihoods Project Survey Area

Although RFLP activities in Timor-Leste will be implemented in the coastal areas of the five districts where this survey was conducted (Baucau, Covalima, Oecusse, Bobonaro and Atauro), there are primary areas of intervention. These primary areas are located in the subdistricts of Vemase (Baucau), Suai (Covalima), Pante Makasar (Oecusse), Atabae (Bobonaro) and Atauro (Dili district). The following diagram and notes describe the actual sample collected.

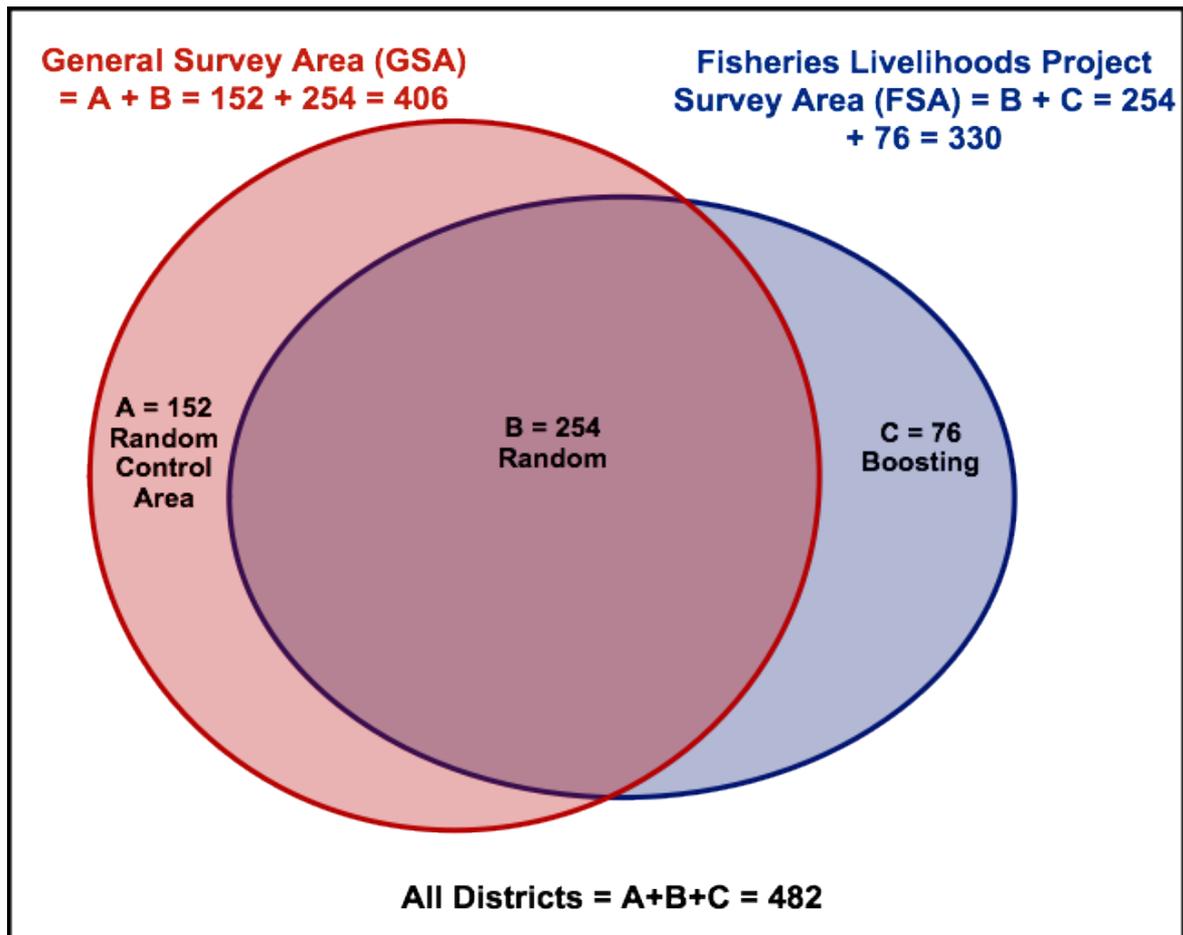


Figure 2-1. Venn diagram of Area Samples

With reference to Figure 2.1 the sample groups can be defined as follows:

- The **General Survey Area** consists of a pure, randomly selected sample of 406 respondents. This included:  
 A = 152 respondents from non-primary project locations in the five districts, and,  
 B = 254 respondents in project locations in the five subdistricts intended for RFLP primary interventions. i.e.  
 $General\ Survey\ Area\ (GSA) = A + B = 152 + 254 = 406$
- The **Fisheries Livelihoods Project Survey Area** consists of 330 respondents including:  
 B = 254 respondents in project locations in the five subdistricts intended for RFLP interventions.  
 C = 76 respondents selected from the same areas as B to boost the sample for statistical validity.  
 $Fisheries\ Livelihoods\ Project\ Survey\ Area\ (FSA) = B + C = 254 + 76 = 330$
- The **Control Data** is the part of random sample which belongs to General Survey Area but is not part of primary Fisheries Livelihoods Project Survey Area:  
 $Control\ Area = A = 152$

Based on the sampling for GSA and FSA, in total the locations surveyed in all 5 districts covered, 13 subdistricts (including 5 RFLP target subdistricts), 24 sucos/villages and 48 aldeias/hamlets (see Appendix 2 for the list of locations).

### 2.1.5 Weightings

Based on the population size of each district and subdistrict and the number of respondents in each sample group, the weights for each sample group which were analysed in this report can be found in the two tables below. Further details of weighting construction can be found in Appendix 1.

Table 2-2. Sample size and weights for General Survey Area (GSA)

District	Population size	Planned sample size	Sample size (actual survey)	Weighting score (based on planned sample size)
BAUCAU	111,484	80	81	1.0081831611
DILI	234,331	80	170	2.1191253303
BOBONARO	89,787	80	65	0.8119706997
COVALIMA	60,063	86	43	0.5052722569
OECUSSE	65,524	80	47	0.5925531327
<b>Total</b>	<b>561,189</b>	<b>406</b>	<b>406</b>	

Table 2-3. Sample size and weights for Fisheries Livelihoods Project Survey Area (FSA)

District	Subdistrict	Population size	Planned sample size	Sample size (after survey)	Weighting score (based on planned sample size)
Baucau	VEMASE	8,969	66	33	0.5035256338
Dili	ATAURO	7,978	60	30	0.4926792571
Bobonaro	ATABAE	10,976	60	41	0.6778199457
Covalima	SUAI	25,980	64	96	1.5041137073
Oecusse	PANTE MAKASAR	35,159	80	130	1.6284259841
<b>Total</b>		<b>89,062</b>	<b>330</b>	<b>330</b>	

### 2.1.6 Enumerators

The enumerator teams who conducted the actual survey consisted of students from Universidade Nasional Timor Lorosa'e (UNTL) who spoke both Tetum and Bahasa Indonesia. Mastery of Tetum was critical since most respondents were comfortable with this language. Bahasa Indonesia was used in training sessions and supervision since some field

teams came from Indonesia. The minimum education of an enumerator was a diploma degree.

To ensure adequate skills for the survey activities a two-day training course with practical sessions was conducted for the enumerators. This included:

- how to conduct interview sessions,
- how to randomly select respondents, and
- the coordination schema.

Quality assurance was done through close consultation with RFLP team, while Quality Control (QC) was applied at several points, namely:

- observation during the enumerator training session to ensure level of skill (all participants were observed),
- cross check and spot check during field work (10% of all questionnaires were checked),
- check during data cleaning and editing (100% of completed filled questionnaires were checked),
- double check of electronic database (10% of entries were checked).

### **2.1.7 Questionnaire**

The questionnaire was developed through collaboration between RFLP, UNTL and the consultant team. A UNTL advisory board did a first revision of the questionnaire developed by the consultant team, indicating potential areas of mis-understanding and wording as well as other problems that could be encountered during the field research. Before implementation of the survey the questionnaire was also tested through a pilot survey in Dili with 29 respondents to check for appropriate wording to ensure easy understanding of the questions by respondents. During this stage it was observed that women were unable to answer the majority of the questions in the questionnaire. It was decided by team that the enumerators should nevertheless focus the questionnaire survey on the adult respondents who are most involved in fisheries related activities and were also able to provide majority of the answers, regardless of their gender. In practice this was almost invariably the male fishers. The interviews were developed in Bahasa Indonesia, so that the enumerators could easily translate to ensure good quality in the data gathered. See Appendix 3 for the forms of the Questionnaires, both in English and in Bahasa Indonesia.

The questionnaire contains aspects about the respondents, their livelihood covering all 5 RFLP outputs and some observations on the environment where their live. Components of the questionnaire include:

- General illustration about the respondent,
- Socio-economic background of the respondent,
- Utilisation of marine and coastal resources (special for fishers – mostly men),
- Gear/vessel to catch fish or utilise other sea resources,
- Safety at sea,
- Reef gleaning,
- Quantity of fish catch,
- Cost and income,

- Post-harvesting: marketing,
- Post-harvesting: processing and public facilities,
- Product marketing,
- Livelihoods and financial services,
- Co-management,
- Observation on the respondent's living environment.

On average each interview took 60 to 90 minutes to complete. Respondents were informed of the expected duration of the interview before it started as part of the informed consent part of the questionnaire. In practice there were no objections regarding the interview length.

## **2.2 Qualitative**

The qualitative part of the study employed two data collection techniques namely, Focus Group Discussions (FGD) and In-depth Interviews (IDI). The two techniques were employed separately with some overlap in selecting the participants/informants. Some observations and open interviews were also conducted to enrich the result of FGDs and IDIs.

The FGDs required 8-12 individuals (participants) to take part in a discussion, which was facilitated by a moderator and recorded by a dedicated note taker. However, due to the availability of relevant respondents in the survey area and/or constraints in logistics and survey team resources, a few FGDs had only 3 participants in one sitting. Therefore additional FGDs in the same area had to be conducted to cover enough number of participants. Participants were identified during the quantitative questionnaire survey as being potentially information rich. Typically each FGD lasted 1 – 1.5 hours with several short breaks to energise participants. In this study, FGDs maximised the participation by commencing with an introductory session, followed by easily-to-respond questions (experiential questions). Once all participants were comfortable, more analytical questions were asked.

FGDs were carried out in all five target districts i.e. Dili, Baucau, Bobonaro, Covalima, Oecusse. FGDs were held at community level (whether at aldeia or suco level) where the teams facilitated 2-4 FGDs at each site. The main participants were male fishers but some women also participated.

While FGDs were only undertaken at aldeia/suco level, In-Depth Interviews were conducted at both community and decision-making or district level. The team carried out four IDIs in each district with selected FGD participants, staff of local offices of Ministry of Agriculture and Fisheries (MAF)/District Fishery Office (DFO) and community members. To obtain the deepest understanding, each informant was interviewed several times with each session lasting in 30-60 minutes. At community level, some IDI informants were participants in FGDs who had demonstrated richer knowledge on relevant issues, particularly fisheries, co-management and safety-at-sea issues. At decision-making or district level, interviewees were selected as key informants at local offices (DFO).

All result of FGDs and IDIs was written up separately from this report and used as a reference for this report.

## 2.2.1 Topics of discussions of FGDs

Topics of discussions in the FGDs were designed in line with the topics of questions put in the quantitative questionnaire, namely:

- Area context (situation, observation and interview),
- Catchment/sea products including (reef) gleaning,
- Fishing gears, boats, equipment, fishing techniques,
- Fishing activities, location of fishing,
- Processing and marketing of sea products,
- Organisation of fishers and co-management,
- Safety at sea (safety equipment, regulations, etc.),
- Fishing catch, types of fish,
- Second occupation or income generator,
- Micro-credit (financial assistance),
- Living standards, and
- Other relevant topics.

## 2.2.2 Locations and participants of FGDs

The locations, types and number of participants of the FGDs can be seen in the table below.

Table 2-4. Locations and participants of FGDs

No.	District	Subdistrict	Suco	Aldeia	Date of FGD	Participants	No. of participants
1	Baucau	Laga	Binagua	Werutama	12-Feb-11	Male fishers (including aldeia head)	8
2	Dili	Atauro	Berau, Beloi, Vila		14-Feb-11	Male fishers	6
3		Atauro			17-Jan-11	Fisheries office	3
4		Atauro	Vila		19-Jan-11	Male fishers, fishing labourer, aldeia head	3
5	Bobonaro	Atabae	Aida Baleten	Biacou	14-Feb-11	Male fishers including aldeia head)	10
6		Balibo	Sanirin	Batugede	22-Jan-11	Male fishers (2 male fisher groups)	14
7	Covalima	Suai	Camenasa	Fatuisin	21-Jan-11	Male fishers	10
8	Oecusse	Pante Makasar	Nipane	Baucsiu	24-Jan-11	Male fishers and staff of	3

No.	District	Subdistrict	Suco	Aldeia	Date of FGD	Participants	No. of participants
						fisheries office	
9		Pante Makasar	Costa	Oesono		Wives of male fishers	(5)
10		Pante Makasar	Costa	Oesono		Male fishers	8
TOTAL							70
Note: Number of female participants is in bracket.							(5) (7.1%)

### 2.2.3 Topics and questions of IDIs

Topics and questions for the IDIs and open interviews were designed differently for different types of respondents.

Questions to the staff of district fisheries office were as follows (an example for Baucau district and Vemase subdistrict):

- How many fisher groups are there in (Baucau) district, (Vemase) and which aldeias are counseled by the Fishery Office?
- What are the types of assistance provided by Fishery Office and/or central government to (Baucau)'s fishers, especially those in (Vemase) subdistrict? Be it in the form of either material, infrastructure, or capacity building assistances.
- How does the assistance system work and what the criteria set by the Fishery Office in determining groups that are qualified to receive government assistance?
- How many are the staff of subdistrict Fishery Office and/or suco? And how are the counseling and monitoring conducted towards the fishers by the field officers of Fishery Office?
- Is there *Lote de pesca* (LdP) (Fish Auction Place) in (Baucau) district? Where is the location and what are the LdP activities? How many people work at the LdP?
- How is the cooperation relationship between the government and local and international NGOs associated with counseling programs to fishers?
- Are there regular meetings between the government and NGOs? What are the frequency and agenda of the meeting in question?
- Is there a zoning map, fishing ground map, data on biodiversity and volume of captured fishes per fishing gear in (Baucau) district?
- What are species of fishes usually caught in this area?
- What are efforts already made by the government, especially the Fishery Office, in order to create a stable price of fish? As well as marketing systems of caught fishes and fish processing and other marine biota? Is there any regulation issued by the government, and how to monitor it?
- How do you solve the problems or challenges mentioned earlier? What are the future plans of the Fishery Office in coping with problems and challenges you have mentioned, mainly those problems related to the fisher community development?

- Is there a traditional protection rule for marine resources already applied in this area? If available, what and how the protection system runs? If available but not running anymore, since when and why the same is not adopted anymore? What are biota or natural resources being protected, and is such protection rule recognised by the government?
- According to you, can traditional regulation help or could it be developed in the future, side by side with government regulation? If yes, why and if not why? If yes, also, how it can be run simultaneously and what are the benefits?
- According to you, what constraints do fishers face in obtaining the maximum results and improving their welfare?

Topics of questions for women respondents or housewives:

- Daily activities and roles
- Daily family consumption (fish and others)
- Involvement in group activities
- Household financial management
- Involvement in micro-finance activities, and
- Other relevant topics.

Topics of questions to male fishers/fisher's groups/traders/heads of aldeias/sucos (different topics for different types of respondents):

- Description of group
- General daily activities
- Fishing gears, boats, fishing activities, fishing locations
- Types of fish/catch
- Cost and income
- Knowledge and skills on going to sea
- Perception on environment safety
- Perception on accidents at sea
- Opinion on sea safety regulations
- How to improve or to increase volume of fishing catch
- Constraints in improving living standard or household income
- Types of potential work/business in the district/subdistrict
- Sales system, selling price and marketing lines (channels)
- Tradition/local culture related to utilisation of marine and water resources
- Dispute solutions in fishing activities, and
- Other relevant topics.

#### **2.2.4 Locations and participants of IDIs**

The locations, types and number of participants of the IDIs can be seen in the table below.

Table 2-5. Locations and participants of IDIs

No.	District	Subdistrict	Suco	Aldeia	Date of inter-view	Respondent(s)	No. inter-viewed
1	Baucau	(All subdistricts) *			17 - 18 Jan 2011	Staff of Baucau fisheries office	1
2		Baucau	Caibada		20-Jan-11	Head of fisher' group	1
3		Baucau	Buruma		20-Jan-11	Housewife	(1)
4	Dili	Metinaro	Duyung	Sahan	18-Jan-11	Coordinator of a fisher' group	1
5		Atauro	Vila	Eclae		Male fisher	1
6		Atauro	Vila	Eclae	19-20 Jan 2011	Head of fisher' group, xefe of aldeia	2
7		Dili City	Comoro		11-Feb-11	Male fisher	1
8		Dili City	Comoro		11-Feb-11	Fish trader (second hand)	1
9		Atauro	Bidao		13-Feb-11	Male fisher	1
10		Dili City	Comoro		13-Feb-11	Fish consumer	(1)
11		Atauro	Bidao		13-Feb-11	Fish consumer - woman (expatriate)	(1)
12		Dili City	Comoro		14-Feb-11	Fish trader (first hand)	1
13		Metinaro		Manularan	15-Jan-11	Head of fisher' group	1
14		Metinaro		Behocir		Head of aldeia	1
15		Dili City				Fish consumer (restaurant)	(1)
16		Dili City				Fish consumer - man (expatriate)	1
17	Bobonaro	Atabae	Aidabaleten	Suli Laran	25-Jan-11	Male fishers	3
18		Balibo	Sanirin	Batugade	26-Jan-	Coordinator of fisher'	1

No.	District	Subdistrict	Suco	Aldeia	Date of inter-view	Respondent(s)	No. inter-viewed
					11	group	
19		Balibo	Sanirin	Subalesu	26-Jan-11	Male fishers, also labourer and farmer	2
20		(All subdistricts)			26-27 Jan 2011	Staff of Bobonaro fisheries office	1
21		Atabae		Beacou		Wife of a fisher	(1)
22		Atabae				NGO Care Timor-Leste - Bobonaro	1
23	Covalima	Suai, Tilomar, etc.				NGO Care Timor-Leste - Covalima	1
24		Suai		Cassa Bauk	21-Jan-11	Fish consumer/ housewife	(1)
25	Oecusse	Pante Makasar			24-Jan-11	Male fisher	1
26		Pante Makasar		Sakato		Housewife	(1)
27		(All subdistricts)				Field instructor	1
28		Pante Makasar	Lalisuk	Padiae	31-Jan-11	Boat lender	1
<b>TOTAL</b>							32
Note: Number of female participants is in brackets.							(6) (19%)

\*) IDI with fisheries office covers all subdistricts in the surveyed district.

### 3 GENERAL ANALYSIS

This chapter first describes the main features of the overall survey population and then the five program areas.

#### 3.1 Overall Profile of Surveyed Districts

The following profile of the RFLP target areas in the five selected districts is based on the stratified sample after adjustment using a weighting for the relative population size of each district. The district level comparisons therefore include adjustment for district population size. The data presented specific for this section is based on the survey of the General Survey Area with the sample size of 406 respondents with only 6 (1.5%) female respondents.

##### 3.1.1 Total respondents

A random sample survey was conducted covering respondents in the five coastal areas of the targeted districts of Timor-Leste, namely Baucau, Dili, Bobonaro, Covalima, and Oecusse. A total of 482 respondents, with only 6 (1.2%) female respondents, were surveyed with the following distribution across the five districts.

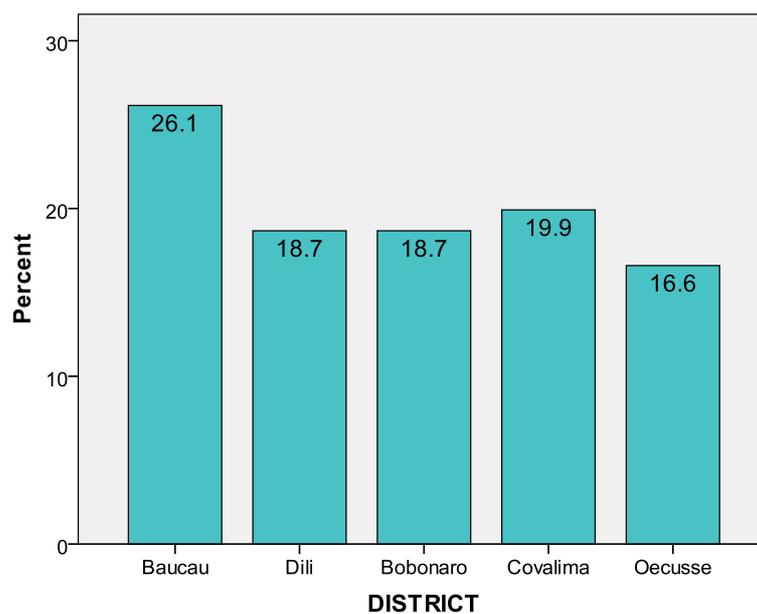


Figure 3-1. Distribution of respondents in 5 districts

Baucau (126 respondents, 26.1%) had the largest sample size followed by Covalima (96 respondents, 19.9%), Dili (90 respondents, 18.7% where 0.8% are women), Bobonaro (90 respondents, 18.7% where 0.4% are women) and Oecusse (80 respondents, 16.6%).

### 3.1.2 Summary district level demographics

The following table provides basic demographic data at district level, for each of the districts containing an RFLP target area. It is based on the 2004 and 2010 Census reports.

Table 3-1. Some demographic indicators and fishery-related information for project target districts

Indicator	Baucau	Dili	Bobonaro	Covalima	Oecusse
Area (km <sup>2</sup> )	1,600	372	1,368	1,225	815
Population in 2004	100,748	175,730	83,579	53,063	57,616
Population in 2010	111,484	234,331	89,787	60,063	65,524
Growth Rate (% pa)	1.69	4.8	1.19	2.07	2.14
Average Household size in 2004	4.4	5.6	4.5	4.5	4.2
Average Household size in 2010	5.2	6.7	5.4	5.4	4.7
No of subdistricts	6	6	6	7	4
No of suco	59	31	50	30	18

Source: RDTL Government website, <http://timor-leste.gov.tl/?p=4144&lang=en&lang=en>

The following information provides a general description of the populations of the target districts, with district level comparisons where appropriate, in terms of:

- Age
- Gender
- Household size
- Marital status
- Education
- Occupation
- Income.

#### Age distribution

The majority of respondents in the survey areas were in the 30-64 years old age groups. 53.3% of the respondents were in the early productive years of 30-44 years, while approximately 29.6% were in the later productive 45-64 year old range. Younger respondents, still moving to the peak of their productive years accounted for 16.0% of the respondents. Only a very small proportion (1.0%) were senior citizens i.e. 65 years and older.

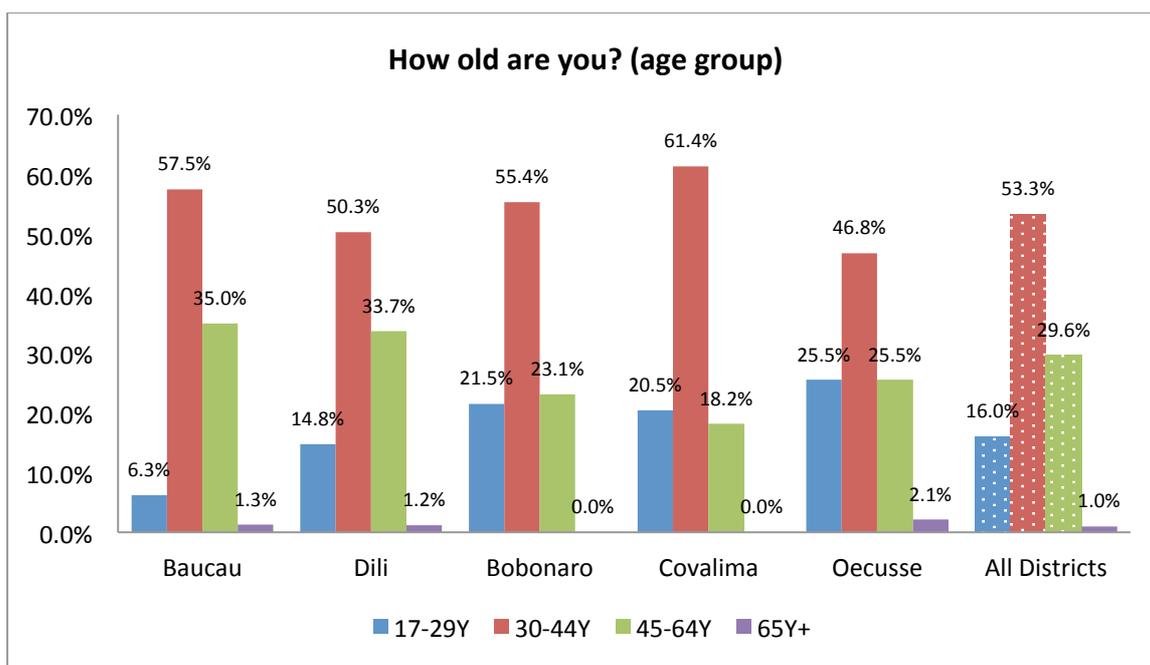


Figure 3-2. Age distribution of respondents

The general trend in age distribution is repeated in each district with the 30-44 year old age group dominating.

### Gender distribution

Males constituted 98.5% of total respondents, while female respondents only made up 1.5%. This gender distribution was expected with the questionnaire objective, which emphasised those who catch fish and/or utilise marine resources for income. The strong gender difference reflects the reality that very few women go to sea in canoes or boats to fish.

Table 3-2. Gender distribution of respondents by district

		SEX				TOTAL	
		MALE	%	FEMALE	%	Total	%
DISTRICT	Baucau	81	20.0%	0	0.0%	81	20.0%
	Dili	165	40.7%	4	1.0%	169	41.7%
	Bobonaro	63	15.6%	2	0.5%	65	16.0%
	Covalima	43	10.6%	0	0.0%	43	10.6%
	Oecusse	47	11.6%	0	0.0%	47	11.6%
Total		399	98.5%	6	1.5%	405	100.0%

As earlier mentioned above in the section of sampling rationale (see paragraph 2.1.1) because female respondents found it difficult to answer the survey questionnaire during the pre-test and therefore failed to produce useful data, male fishers were predominantly chosen as respondents of the questionnaire survey.

However the survey covered some gender issues, which were included in the questionnaire. The status and roles of women in the families or households of respondents were also surveyed and is discussed in the later chapters of this report.

### Household size

Most respondents (83.4%) belonged to larger households i.e. at least 5 persons/household. This is consistent with the average household size in the country, which is 5.8 based on the data from the last 2010 population census. Further, from this survey, only a small number of respondents (16.6%) belonged to smaller households (1-4 persons/household).

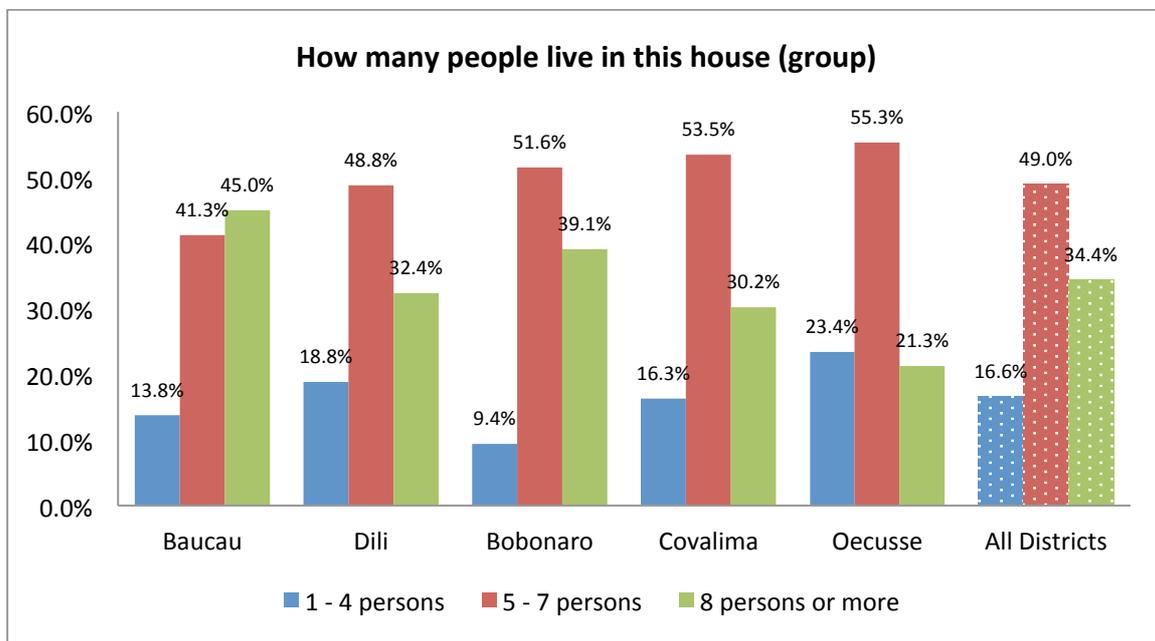


Figure 3-3. Household size of respondents

### Marital status

Respondents in the survey area were overwhelmingly married people (91.1%). Only about 9% of respondents were not married or single.

### Education level

Most respondents interviewed (70.9%) reported having some level of formal education. The remaining 29.1% reported not having any formal education.

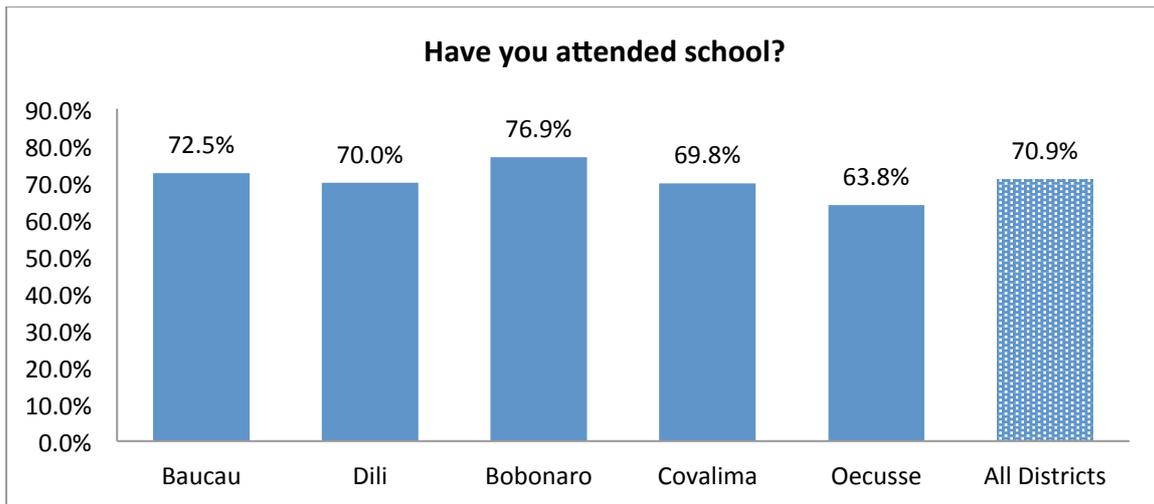


Figure 3-4. Percentage of respondents who attended school

Among those who had attended (attempted or completed) some formal schooling, the predominant level had only attended elementary school (59.2%) of which 34.9% said they had attended but not completed it, while the other 24.3% said they had completed elementary school.

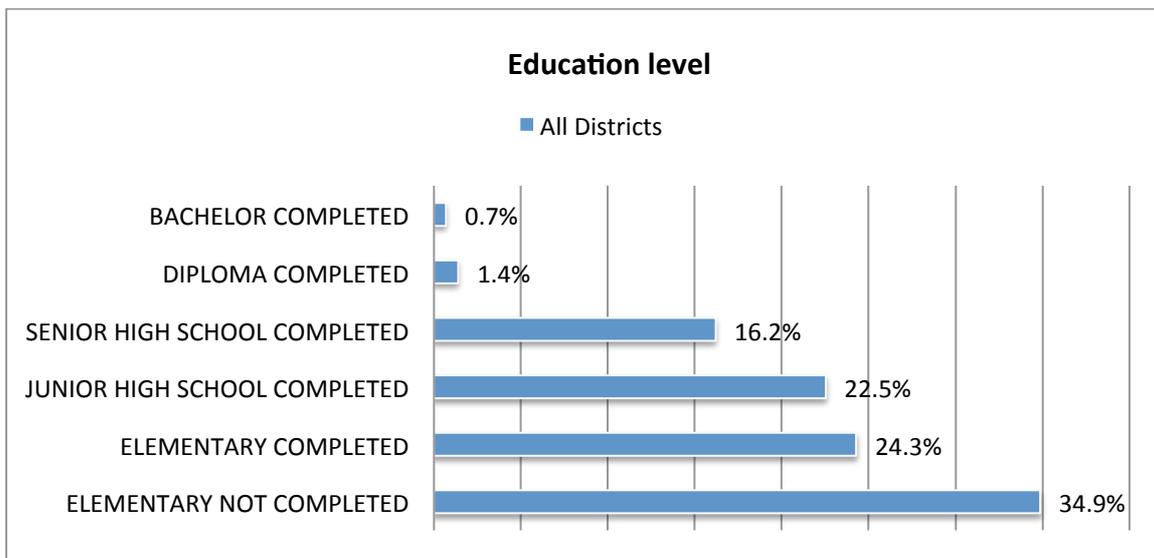


Figure 3-5. Education level of respondents

In comparison to the other districts, the sample population of Bobonaro has the lowest educational achievement for almost all measures after elementary school.

Table 3-3. Education level of respondents per district

What level has been completed?	Baucau	Dili	Bobonaro	Covalima	Oecusse	All Districts
Elementary, not completed	33%	31%	45%	35%	34%	35%
Elementary, completed	18%	22%	33%	23%	31%	24%
Junior High, completed	33%	20%	14%	29%	21%	23%
Senior High, completed	16%	23%	4%	13%	14%	16%
Diploma, completed	0%	2%	4%	0%	0%	1%
Bachelor, completed	0%	2%	0%	0%	0%	1%

### Main occupation

Almost all respondents (92.8%) relied on marine resources as their main source of income. The remaining 7% consisted of farmers (4%), teachers (1.2%) and other work (e.g. farm labourers or kiosk owners).

Table 3-4. Main occupation

Main occupation	Baucau	Dili	Bobonaro	Covalima	Oecusse	All Districts
Fisher	91.40%	91.70%	90.60%	95.50%	100.00%	92.80%
Teacher	1.20%	2.40%	0.00%	0.00%	0.00%	1.20%
Farmer	6.20%	2.40%	9.40%	2.30%	0.00%	4.00%
Farm Worker	0.00%	1.20%	0.00%	0.00%	0.00%	0.50%
Kiosk	0.00%	2.40%	0.00%	0.00%	0.00%	1.00%
Processed Fish Seller	1.20%	0.00%	0.00%	2.30%	0.00%	0.50%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

### Secondary occupation

Many respondents (38%) stated that in addition to their main occupation they also had additional income earning activities.

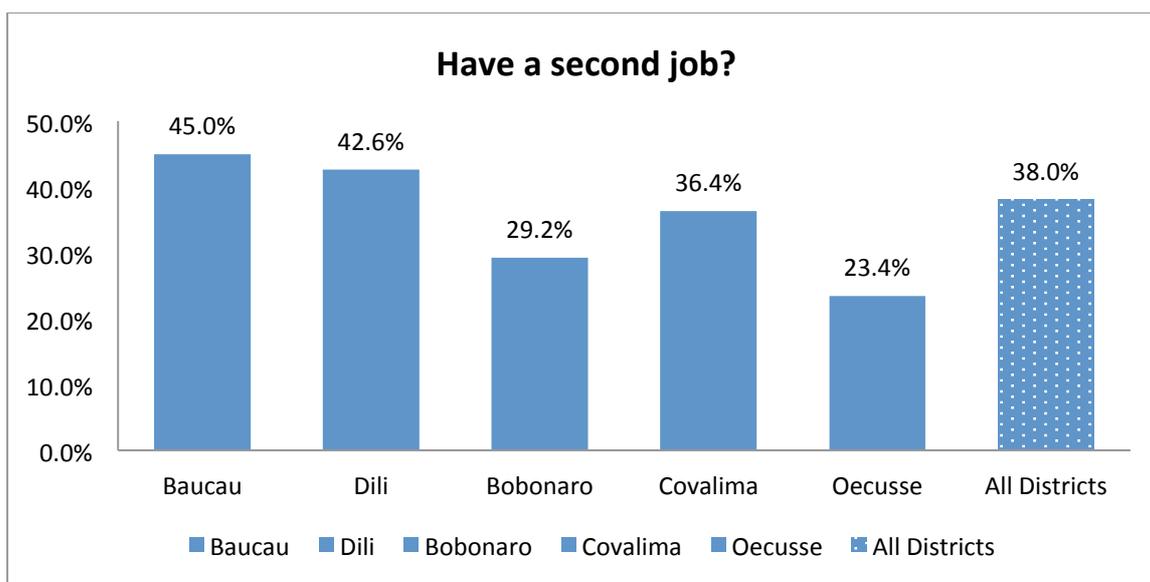


Figure 3-6. Respondents per district who have a second job

Of this group (38%, or 154 respondents) the majority work as farmers (27.3%) followed by animal breeders (26.6%) and building workers (18.8%). Secondary occupations involving marine resource utilisation included fishing seaweed farming (10.4%) and reef gleaning (3.9%). Note that some respondents had multiple secondary occupations. For further analysis of the second job, the few respondents with multiple answers for their second job used the first job chosen in the questionnaire's job list.

Table 3-5. Second occupations of respondents

Second job	All Districts
Farmer	27.3%
Breeder (animals)	26.6%
Building worker	18.8%
Fisher/ peskador	16.9%
Own kiosk/small shop at home	10.4%
Seaweed farmer	10.4%
Labour (private sector)	7.1%
Fish worker/ peskador	5.2%
Processed fish vendor/seller	4.5%
Farm worker	3.9%
Collect fish/marine biota during low tide /reef gleaner	3.9%
Fish collector/buyer from fisher / peskador	1.9%
Teacher	1.3%
Lecturer	0.6%

Second job	All Districts
Fungsionario empresariu (business/private company employee)	0.6%
Informal vendor	0.6%
Director	-
Member of parliament	-
Medical doctor/animal doctor	-
Fungsionaria (employee) PNTL/F-FDTL	-
Market/shop worker	-
Seller at market/mall/shop	-

### Women as fishers

Generally 18% of households contain at least one woman who works as a fisher. From this 18%, 78% of them are in Dili and 14% in Baucau. Relationship between women as fishers and what roles women have in fisheries-related activities is discussed in the later part of this chapter.

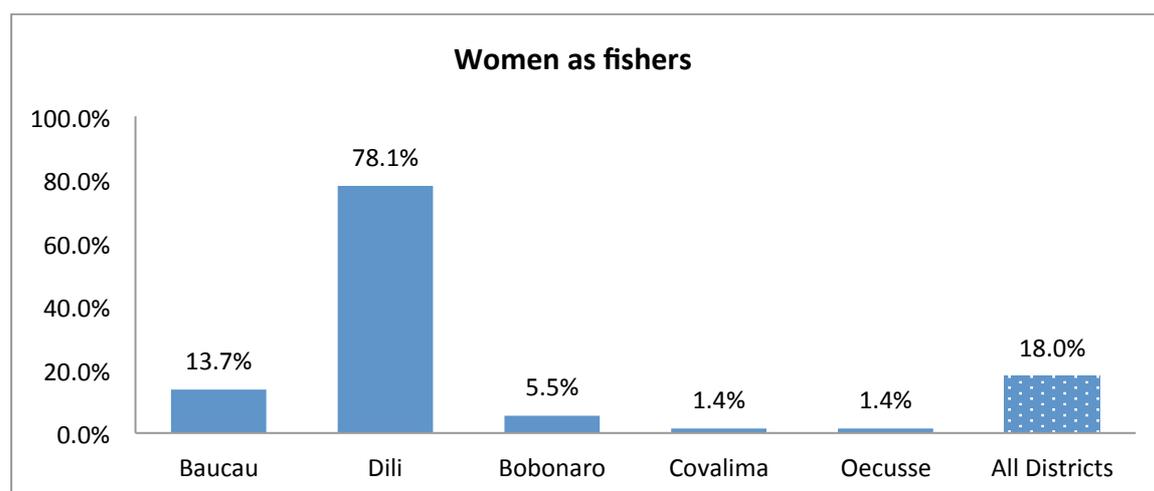


Figure 3-7. District distribution of female fishers

On the status of women in fisheries per district, Dili district has the highest number of women (see table below, 51+15=66) who were also fishers, followed by Baucau (4+10=14). The female fisher being the wife of the head of the household was common in Dili (32%) whilst being the daughter in the family and a fisher at the same time was common in Baucau (13%).

Table 3-6. Status of women as fishers per district

DISTRICT		Status of woman who is fisher in the respondent's household				Total
		Wife in household is a fisher	Daughter in household is a fisher	Other woman in household is a fisher	Household has no women fishers	
Baucau	Count	4	10		69	79
	% of district	5.1%	12.7%	0.0%	87.3%	100.0%
Dili	Count	51	15	2	104	161
	% of district	31.7%	9.3%	1.2%	64.6%	100.0%
Bobonaro	Count	2	2		57	61
	% of district	3.3%	3.3%	0.0%	93.4%	100.0%
Covalima	Count		1		41	42
	% of district	0.0%	2.4%	0.0%	97.6%	100.0%
Oecusse	Count	1	1		44	45
	% of district	2.2%	2.2%	0.0%	97.8%	100.0%

Notes:

- Percentages and totals are based on respondents.
- Possible multiple answers by one respondent.

The table above has 388 respondents (=79+161+61+42+45, thus 96% of total GSA sample) who answered the question. The percentages in the table are based on the district and although not many, there are respondent households that have a fisher who is simultaneously a wife and also a daughter in the family. This could happen where 3 generations of family members live in the household. In some other cases the wife is a fisher, and at the same time at least one other (Other) female household member is also a fisher.

### Average income

Overall, the majority of respondents (67.5%) reported an average monthly income in the range \$100 - \$399, and this was reasonably consistent across districts.

At the upper and lower ends of income, the differences between districts were pronounced. Covalima was notable for a significantly greater percentage (23%) reporting monthly incomes of less than \$100, this being more than double the average. A significant number of overall respondents (8.7%) reported an average monthly income of \$600 or more. This varied widely across districts being highest in Dili (13.6%) and being close to 5-district average in Baucau (7.5%) and Covalima (6.8%).

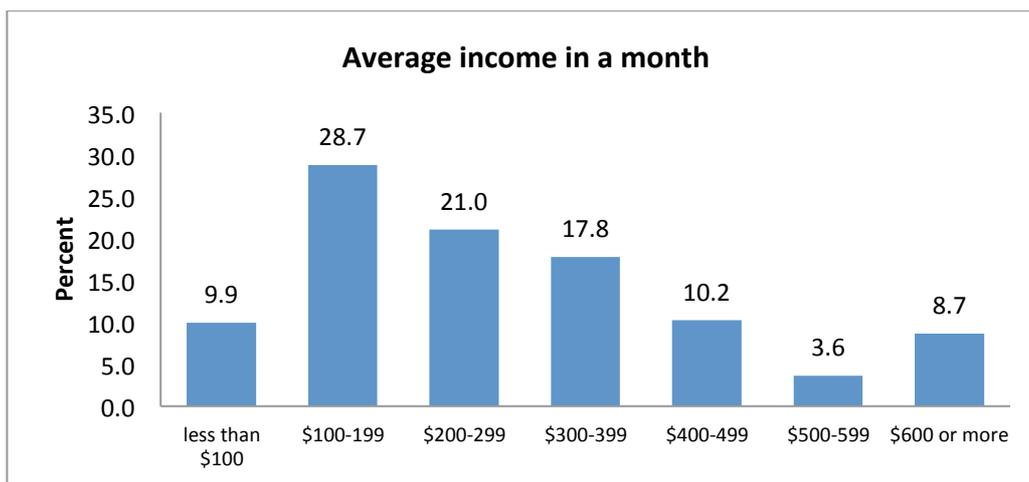


Figure 3-8. Respondents groups based on monthly income

Table 3-7. Monthly income distribution (by district)

Monthly Income	Baucau (%)	Dili (%)	Bobonaro (%)	Covalima (%)	Oecusse (%)	All Districts (%)
Less than \$100	15.0	8.9	4.6	22.7		9.9
\$ 100 - 199	26.3	22.5	36.9	34.1	37.5	28.7
\$ 200 - 299	17.5	20.1	23.1	13.6	35.4	21.0
\$ 300 - 399	15.0	21.3	16.9	11.4	16.7	17.8
\$ 400 - 499	8.8	11.2	13.8	9.1	6.3	10.2
\$ 500 - 599	10.0	2.4	1.5	2.3	2.1	3.6
\$ 600 or more	7.5	13.6	3.1	6.8	2.1	8.7

Specifically for the high-income groups starting from \$400 per month, the types of second job were checked against the income level of respondents and differentiated by districts. The test was done for only the fishers/peskador respondents, which were the majority of the respondents. The test result shows that the second job that had high income above \$400 were mainly farmer, followed by building worker. These high-income earners were mainly located in 3 districts: Dili, Covalima and Baucau (see colour differentiation in the figure below).

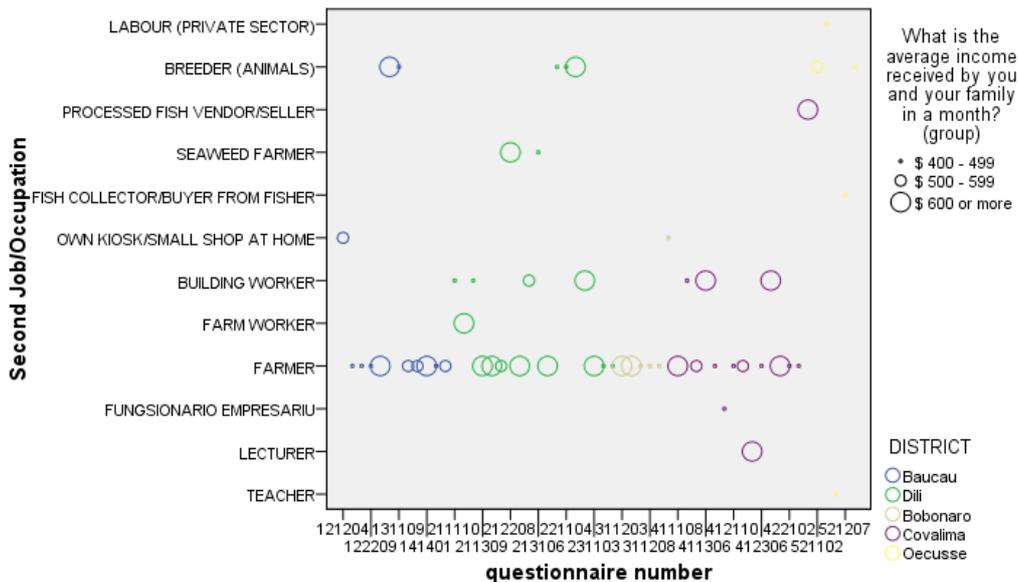


Figure 3-9. Second job versus monthly income (first job is fisher/peskador)

In addition, by checking the data for all surveyed respondents, it was found that almost 100% of respondents, who have income above \$400, have their main/first job as fishers/peskador.

### 3.2 Program Areas

The following sections (i.e. Section 3.3 to Section 3.7) provide a summary analysis of the survey in each of the five program areas i.e.

1. Co-management
2. Safety at sea
3. Post-harvest fisheries
4. Livelihoods enhancement and diversification
5. Micro-finance

Unless clearly indicated otherwise, all results discussed refer to the Fisheries Livelihoods Project Survey Area (FSA) data.

### 3.3 Co-management

Co-management practice can be defined as a partnership arrangement in which government agencies, fishers, non-governmental organizations, and other stakeholders (fish traders, boat owners, business people, etc.) share the responsibility and authority for fisheries management (Pomeroy and Berkes, 1997).

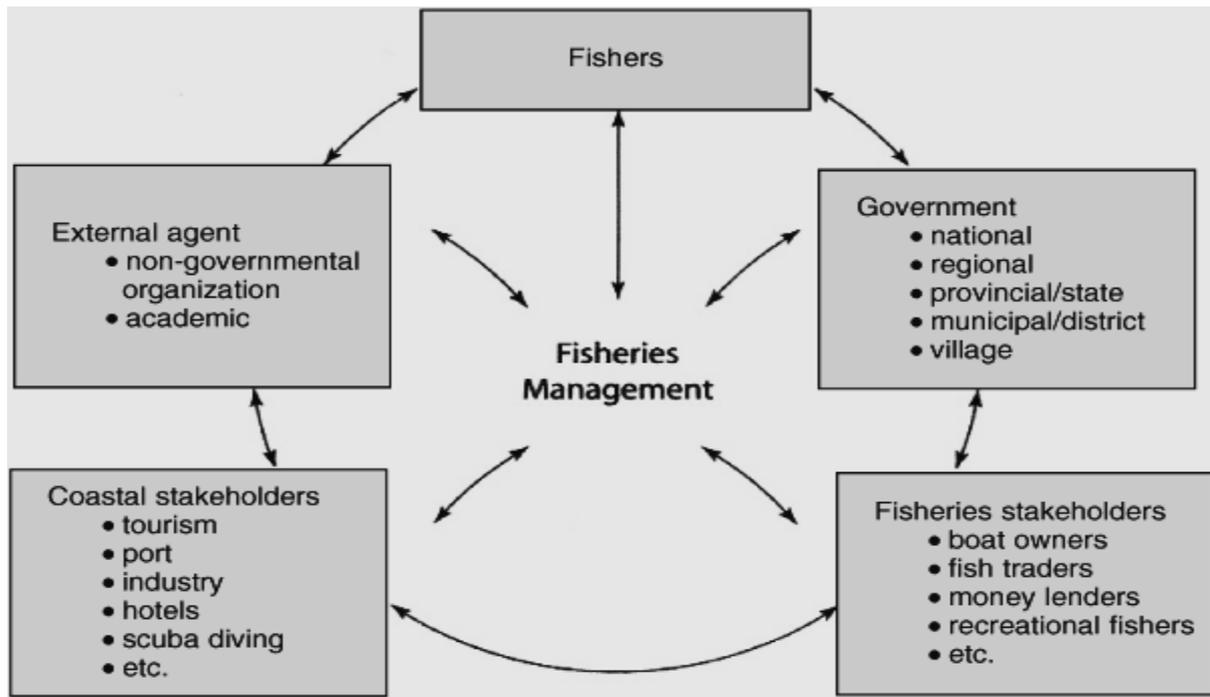


Figure 3-10. Co-management is a partnership (Pomeroy and Berkes, 2001)

The concept and mechanisms of co-management have been practiced by fishers/other stakeholders in various parts of Southeast Asia and the world, with many variations in the partnership arrangements, degree of power-sharing and integration of local management (informal, traditional, customary), and stakeholders' understanding and expectations.

Co-management is frequently called participatory, joint, stakeholder, multi-party or collaborative management. It is a participatory and flexible management strategy that provides and maintains a forum or structure for action on participation, rules making, conflict management, power sharing, leadership, dialogue, decision-making, negotiation, knowledge generation and sharing, learning, and development among resource users, and government. It covers various partnership arrangements and degrees of power sharing and integration of local (informal, traditional, and customary) and centralised government management systems (Pomeroy and Rivera-Guieb, 2006).

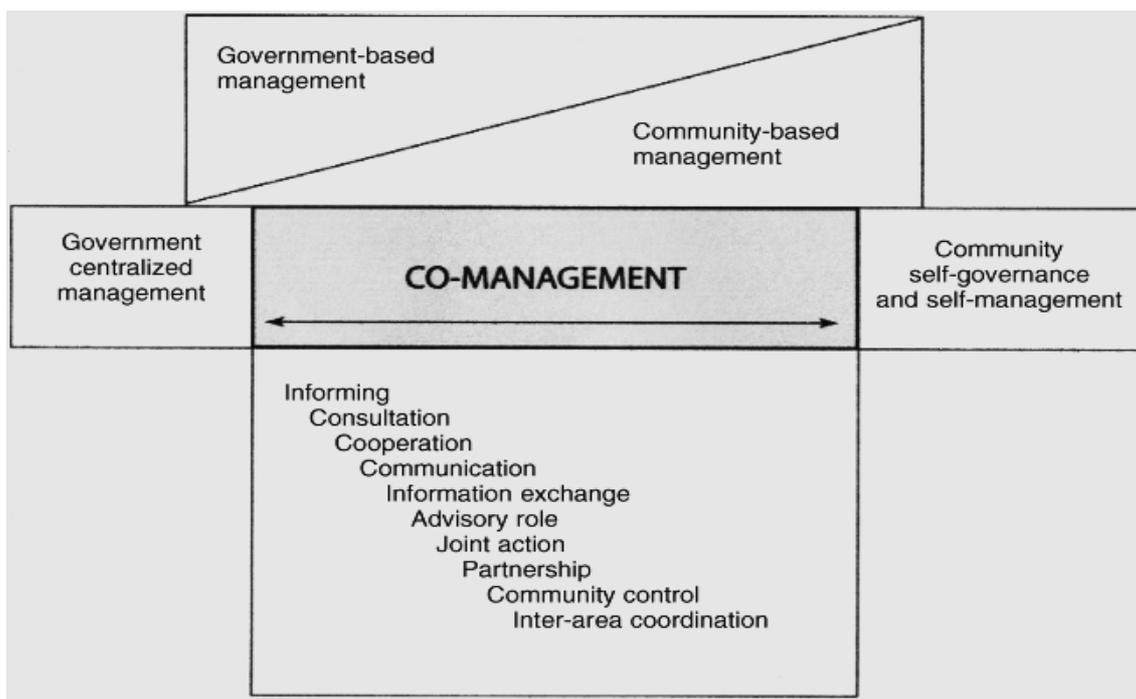


Figure 3-11. Co-management integrates local and centralized government management systems (Pomeroy and Rivera-Guieb, 2006).

Co-management mechanisms at national government, regional government and traditional levels whenever they exist in the target survey areas need to be studied together with the potential drivers of their future existence.

### 3.3.1 Awareness and understanding of co-management

In the Fisheries Livelihoods Project Survey Area (330 respondents in 5 sub-districts), 21.5% were familiar with the term *co-management*, while the remaining 78.5% were ignorant of the term.

Table 3-8. Awareness of co-management

Familiarity with the term co-management	General Survey Area (GSA)		Fisheries Livelihoods Project Survey Area (FSA)	
	Response	%	Response	%
Yes	85	20.8	71	21.5
No	321	79.2	259	78.5
Total	406	100,0	330	100

In addition to the general low level of familiarity, overall, there was notable range of interpretations of the meaning of *co-management*.

About 32% of the respondents who recognized the term co-management understood it as *communities working together with the government*. The majority understood it to have other meanings including *collaboration among groups of fishers* (67%) or *sharing responsibility among fishers* (22%).

Differentiating between the survey areas, the term co-management also meant sharing responsibility among fishers for 21.9% of respondents in the general survey area, 15.8% of them in RFLP’s FSA area. In both areas, around 32% of the respondents said fishers from other village can utilize their coast/sea.

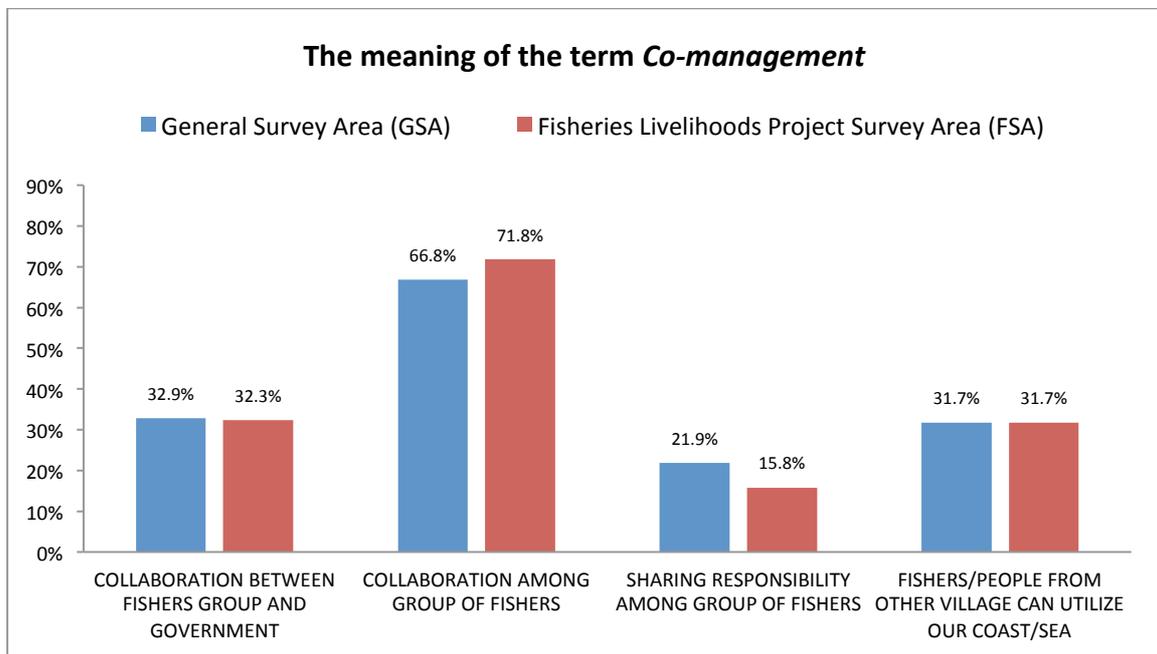


Figure 3-12. Respondents' understanding on the meaning of co-management

In discussions with fishers there were clear examples of informal collaboration among fishers, between fisher groups, and between fisher groups and government agencies.

Though FGDs did not specifically address definitions of co-management, the fishers did recognize traditional fishing groups, which existed as informal groups where fishers work together in their fishing activities, i.e. operating net fishing. Collaboration between fisher groups and government has occurred, especially where the fisher groups were established by the government as a way of channeling government assistance, i.e. nets, small engine (5.5 HP) for ‘ketinting’ or local wooden canoes, and other fishing gear.

Information from FGD in Baucau revealed that a fisher group in Oralan, which had already received rumpon/Fish Aggregating Devices (FADs) from the Baucau Fisheries Office, worked together with another fisher group from Suco Caicua and assisted the latter in rumpon management and other technical aspects.

### 3.3.2 Community groups

The existence of community groups is important as a basis for implementing co-management, particularly in micro-finance management. Strengthening of groups’ organizational capacity will be a good starting point.

**Types of community groups:** Three types of community groups were commonly recognized by the respondents in all areas, i.e. Savings and Loan Groups, Women’s Groups, and Fisher’ Groups. Approximately 80% of respondents in both areas recognised Fisher’ Groups and although most respondents were men, 37% knew of the existence of women’s

groups. Savings and Loan Groups were more popular than cooperatives, with less than 10% of the respondents recognizing cooperatives in comparison to around 22% mentioning Savings and Loan Groups.

Table 3-9. Types of community groups

Community Groups	GSA		FSA	
	Response	Frequency	Response	Frequency
Fisher groups	300	73.8	262	79.3
Women's groups	160	39.5	123	37.4
Saving and loan groups	95	23.5	73	21.9
Cooperatives	31	7.6	18	5.5
Farmer's groups	25	6.4	20	6.3

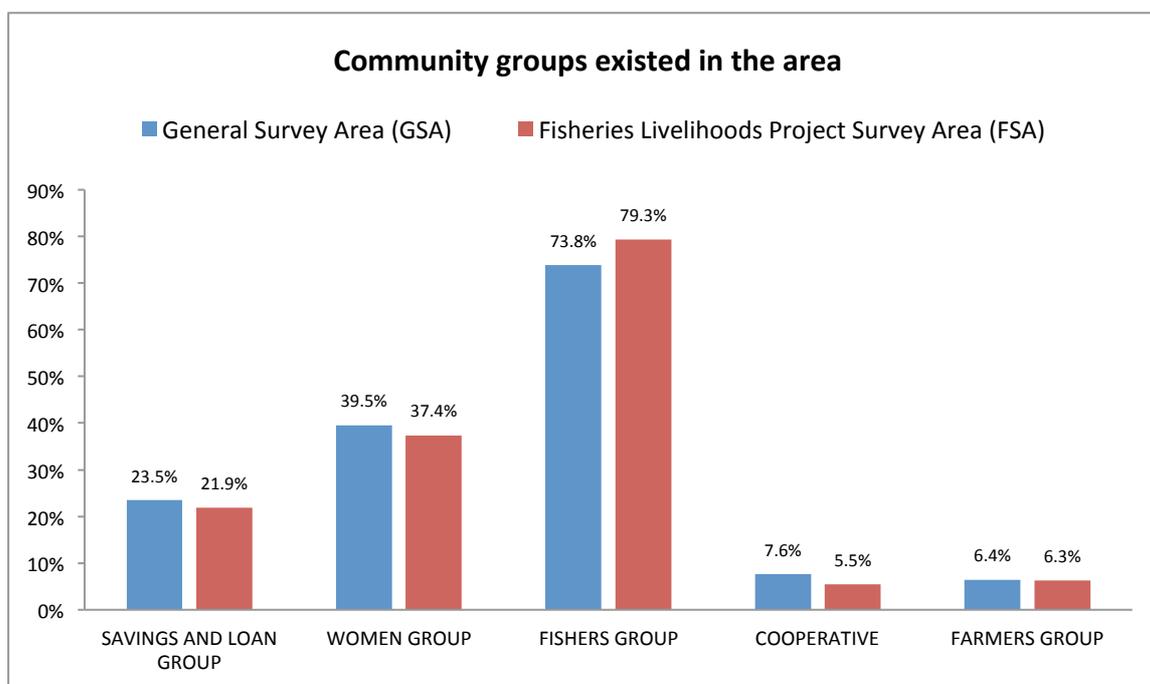


Figure 3-13. Types of community groups

**External sources of assistance for community groups:** The respondents recognized several parties providing assistance to the community groups. The Fisheries Office was mentioned by over 20% of respondents in both GSA and FSA areas. International NGOs were better known in the FSA area (19%) than they were in the GSA area (12%).

Table 3-10. External parties providing assistance to community groups

Assistance providers	GSA		FSA	
	Resp.	Freq.%	Resp.	Freq.%
District government	37	9.1	41	12.5
Subdistrict government	21	5.2	20	5.8
Fisheries office	82	20.2	68	20.4
Local NGO	61	15.0	57	17.0
International NGO	50	12.3	64	19.6
Private company	4	1.0	2	0.6
Individual	38	9.6	11	3.3

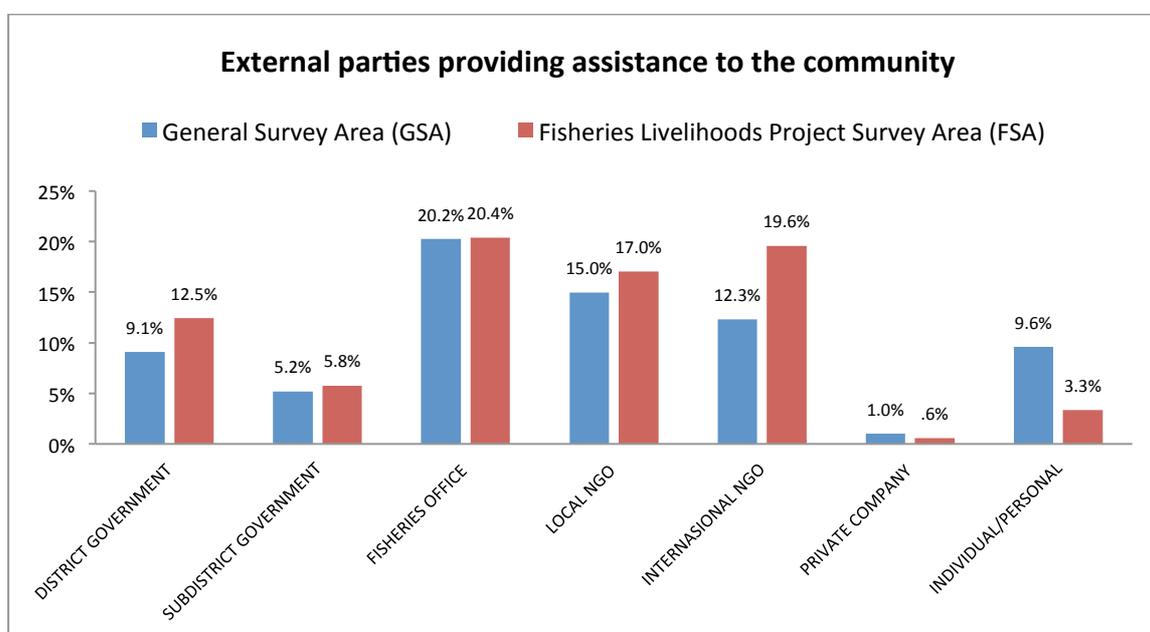


Figure 3-14. External parties providing assistance to community groups

**Community groups receiving external assistance:** In the FSA area, fisher’s groups were identified as the main type of group, which received the most external assistance (42%). They were followed by women’s groups (16%) and farmer’s groups (14%). Relatively little assistance was provided to other groups including product processing groups, seaweed farmers, and ‘nila’ fish (nile tilapia) farmers.

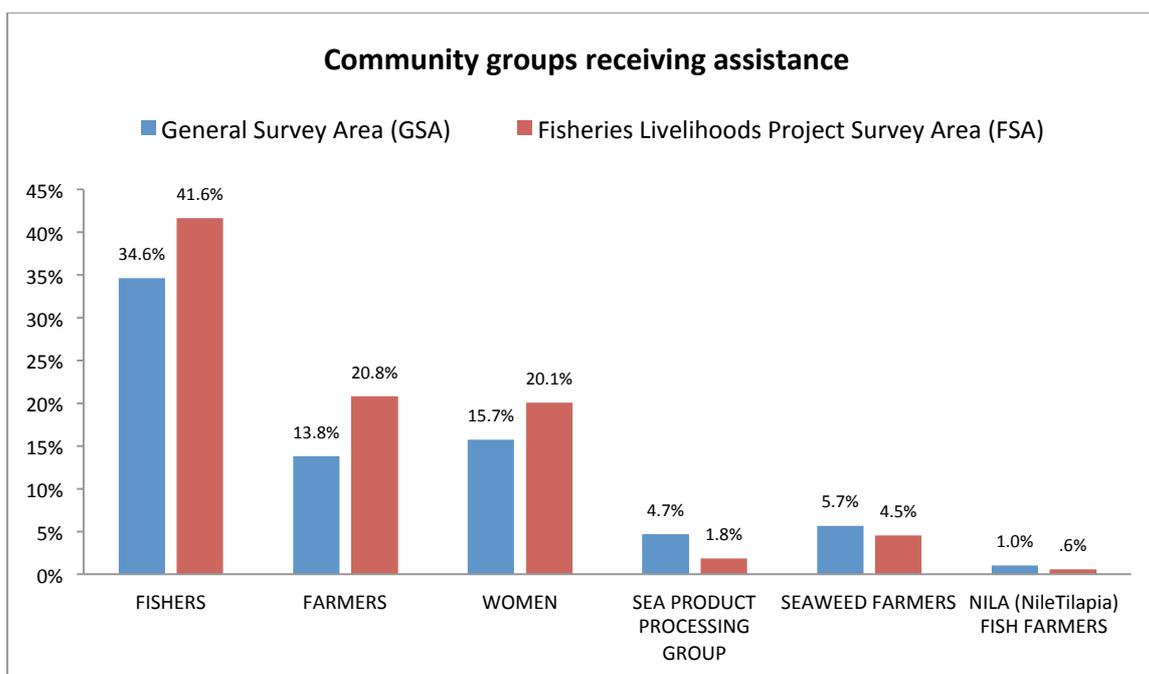


Figure 3-15. Community groups that receive assistance

FGD with fishers from Baucau, Bobonaro and Atauro confirmed that fishing groups were the ones receiving most assistance from the government. Fisher groups from Atabae have received training in the use of longline. Assistance was also given in the form of fishing gear, such as mono-filament nets (1.5-2.5 inch mesh) and motor engines.

### 3.3.3 Knowledge concerning policy and regulations

The existence of a village body responsible for regulating marine resource utilisation was only reported by 11% of respondents. Most respondents (80%) reported that there was no such body in their area, while 9% did not know. Noting that the subset of respondents who knew of the village body was very low (GSA=56 and FSA=37) and may therefore not provide reliable data on the subsidiary questions, further inquiry revealed:

- The identified village bodies were currently active (11.1%);
- There are written regulations/agreements (3.4%) for utilisation of marine resources;
- Most regulations (3.3%, representing 79% of all written regulations) were regulated by the village government.

Table 3-11. Local policy and regulations

Question	GSA		FSA	
	Responses	%	Responses	%
<b>Knowledge of village body</b>				
Yes	56	13.8	37	11.2

Question	GSA		FSA	
	Responses	%	Responses	%
No	306	75.4	264	80.0
Do not know	44	10.8	30	8.8
Total	406	100.0	330	100.0
<b>Existence of regulation/written agreement (regardless village body is still active or not)</b>				
Yes	29	6.3	13	3.4
No	25	5.4	19	5.0
Do not know	2	0.4	32	1.3
Total	56	12.1	37	9.7

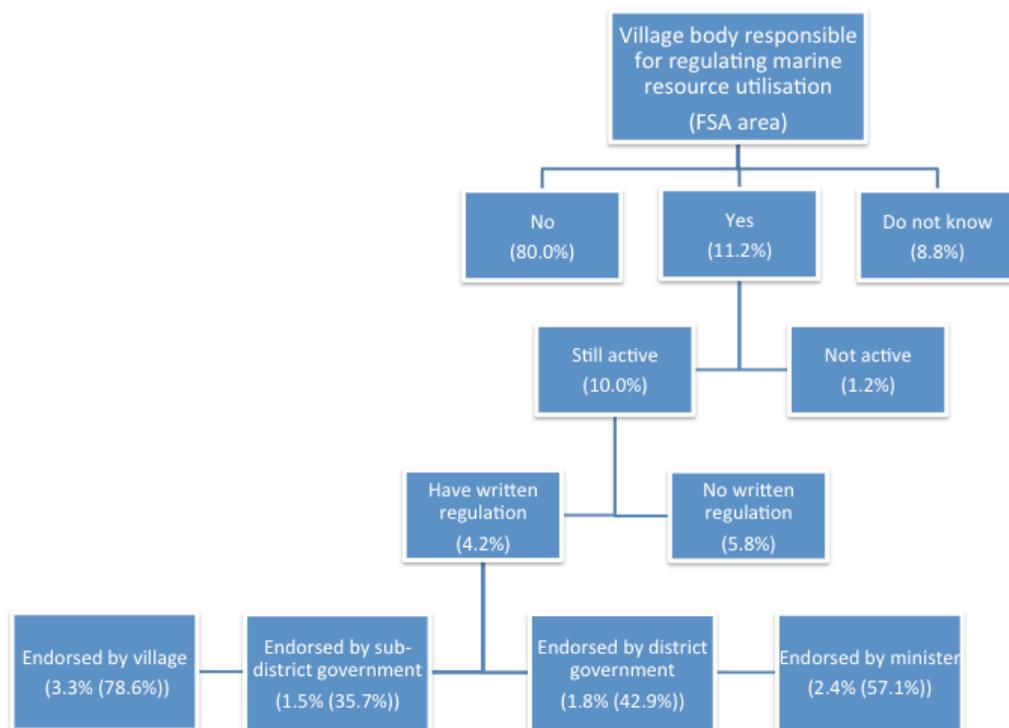


Figure 3-16. Local co-management status in Fisheries Livelihoods Project Survey Area (FSA) where regulating body is still active in the area

Of the 3.4% of respondents in FSA who knew of written regulations/agreements to regulate sea resource utilisation in their area, the districts of Suai (63% or 63% x 37 = 23 responses), Atauro (60% = 22 responses) and Atabae (57% = 21) have quite significant responses

compared to the other 2 subdistricts (see table below). The result also shows that Oecusse (GSA) and Pante Makasar (FSA) is the only district/subdistrict that lacks written regulations/agreements.

Table 3-12. Written regulations/agreements in GSA and FSA areas

	There are written regulations/agreements to regulate sea resources utilisation		
District (GSA)	GSA (from 29 responses = 6.3%)*	FSA (from 13 responses = 3.4%)*	Subdistrict (FSA)
Baucau	50.0%	0.0%	Vemase
Dili	55.9%	60.0%	Atauro
Bobonaro	60.0%	57.1%	Atabae
Covalima	60.0%	62.5%	Suai
Oecusse	20.0%	16.7%	Pante Makasar
Weighted Average	53.6%	42.4%	Weighted Average

\*) Number of responses (GSA=6.3%, FSA=3.4%) is a weighted average based on responses from all respondents in all respective districts and subdistricts who know a village regulating body (GSA=13.8%, FSA=11.1%). Note: The relationship of this table with previous table is that e.g. 42.4% x 37 total responses  $\approx$  13 responses, 53.6% x 56  $\approx$  29.

## Other findings

Although there were only a small number of survey respondents who knew of existing regulations, the team found that local wisdom and initiatives do clearly exist and were operating in several areas.

In Bobonaro district, there is a local wisdom called *Tara Bandu*, which is basically a system of natural resource management, where periodically an area will be protected or closed, and activities involving in the taking or catching marine biota in the region will not be allowed. *Tara Bandu* operates as an unwritten agreement at suco, subdistrict and district level. This system operates by consensus among local leaders and traditional elders while the government supports the implementation of the agreed protection measures. The system has been non-operational since 2005/2006 due to a conflict between Aldeia Balibo and Maliana over which is entitled to manage this tradition. This local wisdom is largely consistent with government regulations. There are also government rules to limit the size of mesh nets or Redi nets that can be used for fishing. This is to avoid catching small fish, which do not meet sales standards. The Bobonaro government plans to revitalise and re-implement *Tara Bandu* system, which is expected to be in force in 2012.

In Atauro, there is an agreement not to conduct fishing in the area of *padang lamun* (sea grass) which extends from the shoreline to around 100 m. The area is easily identified and monitored due to the visibility of the seagrass. Fishers must anchor their boats outside this area.

On the initiative of subdistrict head, who is very concerned with Atauro development and the preservation of local/traditional wisdom, a meeting has already been held between the traditional and community figures of all suco in Atauro to establish a kind of traditional rule concerning the community issues, the problems of area borders between suco, and fishery problems. It is the intention that the outcomes of the 2010 meeting among suco will be validated to become a regulation of the Atauro area in 2011/2012.

### 3.3.4 Conflict resolution

The degree of conflict in a fishing area is a measure of the acceptance and effectiveness of co-management arrangements.

**Incidence:** The majority of respondents (91%) said there was no conflict either among communities within an aldeia or between neighbouring aldeia. Only 9% mentioned the existence of any conflict.

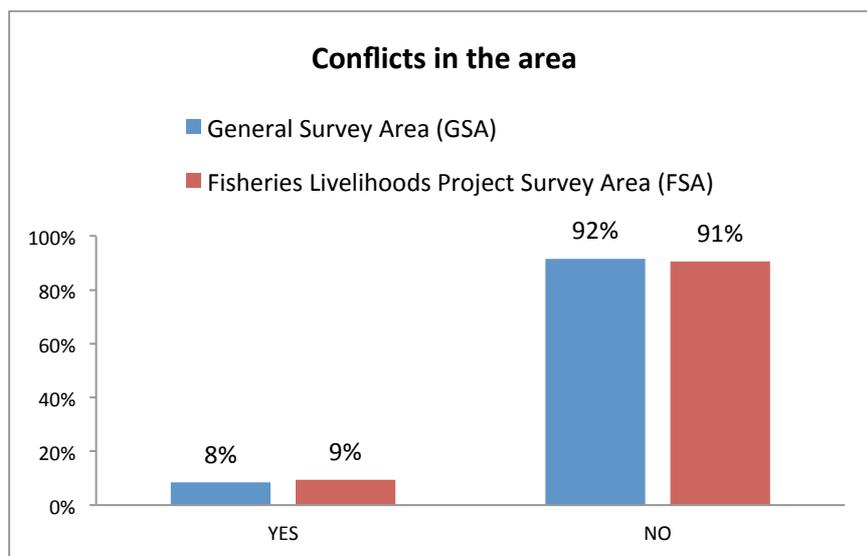


Figure 3-17. Conflicts occurred in the area

**Causes:** Despite the very low incidence of conflict, potential causes of conflict among fishers were identified as relating to: (i) fishing gear used and fishing areas, both locally and with outside fishers, and (ii) conflict due to harvest sharing with other local fishers.

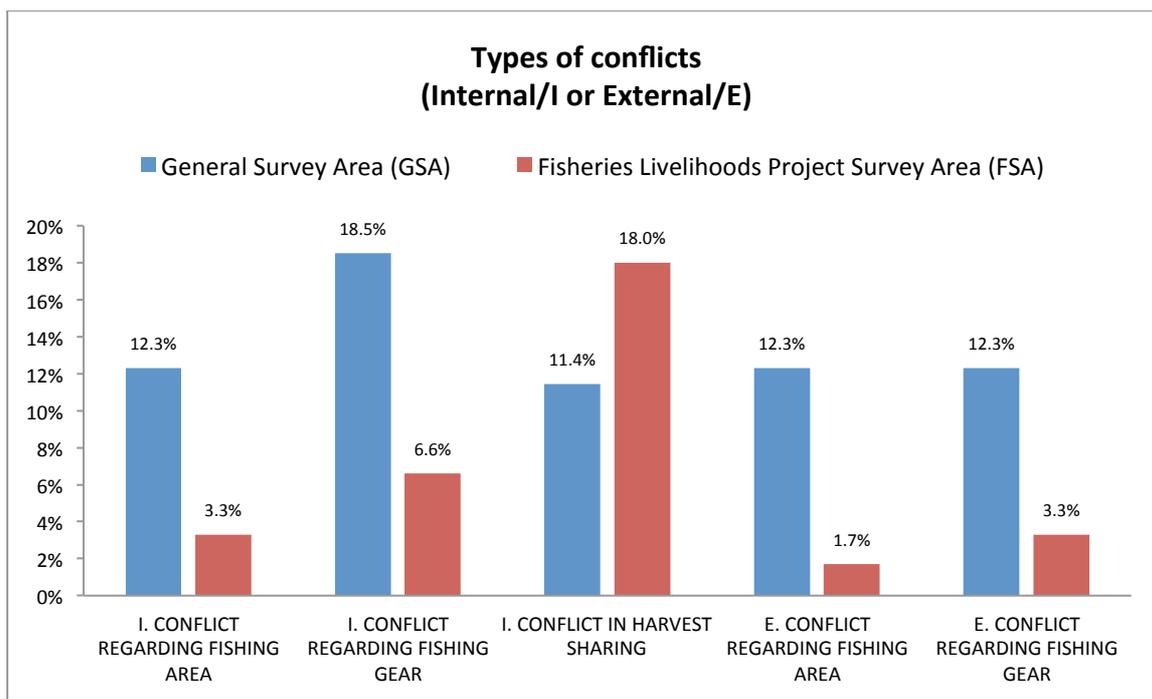


Figure 3-18. Reasons for conflicts

**Resolution:** Where conflict does occur it is readily resolved according to 84.4% of respondents. Conflicts are often resolved through fishers/community meetings (40%) or with the involvement of elderly/community leader (35%). Other government authorities could take a role in mediation and conflict resolution such as the Local Fisheries Office (16%) and the police (23%). The chief of the aldeia (36%) and chief of the suco (18%) were also identified as important in conflict resolution.

Both the government and the church have significant roles in conflict resolution. In Suco Vila for example, conflict among the fishers and villagers in general was almost non-existent. Where there were conflicts in society, the Customary Leader coordinates with the Chefe Suco and Aldeia to act as mediators for the parties in dispute. Usually internal suco/aldeia disputes and conflicts can be resolved peacefully.

In 2003/2004 an inter-suco conflict occurred, where fishers from Suco Beloi caught fish at Suco Vila using mono-filament net of ¼ inch mesh, which was actually banned. As a result the fishers caught juvenile fish, below minimum size. A meeting between the fishers, the customary leader and the heads of both sucos was held, in the presence of the police and the Head of the subdistrict. The fishers of Suco Vila were present to express their opinion on the matter. In settlement of the conflict, the net was confiscated, the fishers signed a written agreement not to repeat their unlawful action and paid compensation, in the form of materials for a customary ceremony including pepper, betel, areca nut, tobacco, distilled palm wine, fish, and a cow.

The Head of the Atauro Subdistrict is committed to the development of the subdistrict and preservation of the traditional customs. A meeting with customary leaders and the people from all sucos in Atauro has been held aiming at confirming customary rules concerning the

community aspects, the boundary between sucos and fisheries disputes. The customary rules are expected to be endorsed by regulation in Atauro in 2011 or 2012.

### 3.3.5 Women's roles in fisheries

In fishing livelihood-related activities, women were considered by respondents to play important domestic roles in household financial management (57%).

Women's direct involvement in fisheries was limited mainly to product selling (42%) and product processing (27%). Other fisheries related activities mentioned were reef gleaning (8%) and seaweed farming (5%). Only 2% of respondents mentioned the involvement of women in fishing at sea. Only 7% mentioned cooking/household chores as their roles. It should be noted that the answers could be multiple and thus one woman can have overlapping roles.

Table 3-13. Roles of women

Women roles	GSA		FSA	
	Responses	Freq. %	Responses	Freq. %
Household financial management	198	48.8	186	56.5
Product selling	158	38.9	140	42.4
Product processing	90	22.2	89	27.0
Reef gleaning	38	9.4	27	8.2
Cooking/preparing for meal	9	2.2	22	6.7
Seaweed farming	52	13.0	16	4.8
Fishing at sea	24	6.2	7	2.4

As shown in the next figure, women play an important role in reef gleaning. They also take part in fish processing, though attempts at producing processed products for economic purposes have not been successful due to poor technique and the lack of markets.

Women were also reported to undertake active roles in other activities, such as training in product processing, running kiosks, household financial management and other non-fishing activities.

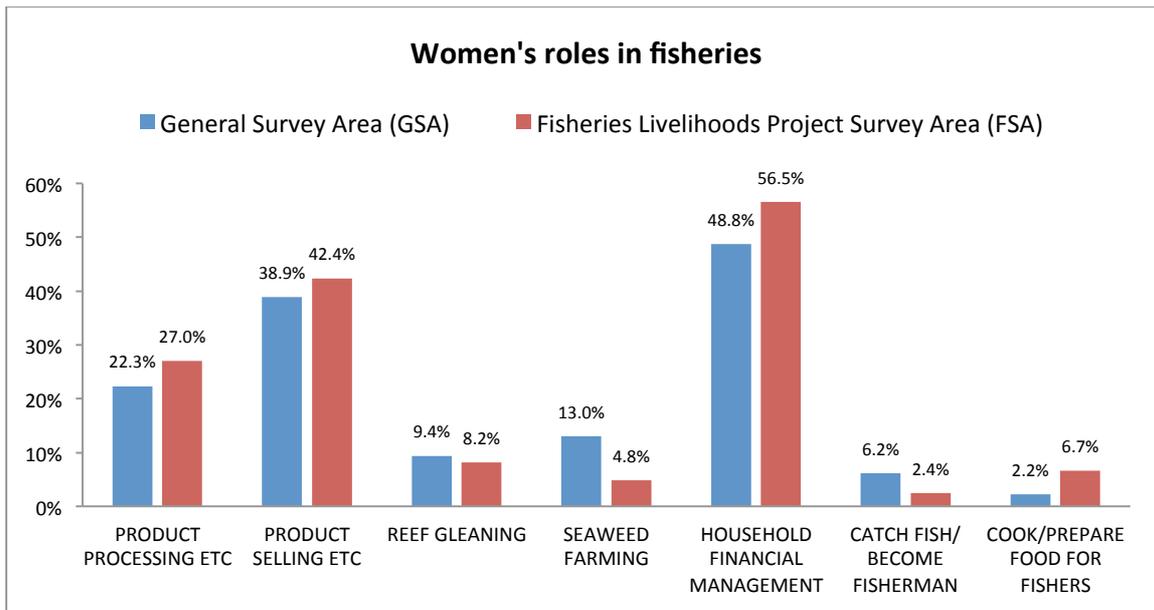


Figure 3-19. Roles of women

Further analysis on the General Survey Area, which shows a similar trend to the Fisheries Livelihoods Project Survey Area, women (wives or daughters in the family/household) who were heads of households and at the same time fishers, have product selling as their main role (63% wives and 66% daughter, see the numbers in bold in the table below). Wives have seaweed farming as their second role or activities, while daughters have the household financial management role. It is interesting to see why in their respective groups (% women\_fisher) daughters as heads of household have a significant higher role in financial management compared to wives as heads of household. FGDs and IDIs could not provide further explanation. It perhaps relates to the level of education of the daughters as it is assumed that they tend to be younger than wives and have a better education than the older generation does, which includes education in basic financial management.

Table 3-14. Roles of women who were also fishers

Roles of women		Woman fishers in household				Total
		Wife in household is a fisher	Daughter in household is a fisher	Other woman in household is a fisher	Households with no women as fishers	
PRODUCT	Count	20	11	0	63	88
PROCESSING	%roles	22.1%	12.1%	.0%	71.7%	
ETC	%fisher	34.3%	37.6%	.0%	20.2%	
PRODUCT	Count	36	19	2	112	156
SELLING ETC	%roles	23.1%	11.9%	1.4%	71.7%	
	%fisher	<b>63.1%</b>	<b>65.6%</b>	100.0%	35.6%	
REEF GLEANING	Count	7	0	0	31	38
	%roles	19.0%	.0%	.0%	81.0%	
	%fisher	12.6%	.0%	.0%	9.7%	
SEAWEED	Count	28	3	2	24	52
FARMING	%roles	53.1%	5.2%	4.1%	45.7%	
	%fisher	<b>48.2%</b>	9.5%	100.0%	7.5%	
HOUSEHOLD	Count	20	18	2	166	194
FINANCIAL	%roles	10.3%	9.2%	1.1%	85.3%	
MANAGEMENT	%fisher	35.2%	<b>63.1%</b>	100.0%	52.7%	
CATCH	Count	11	8	0	10	23
FISH/BECOME	%roles	48.5%	35.9%	.0%	42.4%	
FISHER	%fisher	19.8%	29.4%	.0%	3.1%	
COOK/PREPARE	Count	0	0	0	8	8
FOOD FOR	%roles	.0%	.0%	.0%	100.0%	
FISHERS	%fisher	.0%	.0%	.0%	2.5%	
OTHER	Count	2	3	0	4	9
	%roles	23.9%	33.1%	.0%	43.0%	
	%fisher	3.7%	10.3%	.0%	1.2%	
NOT SPECIFIC	Count	1	5	0	93	98
	%roles	1.0%	4.8%	.0%	95.2%	
	%fisher	1.8%	16.3%	.0%	29.6%	
<b>Total</b>	Count	57	28	2	315	388

Note: Percentages and totals are based on respondents.

### 3.3.6 Key baseline indicators for Co-management

Table 3-15. Key baseline indicators for Co-management

1	Indicator	Area	Baseline 2011	Target 2012	Target 2013
1.1	Community familiarity with the term <i>co-management</i>	FSA	21.5%	25%	30%
		GSA	20.8%	25%	30%
1.2	Correctly understand co-management to mean resource management collaboration between government and fishing communities	FSA	32.3%	35%	40%
		GSA	32.9%	35%	40%
1.3	Village body responsible for regulating marine resource utilization exists	FSA	11.1%	20%	25%
		GSA	13.8%	20%	25%
1.4	Written regulations exist and understood by the community	FSA	3.4%	15%	20%
		GSA	6.8%	15%	20%
1.5	Women played important roles in product processing	FSA	26.9%	30%	40%
		GSA	22.2%	25%	35%

## 3.4 Safety at Sea

The level of awareness of safety at sea measures in fishing communities was relatively low and the loss of life due to mechanical problems on boats, bad weather conditions and natural disasters was usually considered as an occupational risk. Data and information on the level of knowledge and regulation related to safety at sea, as practiced/adopted by the fishers are important to ensure the safety of fishers during fishing, diving to catch coral fish using harpoon, and during the fishing trips.

Safety knowledge is considered a serious issue for the commercial fishing industry, but is easily overlooked for small-scale fisheries. Most traditional farmers have simple perceptions about safety at sea and still lack knowledge on proper safety measures.

### 3.4.1 Frequency and type of events

Dangerous situations occur commonly with approximately 74% (of 330 respondents) having experienced problems when fishing at sea.

When these 74% of respondents were further asked regarding the types of problems encountered, the main problem faced at sea was bad weather and high waves (96%), followed by boat over turning (35%), boat leakage (26%) and losing direction (20%). Less common issues included seasickness (16%) and engine trouble (15%).

Regarding the frequency of fatal accidents at sea, 77% (=29%+48%) of respondents considered such accidents occurred only rarely or very rarely.

Table 3-16. Problems of sea safety and their frequencies of occurrence

Sea safety problems	GSA		FSA	
	Responses	Freq %	Responses	Freq %
<b>Experienced problems when fishing</b>				
Yes	282	69.4	243	73.5
No	124	30.6	87	26.5
<b>Types of problems encountered</b>				
Bad weather/high wave	275	97.5	233	95.9
Boat was overturned	107	37.7	86	35.2
Boat leakage	88	31.2	64	26.3
Sickness/ill	67	23.8	39	16.0
Lost direction	52	18.5	48	19.7
Boat/engine problem	50	17.7	37	15.2
Lost communication	32	11.4	16	6.6
Run out of logistics	27	9.6	29	11.8
Conflict within ship crews	15	5.3	20	8.2
Fire	2	0.7	1	0.2
<b>How common are fatal accidents</b>				
Very often		17.2		10.7
Quite often		15.8		12.4
Rarely happen		28.8		29.0
Very rarely happen		38.1		47.9

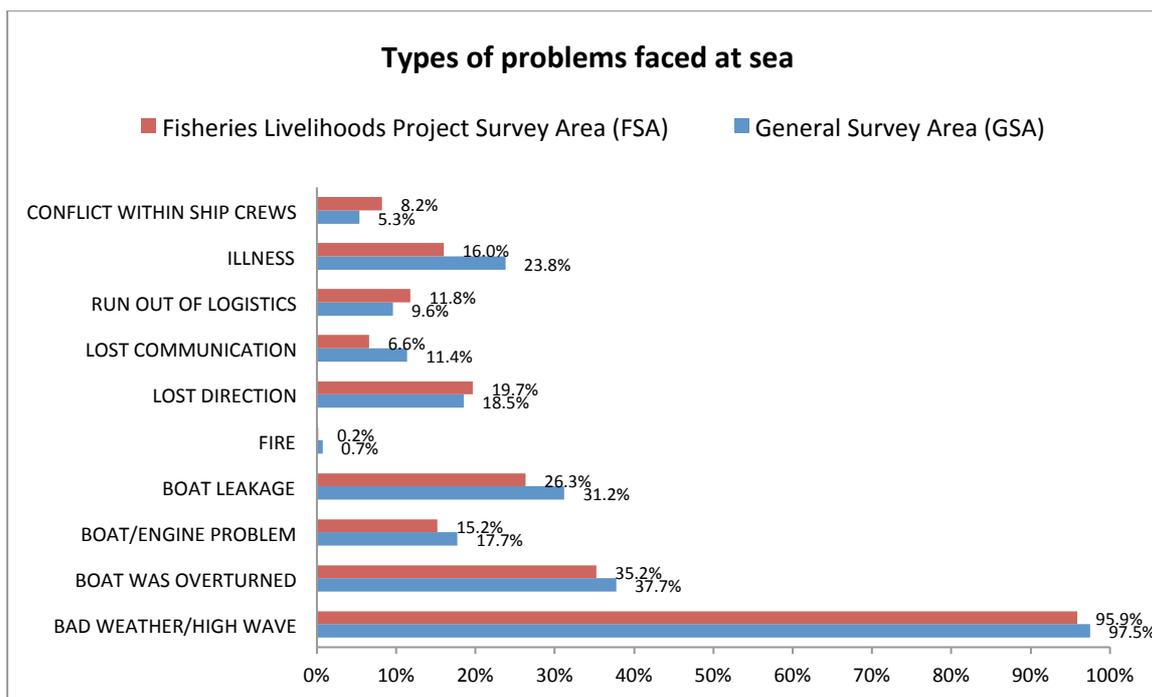


Figure 3-20. Types of problems occurred at sea

### 3.4.2 Responding to problems

When faced with dangerous events the main response (47%) was to look for other boats to provide assistance.

During FGD, the team found that fishers went fishing to the sea together within the near shore (still within the eye sight); however, they conduct their fishing activities separately. This way they could take care of each other.

Approximately 51% of fishers indicated that in an emergency help came on time, while 47% said help came, but too late.

Fishers do their fishing activities along the coast, so that if they face problems, i.e. boat was overturned they can go back to the beach by swimming or for fishers who own cell phone, they can use it to contact their friends/family for help.

Table 3-17. Responses to problems at sea

Responding to problems	GSA (282 respondents)		FSA (243 respondents)	
	Response	Freq. %	Response	Freq. %
<b>Efforts to deal with problems during fishing</b>				
Look for help from other boat	167	59.2	114.0	46.9
Try to contact land	37	13.2	17.7	7.4
Float using traditional means	23	8.2	13.4	5.8

Responding to problems	GSA (282 respondents)		FSA (243 respondents)	
	Response	Freq. %	Response	Freq. %
<b>Help received</b>				
Help came right on time	74	41.9	61	50.8
Help came but too late	97	54.7	56	46.7
No help at all	6	3.4	3	2.5
No answer	2	1.2	2	1.7

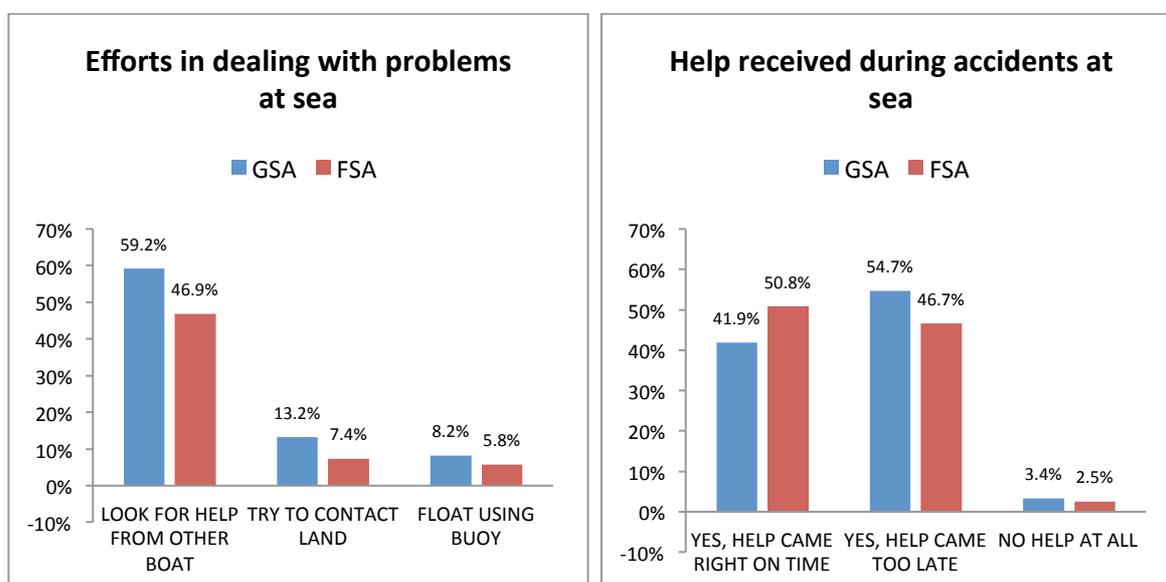


Figure 3-21. Efforts and help received during accidents at sea

### 3.4.3 Impact of accidents at sea

When asked about impacts as a result of accident at sea 41% considered loss of income as the main impact, followed by 23% who responded that they became sick and 12% who suffered injury. Approximately 37% said that there were no impacts at all.

Table 3-18. Impacts of accidents at sea

Impacts of accidents at sea	GSA (282 respondents)		FSA (243 respondents)	
	Response	Freq (%)	Response	Freq (%)
Loss of income	70	24.8	99	41.2
No impact	107	38.1	89	36.6
Became sick	67	24.1	55	22.6

Impacts of accidents at sea	GSA (282 respondents)		FSA (243 respondents)	
	Response	Freq (%)	Response	Freq (%)
	Injury	70	25.2	29
Permanent disability	1	0.4	0	0.0

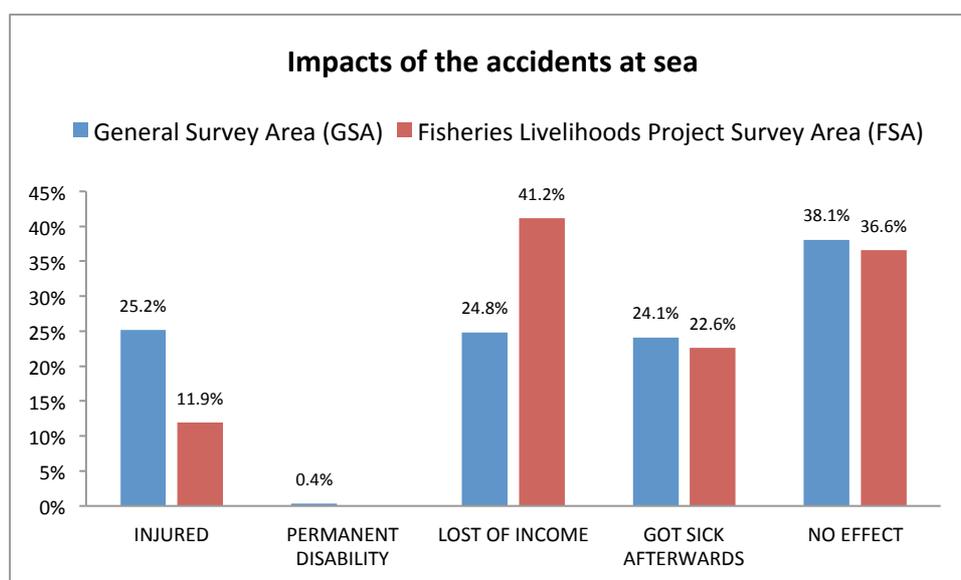


Figure 3-22. Impacts of accidents at sea

### 3.4.4 Attitude to risks at sea

About 81% of respondents strongly agreed or agreed that accidents at sea were an uncontrollable or unavoidable fate<sup>3</sup> that cannot be avoided/out of their control. 70% believed that accidents were an occupational risk, while a similar proportion (56%) believe they are caused by negligence.

There was a broad mix of perception on whether incidents at sea were “pure accidents”<sup>4</sup>. 11% strongly agreed, 45% agreed, while 23% disagree, 4% strongly disagree and 16% did not know/had no opinion.

<sup>3</sup> “Fate” (Indonesian: “takdir”) has an element of spiritual or religious belief that the accident was fated to happen somehow with “God’s permission” regardless of whether it was caused by negligence, external factors (e.g. bad weather), etc.

<sup>4</sup> “Pure” in “pure accidents” usually means that the victims accept the accident by not blaming anyone for the accident. Thus the level of knowledge (or education) of respondents about sea safety will define how they consider accidents to be “pure” or “not pure”.

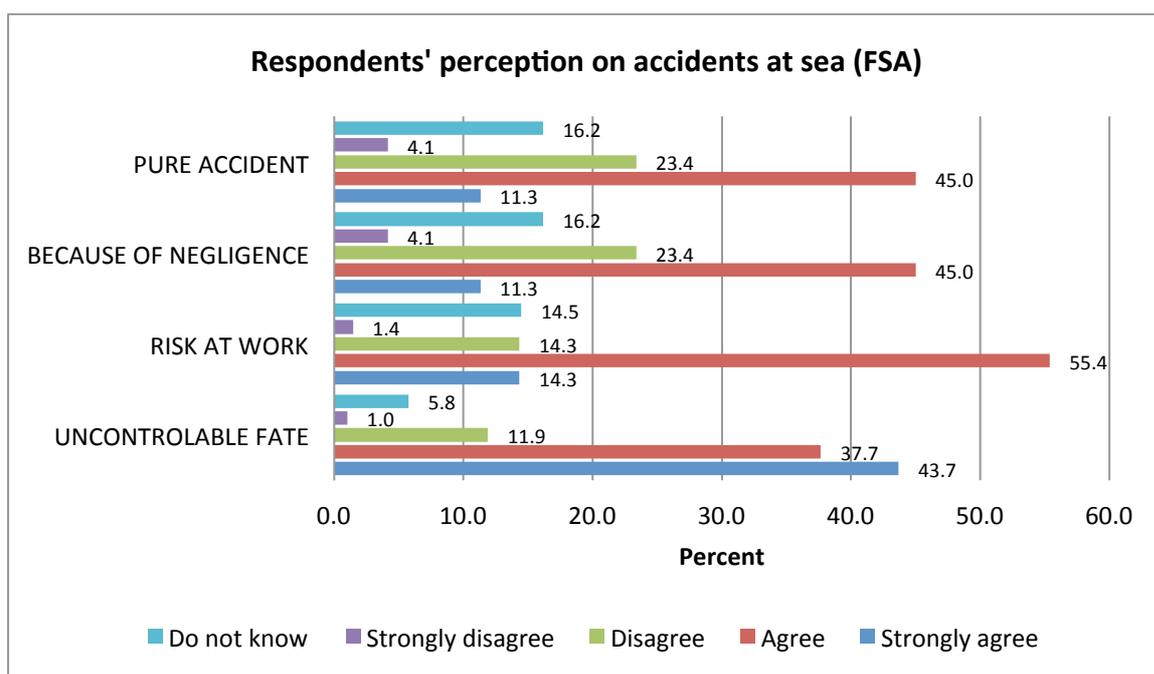


Figure 3-23. Respondents' perception on accidents at sea

### 3.4.5 Safety regulations, equipment and information

#### Awareness of regulations

A better understanding of the concept of safety at sea is needed to ensure the practice of safe and responsible fishing. Only 15% out of total 330 respondents for the FSA area and 21% out of total 406 respondents for the GSA area were aware of any applicable regulations concerning Safety at Sea. Those who were aware only understood that these required them to carry safety equipment and life jackets when they go fishing at sea.

#### Safety equipment

When asked if they brought safety equipment on board when they went fishing only 31% of the total 330 respondents said yes. FGDs revealed that as accidents at sea resulting in the death of fishers rarely occur in Timor-Leste, sea safety regulation is still negligible. Safety equipment is also quite expensive and the fishers consider it a low priority and are reluctant to buy and maintain it.

Table 3-19. Whether safety equipment brought on board

Bringing Safety Equipment On Board	GSA		FSA	
	Response	Freq (%)	Response	Freq (%)
Yes	142	35.0	102	31.0
No	260	64.1	226	68.3
No Answer	4	0.9	2	0.7

Bringing Safety Equipment On Board	GSA		FSA	
	Response	Freq (%)	Response	Freq (%)
Total	406	100.0	330	100.0

### Safety equipment used/brought on-board

The respondents were asked on what kind of safety equipment they bring when they go to the sea. Floats were considered as safety equipment and were used by most (64% out of 102 respondents). Floats included 5-litre jerrycans, 20-litre aqua bottles and tyres. A flashlight (torch) was considered to be essential safety equipment by many (52%) especially for traditional divers/fishers fishing at night who also use it to attract fish. Also considered by many to be essential items to be carried when fishing were lifejackets (20%).

While 20% of respondents reported taking life jackets on board, the figure seems too high. It is suspected that there were some misunderstandings about the question and the intention of bringing the equipment on-board. The question could be possibly understood by some respondents as the equipment that “should” or “ought” to be brought on-board. Another possible reason was that there was other type of safety equipment, which has the same function as life jackets and the respondents considered them as life jackets.

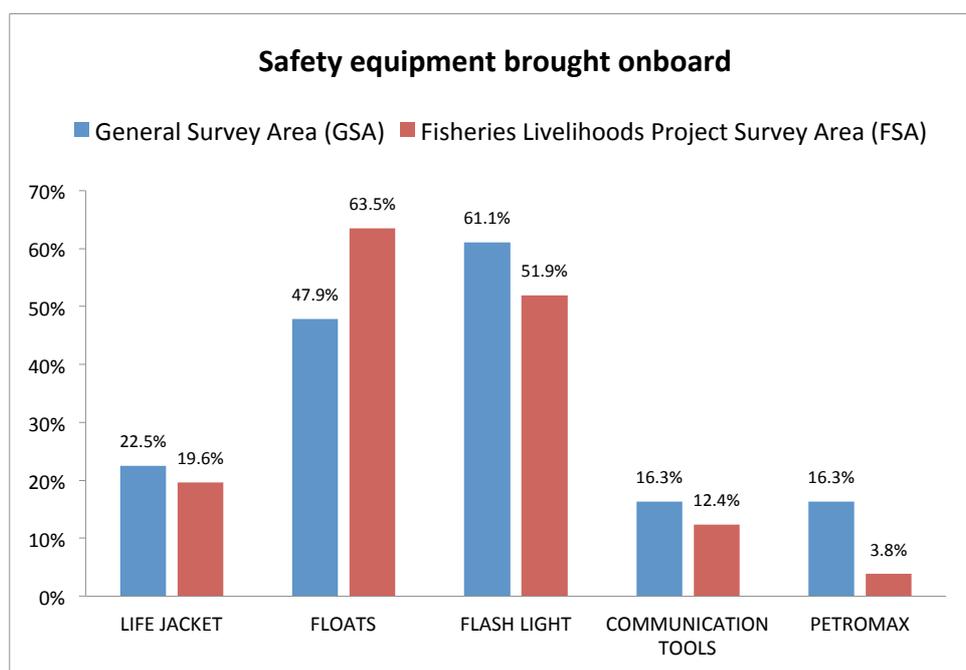


Figure 3-24. Safety equipment brought on board

It should be noted that equipment brought on-board does not always have a primary safety function. For instance floats such as “pelampung” can also be used for floating the nets.

### 3.4.6 Information on Safety at Sea

The majority (75% out of the total 330 respondents) have not received information regarding safety at sea. Of those that have received safety information (80 respondents or 24% out of

total respondents), the Fisheries Office (49%) was the main source followed by the Community Leader (24%) and NGOs (17%).

Table 3-20. Sources of information regarding safety at sea

Sources of information	GSA (94 respondents)		FSA (80 respondents)	
	Response	Freq (%)	Response	Freq (%)
Fisheries office	51	54.4	39	49.1
Navy	15	16.4	5	6.1
Marine police	21	22.5	7	8.1
Community leader	31	32.8	19	24.0
NGO	5	5.8	14	17.6
Coastal radio station/guard	3	3.3	2	2.5

### 3.4.7 Key baseline indicators for Safety at Sea

Table 3-21. Key baseline indicators for Safety at Sea

2	Indicator	Area	Baseline	Target	Target
			2011	2012	2013
2.1	Fishers who have experienced safety problems while at sea	FSA	74%	60%	42%
		GSA	69%	55%	38%
2.2	Understand the importance of having safety equipment on board	FSA	31%	50%	60%
		GSA	35%	50%	60%
2.3	Use the Fisheries Office is the main source of reliable information on sea safety	FSA	49%	60%	70%
		GSA	54%	60%	70%

### **3.5 Post-Harvest Fisheries**

Post-harvest technologies and the availability of effective marketing channels directly determine the quality and economic value of the harvested products. An understanding of current status of products, practices, skills, facilities and market access are important to provide solutions towards livelihoods improvement.

Fresh and processed fish is an important source of protein and proper processing and preservation of fish are required to maintain a good quality supply of fish. Small-scale fishers face problems in handling, transporting and marketing fresh fish under difficult conditions and at high ambient temperatures.

Traditional fishers usually sell their catch as fresh product, through direct sale to middle-traders, fish vendors or consumers. If the fishers fail to sell their catch by immediate, direct sale, they have to process or preserve them. The best ways to preserve fish are: (i) by icing to keep it cool (ii) by freezing, (iii) by drying, (iv) by salting and by (v) smoking. These processes are not always technically or economically feasible.

In addition to post-harvest processing, effective marketing of fish products is key to increasing the incomes of local fishers. Marketing of perishable products; however, depends on adequate facilities, infrastructure and market access.

The information in this part of the survey (together with the information in the Micro-finance section on micro-credit/financial systems and reasons for utilising/not utilising the services) can be used to properly design appropriate mechanisms for diversifying fishers' sources of income, including from non-fishing activities.

#### **3.5.1 Fish preservation & processing**

The FAO<sup>5</sup> estimates that about 10% of fish catch is wasted due to inappropriate post-harvest management. The simplest way to preserve the catch is by chilling or freezing using ice, but longer-term preservation requires processing.

The survey showed that only 9% of respondents who were mostly fishers in the Fisheries Livelihoods Project Survey Area (FSA) use ice. Compared to this FSA result it should be noted that in the General Survey Area (GSA) the weighted average of ice usage was much higher at 34%, which is mainly affected by 70% usage in Dili district.

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<sup>5</sup> <http://www.fao.org/fishery/topic/12320/en>

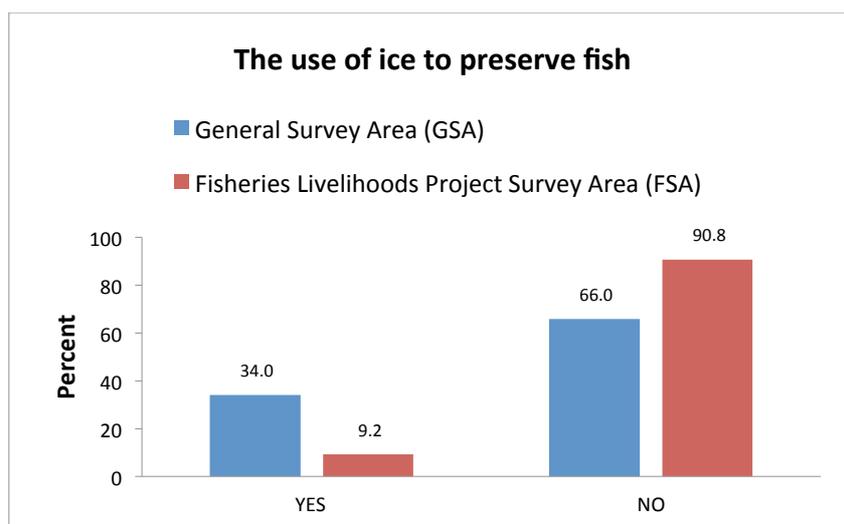


Figure 3-25. The use of ice to preserve fish

When Dili (in GSA) and Atauro (in FSA) are taken out from the list then the weighted average of 8% of respondents in non-Dili districts use ice whilst in non-Atauro subdistricts the weighted average of respondents is 6%.

Table 3-22. Ice usage per district and per subdistrict and their averages

	Ice usage (%)		
	Yes	Yes	
District (GSA)			Subdistrict (FSA)
Baucau	11.1	14.7	Vemase
Dili	70.0	44.8	Atauro
Bobonaro	9.2	12.2	Atabae
Covalima	7.0	3.1	Suai
Oecusse	4.2	3.8	Pante Makasar
GSA weighted average	34.0	9.2	FSA weighted average
Non-Dili GSA weighted average	8.4	6.0	Non-Atauro FSA weighted average

The use of ice during fish capture was only practised by fishers who have trips of more than 6 hours duration. Coastal fishers, who generally fish for less than 6 hours do not carry ice to store the catch during fishing.

Fishers who did not use ice usually sell their catch as fresh product to collectors/fish traders (including capture fishers who are also traders) on the beach. In Dili beach traders buy the

fish then keep the fish in cold boxes. Fish traders who preserve, store and need to transport the fish commonly use styrofoam-insulated iceboxes with dimensions of 52.5 cm x 37.5 cm x 30 cm.

The majority of fishers (60%) sold their catch as fresh product. Some fishers (36%) also process a small portion of their catch before selling, i.e. salting and drying the fish.

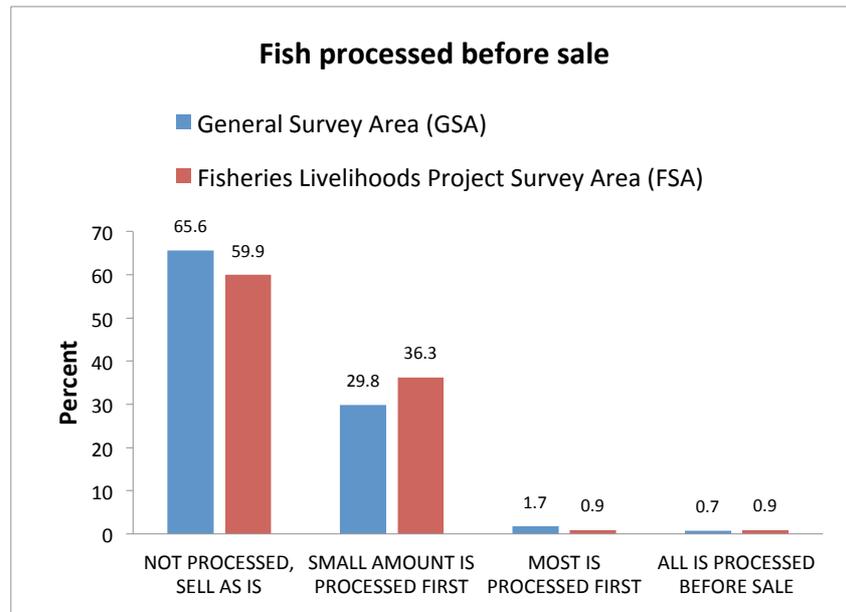


Figure 3-26. Fish processed before sale (GSA:406, FSA:330)

Out of 125 respondents (38%) who processed the fish before sale, approximately 96% of respondents said that they processed fish into salted fish and only a small portion (each <5%) made smoked fish or mashed and salted fish.

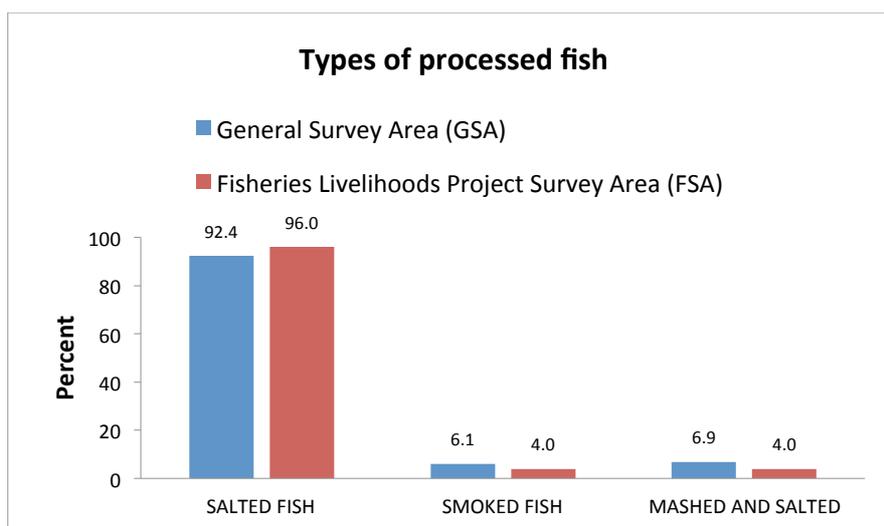


Figure 3-27. Types of processed fish made by fishers (GSA:130, FSA:125)

### 3.5.2 Fish processing knowledge

The knowledge on fish processing, particularly in making salted fish, mainly comes traditionally (learning from parents) (91.8%). Only a small number of fishers had learned skills from their neighbours or from training they attended.

Table 3-23. Sources of knowledge for fish processing

Sources of fish processing knowledge	GSA (130 respondents) (%)	FSA (125 respondents) (%)
Tradition	92.4	91.8
Training	7.9	7.6
Learn from neighbour/other fishers	17.2	8.7
Learn from community group	10.7	6.4

The majority of fishers, particularly in the FSA, (86.9%) expressed a need for additional skills and/or information related to post-harvest management. This included training related to increasing the quality of processed products, and information and skill in diversifying fishery processed products.

In addition, the majority of fishers (74.1%) did not have adequate processing tools. Many considered their situation would be improved by access to drying facilities (48.1%) and modern processing tools (46.6%).

Table 3-24. Skills needed for post-harvest management

<b>Variables</b>	<b>Options</b>	<b>GSA (130 respondents) (%)</b>	<b>FSA (125 respondents) (%)</b>
Need additional skills or information	Yes	80.1	86.9
	No	19.3	12.0
Type of Information and Skills Needed	Additional information	61.3	67.3
	Need training to increase quality	85.8	81.8
	Need diversification of products	59.0	70.0
Have adequate processing tools	Yes	41.1	19.3
	No	51.2	74.1
Type of processing tool needed	Modern processing tool	46.2	46.6
	Knife/ cutter	20.9	25.7
	Drying facility	48.1	48.1

When further questioned on the type of assistance required 82% of the 109 respondents, who said to require the assistance, identified the need for training to increase the quality of products; 70% mentioned the need to diversify products and 68% sought additional information in general.

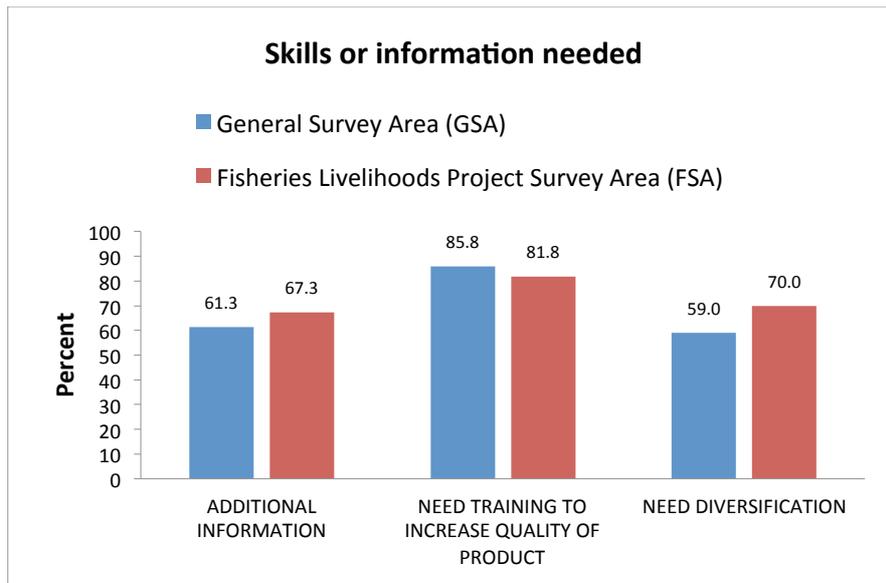


Figure 3-28. Types of skill/information needed (GSA:105, FSA:109)

### 3.5.3 Marketing

Sale through the local market was the dominant method of selling caught fish in Timor-Leste, particularly for fishers in the FSA (27% out of total 330 respondents). Besides selling openly in the local market, fishers also sell their products directly to buyers on the beach or on the roadside. A small number of fishers sell directly to customers as mobile vendors.

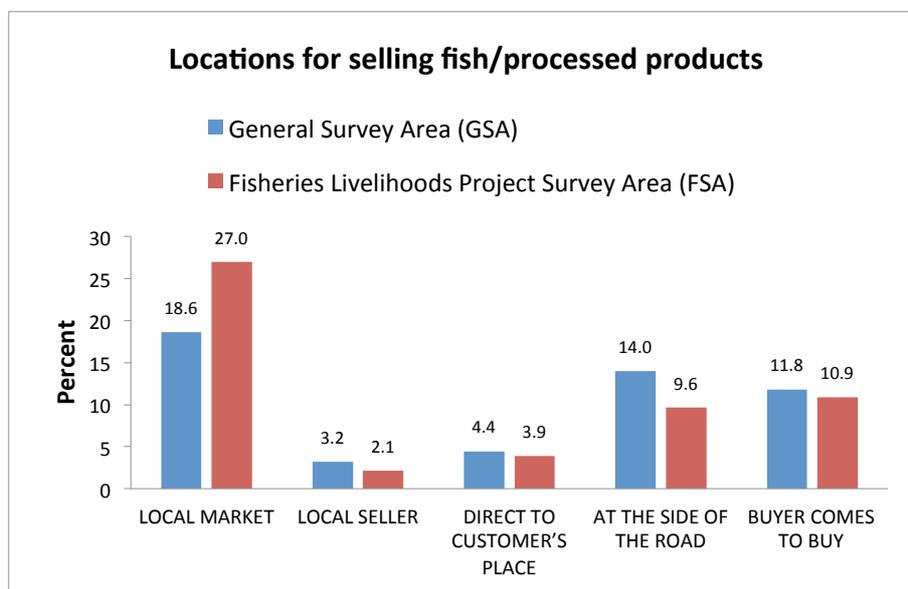


Figure 3-29. Sale location of fish/processed products (GSA:406, FSA:330)

### 3.5.4 Constraints on selling fresh and processed fish

A variety of basic constraints were reported by most fishers (GSA: 52 respondents, FSA: 63 respondents) including difficult physical access to market (65%) and the generally low quality of products for sale (45%). Many also felt that inappropriate product packaging was a constraint on successful marketing (23%).

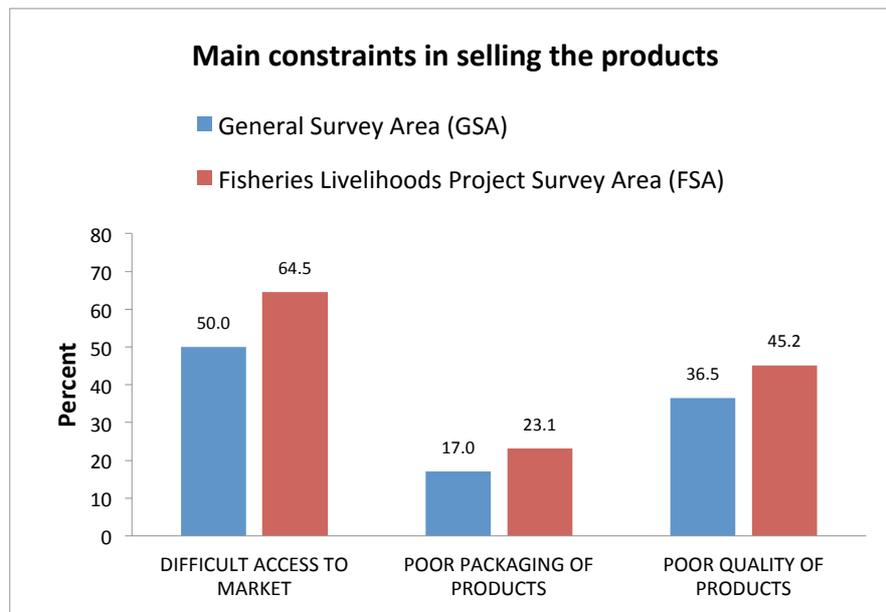


Figure 3-30. Main constraints in selling the products (GSA:52, FSA:63)

### 3.5.5 Marketing chain

Actors in the fish marketing chain include:

**Capture fishers:** As producers of raw products/fresh fish, fishers usually sell their products:

*to local traders* immediately after landing. This selling method is frequently used by coastal fishers. As they usually go fishing twice a day (in the morning and in the afternoon), direct selling saves on the time and transport cost involved in going to market. This also allows them adequate time to take a break and rest between the two fishing periods. The business relationship between the capture fishers and the local traders is usually a permanent one.

*to vendors.* Some fishers, particularly those who own a simple boat and/or fishing gear and take a small catch, have established permanent business links with local vendors, some of whom may provide credit to cover fishing trip costs.

*directly to final consumers* by peddling their products on the beach, on the side of the road or by circling around the area as vendors.

**Local traders:** Local traders exist in almost all fisher settlements, and they have established seller-customer relations. Each local trader usually buys the catches of 6–10 fishers, then transports the product to the District capital, or to Dili to reach the main consumer markets where they sell to distributors or brokers. Sometimes the trader will pay cash on the spot, but usually the fishers must wait until he returns from the city or village. Social ties and mutual trust make this a workable system, which removes the need for local traders to accumulate working capital. The transaction between the local trader and the distributors is usually done in cash.

In addition to selling the catch to distributors in the city, local traders also put aside fish, which has been ordered by consumers or restaurants.

**Distributors:** Distributors pool and distribute the fish products. They buy large quantities of products from local traders and then distribute the products to retailers and vendors, particularly those in the district capitals and in Dili. They also supply city consumers and restaurants. Distributors also act as traders (*tengkulak*) or middle-men/middle-traders or brokers, who usually sell the fish to city fish traders.

**Vendors:** Vendors are part of the fish marketing chain in both the aldeia and the city. There are a limited number of vendors in each location (aldeia or city) where their market includes both household consumers and restaurants that are not willing or able to go to the fish market themselves. The vendors buy fish from their regular distributors or capture fishers.

**Retailers:** Retailers usually operate in the local market or fish centre in the city, such as the one on Lecidere Beach in Dili. They usually purchase fish from a regular distributor or local trader and sell direct to the consumer.

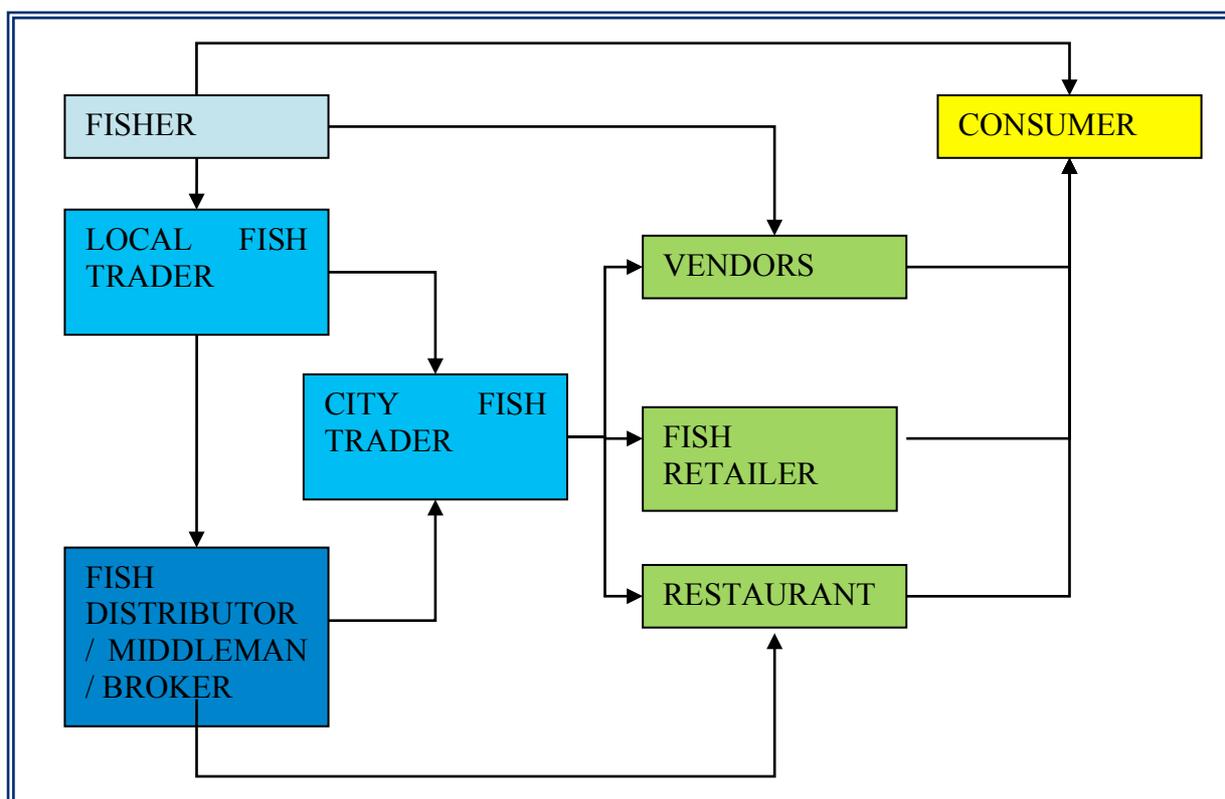


Figure 3-31. Marketing chain from fishers to consumers

### 3.5.6 Key baseline indicators for Post-Harvest and Marketing

Table 3-25. Key baseline indicators for Post-Harvest and Marketing

3	Indicator	Area	Baseline 2011	Target 2012	Target 2013
3.1	Ice usage for fish/catch storage due to production/distribution facilities available in selected fish centres/ fish landings in the five Districts	FSA	9%	20%	40%
		GSA Dili	70%	85%	100%
		GSA Non-Dili	8%	15%	40%
3.2	Fishers have knowledge/skills on product processing/ marketing gained through training	FSA	7.6%	15%	25%
		GSA	7.9%	15%	25%
3.3	Fishers have adequate processing tools and facilities	FSA	19%	25%	50%
		GSA	41%	50%	50%
3.4	Fishers have difficulty accessing markets	FSA	64%	45%	30%
		GSA	51%	30%	20%

### 3.6 Livelihoods Enhancement and Diversification

Livelihood<sup>6</sup> enhancement and diversification is considered critical in the effort to improve the living standards of fisher communities and ensure sustainable fisheries management practices.

A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Chambers and Conway, 1991).

Livelihoods are formed within social, economic and political contexts. Institutions, processes and policies, such as markets, social norms, and land ownership policies affect our ability to access and use assets for a favourable outcome. As these contexts change they create new livelihoods obstacles or opportunities.

Livelihoods and the factors that affect them in fisheries management are complex. Interventions need to consider the complexity and the strengths of existing livelihoods, especially the social resources that exist in communities. Livelihoods improvement will be focused on enhancement within the small-scale fisheries. Therefore, there is a need to recognise the current income-generating activities in the local fishers' community, and to understand the way they practice fishing.

#### 3.6.1 Fishing locations

There is a relatively even distribution of fishing activity along the coast, in reef areas and in deeper water.

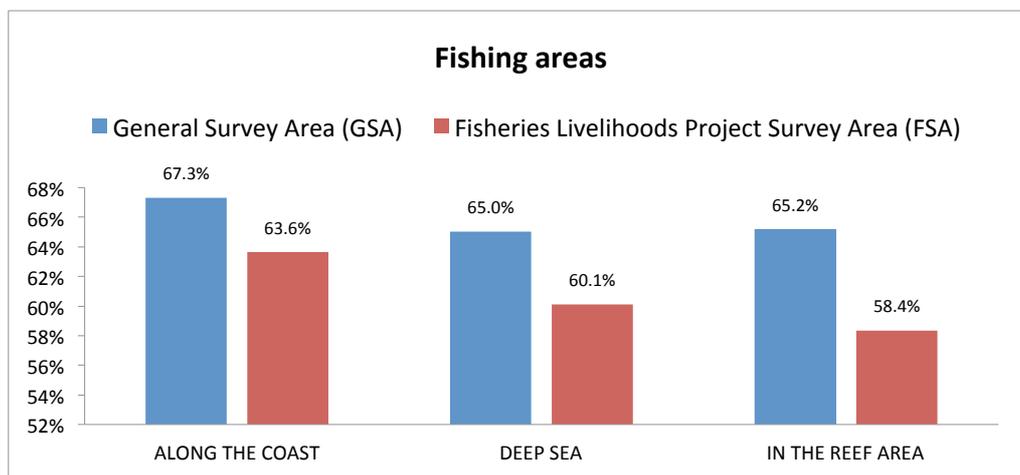


Figure 3-32. Locations where the fishers fish

<sup>6</sup> Literally livelihood means “making a living”, “supporting a family”, or “my job”.

By district/subdistrict base, more fishers in Pante Makasar (64%) and in Suai (63%) were fishing in deep sea waters. Fishers in Atauro (60%) tend to fish in deep sea waters as well. Less fishers fish in deep sea waters in Vemase (50%) and Atabae (51%). At the same time the majority of fishers in Vemase (85%) and Atabae (71%) fish inshore along the coast.

Table 3-26. Locations where fishers fish

Location	Along the coast	Deep sea	In the reef area
GSA-Baucau	72.5%	81.5%	63.8%
GSA-Dili	65.1%	60.0%	63.9%
GSA-Bobonaro	76.9%	61.5%	75.4%
GSA-Covalima	67.4%	60.5%	59.1%
GSA-Oecusse	53.2%	63.8%	63.8%
<b>All Districts (GSA)</b>	<b>67.3%</b>	<b>65.0%</b>	<b>65.2%</b>
FSA-Vemase	85.3%	50.0%	42.4%
FSA-Atauro	55.2%	60.0%	48.3%
FSA-Atabae	70.7%	51.2%	73.2%
FSA-Suai	68.8%	62.5%	53.1%
FSA-Pante Makasar	53.8%	63.8%	63.8%
<b>All Subdistricts (FSA)</b>	<b>63.6%</b>	<b>60.1%</b>	<b>58.4%</b>

### 3.6.2 Fishing calendar

Fishing intensity varies throughout the year, mainly in response to sea conditions.

- March-April - the peak months for fishing
- May-July - decreased fishing activity due to the influence of the seasonal change in winds from west to east
- August-October - fishing activity resumes and peaks in September-October
- November-February - there is a significant decrease in fishing activity due to the rainy season to the lowest point in January-February.

From June to December, in terms of percentage of respondents, more fishing activities were reported in the FSA area compared to the GSA area.

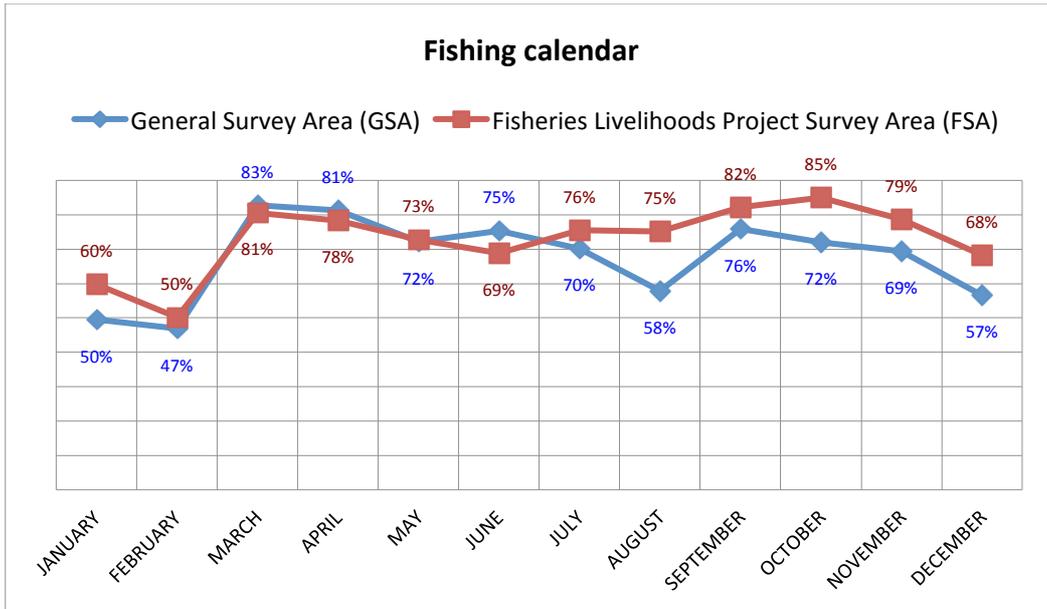


Figure 3-33. Fishing calendar

### 3.6.3 Frequency and duration of fishing

**Frequency:** The majority of fishers (72%) fish every day. Smaller numbers fish every two-three days and a few fish only once per week (8%).

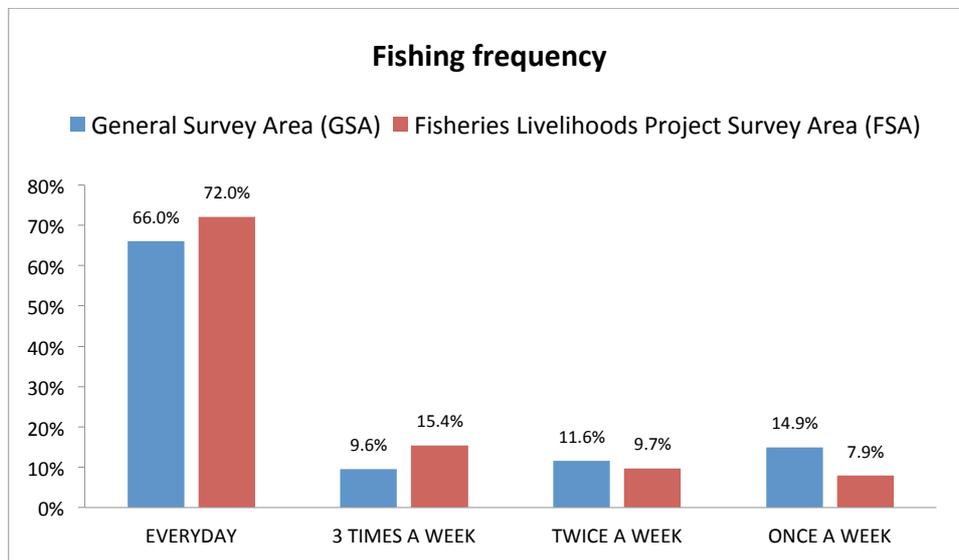


Figure 3-34. Fishing frequency

**Duration:** Approximately 54% of fishers spend less than 6 hours/trip at sea when fishing, while 22% of fishers conduct 6-12 hours fishing trips. Only 16% of the fishers conduct trips of between 12-24 hours. This is commonest in Suai (37%)<sup>7</sup>. A small number of fishers (6%) spend two or more days at sea. (also mainly Suai fishers (12%)).

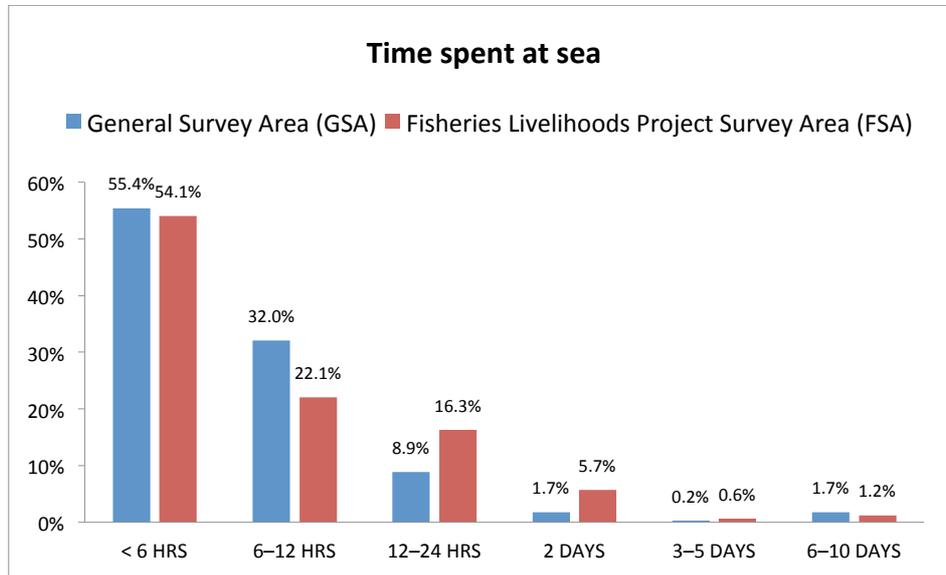


Figure 3-35. Fishing duration

### 3.6.4 Fishing boats

**Types of boats used:** Small non-motorized wooden boats (canoes) are the main type of boat used for fishing (82%). Some fishers (18%) also have outboard motors. A much smaller number have access to larger fishing boats and boats with inboard motors. Very few boats use sails.

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<sup>7</sup> Detailed analysis and data for individual subdistricts (FSA) and districts (GSA) are discussed separately in Chapter 4 to Chapter 8.

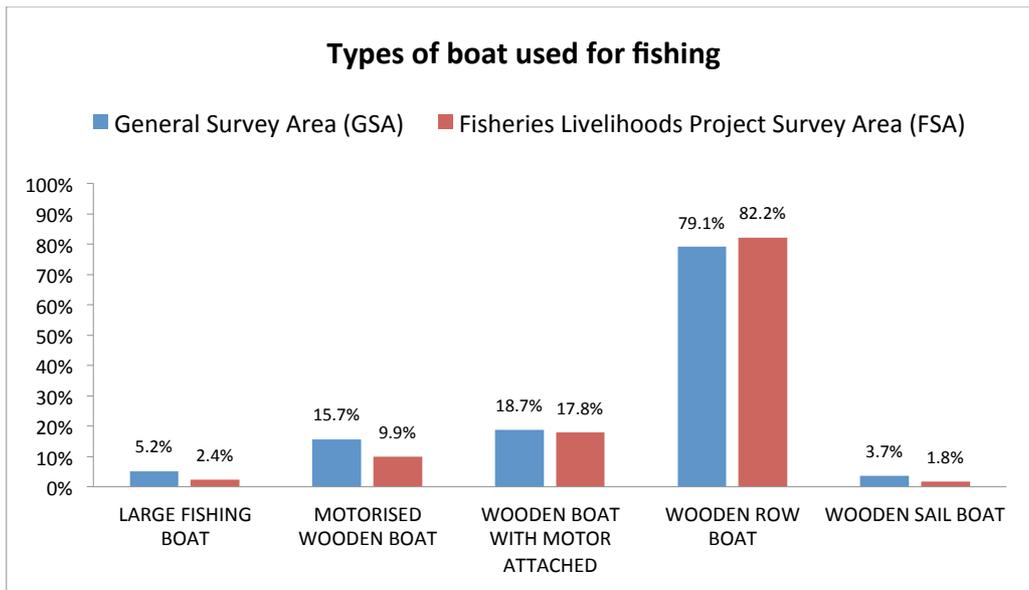


Figure 3-36. Types of fishing boats



Figure 3-37. Wooden boat with (outboard) motor attached, known as "ketinting" boat

**Ownership and Origin of Fishing Boats:** The majority of fishers own their fishing vessels with over 83% either self-owned or family-owned. The remainder are rented (13%) or borrowed (4%).

Most fishers have acquired their boats from their own funds/means (77%). Government and NGO assisted purchases accounted for 11%.

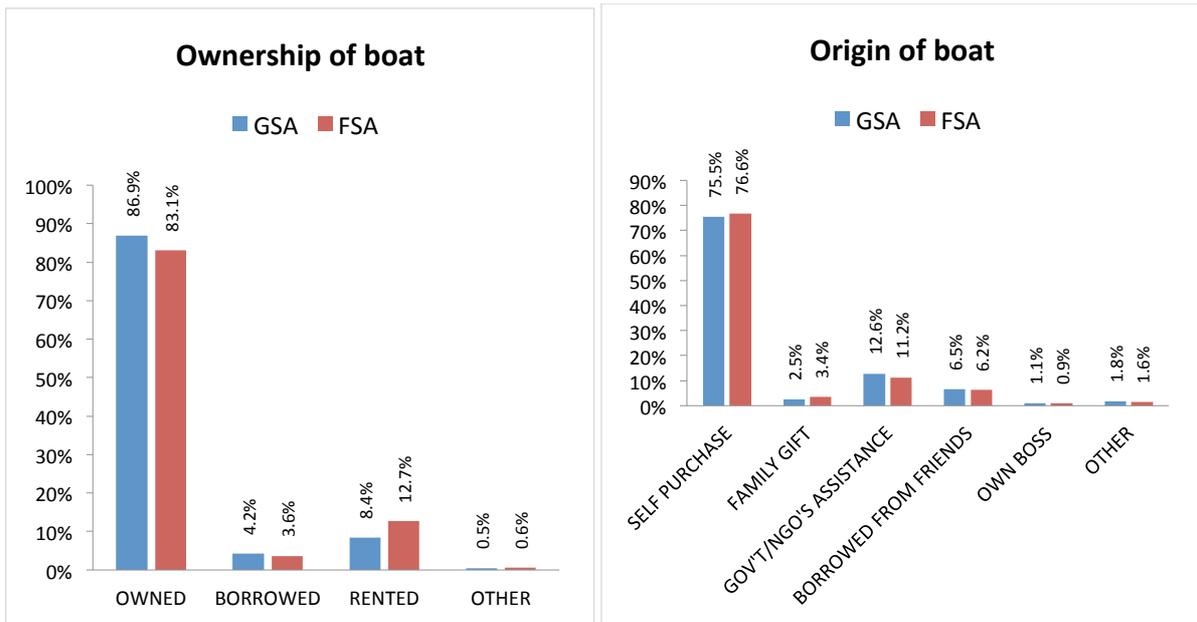


Figure 3-38. Fishing boat ownership and origin

### 3.6.5 Fishing practices

Most fishing was conducted in small groups of 2-5 fishers (76%) with the remainder fishing alone (23%). Fishing as part of larger groups was very uncommon (1%).

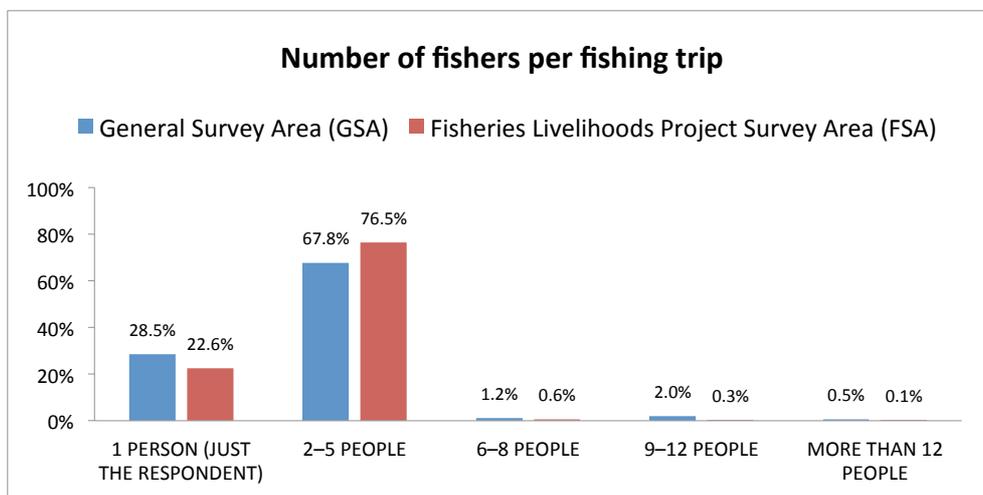


Figure 3-39. Number of fishers per fishing trip

### 3.6.6 Fishing gear

Fishing using hand line is commonly practiced by traditional fishers (72%), as it is a simple, low cost and low energy fishing technique. Fishers often use hand-long-line, which consists of a main line made from mono-filament nylon with hooked branch-lines. Various forms of

net fishing in FSA and GSA area are also common (30-40%) including beach nets, fish nets<sup>8</sup> and gillnets.

Other forms of fishing using traps (bubu), pontoon (bagan), FADs (rumpon) and harpoons were very uncommon in the survey area.

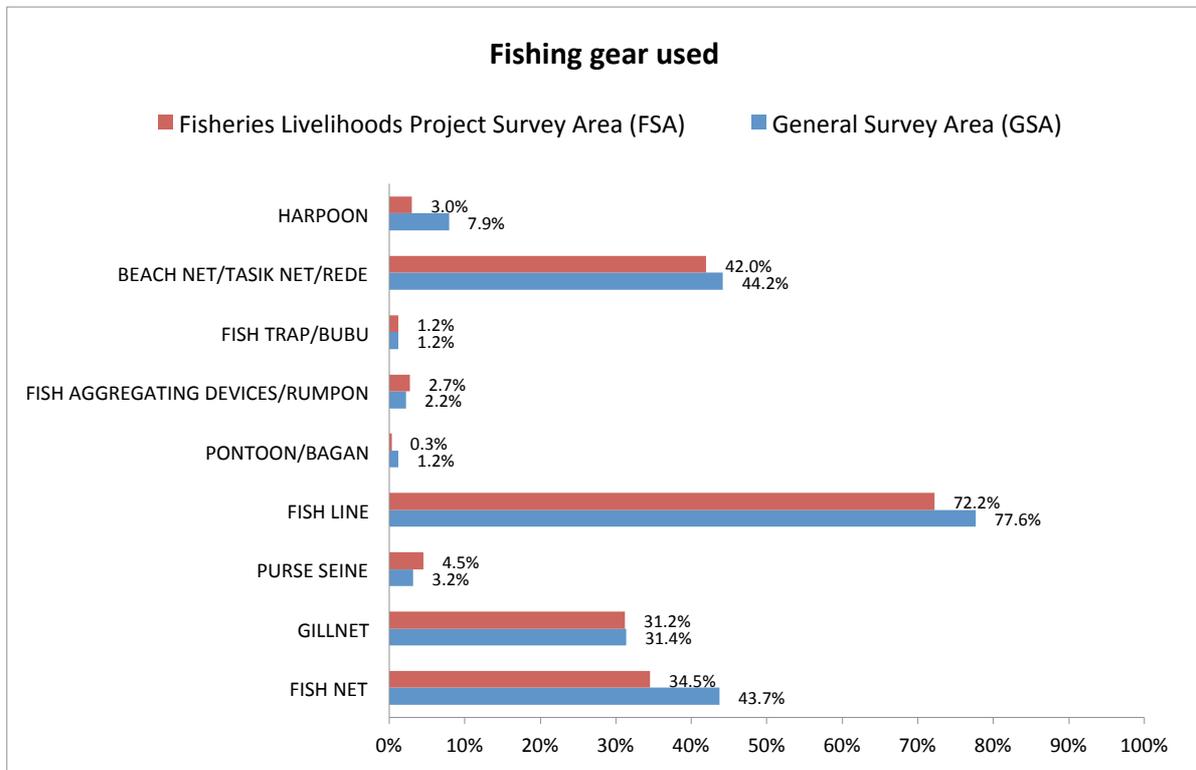


Figure 3-40. Fishing gear used

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<sup>8</sup> A fish net is defined here as a cast net which is usually used by a single fisher to catch fish. Fish net then differs from beach net, purseseine or gillnet. Gillnet catches fish, which try to pass through it by snagging on the gill covers. Thus trapped, the fish can neither advance through the net nor retreat (Source: [http://en.wikipedia.org/wiki/Fishing\\_net](http://en.wikipedia.org/wiki/Fishing_net)).



(a) Longline 99, fishing line of fishers in aldeia Suli Laran, subdistrict Atabae



(b) Mono-filament gillnet or nets of 3 pieces combined as one (3 heads); fisher's own in Suli Laran, Atabae

Figure 3-41. Examples of fishing gears: fishing long-line (a) and gillnet (b)

### 3.6.7 Reef gleaning

Reef gleaning involves collecting marine biota including fish, molluscs and crabs during low tide. It is undertaken by the majority of coastal communities (fishers and non fishers), and involves mainly women and children. Reef gleaning activities were mentioned by 61% of respondents.

There are two periods of gleaning per month related to the lunar low tides. Each gleaning period lasts 3-4 days. Equipment used includes harpoons and hand nets. The products of gleaning are mainly used for family consumption with any excess catch being sold. Any high value species collected are also usually sold.

Children love to participate in reef gleaning because they can play while collecting marine biota for food consumption. More than 80% of respondents mentioned the participation of children in reef gleaning activities. As described in earlier section on (GSA) respondents' occupation, none of the respondents reported that collecting fish/marine biota during low tide (as reef gleaners) was their main occupation. However 4% of all respondents reported gleaning as their second occupation.

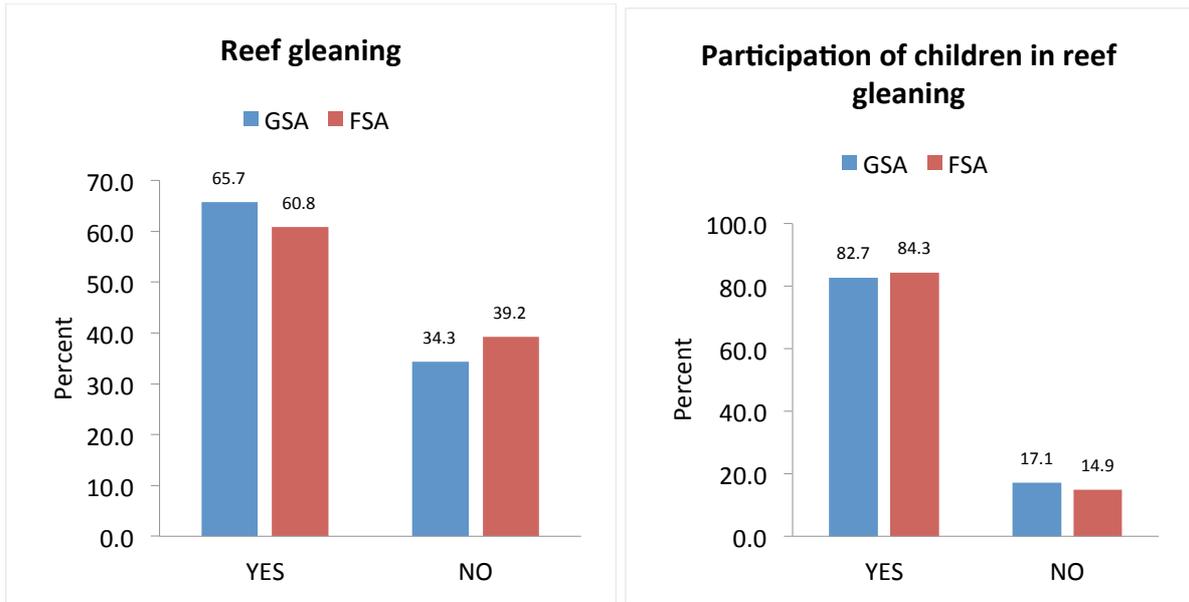


Figure 3-42. Reef cleaning and the participation of children

### 3.6.8 Harvested products

Fishers harvest a variety of marine biota including fish, crustaceans, molluscs and algae.

Various species of fish were by far the main products harvested (97%), followed by shrimp/prawns (32%), squid (19%) and crabs (16%). Some shellfish were collected and seaweed was harvested by a small proportion (7%) of respondents.

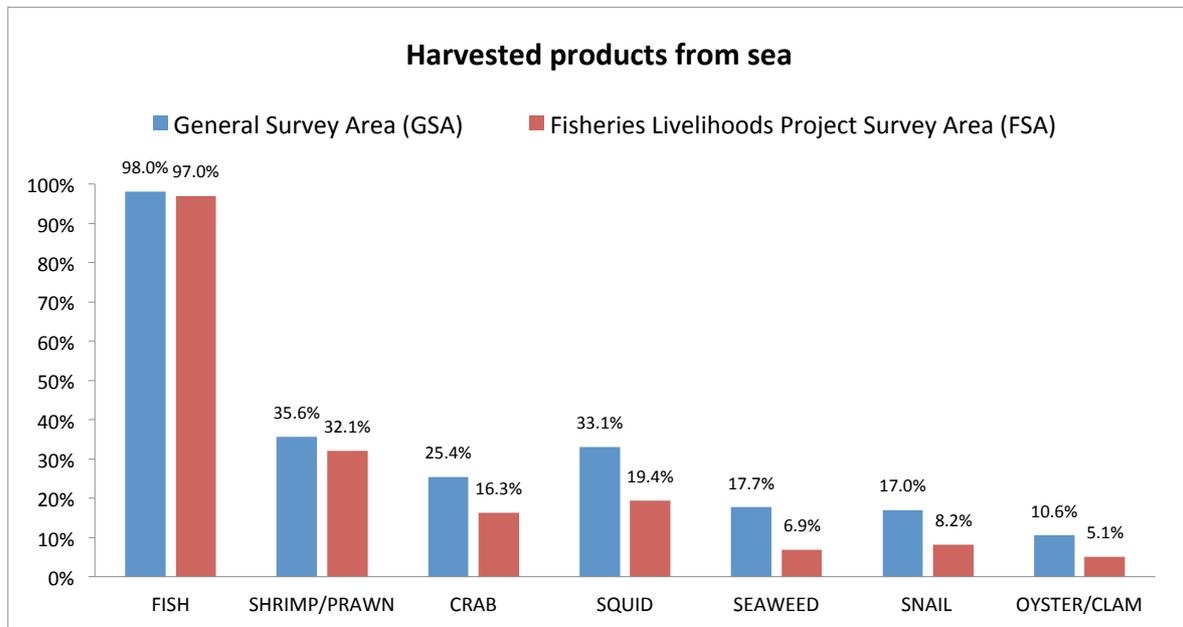


Figure 3-43. Harvested products from the sea

There are at least 12 fish species caught in the area. ‘Sardina’ (sardine), ‘kombong’ (kembung/mackerel) and ‘kakap’ (snapper) were the dominant species caught, all reported by around 40-50% of fishers. Other species include ‘tongkol’ (tuna family), ‘koku’ (trevalli), ‘samber’ (garfish), ‘manu’ (flying fish), ‘daun’ (long tom), ‘bainar’ (fusilier), ‘kitan’ (spinefoot), ‘hiu’ (shark) and ‘kerapu’ (grouper).

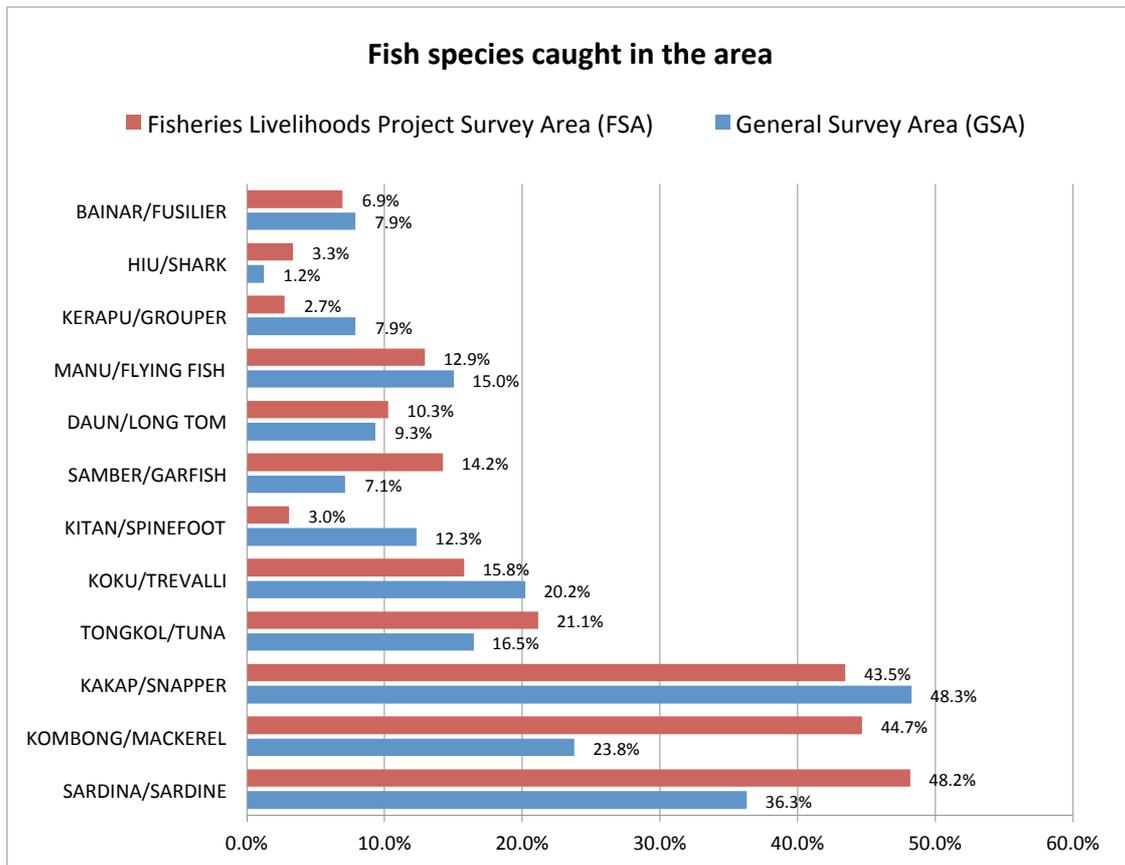


Figure 3-44. Fish caught in the area

### 3.6.9 Monthly income distribution

The majority of respondents (34%) earned an average monthly income of \$100-\$199. Lower monthly incomes of less than \$100 were reported by 11% of respondents. On the higher side approximately 24% earned between \$200-\$299 and 14% earned \$300-\$399. The highest income range (\$600/month or more) was reported by 5% of respondents.

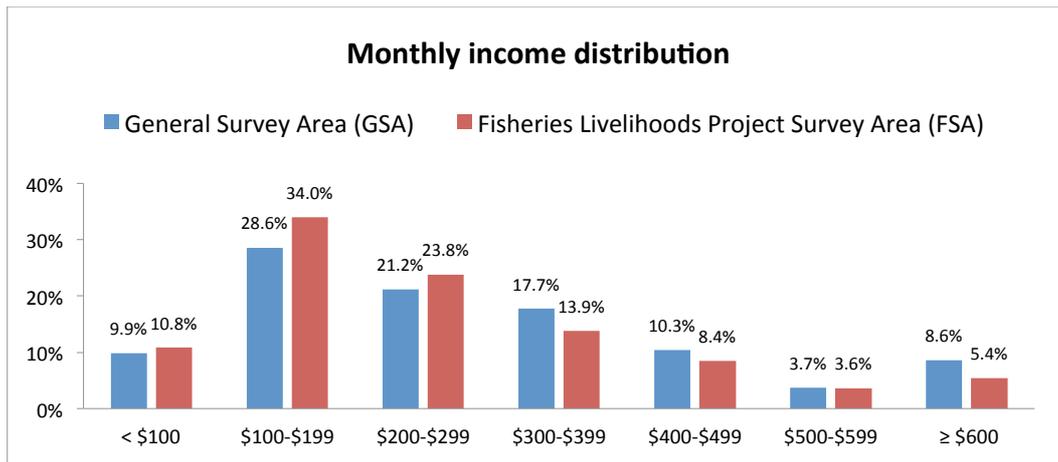


Figure 3-45. Monthly income distribution

As described in Chapter 2, around 38% of all district (GSA) respondents have a second job or occupation for their source of income with the majority do farming, followed by animal breeding and being building workers. When examined more closely for respondents that have fishing as their first job, the 3 second jobs (farmer, animal breeder and building worker) were again different from the second jobs of all the GSA districts. If income from \$100 to \$399 is classified as medium income level, and income above \$400 as high income level then it is more likely that animal breeder will have a higher income level, whilst those with farming as a second job will more likely have medium level incomes.

Table 3-27. Income of fishers who have a second job in GSA area

Number of respondents			What is the average income received by you and your family in a month?						Total	
			less than \$ 100	\$ 100 - 199	\$ 200 - 299	\$ 300 - 399	\$ 400 - 499	\$ 500 - 599		\$ 600 or more
Second Job	TEACHER	Count	1	0	0	0	1	0	0	1
		%column	4.3%	.0%	.0%	.0%	3.0%	.0%	.0%	
	LECTURER	Count	0	0	0	0	0	0	1	1
		%column	.0%	.0%	.0%	.0%	.0%	.0%	3.8%	
	FUNGSIONARIO EMPRESARIU/BU SINESS (PRIVATE COMPANY) EMPLOYEE	Count	0	1	0	0	1	0	0	1
		%column	.0%	2.0%	.0%	.0%	2.6%	.0%	.0%	
	FISHER/ PESKADOR	Count	2	2	0	0	0	0	0	4
		%column	12.8%	8.4%	.0%	.0%	.0%	.0%	.0%	
	FARMER	Count	3	11	9	8	4	2	2	38
		%column	21.4%	42.2%	29.5%	39.5%	22.1%	35.2%	13.7%	
	FISH WORKER/ PESKADOR	Count	0	0	3	1	0	0	0	4
		%column	.0%	.0%	8.9%	4.1%	.0%	.0%	.0%	
FARM WORKER	Count	1	1	2	0	0	0	2	6	
	%column	8.5%	2.0%	7.0%	.0%	.0%	.0%	15.9%		
BUILDING WORKER	Count	3	7	2	6	5	2	3	28	
	%column	22.2%	25.9%	6.9%	30.3%	26.7%	36.9%	23.5%		
INFORMAL VENDOR	Count	0	0	0	1	0	0	0	1	
	%column	.0%	.0%	.0%	5.1%	.0%	.0%	.0%		
OWN KIOSK/SMALL SHOP AT HOME	Count	2	3	4	3	1	1	2	16	
	%column	17.1%	12.4%	13.9%	14.4%	4.1%	17.6%	15.9%		

FISH COLLECTOR/BUYER FROM FISHER / PESKADOR	Count	2	0	0	0	1	0	0	3
	%column	17.9%	.0%	.0%	.0%	3.0%	.0%	.0%	
SEAWEED FARMER	Count	0	1	4	4	2	2	2	15
	%column	.0%	2.3%	13.9%	21.5%	10.8%	36.9%	15.9%	
PROCESSED FISH VENDOR/SELLER	Count	0	0	0	1	1	0	1	3
	%column	.0%	.0%	.0%	5.1%	5.6%	.0%	3.8%	
COLLECT FISH/MARINE BIOTA DURING LOW TIDE /REEF GLEANER	Count	0	2	3	0	1	0	1	6
	%column	.0%	7.2%	9.6%	.0%	4.1%	.0%	6.1%	
BREEDER (ANIMALS)	Count	3	8	10	3	8	3	5	40
	%column	<b>25.6%</b>	33.5%	<b>34.5%</b>	14.8%	<b>40.0%</b>	<b>45.5%</b>	<b>34.8%</b>	
LABOUR (PRIVATE SECTOR)	Count	0	3	4	4	1	0	0	11
	%column	.0%	10.2%	12.1%	19.0%	3.0%	.0%	.0%	
Total	Count	12	25	30	20	20	6	13	126

Notes:

- Percentages and totals are based on respondents.
- Percentages in bold are the maximum value in their respective column.

Although low in numbers, but in terms of percentage contribution to income level range (both medium and high level), seaweed farming can also make a substantial and significant secondary income source.

The questionnaire survey did not collect data on the actual income generated by specific second jobs of the respondents. Therefore the method below compares the percentages of respondents with fishing as their sole income source with that of fishers with different second jobs. The distribution of monthly income range for fishers who were fishers only (1<sup>st</sup> job) and fishers with other second jobs/occupations is given in the next table.

Table 3-28. Percentages of respondents with their jobs and income in GSA area

MONTHLY INCOME	1ST JOB ONLY	1ST JOB AS FISHER + 2ND JOB AS ...				
	FISHER/PE SKADOR	FARMER	BUILDING WORKER	OWN KIOSK/SMALL SHOP AT HOME	SEAWEED FARMER	BREEDER (ANIMALS)
less than \$ 100	10.4%	7.9%	10.7%	12.5%	0.0%	7.5%
\$ 100 - 199	30.3%	28.9%	25.0%	18.8%	6.7%	20.0%
\$ 200 - 299	19.1%	23.7%	7.1%	25.0%	26.7%	25.0%
\$ 300 - 399	21.1%	21.1%	21.4%	18.8%	26.7%	7.5%
\$ 400 - 499	8.4%	10.5%	17.9%	6.3%	13.3%	20.0%
\$ 500 - 599	2.8%	5.3%	7.1%	6.3%	13.3%	7.5%
\$ 600 or more	8.0%	5.3%	10.7%	12.5%	13.3%	12.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Percentages are within the income range

Diversifying into a second job has the potential to increase income. Seaweed farming as a second job can provide income improvements in the range from \$200 to \$600 and more. Animal breeding and building work can both also increase income in the range above \$400.

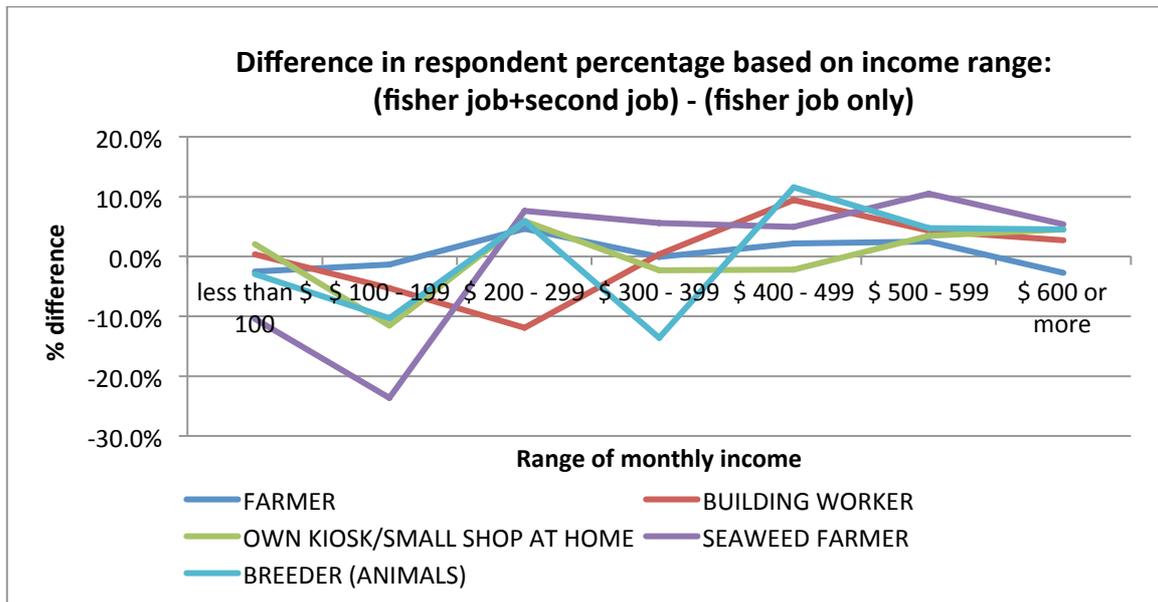


Figure 3-46. Respondent percentage difference between income from first+second job and first job only (first job: fishing only)

### 3.6.9.1 Monthly income versus age

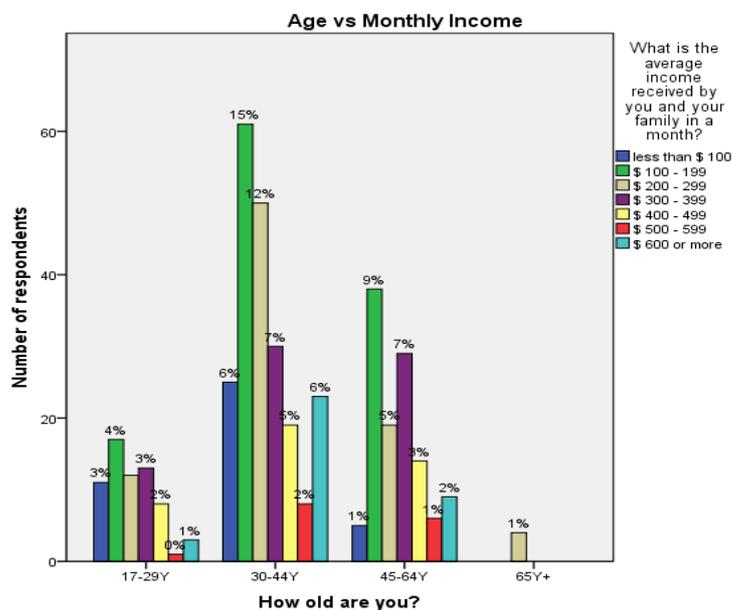


Figure 3-47. Age of respondent differentiated by level of income

As already expected, the majority income earners in the fishery livelihood are those who are between 30 and 44 years old, i.e. of productive age. For all age groups, except 65 years+, the majority of respondents were earning between \$100 - \$199, while the lowest percentage of

respondents were earning the highest income group i.e. above \$500 per month. Across all age groups the majority of respondents were earning between \$100 to \$399 per month.

Table 3-29. Number of respondents in monthly income versus age (in GSA area)

Number of respondents		What is the average income received by you and your family in a month? (Monthly Income, in \$)							Total
		< \$100	\$100-199	\$200-299	\$300-399	\$400-499	\$500-599	> \$600	
How old are you? (Age, in Years)	17-29Y	11	17	12	13	8	1	3	65
	30-44Y	25	61	50	30	19	8	23	216
	45-64Y	5	38	19	29	14	6	9	120
	65Y+	0	0	4	0	0	0	0	4
Total		41	116	85	72	41	15	35	405

Pearson Chi-Square test (asymptotic significance 0.010, 2-sided) of the categorical variables (age and monthly income) in the above table proves that the age and the monthly income have equal distribution and are correlated. Therefore it can be inferred and also expected that similar trend of relationship between age and income will be valid for the GSA population under the same observed or surveyed conditions.

The table also shows that for all ranges of monthly income the trend is similar i.e. that the peak productive age is 30-44 years old followed by 45-64 years old and then 17-29 years old.

### 3.6.9.2 Monthly income versus education level

As generally described in earlier section in this chapter regarding average income and level of education, correlations between these two variables were tested for GSA sample.

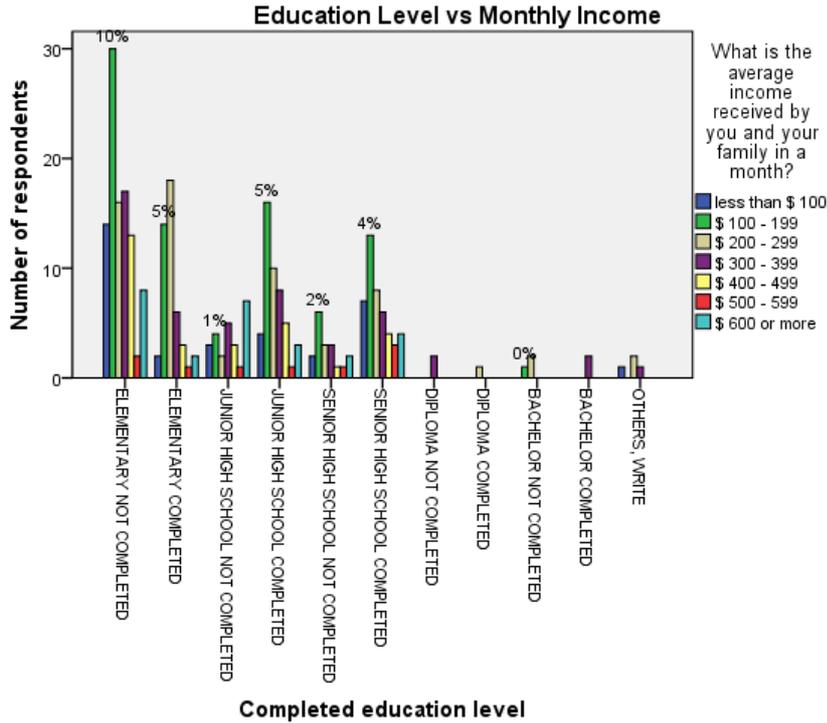


Figure 3-48. Education level of respondents differentiated by their level of income

From the figure above it is clearly seen that for the majority of respondents the highest educational level obtained was only completion of senior high school.

Table 3-30. Number of respondents based on education level and monthly income

Number of respondents	What is the average income received by you and your family in a month? (Monthly Income, in \$)							Total
	< \$ 100	\$ 100 - 199	\$ 200 - 299	\$ 300 - 399	\$ 400 - 499	\$ 500 - 599	≥ \$ 600	
<b>What level has been completed? (Education Level)</b>								
ELEMENTARY NOT COMPLETED	14	30	16	17	13	2	8	100
ELEMENTARY COMPLETED	2	14	18	6	3	1	2	46
JUNIOR HIGH SCHOOL NOT COMPLETED	3	4	2	5	3	1	7	25
JUNIOR HIGH SCHOOL COMPLETED	4	16	10	8	5	1	3	47
SENIOR HIGH SCHOOL NOT COMPLETED	2	6	3	3	1	1	2	18
SENIOR HIGH SCHOOL COMPLETED	7	13	8	6	4	3	4	45
DIPLOMA NOT COMPLETED	0	0	0	2	0	0	0	2
DIPLOMA COMPLETED	0	0	1	0	0	0	0	1
BACHELOR NOT COMPLETED	0	1	2	0	0	0	0	3
BACHELOR COMPLETED	0	0	0	2	0	0	0	2
OTHERS, WRITE	1	0	2	1	0	0	0	4
<b>TOTAL</b>	<b>33</b>	<b>84</b>	<b>62</b>	<b>50</b>	<b>29</b>	<b>9</b>	<b>26</b>	<b>293</b>

Pearson Chi-Square test between the categorical variables of education level and the monthly income for all levels of education did not deliver a significant equal distribution (asymptotic significant level = 0.266 for 2-sided test). Therefore we cannot derive any general conclusion on the correlation between the education level and the monthly income of all respondents, who in the majority were fishers.

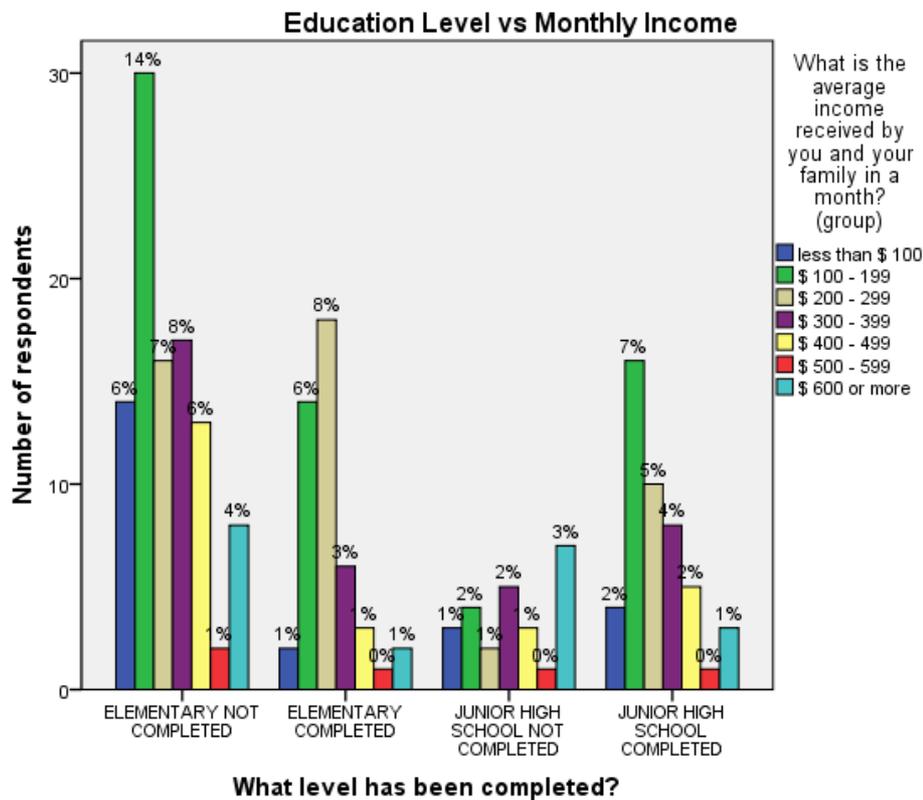


Figure 3-49. Education level up to junior high school differentiated by monthly income

However, when the education level test is selected only up to the completion of junior high school then the distribution is found to be significantly equal (significant at 0.051, 2-sided). For this group of education levels (up to the completion of junior high school) the following conclusions can be drawn:

- there is a very high tendency that low-income respondents fall into the group that did not finish elementary school (distribution is positively skewed from the low income groups with the mean lying in the low income group),
- the group that finished junior high school shows a greater tendency of having higher income (distribution is more positively skewed from the low income groups with mean moved to the higher income groups),
- with equal distribution within all groups from “elementary not completed” to “junior high school completed” there is a significant tendency that people finishing junior high school are more likely to have higher income.

For the completion of education beyond junior high school, when tested, it was found that there is no correlation between monthly income and the level of education completed (e.g. for graduates of senior high school or university graduates). However this may have been due to the small respondent size for this range of education levels.

### 3.6.10 Constraints in earning higher income

A broad range of capital, capacity and market issues constrain opportunities to enhance livelihoods. Access to fishing vessels and equipment was an important constraint identified by respondent (55%) as was access to capital in general (16%).

Marketing issues were also prominent including limited market power (29%), limited channels (27%) and access to the major towns (13%). On the other hand, the dominant role of the middle-traders was reported as being a constraint by very few respondents (1%).

Inadequate skills (29%) and low levels of education (20%) were also seen as genuine constraints.

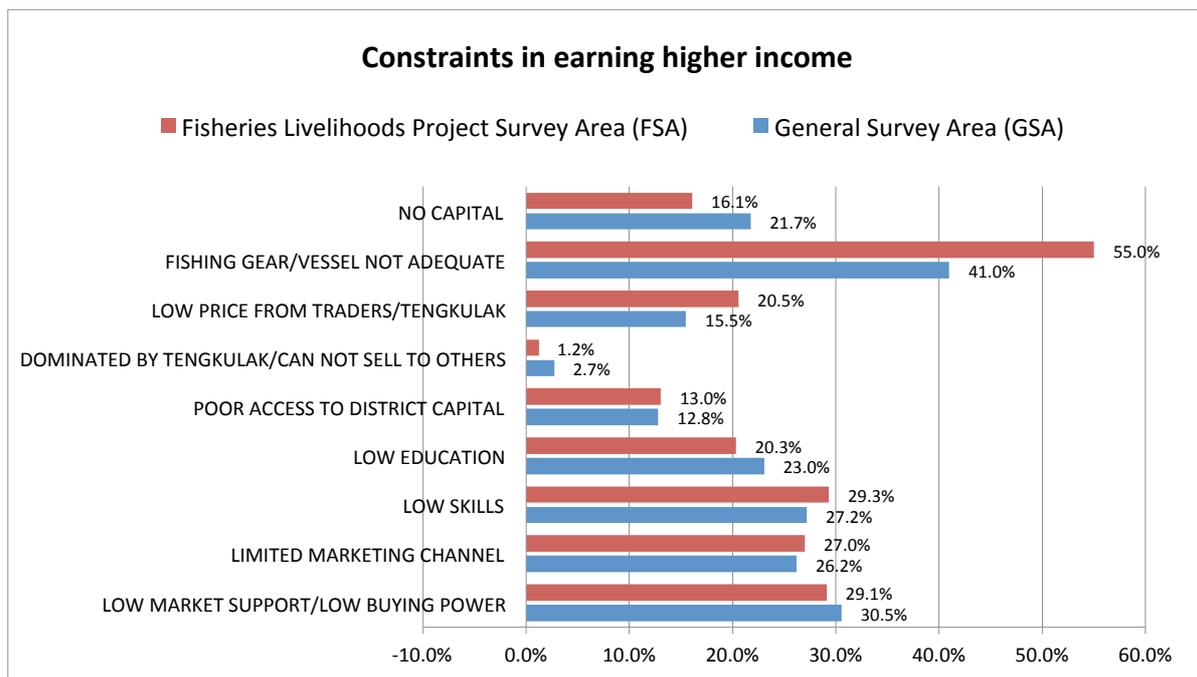


Figure 3-50. Constraints to earning higher income

### 3.6.11 Potential activities for earning higher income

When asked about other activities with the potential to increase income, farming (37%) and/or livestock (29%) were the most prominent responses. Enhanced fish/sea product processing was also prominent (25%).

Owning a shop/kiosk was also seen as an opportunity by many (17%) especially for supplying the daily equipment needs of fishers. During Focus Group Discussions, respondents repeatedly explained that if fishing equipment/motor/gear was broken, they cannot buy the spare parts in the local market either because they are not available or because the prices are too expensive. Also most said that they do not have the ability to fix these things themselves. This is an unmet area of need and some respondents see this as an area of commercial opportunity.

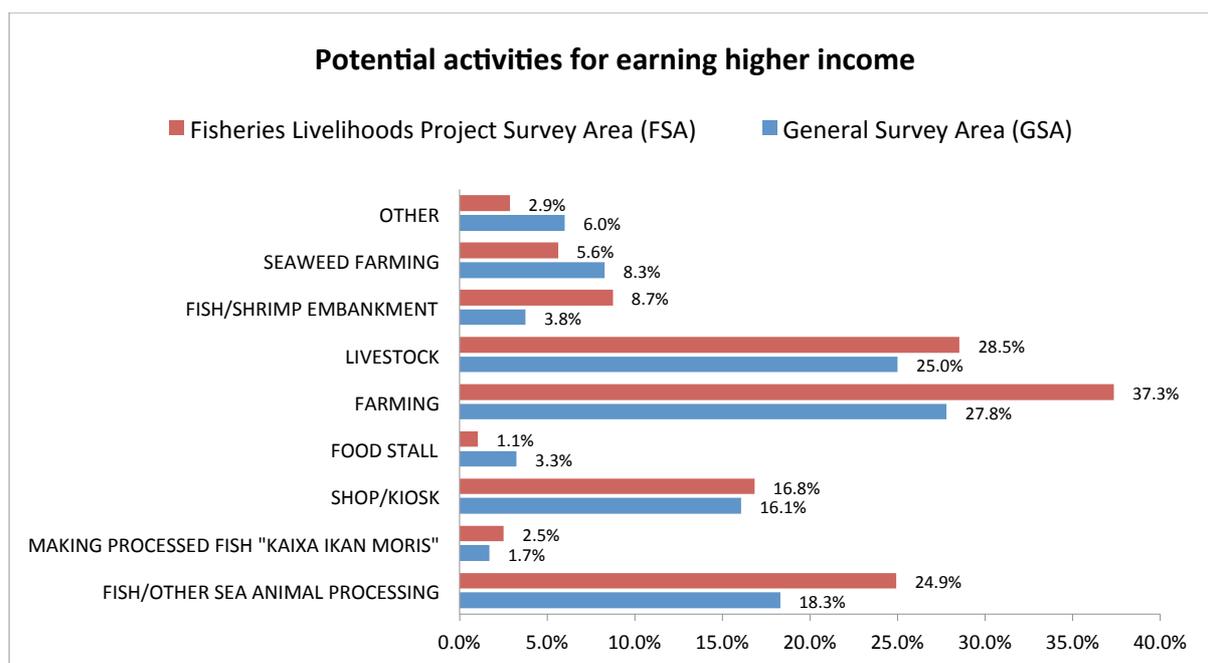


Figure 3-51. Potential activities to earn higher income

### 3.6.12 Key indicators for Livelihoods Enhancement and Diversification

Table 3-31. Key baseline indicators for Livelihood Enhancement and Diversification

4	Indicators	Area	Baseline	Target	Target
			2011	2012	2013
4.1	The percentage number earned an average monthly income of \$200-\$299	FSA	24%	30%	35%
		GSA	21%	26%	30%
4.2	Low market support /buying power is one of the constraints in earning higher income	FSA	29%	25%	20%
		GSA	31%	25%	20%
4.3	Low skill is a constraint in earning higher income	FSA	29%	25%	20%
		GSA	27%	25%	20%
4.4	Inadequate fishing gear/fishing vessel is considered a constraint in earning higher income	FSA	55%	25%	20%
		GSA	41%	25%	20%

### 3.7 Micro-finance

Proper access to credit and other financial services assists small-scale fishers to manage risks and reduce economic and social vulnerability, which in turn improves their livelihoods. Awareness and knowledge of micro-credit and small-scale financial systems is fundamental to increasing community interest in utilising these financial services.

#### 3.7.1 Awareness of available financial services

Overall, awareness of the existence of financial institutions in the local area was very limited. More than 33% of the respondents knew of no local providers of financial services.

There was however some degree of awareness of a variety of financial services including NGOs (25%), person-to-person loans (17%), cooperatives (7%) and banks (6%). Other micro-finance services accounted for a significant 32%.

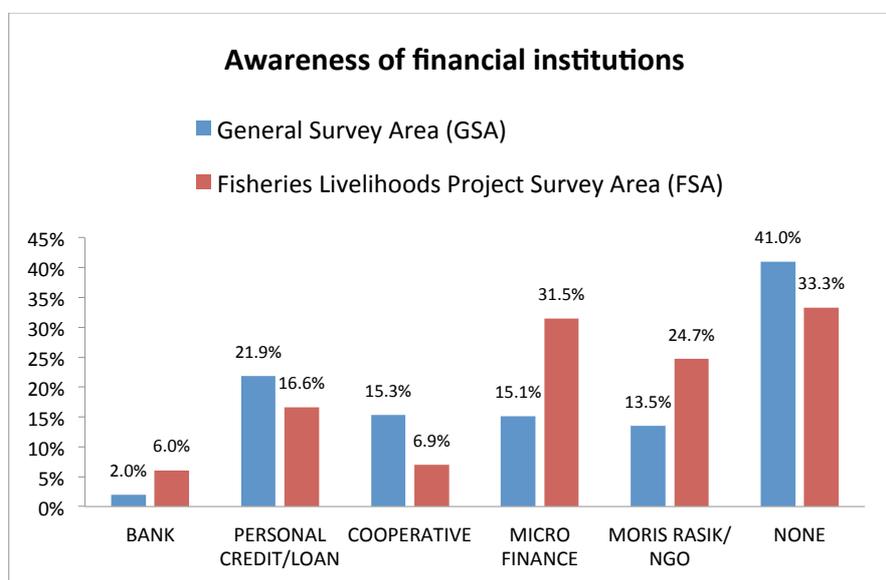


Figure 3-52. Awareness of the existence of financial institutions in the area

#### 3.7.2 Use of financial services

Use of financial services, i.e. savings, borrowing, and insurance was quite low. When asked about their usage of financial services, only around 15% of respondents had ever made use of any existing financial institutions/services: 14% (45 respondents) for the sub-district FSA area and 15% (62 respondents) for the district GSA area.

### 3.7.3 Borrowing

#### Preferred suppliers of loans

Of these 14% (45) who have used financial services, about 29% preferred informal, personal loans (i.e. borrowing from individuals) closely followed by borrowing from micro-finance schemes (29%) and from NGOs (24%). Borrowing from cooperatives was the least common (7%) and there was zero use of bank loans.

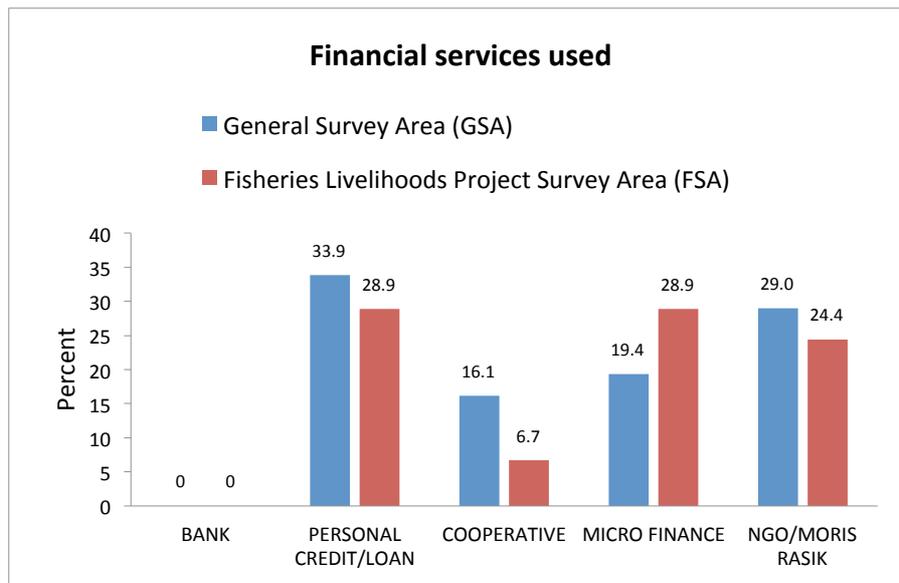


Figure 3-53. Financial services used by respondents

#### Reasons for not borrowing

As noted above, approximately 85% of total respondents (FSA: 86% of 330, GSA: 84% of 406) have never used financial services. Of this group of people the reasons why they did or do not borrow money varied. The reasons given indicate relatively high levels of fear and low levels of knowledge about borrowing. The process was too difficult (34%), they were afraid they would be unable to repay the loan (35%) or they felt the cost was too high (30%). 27% could not identify a clear reason.

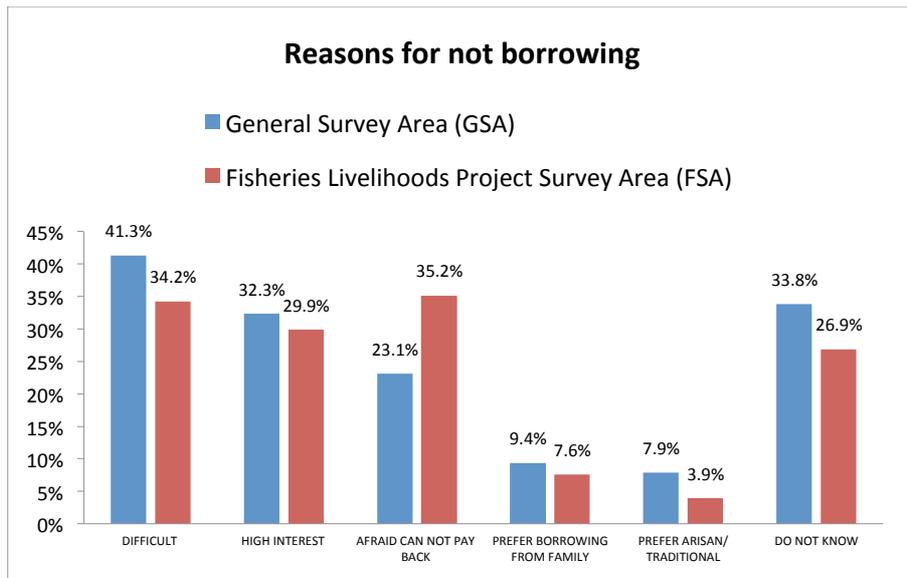


Figure 3-54. Reasons why not borrowing money

### Application of borrowed funds

Reasons for borrowing varied from time to time for respondents who did/do use financial services (GSA: 62, FSA: 45). The applications of the borrowed funds included capital purchases (48%), children’s education (33%), operating capital (42%) and to finance daily expenses (48%). Borrowers generally repay loans in weekly or monthly installments.

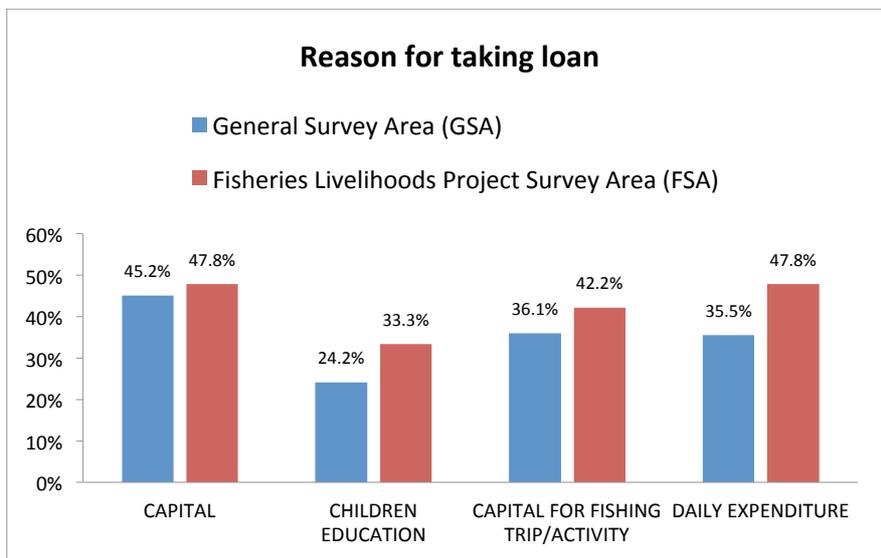


Figure 3-55. Reasons why respondents take loans

### 3.7.4 Saving

**Frequency of saving:** On savings practices, 24% preferred weekly saving, 18% preferred monthly saving. Around 13% chose daily saving, while 13% conducted irregular saving.

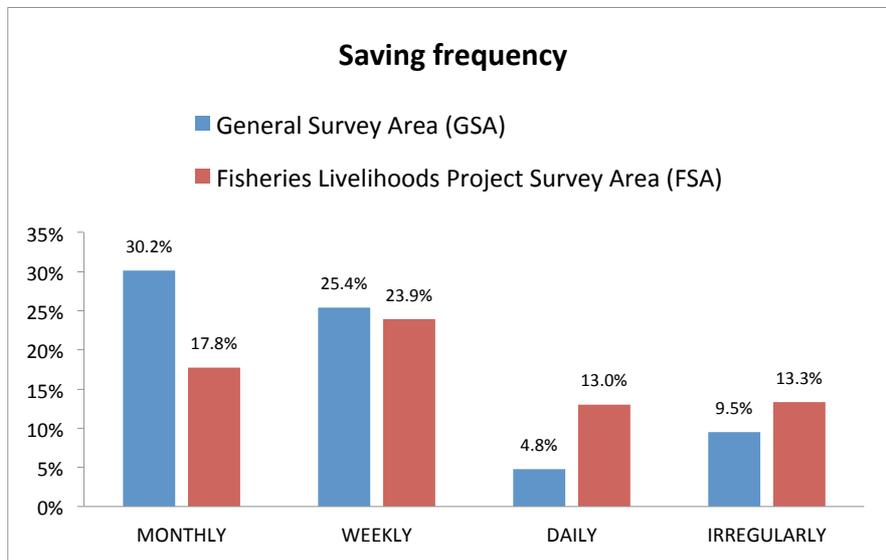


Figure 3-56. Frequency of saving money

**Amount of saving:** The reported amount of money saved monthly was quite low. 42% did not answer; about 15% reported average monthly savings of \$10 or less. A small proportion (11%) were able to save over \$70 per month.

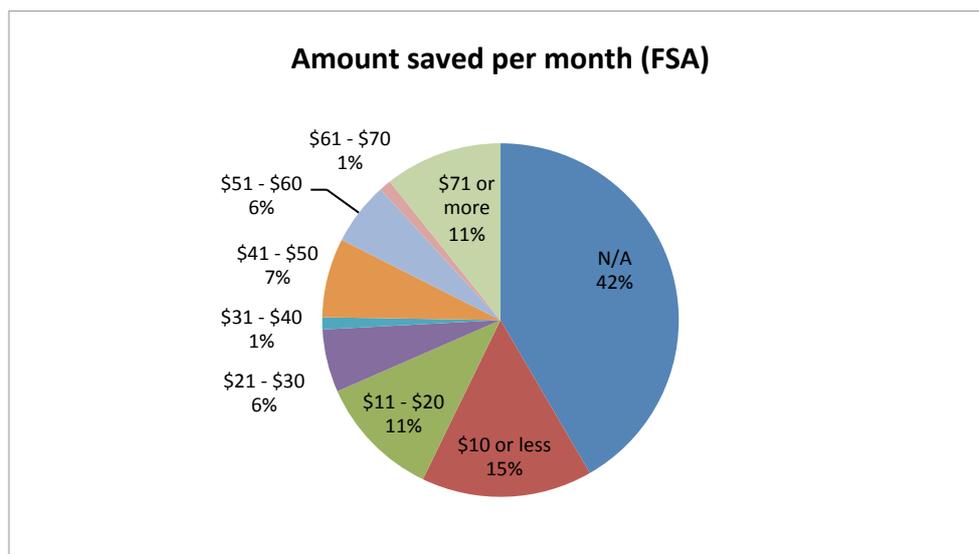


Figure 3-57. Amount of money saved per month

**Saving with institutions:** For those who said they do not use financial institution services (GSA: 344 or 85%, FSA: 285 or 86%) the ability and willingness to save with financial institutions was low. The main reasons given were that they had no money to save (55%). 10% regarded low interest rates as a deterrent, while others did not trust that their savings would be returned (8%). A large 24% did not know how to save with financial institutions.

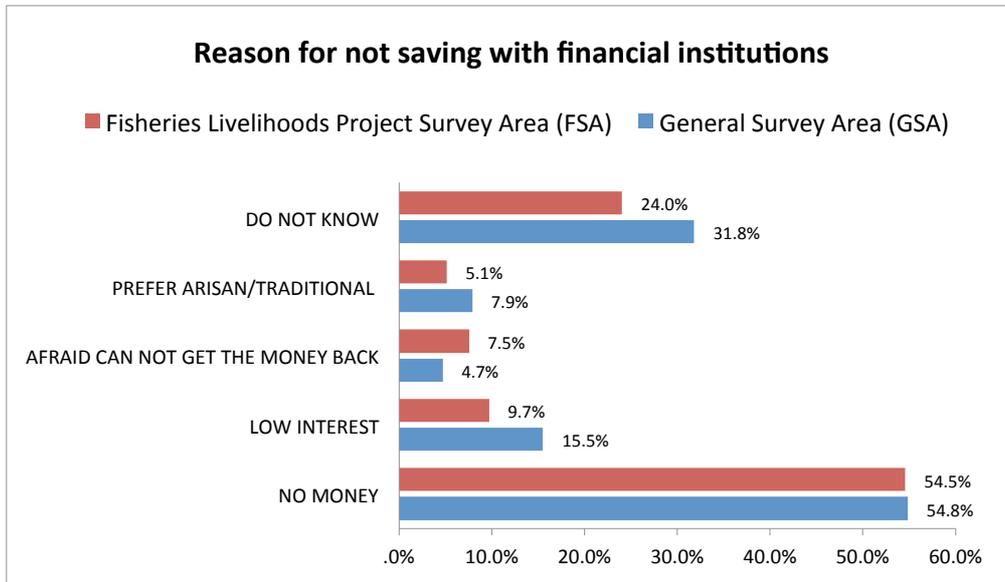


Figure 3-58. Reasons for not saving with financial institutions

### 3.7.5 Micro-finance providers and services

#### Providers of micro-credit

Micro-credit services are relatively under developed with only 17% of respondents aware of any micro-credit services available in the area (compared to 15% for the GSA).

49% (=37%+12%) of this small group identified NGOs (including Moris Rasik) as the main micro-credit provider and 14% identified the government as a micro-credit provider. Other micro-credit services were provided by the church, cooperatives and credit unions.

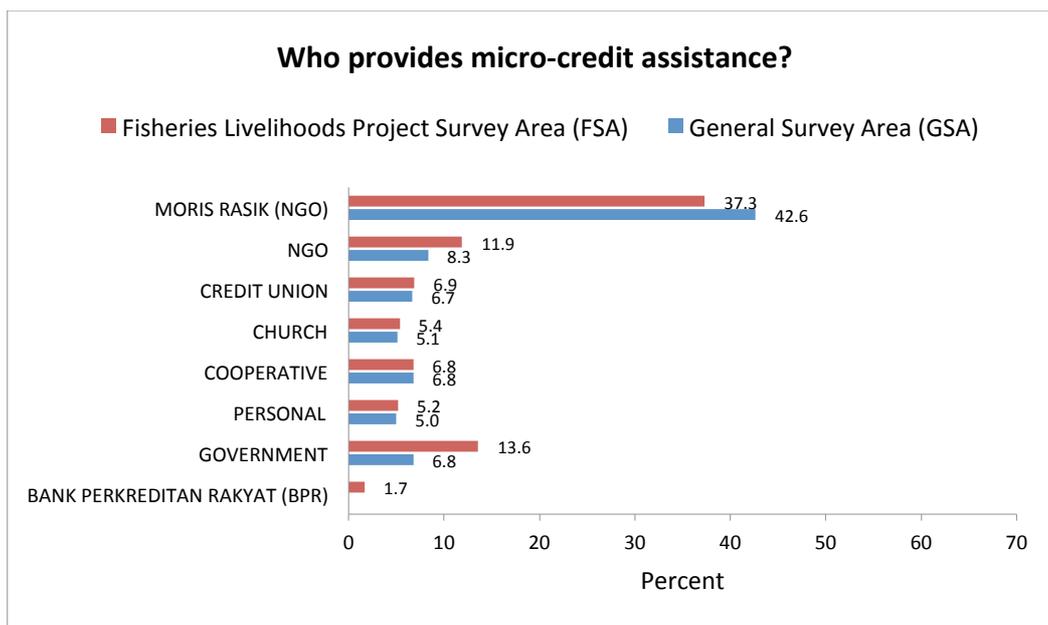


Figure 3-59. Providers of micro-credit assistance

### Users of micro-credit

Users of micro-credit services or assistance are even lower with only 32% of respondents (34% for GSA) confirming that they have ever made use of micro-credit services.

Easy access was given as the main reason for using micro-credit (43%) while another 43% identified the low interest rate.

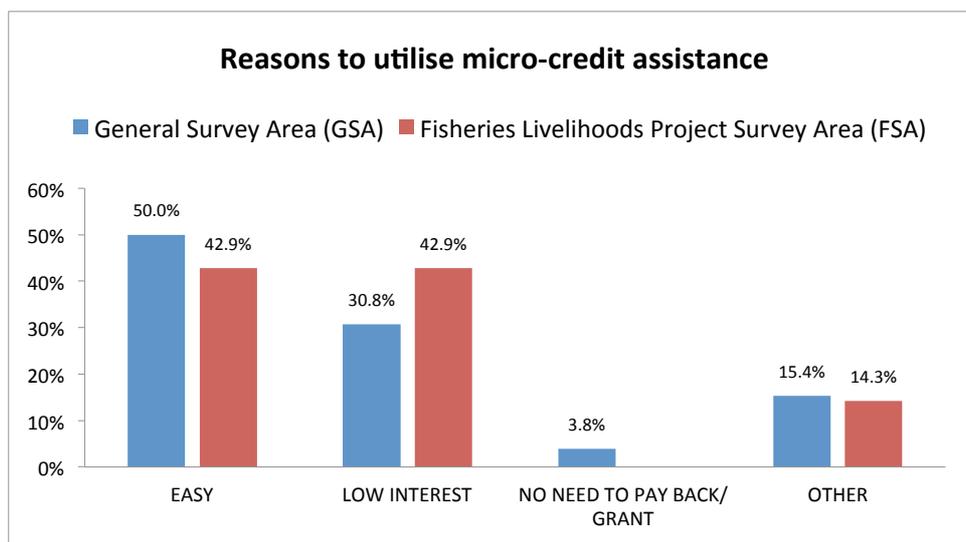


Figure 3-60. Reason to utilise micro-credit assistance

23% of respondents with micro-credit loans also said that they intended to use the assistance again after they pay off their current loans. The main reason given for continuing to utilise

micro-credit is increased income (47%). Receiving training and technical assistance was also given as a significant reason (12%). Some of the 29% respondents who selected Other said that the assistance can be used for buying fishing gears and boat fuel.

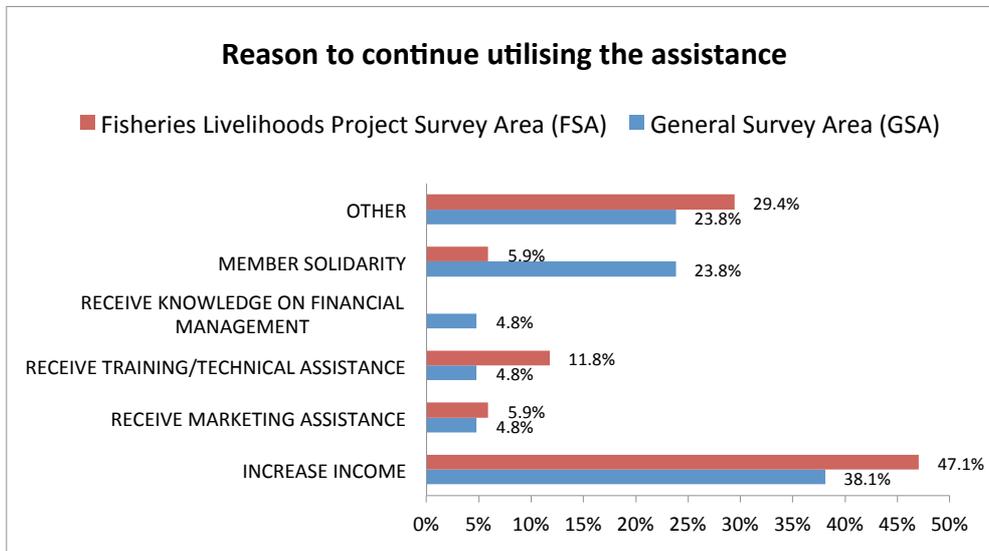


Figure 3-61. Reason to continue utilising the financial institutions

### Group users of micro-credit

According to respondents groups that utilise the micro-credit assistance are dominated by female groups (around 60%). 28% of male groups use the service.

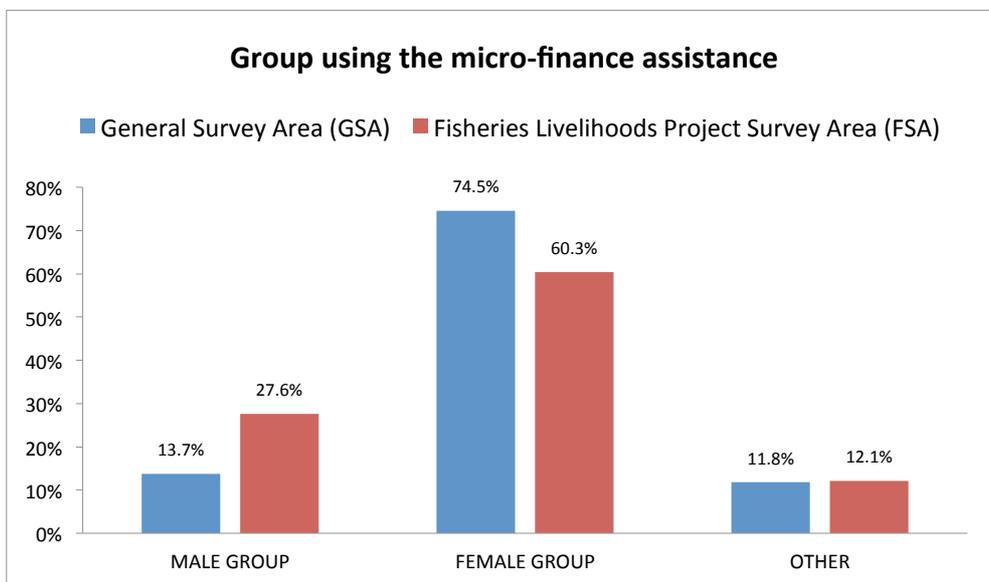


Figure 3-62. Group that uses micro-finance assistance

### 3.7.6 Kind of assistance needed

Most of the respondents need financial assistance for replacing fishing gear (81%) and to cover fishing operational costs (64%). Assistance needed for replacing fishing gear was more dominant in the FSA area (81% compared to 70% in the GSA), while the reverse was true for operational cost for fishing.

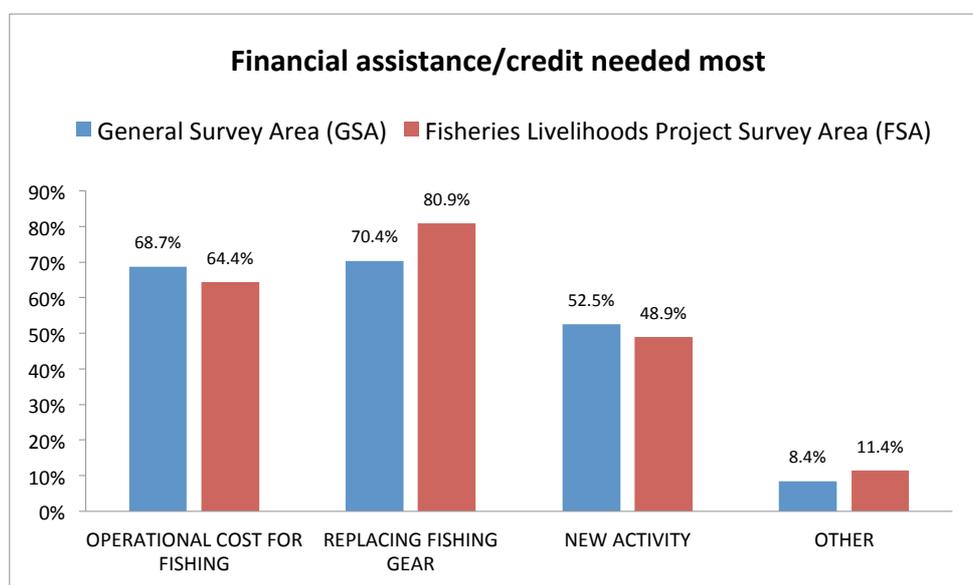


Figure 3-63. Financial assistance or credit needed most by the respondents

### 3.7.7 Key indicators for micro-finance

Table 3-32. Key baseline indicators for Micro-finance

5	Indicator	Area	Baseline	Target	Target
			2011	2012	2013
5.1	Users of financial services	FSA	14%	20%	40%
		GSA	15%	20%	40%
5.2	Users of micro-finance	FSA	4%	10%	25%
		GSA	3%	10%	25%

### 3.8 Summary of Indicators

Table 3-33. Summary of indicators for Livelihoods Baseline Survey

	<b>Indicator</b>	<b>Area</b>	<b>Baseline</b>	<b>Target</b>	<b>Target</b>
			<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>1</b>	<b>Co-management</b>				
<b>1.1</b>	Community familiarity with the term <i>co-management</i>	FSA	22%	25%	30%
		GSA	21%	25%	30%
<b>1.2</b>	Correctly understand co-management to mean resource management collaboration between government and fishing communities	FSA	32%	35%	40%
		GSA	33%	35%	40%
<b>1.3</b>	Village body responsible for regulating marine resource utilization exists	FSA	11%	20%	25%
		GSA	14%	20%	25%
<b>1.4</b>	Written regulations exist and understood by the community	FSA	3%	15%	20%
		GSA	7%	15%	20%
<b>1.5</b>	Women played important roles in product processing	FSA	27%	30%	40%
		GSA	22%	25%	35%
<b>2</b>	<b>Safety at Sea</b>				
<b>2.1</b>	Fishers who have experienced safety problems while at sea	FSA	74%	60%	42%
		GSA	69%	55%	38%
<b>2.2</b>	Understand the importance of having safety equipment on board	FSA	31%	50%	70%
		GSA	35%	50%	70%
<b>2.3</b>	Use the Fisheries Office is the main source of reliable information on sea safety	FSA	49%	60%	70%
		GSA	54%	60%	70%
<b>3</b>	<b>Post-harvest and Marketing</b>				
<b>3.1</b>	Ice production/distribution facilities available in selected fish centres/ fish landings	FSA	9%	20%	40%
		GSA	34%	20%	40%
<b>3.2</b>	Fishers have knowledge/skills on product processing/ marketing gained through training	FSA	8%	15%	25%
		GSA	8%	15%	25%

	<b>Indicator</b>	<b>Area</b>	<b>Baseline 2011</b>	<b>Target 2012</b>	<b>Target 2013</b>
<b>3.3</b>	Fishers have adequate processing tools and facilities	FSA	19%	25%	50%
		GSA	41%	50%	50%
<b>3.4</b>	Fishers have difficulty accessing markets	FSA	64%	45%	30%
		GSA	51%	30%	20%
<b>4</b>	<b>Livelihoods Enhancement and Diversification</b>				
<b>4.1</b>	The percentage number earned an average monthly income of \$200-\$299	FSA	24%	30%	35%
		GSA	21%	26%	30%
<b>4.2</b>	Low market support /buying power is one of the constraints in earning higher income	FSA	29%	25%	20%
		GSA	31%	25%	20%
<b>4.3</b>	Low skill is a constraint in earning higher income	FSA	29%	25%	20%
		GSA	27%	25%	20%
<b>4.4</b>	Inadequate fishing gear/fishing vessel is considered a constraint in earning higher income	FSA	55%	25%	20%
		GSA	41%	25%	20%
<b>5</b>	<b>Micro-finance</b>				
<b>5.1</b>	Users of financial services	FSA	14%	20%	40%
		GSA	15%	20%	40%
<b>5.2</b>	Users of micro-finance	FSA	4%	10%	25%
		GSA	3%	10%	25%

## 4 RESULTS AND ANALYSIS – BAUCAU AND VEMASE

### 4.1 Respondent Profiles

Situated 129 km east of Dili, the district of Baucau covers 1,600 km<sup>2</sup> and serves as a gateway for the neighbouring districts of Lautem, Viqueque and Manatuto.

The District is divided into six subdistricts and 59 sucos: Baucau (11 sucos), Laga (8 sucos) and Vemase (7 sucos) on the coastal plain, while Venilale (8 sucos), Quelicai (15 sucos), and Baguia (10 sucos) are located inland.

Baucau is the third largest district in Timor-Leste with a population of 111,484, comprising 55,794 males and 55,690 females. The population growth is in the lowest bracket with a 1.69% annual growth rate since 2004 and an average household size of 5.2.

The most promising fishing areas are located off the northern shore. The RFLP targeted areas in Baucau lie primarily in the subdistrict of Vemase.

Regarding the samples there were 81 respondents in the sample for the General Survey Area (GSA) in Baucau district (Confidence Interval CI = ±11%). This means that data from the sample for this district level has a margin of error of 11%. Another way to describe it is that the correct population value of the district (statistically called the “mean”) represented by the sample lies in the interval of 89% - 111% of the sample result<sup>9</sup>. For the Fisheries Livelihoods Project Survey Area (FSA) in Vemase subdistrict there were 33 respondents (CI = ±17%). Therefore the correct population value of the subdistrict represented by the sample lies in the interval of 83% - 117% of the sample result.

Unless otherwise stated, all the percentages used in the following sections in this chapter will be based on the total number of respondents in the respective survey area.

### 4.2 Co-management

#### 4.2.1 Fact-finding results

##### 4.2.1.1 Familiarity with the term co-management

In Baucau District (GSA) 16% of the respondents were familiar with the term co-management. The result in the Project area (FSA Vemase) was somewhat higher, i.e. 21%.

When asked about their understanding of the meaning of the term *co-management*, only 28.6% understood it to mean *communities working together with the government*. 71% understood it to have other meanings, i.e. *collaboration among groups of fishers* (71%) or *sharing responsibility among fishers* (43%).

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<sup>9</sup> Statistically, however, we cannot say that the data (from the sample) can represent the district (population) with a probability of between 89% and 111%.

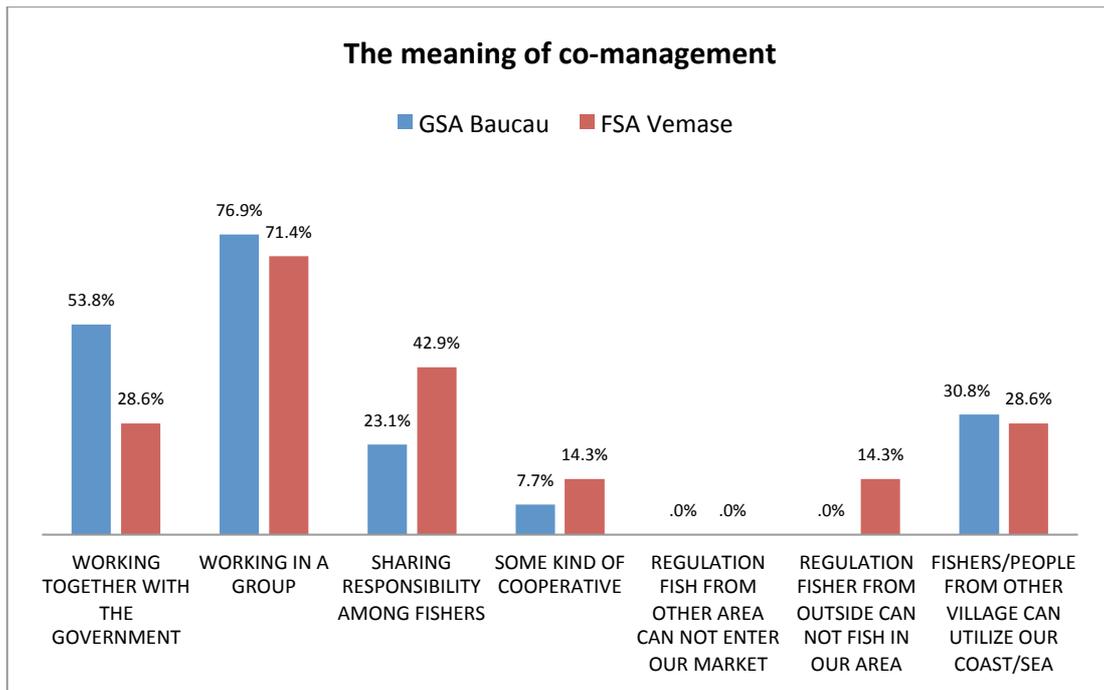


Figure 4-1 What respondents understand by the term co-management

#### 4.2.1.2 Existence of collaborations

79% of the 21% of respondents who understood co-management indicated that some kind of collaborations or group sharing activities existed in their area in the form of *collaboration among groups of fishers*, while 12% referred to *sharing responsibility among fishers*. 29% said *collaboration between fishers group and government* did also exist.

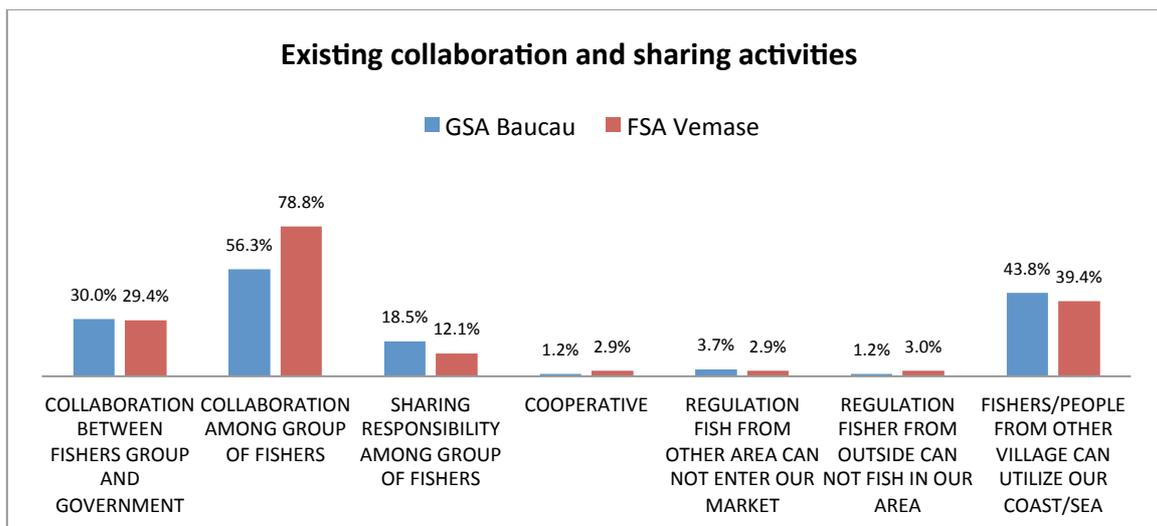


Figure 4-2 Types of existing collaboration and shared activities

### 4.2.1.3 Community groups

Fisher Groups are the dominant community group recognised in Vemase (79% of responses). Other community groups commonly identified by the respondents were Savings and Loan Groups (27%) and Women’s Groups (21%). Savings and Loan Groups were more popular than cooperatives, with only 9% of the respondents recognizing cooperatives in comparison to around 27% mentioning Savings and Loan Groups.

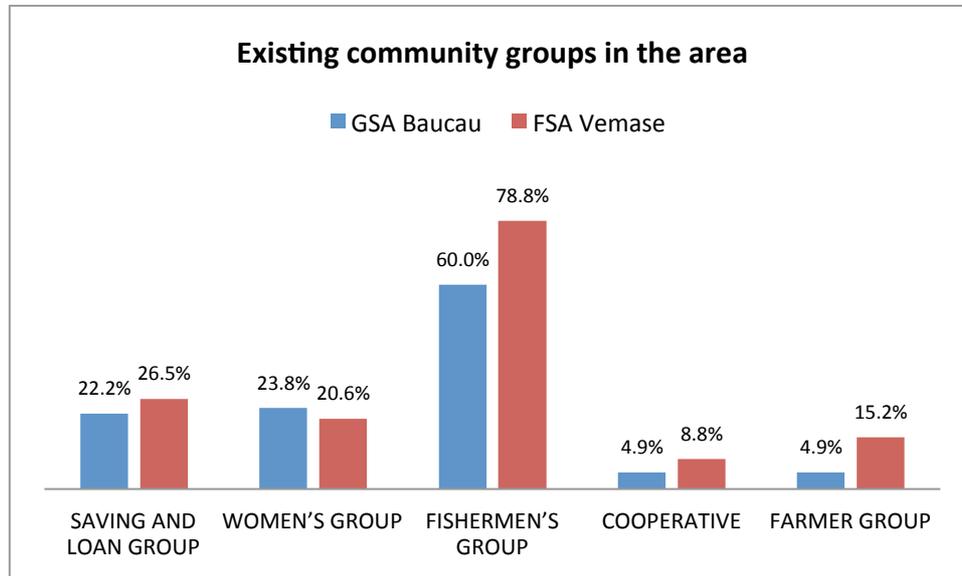


Figure 4-3. Existing community groups in the area

Approximately 53% (GSA Baucau: 36%) of the respondents have joined activities of the fisher groups. Around 6% (GSA Baucau: 9%) have participated in savings and loan groups, while only 3% (GSA Baucau: 4%) have been involved in women’s group or cooperatives.

**External sources of assistance for community groups:** The respondents recognized several parties as providing assistance to community groups. The Fisheries Office was mentioned by over 21% of respondents in Vemase (GSA Baucau: 9%). Subdistrict Government was identified by almost 10% of the respondents (GSA Baucau: 4%).

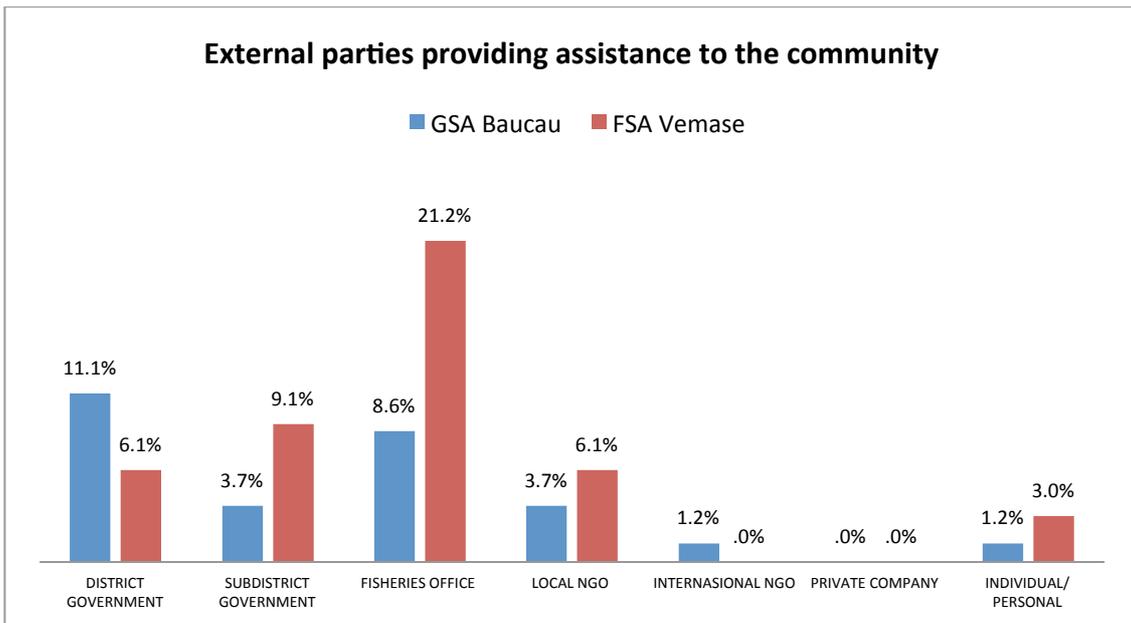


Figure 4-4. External parties providing assistance to the community

**Community groups receiving external assistance:** In Vemase, fisher groups were identified as the type of group, which received the most external assistance (21%). They were followed by farmer groups (9%). Relatively little assistance (<3%) was provided to other groups including women’s groups, and seaweed farmers.

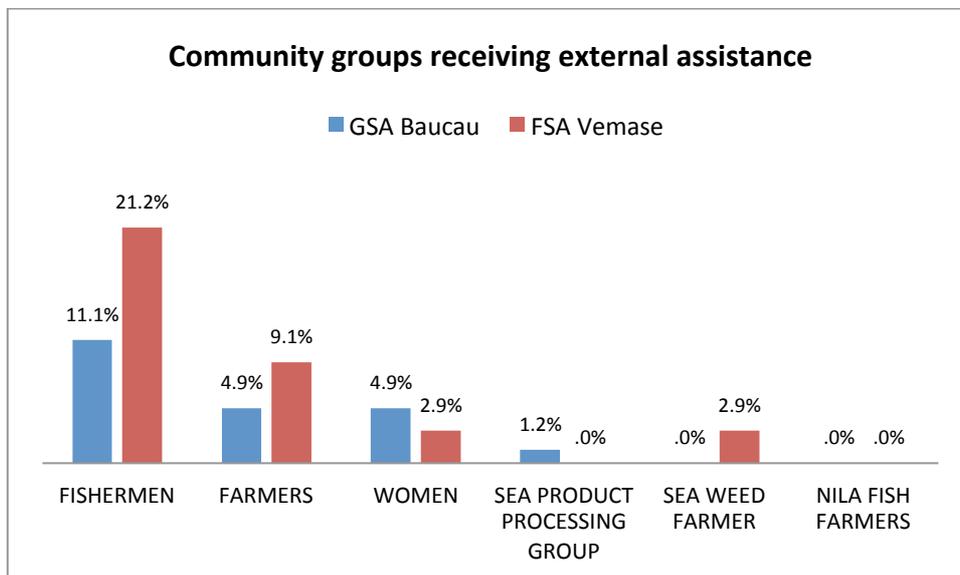


Figure 4-5. Community groups receiving external assistance

FGD with fishers from Vemase, confirmed that fishing groups were the ones receiving most assistance from the government. The types of assistance given included fishing gear, such as mono-filament nets (1.5-2.5 inch mesh), rumpon/FADs, motors/engines, and training on salting fish.

#### 4.2.1.4 Knowledge concerning policy and regulations

The existence of a village body responsible for regulating marine resource utilisation was reported by only 3% of respondents in Vemase (GSA Baucau: 3%). There was no knowledge of the existence of written regulations concerning resource utilisation in Vemase.

Although the respondents did not know about a village body or written regulations concerning marine resource utilisation, the In Depth Interview (IDI) with staff of the Fisheries Office in Vemase revealed that awareness raising on government regulations has been conducted by the staff from Fisheries Office in cooperation with community leaders and staff of Subdistrict Vemase. The aware raising focused on protected corals and animals (crocodile and Hawksbill turtle); prohibited fishing gear types; banning of mangrove cutting and the use of explosives for catching fish.

#### 4.2.1.5 Women's roles in fisheries

Direct involvement of women in fisheries was reported to include product selling (61%) and product processing (24%). Women were also reported have an important role in domestic household financial management (33%).

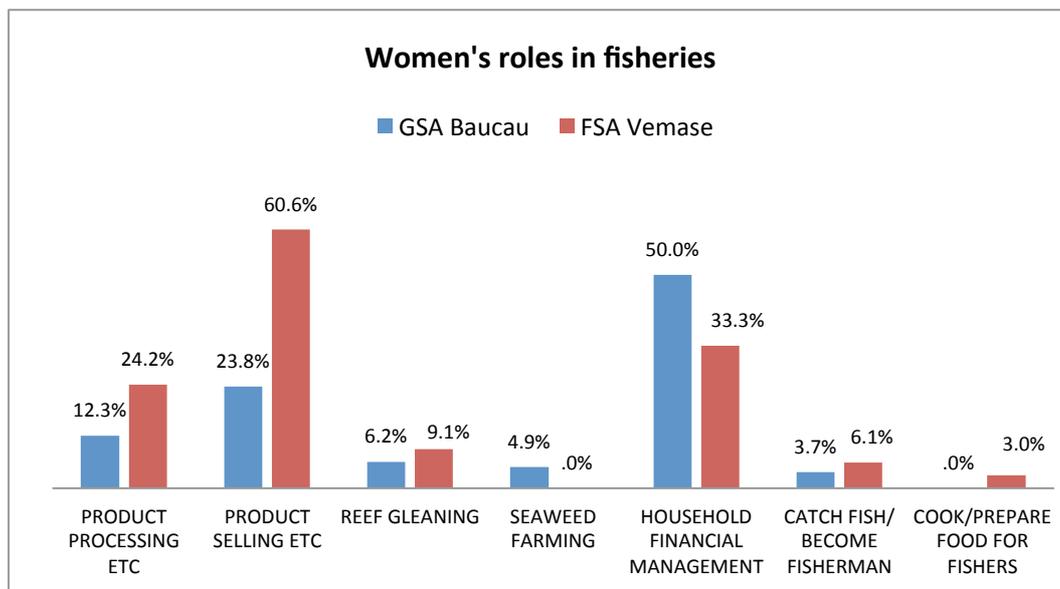


Figure 4-6. Women's roles in fisheries

Other fisheries related activities mentioned were reef gleaning (9%) and involvement in fishing at sea (6%).

Women play an important role in reef gleaning activities, which can be undertaken for 6-8 days per month. Women should be encouraged to establish women's groups and be active in alternative livelihoods programs.

#### 4.2.1.6 Conflict resolution

Only 12% of respondents in Vemase (GSA Baucau: 7%) mentioned the existence of any conflict in the area.

Where conflict does occur it was readily resolved according to 50% of respondents (GSA Baucau: 43%). Conflicts were often resolved through fishers/community meetings (33%) or

with the involvement of the elderly/community leaders (33%). Other government authorities could take a role in mediation and conflict resolution such as the Local Fisheries Office (33%).

## **4.2.2 Analysis**

### **4.2.2.1 The understanding of co-management concept**

Real understanding of the co-management concept was still limited. Only 21% were familiar with the term and only 29% of those (i.e. less than 7%) correctly understood it. Most think it means *collaboration among groups of fishers*. Some fisher groups in the area were actually consolidated by the government as a conduit for channeling government assistance to fisheries.

### **4.2.2.2 Community groups**

The National Directorate of Fisheries and Aquaculture (NDFA) as well as other state institutions and NGOs promoted the establishment of groups by giving equipment (boats, nets, engines, etc.) and training to group members rather than to individuals. Facilitation is still needed to socialise and describe the benefits of having a group and how sharing responsibility and working together in a group will ease individual burden and help in resolving disputes.

When applying for assistance, fishers' groups have to prepare a proposal which requires approval from the extension worker, local authority (*chefe de Suco* and the subdistrict administrator), the District Fisheries Office and the District Director of MAF.

### **4.2.2.3 Knowledge concerning policy and regulations**

The respondents had no knowledge concerning policy and regulation. There was no customary law in place either.

Awareness raising on new regulations has been conducted by staff of the Fisheries Office. There should be continuous effort and facilitation in the implementation of the regulations, i.e. on the types of protected species, etc. Posters or brochures were distributed to the community. The annual awareness raising seemed to help in achieving community compliance with laws/regulations. The involvement of the community leader in awareness raising was seen as an appropriate way to reach out to the community.

### **4.2.2.4 Women's roles**

Although responses to the questionnaires showed that women in Vemase played a role in product processing and product selling, the actual implementation of this was still limited. The main role of women was housework, i.e. preparing family meals, cleaning the house, etc. However, women were in control of household financial management, so there is an opportunity to improve their skills by conducting simple financial management training for women's groups.

### **4.2.2.5 Conflict resolution**

There has been little conflict among fishers in Vemase. Conflict occurred due to the use of explosives, which were considered destructive by fishers.

Conflicts were resolved through mediation by the community leader and the Fisheries Office. Conflicts can be totally avoided once the regulation on prohibited fishing tool/gear is in force.

### **4.2.3 Program recommendations**

#### **a. Establishment of appropriate community groups and strengthening of existing groups**

Establishment of community groups, particularly fisher's group and women's groups is important to increase the capacity of respondents to collaborate for mutual advantage and increased management/organisational capability. Training and facilitation are required to improve community capability to manage their resources. Women's groups can be strengthened to improve economic capacity and to develop alternative livelihood activities.

The main obstacle in group establishment is to clearly define the objective and target achievements of the group. Therefore, facilitation in group and organisational management should be conducted early, before defining the groups to be established. Once groups are established field extension workers should actively seek opportunities to demonstrate their value and then disseminate this experience to other groups.

#### **b. Socialisation of regulations and awareness related to marine resources management**

Continuous socialisation of regulations on marine resources utilisation should be conducted, including the types of protected species, the needs to ban mangrove cutting, and the danger of potash to the sustainability of fish resources.

There should be an increasing awareness of sustainable use of resources. The communities should be aware that they must participate in any efforts to maintain sustainability of their marine resources and how this will link to improved household and community welfare.

#### **c. The role of women**

The role of women in fisheries should be strengthened through training in product processing and marketing. Women already play an important role in domestic household financial management; therefore, increasing their capacity in micro-finance management and micro-enterprise development will be appropriate in the effort to increase family welfare.

## **4.3 Safety at Sea**

### **4.3.1 Fact-finding results**

#### **4.3.1.1 Types of problems encountered at sea**

Most fishers in Vemase (61%) have encountered problems at sea. Among those, the main problems faced were bad weather and high waves (90%), followed by overturned boats (30%), boat leakage (30%) and loss of direction (19%). Other problems included seasickness (19%) and engine trouble (19%).

Despite this, fatalities were considered uncommon with 48.5% of respondents considering such accidents occurred only rarely or very rarely.

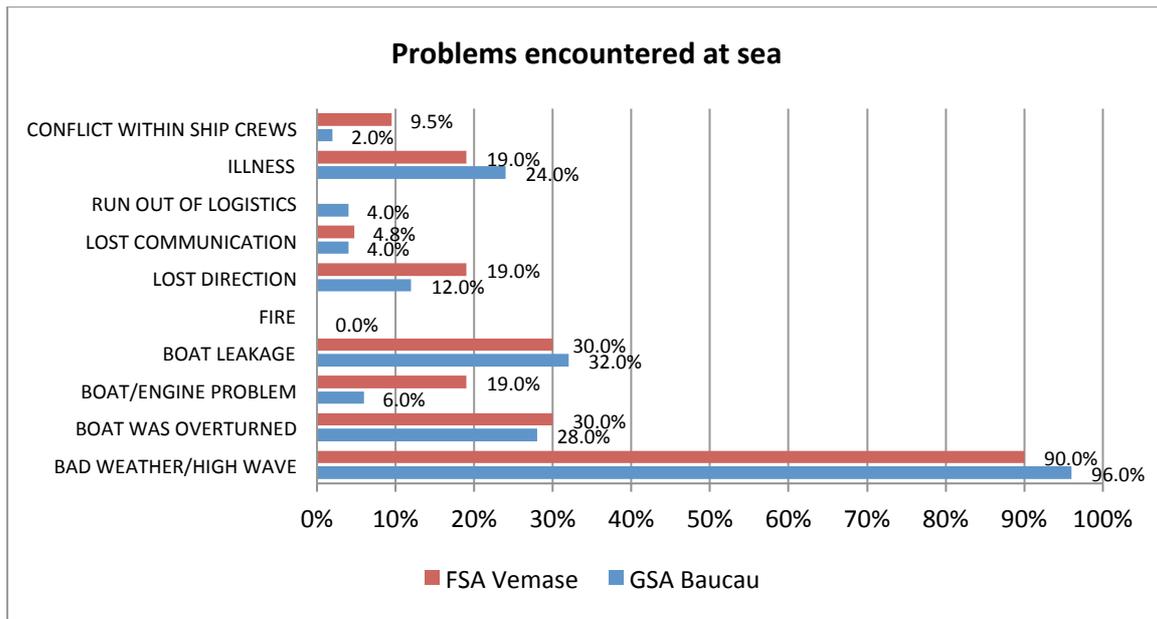


Figure 4-7. Problems encountered at sea

#### 4.3.1.2 Responding to problems

When faced with dangerous events at sea, the main response (40%) was to look for other boats to provide assistance. Consistent with the perception that accidents at sea were rarely fatal, the FGD showed that fishers in Vemase do not consider accidents at sea to be a serious matter. This was particularly the case because their fishing grounds were very near to the shore (around 2 km from the coast or still within eyesight).

Overtaken boats comprise the great majority of actual accidents. In this situation fishers would swim, right the boat and continued their fishing activities. Safety equipment brought on board was generally limited to a 5-litre empty jerrycan, which can be use as a float.

Approximately 33% of fishers indicated that in an emergency help arrived on time, while 67% said help came, but was too late and they had to rely on their own efforts.

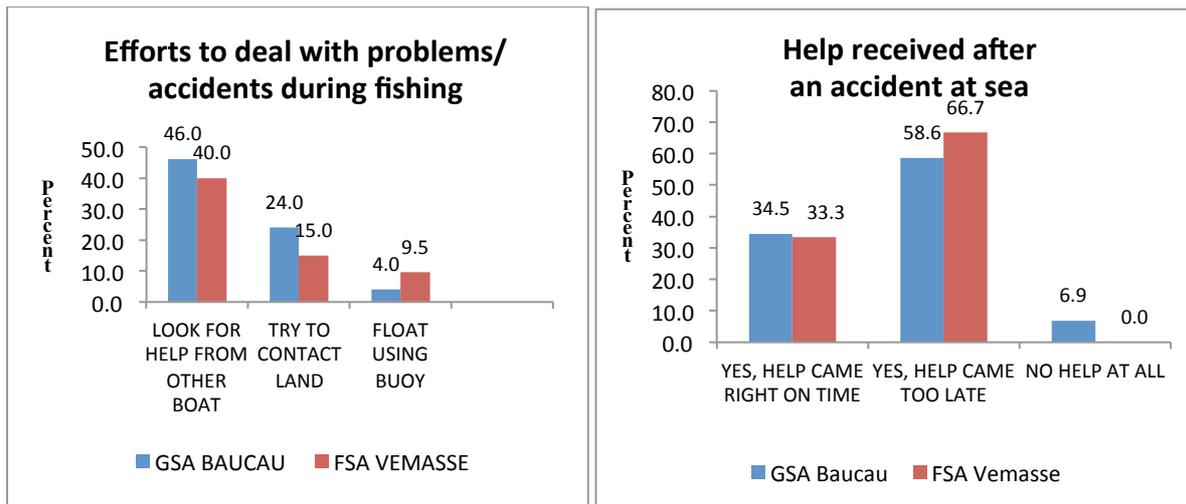


Figure 4-8. Efforts to deal with problems at sea and whether help was received

#### 4.3.1.3 Impact of accidents at sea

When asked about the impacts of accidents at sea 40% considered loss of income to be the main impact, followed by 25% who responded that they became sick and 24% who suffered injury. Approximately 33% said that there were no impacts at all.

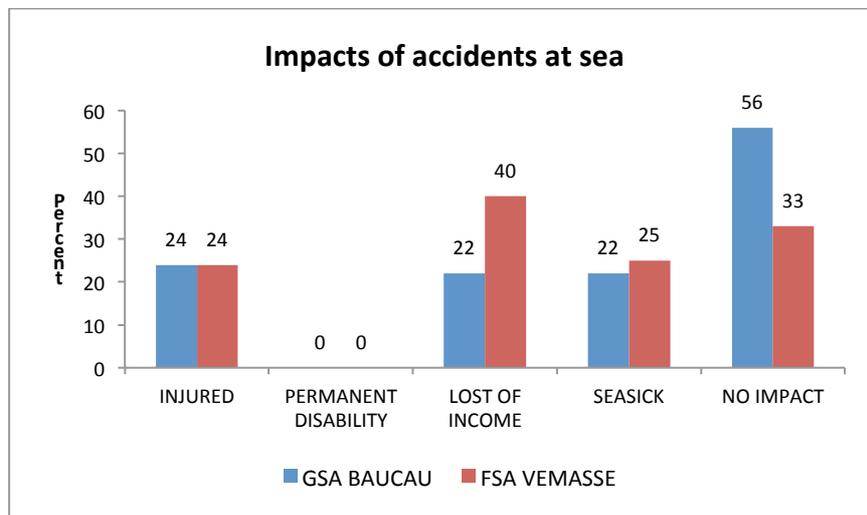


Figure 4-9. Impacts of accidents at sea

#### 4.3.1.4 Attitude to risks at sea

Fishers in Vemasé accept the risks associated with their livelihood, with 77% agreeing or strongly agreeing that accidents at sea were an uncontrollable fate that was outside their control. Regarding the causes of accidents 60% believed that accidents were an inherent occupational risk but a similar proportion (52%) believed they were caused by negligence. There was a broad mix of perception on whether incidents at sea were “pure accidents”. 21%

strongly agreed, 29% agreed, while 29% disagreed, 3% strongly disagreed and 18% did not know/had no opinion.

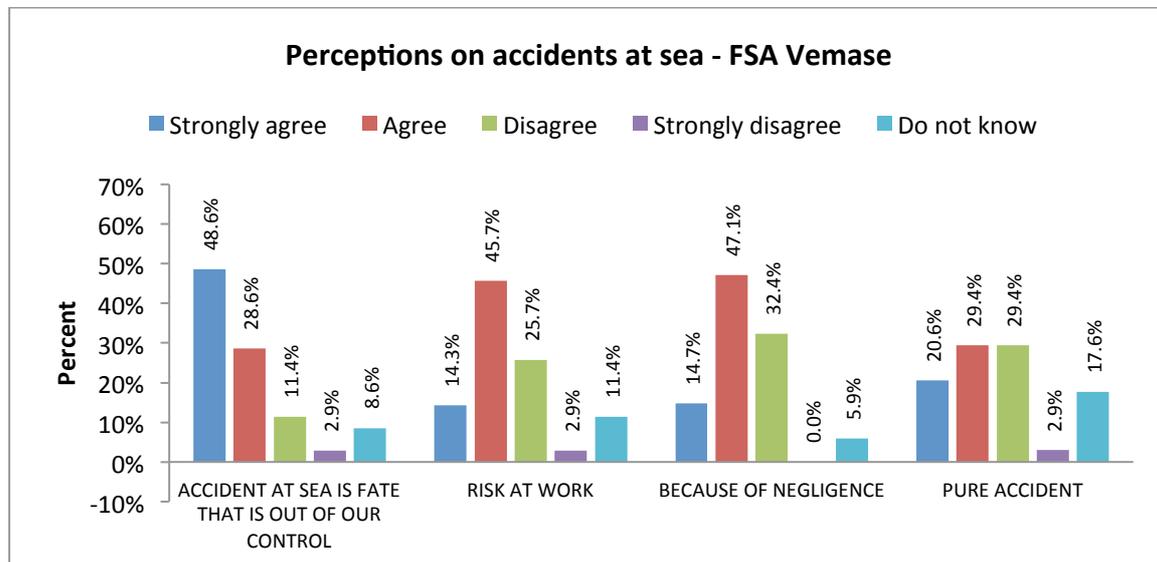


Figure 4-10. Perceptions on accidents at sea in Vemase subdistrict

FGD with fishers from Werutama (Laga Subdistrict) revealed that accidents experienced by fishers at sea were not considered a serious problem as there have been no casualties. This was also associated with the close proximity of their fishing area.

Accidents were usually limited to capsized canoes, where the fishers can usually just turn the canoe the right way up and then continue their fishing activities as usual.

#### 4.3.1.5 Safety regulations, equipment and information

##### 4.3.1.5.1 Awareness of regulations

A better understanding of the concept of safety at sea is needed to ensure the practice of safe and responsible fishing. Only 18% of respondents were aware of any applicable regulations concerning Safety at Sea. Those who were aware only understood that these required them to carry safety equipment when they go fishing at sea. However, during the survey, no awareness of specific regulations for the use of specific safety equipment when going fishing was found during interviews.

##### 4.3.1.5.2 Safety equipment

When asked if they brought safety equipment on board when they went fishing only 27% of the Vemase respondents said yes (40% in GSA Baucau). The FGD revealed that as accidents at sea resulting in fatalities of fishers were very rare in Baucau, sea safety regulation were of negligible importance. Safety equipment is also quite expensive so fishers give it a low priority and are reluctant to buy and maintain it.

##### 4.3.1.5.3 Perceptions of safety equipment required on board

A flashlight (torch) was considered to be essential safety equipment by many (49% of Vemase respondents) especially for traditional divers/fishers and those fishing at night who also use it to attract fish.

Also considered by many to be essential items to be carried when fishing were lifejackets (35%) and floats (up to 30%). Floats included life buoy (30%) which again includes 20-litre aqua bottles and tyres, and 5-litre jerrycans (9%),

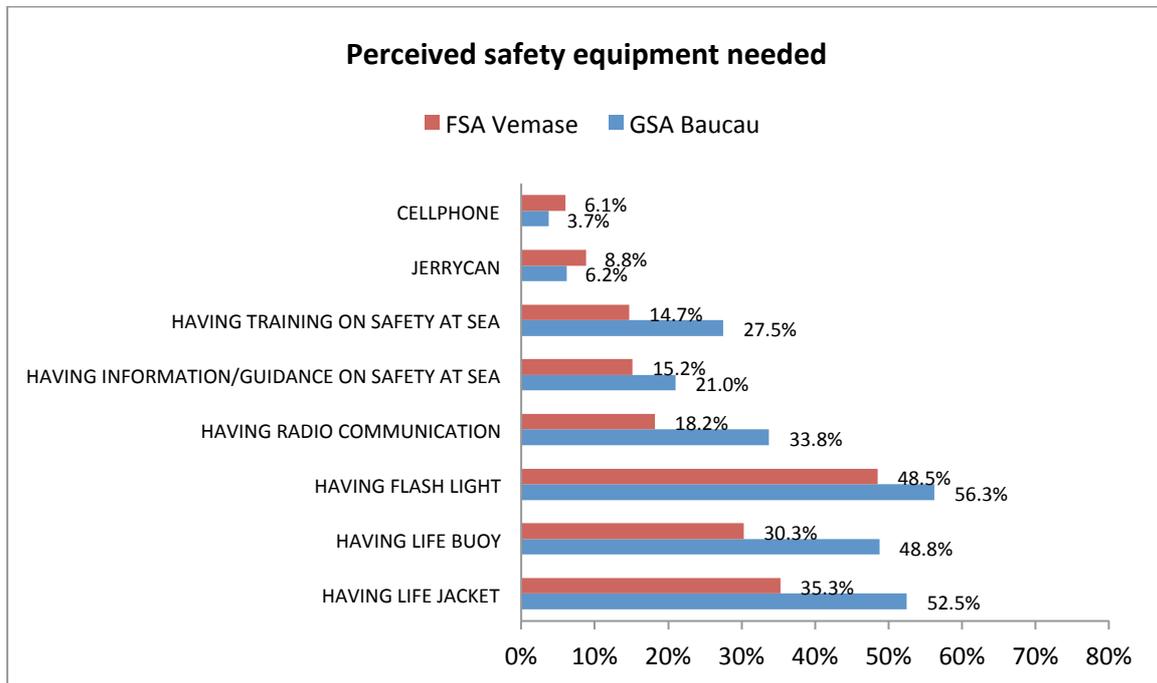


Figure 4-11. Perceptions of needed safety equipment

#### 4.3.1.6 Information on safety at sea

The majority (82% of the respondents in Vemase, 84% in Baucau) were unaware of any regulation on safety at sea. Of those that had received safety information (32% in Vemase, 12% in Baucau), the Fisheries Office (46%) was the main source, followed by community leaders (36%) and the Marine Police (18%).

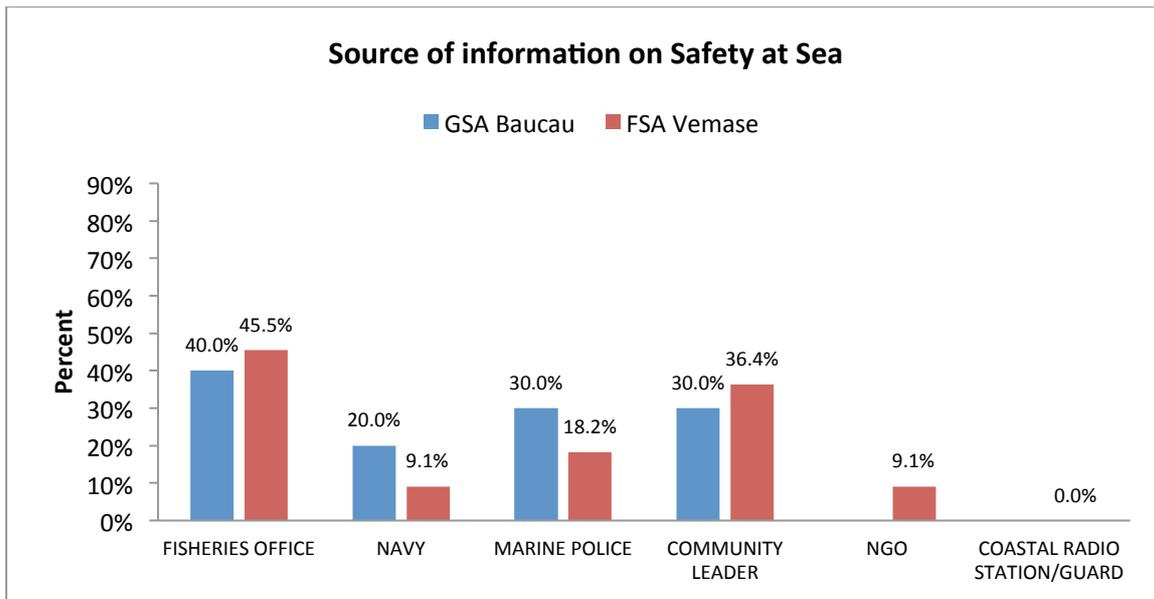


Figure 4-12. Source of information on Safety at Sea

## 4.3.2 Analysis

### 4.3.2.1 Dealing with problems encountered at sea

Although the respondents were aware of problems encountered at sea, they consider that problems with bad weather cannot be avoided, and must simply be faced. Moreover, as accidents at sea are rarely fatal, and considering that their fishing grounds are still within sight of shore, precautions to prevent accidents at sea are negligible. Therefore, the types of safety equipment brought on board remains very limited.

Proper safety equipment is considered expensive. As it was a low priority, expectations remain that it should be a government responsibility to supply.

### 4.3.2.2 Socialisation and implementation of safety regulations

Only 18% of respondents at FSA Vemase were aware of any applicable regulations concerning Safety at Sea. It could be possible that the low percentage was a sign that no specific regulations on safety equipment were disseminated to the people in the area. It was also reported by Baucau fishery office staff that training on safety at sea had been provided in the past by the Fisheries Office in cooperation with Marine Police. This training addressed equipment, preparation for sea, and how to avoid accidents.

Further, the understanding of these 18% of respondents was that regulations were limited to carrying safety equipment and life jackets, when they went fishing at sea.

### 4.3.3 Program recommendations

Knowledge on safety at sea is important, particularly as there is a plan to accelerate fisheries development in Timor-Leste. The fishers should be made aware that proper safety equipment is important and the Fisheries Office should intensify its interaction with fisher groups and

providing adequate information on fishing related activities and safety as part of responsible fishery activities.

## 4.4 Post-Harvest Fisheries

### 4.4.1 Fact-finding results

#### 4.4.1.1 The use of ice for preserving catch

Use of ice in fish preservation is low (15%) in Vemase. There was no significant difference in ice use between GSA Baucau and FSA Vemase. According to fishers, the low utilization of ice for preserving fish was due to the lack of an ice producer in Baucau. Ice production in Baucau is limited to small-scale household production with no industrial scale production. Therefore, ice used for fisheries has to be imported from Dili. Producing and distributing ice from the city of Baucau to surrounding areas would be quite difficult because of poor road conditions and the long distances involved, which results in a high price for ice.

#### 4.4.1.2 Processing of the pre-sale fish catch

Pre-sale processing of the fish catch was low in Vemase. 49% of respondents reported selling all their catch in fresh/unprocessed condition while another 50% processed only a small amount of their catch. There was a significant difference between GSA Baucau and FSA Vemase, with 76% of GSA Baucau respondents selling all their catch fresh and only 19% processing any of it.

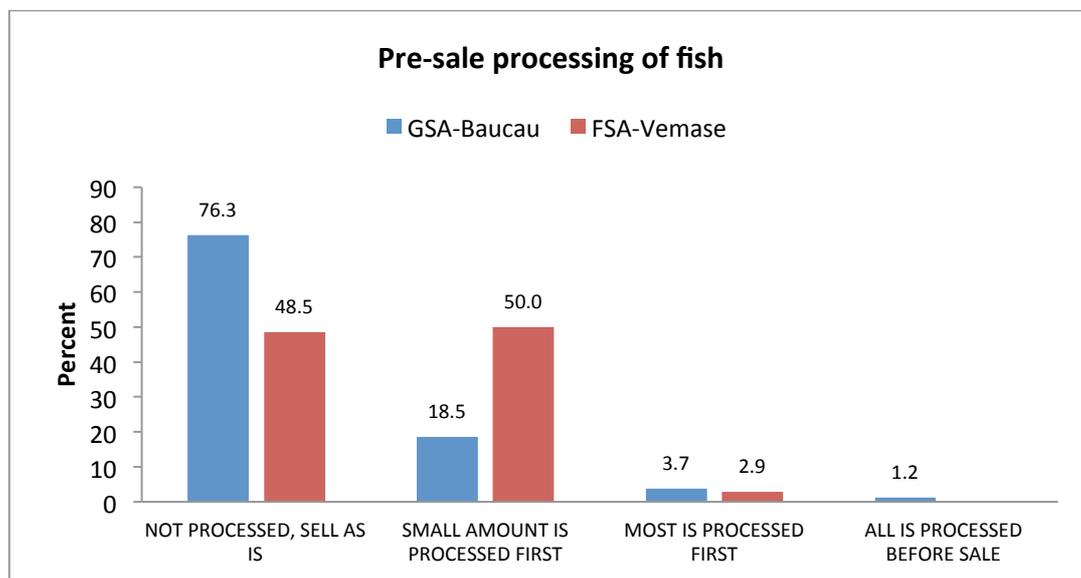


Figure 4-13. Pre-sale processing of fish

Dried salted fish (94%) was by far the most common processed fish product produced in Vemase, with smoked fish (6%) making up the balance. A very small amount of mashed, salted fish was produced in the GSA Baucau.

Table 4-1. Processed fish products

What do you make from it?	GSA Baucau	FSA Vemase
Salted fish	84.2	94.4
Smoked fish	5.3	5.6
Mashed and salted	5.3	0.0

FGD in Weratama (Laga Subdistrict) show that, while male fishers do know how to dry fish, processing of the catch was not done because the strong demand for the fresh catch means it is always sold out.

Although the selling price for fresh fish is low (especially when fish are abundant) fishers do not hold fish or process them into more durable products such as dried fish, because they cannot market them. The traders who come to this area will only buy fresh fish.

Processing of fish for family consumption is commonly done by boiling the fish and fermented it into vinegar/acidic fish with salt (bought from the local salt-makers) or in fermented palmyra palm (nira lontar). Consumption of fried fish was rarely done because it requires additional cost to purchase coconut oil from farmers in the aldeia.

#### 4.4.1.3 Sources of post-harvest processing knowledge and skills

The simple technologies used for dried/salted fish production, were mainly family/traditional knowledge (94%) transferred from one generation to the next in FSA Vemase. In a fewer cases the technology was learned from neighbours and other fishers (22%).

The proportion of fishers who obtained their knowledge and skill from training conducted by the government, NGOs or from community groups was very small.

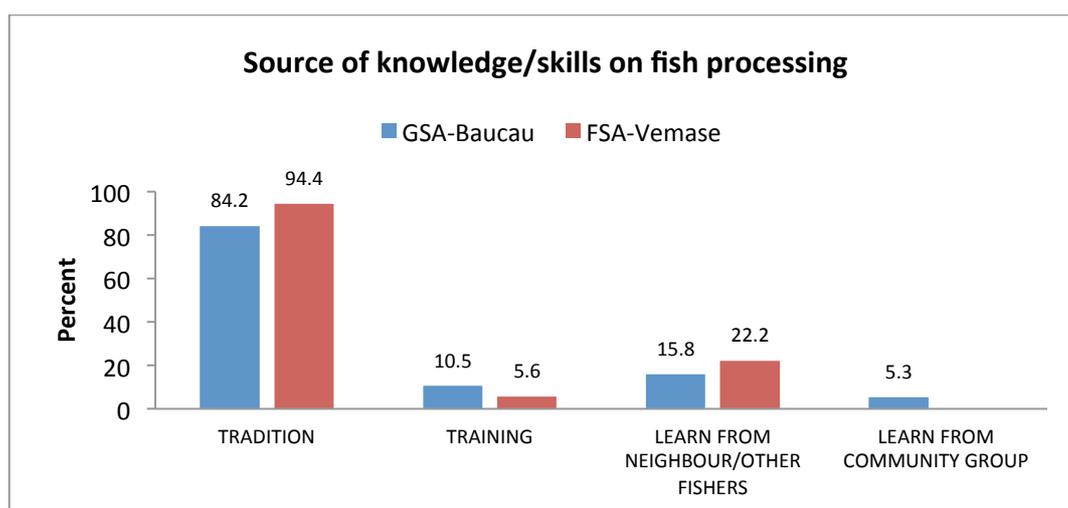


Figure 4-14. Source of knowledge or skills on fish processing

#### 4.4.1.4 Need for knowledge and skill on post-harvest processing

Acceptance of the need for additional post-harvest skills and knowledge was high (67% in Vemase and 63% in Baucau). The most needed areas of knowledge and skill for Vemase fishers were:

- Training related to quality improvement of processed product (58%).
- Additional fish processing knowledge (58%).
- Skills related to processed product diversification (42%).

The need for training and diversification was higher in the GSA Baucau.

Table 4-2. Processing skills needed by fishers

Do you feel that you need skill/information for post-harvest skill?	GSA Baucau	FSA Vemase
Yes	63.2	66.7

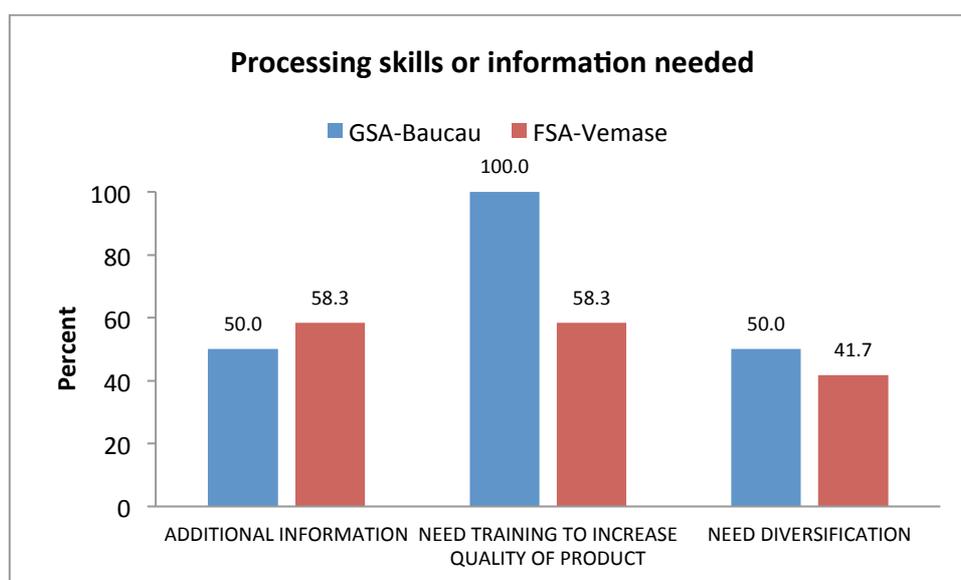


Figure 4-15. Processing skills or information needed

#### 4.4.1.5 Ownership of fish processing facilities

To the question of whether they possess adequate facilities and equipment for fish processing, only 41% of FSA Vemase fishers answered yes. On further questioning half indicated that more modern equipment was needed (50%) while access to good drying facilities was an issue for 30%. A small 10% simply need knives/cutters.

Table 4-3. Adequacy of processing equipment and facilities

Do you think you have adequate equipment to process fish/sea product?	GSA Baucau (%)	FSA Vemase (%)
Yes	61.1	41.2
No	38.9	58.8
What equipment/facility do you need?		
Modern processing equipment	57.1	50.0
Knife/cutter	14.3	10.0
Drying facility	28.6	30.0

#### 4.4.1.6 Means of selling fresh and processed aquatic products

The main sale locations for fish and processed fish products were:

- Selling at the roadside was the most common method (35%)
- Selling in the local market was the second most common method (24%)
- Selling to buyers on the beach was also common (21%).
- Direct selling to consumers and local vendors, was conducted by only 6%.

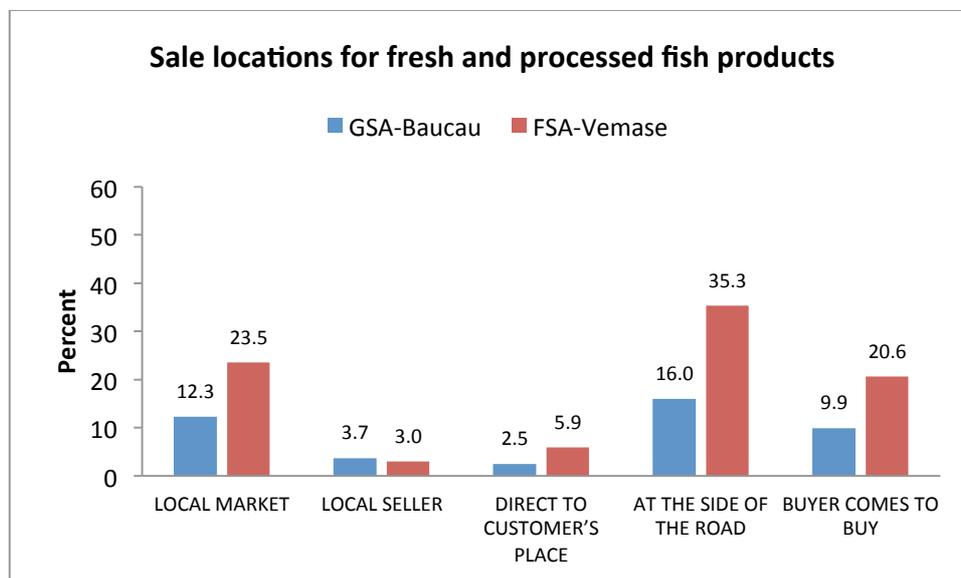


Figure 4-16. Sale locations for fresh and processed fish products

#### 4.4.1.7 Problems when selling processed fish products

Access to markets was the biggest problem reported for selling processed fish product (50%). Other significant problems were the low level of product quality (33%) and poor packaging of the fish and/or processed product (29%).

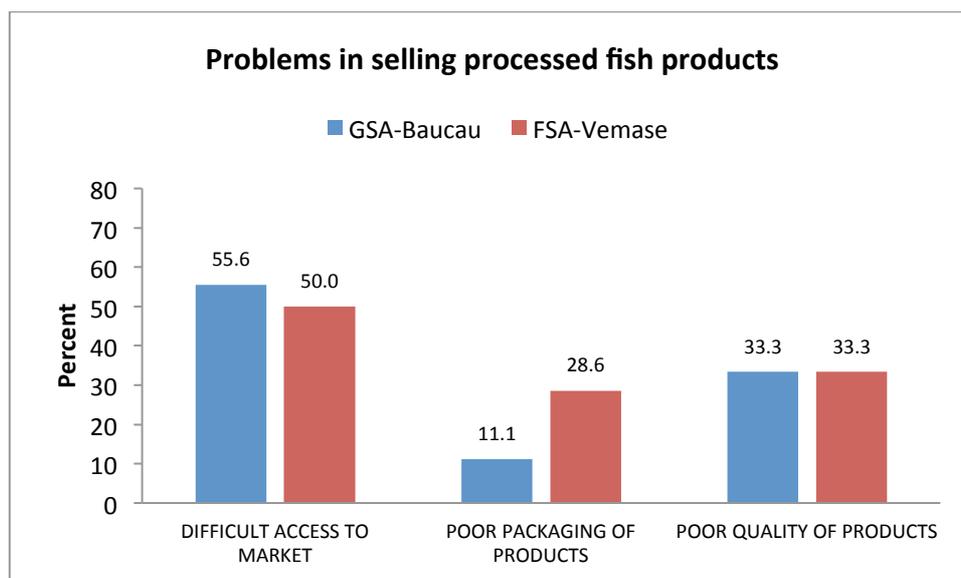


Figure 4-17. Problems in selling processed fish products

FGD in Weratama revealed that some women had tried to make dried fish and market them in the Laga Pasa (market), but the products were not popular with customers, so they were unable to sell their product. Consumers prefer fresh fish to dried fish. Dried fish production, although clean and hygienic, is not marketable so the production is currently limited to household consumption.

#### 4.4.2 Analysis

Ice production in Baucau is limited to small-scale household production; therefore, it is considered expensive for fishers to preserve their catch using ice that has to be bought from Dili. As a result, they tend to sell the catch fresh as quickly as possible, after setting some aside for family consumption.

Fish is not processed because the catch is always fully sold fresh. Despite a low selling price (especially when fish are abundant) fishers have limited marketing opportunities for processed products as traders will only buy fresh product. This situation is also influenced by the absence of facilities and the lack of information about market demand for processed and value added fish products. Weak local demand, poor access to external markets coupled with low processed product quality and poor packaging are the main constraints to selling processed fish products.

#### 4.4.3 Recommendations

- Small-scale ice making facilities should be established in Baucau and other key centres, so that fishers do not have to buy ice from Dili.
- Household ice production should be encouraged to support individual fishers who conduct daily fishing activities.
- A survey on market demand should be conducted to determine where best to sell fresh and processed and value added fish/seafood products.
- Training in fish processing should be coupled with awareness raising on the benefits of producing processed fish products for longer-term purposes.

- e. Multi-function fish auction places should be established and promoted (i) to be used as meeting places between fishers and buyers, (ii) to keep and preserve unsold catch, (iii) as places for fish processing activities and (iv) as places for fisheries training and awareness raising for the community and data collection and sharing of weather forecast and market information data.

## 4.5 Livelihoods Enhancement and Diversification

### 4.5.1 Fact-finding results

#### 4.5.1.1 Sea fishing frequency

Fishing frequency patterns vary depending on the season and other key determinants. Some fishers go to sea every day, while others go to sea as little as once, twice or three times per week. Though their schedules vary responses indicate that the majority of fishers tend to fish every day. From 33 respondents in Vemase, 55% go to sea daily. Other respondents reported they go to sea only once a week (24%), twice a week (24%) and three times a week (24%).

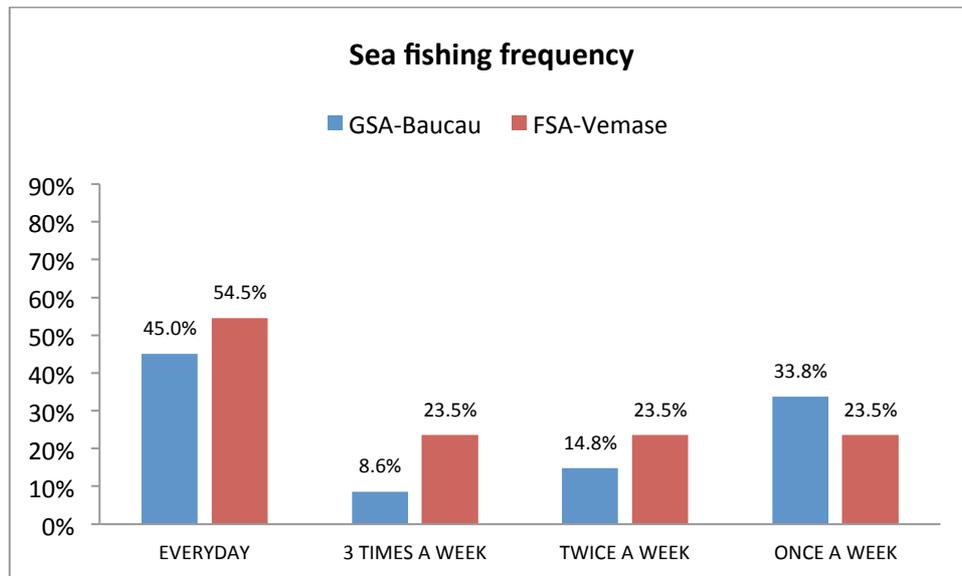


Figure 4-18. Frequency of going sea fishing in Baucau district and Vemase subdistrict

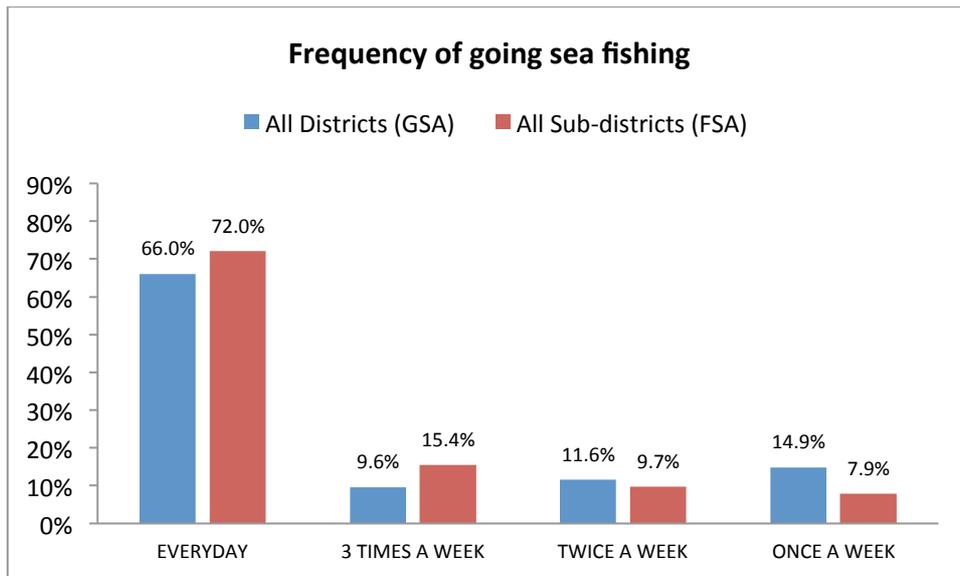


Figure 4-19. Average frequency of going sea fishing for all 5 districts (GSA) and all 5 subdistricts (FSA)

When compared to the average frequency in all 5 subdistricts, the frequency of Vemase fishers going to the sea daily was far lower than the average percentage for the 5 subdistricts overall (72%). On the other hand, the frequency of fishers going fishing once, twice or three times a week (24%) was higher compared to the overall average of the 5 subdistricts, which were 8%, 10%, and 15%, respectively.

#### 4.5.1.2 Time duration at sea each time

The great majority (88%) were day fishers who spend less than 12 hours at sea per fishing trip. The largest group (56%) fish for period of less than 6 hours. However, there were a significant group of fishers (32%) that spend 12 hours a day at sea. Relatively smaller numbers of fishers (6%) spend more than 12 hours a day (12-24 hrs) and multi-day trips were rare.

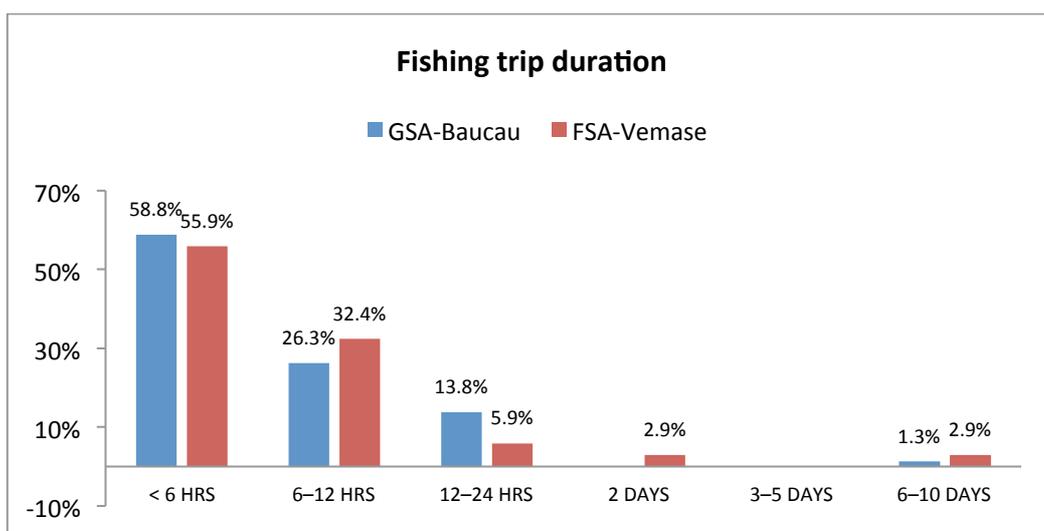


Figure 4-20. Fishing trip duration

### 4.5.1.3 Monthly at sea activity

Vemase fishers fish all year round, but the number of fishers varies with seasonal weather conditions. From the total number conducting fishing activities reported by month across the year, from March to June and from September to December were the months with the greatest number of fishers (more than 50%) at sea. Conversely, January, February, July and August were the months when the least number of were at sea.

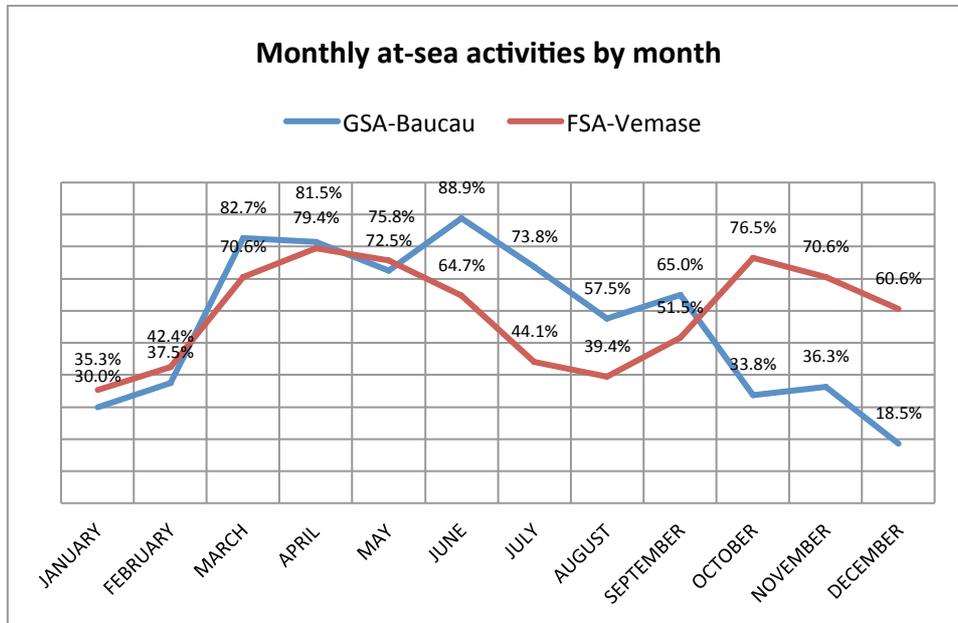


Figure 4-21. Percentage of respondents at sea by month

### 4.5.1.4 Location of fishing area

Three discrete types of fishing ground were described i.e. along inshore coast fishing, deep sea and on coral reefs. Vemase fishers mostly fish along the coast (85% of respondents). However, the area of deep sea (50%) and coral reef area (42%) were also significant fishing grounds of the fishers.

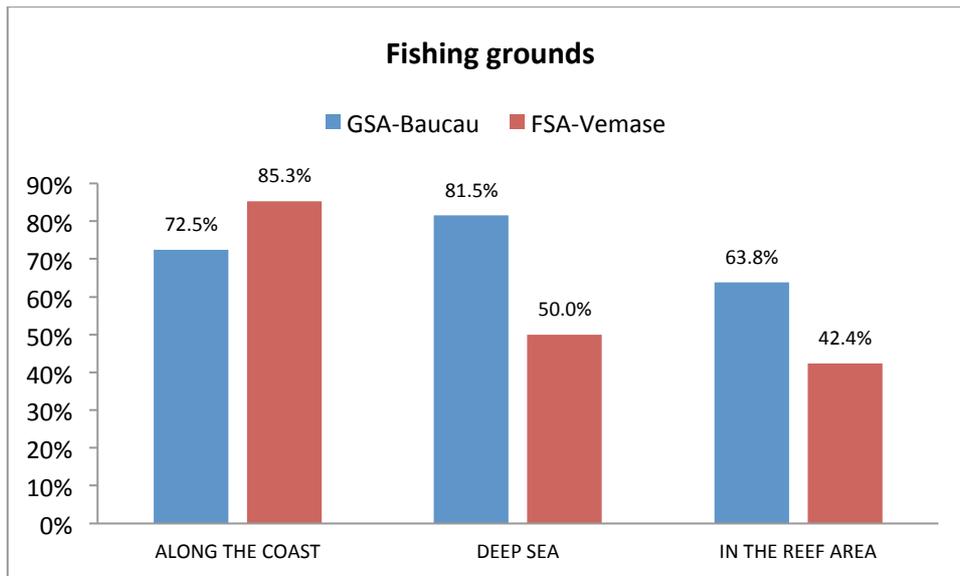


Figure 4-22. Major fishing grounds

#### 4.5.1.5 Boat and fishing gear

**1. Boat Type and Fishing Gear.** The type of boats used by fishers in Vemase can be grouped into several types namely: large boats, motorized wooden boats, boats with outboard engines, jugung or wooden boats without engine, and wooden boats with sail. Of the 33 respondents in Vemase who were asked about the type of boat they were using to fish, 85% indicated that they use a non-motorized wooden boat (rowing boat). Only 12% of fishers had outboard engines, while other boat types were uncommon.

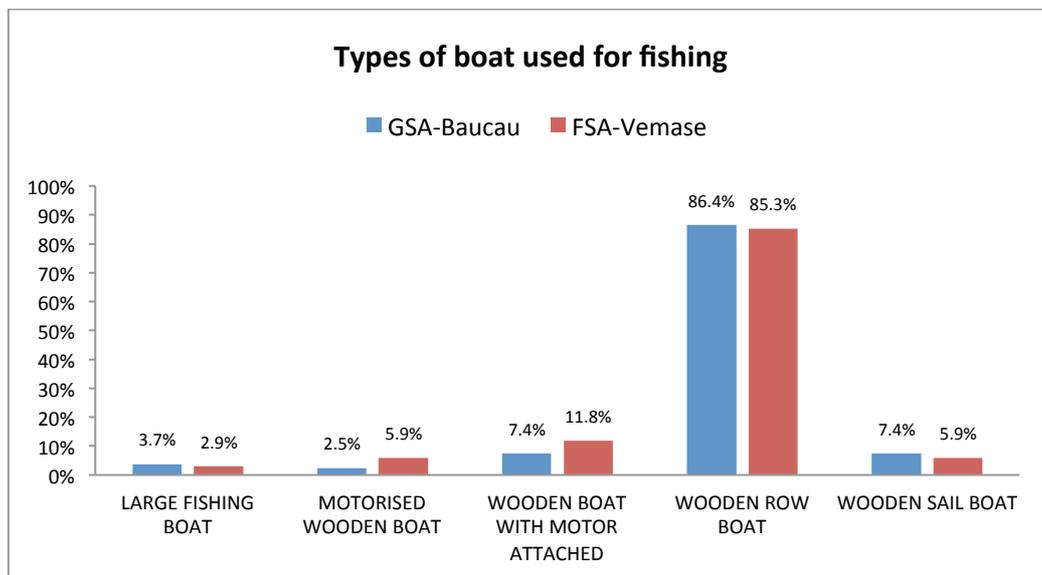


Figure 4-23. Types of boat used for fishing

Hook and line, and fishing nets were the most common gear used in Vemase. Hook and line (fish line) was used by 68% of respondents, and fish net were used by 56% of respondents, gillnets were used by 52% of respondents, and other nets by 36% of respondents. Many

fishers change gears at different times of the year and may use more than one type of fishing gear. Vemase fishers also utilize ‘rumpon’, a fish aggregating device (FAD). 18% of respondents stated that they own rumpon/FAD.

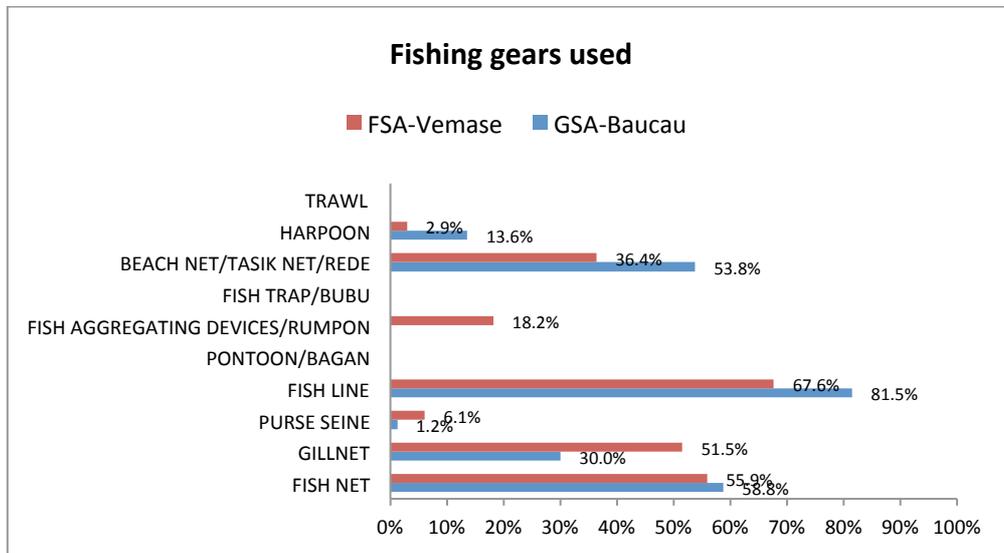


Figure 4-24. Fishing gears used

**2. Ownership:** Ownership of fishing boats falls into four categories, including: self/family owned, profit sharing, hired, and other status. The figure below indicates that most of the fishing boats were self/family owned (79%). Other arrangements made up the balance and involved profit sharing and/or hire. Most of the fishing boats were jugung type (wooden row boats without engines) as shown in the earlier figure.

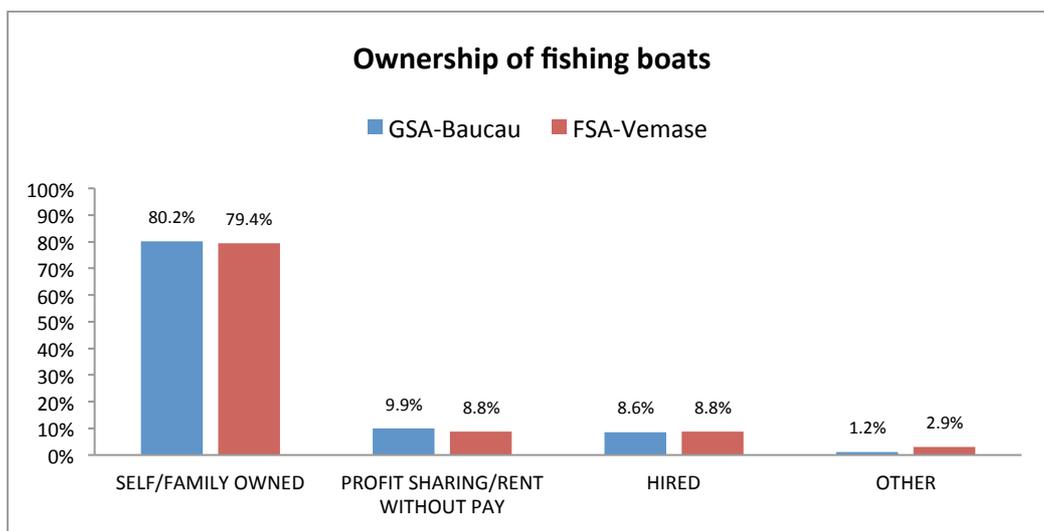


Figure 4-25. Ownership of fishing boats

9% of boats fished on a profit sharing with the boat owner taking the biggest share compared to the other 4 subdistricts in the survey where the average percentage for all 5 subdistricts was only 4%.

**3. Means of Obtaining Fishing Boat Ownership.** Fishing boats were acquired by purchase, family gift, government aid/NGO, or by borrowed from a friend. Most Vemase fishers (76 %) had bought their fishing boat themselves. Only a small percentage of fishers (6%) had received a boat donated by government or NGO aid.

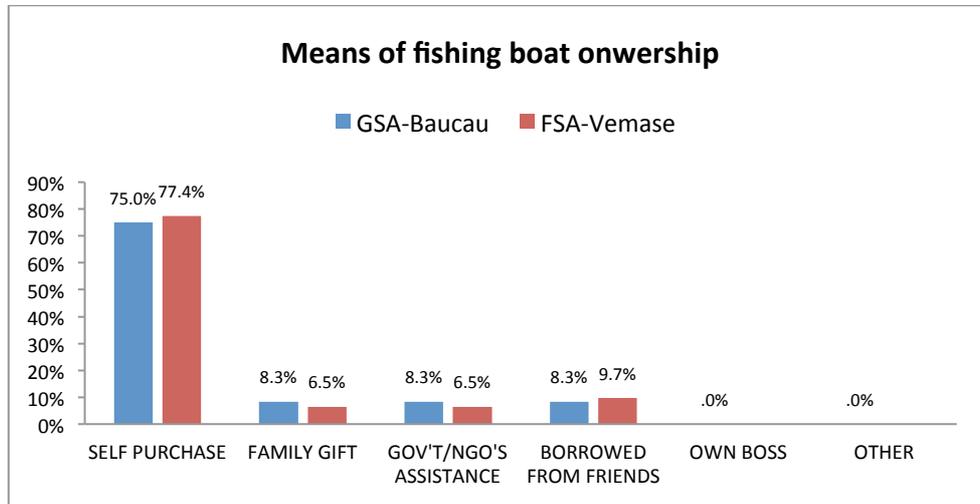


Figure 4-26. Means of fishing boat ownership

#### 4.5.1.6 Work system in fishing

The fishing work system included group fishing and individual effort. Fishing in groups was more common in this area, as reflected by survey responses. Total membership of a fishing group is dependent on the boat size. Small wooden boats without engines are used by 2-3 fishers. Larger boats with engines, however, can be crewed by 5 fishers or more. Fishing in groups of 2-5 members (65%) was the most common. Fishers working individually (32%) was also favored in the area. Larger fishing groups of more than 5 members was only conducted by 3% of respondents.

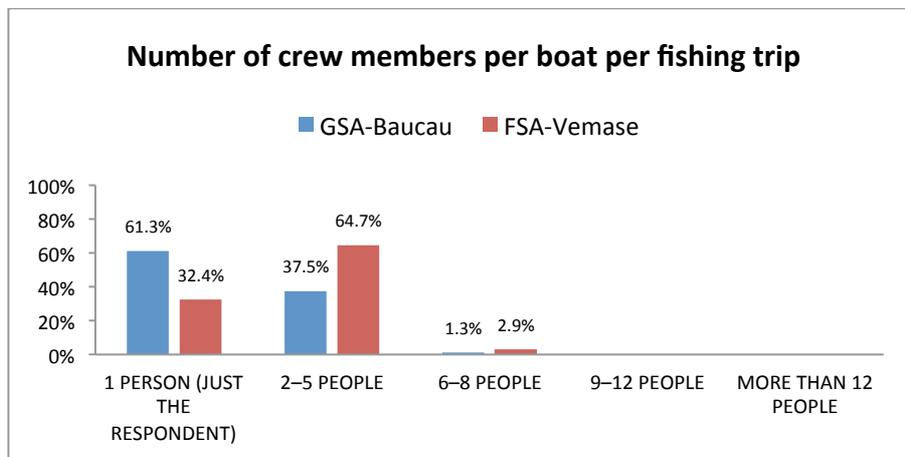


Figure 4-27. Number of crew members per boat per fishing trip

#### 4.5.1.7 Fish catch

**1. Variety of Catch.** The catch in the Vemase area included fish, shrimp/prawn, crab, squid, seaweed, snails, and oysters/clams. However, fish was the main target of 97% of respondents, while shrimp was targeted by 46% of respondents (higher than the 5 subdistrict average in the survey of 32%), and crab was collected by 35% of respondents, which was the highest compared to the other subdistricts with the 5 subdistrict average of 16%. Other catch such as squid, snail, oyster, and seaweed were relatively uncommon (3% to 9%).

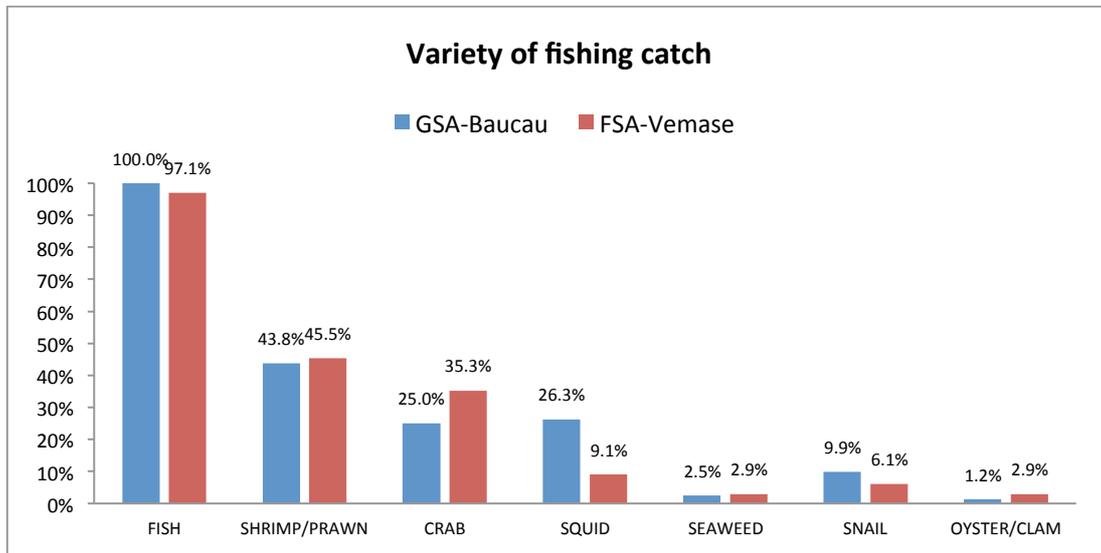


Figure 4-28. Variety of fishing catch

**2. Variety of Fish Species.** As shown in the previous figure the most common targeted catch was fish. The next figure shows the variety of fish catch as target species for fishers in Vemase. These species include ‘sardina’/sardines, ‘tongkol’/tuna, ‘kakap’/snapper, and ‘koku’/trevalli. These data may serve as an indicator for species abundance in Vemase.

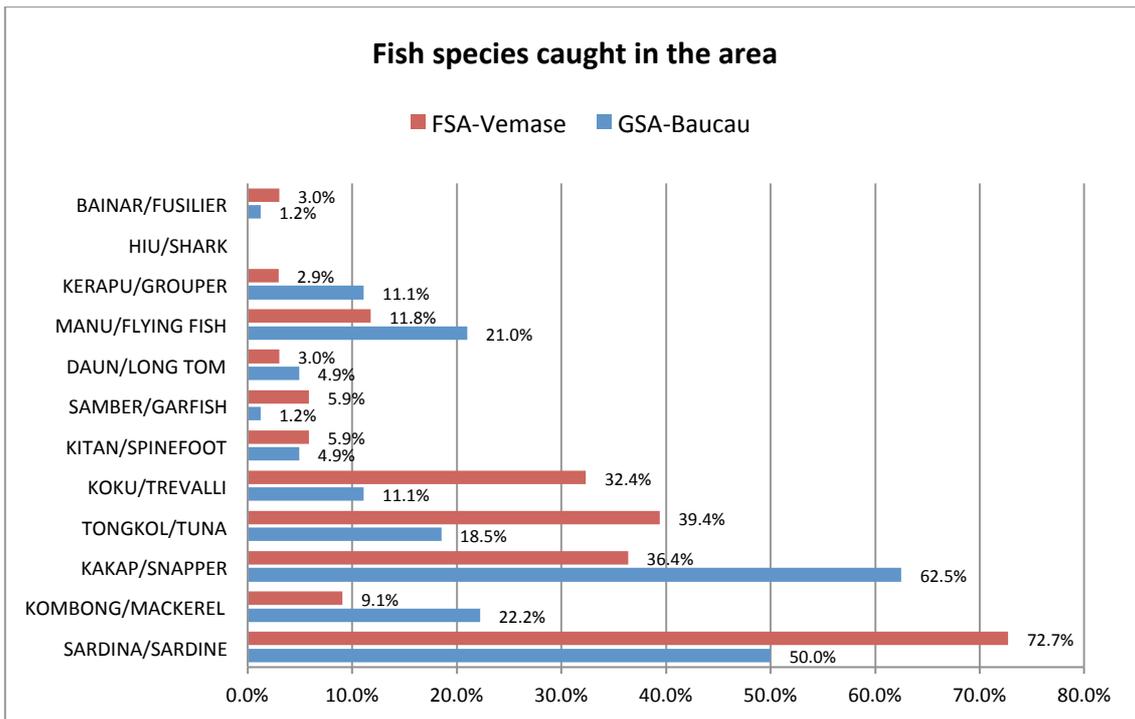


Figure 4-29. Fish species caught in the area

#### 4.5.1.8 Monthly average income

Overall, more than half of all respondents (66%) earned monthly incomes in the lower three ranges spanning \$0-\$299. However those fishers making more than \$500 a month comprised a significant portion of the respondents (17%).

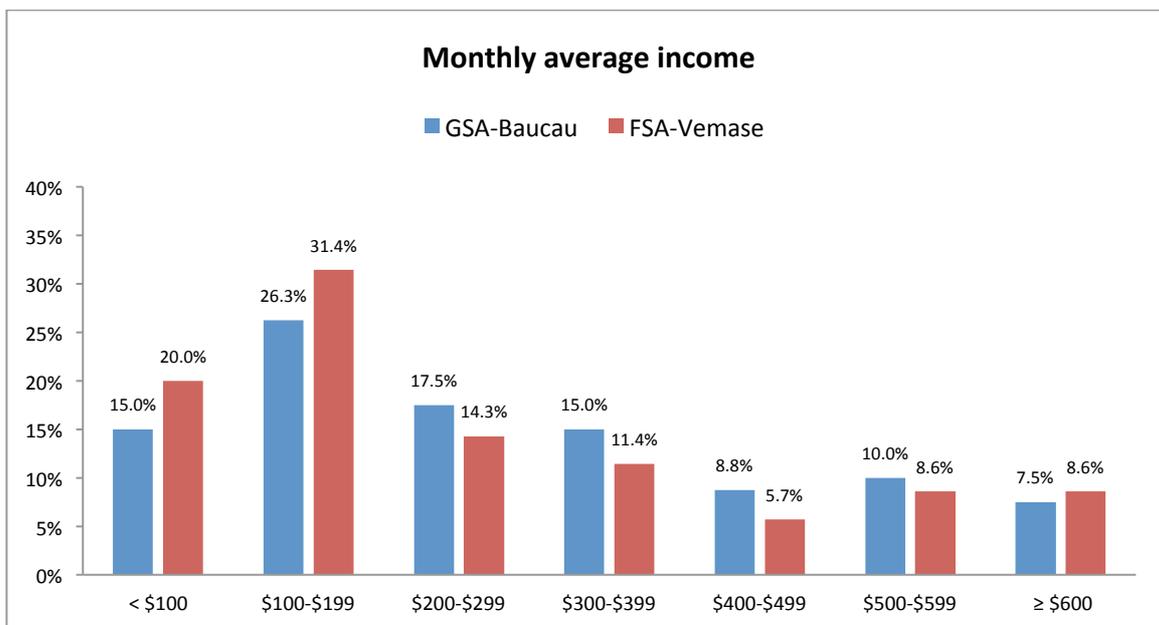


Figure 4-30. Monthly average income

#### 4.5.1.9 Additional income

Sixty four percent of respondents did not have any additional work and relied on fishing as their only livelihood and income source. A significant minority of Vemase fishers (36%) (GSA-Baucau: 45%) had second sources of income in addition to working as fishers.

Second livelihoods included farming, raising cattle, and running a kiosk. The two main second jobs in Vemase were farmers (46%) and animal breeders (33%).

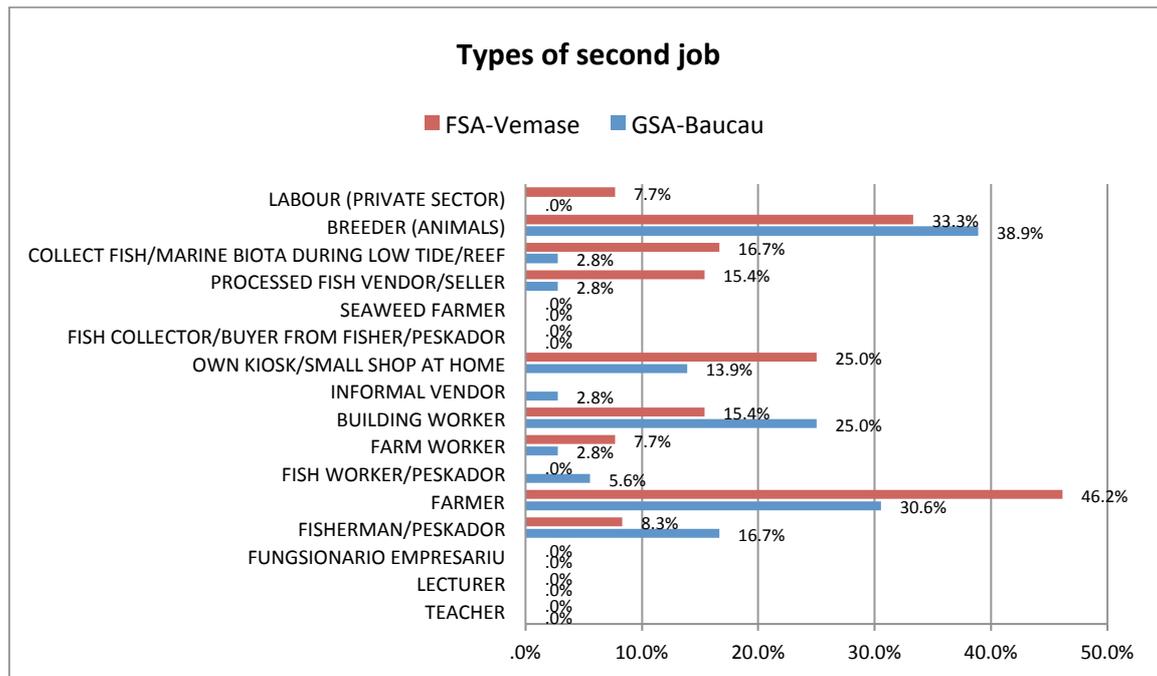


Figure 4-31. Types of second job

#### 4.5.2 Analysis

##### 4.5.2.1 Fishing activity and target species

The sea-going capacity of local fishers was still limited to trips of 6-12 hours duration. They were limited by their boats and equipment with most operating from simple non-motorized wooden boats, using hook and line, and hand nets. FADs were used by some. Most fishers owned their own boats.

Fishing activities were conducted throughout the year, however, the preferred months were March to June inclusive and September to December inclusive i.e. 8 months of peak fishing season. The other 4 months (January and February and July and August) have difficult or dangerous weather, though some fishers still go to sea. January and February is also the monsoon rain season, when many fishers working on farms.

Though other marine biota were caught, fish were the main target for the fishers in Vemase (97%). The main target fish species include ‘sardina’/sardine (73%), ‘tongkol’/tuna (39%), ‘kakap’/snapper (36%), and ‘ikan koku’/trevalli (32%).

#### **4.5.2.2 Work system and women's and children's roles**

The dominant work system for fishers was to work in groups. Each fishing boat, depending on its size, had a crew group of 2 to 5 fishers. Each group has a leader, who is the owner of the boat. Group members are commonly family of the nearest neighbours. Group members are not paid, but are given a share of the catch/profit.

The role of women and children is relatively small. The main role of wives is to prepare meals for their husbands. In the morning before the husband goes to sea, wives prepare coffee/tea. At around 9 o'clock wives and children bring the breakfast to the shore. At around 10 o'clock the husband lands to eat breakfast and some of the fish catch is brought ashore. After breakfast, the husband returns to fishing, while the wives prepare lunch on the beach. No one is home during day time.

#### **4.5.2.3 Alternative livelihoods**

36% (12 respondents) had extra work or an additional livelihood. Alternative work included farming (46%), raising cattle (33%) and owning a kiosk (25%). Every person can have more than one job, for example a crop farmer can also raise cattle. Selling groceries, food, drinks, and fruit in a kiosk is practical where houses are adjacent to the main road.

The income earned from these additional livelihoods sources was not known because normally they use the money earned for savings (especially from farming and cattle raising). They sell the cattle or the paddy when they need cash, and sometimes they store paddy as a stock.

#### **4.5.3 Program recommendations**

To develop fishers' livelihoods the following steps are recommended:

##### **a. Boat procurement**

The main constraint faced by fishers is access to adequate boats with engines. Unpowered boats have a limited range and load capacity which limit both the size of the crew group and the catch that can be taken from the sea. Lack of finance is the main obstacle which prevents fishers from procuring more suitable fishing boats fitted with appropriate engines. A strategy to support boat procurement through micro-finance development is required.

##### **b. Fishing gear procurement**

Some fishers (33%) do not own a boat at all. They catch fish from shore using fish spears or guns. Their catch is therefore very limited. This kind of fisher needs to be supported so they can acquire their own a boat and fishing gear to improve their livelihood.

##### **c. Improvement of fishers capability**

From FGD, fishers know that their knowledge and capability in catching fish is limited. They want to learn more about fishing methods from the fishers in Indonesia who have more experience and knowledge in fishing. Based on their inputs and comments, it is recommended that training in fishing techniques and skills be conducted in Timor-Leste and/or send some fishers to Java for training.

##### **e. Development of alternative livelihoods**

Potential alternative livelihoods in Baucau include farming, cattle raising, and kiosk retailing. Local fishers mostly dwell inland, not along the coast. The land around their houses is fertile and could be planted with corn and paddy, or used to raise cattle.

## 4.6 Micro-finance

### 4.6.1 Fact-finding results

#### 4.6.1.1 Community knowledge concerning financial institutions

Nearly half of the respondents (49%) have no knowledge concerning financial institutions. The best known financial institutions were micro-finance institutions (29%) and NGOs (15%). Some NGOs provide community assistance, and specifically respondents mentioned the NGO Moris Rasik, which offers loans to meet the capital needs of the local community. Cooperatives were barely known (9%) and banks were mentioned by very few respondents (1%) as they are largely unavailable in the area.

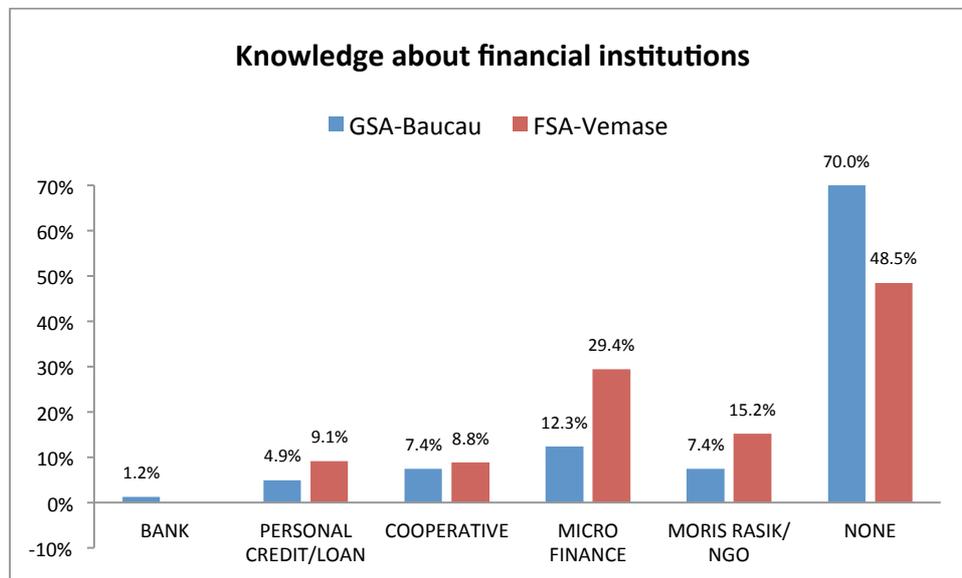


Figure 4-32. Awareness or knowledge about existing financial institutions

Results of the FGD and IDI show that up to early 2011 few micro-credit services were available in most of the areas. The exceptions were few a NGO financial institutions. Lending for various needs (personal/family or business/purchase of fishing gear) is generally obtained from local relatives. Loans from relatives are generally socially-based, do not require any collateral and are without interest (based on mutual trust).

#### 4.6.1.2 Respondents' knowledge concerning micro-credit assistance in their area

Knowledge of micro-credit assistance was limited in Vemase (24%), while in Baucau district it was even lower (10%) i.e. 76% Vemase (90% Baucau) respondents had no knowledge of micro-credit financial support programs. These results may mean there are no micro-credit services in the area or may also mean that awareness or access is very low.

44% of the respondents who knew of the existence of micro-credit assistance in their area considered Moris Rasik as an NGO, which provided micro-credit assistance. A very limited number of respondents were aware of the existence of credit unions and cooperatives. From all 5 districts surveyed, only in Vemase did some respondents refer to the former Bank Perkreditan Rakyat (an Indonesian community credit bank). BPR no longer exists in Timor-Leste.

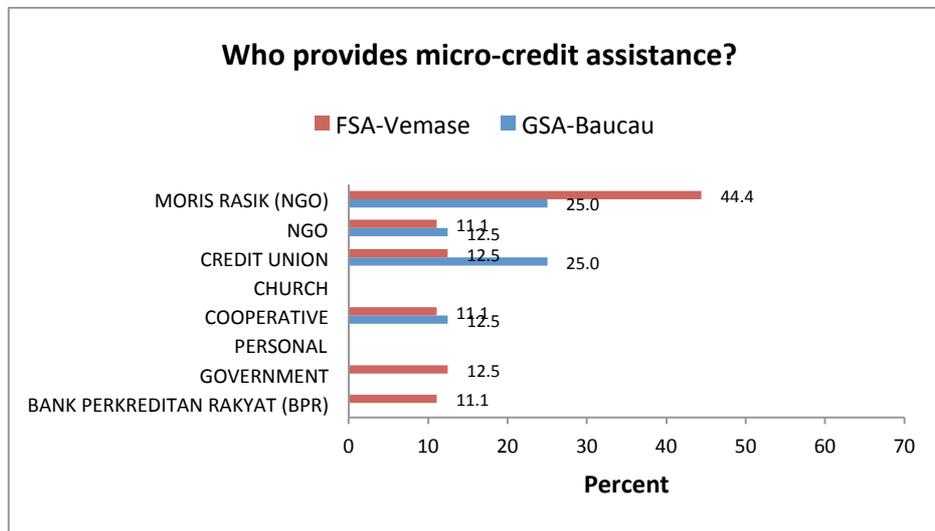


Figure 4-33. Who provides micro-credit assistance in the area?

Interviews with staff of the fisheries office in Baucau district revealed several points regarding aid in the form of grants and funds from the government and other institutions to the fisher community in Baucau, as follows:

- There is cooperation between the government and local and international NGOs. Usually the NGOs will coordinate with the government before disbursing grants to the community.
- Grants for fishery affairs are checked by/with the District Fishery Office to prevent double assistance/aid.
- Currently there are no international or national NGOs granting assistance to the community of this district area.
- Assistance to fishers comes from the Government and the RFLP.
- Revolving fund assistance is being provided by Moris Rasik. But it focuses on women's groups. Male fishers frequently borrow money in the name of their wives.

#### 4.6.1.3 Experience in using the services of a finance institution

The very limited number of micro-finance institutions and micro-credit assistance sources in the survey area was reflected in the small number of respondents who have received financial or micro-credit loans. From 33 respondents in Vemase, only 15% (7% in Baucau) acknowledged that they have experienced utilising the financial services of the institutions. Of those that had used financial service institutions, 67% of the Vemase respondents said that they used micro-finance services and 33% used Moris Rasik NGO's services. Around 17% of respondents were aware about the existence of personal credit/loan and cooperatives.

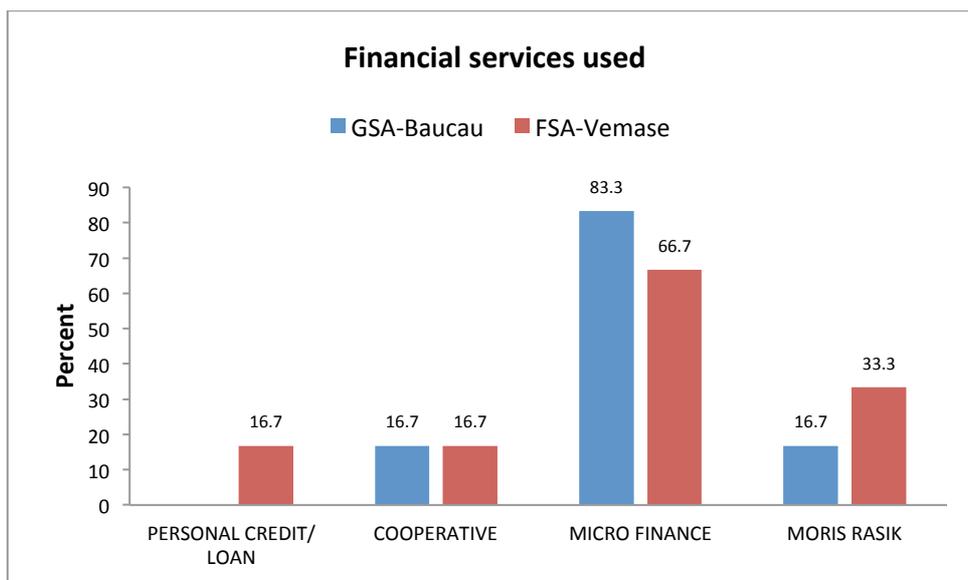


Figure 4-34. Financial services used

From those 15% in Vemase (7% in GSA Baucau) that had used financial services, 33% had used financial services for saving money, but the majority had used loan/credit (83%) services of financial institutions.

The reason given by borrowers for using micro-credit assistance or loans included capital to start work in fisheries (60%) or to pay for operational fishing activities (67%). This percentage who use loans to cover the cost of fishing activities was the highest of the 5 districts surveyed. It is notable that there was a big difference of percentages between GSA (n=62) and FSA (n=45) in the use of loans for daily expenditure<sup>10</sup>.

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<sup>10</sup> On average there are only around 45 respondents in subdistrict (range from 30 to 87) and 62 respondents in district (range from 10 to 77) as subsets of sample, as those who used financial services in the past or are still using the services. These sample subsets become target respondents for further relevant questions in the survey questionnaire. When dividing by 5 subdistricts or district, in average per subdistrict and per district there are around 9 respondents (range 6 to 17) and 12 respondents (range 2 to 15) respectively answered a question. As these numbers of respondents were sometimes very small to be distributed in (multiple) answers (e.g. 2 target respondents) then it should be noted that the data result could have a relative high margin of errors (high confidence intervals).

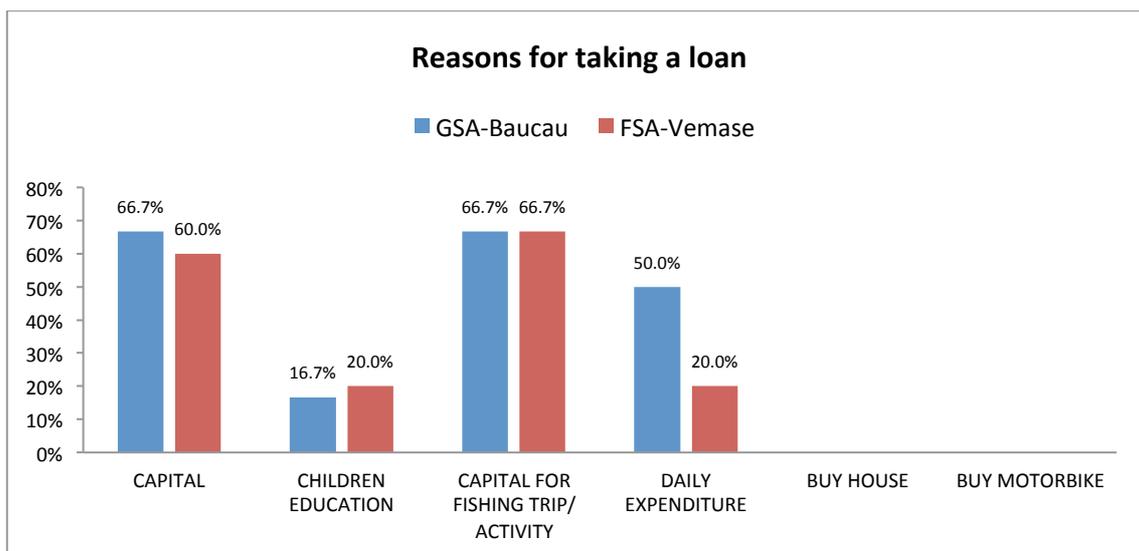


Figure 4-35. Reasons for taking a loan

Almost all male fishers in the FGD expressed their need for micro-credit for the development of fishing gear. If micro-credit funds were available to male fishers who only have rowing boats, they would use the loan to buy a motorized “ketinting” (with outboard engine) so that they would be able to fish little further out to sea, and to buy more nets in order to increase their catch.

Some fisher groups had experience with micro-credit assistance such as those in aldeia Werutama, suco Binagua, subdistrict Laga. But the assistance was not always successful. One group (Waitala group) was created by 12 fishers in 2004 with impetus from a local NGO in Baucau, which developed cooperatives. To become a member of the cooperative, each member paid \$22 and thereafter paid a monthly contribution of \$5. Getting involved with or receiving assistance from NGOs is not always a success story. Fishers in the Waitala group (12 people) wanted to participate in one NGO program, seeing advantage in the opportunity for micro-credit. However until now (early 2011), the NGO credit program has not shown any progress and it lacks clarity about what happens next with the program. According to fisher members, the money that they have already paid into this NGO micro-credit program will be returned to them in kind, in the form of fishing equipment. Another story of micro-credit assistance to a women’s group, is a success story (see the story of Maria in the story box).

**A story of Maria F. regarding micro-credit assistance to women in Buruma**

A group of women in Maria's village in Buruma, has 10 members. Originally, consisting of 12 people, they received training assistance from an NGO, but the assistance program did not work and later the group was disbanded.

Later, they received 25 days training from the Department of Industry on how to make asam (sour) candy, peanut butter, jelly, marmalade, pineapple jam and papaya jam. After that they received a micro-credit loan from Hafuti, for \$150, repayable over 18 months at \$ 9.6 per month. They are now independent of Hafuti. (Hafuti itself still exists and is active in a neighbouring village).

The group she is currently a member of, received information about CDC (an NGO) from another NGO, Christu Rei (priest). CDC provides opportunities for women's groups. The group then submitted a proposal, which was accepted and they were then assisted by the CDC in the form of materials and tools, such as pans and a stove worth \$ 410. They were also assisted in the production and marketing by CDC, and working together with the CDC, have been able to build a house/building for the production of jams, etc. Now their products are being sold in supermarkets and they are earning high revenues from their sales.

Women's groups dominate the users of financial assistance (71%) compared to 29% for male fisher groups. This results from the condition where NGOs such as Moris Rasik and others, provide their services mainly to individual women or women's groups.

**4.6.1.4 Reasons for not borrowing from and not saving money in finance institutions**

As described above, survey respondent community members of Vemase subdistrict were not very aware of financial institutions, with 49% of the respondents not knowing whether there was a financial institution in their area. During Focus Group Discussions, it became apparent that most people had negative perceptions concerning credit services. The general perception was that getting loans from finance institutions was difficult and the interest rates were high. Most FGD participants had never been in debt and were afraid of not being able to repay the loan. In these circumstances they prefer to borrow money from other fishers or from their relatives.

With regard to micro-credit terms and conditions such as collateral, generally FGD participants were willing to guarantee loans using their land title deeds and their house if required by lending institutions. Respondents stated that they were prepared to pay interest of 1.5% per month, but that higher rates than 1.5% per month were considered high and burdensome.

The two main reasons cited by community members for not borrowing money from finance institutions were i) *do not know how to borrow* (38%) and ii) *difficult* (24%). Both these answers may be related to the limited knowledge of the community about the process of borrowing from financial institutions. The other two cited reasons for not borrowing were iii) *high interest* (21% of respondents) and iv) *fear of being unable to pay the loan* (24% of respondents) relate to the income capacity and income instability over the period of a long term loan. Borrowing from family relatives was quite common (12%) whilst using the service

of traditional group of “*arisan*”<sup>11</sup> was almost negligible (3%) although the latter has similar characteristics to micro-finance services in term of utilisation of self group-collected money.

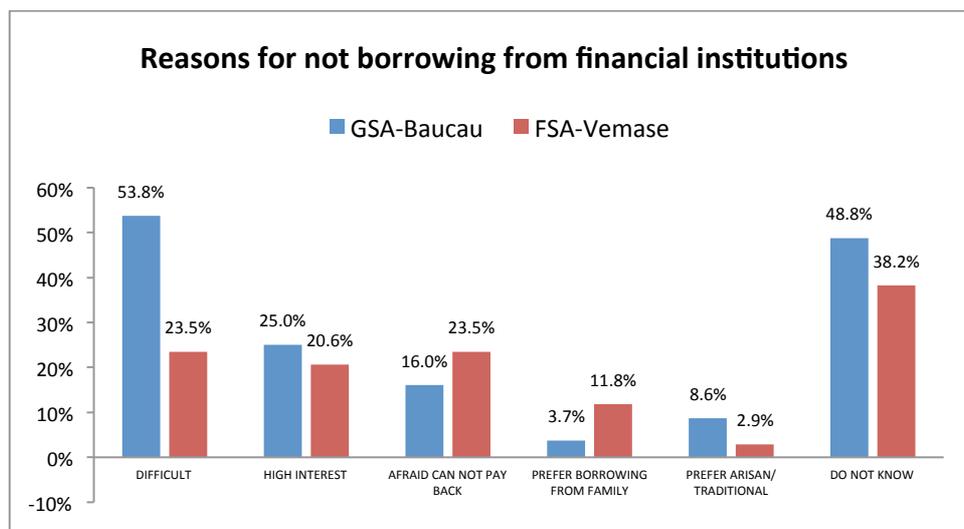


Figure 4-36. Reasons for not borrowing from financial institutions

The main reason given why respondents do not save money was simply because they have no money to be saved (44%). 27% reported not knowing how to save money with financial institutions.

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<sup>11</sup> **Arisan** is an Indonesian social gathering in which a group of friends and relatives meet monthly for a private lottery similar to a betting pool. Each member of the group deposits a fixed amount of money into a pot, then a name is drawn and that winner takes home the cash. After having won, the winner's name is removed from the pot until each member has won and then the cycle is complete. This is called a *fixed lottery* because it is fair to all participants in that each member wins an equal amount over the course of a complete cycle and no interest is charge on the load. Arisan is particularly popular among housewives. (Source: <http://en.wikipedia.org/wiki/Arisan>).

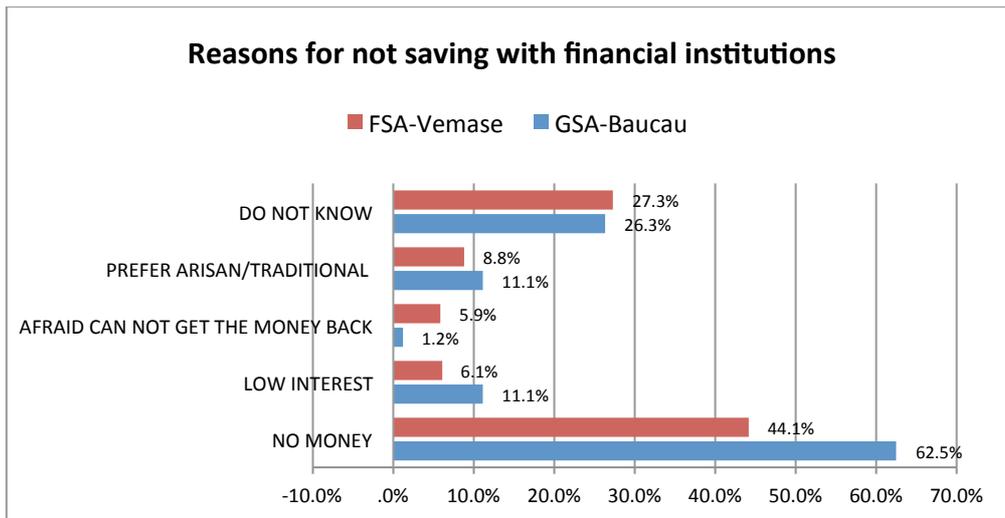


Figure 4-37. Reasons for not saving with financial institutions

#### 4.6.1.5 Respondents' ability to save

From Focus Group Discussions it was apparent that the ability of respondents (15% from all respondents) to save money was low; the majority were not saving any money at all or only saved irregularly. Only 33% of respondents save each month. Saving cash in households was not commonly practiced in the community. Most respondents explained that their savings were in the form of livestock, which they can easily sell if they need cash for daily expenses, including for educational purposes. Keeping livestock was also important to supply the needs of the community for traditional ceremonies.

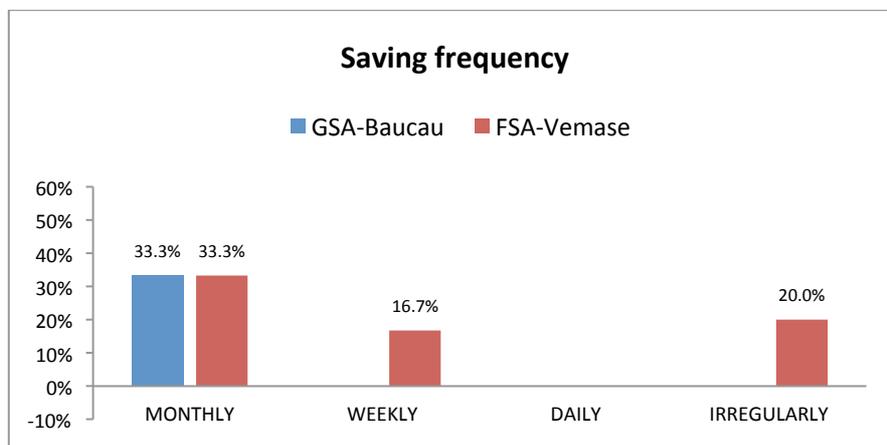


Figure 4-38. Saving frequency

Fishers who are members of a group, usually have their own group savings. These are set aside from fish sales, usually 20-30% of total sales. Fishers use these savings to pay for purchase or repair of fishing gear repair or for daily expenses during the low season.

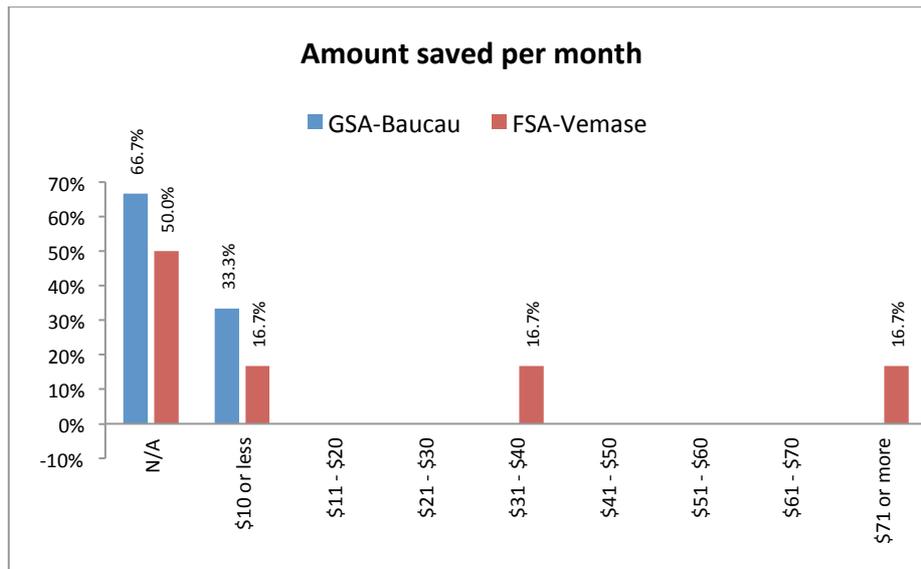


Figure 4-39. Amount saved per month

Half of respondents did not answer how much they saved regularly. Some respondents (17%) saved less than \$10 per month, 17% of respondents saved between \$31 and \$40 per month, whilst the same percentage reported saving more than \$70 per month. The low percentage of respondents who answered the question suggests that the saving habit is not common in Vemase.

## 4.6.2 Analysis

### 4.6.2.1 Availability of financial institutions

Although financial institutions, which can support fishers' activities are available, the majority of fishers were unaware of them. The best known existing financial service provider to the community was Moris Rasik NGO (44%). The involvement of banks, credit unions and financial institutions as part of government programs was very limited.

There was no information given on the total number of finance institutions in Vemase or the reasons why the community were not aware of them. Presumably, this was due to the informal character of business operations, without formal offices or secretariats, which would be better and more easily recognised by the community.

### 4.6.2.2 Community access to finance institutions

Micro-credit programs were available in Baucau district, particularly in Vemase subdistrict, even though they only a small proportion of community members were aware of them. This condition indicates that the government finance assistance program in the form of micro-credit was still limited. In contrast, NGOs have conducted an active community assistance program through direct involvement of their personnel in the community and the NGOs were therefore better known in the community. Data also showed that the majority of fishers in Baucau district, particularly in Vemase, have no experience in obtaining a loan to support their business from financial institutions.

### **4.6.2.3 Utilisation of loans**

As the sample was very low, analysis of the utilisation of loans was impossible, hence the purpose, benefits and procedures of the assistance/program for the community were poorly understood.

### **4.6.3 Program recommendations**

- a. Raise awareness and improve community understanding about micro-finance services for both borrowing and saving money. Information dissemination from the financial institutions on both the borrowing and saving process needs to be made widely available. In parallel, training on the use of micro-finance services and basic training in household financial management should be provided to the community.
- b. Improve the service capacity of the financial institutions for fishers through the establishments of new institutions, or the strengthening of existing ones. In the event that new micro-finance institutions are established, it is suggested that the new financial institutions should focus specifically on the needs of fishers. In the case of strengthening of existing institutions, it is recommended that the institutions develop special services for fishers and should allocate loans for fishers to use as capital.
  - Such finance institutions should be formalized with a secretariat or a permanent office and having an office plaque showing the name of the institution in order to be easily recognized by the community, including both fishers and/or the general public.
  - An awareness raising campaign should be conducted to inform the community of the existence of finance institutions, the types of services they provide and their requirements for a loan.

Examples of individual loans, both successful and failed, to several fishers in Atauro, considered as an example of a fisheries-livelihood dependent area, can be used as lessons learnt for developing micro-credit services appropriate for fishers in Baucau district, particularly in Vemase, when selecting various options.

## 5 RESULTS AND ANALYSIS – DILI AND ATAURO

### 5.1 Respondent Profiles

Dili District is situated on the northern coast of Timor-Leste. Dili is the capital of Timor-Leste. The district is bounded to the south by Aileu District, to the west by Liquica District and to the east by Manatuto District. Included within Dili District is the island of Atauro, which is approximately 30 kilometres north of Dili Town. Geographically Dili District is diverse, with a combination of coastal roads and beaches and rugged mountain terrain.

Dili District is one of the largest districts in Timor-Leste. It has six subdistricts comprising 31 sucos:

- North, Atauro (5 sucos)
- South, Vera Cruz (7 sucos)
- East, Cristo Rei (7 sucos) and Metinaro (2 sucos)
- West, Dom Aleixo (4 sucos)
- Dili town, Nain Feto (6 sucos)

Dili district has the smallest land area (372 km<sup>2</sup>), but the highest population. From the recent Population and Housing Census 2010, Dili District has a population of 234,331 with an average household size of 6.7. The population growth rate is 4.8% (based on the 2004 census). The sex ratio is 113 males per 100 females.

Atauro Island and the coastal areas of Cristo Rei and Metinaro are very rich in fish and other marine resources. With appropriate fishing equipment, the volume of fish caught could be increased not only to meet the demand in Dili, but also of other districts.

The district government has prioritized increased fish and aquaculture production, both for local consumption and for income generation. The official strategy is to develop and protect natural resources, develop agricultural business, enforce policy for the protection and conservation of the environment, and to formulate a legal framework in support of agriculture.

There were 170 respondents in the sample for the General Survey Area (GSA) in Dili district (Confidence Interval CI = ±8%). For the Fisheries Livelihoods Project Survey Area (FSA) in Atauro subdistrict, there were 30 respondents (CI = ±18%).

Unless otherwise stated, all the percentages used in the following sections of this chapter will be based on the total number of respondents in the respective survey area.

## 5.2 Co-management

### 5.2.1 Fact-finding results

#### 5.2.1.1 Familiarity with the term co-management

In Dili District (GSA) and in the Project area (FSA Atauro) the percentage of respondents who were familiar with the term co-management, was similar, i.e. 23.7% and 23.3%, respectively.

When asked about their understanding of the meaning of the term *co-management*, 50% correctly understood it to mean *communities working together with the government*. Other answers included *sharing responsibility among fishers* (67%) and *working in a group* (57%).

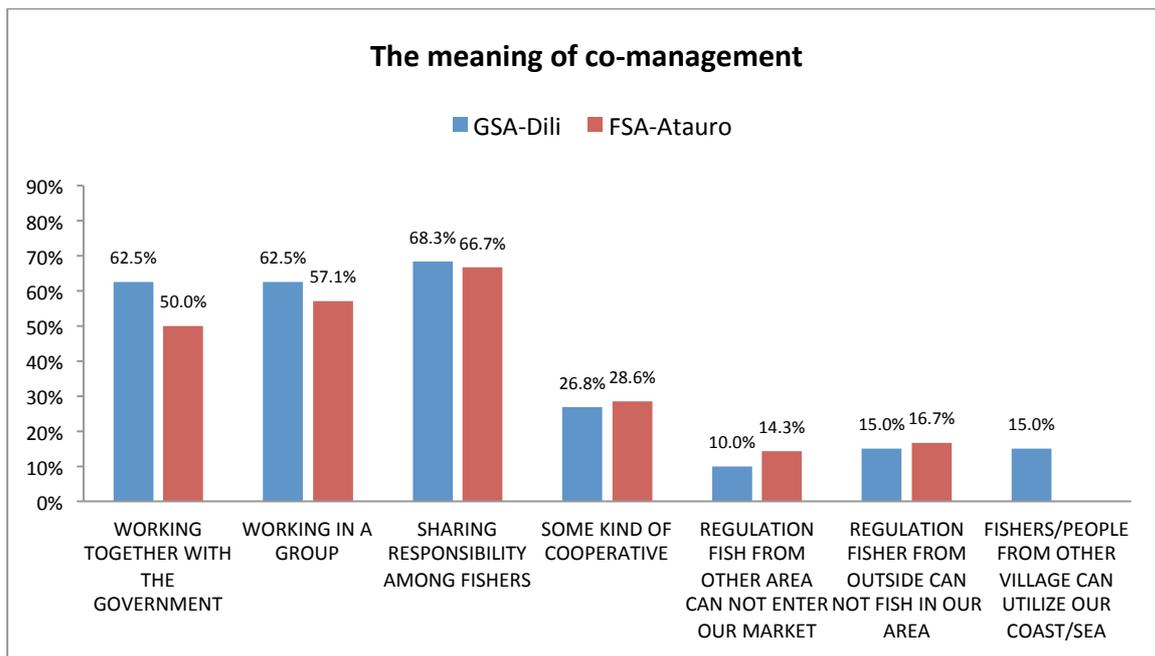


Figure 5-1. Understanding of the word co-management

#### 5.2.1.2 Existence of collaboration

Practical collaboration exists in Atauro. Respondents reported *collaboration among groups of fishers* (63%), *fishers from other villages utilizing our sea* (37%), and *collaboration between fishers' groups and the government* (23%).

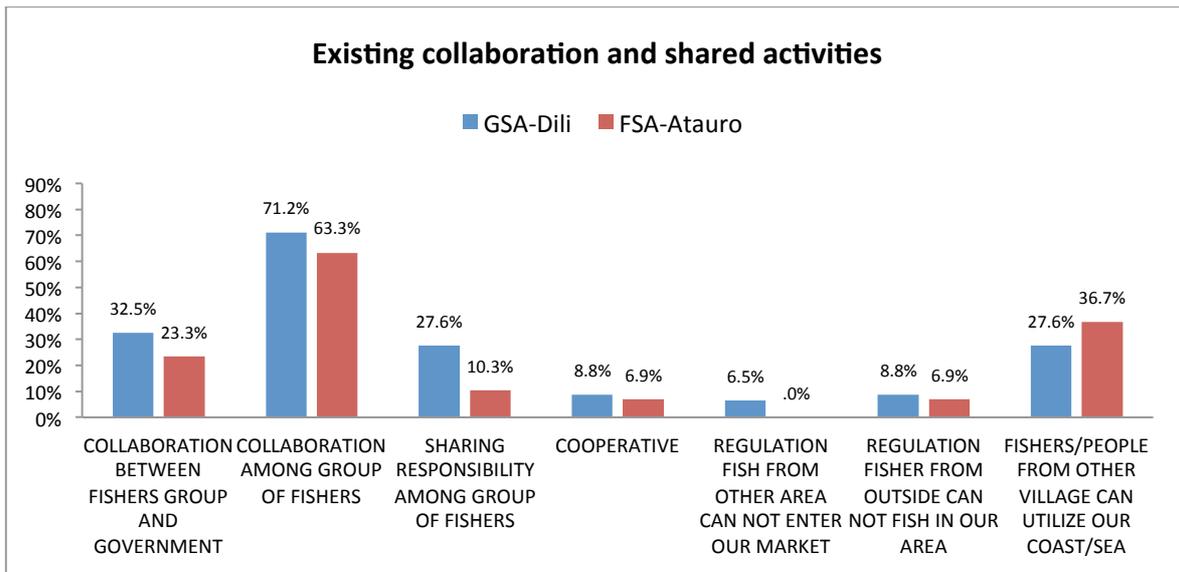


Figure 5-2. Existing collaboration and shared activities

### 5.2.1.3 Community groups

Fisher groups are the dominant community group recognised in Atauro (69% of responses). Other community groups commonly recognised by the respondents were Women’s Groups (55%) and Savings and Loan Groups (17%).

Savings and Loan Groups were more popular than cooperatives, with only 7% of the respondents recognizing cooperatives in comparison to around 17% mentioning Savings and Loan Groups.

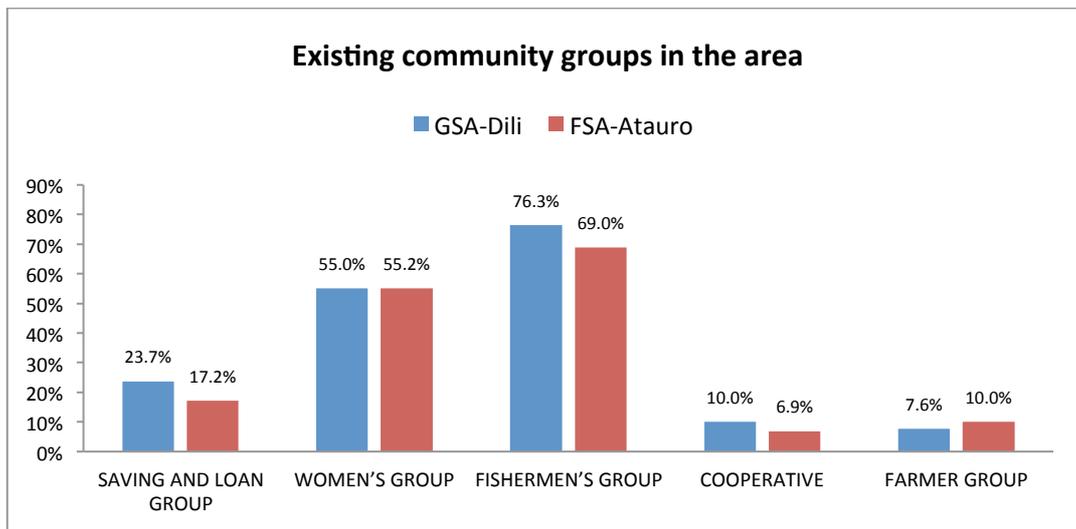


Figure 5-3. Existing community groups in the area

Approximately 37% (GSA Dili: 53%) of respondents have joined activities of fisher groups. About 28% (GSA Dili: 23%) have been involved in women’s groups, and 6% (GSA Dili: 9%) have participated in savings and loan groups.

**External sources of assistance for community groups:** The respondents recognized several parties that were providing assistance to community groups. “The Fisheries Office” was mentioned by more than 24% of respondents in Atauro (GSA Dili: 25%). ”Local NGO” was identified by 17% of respondents (GSA Baucau: 20%), whereas “International NGO” was mentioned by 13% of respondents (GSA Dili: almost 14%). Approximately 17% of the respondents chose “Individual” as the source of financial assistance to community groups.

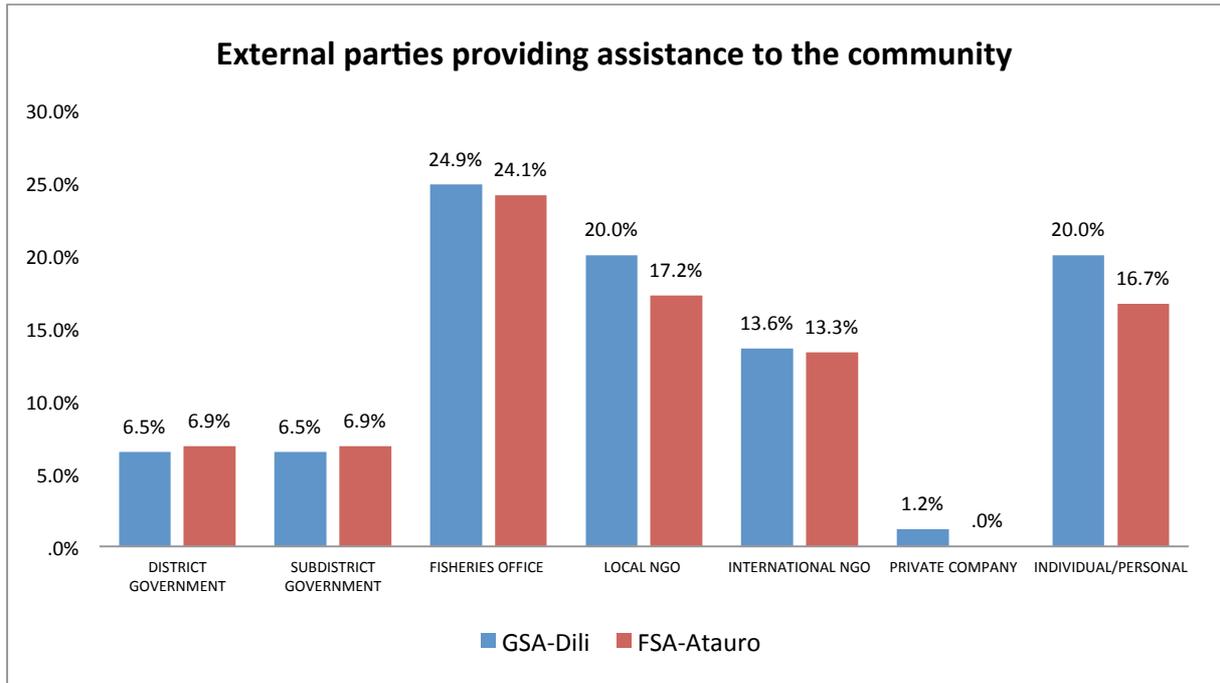


Figure 5-4. External parties providing assistance to the community

**Community groups receiving external assistance:** In Atauro, “fishers groups” were identified as the group, which received the most external assistance (41%). Others identified as receiving external assistance were “women’s groups”, “farmer’s groups” (17%), “seaweed farmers” (14% assistance), and “sea product processing group” (7%).

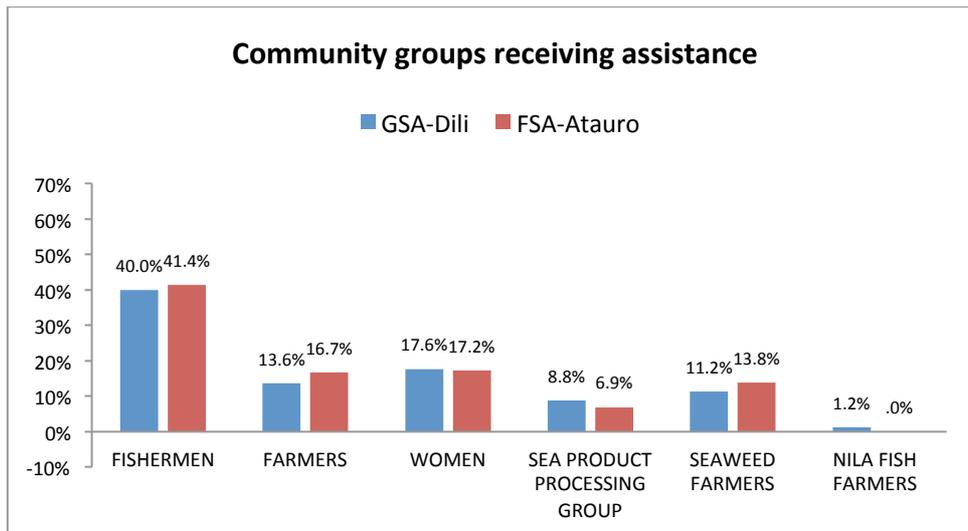


Figure 5-5. Community groups receiving assistance

Focus group discussions with fishers from Atauro, confirmed that fishing groups were the community groups receiving most assistance from the government. Assistance included fishing gear, such as mono-filament nets, *katinting* engines, motor engines, and boats.

#### 5.2.1.4 Knowledge concerning policy , regulations, and customary law

The existence of a village body responsible for managing marine resources was reported by only 17% of respondents in Atauro (GSA Dili: 20%). Approximately 60% of those who said they knew about the existence of the said village body indicated knowledge of written regulations concerning marine resource management in Atauro.

An in-depth interview (IDI) with the Head of Suco Vila in Atauro revealed differences in fishing practices to fishers of Suco Bikeli and of Beloi who sometimes fish up to the areas of Oecusse, Baucau, Bobonaro or even to Wetar Island in Indonesia. Suco Vila fishers only fish in front of their suco water.

There was an agreed rule not to fish in the sea grass area, about 100 m from the shoreline to prevent damage from anchoring. Furthermore, there has been a tradition that during conditions of heavy seas, fishers are allowed to fish in other suco's waters as long as they do not use nets.

Customs and traditional ceremony also apply for repairing traditional rowing boats. Once the repair has been completed and the boat is ready to sail, the owner must provide food for the community. The fisher's wife is obliged to bid farewell and welcome her husband when leaving the shore and returning from the sea. The first catch from fishing should not be sold but should be used for personal consumption. During the period of her husband's first fishing excursion the wife is forbidden to eat chilies and mangoes, as it is believed that such foods bring bad luck. The second catch can be sold and the wife can resume consumption of chilies and mangoes again.

The respondents also demonstrated knowledge and perceptions of the impacts of fishing gear on the environment. For example the use of nets (casting net, mono-filament and multi-filament gillnets) were considered to be alright, but the use of trawling was discouraged as it catches too many juvenile fish. Fish traps ('bubu' and arrow raffle) were considered to be safe

and were used to catch larger size fish. The use of poisons and explosives was considered hazardous to the environment.

### 5.2.1.5 Women's roles in fisheries

Direct involvement of women in fisheries includes product selling (55%) and product processing (37%). Women also have an important role in seaweed farming (35%) and in domestic household financial management (31%).

Other fisheries-related activities mentioned for women were reef gleaning and involvement in fishing at sea, both accounted for about 10% responses.

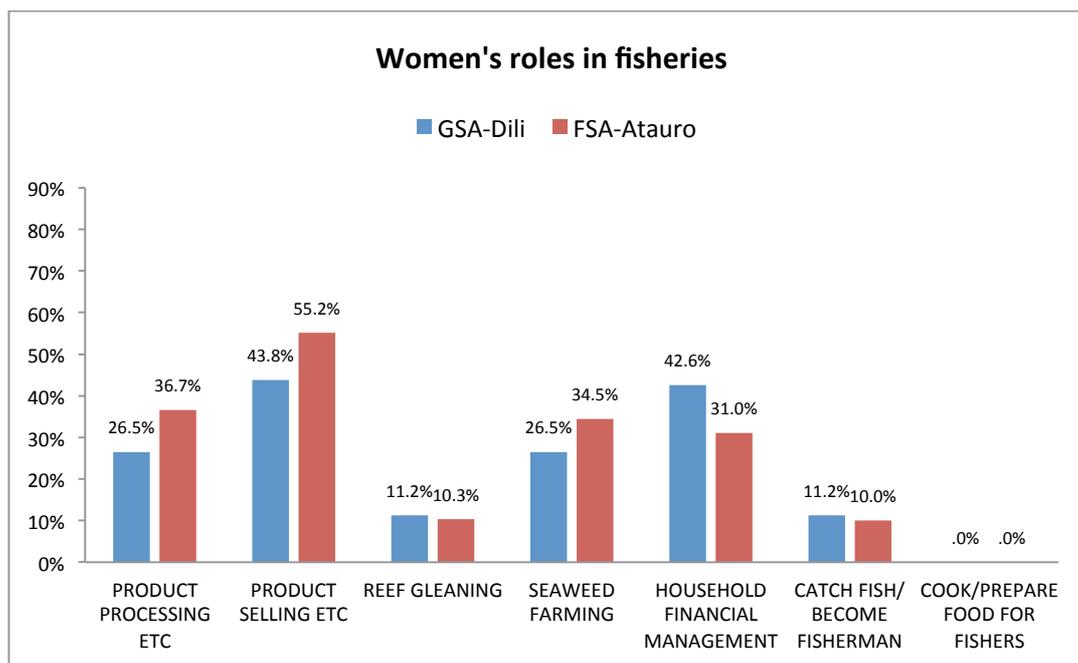


Figure 5-6. Women's roles in fisheries

Women play an important role in reef gleaning activities, which can be undertaken for 6-8 days per month. Women should be encouraged to establish women's groups and be active in alternative livelihoods programs.

### 5.2.1.6 Conflict resolution

Only 14% of respondents in Atauro (GSA Dili: 9%) mentioned the existence of any conflict in the area. Where conflict does occur it was readily resolved according to all respondents (GSA Dili: 81%). Conflicts were often resolved through fishers/community meetings (60%) or with the involvement of elderly/community leaders (50%). Almost all respondents believed that enforcing the law can resolve conflicts.

### Examples

Once in 2003/2004 there was a problem when a fisher from suco Beloi fished in Suco Vila waters with an illegal fine mesh ( $\frac{1}{4}$  inch) net. These nets were forbidden because they caught juvenile or undersized fish. To resolve this problem, a meeting was held between the fisher and the traditional and suco leaders of both areas, by calling the police and the subdistrict

Head. The fishers group of suco Vila was also called to express their opinions. The issue was resolved as follows:

- The ¼ inch mesh size net was confiscated,
- The male fisher signed a written agreement not to repeat his action and he paid a fine. This was not a monetary fine but he prepared materials needed for the traditional ceremony to mark the settlement of the dispute, i.e. *sirih*/betel vine, *pinang*/areca nut, tobacco, *sopi*/distilled palm wine, fish, and one cow.

Recently, another problem arose from a fishing technique employed by fishers from outside suco Vila to startle fish at sea. A tool made of paralon pipes containing iron pieces, was pulled through the water to make a noise. The noise startles fish about to enter nets placed at sea by the suco Vila's fishers. Thus, fish are forced away from the local nets and enter the nets of the fishers utilising the startling device.

As might be expected, this caused conflict between the two groups. To resolve this problem it was reported to the fishery officials of Atauro and to the Atauro subdistrict head. A meeting was held involving all customary and community leaders of Atauro, to establish customary rules relating to borders between sucos and to other fishery matters. There is now a plan to issue Atauro Subdistrict Regulation on these matters for enforcement in 2011 or 2012.

## **5.2.2 Analysis**

### **5.2.2.1 Understanding of co-management concept**

Understanding of the co-management concept among fishing communities was still limited. Although 63% of those familiar with the term co-management referred it as *collaboration among groups of fishers*, the larger fisher groups in the area were actually promoted by the government as a conduit for channeling government assistance in fisheries. Focus group discussion with fishers from Atauro, confirmed that fishers' groups were the ones receiving most assistance from the government.

### **5.2.2.2 Community groups**

The District Fisheries Office initiated the establishment of fishers' groups. The number of fishers groups varies from suco to suco or from aldeia to aldeia. For example, the total number of fishers groups in Metinaro subdistrict was 57 groups, consisting of 4-7 fishers in each group.

Each group had been given assistance by the District Fisheries Office, which included fishing gear, such as 3-4 mono-filament nets, *katinting* engines, 15 HP-motor engine, and boats.

### **5.2.2.3 Knowledge concerning policy, regulations and customary law**

Although the respondents had little knowledge of policy and regulations, the Atauro fishers still practice customary law. Suco Vila has a customary law regarding their fishing practice. Fishers are banned from setting fish nets or from fishing in seagrass areas, so as to protect nursery grounds. Recently, the government issued regulations banning the use of trawl nets, fine mesh (¼-inch) nets, the use of poison for fishing, and prohibition of fishers taking corals.

#### **5.2.2.4 Women's roles**

Although it was evident that women in Atauro also played a role in product processing and product selling, the actual implementation of this was still limited. The main role of women was housework, i.e. preparing family meals, cleaning the house, and other domestic tasks. However, women were in control of household financial management, so there is opportunity to improve their skills through additional training for women's groups.

#### **5.2.2.5 Conflict resolution**

There has been little conflict among fishers in Atauro. Conflict has occurred with outside fishers who employed methods considered destructive by local fishers.

Conflicts were resolved through mediation by the community leader and the Atauro Subdistrict Government. Conflicts can be avoided once the regulations relating to community aspects, the borders between sucos, and destructive fishing tool/gears are in force.

### **5.2.3 Program recommendations**

#### **a. Establishment of appropriate community groups and strengthening of existing groups**

Establishment of community groups, particularly fishers's group and women's group, is important in order to increase the capacity of respondents to collaborate for mutual advantage and to increase management/organisational capability. Training and facilitation are required to improve community capability to manage their resources (e.g. financial management).

Women's groups can be strengthened to improve economic capacity and to develop alternative livelihood activities.

The main obstacle in group establishment is to clearly define the objective and target achievements for the group. Therefore, facilitation in group and organisational management should be conducted early, before defining the groups to be established.

#### **b. Regulations, awareness and customary rules related to marine resources management**

Awareness raising of regulations governing utilisation of marine resources should be conducted, including information on the types of protected species, the need to ban mangrove deforestation, and the danger of potash to the sustainability of fish resources.

There should be an increasing awareness of sustainable use of marine resources. The communities should be aware that they must participate in any efforts to maintain sustainability of their marine resources and how this links to better social and economic well-being.

Integrating customary rules into subdistrict regulations should provide a solid base for resolving conflict and sustainable fisheries management.

#### **c. The role of women**

The role of women in fisheries should be strengthened through training in product processing and selling. Women already play an important role in domestic household financial

management. Thus, increasing their capacity in micro-finance management and in micro-enterprise development should benefit family welfare.

### 5.3 Safety at Sea

#### 5.3.1 Fact-finding results

##### 5.3.1.1 Types of problems encountered at sea

Most fishers in Atauro (63%) have encountered problems at sea. Among those problems identified, all had encountered bad weather and dangerous seas. Others reported overturned boats (32%), boat leakage (26%), loss of direction (22%) seasickness (16%) and engine trouble (16%).

Despite this, fatalities were considered uncommon with 50% of respondents stating that fatalities occurred rarely or very rarely.

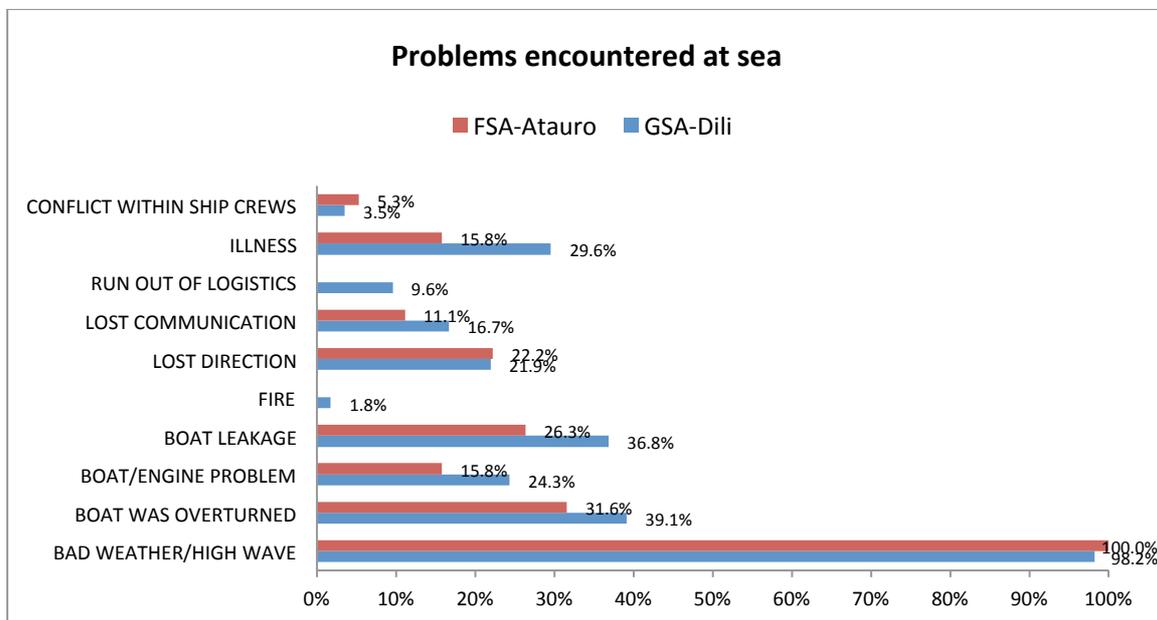


Figure 5-7. Problems encountered at sea

##### 5.3.1.2 Responding to problems

When faced with dangerous events at sea, the main response (40%) was to look for other boats to provide assistance. Fishers in Atauro do not consider accidents at sea as a serious matter because there have not been any fatalities due to accidents at sea and their fishing grounds were very near shore (around 2 km from the coast or within eyesight).

Overturned boats comprise most accidents. In this situation fishers would swim, right the boat and continue their fishing activities. Safety equipment brought on board was generally limited to a 5-litre empty jerrycan, which can be use as personal flotation.

About a third of fishers indicated timely emergency assistance was received following an accident at sea, but most relied on their own efforts.

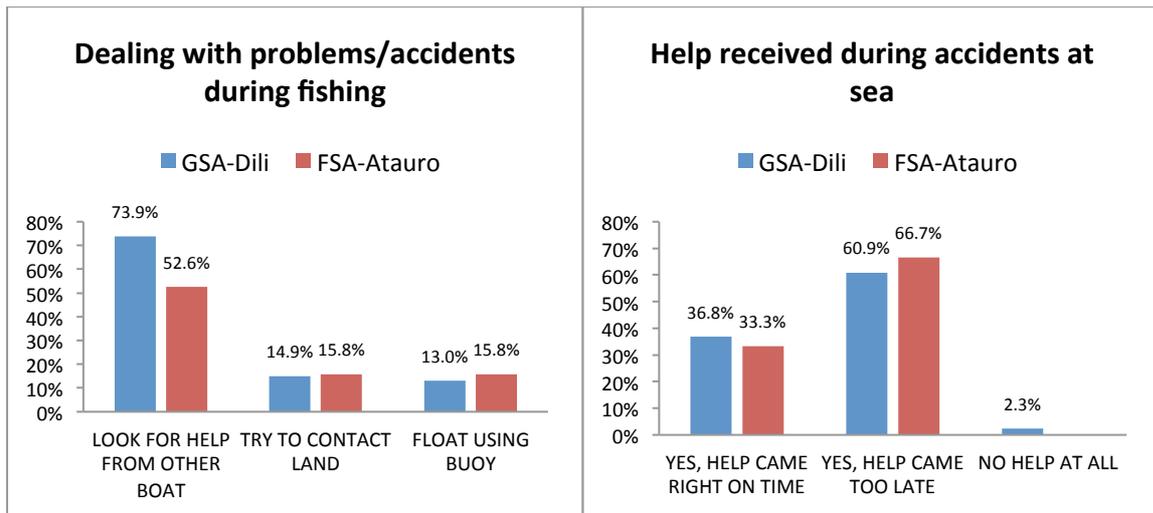


Figure 5-8. Dealing with problems at sea and whether help was received

### 5.3.1.3 Impact of accidents at sea

When asked about the impacts of accidents at sea, 32% considered subsequent sickness to be the main impact, followed by 22% who suffered injury and 16% who rated loss of income as the main impact. About a third of respondents reported no adverse impacts.

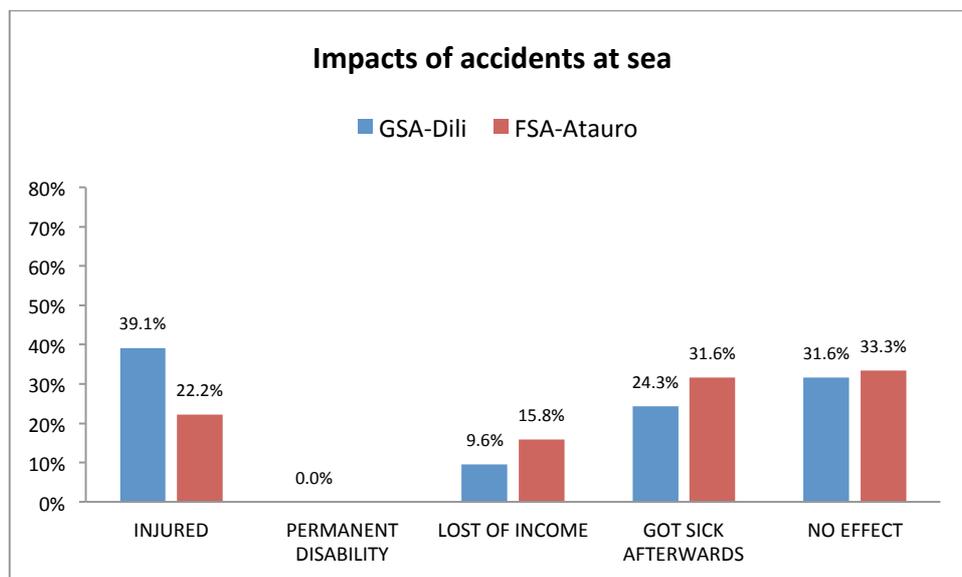


Figure 5-9. Impacts of accidents at sea

### 5.3.1.4 Attitude to risks at sea

Fishers in Atauro accept the risks associated with their livelihood, with 76% agreeing or strongly agreeing that accidents at sea were an uncontrollable fate that was outside their control. Regarding the causes of accidents, 52% believed that accidents were an inherent occupational risk, but 61% believed that they were caused by negligence. There was a broad mix of perceptions on whether incidents at sea were “pure accidents”: 17% strongly agreed,

14% agreed, 14% disagreed, 10% strongly disagreed and, notably 45% did not know/had no opinion.

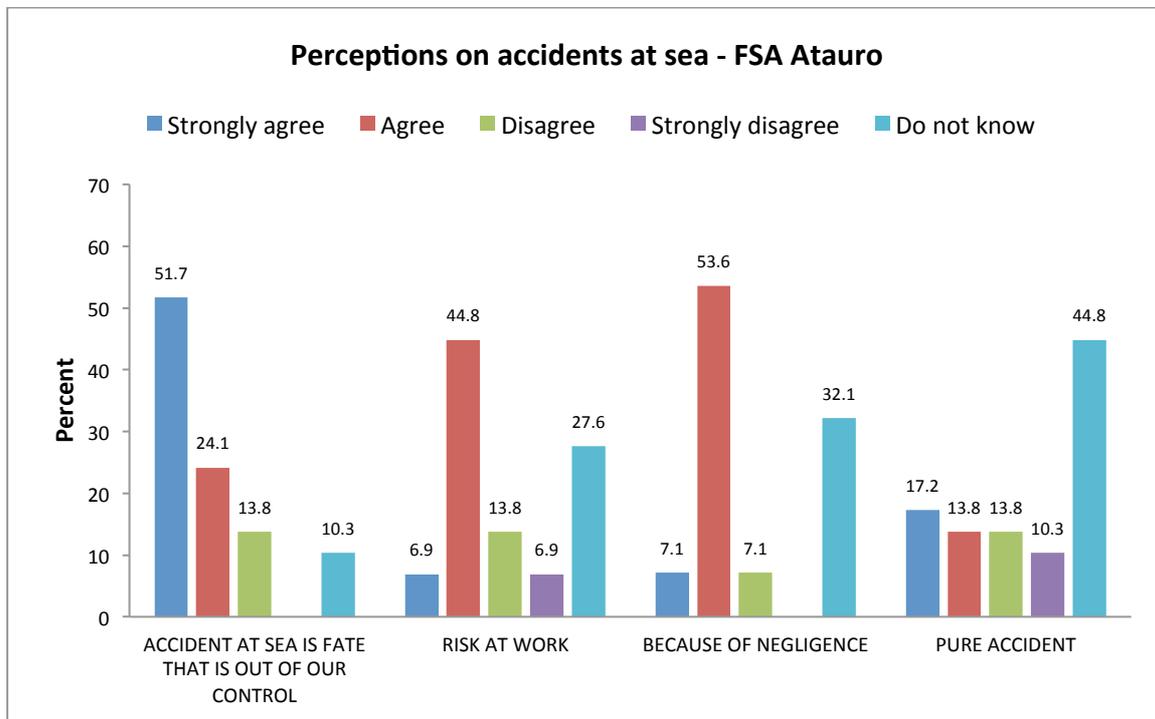


Figure 5-10. Perception on accidents at sea in Atauro subdistrict

### 5.3.1.5 Safety regulations, equipment and information

#### 5.3.1.5.1 Awareness of regulations

A better understanding of the concept of safety at sea is needed to ensure the practice of safe and responsible fishing. Only 27% of respondents were aware of any applicable regulations concerning Safety at Sea, though this was the highest awareness across all districts. Those who were aware only understood that applicable regulations required them to carry safety equipment and life jackets when at sea.

#### 5.3.1.5.2 Safety equipment

When asked if they brought safety equipment on board when they went fishing only 41% of the Atauro respondents said yes (37% in GSA Dili). Results of focus group discussions revealed that as respondents rarely experienced fatalities at sea, adherence to sea safety practices was low. Safety equipment was considered to be expensive and a low priority for fishers to buy and maintain.

#### 5.3.1.5.3 Perceptions of safety equipment required on board

A flashlight (torch) was considered to be an essential item of safety equipment by many (57% of Atauro respondents) especially for traditional divers/fishers and for those fishing at night who also use it to attract fish.

Other nominated items considered essential for fishing were lifejackets (30%) and floats (43%). Floats included life buoys (37%) which comprise 20-litre aqua bottles and tyres, and 5-litre jerrycans (10%).

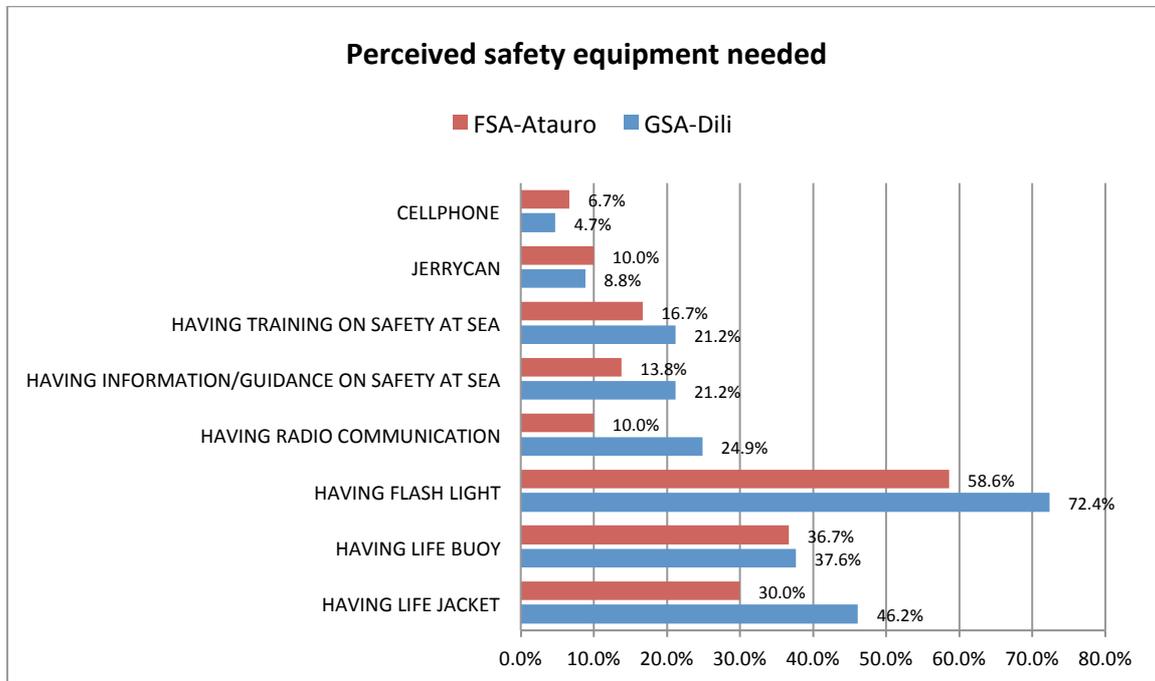


Figure 5-11. Perceived safety equipment needed

### 5.3.1.6 Information on safety at sea

Most respondents (72%) were unaware of any information regarding safety at sea. Of those that had received safety information (28% in Atauro, 25% in Dili), the Fisheries Office (50%) was the main source of information followed by the community leaders (38%) and the Marine Police (25%).

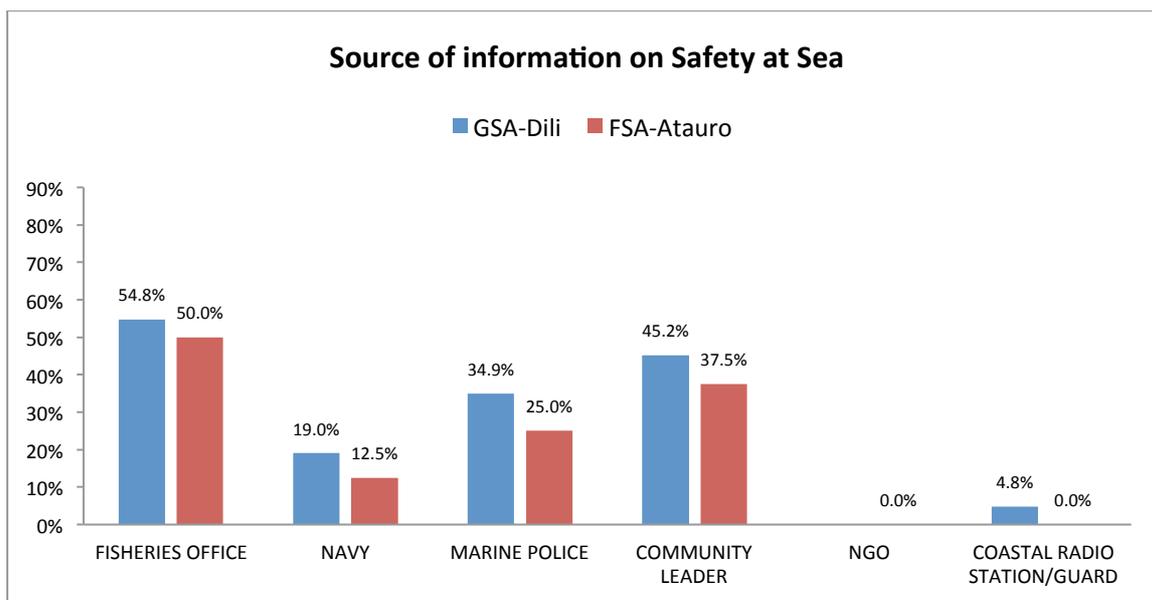


Figure 5-12. Source of information on Safety at Sea

### 5.3.2 Analysis

#### 5.3.2.1 Dealing with problems encountered at sea

Although the respondents were aware of problems encountered at sea, they considered that problems with bad weather were unavoidable and must simply be faced. Moreover, as accidents at sea were rarely fatal, and considering the fact that many said they can survive accidents because their fishing ground is still within sight of shore, precautions taken to prevent accidents at sea were still negligible. Therefore, the types of safety equipment brought on board remained very limited. Awareness raising related to safety at sea and its risks have been conducted by the Fisheries Office.

Proper safety equipment was considered expensive. As it was a low priority, expectations remain that it should be the responsibility of the government to supply.

#### 5.3.2.2 Socialisation and implementation of safety regulations

Only 27% of respondents at FSA Atauro were aware of any applicable regulations concerning Safety at Sea. Further, their understanding was that regulations were limited to carrying safety equipment and life jackets when going fishing at sea.

### 5.3.3 Program recommendations

Knowledge of safety at sea is important, particularly when there is a plan to accelerate fishery development in Timor-Leste.

Fishers should be made aware of proper safety equipment and its importance. The Fisheries Office should intensify their interaction with fisher groups and provide adequate information on fishing-related activities and safety as part of responsible fishery activities.

## 5.4 Post-Harvest Fisheries

### 5.4.1 Fact-finding results

#### 5.4.1.1 The use of ice to preserve catch

The use of ice in fish preservation was quite high (70%) in Dili, but relatively low in Atauro (45%). This reflects the low availability of ice in Atauro which must be obtained from Dili.

Table 5-1. Ice utilisation to preserve fish

Do you use ice to store the fish?	GSA Dili	FSA Atauro
YES	70.0	44.8

#### 5.4.1.2 Processing of the pre-sale fish catch

Pre-sale processing of the fish catch is low in Dili. Most respondents (60%) report selling all their catch in fresh/unprocessed condition, while some (35%) process a small amount of the catch. There was no significant difference between GSA Dili and FSA Atauro with 43 – 60% of GSA Dili and Atauro respondents selling all their catch fresh and about 35 - 50% processing some of their catch.

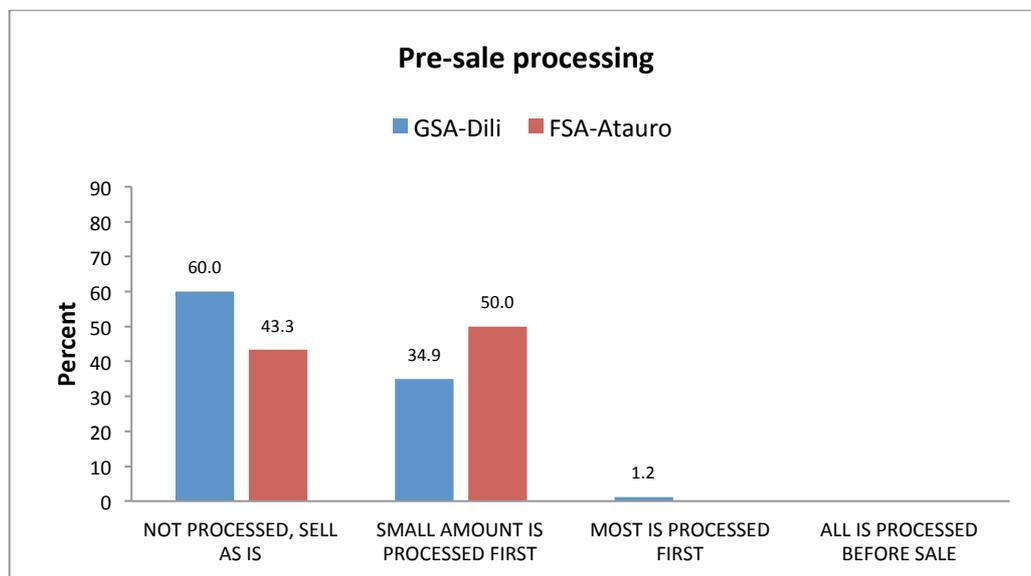


Figure 5-13. Pre-sale processing

Dried salted fish (93.4 -100%) was by far the most common processed fish product produced in GSA Dili and FSA Atauro with a much smaller proportion being smoked and mashed/salted fish (6.7 – 9.8%)

Table 5-2. Processed fish products

What do you make from it?	GSA Dili	FSA Atauro
Salted fish	93.4	100
Smoked fish	9.8	6.7
Mashed and salted	9.8	6.7

#### 5.4.1.3 Sources of knowledge and skills in post-harvest processing

Family/traditional knowledge (96.7 - 100%) was the major source of knowledge and skill in post-harvest processing in GSA Dili and FSA Atauro. The technology was also learned from other neighbours and other fishers (20 – 27.4%), though to a much lesser extent.

The proportion of fishers who obtained their knowledge and skill from training conducted by the government or NGOs, or from community groups was relatively small (7%).

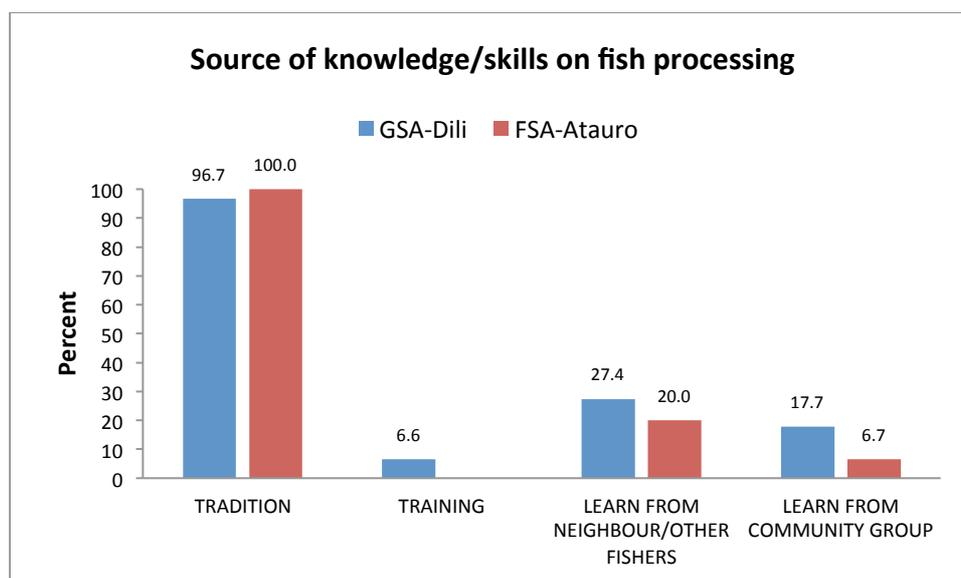


Figure 5-14. Source of knowledge or skills on fish processing

#### 5.4.1.4 Need for knowledge and skill on post-harvest processing

Acceptance of the need for additional post-harvest skills and knowledge was high (79% in Dili and 80% in Atauro). The most needed areas of knowledge and skill for Atauro fishers were:

- Training related to quality improvement of processed products (81.8%).

- Additional information on fish processing knowledge (45.5%).
- Skills related to processed product diversification (45.5%).

The need for training and diversification was almost the same in the GSA Dili.

Table 5-3. Skills needed by fishers

Do you feel that you need skill/information for post-harvest skill?	GSA Dili	FSA Atauro
Yes	79.0	80.0

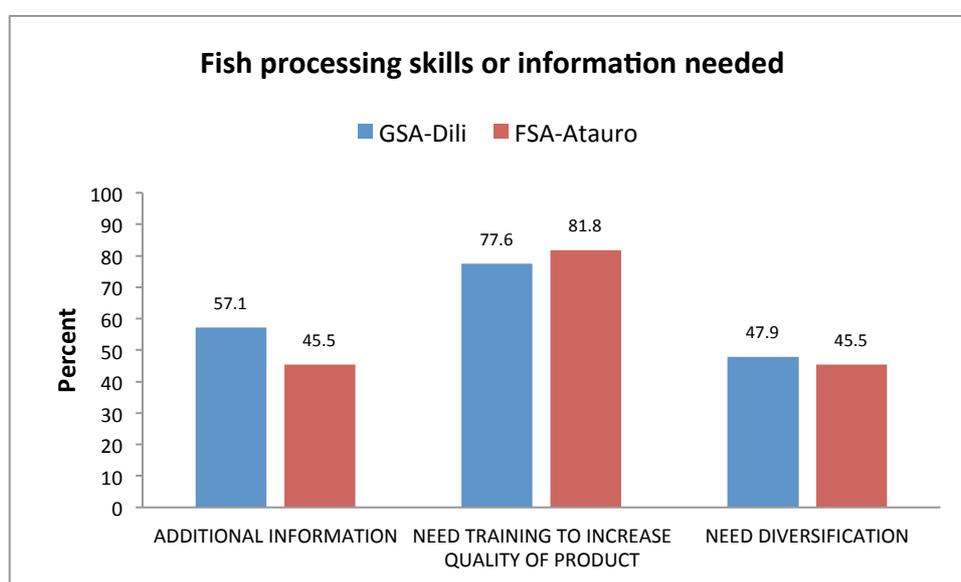


Figure 5-15. Fish processing skills or information needed

#### 5.4.1.5 Ownership of fish processing facility

About 60% of FSA Atauro fishers considered their facilities and equipment for fish processing to be adequate with all having access to knives and cutters. However, most (75%) indicated that more modern equipment was needed, while access to good drying facilities was also an issue for 40%.

Table 5-4. Adequacy of processing equipment and facilities

Do you think you have adequate equipment to process fish/sea product?	GSA Dili (%)	FSA Atauro (%)
Yes	65.5	61.5

Do you think you have adequate equipment to process fish/sea product?	GSA Dili (%)	FSA Atauro (%)
No	34.5	38.5
<b>What equipment/facility do you need?</b>		
Modern processing equipment	42.1	75.0
Knife/cutter	10.5	
Drying facility	57.9	40.0

#### 5.4.1.6 Locations for selling fresh and processed aquatic products

The locations where fishers sell their fish and processed fish products included the following:

- local market (27.6%);
- road side (20%);
- on the beach (16.7%); and,
- Direct selling (13%).

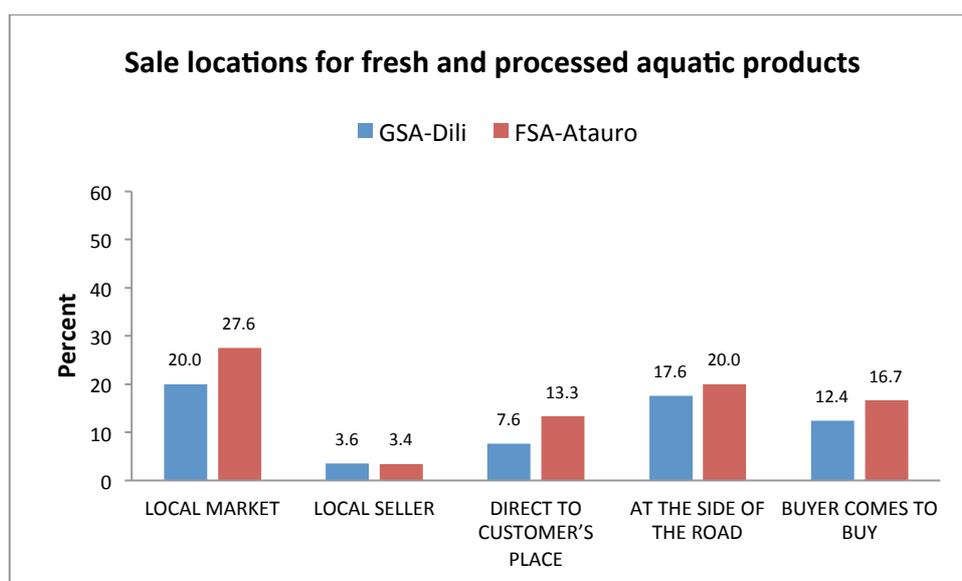


Figure 5-16. Locations for selling aquatic products

#### 5.4.1.7 Problems when selling processed aquatic products

According to respondents access to market and poor product quality were the biggest barriers to selling processed aquatic products (40%). No one in Atauro stated poor packaging as a problem but 9.5% respondents in Dili saw it as a problem.

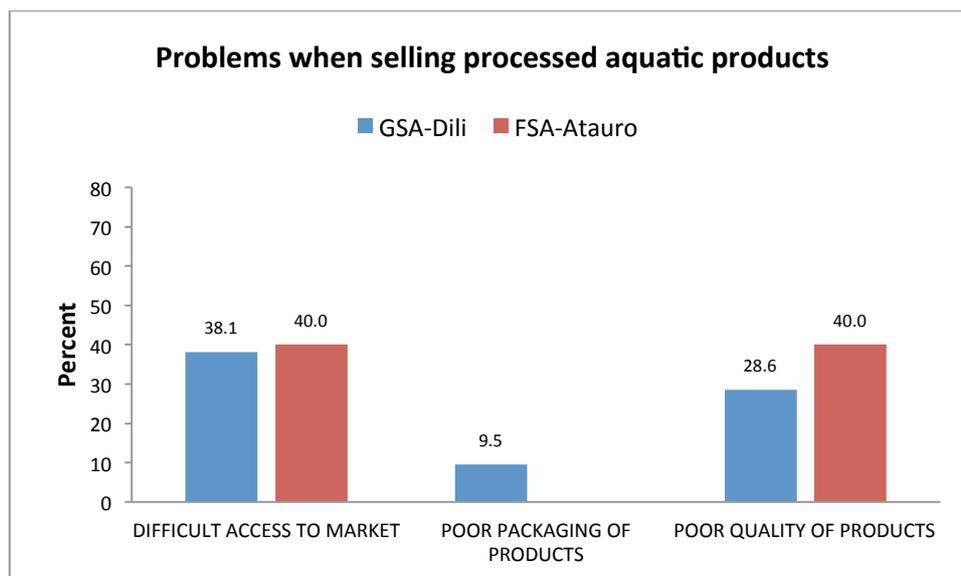


Figure 5-17. Problems when selling processed aquatic products

#### 5.4.2 Analysis

Ice use was common in Dili (70%) but less so in Atauro (45%), because ice is produced in Dili. As Dili is the largest market for fresh fish product and as ice is abundant it might be expected that fresh fish would dominate the market in Dili, while processed fish might be more prominent in Atauro. However, as fish processing is relatively under-developed, fishers tend to sell the catch as quickly as possible, after keeping some aside for home consumption.

Fishers in Dili and Atauro acknowledged that they have adequate fish processing equipment. However, they suggested that improvements could be made in training to increase the quality of processed products (78-82%), product diversification (45-48%) and newer equipment (42 – 75%). Most processing of fish is rudimentary i.e. salting. There is an opportunity to introduce new processing technologies through targeted training and investment in appropriate technology. Such investment would improve the product quality and potentially increase the value of seafood products with commensurate economic benefits.

#### 5.4.3 Recommendations

- a. Training on post-harvest processing should be provided for fishers and people working with post-harvest activities. Aquatic products processing should be diversified to include more product varieties linked to market demand.
- b. Ice production facilities should be established particularly for areas outside Dili city (e.g. Atauro).

## 5.5 Livelihoods Enhancement and Diversification

### 5.5.1 Fact-finding results

#### 5.5.1.1 Sea fishing frequency

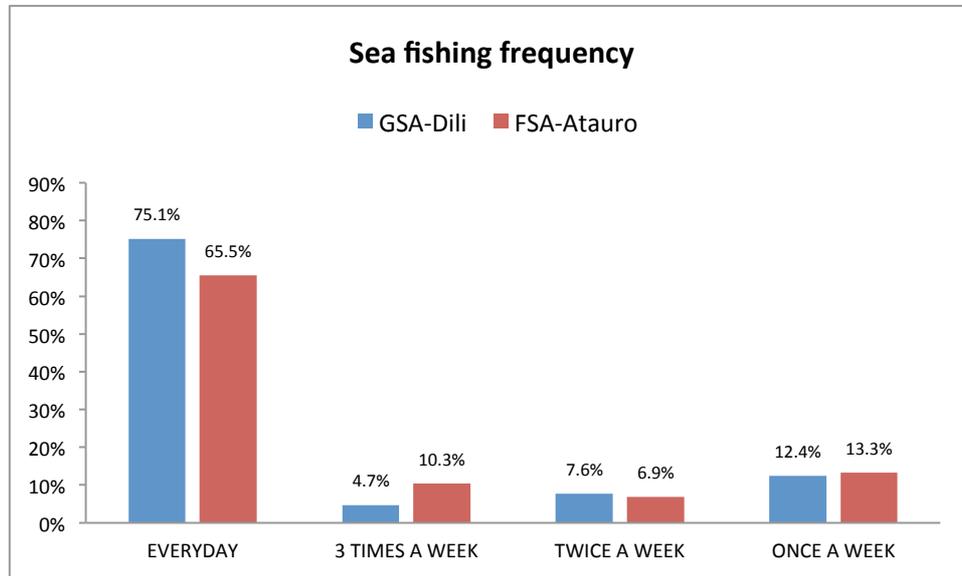


Figure 5-18. Sea fishing frequency in Dili district and Atauro subdistrict

Sea fishing frequency varies depending on season and on other priorities. Some fishers fish every day, while others may fish as little as once, twice or three times per week. From 30 respondents in Atauro, the majority (66%) go to sea fishing every day. Other respondents reported they go to sea only once a week (13%), twice a week (7%) and three times a week (10%).

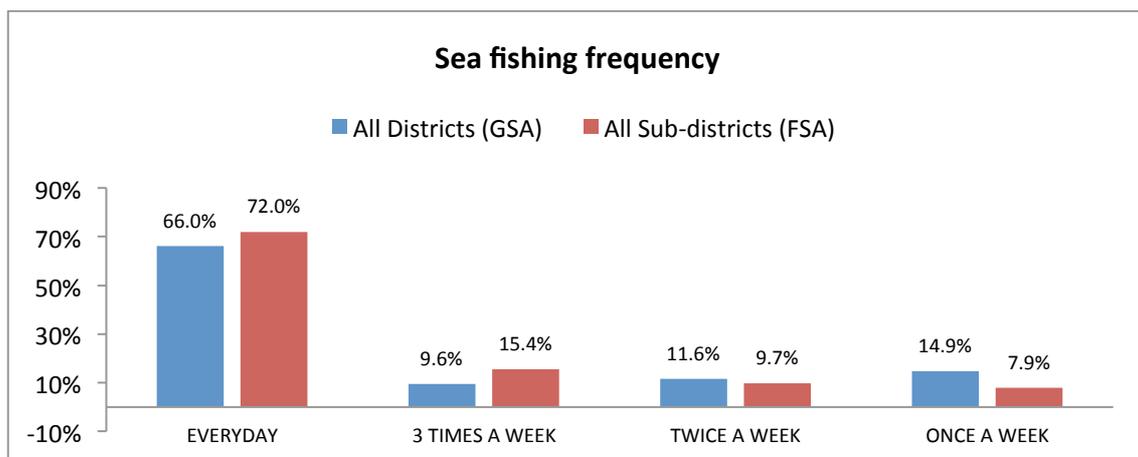


Figure 5-19. Average sea fishing frequency in all 5 districts (GSA) and in all 5 subdistricts (FSA)

Although Atauro is an island where people depend primarily on fishing activities the percent of Atauro fishers fishing at sea daily (66%) and 3-times-weekly frequency (10%) was lower than the 5 subdistricts averages (72% and 15% respectively). However, the once-a-week and twice-a-week frequencies for Atauro fishers were higher than the 5 subdistricts averages.

### 5.5.1.2 Duration of fishing trips

Most (88%) were day fishers and spend less than 12 hours at sea per fishing trip. The largest group (69%) fish for periods of up to 6 hours. However, there were a significant group of fishers (31%) that spend up to 12 hours a day at sea. Fishers who spend more than 12 hours a day and make multi-day trips were uncommon (< 5%).

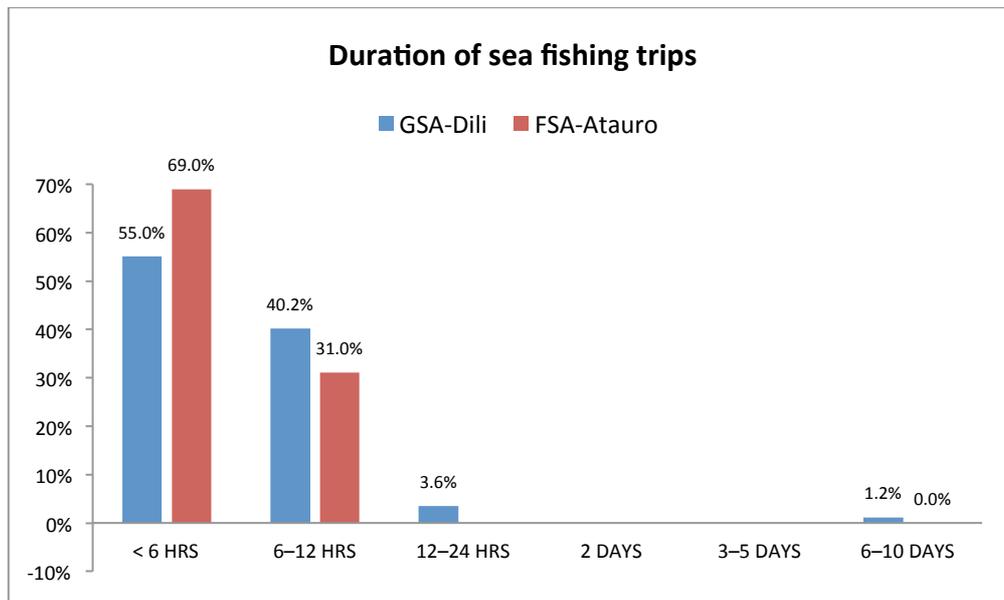


Figure 5-20. Duration of sea fishing trips

### 5.5.1.3 Monthly at sea activity

Atauro fishers fish all year round, but the number of fishers participating varies with seasonal weather conditions. More than 50% of the total numbers of sea fishers from Atauro operate in January, February, March, April, May, June and September, October, and November, while conversely less Atauro sea fishers operate from mid-July through to the end of August and in December.

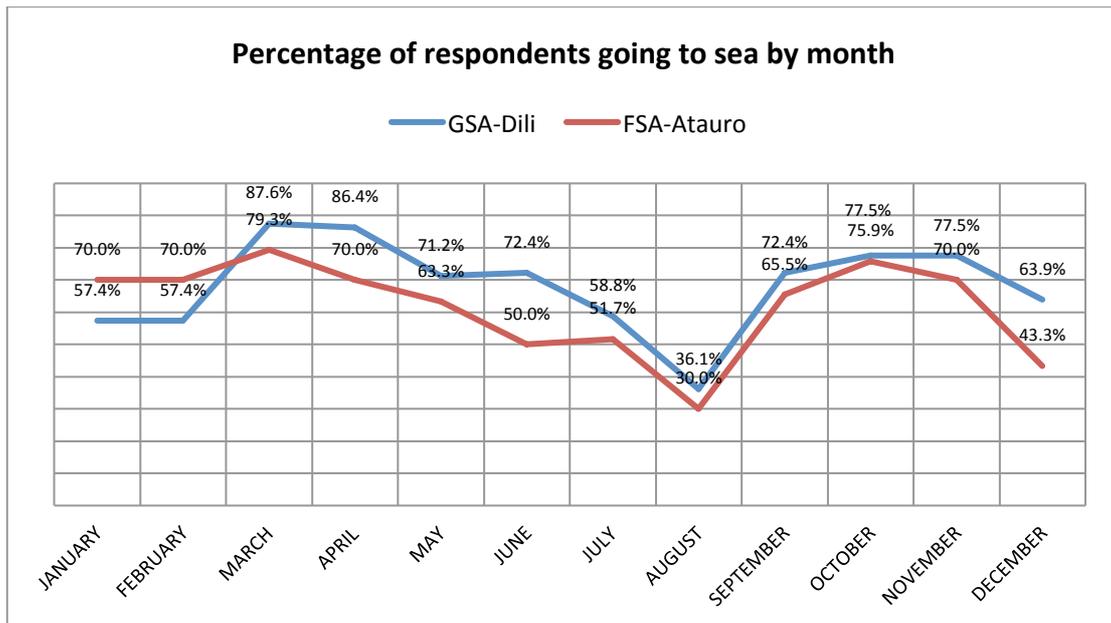


Figure 5-21. Percentage of respondents going to sea by month

More Atauro subdistrict fishers (70%) go to sea to fish in the months of January and February than Dili fishers (57%). For the rest of the year the proportion of fishers going to sea for Atauro and Dili follow similar trends even though the percentages of Atauro fishers going to sea were consistently less than those of GSA Dili. The months of June to August and December have the lowest levels of sea activities for Atauro fishers.

#### 5.5.1.4 Position of fishing area

Fishers typically fish in three discrete types of fishing area namely inshore along the coast, in the deep sea and on coral reefs. Atauro fishers mostly fish in the deep sea area (60% of respondents). However, the inshore area along the coast (55%) and coral reef areas (48%) were also important fishing areas.

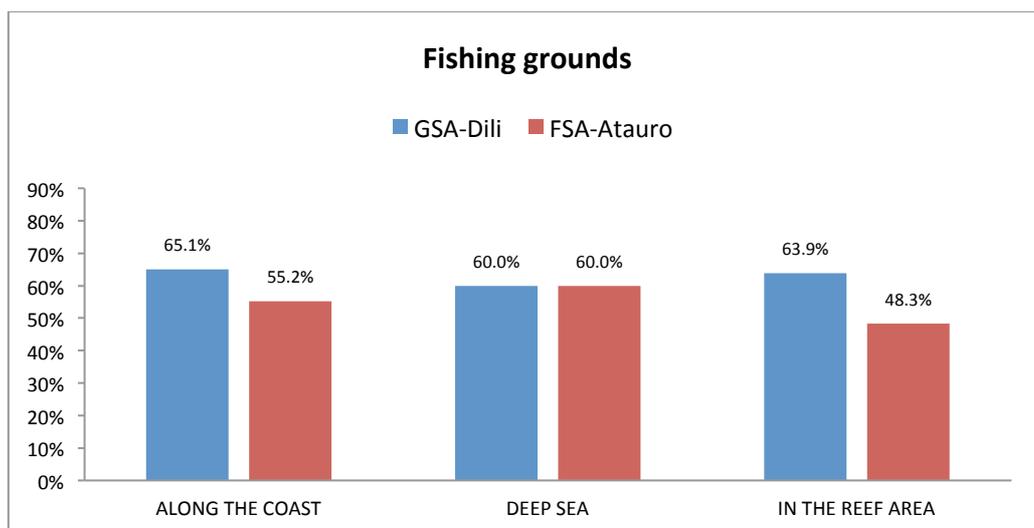


Figure 5-22. Fishing grounds

### 5.5.1.5 Boat and fishing gear

**1. Boat Type and Fishing Gear.** The type of boats used by fishers in Atauro can be grouped into large fishing boats, motorized wooden boats, boat with outboard engines, jugung or wooden row boats without engines, and wooden sail boats. Of respondents from Atauro, 79% indicated that they used wooden row boats (non-motorized), 23% have motorized wooden boats and the remainder 23% use motorized wooden boats. A small portion of fishers own large fishing boats (7%) and wooden sail boats (3%).

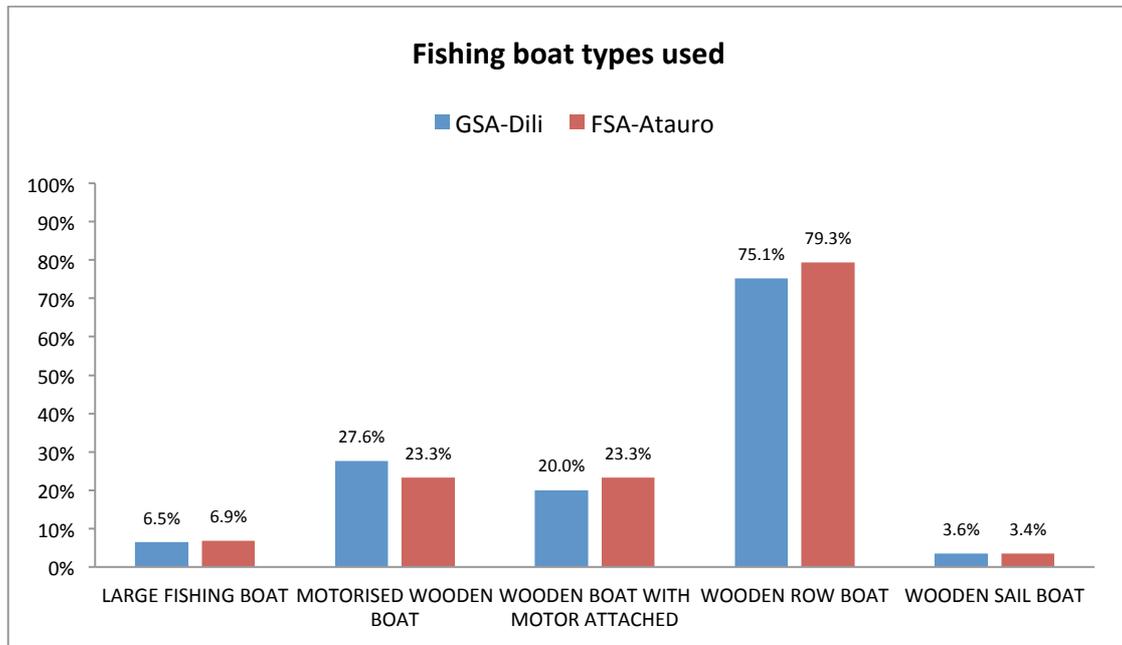


Figure 5-23. Fishing boat types used

Hook and line, and fishing nets were the most commonly used gear types in Atauro. Hook and line (fish line) were used by 69% of respondents, while fishing nets were used by 37% of respondents, gillnets by 24% and beach nets by 47% of respondents. A fisher may use more than one type of fishing gear and will often change seasonally. Unlike Vemase fishers (18%), only a small proportion of Atauro fishers (3%) reported utilizing ‘rumpon’, a fish aggregating device (FAD).

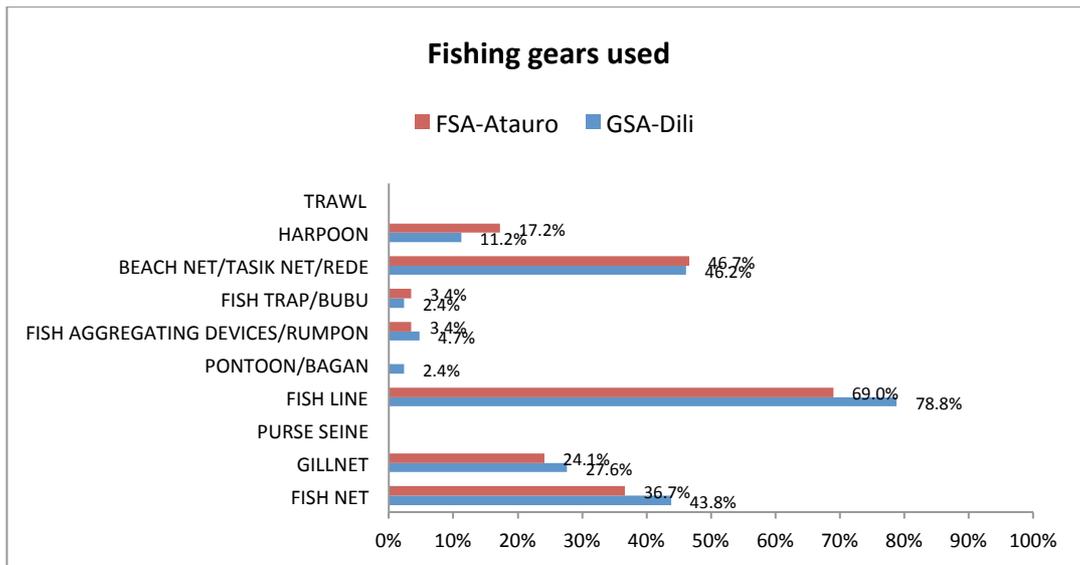


Figure 5-24. Fishing gears used

**2. Ownership:** Ownership of fishing boats fell into three categories: self/family owned, profit sharing, and hired. Most fishing boats were self/family owned (93%). Most fishing boats were jugung type (non-motorized wooden row boats).

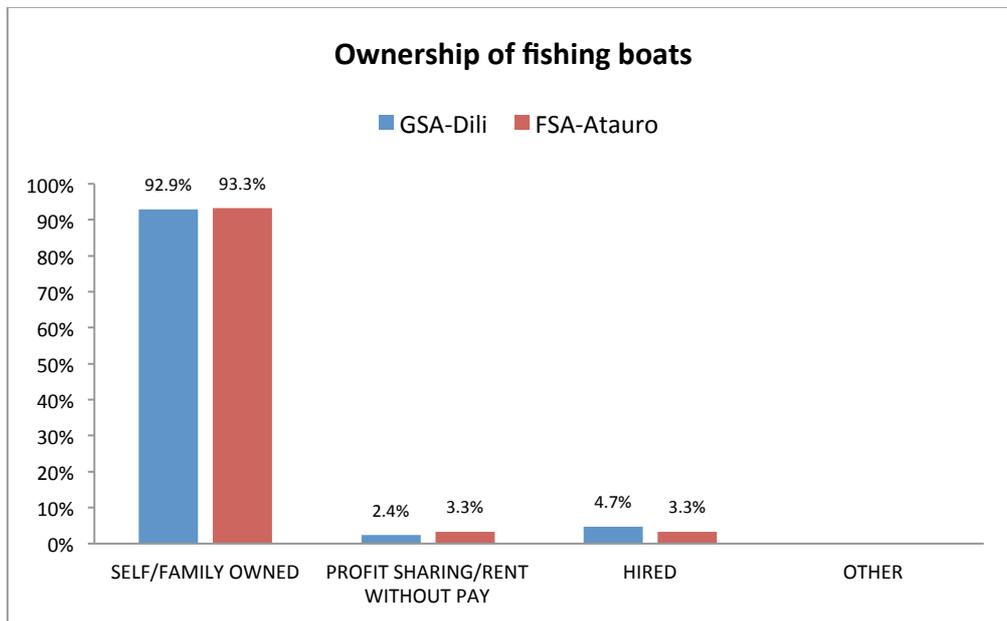


Figure 5-25. Ownership of fishing boats

The proportion of boats used on a profit sharing basis with the boat lender at only 3%, was similar to the proportion that were hired.

**3. Accessing Fishing Boats.** Fishing boats were acquired by purchase, family gift or inheritance, from government or NGO aid, or borrowed from friends. Most Atauro fishers (79 %) bought their fishing boat. Only a small percentage (4%) obtained their boat from government or NGO aid, while 4% had borrowed their boat from a friend or relative.

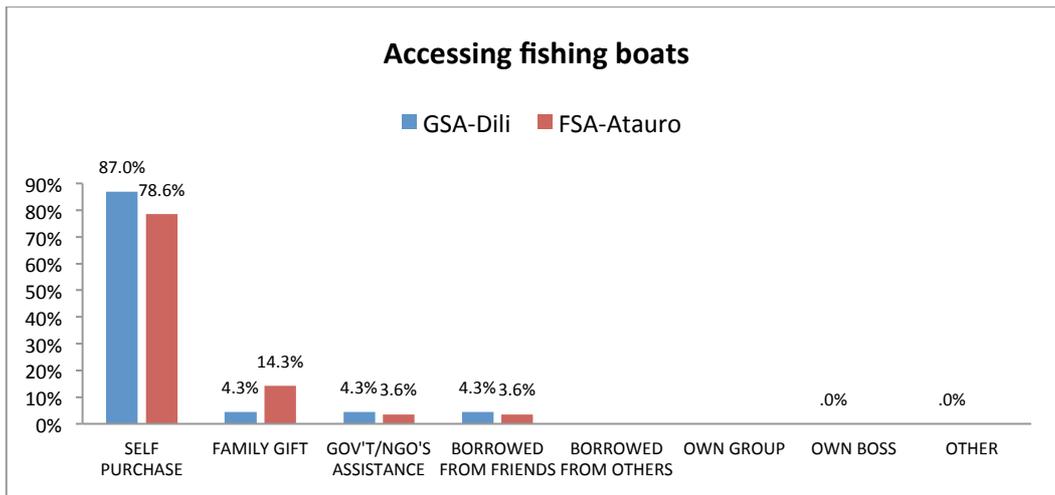


Figure 5-26. Accessing fishing boats

### 5.5.1.6 Fishing operation system

Fishers typically fish in groups or as individual fishers. Fishing in groups was more common (75%). The number of members in a fishing group was largely dependent on the boat size. Small wooden boats without engines typically had 2-3 fishers. However, larger boats with engines were typically crewed by 5 fishers or more. Fishing in groups of 2-5 members (68%) was the most common. Many fishers work individually (25% of respondents), but large fishing groups (6 or more) were relatively rare (7%) in Atauro.

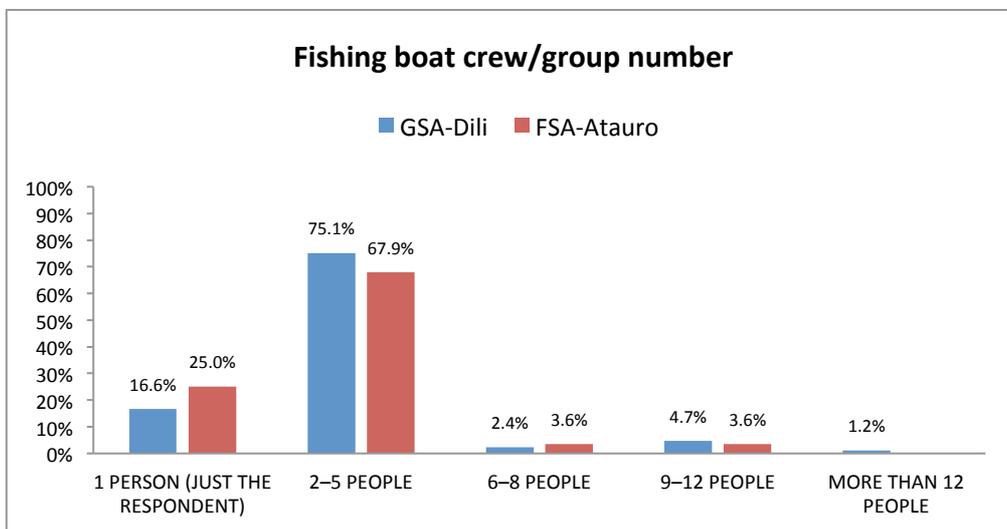


Figure 5-27. Fishing boat crew/group number

In-depth interviews with several fishers and with staff members of the fisheries office revealed that members of a fisher group alternated work activities including fishing and selling the catch. For a group which usually consists of 6-7 members, half of the members go to fish and, on return the other members take over the boat. The boat, with the catch aboard and with new supplies will then sail to a market place to sell the catch.

Thus, it is possible that of the 68% of respondents indicating a group “2-5 people” that some could actually represent groups of 4-10 people.

### 5.5.1.7 Fish catch

**1. Variety of Catch.** The catch in the Atauro area included fish, shrimp/prawns, crabs, squid, seaweed, snails, and oysters/clams. However, fish were reported to be the main target of most (97%) respondents. Squid was targeted by 45% of respondents (higher than the 5-subdistrict average of 19%), and seaweed was collected by 53% of respondents, which was the highest compared to the other subdistricts (7%). Other catches of shrimp, crabs, snails, and oysters were also significant (23% to 45%).

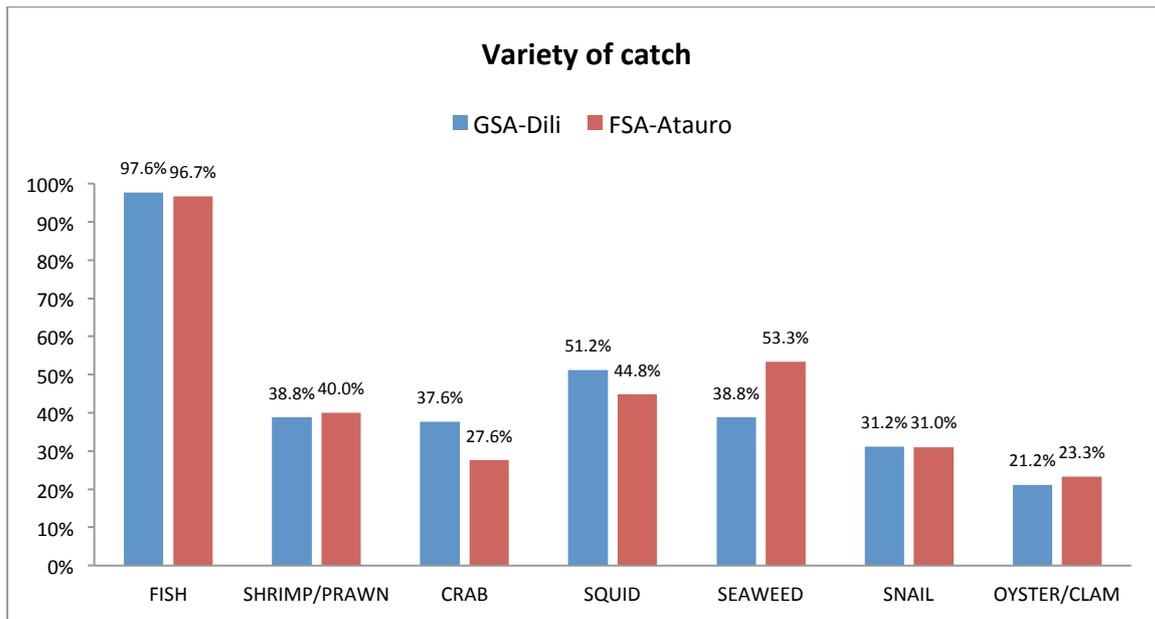


Figure 5-28. Variety of fishing catch

**2. Variety of Fish Species.** Of fish that were targeted, species caught by fishers in Atauro included ‘kakap’/snapper, ‘koku’/trevalli and ‘bainar’/fusilier. Unlike in Vemase where ‘sardina’/sardine and ‘tongkol’/tuna comprised 73% and 39% of the catch respectively, in Atauro these species made up only 10% of the total reported fish catch. These data may be indicative of species abundance in the waters around Atauro Island.

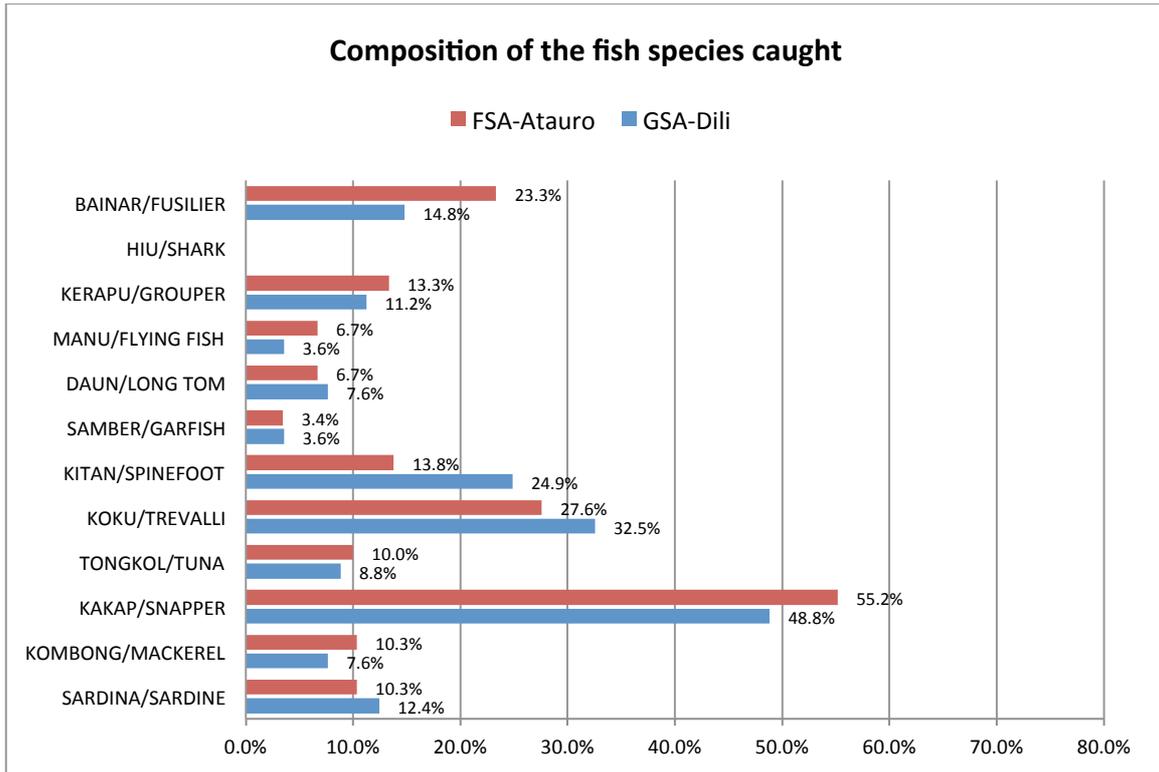


Figure 5-29. Composition of the fish species caught

### 5.5.1.8 Monthly average income

Overall, more than half of all respondents (79%) earned monthly incomes in the lower four earning ranges spanning \$0-\$399. However, those fishers making more than \$400 a month comprised a significant portion of the respondents (21%).

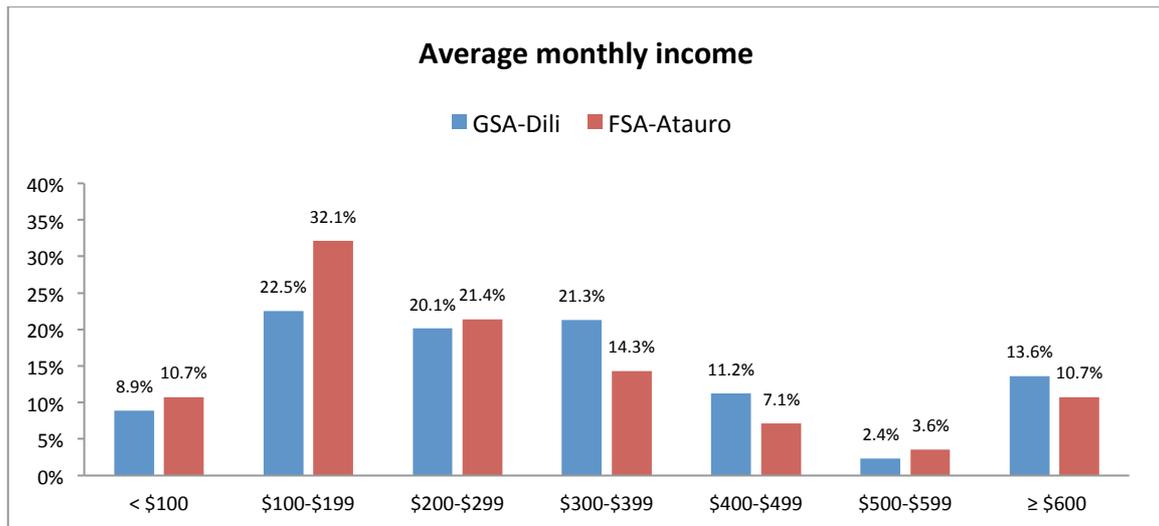


Figure 5-30. Average monthly income

### 5.5.1.9 Additional income

A significant portion of Atauro fishers (48%) (GSA-Dili: 43%) indicated that they have work other than fishing. Half of the respondents rely only on fishing.

Of those respondents with additional work, activities included farming (29%), seaweed farming (21%), fisher/peskador (21%), breeder and building worker. The three common second jobs of Atauro fishers were farmer (29%), seaweed farmer and fisher/peskador (21% respectively).

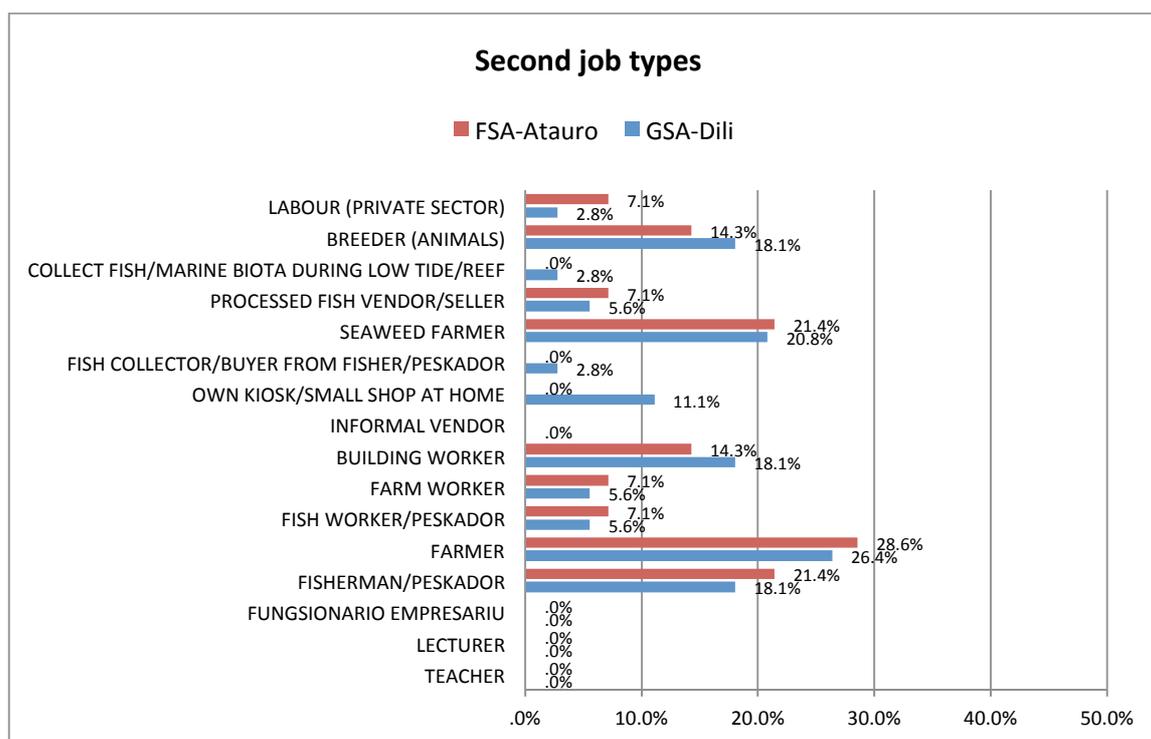


Figure 5-31. Second job types

## 5.5.2 Analysis

### 5.5.2.1 Fishing activity and target species

The sea-going duration of local fishers was largely limited to trips of 6 to 12 hours. Trip duration was primarily limited by boats and equipment with most fishers operating simple non-motorized wooden boats and using hook and line and hand nets. Fish aggregating devices (FADs) were only rarely used.

Though other marine biota was caught, fish were the main target for the fishers of Atauro. Other species were also targeted and included squid, seaweed, shrimp, snails and crabs.

### 5.5.2.2 Fishing system and the role of women and children roles

The majority of fishers (75%) fished in a group, while 25% fished alone. The majority of fishing boats operated by a group had, depending on the boat size, 2 to 5 fishers. Each group was led by a group leader, who was the boat owner. Group members were commonly family

members of the nearest neighbours. Group members were not paid but were given a share of the catch/profit.

The role of women and children was relatively minor. Discussion with fisher's wives in Atauro revealed that the main role of wives was to prepare meals for their husbands. In the morning before the husband goes to the sea, wives prepare a drink (coffee or tea), and breakfast. At around 09.00 hours wives and children bring the breakfast to the shore. At around 10.00 hours the husband lands to eat breakfast and some of the fish catch is brought ashore. After breakfast, the husband returns to the sea and the wives prepare lunch which is served on the beach. No one stays at home during the day time.

### **5.5.2.3 Alternative livelihoods**

Nearly half (48%) of Atauro respondents had extra work or an additional livelihood. Alternative work included farming, seaweed farming (21%) and fisher/peskador. Animal breeder and building worker were also the secondary livelihoods of a smaller portion of respondent fishers. Manual work such as labouring, casual worker, farmer or fishers was more common than secondary service livelihoods like selling groceries, food, drink, and fruit in a kiosk. Also many fishers in Atauro combine all these with the transportation of commodities from and to Dili and other nearby areas.

The income earned from these additional livelihoods was unknown because earnings made were usually saved (especially from farming and cattle raising). Fishers sell their cattle or the paddy when they need cash, and sometimes they store rice paddy as seed stock.

### **5.5.3 Program recommendations**

To further develop fishers' livelihoods the following steps are recommended:

#### **a. Boat procurement**

The main constraint for fishers was access to adequate boats with engines. Unpowered boats have a limited range and the load capacity limits both the size of the fishing group and the catch. Lack of finance was the main obstacle preventing fishers from procuring more suitable fishing boats fitted with appropriate engines. A strategy to support boat procurement through micro-finance development is required.

#### **b. Fishing gear procurement**

Most fishers own a boat even though it may be a non-motorized wooden boat. If they were to be supported to purchase fishing boats fitted with an appropriate engine, they would also need assistance to purchase appropriate fishing gears to improve their catching efficiency and therefore their economic returns.

#### **c. Improvement of fishers capability**

From focus group discussions, fishers were aware that their knowledge and capacity to catch fish was limited. They want to learn more from the fishers in Jawa (Indonesia) who have more experience and knowledge of fishing. Based on their inputs and comments, it is recommended that training on fishing techniques and skill be conducted in Timor-Leste and/or some fishers should be sent to Java for training.

## e. Development of alternative livelihoods

Potential alternative livelihoods on Atauro Island include farming, seaweed farming, cattle raising, building worker and fisher/peskador. Local fishers mostly live inland, and not along the coast. The land around their houses is fertile and can be planted with corn and paddy, or can be used to raise cattle.

## 5.6 Micro-finance

### 5.6.1 Fact-finding results

#### 5.6.1.1 Community knowledge concerning finance institutions

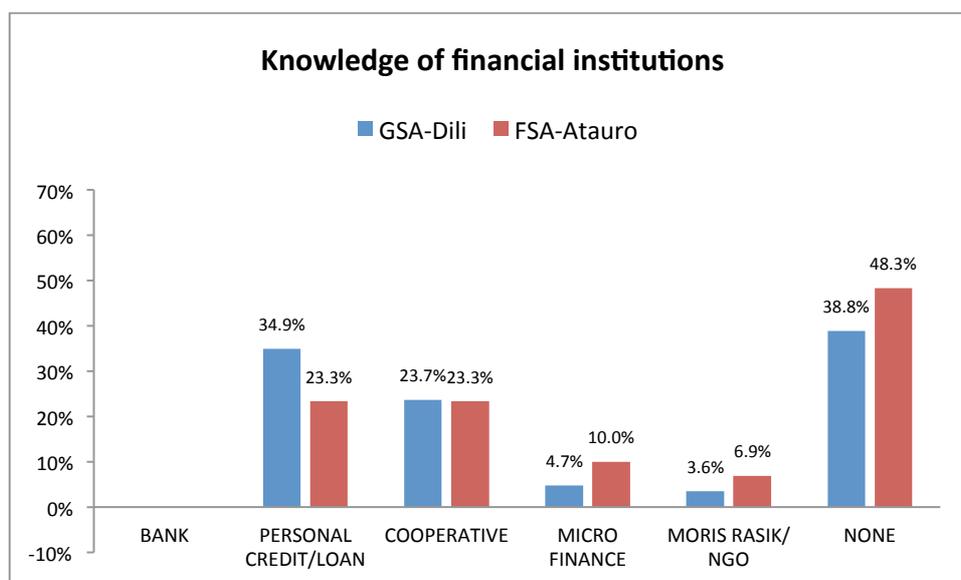


Figure 5-32. Knowledge of existing financial institutions

Nearly half of the Dili District respondents (48%) stated that they had no knowledge of finance institutions in their area. The finance institutions, which were best known by 52% of respondents included cooperatives (23%) and private loans (23%), which were higher than for the other 4 surveyed districts. However, the NGO Moris Rasik which was well known in Baucau was only mentioned by 7% (2) of respondents in Dili.

For a specific question regarding utilisation of financial services, some 23% of respondents in Atauro subdistrict and 18% of respondents in Dili district had used financial services. These percentages were the highest compared to the other surveyed districts/subdistricts.

#### 5.6.1.2 Respondent knowledge on micro-credit assistance in their area

Respondent knowledge of micro-credit assistance in Atauro was very limited (13%) and this was as low as Suai's and Pante Makasar's. Most respondents either had no information concerning micro-credit aid or had no access to micro-credit.

Of those that were aware of micro-credit service providers, half of the respondents were aware of the NGO Moris Rasik (50% of 13% of respondents in Atauro and 15% in Dili) as the NGO was the only institution providing micro-credit assistance in their area.

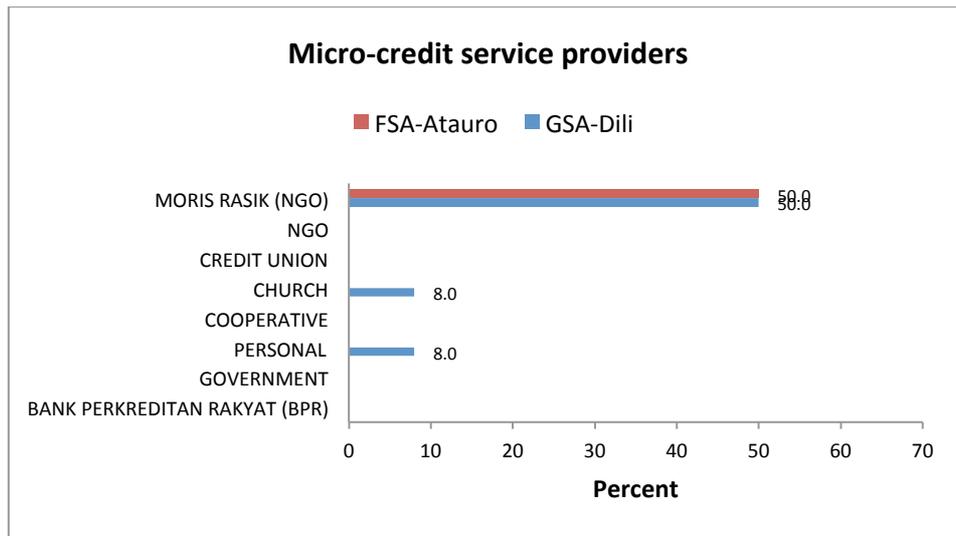


Figure 5-33. Micro-credit service providers

### 5.6.1.3 Experience in using financial institution services

The very limited number of micro-finance institutions and micro-credit assistance sources in the survey area was reflected in the small number of respondents who had received financial or micro-credit loans. As described in the previous section, only 23% of Atauro respondents (18% in Dili) acknowledged utilising the services of financial institutions. Of these respondents, none used micro-finance services while only 17% had used the micro-credit services of the NGO Moris Rasik. About half of respondents were aware of the existence of personal credit/loans and 17% of the respondents surveyed were aware of cooperatives.

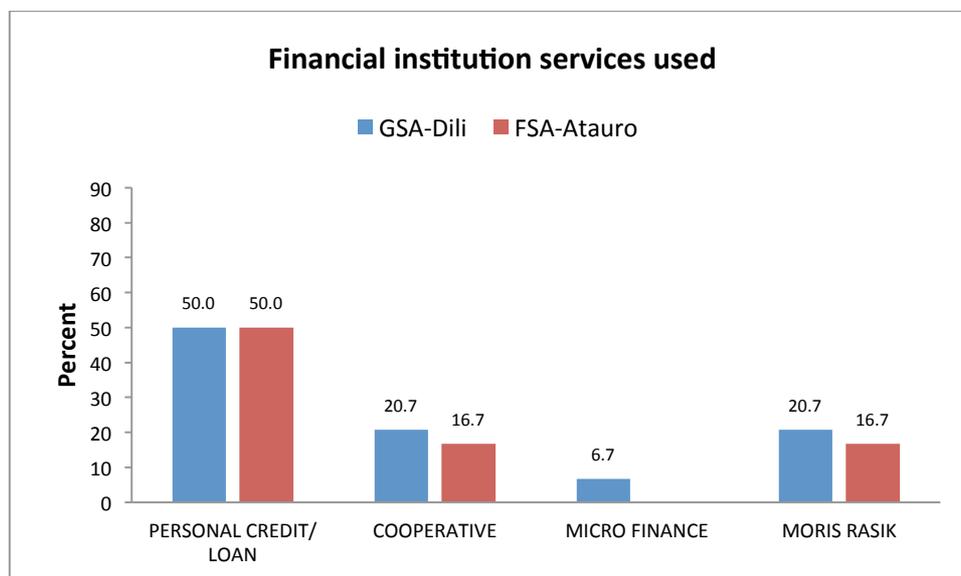


Figure 5-34. Financial institution services used

Of those 23% respondents who were aware of financial services in Atauro (18% in GSA Dili), 57% had used financial institution services for saving money, which was the highest of the other 4 subdistricts surveyed. Some 67% of respondents used the financial institution services for loan/credit.

Reasons given by respondents for getting micro-credit assistance or loans were mostly for capital to start work in fisheries (43%), to cover daily expenditures (29%) and education of children (29%). The percentage using the loan/credit services for covering the cost of fishing activities (43%) was high relative to the other 4 surveyed districts. Most of the capital was used to buy and to fix boats and fishing gear.

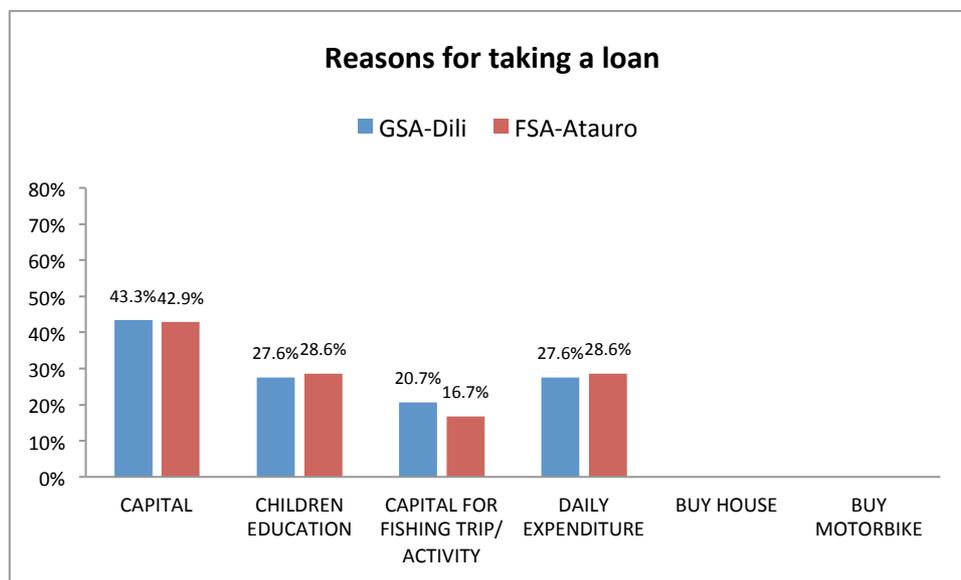


Figure 5-35. Reasons for taking a loan

From the focus group discussions with staff of the Dili fisheries office, although the income of Atauro Island fishers was relatively high, they still considered that lack of capital was a constraint to improving fishing activities. According to the fisheries office, provision of capital should be coordinated by the Ministry of Development and Economy. However the aid provided by this ministry is currently in the form of capital goods such as fishing gear rather than cash. This was similar to the aid provided by the Ministry of Agriculture and Fisheries.

Women’s groups were considered to be the main group receiving financial assistance (67%) in comparison with 33% received by male fisher groups. This reflects Moris Rasik and other NGOs, provision of services mainly to individual woman or women’s groups.

#### **5.6.1.4 Reasons for not borrowing from and not saving money in finance service institutions**

As described above, the majority (48%) of community member respondents from Atauro subdistrict were unaware of finance service institutions in their area. Feedback from Focus Group Discussions about financial institution services was generally negative. The general perception was that getting loans from the finance institutions was difficult and interest rates were high. Most respondents had never been in debt and were afraid of being unable to repay a loan. Under these circumstances they preferred to borrow money from other fishers or from their relatives.

The two main reasons given why community members did not borrow money from financial institutions were i) not knowing how to borrow (37%) and ii) difficult (37%). This indicates a need to improve the awareness of financial institutions on coastal communities. Access to financial institutions outside Dili was also problematic. Other constraints identified by

respondents included high interest (20%) and concern over loan repayment (10%) which reflect issues with income security.

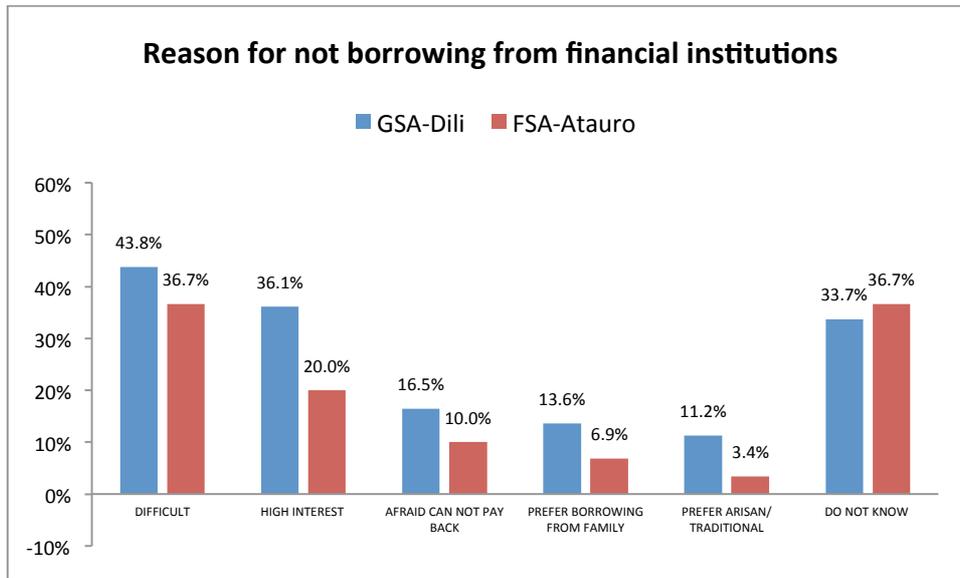


Figure 5-36. Reasons for not borrowing from financial institutions

The main reasons given why respondents did not save money were i) the lack of money (47%) and ii) the lack of knowledge of financial institutions (38%).

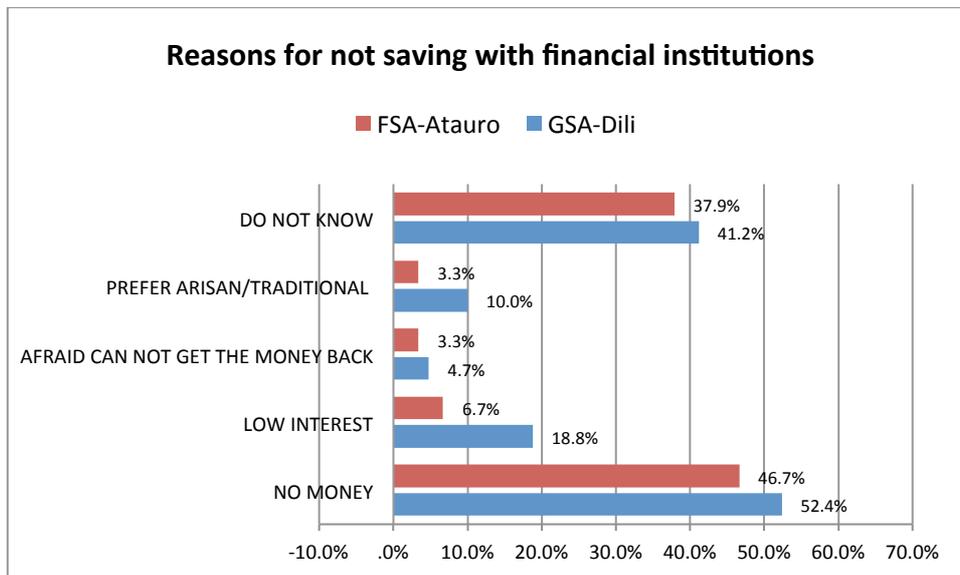


Figure 5-37. Reasons for not saving with financial institutions

### 5.6.1.5 Savings ability

Focus Group Discussions confirmed the poor ability of respondents to save money. Only 33% of respondents stated that they were able to save money on a monthly basis and a similar proportion on a weekly basis. Saving cash in households was uncommon. Most respondents explained that their savings were not in cash, but were rather in the form of livestock, which

they can easily sell if they need cash for daily expenses and for educational purposes. Keeping livestock was also important to supply community needs for traditional ceremonies.

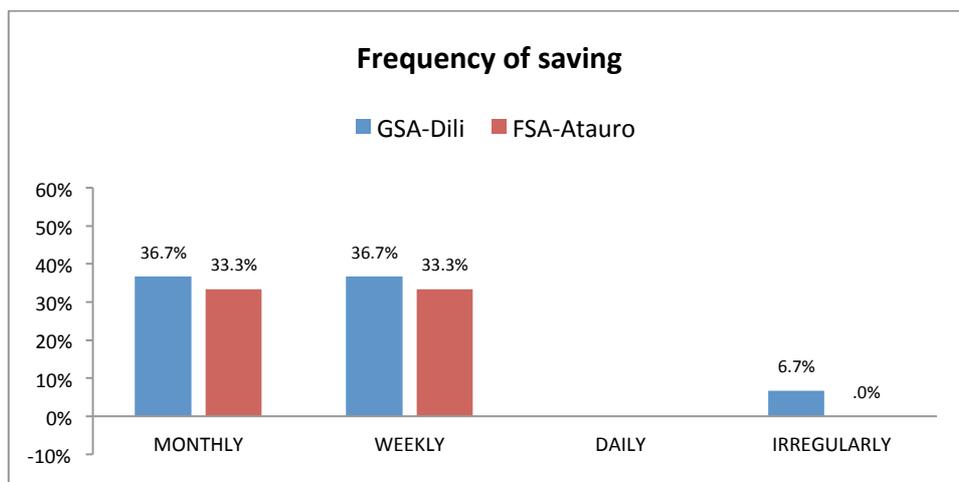


Figure 5-38. Frequency of saving

Fishers who were members of a group, usually have their own group savings. These are set aside from fish sales, usually 20-30% of total sales. Groups use these savings to pay for purchase or repair of fishing gear repair or for daily expenses during the low season.

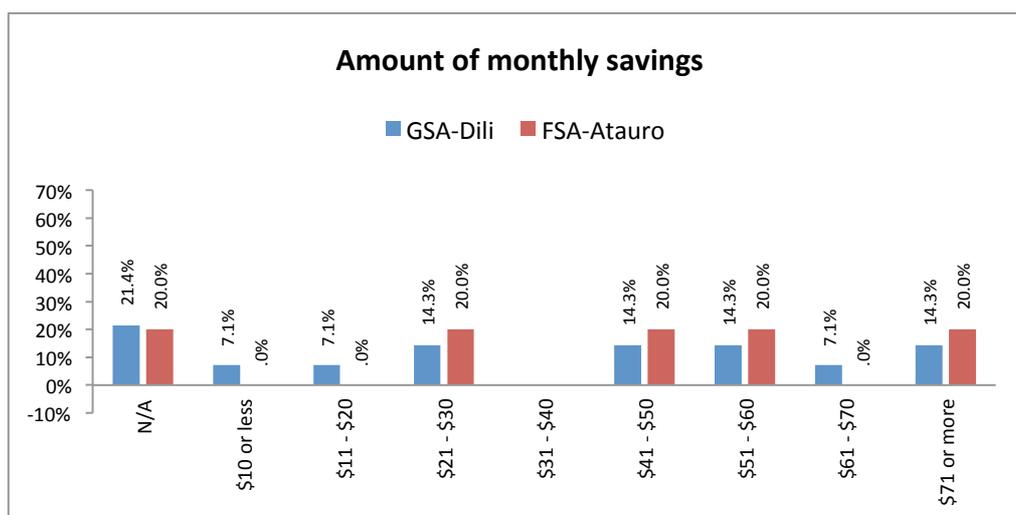


Figure 5-39. Amount of monthly savings

Of the Atauro 23% of respondents that saved, 20%, saved less than \$30 per month, 20-40% of respondents saved between \$41 and \$60, and 20% saved more than \$70 per month.

## 5.6.2 Analysis

### 5.6.2.1 Availability of finance institutions

Financial institutions recognized in Atauro are micro-finance institutions, cooperatives and NGOs. However, general awareness of financial institutions and financing opportunities was low. Significantly, access to financial services remote outside of Dili was poor. This affects both awareness and opportunities for finance and micro-credit to further develop and to tap into seafood and related industries.

### **5.6.2.2 Community access to financial institutions**

Savings were limited mainly because of the low levels of income and the lack of knowledge of financial institutions (for savings purposes).

### **5.6.2.3 Utilisation of loans**

No data were obtained on loan utilisation from those respondents that stated they obtained loans. There was a general reluctance to borrow money because of concerns about debt repayment and, consistent with the above, the general lack of knowledge about financial services on offer.

### **5.6.3 Recommendations**

Based on fact-finding results and the analysis, it is suggested that the following activities are conducted to develop and strengthen the contribution of micro-finance services to livelihoods diversification for fishers in Dili District, and particularly in Atauro subdistrict:

- a. Micro-finance institutions, that provide micro-credit, facilitated and enabled by the government, such as cooperatives, credit unions and other forms of community micro-finance institutions that are non-NGO based, should be established. This will help empower Atauro fishers and other fisheries stakeholders to strengthen existing and to develop alternative sustainable livelihoods. Financial institutions need to provide better coverage of services in the region, because the region is currently underserved financial service institutions.
- b. Where new financial institutions are needed, it is suggested that financial institutions focus on providing loans to support the needs of the fishers for appropriate fishing gear and vessels. With the aim of strengthening existing institutions, it is recommended that the existing institutions develop special services for fishers and allocate loans for working capital to improve the efficiency and economic returns for the local fishing sector and the aquatic product-processing sector.
- c. Awareness raising needs to be conducted to make coastal communities more aware of the existence of micro-finance institutions, the types of services they provide and the requirements and processes for obtaining a loan. Basic training on financial and income management should be provided to coastal households to raise their awareness of financial services and to improve the uptake of these services to stimulate improved livelihoods. Training should also include debt management and basic financial planning to address current fears of coastal community members concerning debt.
- d. Examples of individual loans to several fishers in Atauro, can be used as case studies of a fisheries-livelihood dependent area, and as lessons learnt for developing micro-credit services appropriate to fishers in Dili district.

## 6 RESULTS AND ANALYSIS – BOBONARO AND ATABAE

### 6.1 Respondent profiles

Bobonaro has boundaries with Liquiça district to the north, Covalima and Ainaro districts to the south, Ermera and Ainaro districts to the east and the Indonesian province of Nusa Tenggara Timur to the west.

It has an area of 1,368 km<sup>2</sup>, and consists of 6 subdistricts, 50 sucos and 193 aldeias:

- Lolotoi subdistrict (7 sucos)
- Bobonaro subdistrict (18 sucos)
- Cailaco subdistrict (8 sucos)
- Atabae subdistrict (4 sucos)
- Balibo subdistrict (6 sucos)
- Maliana subdistrict (7 sucos)

Bobonaro has a population of 89,787 and an average household size of 5.4. Bobonaro's annual population growth rate from 2004 is in the lowest bracket at 1.19% pa. The sex ratio is 98 males per 100 females (i.e. 44,423/ 45,364).<sup>12</sup>

Only two subdistricts in Bobonaro, namely Atabae and Balibo, carry out activities in the fisheries sector, but in these two subdistricts most of the population are fishers. Apart from marine fishing there are also popular enterprises involving freshwater fish, such as carp, catfish, Mozambique tilapia ('mujair') and common snakehead ('gabus'/Channa striata).

There were 65 respondents in the sample for the General Survey Area (GSA) in Bobonaro district (Confidence Interval CI = ±12%) and 41 respondents in the Atabae subdistrict (CI = ±15%).

Unless otherwise stated, all the percentages used in the following sections in this chapter are based on the total number of respondents in the respective survey area.

### 6.2 Co-management

#### 6.2.1 Fact-finding results

##### 6.2.1.1 Familiarity with the term co-management

In Bobonaro District (GSA) and in the Project area (FSA Atabae) 12% and 20% of the respondents respectively were familiar with the term co-management.

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<sup>12</sup> Population and Housing Census 2010.

When asked about their understanding of the meaning of the term *co-management*, 62.5% understood it to mean “*working in a group*”. Other answers provided were “*working together with the government*” (37.5%) and “*sharing responsibility among fishers*” (25%).

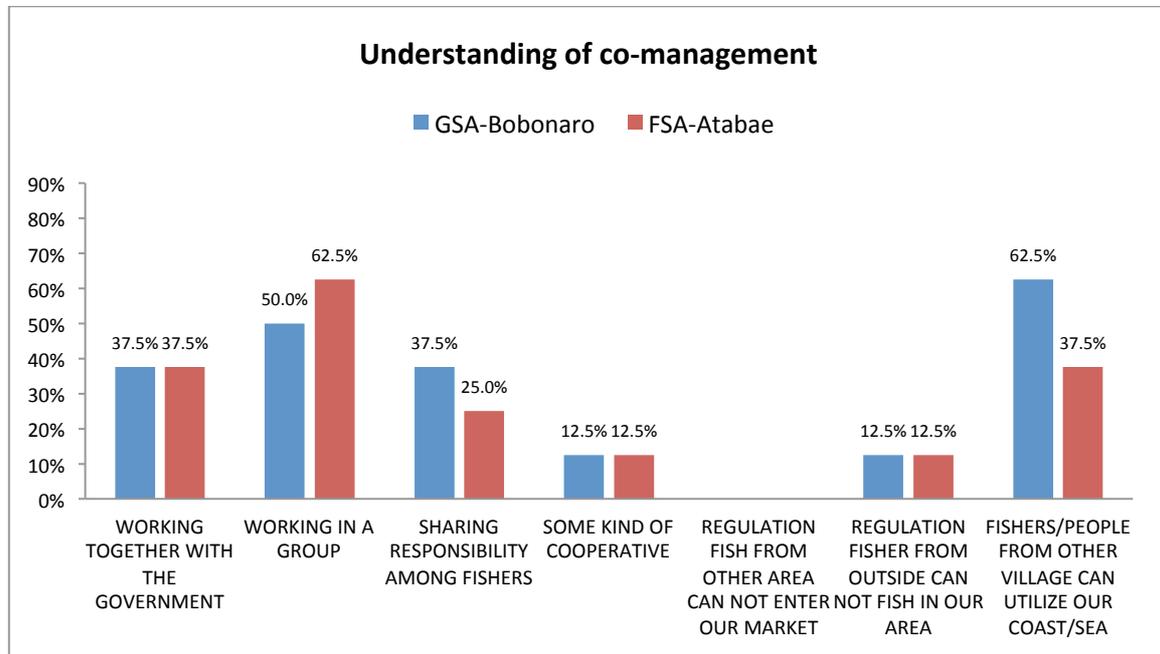


Figure 6-1. Understanding of co-management

### 6.2.1.2 Existing collaboration

Some 60% of the 23% of respondents who understood co-management indicated that some kind of collaboration or group sharing of activities existed as “*collaboration among groups of fishers*”, 35% understood the term to be “*of collaboration between fisher’s groups and government*”, and only 5% referred to “*sharing responsibility among fishers*”.

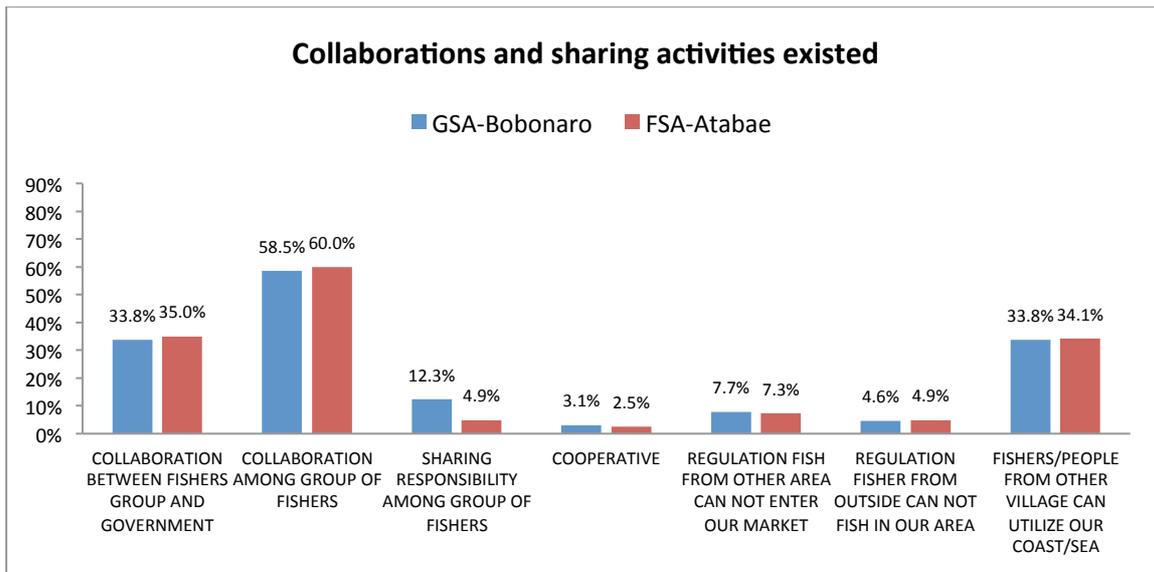


Figure 6-2. Types of collaboration and shared activities existed

### 6.2.1.3 Community groups

Fisher groups were the dominant community group recognised in Atabae (65% of the responses). Other community groups identified by the respondents included Savings and Loan Groups and Women’s Groups (17.5% each). Savings and Loan Groups were more recognisable than cooperatives, with only 5% of the respondents recognizing cooperatives compared with 17.5% of those who recognised Savings and Loan Groups. Farmers’ Group accounted for 12% of the optional answers.

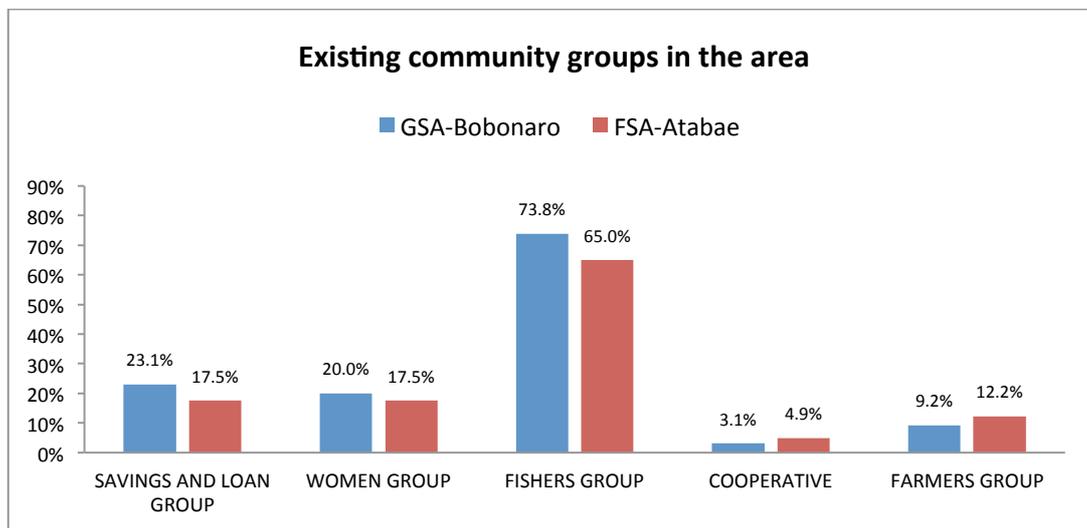


Figure 6-3. Existing community groups in the area

Approximately 49% (GSA Bobonaro: 50%) of the Atabae respondents have joined activities of fisher groups.

The focus group discussions revealed that there were no organisations, initiated by fishers, which address their common needs. Groups which do exist were informal working groups,

who participate in fishing activities (e.g. mutual help in spreading the seine). Further to this, there were fisher groups, which were established to receive government aid. Because government assistance in 2002 and 2008 was aimed at groups of 6 fishers, the Fisheries Extension Officers promoted these groups to qualify for assistance.

**External sources of assistance for community groups:** The respondents recognized several parties providing assistance to community groups. The District Government was mentioned by 23% of the Atabae respondents (GSA Bobonaro: 11%) as the main party providing assistance to the community. The Fisheries Office was mentioned by more than 20% of respondents in Atabae (GSA Bobonaro: 23%). Local NGOs were identified by some 10% of the respondents (GSA Baucau: 12%).

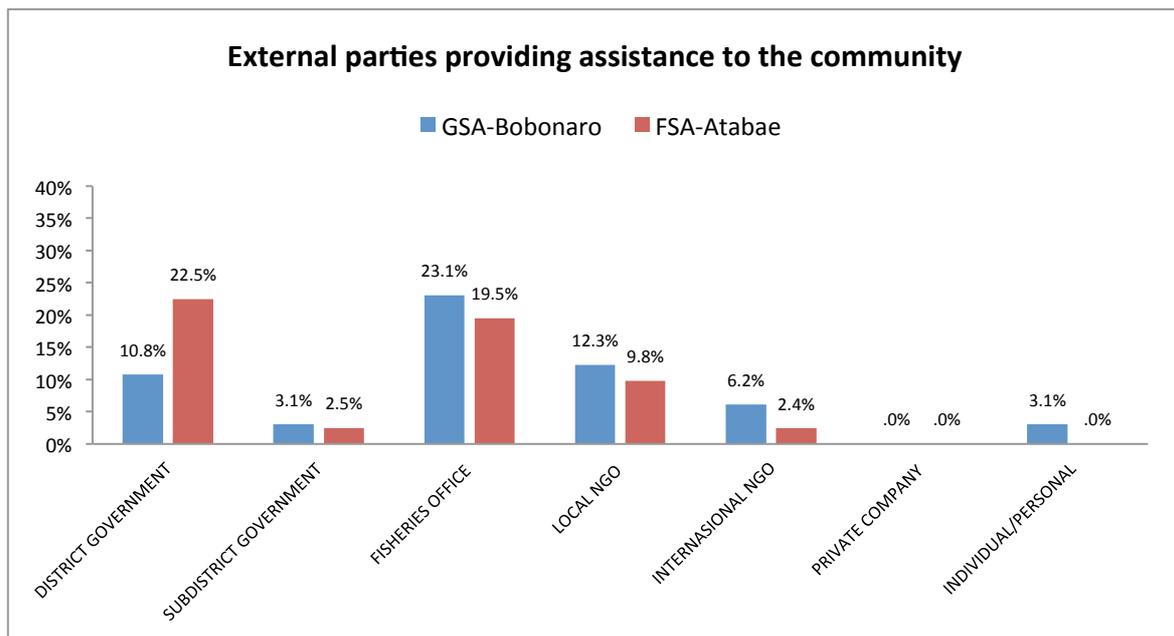


Figure 6-4. External parties providing assistance to the community

**Community groups receiving external assistance:** In Atabae, fisher groups were identified as the group which received the most external assistance (45%). Other groups receiving assistance were identified as farmer groups (17%), and women's group (13%). Relatively little assistance (<3%) was provided to sea product processing groups.

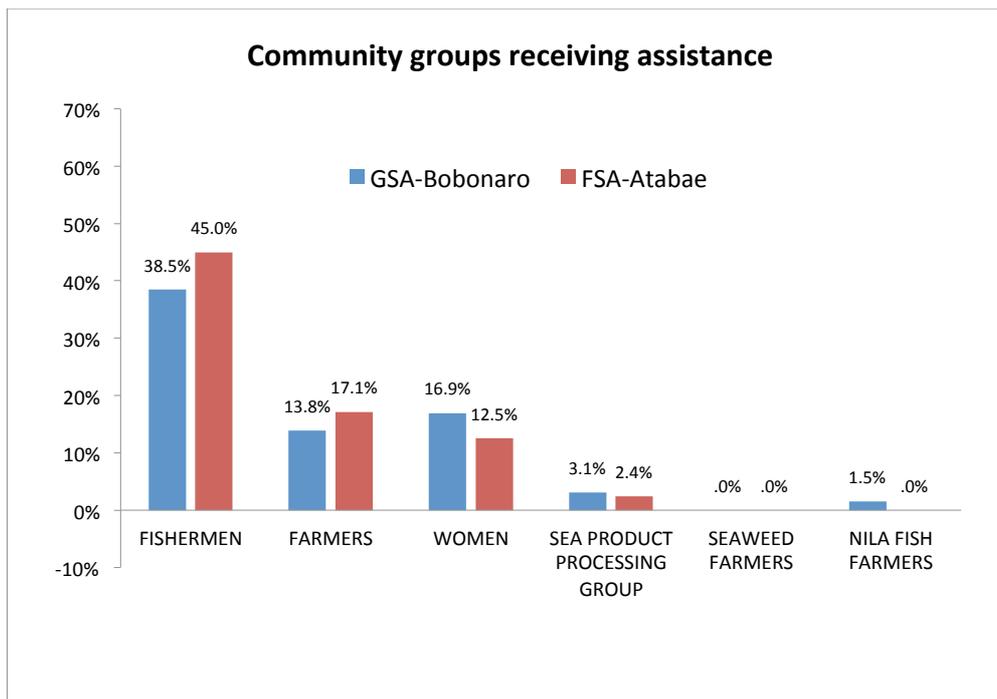


Figure 6-5. Community groups that received assistance

Focus group discussions with fishers from Atabae, confirmed that fisher groups received more assistance from the government than any other type of community group. The types of assistance given included fishing gear, such as mono-filament net (1.25-2.5 inch mesh). Batugade received 6 fibre-glass boats with motors (4-5 persons/group) and Balibo received 5 fibre-glass boats (4-5 persons/group); for Subdistrict Atabae there were a total of 31 *katinting* boats, i.e. 16 boats with 15 HP motors and 13 boats with 3 HP motors.

Further to material assistance, the government also arranged training in longline fishing prompting fishers in the subdistrict of Atabae to implement this technique using their own funds. A simple technique using a long rope to tie 75-100 hooks has been practiced.

Training in fish processing was conducted, but thus far has been limited to salting fish.

#### **6.2.1.4 Knowledge concerning policy, regulations, and customary law**

The existence of a village body responsible for marine resource management was reported by 17% of respondents in Atabae (GSA Bobonaro: 15%). Some 57% of respondents from Atabae demonstrated knowledge of traditional resource management.

Interviews with stakeholders in Bobonaro/Atabae revealed that awareness raising about government regulations had been conducted by the staff from the subdistrict Fisheries Office in cooperation with community leaders. Subjects included protected species, such as corals, crocodiles, and turtles; banned fishing gear; sustainable fishing techniques; and mangrove conservation. Community leaders have assisted the government in monitoring compliance.

Tara Bandu, a traditional resources management system based on seasonal closures, has been widely implemented in Bobonaro District. It is an informal agreement, known as a traditional

norm/custom at Suco level, subdistrict and district. It is based on a consensus among local leaders and community elders with the Fisheries Office.

For example fisheries protection in Lake Bemalai is supported by the Provincial Government and all citizens of Timor-Leste. Violation of community rules involves a court process conducted by senior customary authorities and community leaders. Sanctions are imposed in kind (*natura*), in the amount needed for the closing ceremony at the lake, as the violators had to feed the whole community. This was undertaken based on the belief that anyone who violates these customary rules will be hurt or even eaten by crocodiles, the protectors of the lake.

The Tara Bandu procession in Bemalai Lake is undertaken by customary or ritual authorities, four representatives from the sacred houses<sup>13</sup> of Balibo (the mountain site) and three representatives from Atabae (the coastal site).

Lake Bemalai is closed for 9-10 months including 6 months during the rainy season and 3 months in dry season. At the end of the closure, the depth of the lake facilitates community fishing. The traditional authority then re-opens the lake for fishing and the community can harvest the fish until the next closure (usually within a week). However, seasonal closures have been ad hoc and disputes over traditional practices have occurred.

Before 2006, in Suco Sanirin (Atabae and Palaka) Tara Bandu was also applied. There were restrictions on harvesting or catching 'Bulana'/'Belanak' fish (blue-spot/blue-tail mullet) and male 'Bandeng' (milkfish). Women were not allowed to catch crabs. Estuarine waters were closed for 10-11 months in a year. At the time of opening, catches were abundant and even fishers from Indonesia were involved in harvesting and marketing the catch.

Government and traditional/community leaders have cooperated in fisheries management. Violation of fisheries management rules involves traditional sanctions including a traditional procession and providing food and drink (betel, areca nuts, *sopi*<sup>14</sup>, chicken, pig, cow or goat) with the amount required decided by traditional leaders in support of a traditional ceremony. The violator is required to feed all people in the Suco at considerable expense. This was an effective deterrent. Tara Bandu ceased to be practiced from 2000/2001 however, the Bobonaro District Government plans to revitalize the practice of TARA BANDU, starting either this year (2011) or next year (2012).

### **6.2.1.5 Women's roles in fisheries**

Direct involvement of women in fisheries includes product selling (45%) and product processing (13%). Women also have an important role in domestic household financial management (34%).

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<sup>13</sup> Sacred house refers to the lineage that owns and is represented by the house.

<sup>14</sup> *Sopi* is traditional drinking gin (distilled palm wine), which is used in many traditional customs or rituals in Timor region as it is believed to have sacred value.

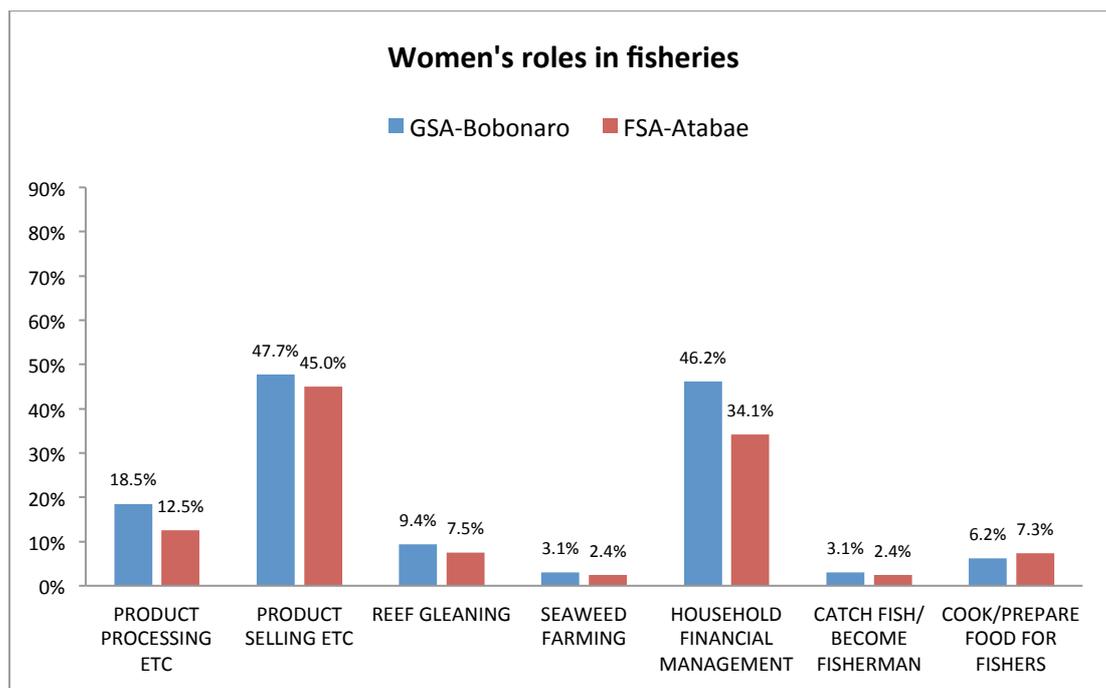


Figure 6-6. Women's roles in fisheries

Other fisheries-related activities mentioned were reef gleaning (8%) and cooking/preparing food for husbands or other members in the family (as fishers) who were going to fish.

Women play an important role in reef gleaning activities, which can be undertaken for 6-8 days per month. Gleaning involves harvesting organisms from the reef. Women should be encouraged to establish women's groups and be active in alternative livelihoods programs.

### 6.2.1.6 Conflict resolution

Only 7% of respondents in Atabae (GSA Bobonaro: 6%) mentioned the existence of any conflict in the area.

Conflicts were usually resolved through the involvement of the elderly/community leaders (25%). Other parties involved in mediation and conflict resolution included the Police (25%).

## 6.2.2 Analysis

### 6.2.2.1 The understanding of co-management concept

Co-management is poorly understood and generally interpreted as government assistance rather than a shared government/community response to managing marine resources.

### 6.2.2.2 Community groups

The District Fisheries Office promoted the establishment of fisher groups consisting of fishers willing to work in teams and to follow the rules agreed by the group. Groups can also receive training in fishing techniques, sustainable fishing practices and seafood product handling and processing.

### **6.2.2.3 Knowledge concerning policy, regulations, and traditional law**

There is a need for greater awareness raising of sustainable fisheries management aligned to customary and traditional practices where such practices are based on conservative marine resource management. The role of traditional leaders and community elders is important in reinforcing the government's role in fisheries management. This is also important in promoting co-management and a shared community response to fisheries development in Timor-Leste.

### **6.2.2.4 Women's roles**

There is an opportunity to increase the role of women in the seafood industry. Roles including financial management and product processing could be undertaken by women consistent with the need to further develop the seafood industry in Timor-Leste.

### **6.2.2.5 Conflict resolution**

There has been little conflict reported among fishers in Atabae. Occasional use of explosives, a destructive fishing method, has been resolved through mediation by the community leader and the Fisheries Office. FGD and IDI results did not detect any conflict between fishers in Timor-Leste and fishers from Indonesia especially in the bordered water areas. When communities suspect illegal fishing by people from outside Timor-Leste they usually report it to the police.

## **6.2.3 Program recommendations**

### **a. Strengthening of existing groups and establishment of appropriate community groups**

Establishment of community groups, particularly fishers's group and women's group is important to increase the capacity of respondents to collaborate for mutual advantage and increased management/organisational capability. Training and facilitation are required to improve community capability to manage their resources. Women's groups can be strengthened to improve economic capacity and to develop alternative livelihoods activities.

Lack of clearly defined objectives and target achievements are the main obstacle to group establishment. Therefore, facilitation in group and organisational management should be conducted early, before defining the groups to be established. The establishment of fishing cooperatives could improve economic efficiency and returns to fishers. A cooperative would also serve as a link to the Fisheries Office for monitoring and data collection.

### **b. Awareness raising of regulations related to marine resources management**

Continuous awareness raising of regulations on marine resources utilisation should be conducted, including fisheries protection, mangrove conservation, and sustainable fisheries management.

### **c. Revitalisation of traditional/ customary rules**

The reintroduction of TARA BANDU would be beneficial to community engagement and sustainable fisheries management.

### **d. The role of women**

The role of women in fisheries should be strengthened through training in product processing and selling. Women already play an important role in domestic household financial management; therefore, increasing their capacity in micro-finance management and micro-enterprise development will be appropriate in the effort to increase family welfare.

### 6.3 Safety at Sea

#### 6.3.1 Fact-finding results

##### 6.3.1.1 Types of problems encountered at sea

Most fishers in Atabae (63%) have encountered problems at sea. Among those all had faced bad weather and high waves, with some experiencing overturned boats (32%), boat leakage (26%), loss of direction (22%), seasickness (16%) and engine trouble (16%). Despite this, fatalities were considered uncommon with 59% of respondents stating that such accidents occurred only rarely or very rarely.

During the Portuguese era (before 1975), seven fishers were lost in heavy seas some 1-2 km from the coastline.

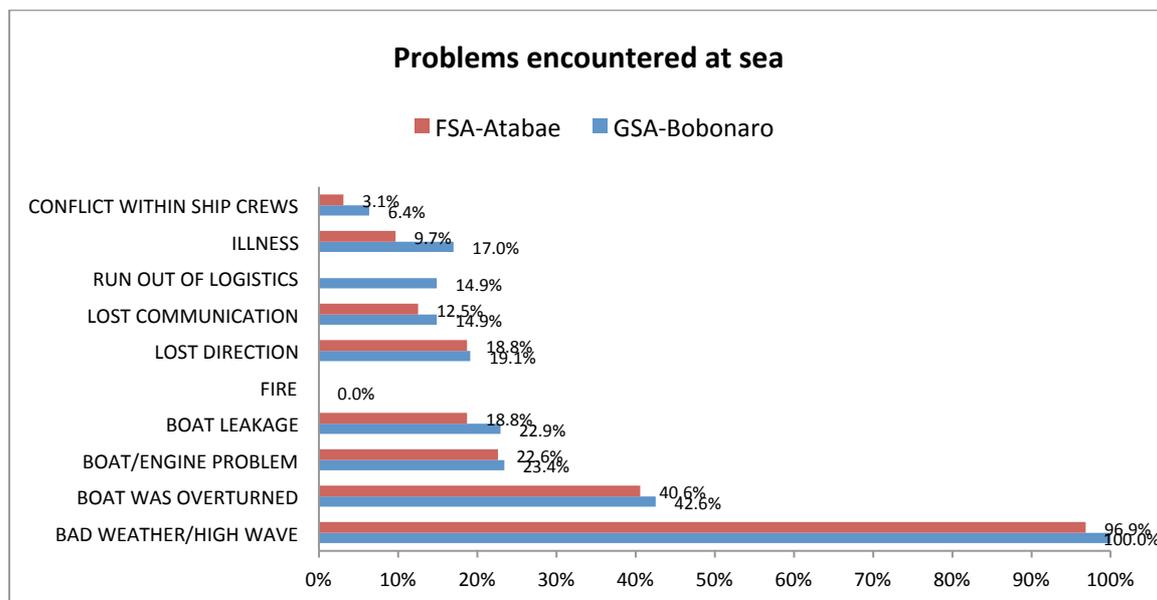


Figure 6-7. Problems encountered at sea

##### 6.3.1.2 Responding to problems

When faced with danger at sea, the main response (47%) was to look for other boats to provide assistance. Focus group discussions revealed a generally low concern for safety at sea, possibly reflecting a perception that inshore coastal fishing is safe. Fishing grounds are generally close to the shore (around 2 km from the coast or still within sight of land).

Most accidents at sea involve boat capsizing. In this situation fishers either swim to shore or right the boat and continue their fishing activities. Safety equipment was generally limited to a 5-litre empty jerry can that can be used as a flotation device.

About 65% of fishers indicated that, in an emergency, assistance was provided in time whereas 29% of fishers said help came, but too late and they had to rely on their own efforts.

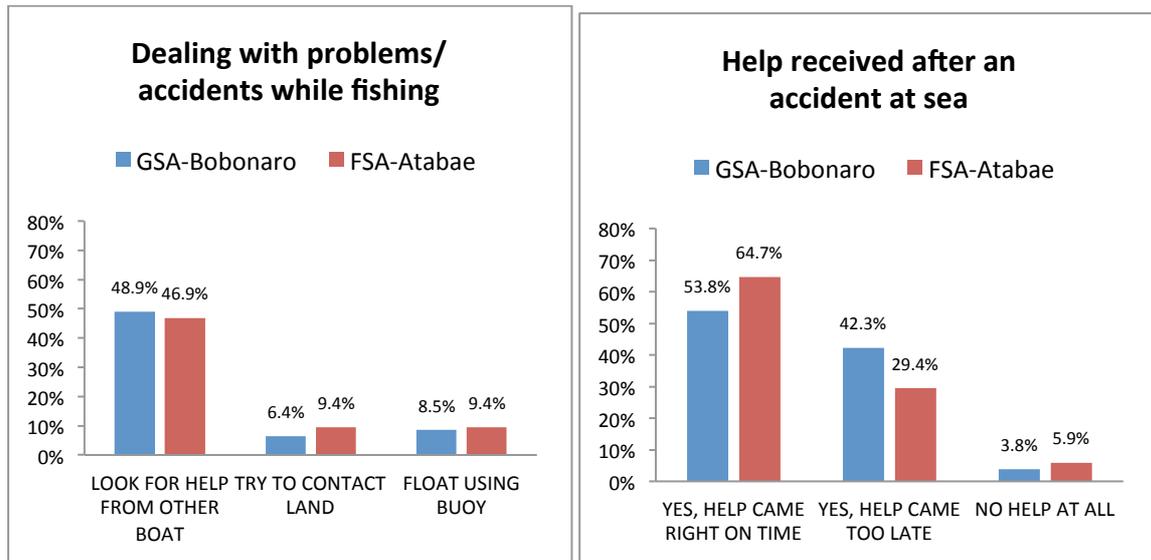


Figure 6-8. Dealing with problems at sea and how help was received

### 6.3.1.3 Impact of accidents at sea

When asked about the impacts of accidents at sea 41% considered that loss of income was the main impact, 25% responded that they became sick and 9% indicated that they suffered injury. Some 38% said that there was no impact at all from their accident at sea.

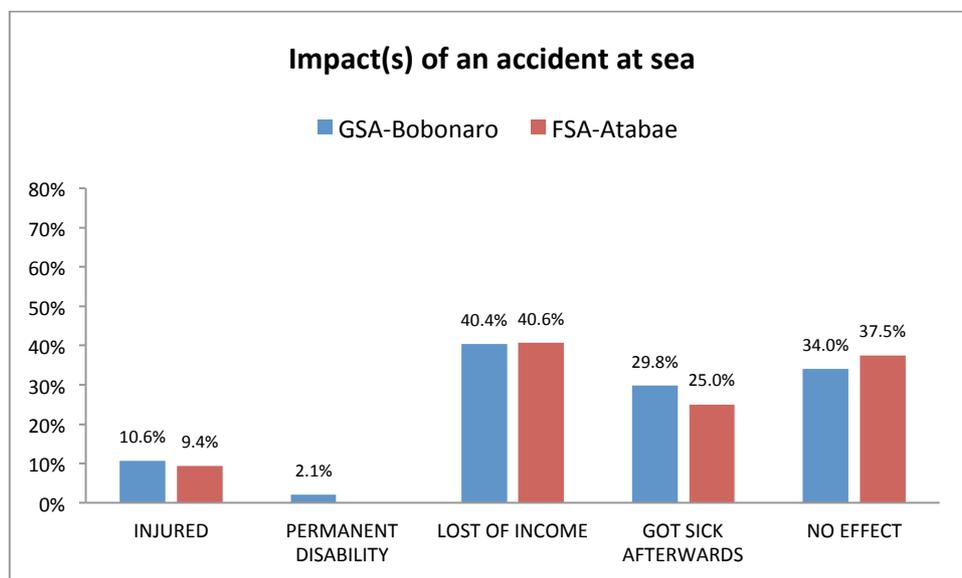


Figure 6-9. Impact(s) of an accident at sea

### 6.3.1.4 Attitude to risks at sea

Fishers in Atabae accept the risks associated with their livelihood. 73% agreed or strongly agreed that accidents at sea were a fate that was outside their control. Regarding the causes of accidents most (76%) believed that accidents were an inherent occupational risk, but 53% believed that accidents were also caused by negligence. There were mixed perceptions of whether incidents at sea were “pure accidents”: 15% strongly agreed, 30% agreed, 18% disagreed, 13% strongly disagreed and 25% did not know/had no opinion.

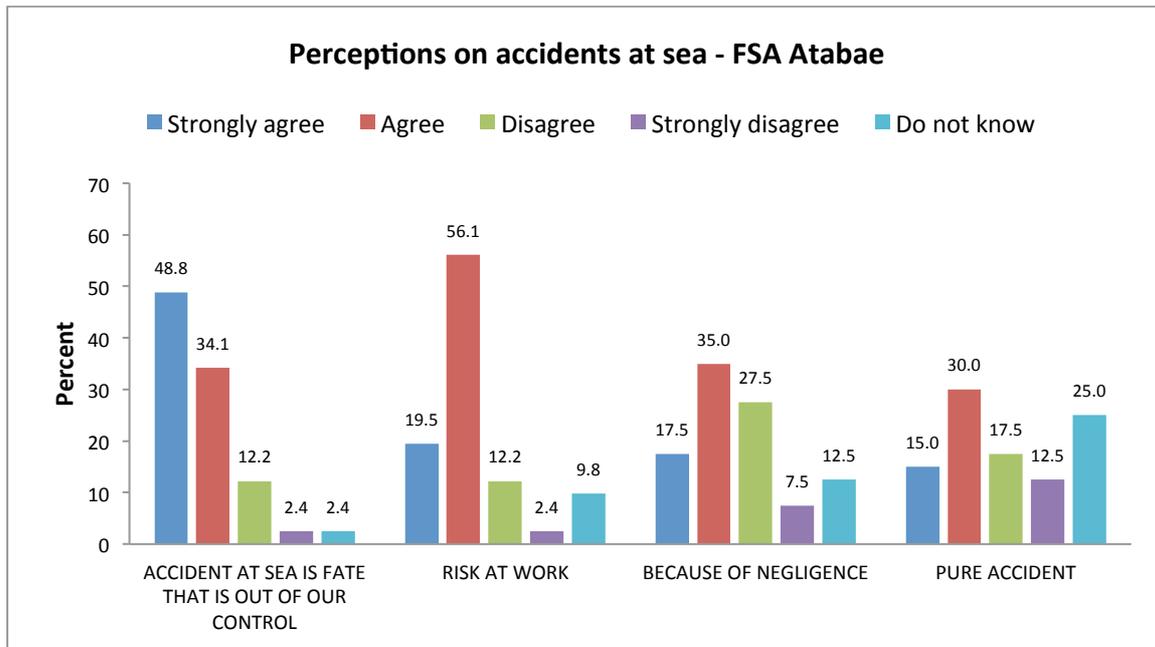


Figure 6-10. Perceptions on accidents at sea in Atabae subdistrict

### 6.3.1.5 Safety regulations, equipment and information

#### 1.1.1.1.1 Awareness of regulations

A better understanding of the concept of safety at sea is needed to ensure the practice of safe and responsible fishing. Only 22% of respondents were aware of any applicable regulations concerning Safety at Sea. Those who were aware of regulations understood these to only require them to carry safety equipment when going to sea.

#### 1.1.1.1.2 Safety equipment

When asked if they took safety equipment on board when they went fishing only 40% of the Atabae respondents said yes (32% in GSA Bobonaro). Focus group discussions revealed poor compliance to sea safety regulations in Bobonaro. Safety equipment was perceived to be expensive and unnecessary.

#### 1.1.1.1.3 Perceptions of safety equipment required on board

A flashlight (torch) was considered to be essential safety equipment by many (29% of Atabae respondents) especially for traditional divers/fishers and those fishing at night time who also use light to attract fish.

Also considered by many to be essential items to be carried when fishing were lifejackets (25%) and floats (up to 80%). Floats included life buoys (30%) including 20-litre aqua bottles and tyres, and 5-litre jerry cans.

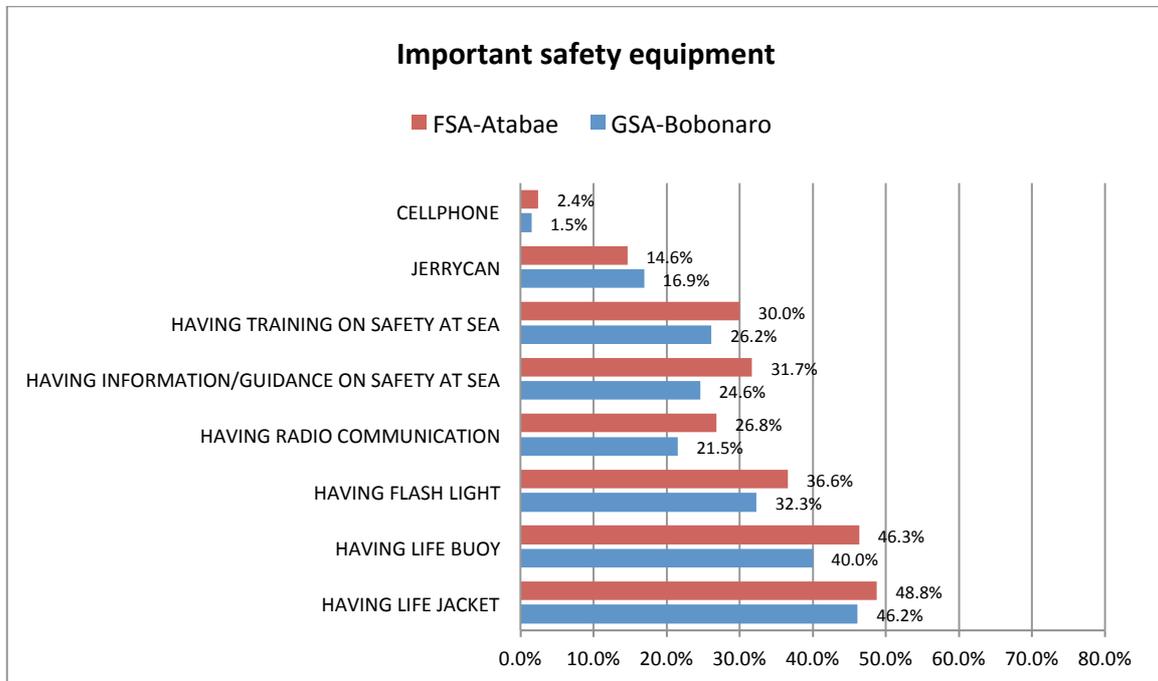


Figure 6-11. Important safety equipment

### 6.3.1.6 Information on safety at sea

Most respondents (78% in Atabae, 84% in Bobonaro) were unaware of any safety at sea regulation. Of those that were aware of some safety information (i.e. 22% in Atabae, 12% in Baucau), the Fisheries Office (58%) was the main source followed by community leaders (33%), and the Marine Police (17%).

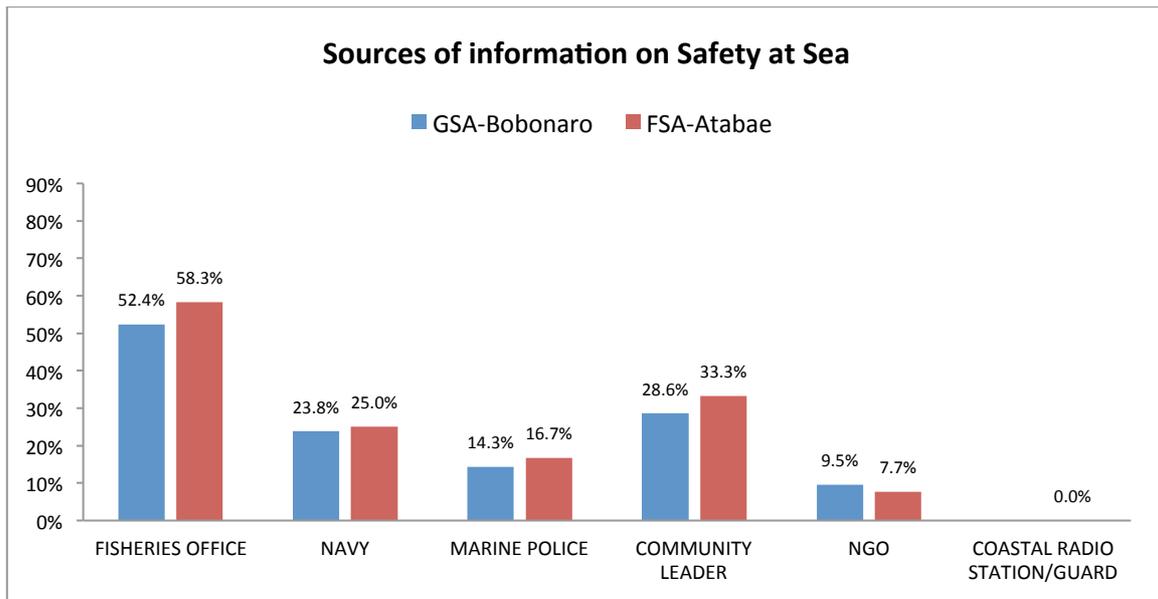


Figure 6-12. Sources of information on Safety at Sea

### 6.3.2 Analysis

#### 6.3.2.1 Dealing with problems encountered at sea

Although the respondents were aware of problems encountered at sea, they considered such problems insignificant and part of life at sea. Moreover, as accidents at sea were rarely fatal, and as fishing was undertaken close to shore, precautions to prevent accidents at sea were negligible. Safety equipment taken on board remains very limited. Given the perception of low risk, safety equipment was perceived to be an unnecessary expense.

#### 6.3.2.2 Socialisation and implementation of safety regulations

There is a strong need to raise awareness of safety at sea. Even though major accidents are infrequent, safety equipment can further reduce risk and it need not be expensive. There is a role for targeted training to raise awareness and to increase the use of adequate safety equipment.

### 6.3.3 Program recommendations

Knowledge on safety at sea is important, particularly when there is a plan to accelerate fishery sector development in Timor-Leste. Fishers should be made aware that proper safety equipment is important and the Fisheries Office should intensify their interaction with fisher groups to provide adequate information on fishing related activities and safety as part of responsible fishery activities.

## 6.4 Post-Harvest Fisheries

### 6.4.1 Fact-finding results

#### 6.4.1.1 Use of ice for preserving catch

The use of ice for fish preservation was low in Atabae (12.2%) and Bobonaro (9.2%). The low utilization of ice for preserving fish was due to the lack of an ice producer in Bobonaro. Ice production in Bobonaro was limited to small-scale household production as there is no industrial scale production. Ice for fisheries use must be sourced from Dili.

#### 6.4.1.2 Pre-sale fish processing

Pre-sale fish processing was low in Atabae. Most respondents (76%) reported selling all their catch fresh without any processing. Only 22% of respondents stated that a limited amount of catch processing was conducted before sale.

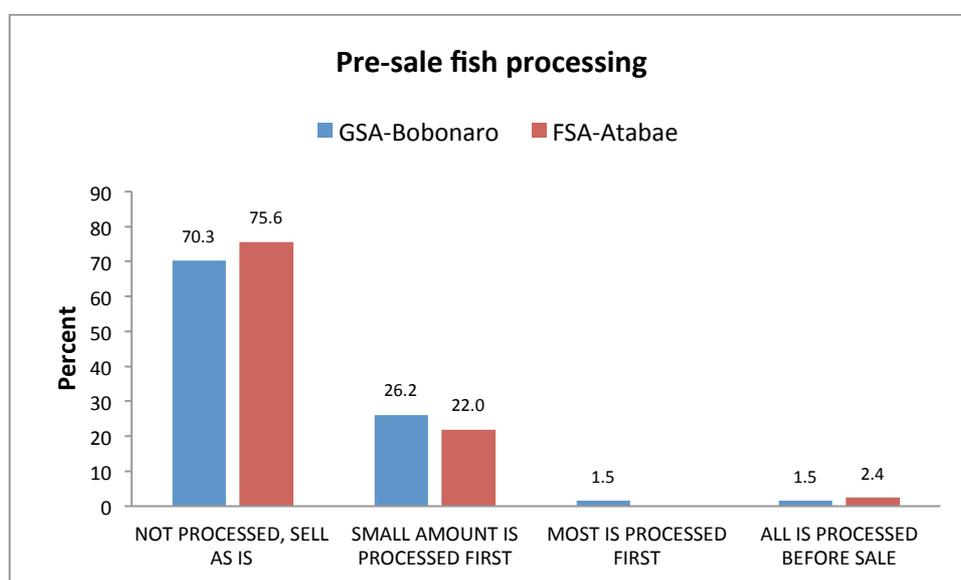


Figure 6-13. Pre-sale fish processing

Dried salted fish (89%) was by far the most common processed fish product produced in Atabae.

Table 6-1. Processed fish products

What do you make from it?	GSA Bobonaro	FSA Atabae
Salted fish	89.5	88.9
Smoked fish	0	0
Mashed and salted	0	0

### 6.4.1.3 Source of knowledge and skills on post-harvest processing

Family/traditional knowledge (77.8%) was the major source of knowledge and skills on post-harvest processing in FSA Atabae. The technology was also learned from neighbours/other fishers (10%) and organized training (10%). No fishers obtained their knowledge and skill from community groups.

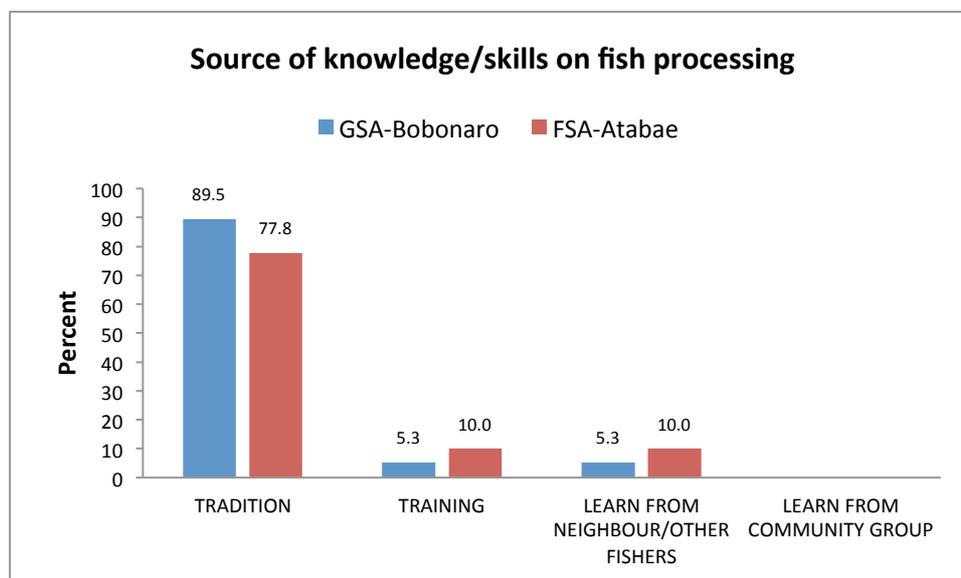


Figure 6-14. Source of knowledge or skills on fish processing

### 6.4.1.4 Need for post-harvest processing knowledge and skills

The need for additional post-harvest skills and knowledge was widely agreed (87.5% in Atabae and 83.3% in Bobonaro). The priorities identified by Atabae fishers were:

- Training related to quality improvement of processed product (85.7%).
- Additional information on fish processing knowledge (57.1%).
- Skills related to processed product diversification (71.4%).

The need for training to increase the quality of product was higher (100%) in the GSA Bobonaro.

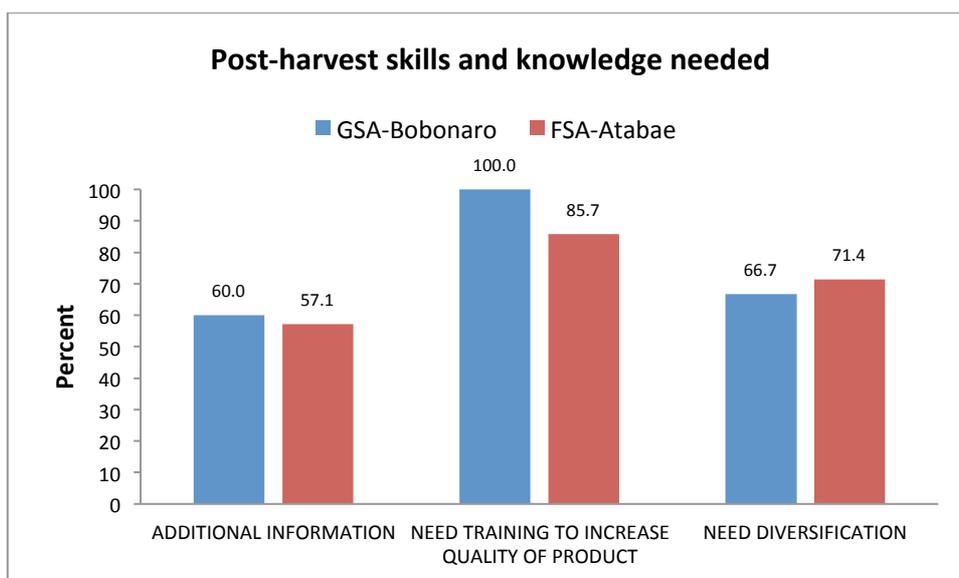


Figure 6-15. Post-harvest skills and knowledge needed

#### 6.4.1.5 Ownership of fish processing facilities and equipment

Only 14.3% of FSA Atabae fishers considered their processing facilities and equipment to be adequate. On further questioning, half indicated that more modern equipment was needed whereas access to good drying facilities and knives/cutters was an issue for 16.7% of respondents.

Table 6-2. Adequacy of processing equipment and facilities

Do you think you have adequate equipment to process fish/sea product?	GSA Bobonaro (%)	FSA Atabae (%)
Yes	17.6	14.3
No	82.4	85.7
What equipment/facility do you need?		
Modern processing equipment	46.2	50.0
Knife/cutter	21.4	16.7
Drying facility	35.7	16.7

#### 6.4.1.6 Selling locations for processed aquatic products

The means and locations for the sale of processed aquatic products included:

- Selling at the roadside (9.8%);
- Selling in the local market and to buyers on the beach (7.5%); and,
- Direct selling to consumers and local vendors (1.5%).

The low number of respondents answering this question was indicative of the fact that most fishers sell their catch fresh, and only limited quantities of aquatic products were processed at all.

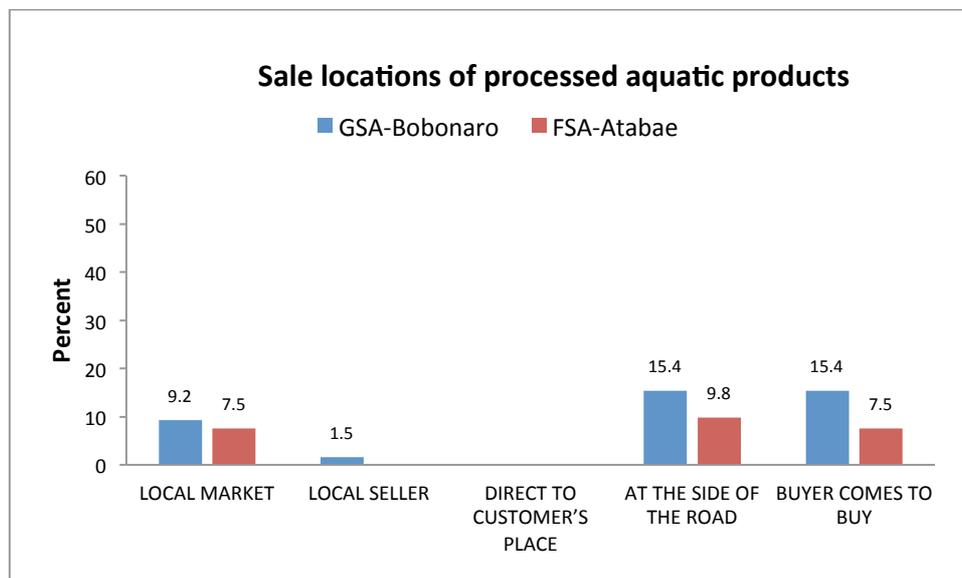


Figure 6-16. Sale locations of processed aquatic products

The catch was usually sold directly to collecting traders (first hand) in Aldeia Biacou (local people). There were about ten local residents who act as traders/merchants. The relationships between fishers and fish traders were regular commercial relationships. The trader sells the catch on the fisher's behalf for an agreed price and volume, and upon the trader's return from Dili the trader pays the fisher. The price of fish is based on the condition of the catch and the perceived market demand in Dili by the trader. Under conditions of abundant catches and over-supply to Dili city prices are generally lower.

#### 6.4.1.7 Problems when selling processed fish products

Poor quality of processed products was identified as the greatest problem when selling processed fish products (50%). Other significant problems included access to markets (33%) and poor packaging of fish and/or processed products (33%).

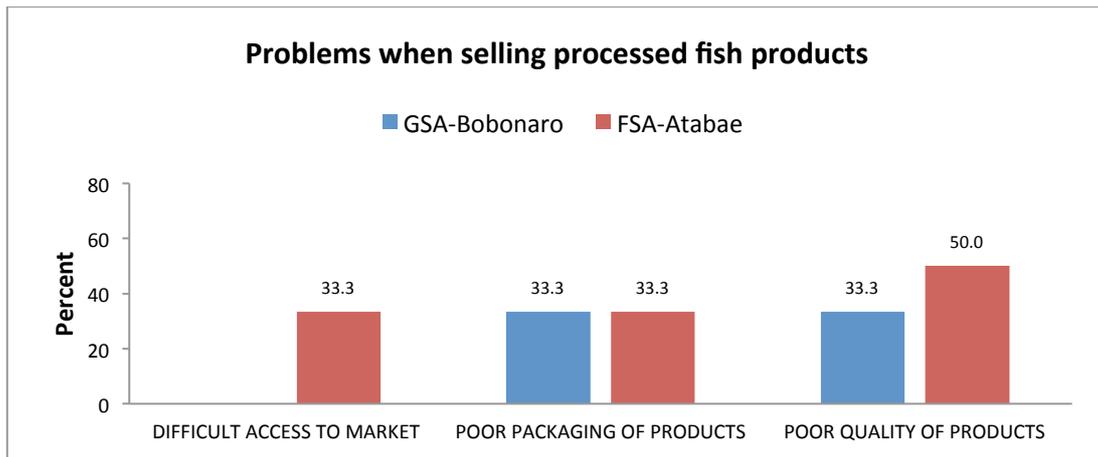


Figure 6-17. Problems when selling processed fish products

### 6.4.2 Analysis

The availability of ice remote from Dili was a major factor influencing catch preservation and the traditional practice of selling unprocessed catch direct to consumers. Basic preservation (salting) was practiced but processing catch into other fish products was not generally practiced and affects the quality of (and therefore the price paid for) fish.

Marketing channels were limited. In Subalesu there were no collectors, or even middle-traders, who can buy large volumes of catch. In addition there was no fish landing or auction site. The lack of fish landing or auction facilities and the lack of information about market demand results in the inability of the fishers to determine product price. Therefore, fishers tend to sell their catch quickly at a low price as the lack of preservation facilities prevents storage.

### 6.4.3 Recommendations

a. Training in seafood product handling and development is needed to improve storage opportunities and to regulate flow to markets. Training on cold chain management and the development of ice making facilities remote from Dili is also needed to improve product handling, product quality and to increase revenue from the fishery.

b. The establishment of fish landing and auction facilities and other formal mechanisms for aquatic product sales will improve the connectivity of fishers to markets and improve economic returns.

## 6.5 Livelihoods Enhancement and Diversification

### 6.5.1 Fact-finding results

#### 6.5.1.1 Frequency of sea going

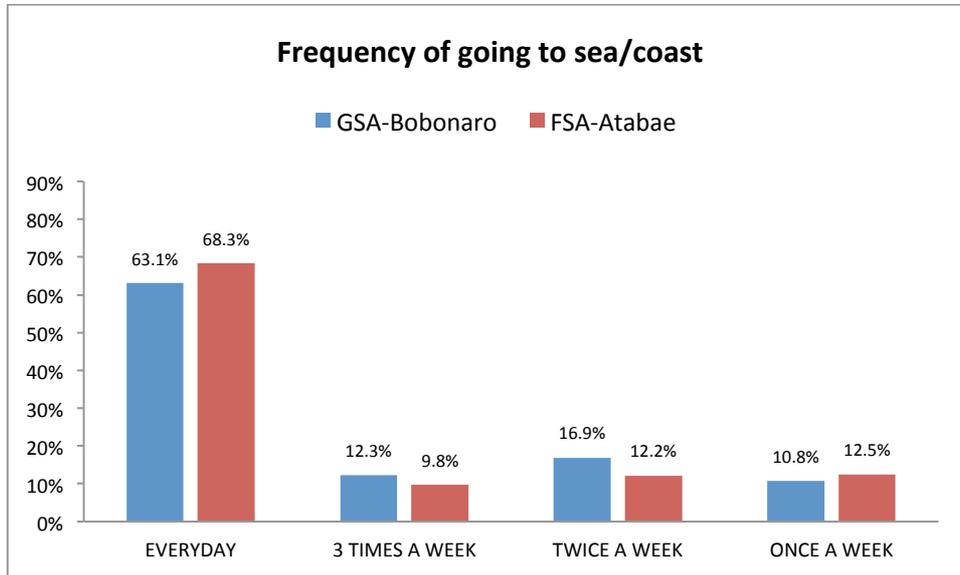


Figure 6-18. Frequency of going to sea in Bobonaro district and Atabae subdistrict

Fishing frequency varies depending on the season and other priorities. Most fishers fish every day (68% in Atabae). Other respondents reported going to sea only once week (13%), twice a week (12%) and three times a week (10%).

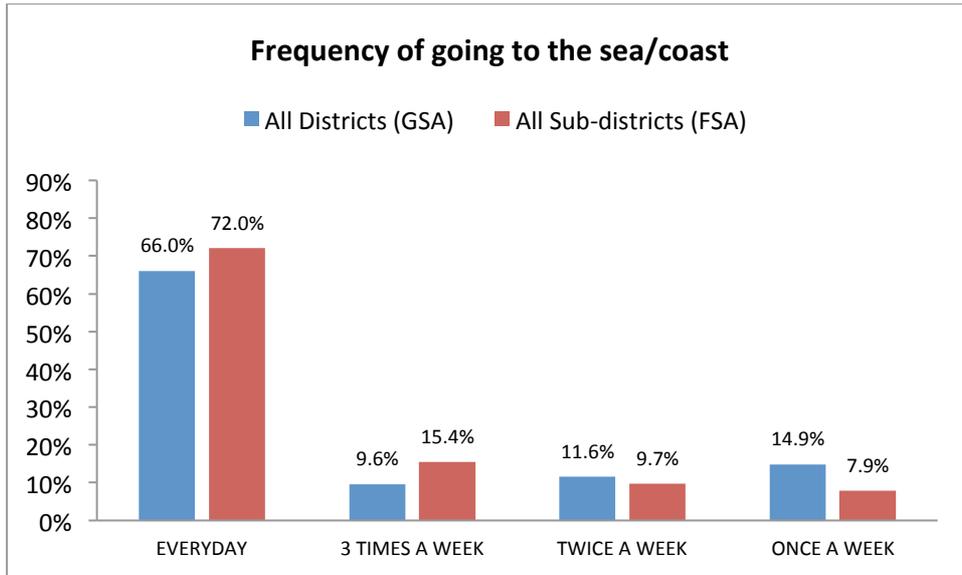


Figure 6-19. Average frequency of going to sea in all 5 districts (GSA) and in all 5 subdistricts (FSA)

The daily-frequency of fishers in Atabae going to the sea (68%) was slightly lower than that of the 5 subdistricts average (72%). However, those fishing twice-a-week (12%) and once-a-week (13%) were higher than the averages which are 10% and 8% respectively.

### 6.5.1.2 Duration of sea fishing trips

In general, all fishers in Atabae were day-fishers and spend less than 12 hours at sea per fishing trip. The largest group (66%) fish for periods of less than 6 hours. However, some (29%) spend 12 hours per fishing trip at sea. Relatively small numbers of fishers (2%) conduct multiple-day trips, but fishers who spend more than 12 hours at sea were rare.

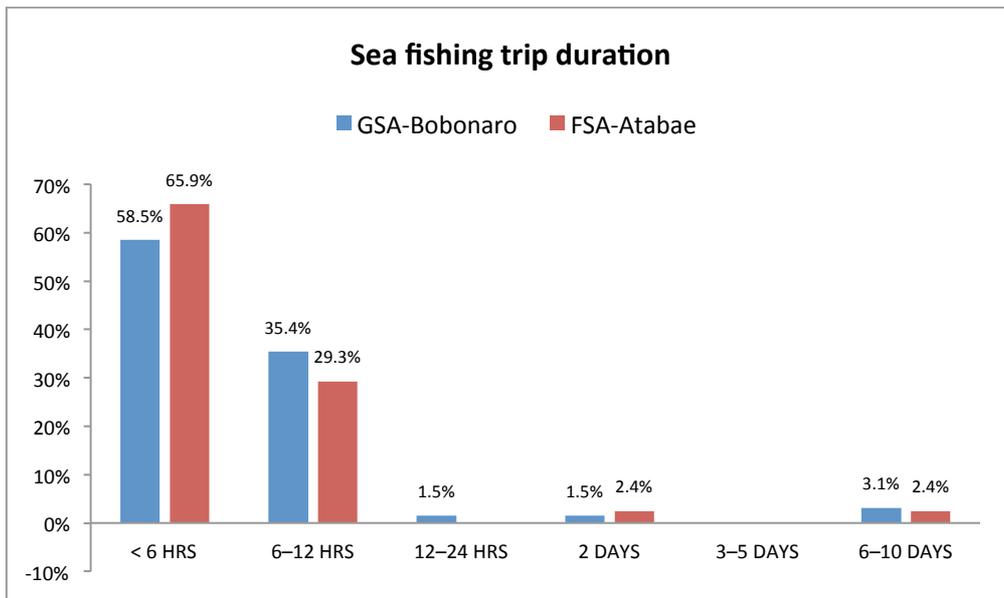


Figure 6-20. Sea fishing trip duration

### 6.5.1.3 Monthly at sea activity

Atabae fishers fish all year round, but the number of fishers operating varies with seasonal weather conditions. More than 50% of the total number of fishers in Atabae go fishing every month, except February when only 40% of the fishers go to sea.

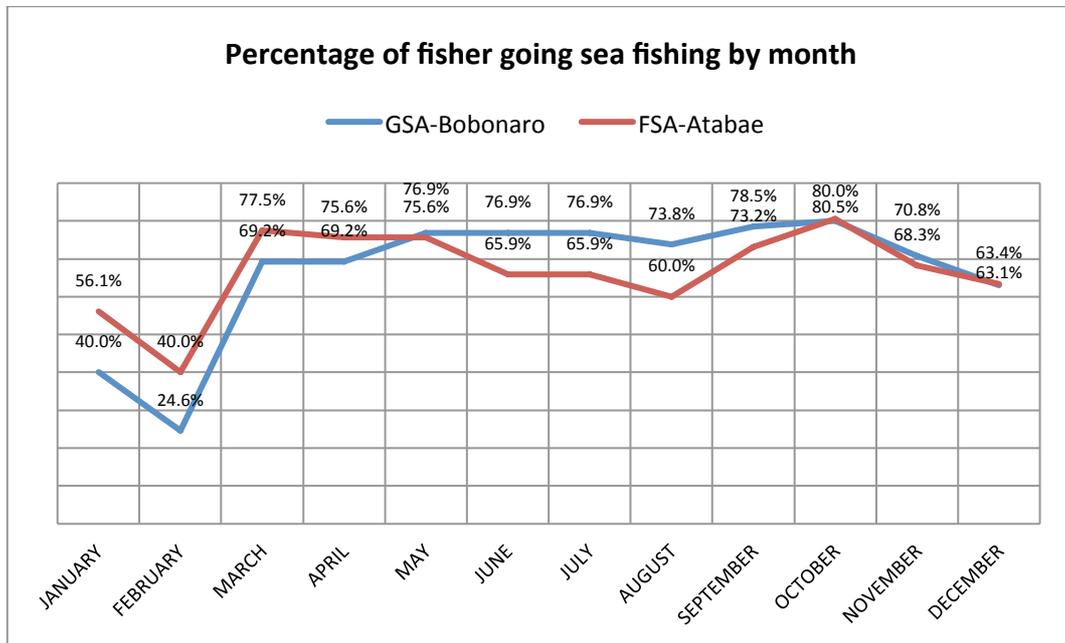


Figure 6-21. Percentage of fishers going sea fishing per month

Unlike other districts, when the GSA and FSA are compared to each other, similar proportions of fishers from Bobonaro district and Atabae subdistrict go to sea throughout the year.

### 6.5.1.4 Main fishing grounds

Three discrete types of fishing area were described by fishers namely i) inshore along the coast, ii) in deep sea areas and iii) on coral reefs. Atabae fishers mostly prefer to fish along the coast (71% of respondents) and in reef areas (73%). However, fishers also operate in the deep sea (51%).

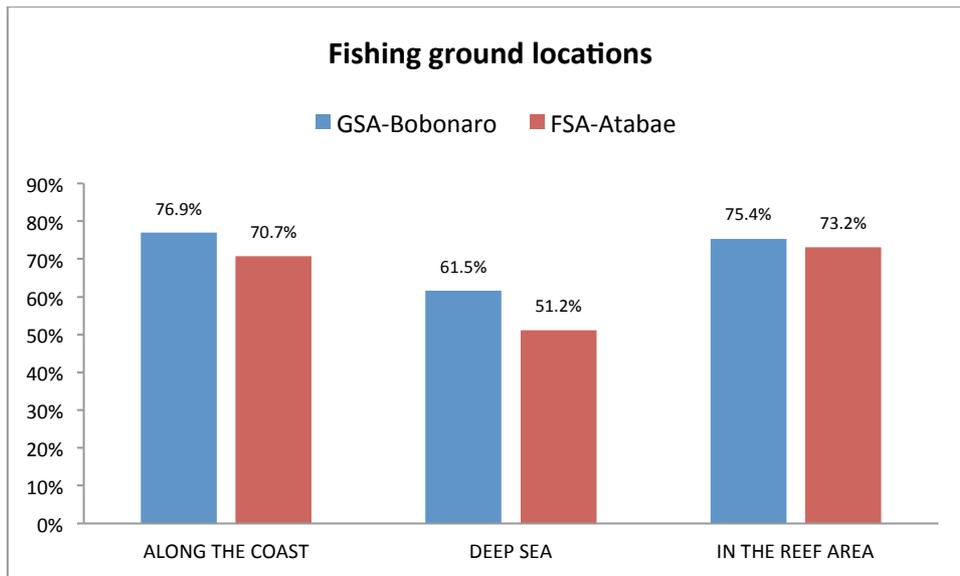


Figure 6-22. Fishing ground locations

### 6.5.1.5 Boat and fishing gear

**1. Boat Type and Fishing Gear.** The type of boats used by fishers in Atabae include: large boats, motorized wooden boats, boats with outboard engines, non-motorized jugung or wooden boats, and wooden boats with sails. Most respondents (59%) use non-motorized wooden boats (rowing boat). Others used large fishing boats (13%), motorized wooden boats (22%) and outboard engine boats (32%). Wooden sail boat were uncommon (3%).

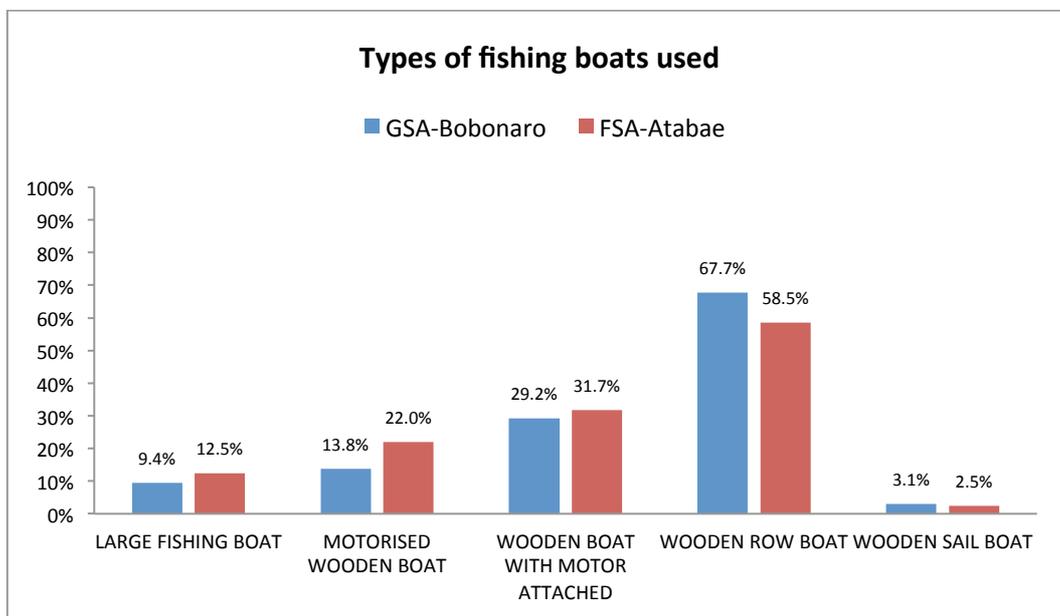


Figure 6-23. Types of fishing boats used

Hook and line (73%) and gill nets (55%) were the most common fishing gears used in Atabae. Note that a fisher may use more than one type of fishing gear. Atabae fishers do not utilize 'rumpon', a fish aggregating device (FAD), but use purse seine nets instead (12%).

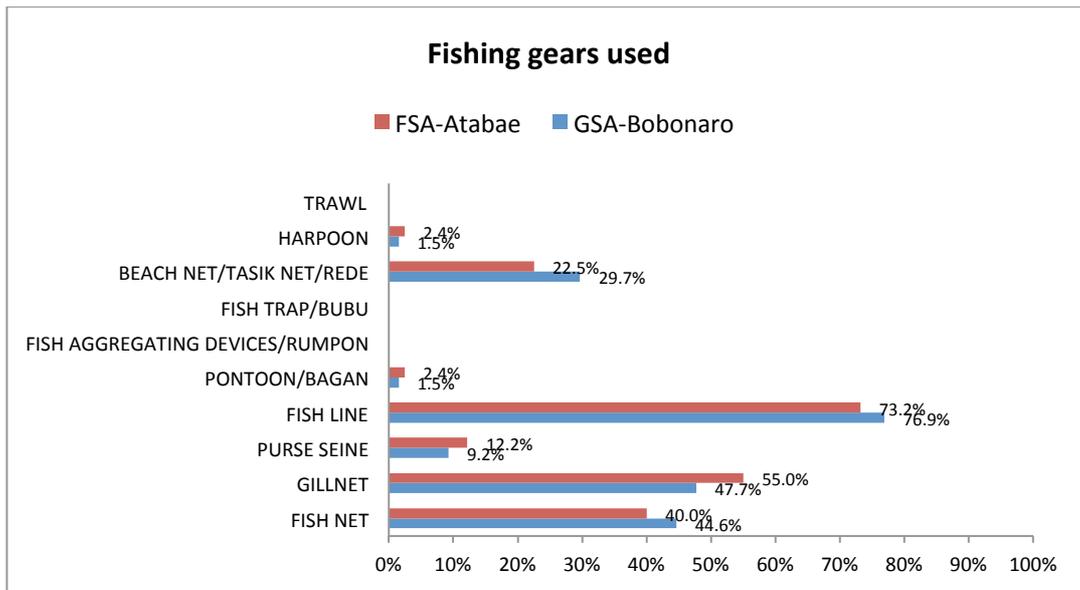


Figure 6-24. Fishing gears used

**2. Ownership:** Ownership of fishing boats falls into four categories: i) self/family owned, ii) profit sharing, iii) hired, and iv) other. Most fishing boats in Atabae were self/family owned (83%).

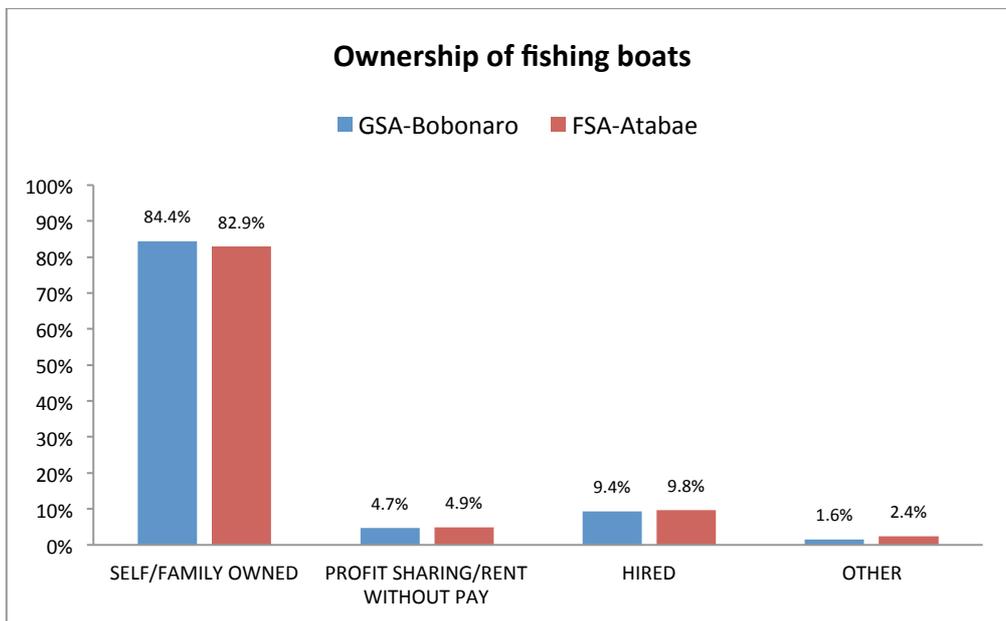


Figure 6-25. Ownership of fishing boats

**3. Accessing a Fishing Boat.** Fishing boats can be acquired by means of purchase, family gift or inheritance, government/NGO aid, or borrowed from friends. Most Atabae fishers (84%) have purchased their own fishing boat. Only a small percentage of fishers (11%) had obtained their boat from government aid or with NGO support.

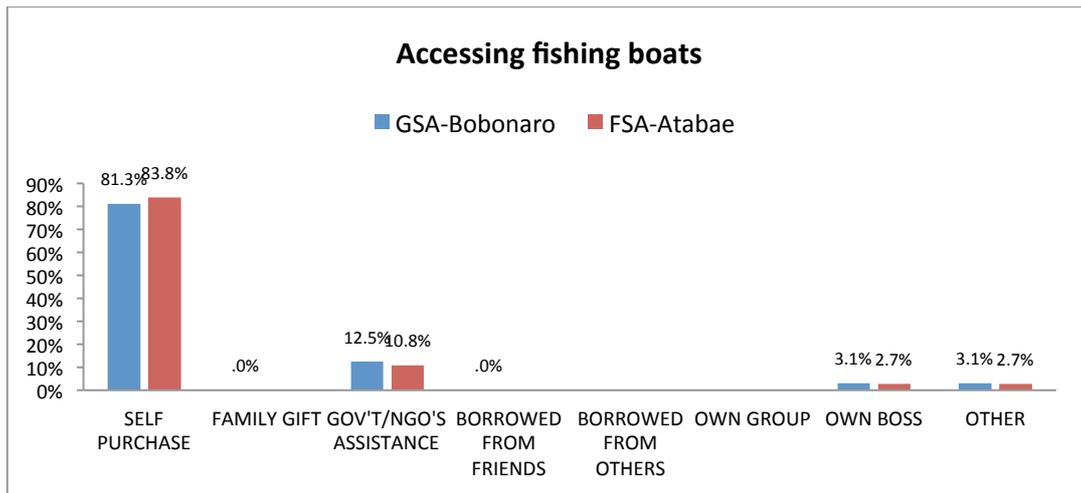


Figure 6-26. Accessing fishing boats

### 6.5.1.6 Working systems for fishing

Fishers in Atabae either fish in groups (70%) or individually (30%). For those fishing in groups, the number of group members was dependent on boat size. Small non-motorized boats were usually operated by groups of 2-3 fishers. All group operated fishing boats in Atabae were operated by 2-5 members. No respondents worked on boats with more than 5 members.

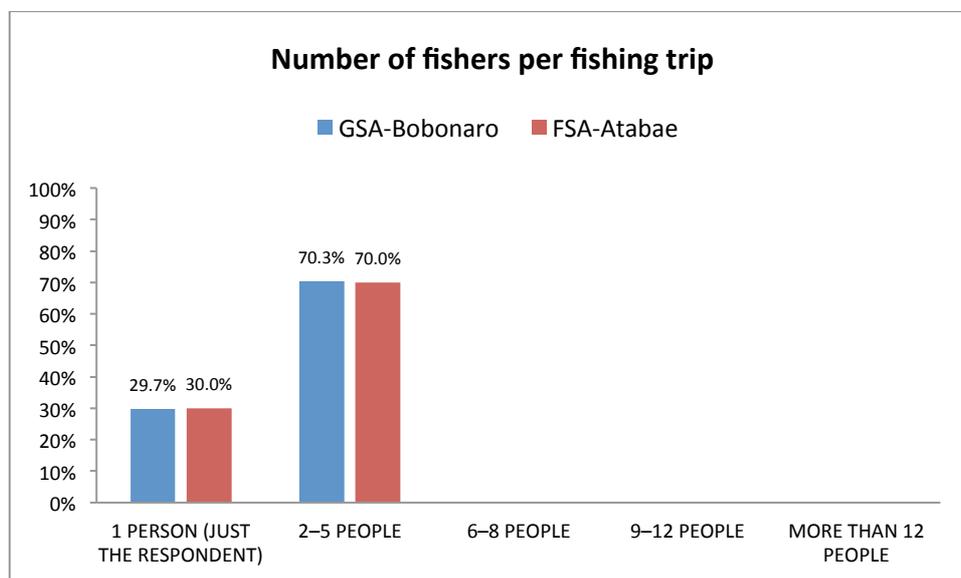


Figure 6-27. Number of people per fishing trip

In-depth interviews with several fishers and with staff of the Fisheries Office, revealed that fishers alternated between fishing and taking their catch to the market place. From a group of 6-7 members, half of the members will go to sea to fish at one time. On their return the other half of the group will take over and sail the boat with catch to markets in other towns.

### 6.5.1.7 Fish catch

**1. Variety of Catch.** The catch in the Atabae area includes fish, shrimp/prawns, crabs, squid, seaweed and oysters/clams. However, fish are targeted by most of the respondents (98%) together with shrimp (27% of respondents), crab (17%) and squid (20%). Catches of oysters and seaweed are relatively uncommon (2%).

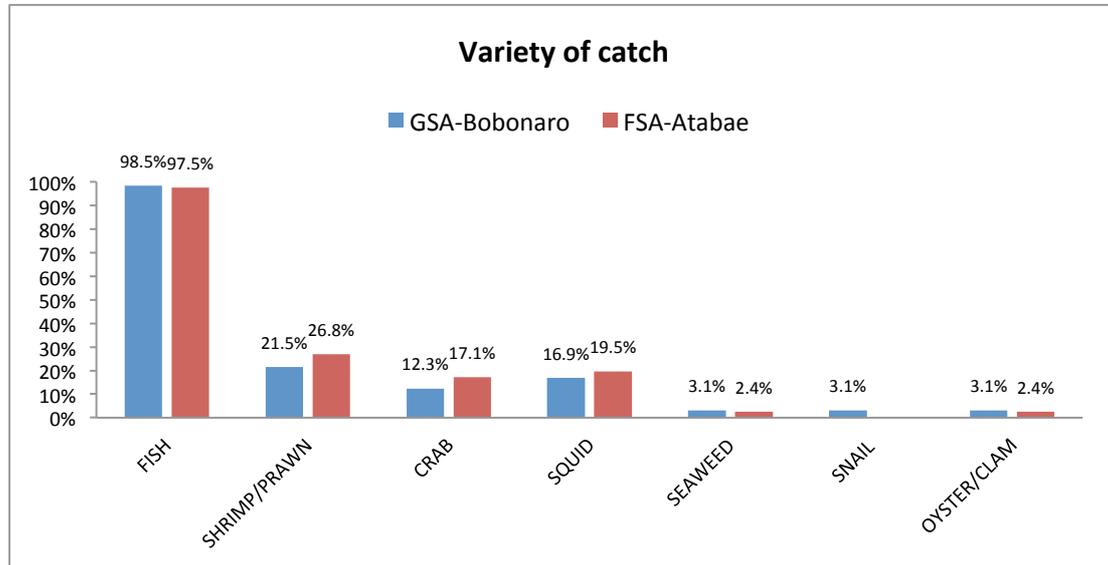


Figure 6-28. Variety of catch

**2. Variety of Fish Species.** Of fish targeted, species include ‘sardina’/sardine, ‘tongkol’/tuna, ‘manu’/flying fish, ‘kakap’/snapper, ‘kombong’/mackerel and ‘daun’/long tom. The frequency data below indicate the relative abundance of fish species in Atabae.

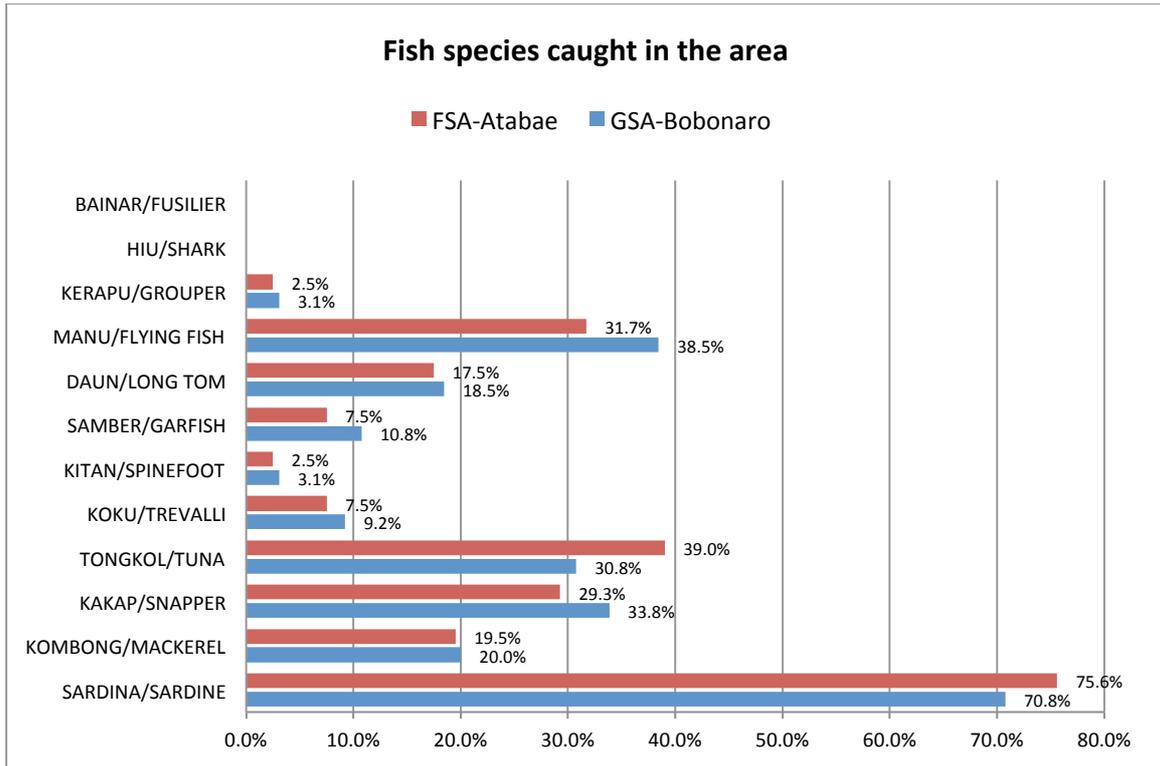


Figure 6-29. Fish species caught in the area

### 6.5.1.8 Monthly average income

Most respondents (88%) reported that they earned monthly incomes of between \$100-\$499. Few fishers make more than \$500 a month (4%). Fishers who earn less than \$100 a month were also uncommon (7%), a figure smaller than the average of all five subdistricts (11%).

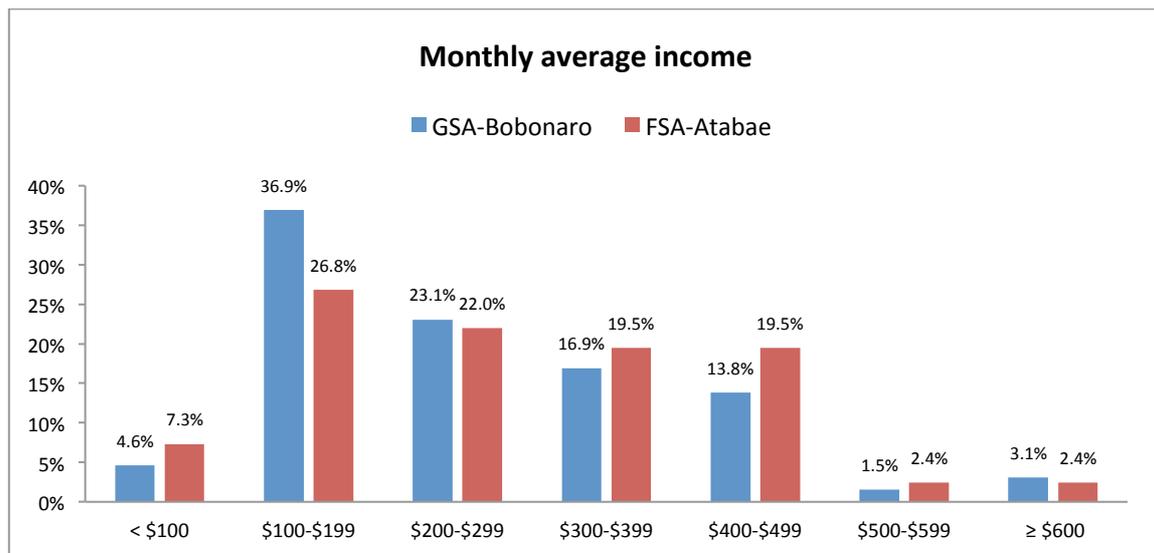


Figure 6-30. Monthly average income

### 6.5.1.9 Additional income

Most respondents (77%) have no any additional work and rely solely on fishing. Those respondents with additional work (i.e. other than fishing) (23%) reported activities including: fisher/peskador (44%), farming (30%), collecting fish/marine biota during low tide (22%), labour (10%), animal breeder (11%), kiosk (10%) and building worker (10%).

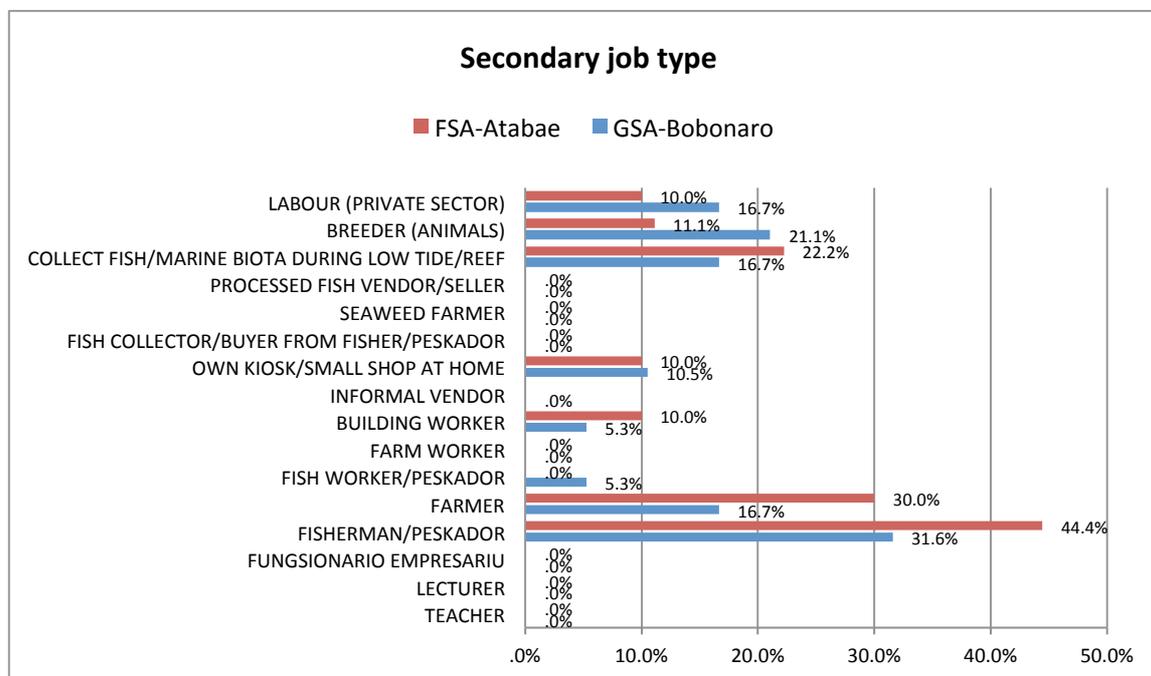


Figure 6-31. Secondary job type

## 6.5.2 Analysis

### 6.5.2.1 Fishing activity and target species

Most fishers undertake day trips in their own boats and used hook-and-line or hand nets. Fish were the main type of targeted catch, with sardines the most common species.

### 6.5.2.2 Fishing system and the role of women and children

The dominant working system for fishers was to fish in a group. Each fishing boat, depending on its size, was operated by a group of 2 to 5 fishers. Each group had a group leader, who was the boat owner. Group members were commonly family of the nearest neighbours. Group members were not paid, but were given a share from the catch/profit.

The role of women and children was considered primarily as support to the husband's fishing activities, however women were involved in a limited amount of processing and gleaning at low tides.

### 6.5.2.3 Alternative livelihoods

About a quarter of fishers had additional livelihoods to supplement their incomes.

### 6.5.3 Program recommendations

To develop fishers' livelihoods the following steps are recommended:

#### a. Boat procurement

Fishing boats and equipment are rudimentary. Investment in boats and fishing gear could improve catch rates and the quality of fish targeted to market demand. Micro-finance or micro-credit schemes would help with procurement of boats and gears perhaps through cooperative structures.

#### b. Improvement of fishers capability

Training in fishing techniques (related to improved boat and gear acquisition) could improve returns from fishing and thus, employment opportunities for coastal communities.

## 6.6 Micro-finance

### 6.6.1 Fact-finding results

#### 6.6.1.1 Community knowledge concerning finance institutions

18% of respondents had no knowledge concerning finance institutions, a low proportion compared with the average of all 5 surveyed subdistricts. Between 12% and 40% of respondents knew of cooperatives, NGOs and other micro-finance institutions. The best-known finance institution was Moris Rasik (40%).

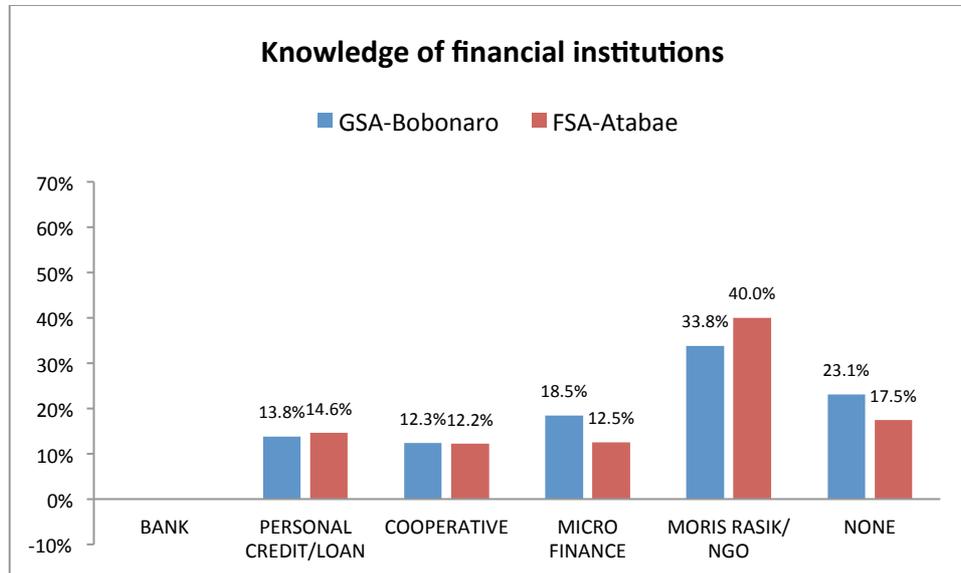


Figure 6-32. Knowledge of existing financial institutions

From all surveyed respondents, 15% in Atabae subdistrict and 22% in Bobonaro district had experience in utilising financial services.

#### 6.6.1.2 Respondent knowledge of micro-credit assistance in their area

27% of Atabae residents had some knowledge of micro-credit assistance, which was the highest of all the surveyed districts and subdistricts.

Among those who indicated knowledge of micro-credit services, most were familiar with Moris Rasik (64%).

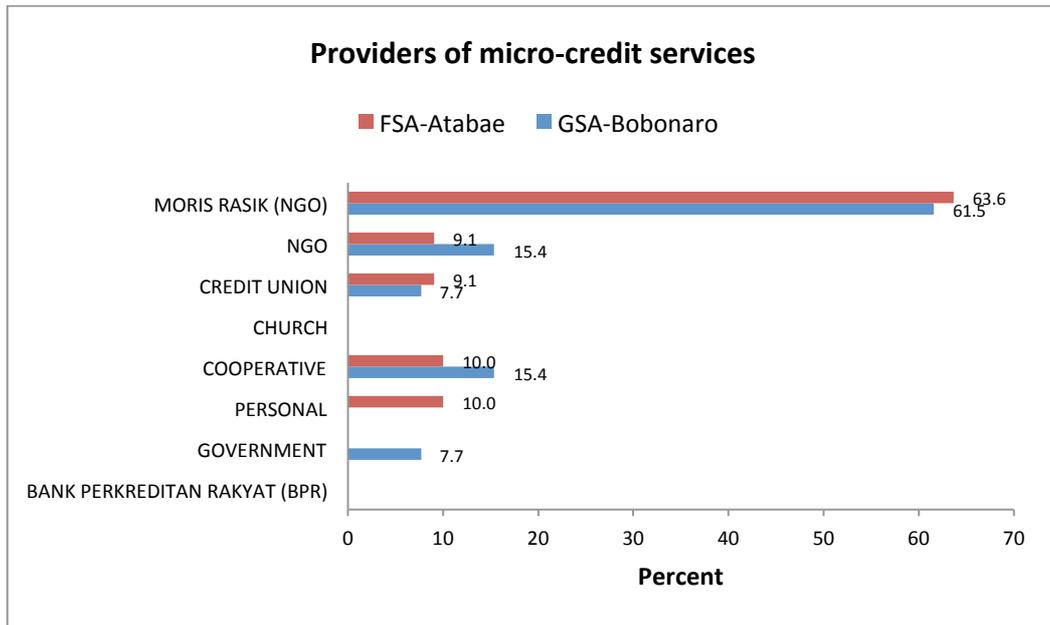


Figure 6-33. Providers of micro-credit services

### 6.6.1.3 Experience of using financial institution services

The very limited number of micro-finance institutions and micro-credit assistance sources in the survey area was reflected by the small number of respondents who have received financial assistance or micro-credit loans. Only 15% of respondents in Atabae and 22% of respondents in Bobonaro acknowledged having used financial institution services. Of those respondents 17% said that they used micro-finance services with most (83%) using the services of Moris Rasik. Some 17% of respondents had used services from cooperatives and another 17% of respondents had used personal credits/loans.

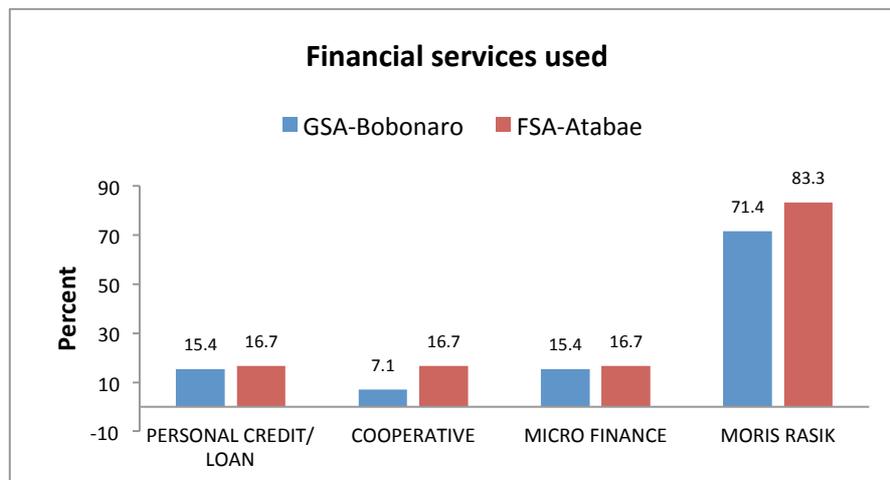


Figure 6-34. Financial services used

**Story of Mr. Agosto from aldeia Biacou, Atabae about using the micro-credit service of the NGO, Moris Rasik**

In 2004, Mr. Agosto borrowed \$100 through his wife, as a loan from Moris Rasik, as their loans are only given to women. Women are regarded as more responsible borrowers and are more reliable with repayments. The loan did not require collateral and relied on the trust of the Moris Rasik field officers (who were Biacou residents as well). The loan, for consumption purposes (home improvement) was paid back on time with income from fishing activities. This was followed by a second loan, again with the wife as the borrower, for \$200 in 2006. This loan was also repaid on time. In 2008, having gained the trust of Moris Rasik they borrowed \$1,000, which was settled in 2010. The loan interest is about 1.5% per month. This last loan (\$1,000) was used to buy a motorized ketinting and seine nets for \$300 and the remainder was used to repair their house. Weekly installments of \$16 repaid the loan within one and a half years.

When asked why they used credit services, half said that they used the finance for working capital and the remainder used the services as capital to cover fishing equipment procurement.

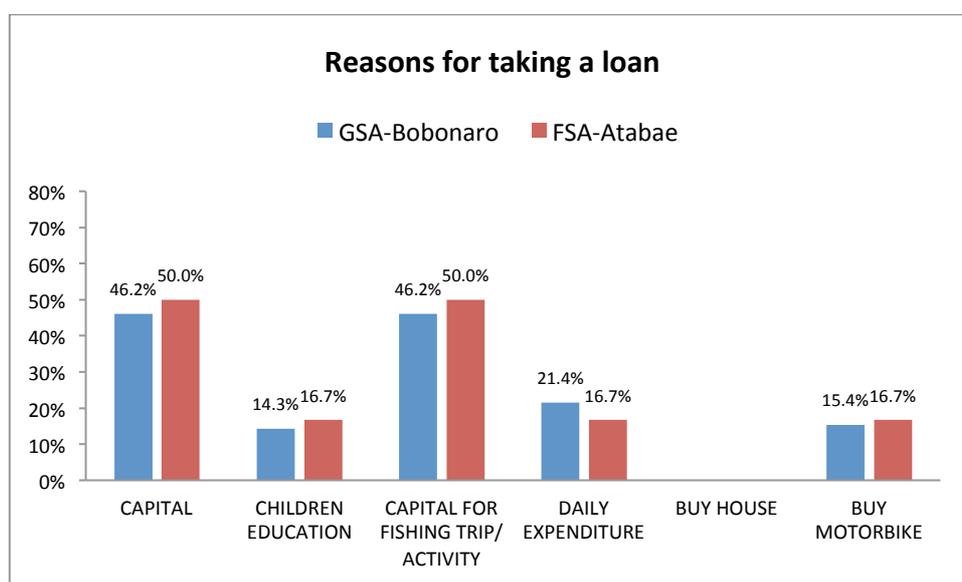


Figure 6-35. Reasons for taking a loan

Respondents were unanimous in their opinion that women were the principal users of micro-finance services. Men were perceived not to use financial services.

**6.6.1.4 Reasons for not borrowing from, and not saving money with, financial service institutions**

**Not borrowing:** The general perception was that getting loans from financial institutions was difficult and the interest rate was high. Most respondents had never been in debt and were afraid of being unable to repay a loan. Under these circumstances most preferred to borrow money from other fishers or from their relatives.

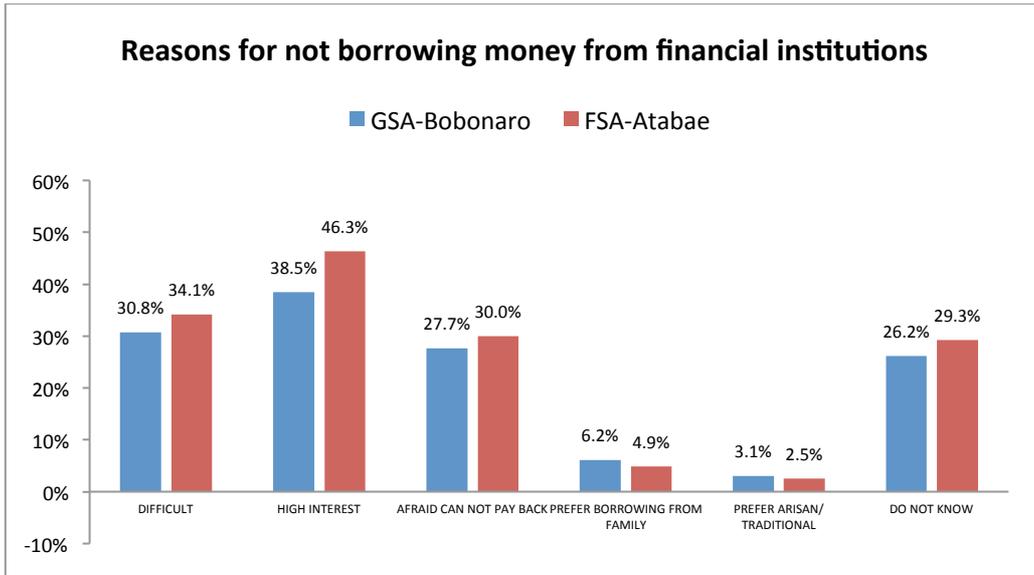


Figure 6-36. Reasons for not borrowing money from financial institutions

**Not saving:** The main reason respondents gave for not saving money with financial institutions was the lack of income/funds to save (50%). Others considered the interest rate too low to justify the effort (23%). A similar number did not answer the question (24%).

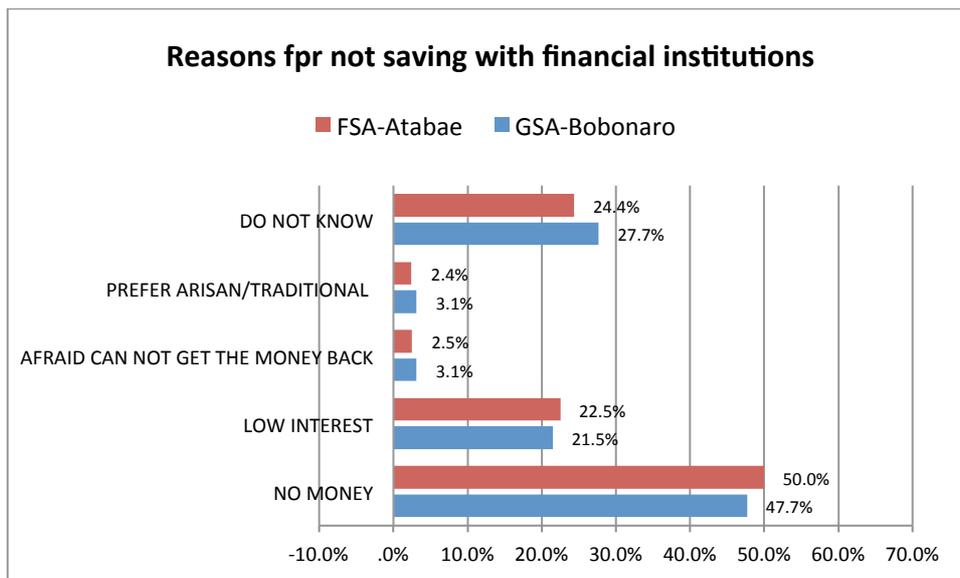


Figure 6-37. Reasons for not saving money with financial institutions

### 6.6.1.5 Respondents' ability to make savings

Most respondents reported making regular savings but preferred to keep their savings in the form of livestock, which they can easily sell if cash was needed for daily expenses, including for their children's education. As was common in the agricultural sector in all 5 districts, keeping livestock was also important to supply the needs of the community for traditional feast ceremonies.

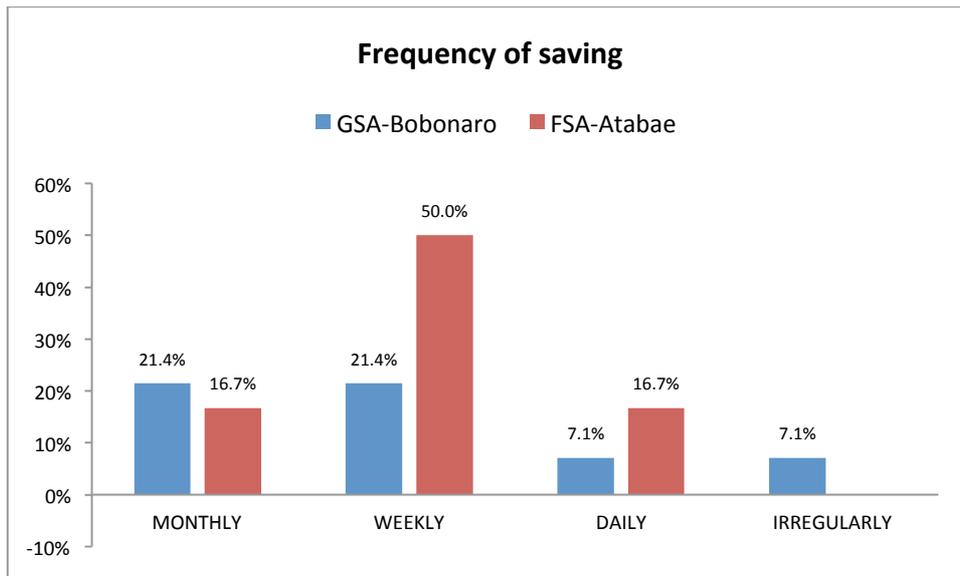


Figure 6-38. Frequency of saving

Fishers, who are members of a group, usually have their own group savings. These savings are set aside from fish sales, usually 20-30% of total sales. Fishers use these savings to pay for purchase or repair of fishing gear repair or for daily expenses during the low season.

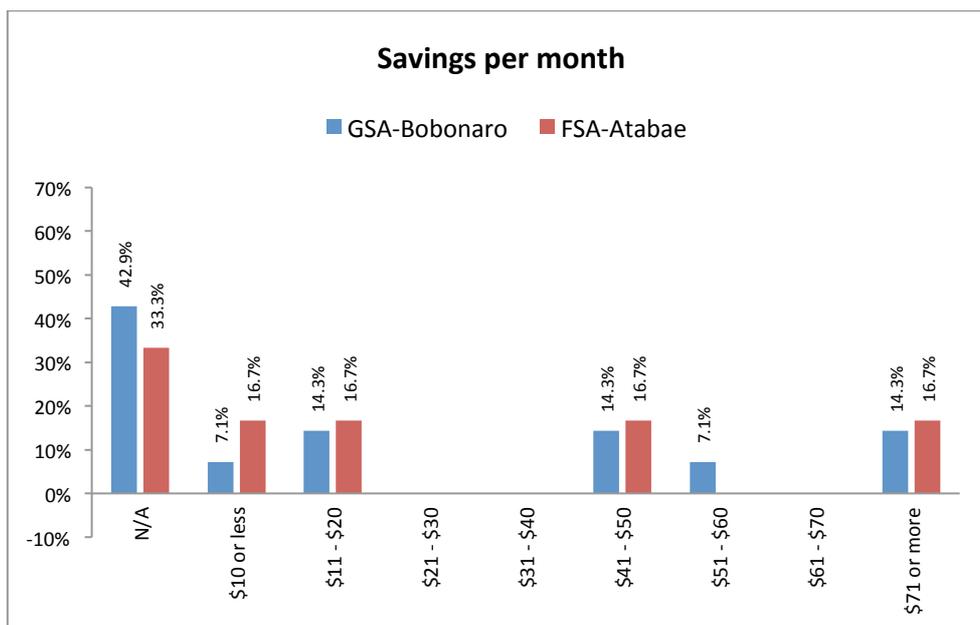


Figure 6-39. Savings per month

Up to 67% of respondents from Atabae (out of those 15% of respondents that used financial services) saved less than \$20 per month, while 17% of respondents saved between \$41 and \$50.

## **6.6.2 Analysis**

### **6.6.2.1 Availability of finance institutions**

In Bobonaro, and particularly in Atabae, most respondents indicated awareness of the existence of at least one finance institution in their area. The most recognised types of finance institutions were micro-finance institutions, cooperatives and NGOs.

### **6.6.2.2 Community access to finance institutions**

Lack of understanding of the process, perceived high interest rates and uncertainty about their capacity to repay loan meant that only 15% of respondents use the services of financial institutions. Of note was that these reasons reflect perceived rather than actual difficulties of obtaining finance.

### **6.6.2.3 Utilisation of loans**

The main uses of loans were to provide working capital for fishing activities. Savings were relatively low and any possible savings were kept as livestock rather than cash. This link between finance and savings is important when considering remedial strategies to further develop fishing capacity.

## **6.6.3 Recommendations**

Based on this data and analysis, the following activities are recommended:

- a. Establish micro-credit institutions facilitated by the government such as cooperatives, credit unions and other forms of community micro-finance institution, which can provide financial services targeted to community needs. This will help empower Atabae and Bobonaro fishers and other fisheries stakeholders to develop their livelihoods in the long run.
- b. Institutional financial services with formal permanent offices dedicated to fishers should be developed. These services should address fishers' working capital and proactively raise awareness among fishing communities.
- c. Awareness raising needs to be conducted to inform the community of the existence of micro-finance institutions, types of services provided and the requirements to obtain a loan. Basic training in financial and income management for families will help ensure understanding of the importance of income improvement, living cost management, increasing savings and accumulating assets through their livelihood. The involvement of women is particularly important given their current role in financial management.
- d. Examples of individual loans to several fishers in Atauro, considered as an example of fisheries-livelihood dependent area, can be used as lessons learnt for developing micro-credit services for fishers

## 7 RESULTS AND ANALYSIS – COVALIMA AND SUAI

### 7.1 Respondent Profiles

Covalima is situated on the southwest corner of Timor-Leste and has an area of 1,225 km<sup>2</sup>. It is bordered by Bobonaro and Ainaro Districts and by Nusa Tenggara Timur (Indonesia). Covalima spans the five former kingdoms of Camenasa, Suai, Maucatar, Taroman and Fohorem. Suai city is the district capital.

Covalima is divided into seven subdistricts and 30 sucos: Suai city (5 sucos), Maukatar (4 sucos), Fatumean (3 sucos), Zumalai (8 sucos), Tilomar (4 sucos), Fatululik (2 sucos) and Fohorem (4 sucos).

Covalima has a total population of 60,063 with an average household size of 5.4. The population growth rate since 2004 is 2.07% pa and the sex ratio is 101 males per 100 females (i.e. 30,188 to 29,875).

Topographically, Covalima is divided into two regions. The region in the north and northwest is mountainous but the southern region consists of a flat coastal plain that is prone to flooding during the wet season. The coastline is a mixture of sandy and rocky beaches, with some areas of mangrove swamp. The long wet season in Covalima begins in October/November and continues through to May. The months of June to October are generally dry, however there is sporadic rain during this time.

The sample for the General Survey Area (GSA) in Covalima district included 43 respondents (Confidence Interval CI = ±15%). The Fisheries Livelihoods Project Survey Area (FSA) in Suai subdistrict, included 96 respondents (CI = ±10%).

Unless otherwise stated, all the percentages used in the following sections in this chapter will be based on the total number of respondents in the respective survey area.

### 7.2 Co-management

#### 7.2.1 Fact-finding results

##### 7.2.1.1 Familiarity with the term co-management

In Covalima District (GSA) 12% of the respondents were familiar with the term co-management. The result in the Project area (FSA Suai) was somewhat higher (34%).

When asked about their understanding of the meaning of the term *co-management*, 85% understood it to mean *working in a group*; or *sharing responsibility among fishers* (46%). Only 36% correctly understood it to mean *working together with the government*.

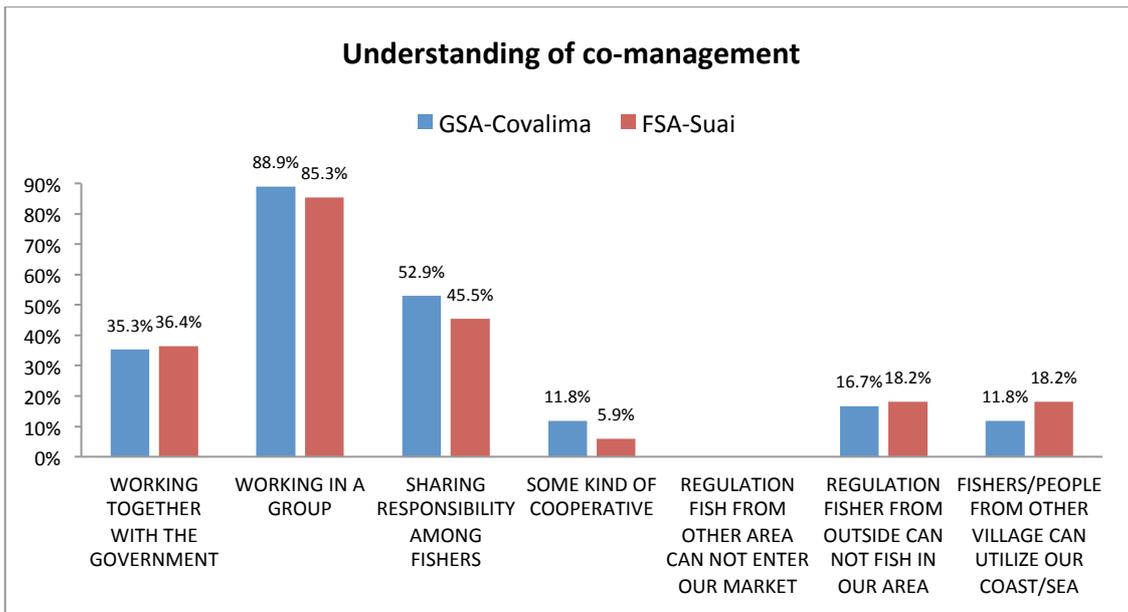


Figure 7-1. Understanding of co-management

### 7.2.1.2 Existing collaboration

64% of the 34% of respondents who were familiar with the term *co-management* indicated that some kinds of collaboration existed in their area in the form of *collaboration among groups of fishers*, while 28% said *collaboration between fishers groups and the government* and 16% referred to *sharing responsibility among fishers*.

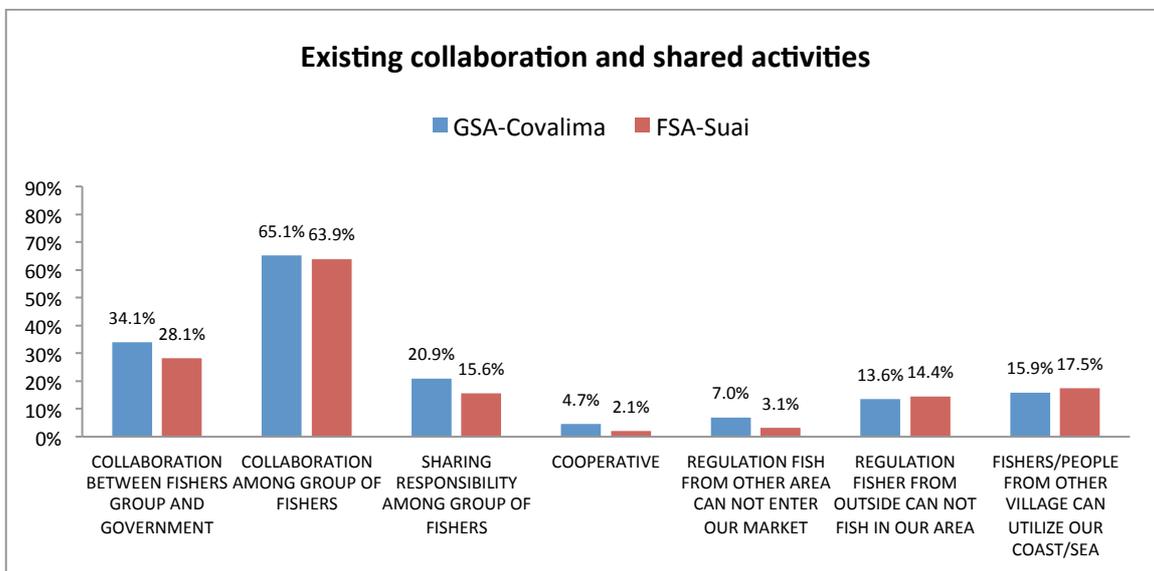


Figure 7-2. Existing collaboration and shared activities

### 7.2.1.3 Community groups

Fisher groups were the dominant community group recognised in Suai (81% of the responses). Other community groups commonly identified by the respondents were Women's Groups (19%); Savings and Loan Groups (13%) and Farmer's Groups (8%). Only 3% of the respondents recognized cooperatives.

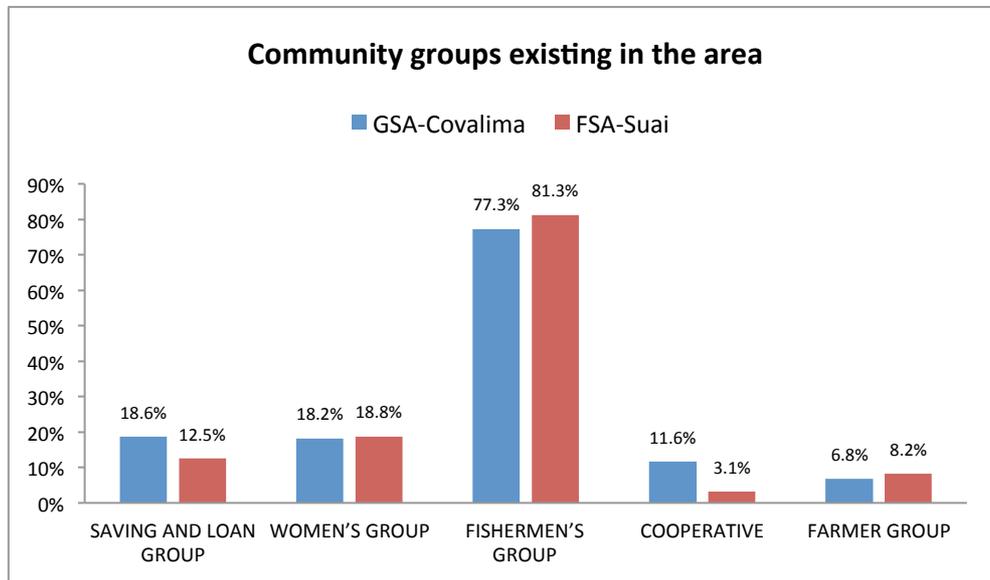


Figure 7-3. Community groups existing in the area

Approximately 69% (GSA Covalima: 63%) of the respondents have joined the activities of fisher groups. Only 2% have been involved in women's group or cooperatives. None of the respondents mentioned joining savings and loan group activities.

**External sources of assistance for community groups:** The respondents recognized several parties as providing assistance to community groups. The Fisheries Office was mentioned by only 6% of respondents in Suai (GSA Covalima: 9%), while international NGOs were identified by 14% of the respondents (GSA Covalima: 11%).

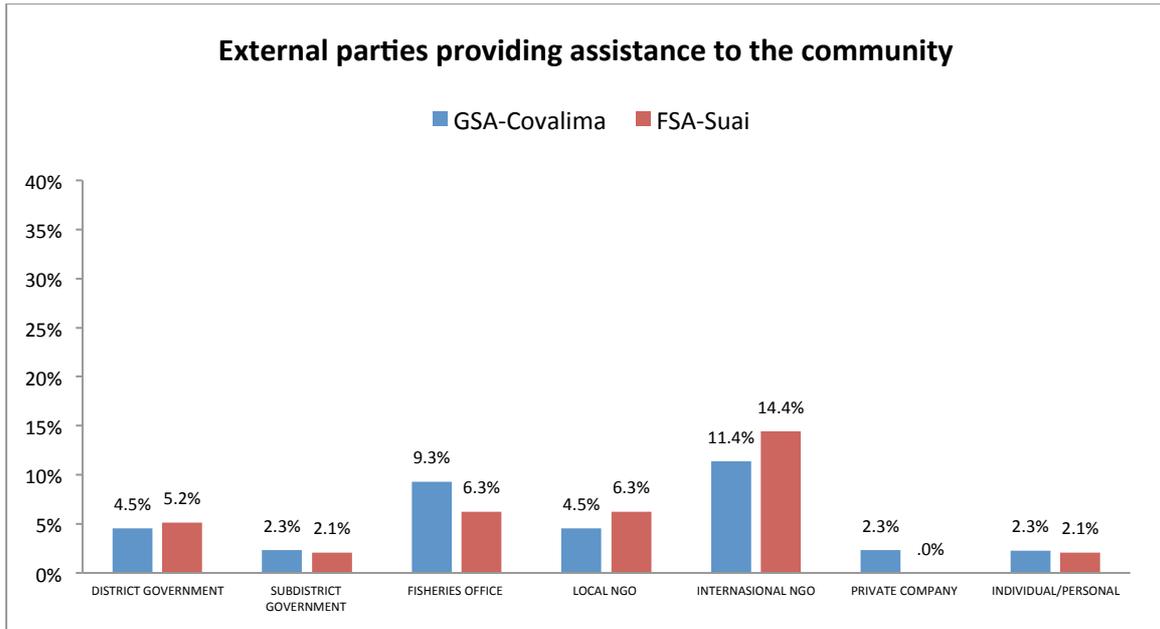


Figure 7-4. External parties providing assistance to the community

**Community groups receiving external assistance:** In Suai, fisher groups were identified as the group type which received the most external assistance (14%). Farmers’ groups (8%), and women’s groups (6%) were the second and third biggest recipients of external assistance according to respondents. Relatively little assistance (2%) was provided to ‘nila’ fish (nile tilapia) farmers.

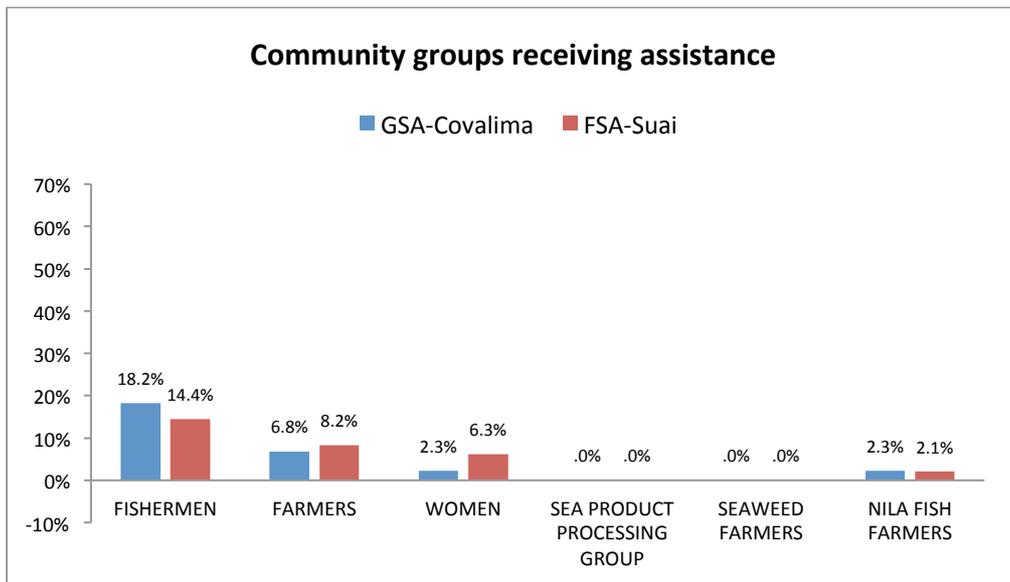


Figure 7-5. Community groups receiving assistance

### 7.2.1.4 Knowledge concerning policy and regulations

The existence of a village body responsible for regulating marine resource utilisation was reported by only 11% of respondents in Suai (GSA Covalima: 14%). Knowledge of the existence of written regulations concerning resources utilisation was mentioned by 63% of respondents in Suai.

### 7.2.1.5 Women's roles in fisheries

Direct involvement of women in fisheries includes product selling (16%) and product processing as well as reef gleaning (8% each). Women also have an important role in domestic household financial management (50%) and cooking (19%).

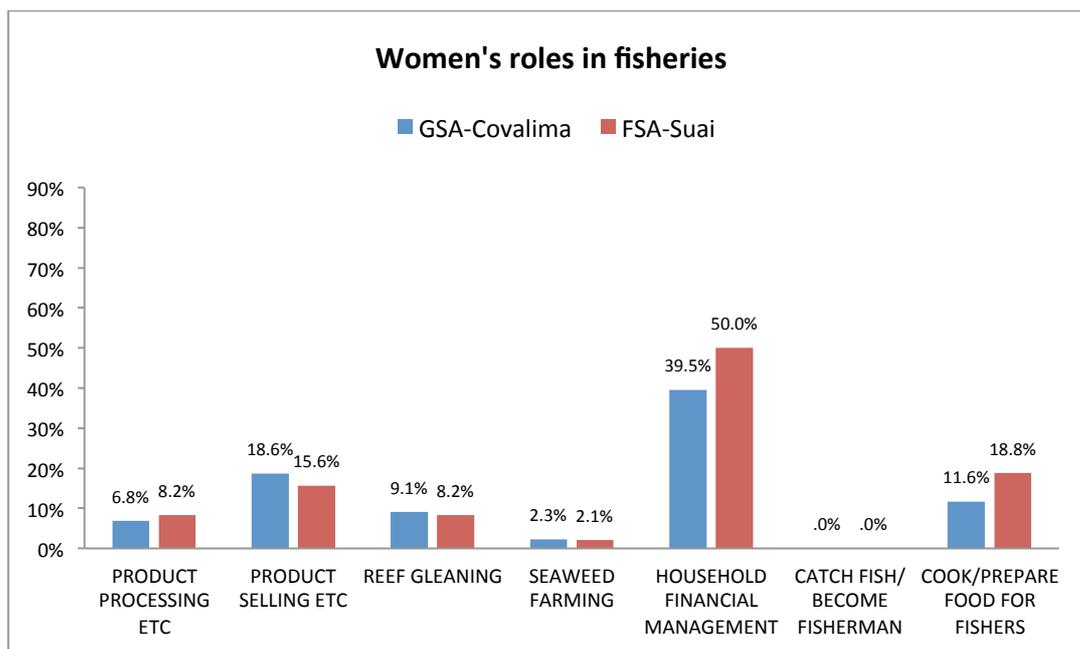


Figure 7-6. Women's roles in fisheries

Women play an important role in reef gleaning activities, which can be undertaken for 6-8 days per month. Women should be motivated to participate more in fishery related activities, i.e. in fish processing as an alternative livelihood program.

### 7.2.1.6 Conflict resolution

Only 5% of respondents in Suai (GSA Covalima: 9%) mentioned the existence of any conflict in the area. Where conflict does occur it was readily resolved according to 100% of respondents (GSA Covalima: 100%). Conflicts were usually resolved by imposing fines on violators, who were usually outside fishers. Involvement of elders/community leaders and reporting to the police, however, were also mentioned by 29% of respondents in GSA Covalima as ways of dealing with conflicts.

## 7.2.2 Analysis

### 7.2.2.1 Understanding of co-management

Real understanding of the term co-management was still limited. Only 34% were familiar with the term and only 36% of those (i.e. around 12%) correctly understand it. Most thought it meant some form of *collaboration among groups of fishers*. Note that some fisher groups

in the area were actually initiated and promoted by the government as a conduit for channeling government assistance in fisheries.

### **7.2.2.2 Community groups**

International NGOs were readily identified as institutions providing community assistance. This relates to the fact that Oxfam and Friends of Suai, two international NGOs, had been working on community development and capacity building in the area for quite some time.

### **7.2.2.3 Knowledge concerning policy and regulations**

The respondents had some knowledge concerning policy and regulations, but it was not really related to marine resources utilisation. Nor did respondents report the existence of any customary law.

### **7.2.2.4 Women's roles**

Although responses to the questionnaires showed that women in Suai played a role in product processing (8%) and product selling (16%), the actual implementation of this was still limited. The main role of women was household financial management (50%), while 18% of respondents highlighted housework roles, i.e. cooking or preparing meals for fishers before they go fishing. Since women are in control of household financial management, there is good potential for sound financial management of loans when they are provided with micro-credit assistance. Women or women groups could be the first target groups of RFLP training on managing household finances, which would have direct impact on the betterment of any existing livelihoods being conducted and any new livelihoods undertaken.

Currently the Friends of Suai, a partnership between the City of Port Philip in Australia with the Timor-Leste Government is focusing activities in Suai and Covalima, and has provided technical assistance programs for the promoting of integrated and environmentally friendly farming, such as permaculture<sup>15</sup>, making and marketing of Tais<sup>16</sup>, and other community and economic development programs. The women of Suai have been actively involved in various programs, but they did not mention receiving any training on fishery related activities.

Oxfam is also actively involved in health and nutrition program in Suai (Covalima) and Oecusse. The program includes training and mentoring of women in these two areas.

### **7.2.2.5 Conflict resolution**

There was little reported conflict among fishers in Suai. Where conflict occurred it was mainly due to the use of destructive fishing practiced by outside fishers. Conflicts were resolved by imposing fines to violators. Respondents consider that conflicts can be totally avoided if regulations on prohibited fishing gear and methods are enforced.

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<sup>15</sup> Permaculture is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems. Source: <http://permaculture.org.au/what-is-permaculture/>

<sup>16</sup> Tais is a form of traditional weaving in Timor-Leste. Source: <http://en.wikipedia.org/wiki/Tais>.

### **7.2.3 Program recommendations**

#### **a. Establishment of appropriate community groups and strengthening of existing group**

Establishment of community groups, particularly fisher and women's groups, is important to increase the capacity of respondents to collaborate for mutual advantage and increased management/organisational capability. Training and facilitation are required to improve community capability to manage their resources. Women's groups can be strengthened to improve economic capacity and to develop alternative livelihoods activities.

The main obstacles to group establishment are the lack of clearly defined objectives and target achievements for the group. Therefore, facilitation in group and organisational management should be conducted early, before defining the groups to be established. Once groups are established field extension workers should actively seek opportunities to demonstrate their value and then disseminate this experience to other groups.

#### **b. Socialisation of regulations and awareness related to marine resources management**

Awareness raising of regulations on marine resources utilisation should be conducted, including the types of protected species, the need to ban mangrove cutting, and the danger of potash to the sustainability of fish resources. Coastal communities should be made aware that they must participate in efforts to maintain the sustainability of their marine resources and how this links to better coastal community welfare.

#### **c. The role of women**

The role of women in fisheries should be strengthened through training in product processing and selling. Women already play an important role in domestic household financial management; therefore, increasing their capacity in micro-finance management and micro-enterprises development will be appropriate in strategies to increase family welfare. The experience of Friends of Suai and Oxfam in providing training programs for women, should be used as a basis to develop training in fishery related activities.

## **7.3 Safety at Sea**

### **7.3.1 Fact-finding results**

#### **7.3.1.1 Types of problems encountered at sea**

Most fishers in Suai (91%) have encountered problems at sea. Among those, 100% have faced bad weather, high waves (90%), overturned boats (30%), boat leakage (30%) and loss of direction (19%). Other problems have included seasickness (19%) and engine trouble (19%).

Despite this, fatalities were considered uncommon with 48% of respondents stating that such accidents occurred only rarely or very rarely.

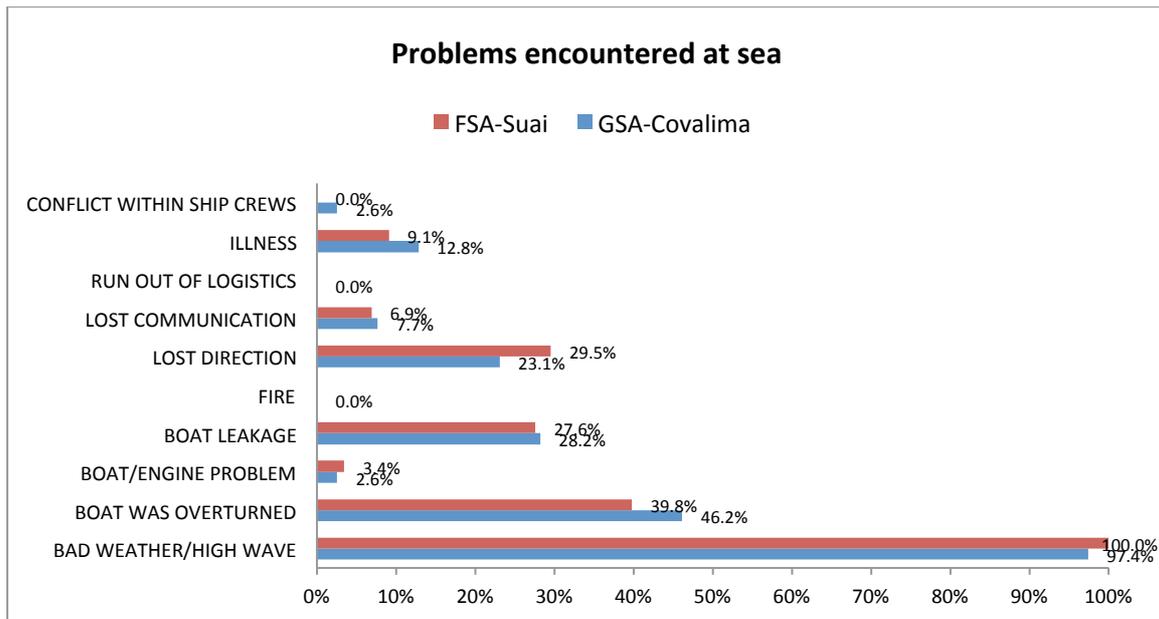


Figure 7-7. Problems encountered at sea

### 7.3.1.2 Responding to problems

When faced with dangerous events at sea, the main response (48%) was to look for other boats to provide assistance. Consistent with the perception that accidents at sea are rarely fatal, the FGD showed that fishers in Suai did not consider accidents at sea to be a serious matter. This was particularly the case because their fishing grounds were inshore and very near shore (around 2 km from the coast or still within sight of land).

Overtaken boats comprise the great majority of actual accidents. In this situation fishers would swim, right the boat and if possible continue their fishing activities. Safety equipment brought on board was generally limited to a 5-litre empty jerry can, which can be used as a float.

Approximately 55% of fishers indicated that in an emergency help came on time while 45% said that help arrived but was too late and they had to rely on their own efforts.

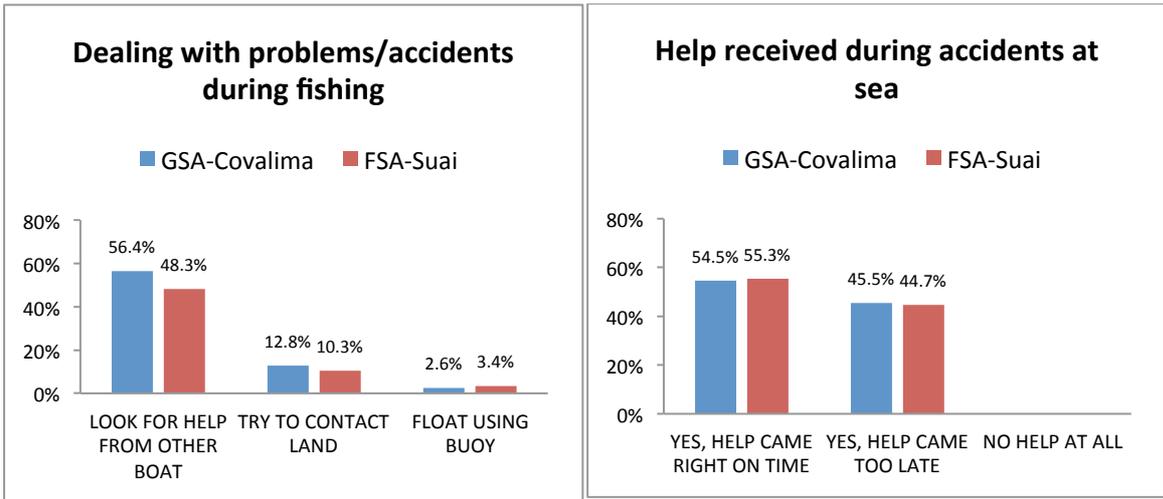


Figure 7-8. Dealing with problems at sea and when help was received

**7.3.1.3 Impact of accidents at sea**

When asked about the impacts of accidents at sea 23% considered subsequent illness to be the main impact, followed by 14% who were impacted by injury and 14% who suffered loss of income. Approximately 60% said that there was no impact at all.

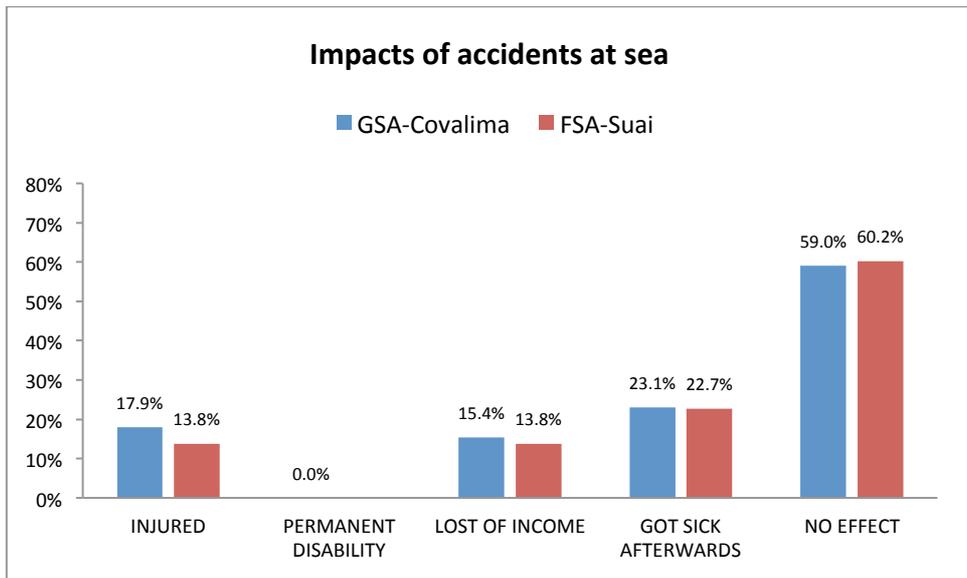


Figure 7-9. Impacts of accidents at sea

**7.3.1.4 Attitude towards risks at sea**

Fishers in Suai accept the risks associated with their livelihood, with 89% agreeing or strongly agreeing that accidents at sea were an uncontrollable fate that was outside their control. Regarding the causes of accidents 79% believed that accidents were an inherent occupational risk, but a large proportion (68%) believed they were caused by negligence. There was a broad mix of perceptions on whether incidents at sea were “pure accidents”. 8%

respondents strongly agreed, 33% agreed, while 37% disagreed, 14% strongly disagreed and 8% did not know/had no opinion.

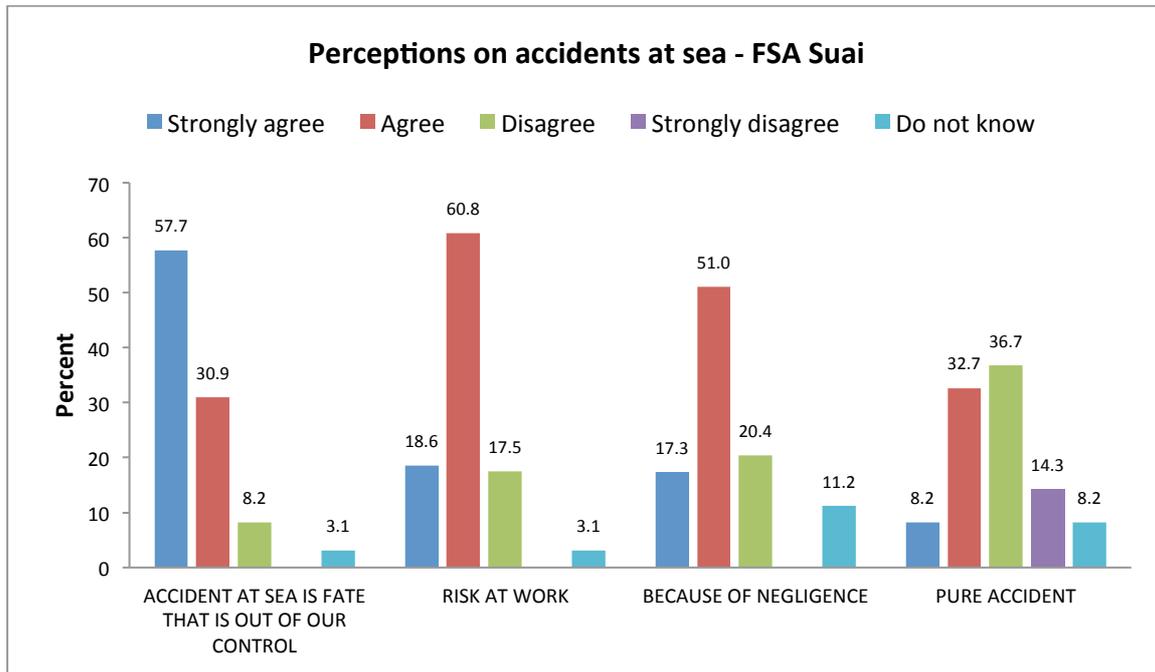


Figure 7-10. Perceptions on accidents at sea in Suai subdistrict

### 7.3.1.5 Safety regulations, equipment and information

#### 7.3.1.5.1 Awareness of regulations

A better understanding of the concept of safety at sea is needed to ensure the practice of safe and responsible fishing. Only 18% of respondents were aware of any applicable regulations concerning Safety at Sea. Those who were aware only understood that these required them to carry safety equipment and life jackets when they went fishing at sea.

#### 7.3.1.5.2 Safety equipment

When asked if they brought safety equipment on board when they went fishing only 13% of the Suai respondents said yes (14% in GSA Covalima). FGD revealed that as accidents at sea resulting in the death of fishers were rare in Covalima, implementation of sea safety regulation were negligible. Safety equipment was also considered quite expensive so the fishers considered it a low priority and were reluctant to buy and maintain it.

#### 7.3.1.5.3 Perceptions of safety equipment required on board

A flashlight (torch) was considered to be essential safety equipment by many (47%) especially for traditional fishers and those fishing at night who also use the torch to attract fish.

Also considered by many to be an essential item to be carried when fishing were life jackets (55%) and floats (up to 69%). Floats included life buoys (61%), and other items including 20-litre water bottles and tyres, and 5-litre jerry cans (8%).

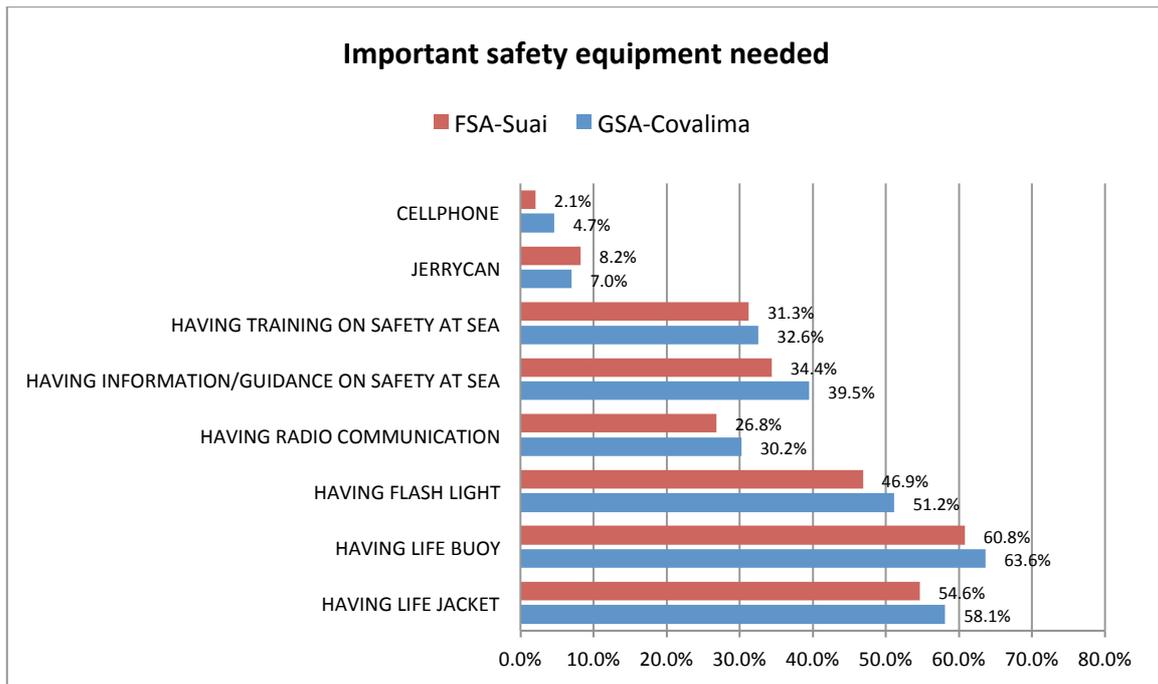


Figure 7-11. Important safety equipment needed

### 7.3.1.6 Information on safety at sea

The majority (87% FSA Suai, 86% GSA Covalima) were unaware of any safety at sea regulations. Of those that had received safety information (21% in Suai, 23% in Covalima), the Fisheries Office (55%) was the main source followed by the NGOs (40%) and the Coastal Radio (10%).

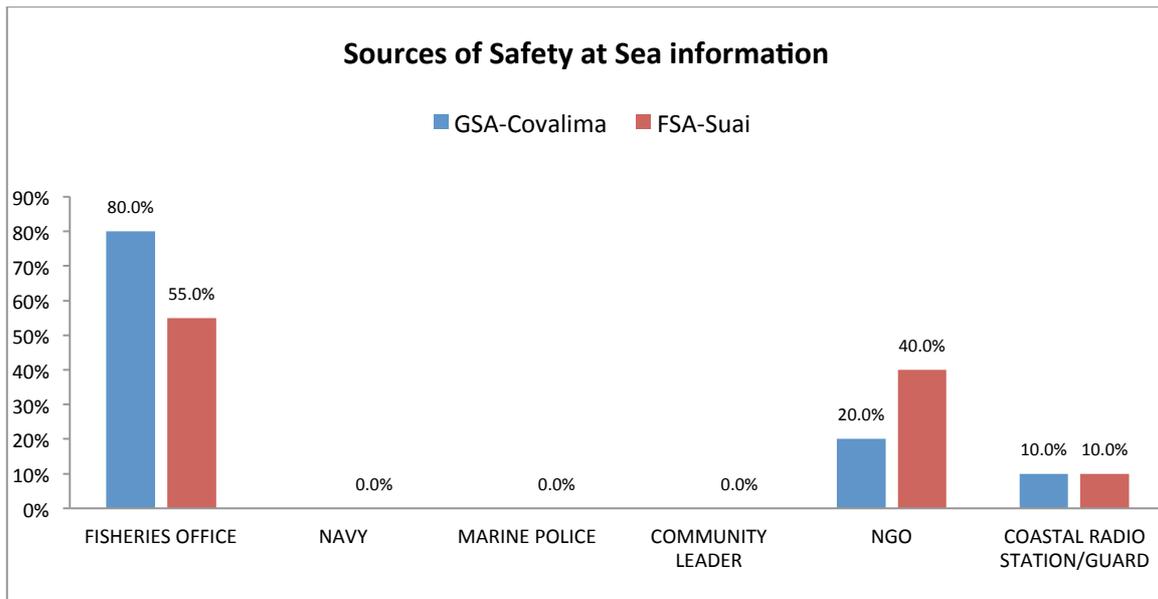


Figure 7-12. Sources of Safety at Sea information

## 7.3.2 Analysis

### 7.3.2.1 Dealing with problems encountered at sea

Although the respondents were aware of problems encountered at sea, they considered that these problems were unavoidable. As accidents at sea were rarely fatal, and as their fishing grounds were within sight of shore, precautions to prevent accidents at sea were negligible. Therefore, the types of safety equipment taken on board remained very limited. Awareness raising on safety and risks at sea had been conducted by the Fisheries Office. Proper safety equipment however was considered expensive. As it was a low priority for fishers, they expect safety equipment to be provided by the government.

### 7.3.2.2 Socialisation and implementation of safety regulations

Only 13% of respondents in FSA Suai were aware of any applicable regulations concerning Safety at Sea. Further, their understanding was that regulations were limited to requiring the carrying of safety equipment and life jackets when they go fishing at sea. The Fisheries Office had provided sea safety training covering vital equipment, prudent preparations and avoiding accidents.

### 7.3.3 Program recommendations

Knowledge on safety at sea is important, particularly as there is a plan to accelerate fisheries development in Timor-Leste. Fishers should be made aware that proper safety equipment is important and the Fisheries Office should intensify its interaction with fisher groups and providing adequate information on fishing related activities and safety as part of responsible fishery activities.

## 7.4 Post-Harvest Fisheries

### 7.4.1 Fact-finding results

#### 7.4.1.1 The use of ice in preserving the catch

Use of ice in fish preservation was low (3%) in Suai. There was no significant difference in ice use between GSA Covalima and FSA Suai. According to fishers, the low utilization of ice for preserving fish was due to the lack of an ice producer in Covalima. Ice production in Suai was limited to small-scale household production with no industrial scale production. Therefore, ice for fisheries use has to be imported from Dili.

#### 7.4.1.2 Pre-sale processing of fish catch

Pre-sale processing of the fish catch was very low in Suai. 82.5% of respondents reported selling all their catch fresh/unprocessed, while only 9.4% processed a small amount of their catch. There was no difference between GSA Covalima and FSA Suai in selling all their catch fresh and processing any of it.

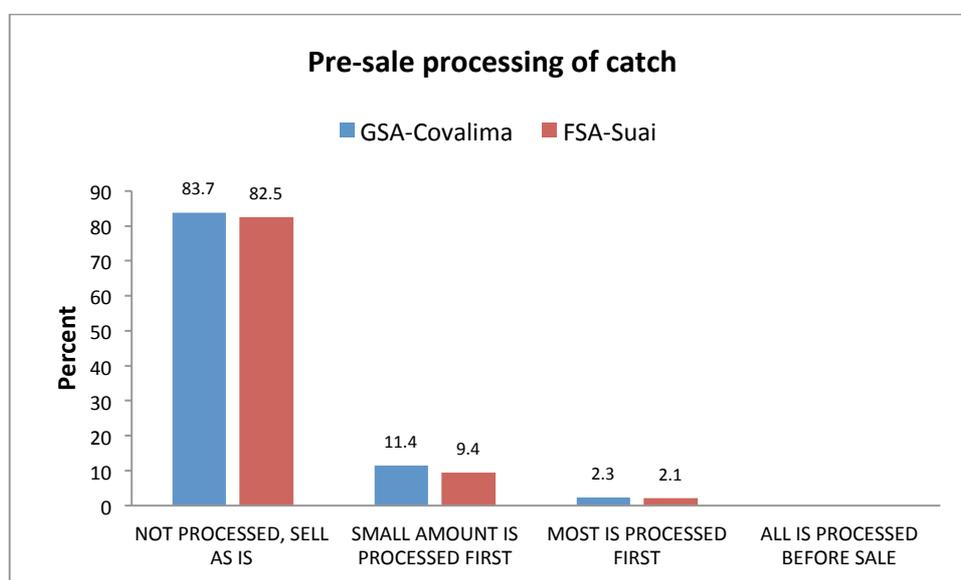


Figure 7-13. Pre-sale processing of catch

Dried salted fish (75%) was by far the most common processed fish product produced in Suai, with mashed/salted fish (15%) as the alternative.

Table 7-1. Processed fish products

What do you make from it?	GSA Covalima	FSA Suai
Salted fish	83.3	75.0
Smoked fish	-	-
Mashed and salted	16.7	15.4

### 7.4.1.3 Sources of post-harvest processing knowledge and skills

Relating mainly to the simple technology used to produce dried salted fish, family/traditional knowledge (61%) was the major source of post-harvest processing knowledge and skills in FSA Suai. The proportion of fishers who obtained their knowledge and skills from training conducted by government or NGOs was around 25%. This was relatively high and was the highest among all districts.

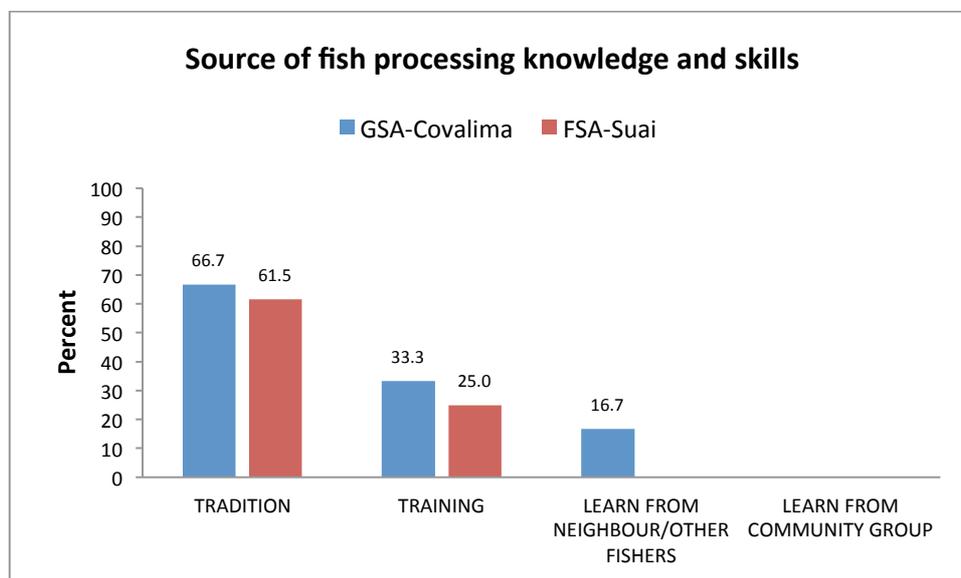


Figure 7-14. Source fish processing knowledge and skills

### 7.4.1.4 Need for post-harvest processing knowledge and skills

Acceptance of the need for additional post-harvest skills and knowledge was high (84% in Suai and 83% in Covalima). The most needed areas of knowledge and skills for Suai fishers were:

- quality and process improvement for processed products (58%).
- skills to enable increased processed product diversification (42%).

The need for training to increase quality of product was higher in the GSA Covalima.

Table 7-2. Skills needed by fishers

Do you feel that you need skill/information for post-harvest skill?	GSA Covalima	FSA Suai
Yes	83.3	84.6

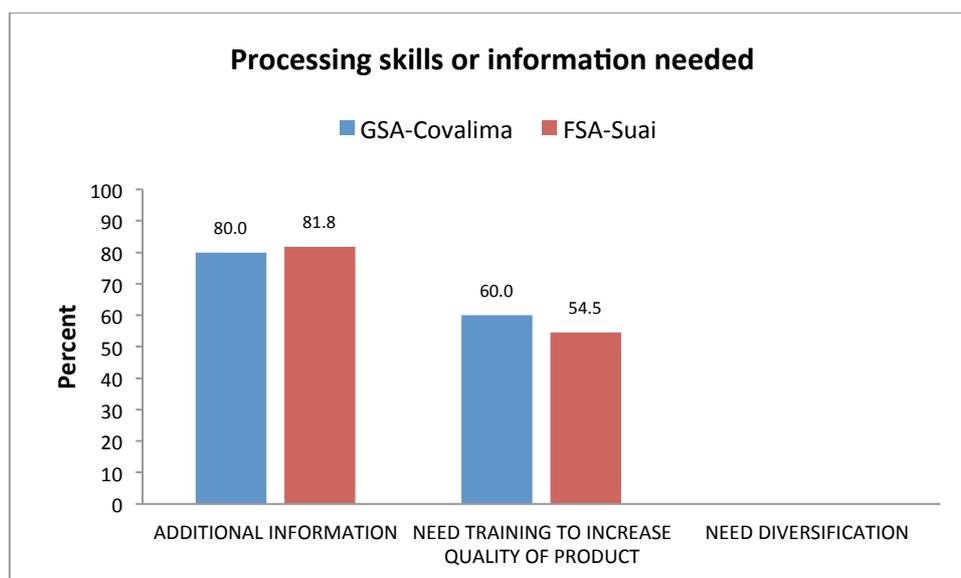


Figure 7-15. Processing skills or information needed

#### 7.4.1.5 Ownership of fish processing facilities

A small proportion (15%) considered they possessed adequate facilities and equipment for fish processing. On further questioning, many (73%) indicated that more modern equipment was needed. A small 18% simply needed knives/cutters.

Table 7-3. Adequacy of processing equipment and facilities

Do you think you have adequate equipment to process fish/sea product?	GSA Covalima (%)	FSA Suai (%)
Yes	16.7	15.4
No	83.3	84.6
What equipment/facility do you need?		
Modern processing equipment	60.0	72.7
Knife/cutter	20.0	18.2
Drying facility	20.0	0

#### 7.4.1.6 Location of processed fish product sales

Fishers sold processed fish product at the following locations:

- Road side sale was the preferred method (35%)
- Sale in the local market was the next most common method (24%)
- Sale to buyers on the beach was also common (21%).
- Direct sale to consumers and local vendors, was conducted by only 6%.

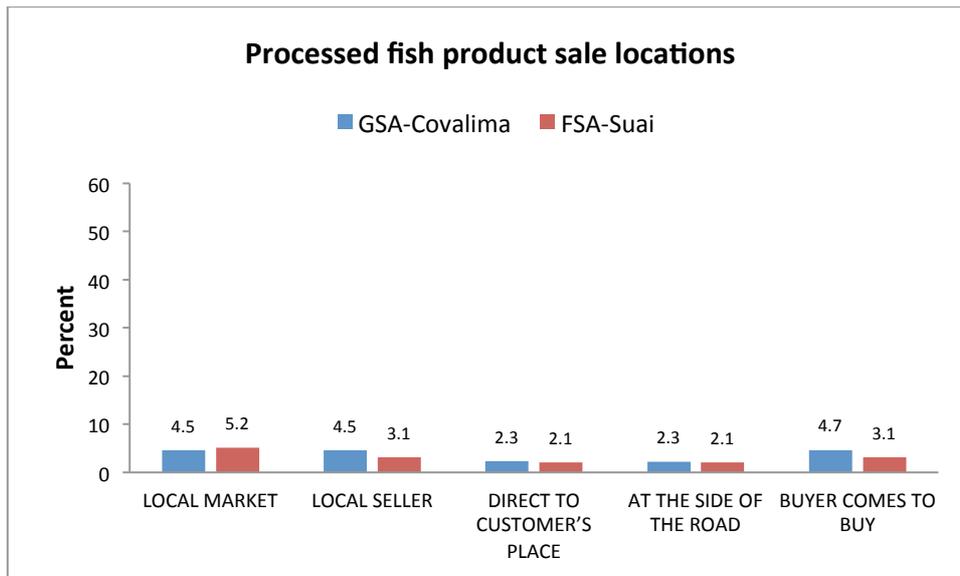


Figure 7-16. Processed fish product sale locations

#### 7.4.1.7 Problems in selling processed fish products

Low product quality was considered the biggest barrier to selling processed fish product (100%). Poor packaging of the processed product was also considered a constraint (50%).

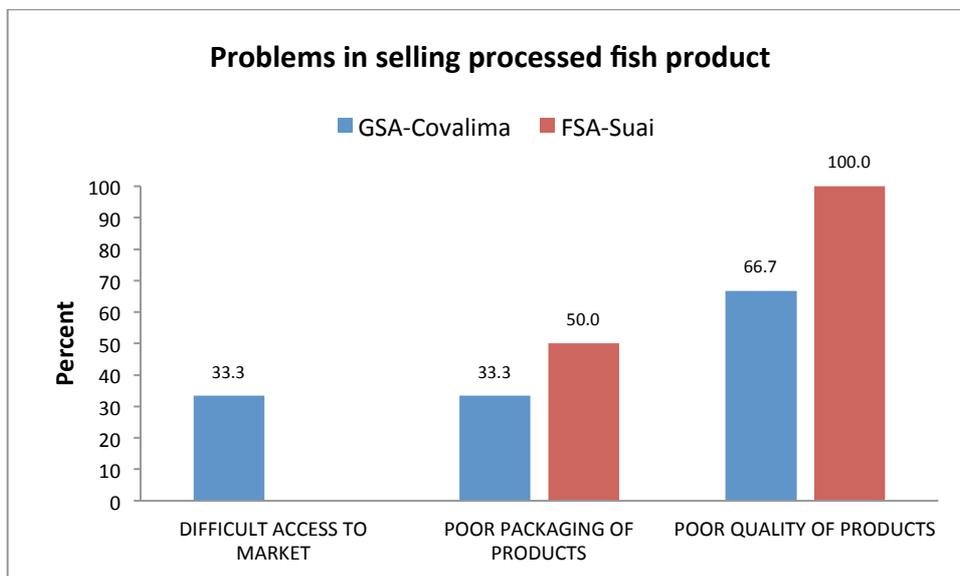


Figure 7-17. Problems in selling processed fish products

#### 7.4.2 Analysis

As ice production in Suai/Covalima was very limited its use by fishers to preserve their catch before selling was very restricted. Only around 3-7% fishers in Covalima used ice to preserve

their catch. Fishers tend to sell their catch fresh, and as quickly as possible, after setting aside some for family consumption.

As the catch was virtually all sold fresh, processing was very limited. Prices received for the fresh catch are quite low (especially when fish are abundant), however fishers have limited marketing opportunities as traders will only buy fresh products. This situation is also influenced by the absence of facilities and a lack of information about market demand for processed fish products. Access to markets, coupled with the low level of product quality and poor packaging were the main constraints to selling processed fish products.

### **7.4.3 Recommendations**

- a. Small-scale ice making facilities should be established in Suai and key centres so that fishers do not have to buy ice from Dili.
- b. Household ice production should be encouraged to support individual fishers who conduct daily fishing activities.
- c. A survey on market demand should be conducted to determine where to sell fresh and processed fish/seafood products.
- d. Training in fish processing should be coupled with awareness raising on the benefits of producing processed fish with longer-term shelf lives.
- e. Multi-function fish auction places should be established and promoted (i) to be used as meeting places between fishers and buyers, (ii) to keep and preserve unsold catch, (iii) as places for fish processing activities, (iv) as places for fisheries training and awareness raising for the community and (v) to collect catch and effort data to be used as an indicator for both the government and fishers on the state of aquatic stocks.

## **7.5 Livelihoods Enhancement and Diversification**

### **7.5.1 Fact-finding results**

#### **7.5.1.1 Frequency of fishing trips**

The pattern of fishing frequency varies depending on the season and other priorities. Fishers can work every day, or as little as one, two or three days per week.

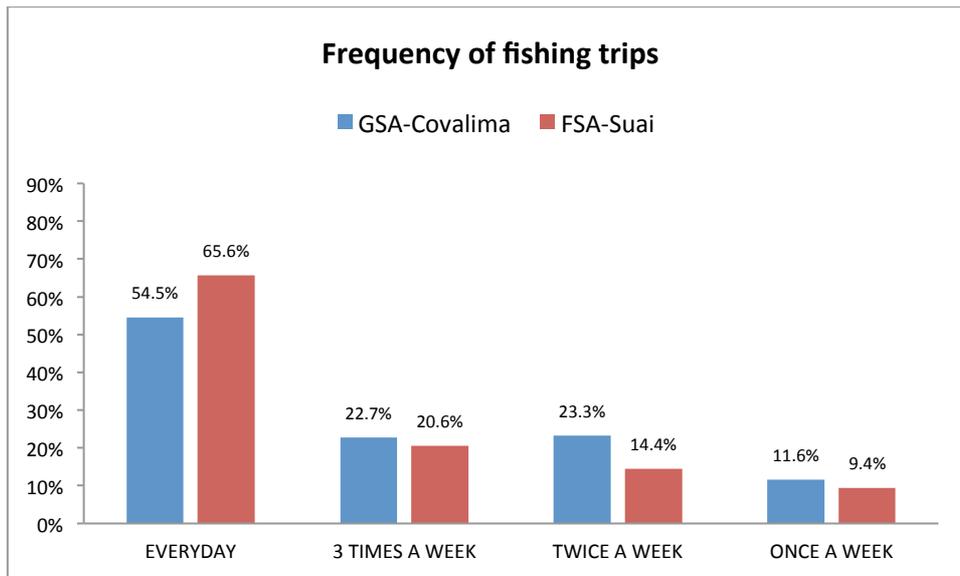


Figure 7-18. Frequency of fishing trips in Covalima district and in Suai subdistrict

Though their fishing schedules vary, the majority of fishers fish every day. From 96 respondents in Suai, 66% reported going to sea every day. Other respondents reported going to sea only one day per week (9%), two days per week (14%) and three days per week (21%).

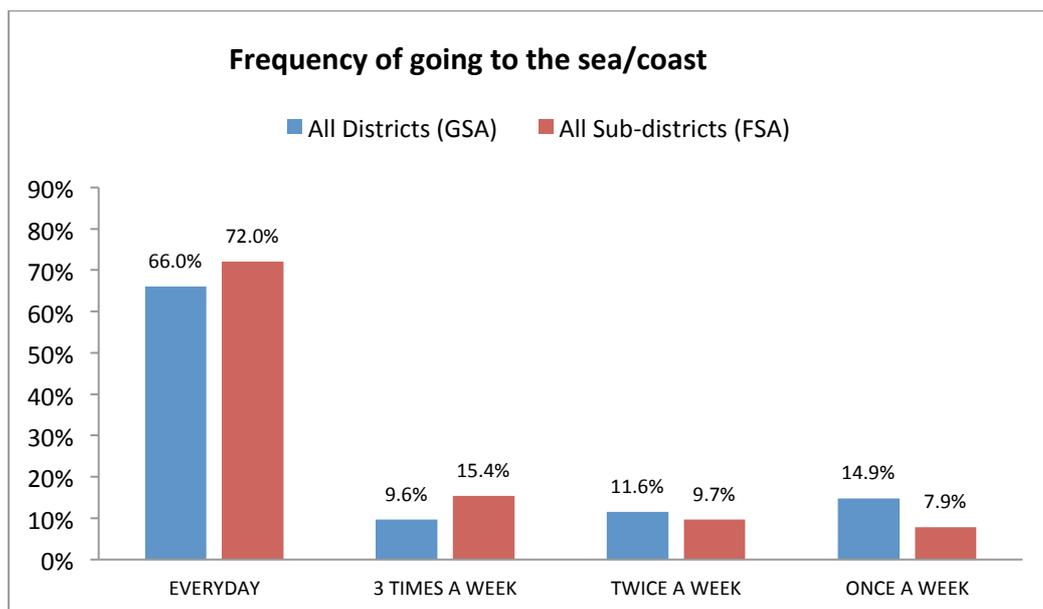


Figure 7-19. Average frequency of going to sea in all 5 districts (GSA) and all 5 subdistricts (FSA)

Compared to the average frequency in all 5 subdistricts, the proportion of Suai fishers going fishing daily was far lower than the average percentage in the all 5 subdistricts (72%). On the other hand, the frequency of fishers going fishing once (9%), twice (14%) or three times a week (21%) was higher compared to the average of those in all 5 subdistricts, at 8%, 10%, and 15%, respectively.

### 7.5.1.2 Duration of sea fishing trips

The great majority (86%) of fishers were day fishers and spend less than 24 hours at sea per fishing trip. The largest group (48%) fish for period of less than 12 hours per fishing trip. Thirty seven percent fished for between 12 to 24 hours. However, there were relatively small groups of fishers that spend up to two days (12%) and more than three days at sea (4%).

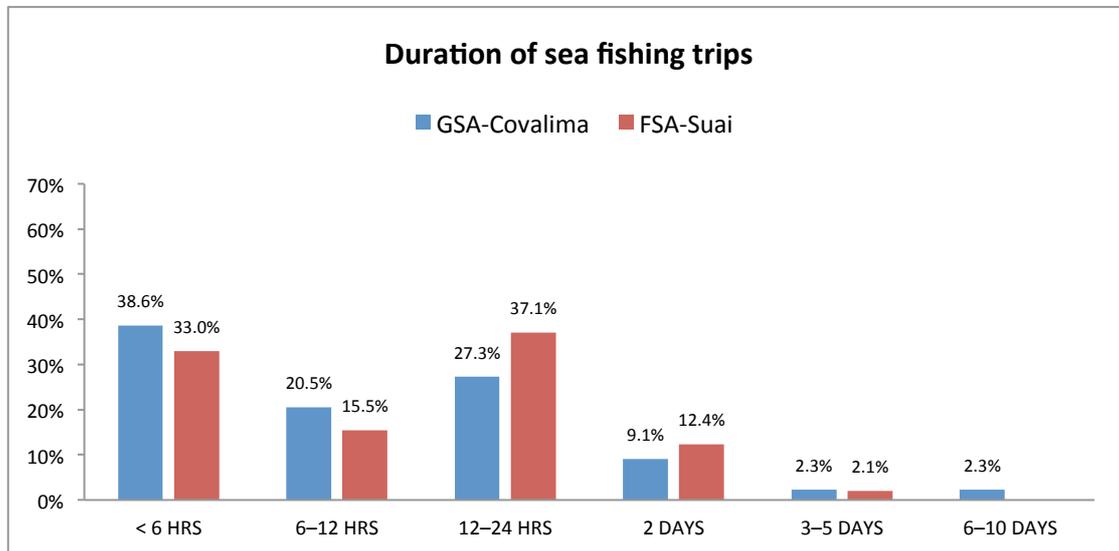


Figure 7-20. Duration of sea fishing trips

### 7.5.1.3 Sea fishing by month

Suai fishers fish all year round, but the number of fishers varies with seasonal weather conditions. From the total number of fishers conducting fishing activities in a month across the year, the months when fishers went to sea the least (less than 50%) were in May and June.

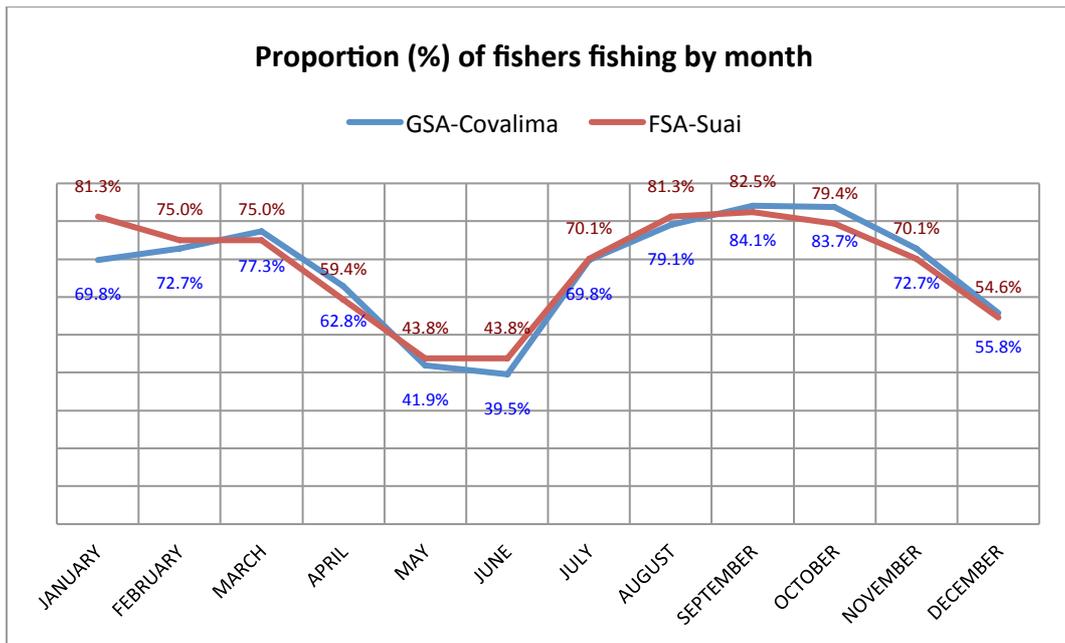


Figure 7-21. Proportion of fishers going to sea by month

Unlike other districts, when the GSA and FSA were compared to each other, for Covalima district and Suai subdistrict there was a very similar trend in the proportion of fishers going to the sea throughout the year.

#### 7.5.1.4 Location of fishing grounds

Three discrete types of fishing area were described i.e. inshore along the coast, in the deep sea and on coral reefs. The majority of Suai fishers fish inshore along the coast (69% of respondents) and in the deep sea (63%). However, coral reef areas (53%) were also fished.

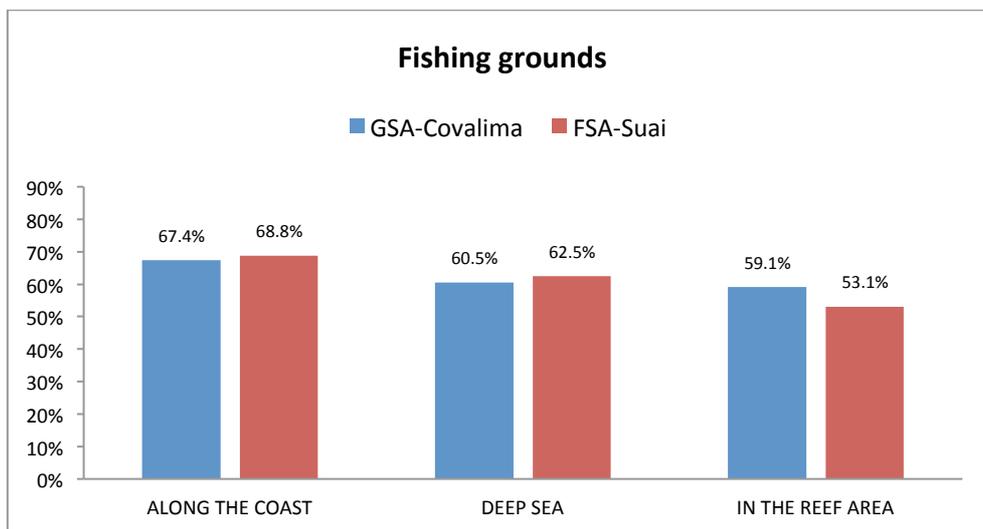


Figure 7-22. Location of fishing grounds

### 7.5.1.5 Boat and fishing gear

**1. Boat Type and Fishing Gear.** The boats used by fishers in Suai can be grouped into several types: large boats, motorized wooden boats, boats with outboard engine, non-motorized jugung or wooden boats, and wooden boats with sails. From 96 respondents in Suai who were asked about the type of boat they used for fishing, 92% indicated that they used a non-motorized wooden boat (rowing boat). Only 9% of fishers had outboards and 5% had motorized wooden boats. Other types of boats were uncommon and large-scale fishing boats were rare.

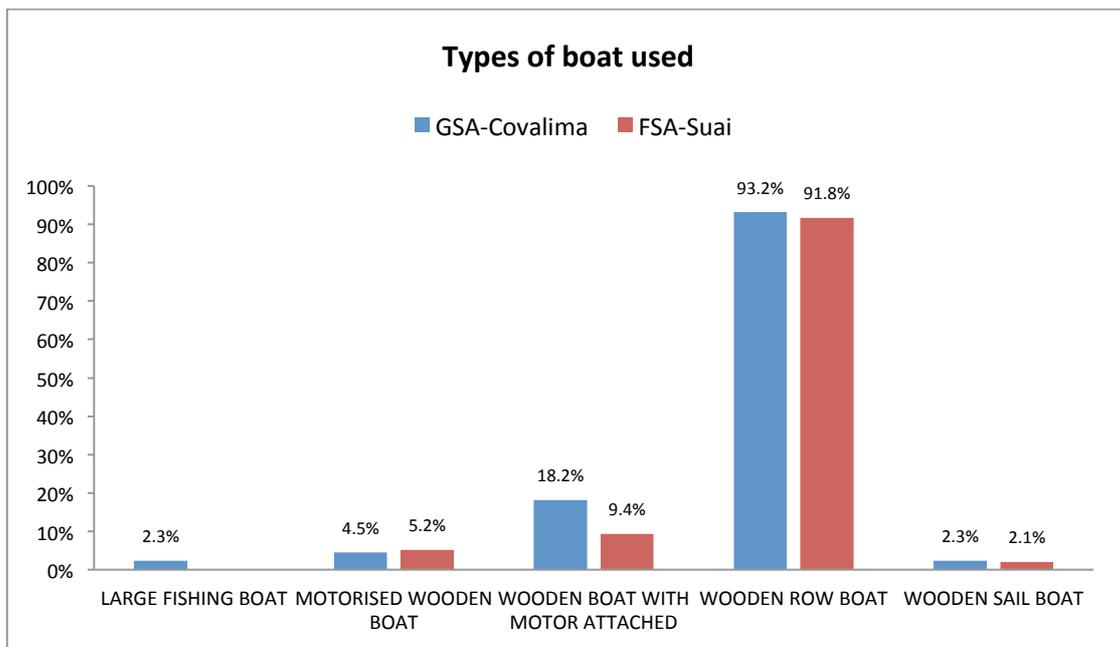


Figure 7-23. Types of boat used

Hook and line and fish nets were the most commonly used fishing gear in Suai. Hook and line (fish line) was used by 86% of respondents, and gillnet were used by 52% of respondents, fish net were used by 50% of respondents, and other nets by 14% of respondents. Fishers may use more than one type of fishing gear during fishing trips and change gears with season.

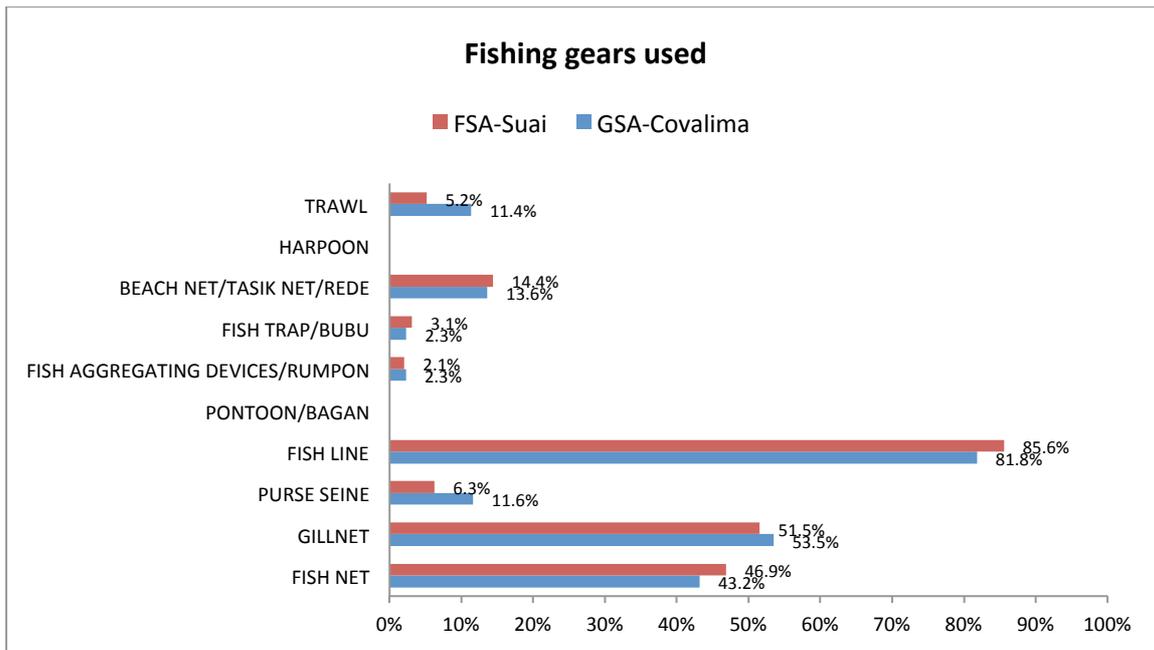


Figure 7-24. Fishing gears used

**2. Ownership.** Ownership of fishing boats fell into four categories, including: self/family owned, profit sharing, hired, and other status. The figure below indicates that most of the fishing boats were self/family owned (92%). Other arrangements involving profit sharing and/or hire made up the small balance. Most of the fishing boats were non-motorized jugung type (wooden row boats) as shown in previous figure about type of boat used.

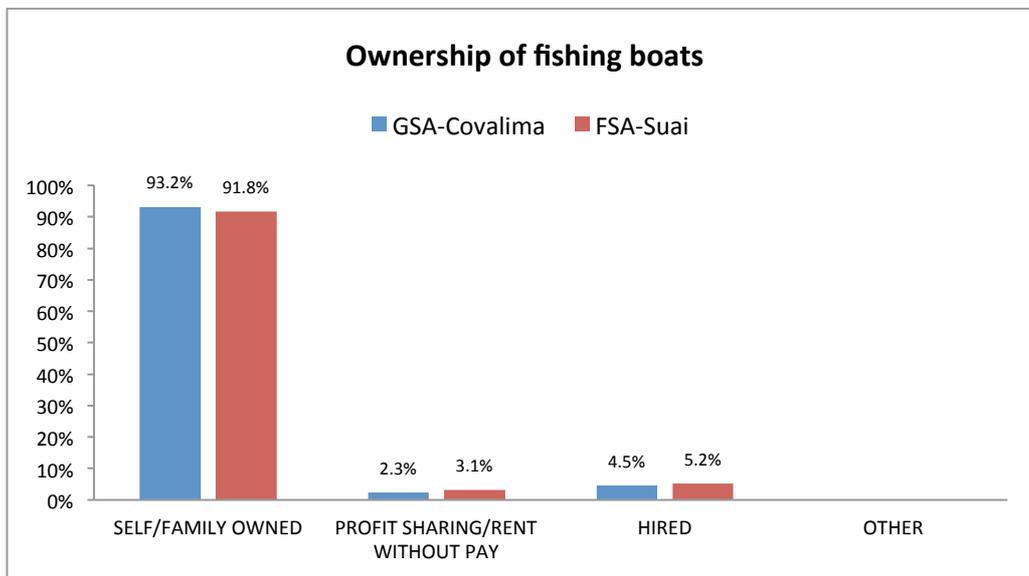


Figure 7-25. Ownership of fishing boats

**3. Accessing a Fishing Boat.** Fishing boats can be acquired by means of purchase, family gift/inheritance, government aid/NGO, borrowed from friends, or other categories. Most Suai

fishers (87 %) had purchased their fishing boat themselves. Only a small percentage of fishers (5%) had received their boat from government aid or an NGO and 6% had borrowed a boat from a friend.

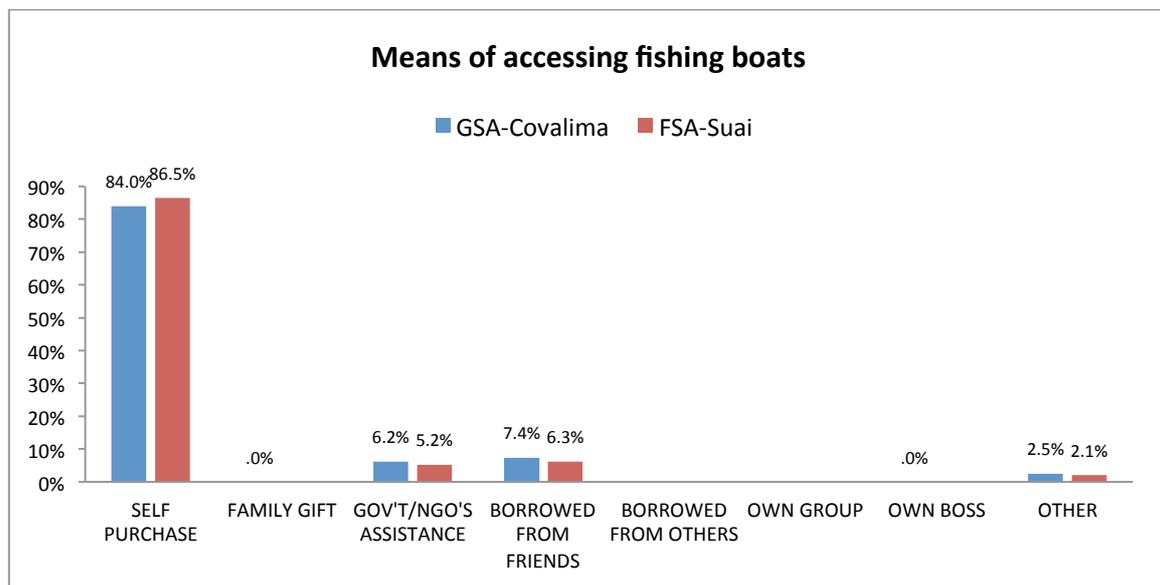


Figure 7-26. Means of accessing fishing boats

### 7.5.1.6 Fishing system

Fishers either fish in groups or individually. Fishing in groups was most common (66%) in this area, while 34% fished individually. The number of members of a fishing group was largely dependent on boat size. Small non-motorized wooden boats were operated by 2-3 fishers. Larger boats with engines, however, can accommodate crew of 5 fishers or more. All respondents in Suai who fished in groups had 2-5 group members. No respondents reported being members of larger fishing groups (of more than 5 members).

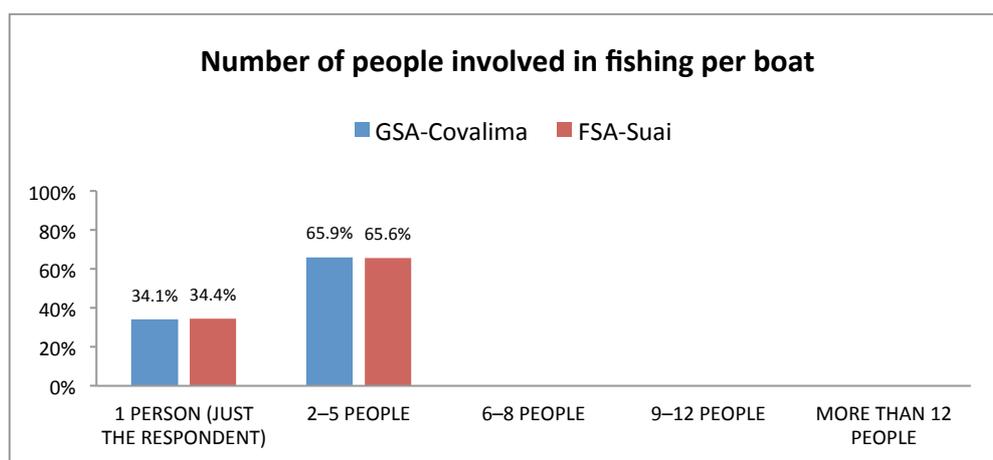


Figure 7-27. Number of people involved in fishing per boat

The role of women and children was relatively small. The main role of wives was to prepare meals for their husbands. In the early morning (some even started 3-4 o'clock in the morning) before the husband went to sea, wives prepared coffee or tea. Later wives and children also

brought breakfast to the shore. After this early morning fishing the husband landed to eat breakfast and some of the fish catch was brought ashore. After breakfast, the husband returned to fishing.

### 7.5.1.7 Fish catch

**1. Variety of Catch.** The catch in the Suai area included fish, shrimp/prawns, crabs, squid, seaweed, snails, and oysters/clams. However, fish was the main target of 95% of respondents, while shrimp<sup>17</sup> was targeted by 59% (the highest in the 5-subdistricts which average 32%).

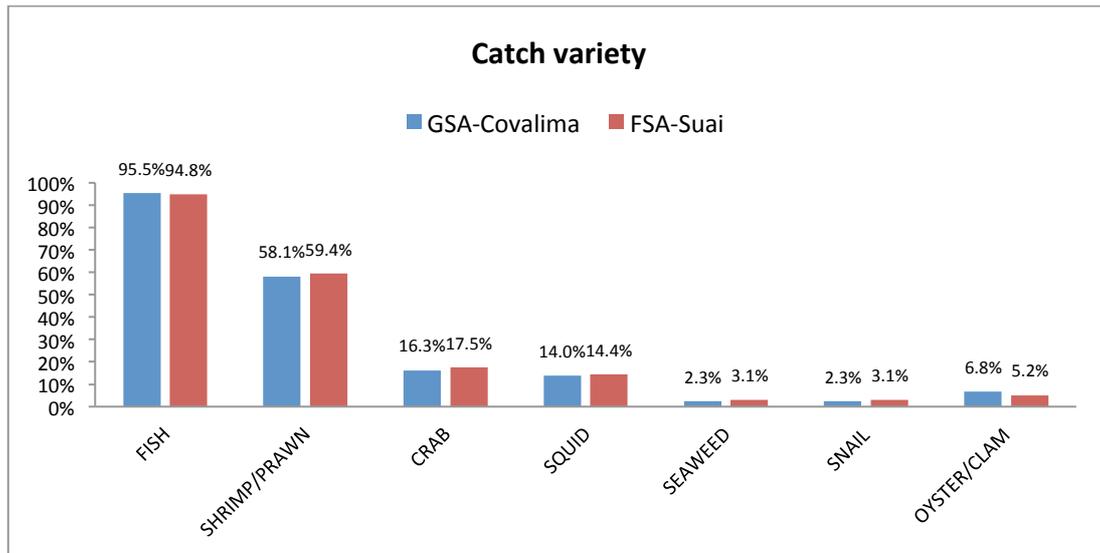


Figure 7-28. Catch variety

**2. Variety of Fish Species.** As shown in the previous figure the most common targeted catch was fish. The figure below shows the variety of fish species caught by fishers in Suai. These species included ‘kombong’/mackerel (63%), ‘sardina’/sardine (45%), ‘kakap’/snapper (31%), ‘tongkol’/tuna (19%), ‘daun’/long tom (18%), ‘manu’/flying fish (14%), ‘koku’/trevalli (14%) and ‘hiu’/shark (11%). These data may serve as an indicator for species abundance in Suai.

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<sup>17</sup> From the discussions and interviews in Suai it was not reported whether the shrimp was caught from rivers or from the sea.

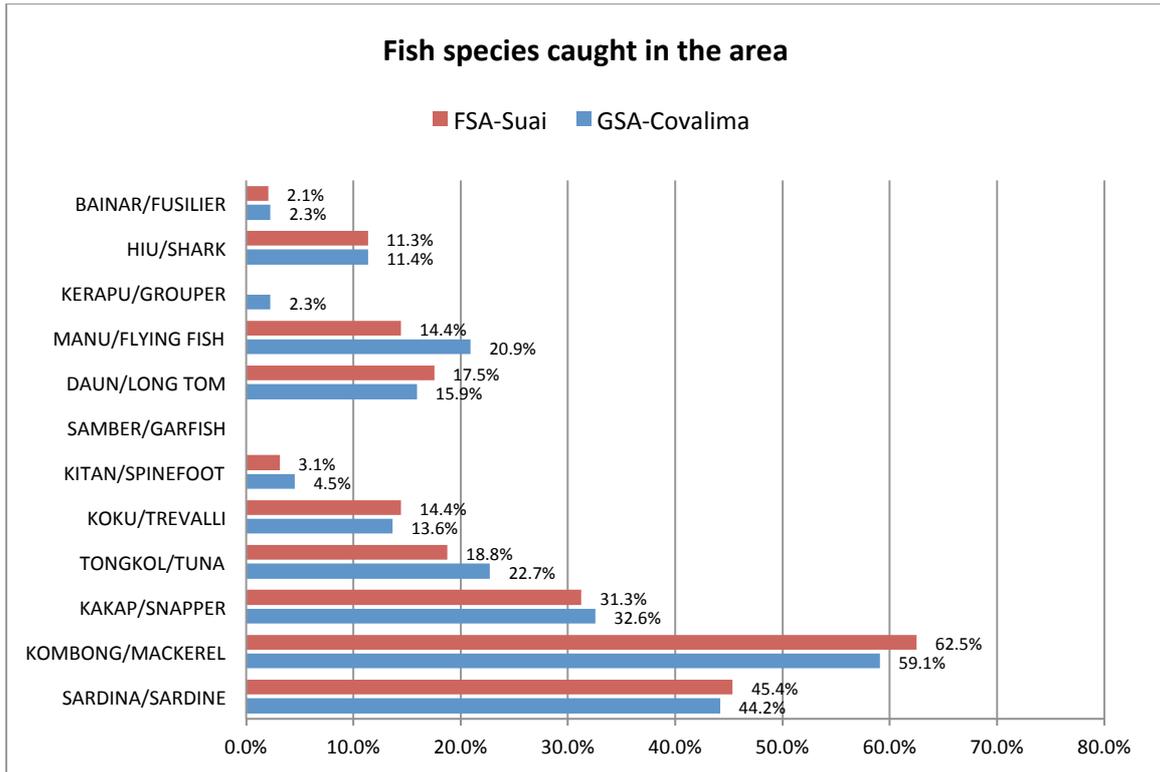


Figure 7-29. Fish species caught in the area

### 7.5.1.8 Monthly average income

Overall, more than half of all respondents (69%) earned monthly incomes in the lower three ranges spanning \$0-\$299. However, fishers making more than \$300 a month comprised a significant portion of the respondents (31%).

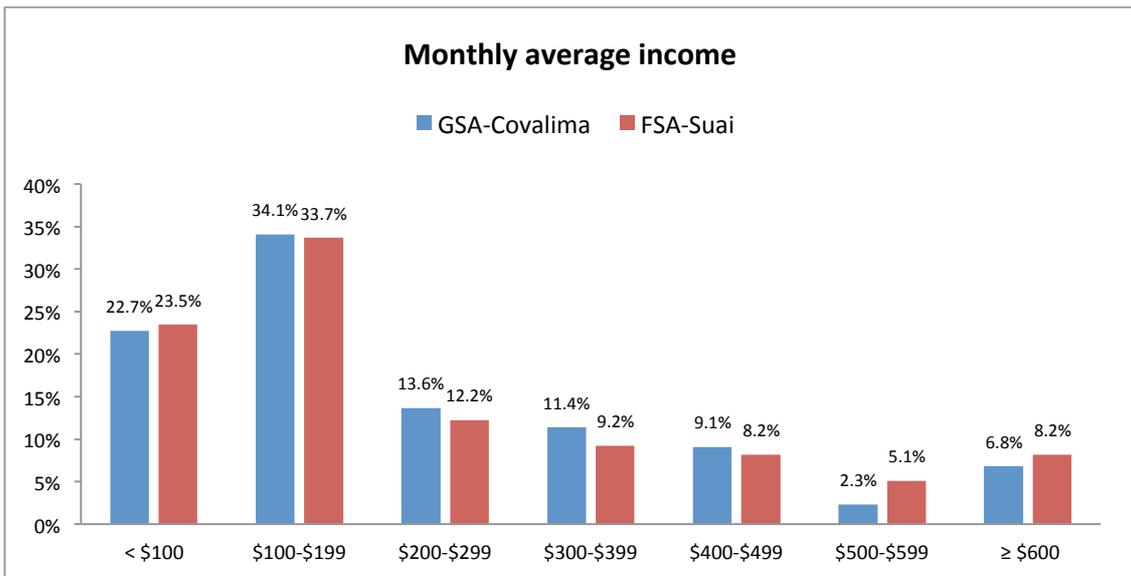


Figure 7-30. Monthly average income

### 7.5.1.9 Additional income

A significant minority of Suai fishers (41%) (GSA-Covalima: 36%) indicated that they had other work in addition to working as fishers. Therefore 59% of the respondents were totally reliant on fishing as their sole livelihood.

Additional work reported included farming (46%), building worker (31%) and animal breeder (39%). Other types of secondary jobs were done by far fewer respondents (each less than 8%).

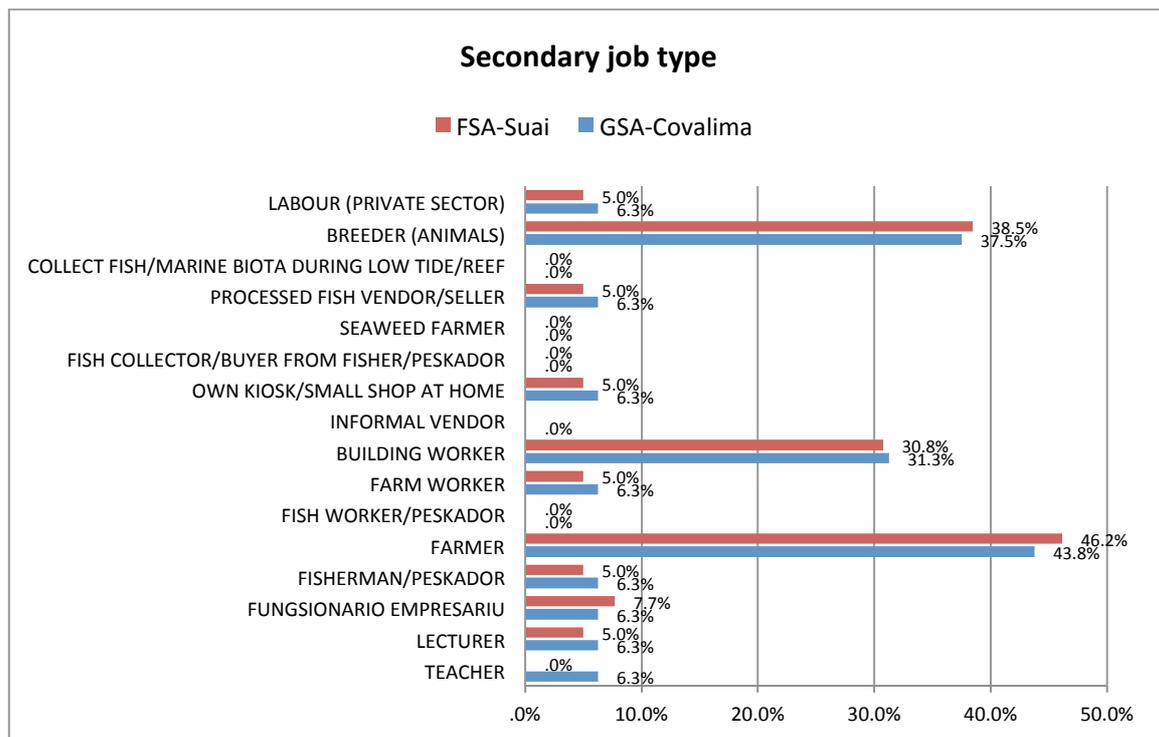


Figure 7-31. Secondary job type

## 7.5.2 Analysis

### 7.5.2.1 Fishing activity and target species

The seagoing capacity of local fishers was limited to trips of 6-12 hours duration. They were limited by their boats and equipment with most operating from simple non-motorized wooden boats and using hook and line and fish nets. Most fishers owned their own boats.

Fishing activities occur throughout the year, however less than 50 percent of fishers go to sea in May and June because of difficult or dangerous weather conditions.

Though other seafood was caught, fish was the main target for the fishers in Suai (95%). The main target fish species included 'kombong'/mackerel (63%), 'sardina'/sardine (45%), 'kakap'/snapper (31%), 'tongkol'/tuna (19%), 'daun'/long tom (18%), 'manu'/flying fish (14%), 'koku'/trevalli (14%) and 'hiu'/shark (11%). These data may serve as an indicator for relative species abundance in Suai.

### **7.5.2.2 Fishing system and the role of women and children**

The dominant work system for fishers was group fishing. Group operated fishing boats, depending on boat size, had 2 to 5 fishers. Each group had a leader, who was the boat owner. Group members were commonly family of the nearest neighbours. Group members were not paid, but were given a share from the catch/profit.

The role of women and children was relatively small. The main role of wives was to prepare meals for their husbands.

### **7.5.2.3 Alternative livelihoods**

41% of respondents had extra work or an additional livelihood. Alternative work included farming (46%), building worker (31%) and animal breeder (39%). Every person can have more than one job, for example a crop farmer can also raise cattle. Other less common types of secondary jobs included labour, processed fish vendor, kiosk owner/operator, farm worker, peskador, fungsionario (employee) and lecturer. The amount of income earned from additional livelihoods was unknown as the earnings (especially from farming and cattle raising) were usually saved in kind. They sold the cattle or the paddy when they needed cash, and sometimes they stored paddy as a stock.

## **7.5.3 Program recommendations**

To develop fishers' livelihoods the following steps are recommended:

### **a. Boat procurement**

The main productivity constraint for fishers was access to adequate boats with engines. Non-motorized boats have a limited range and load capacity, limiting both the size of the group and the catch. Lack of finance was the main obstacle for the fishers in procuring more suitable fishing boats fitted with appropriate engines. A strategy to support boat procurement through micro-finance development is required.

### **b. Fishing gear procurement**

The commonest fishing gear used includes hook and line, and fish nets. The catch is therefore very limited. This kind of fisher needs to be supported so they can acquire their own boat and fishing gear to improve their livelihood.

### **c. Improvement of fishers capability**

From FGD, fishers were aware that their fishing knowledge and capability was limited. Based on their inputs and comments, it is recommended that training in fishing techniques and skills be conducted in Timor-Leste and/or send some fishers to Java for training.

### **e. Development of alternative livelihoods**

Potential alternative livelihoods in Suai include farming, building worker and animal breeder. Local fishers mostly dwell inland, not along the coast. The land around their houses is fertile and can be planted with corn and paddy, or can be used to raise cattle.

## 7.6 Micro-finance

### 7.6.1 Fact-finding results

#### 7.6.1.1 Community knowledge concerning finance institutions

More than half of the respondents (55%) had no knowledge concerning financial institutions. The best-known financial institutions were the NGO Moris Rasik (25%). Some NGOs provide community assistance and respondents specifically mentioned Moris Rasik, which offers loans to meet the capital needs of the local community. Cooperatives and banks were unknown.

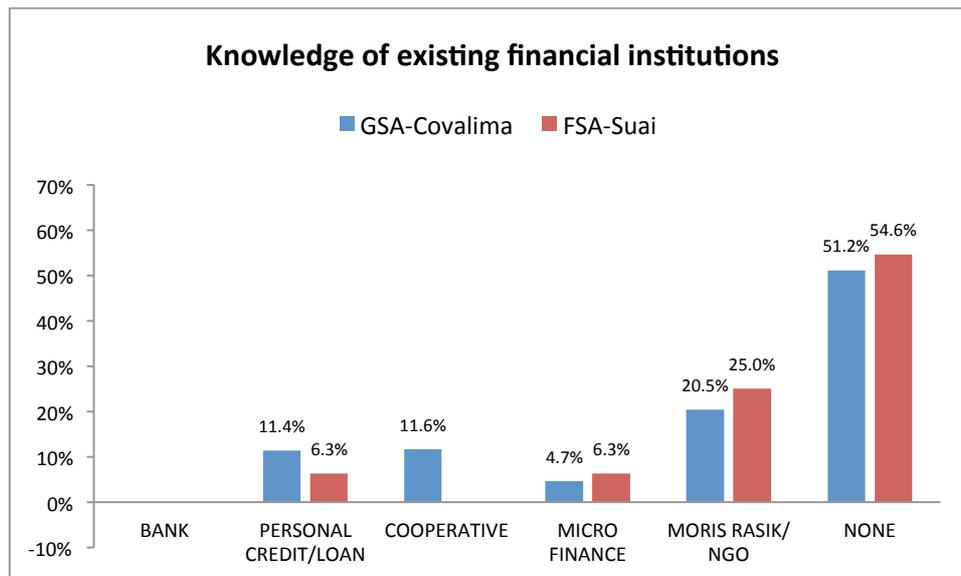


Figure 7-32. Knowledge of existing financial institutions

Only 3% of respondents in Suai (GSA Covalima 9%) had used financial services. These percentage figures for Suai were the lowest in the 5 surveyed subdistricts. For comparison, 18% of respondents in Pante Makasar and 23% of respondents in Atauro had used financial services.

#### 7.6.1.2 Respondents' knowledge of micro-credit assistance in their area

Knowledge of micro-credit assistance was limited in Suai (16%) and in Covalima district it was even lower (14%). 84% of respondents in Suai had no knowledge of micro-credit financial support programs. These results may mean there were either no available micro-credit services or mean that the awareness or access of coastal community members from this area was very low.

60% of the respondents in Suai (43% in Covalima) who knew of the existence of micro-credit assistance in their area were aware of that the NGO Moris Rasik provided micro-credit assistance. Some were aware of the existence of cooperatives and government assistance, but not credit unions and the church. Awareness of NGO and Moris Rasik in Suai was the second highest in the 5 surveyed subdistricts.

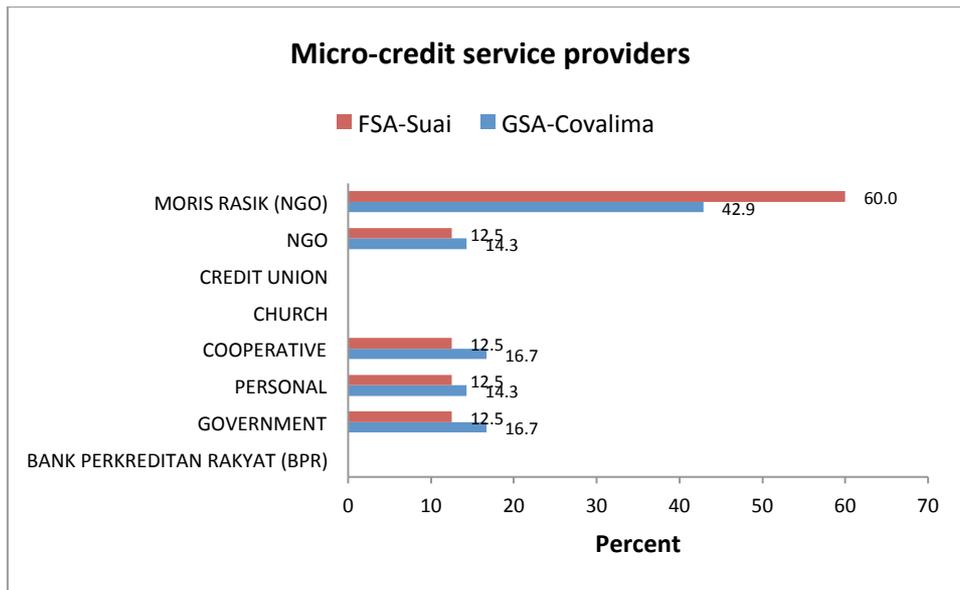


Figure 7-33. Micro-credit service providers

### 7.6.1.3 Experience using financial institution services

The very limited number of micro-finance institutions and micro-credit assistance sources in the survey area was reflected by the small number of respondents who had received financial or micro-credit loans. Only 3% of respondents in Suai (9% in Covalima) acknowledged that they had experience utilising financial institution services.

The only reason given by Suai borrowers for using micro-credit assistance or loans was as working capital (50%).

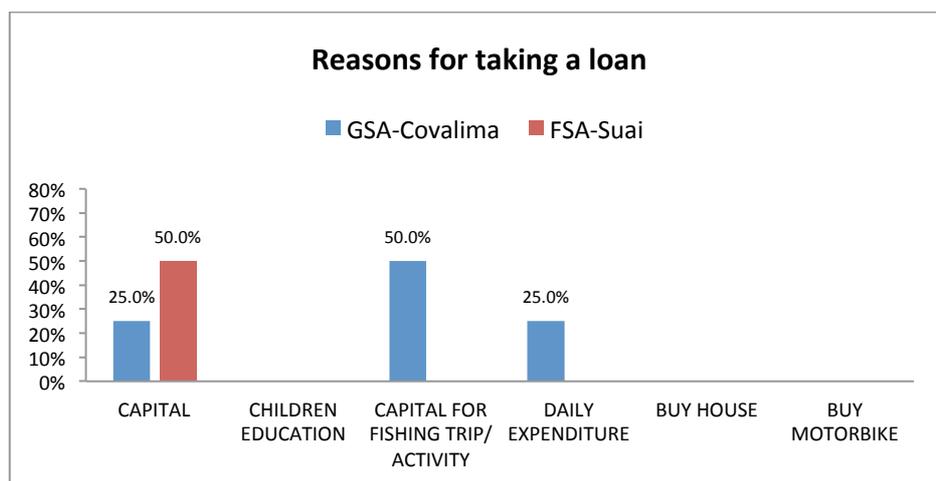


Figure 7-34. Reasons for taking a loan

Women's groups dominated the users of financial assistance (50%) compare to 38% for fisher groups (male users). This results micro-finance institutions like the NGO Moris Rasik and others, preferring to provide their services primarily to individual women or women's groups.

#### **7.6.1.4 Reasons for not borrowing from and not saving money with financial institutions**

As described above, the awareness of financial institutions in Suai subdistrict was particularly low with 55% of respondents not knowing whether there was a financial institution in their area. Feedback during Focus Group Discussions on perceptions of credit services was largely negative. The general perception was that getting loans from finance institutions was difficult and interest rates were high. Most fishers have never been in debt and were afraid of being unable to repay a loan. In these circumstances they preferred to borrow money from other fishers or from their relatives (13%) or use the services of a traditional group “arisan” (8%).

Arisan is a social gathering in which a group of friends and relatives meet monthly for a private lottery similar to a betting pool<sup>18</sup>. Each member of the group deposits a fixed amount of money into a pot, then a name is drawn and that winner takes home the cash. After having won, the winner's name is removed from the pot until each member has won and then the cycle is complete. This is called a *fixed lottery* because it is fair to all participants in that each member wins an equal amount over the course of a complete cycle and no interest is charge on the load. Arisan is particularly popular among housewives.

As arisan has social objectives rather than economic objectives this activity can not be used to tackle problems of livelihoods, and particularly in income generation for housewives' households. However it can be seen that because the housewives had a certain level of control as money managers in their households they were able to set aside some money to join arisan groups.

The two main reasons given for not borrowing money from institutions, i.e. *do not know how to borrow* (25%) and *difficult* (55%) indicate a lack of knowledge in the community about the process of borrowing. The other two reasons (*high interest* 34% of respondents and 38% of respondents were *afraid of not being able to repay* the loan) relate to the income capacity and income stream uncertainty of the community and of fishing as a livelihood.

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<sup>18</sup> Source: <http://en.wikipedia.org/wiki/Arisan>

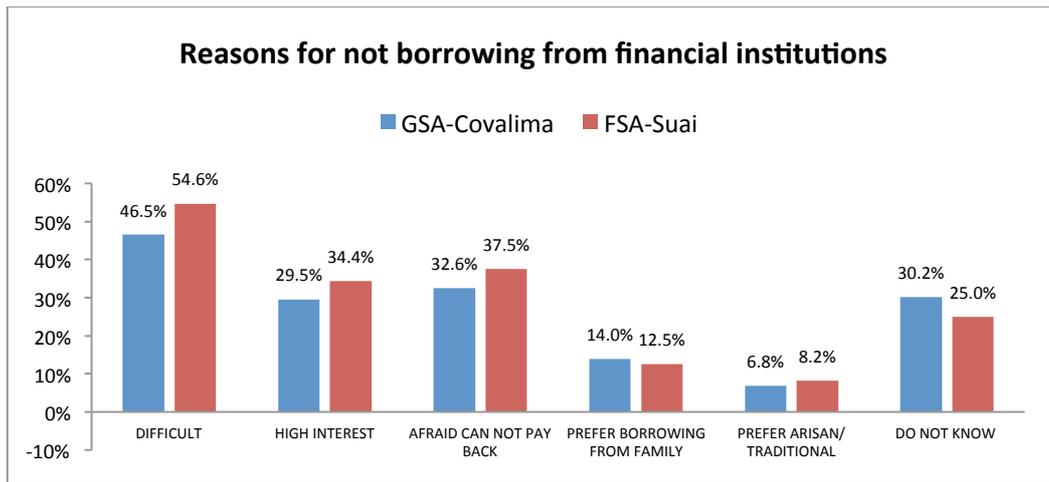


Figure 7-35. Reasons for not borrowing from financial institutions

FGD with fishers from Camenasa, and Fatuisin in Suai revealed that the main reason they did not *borrow* money from financial institutions was that there were no cooperatives and micro-credit institutions in their area. There was also a common concern that they may be unable to repay the loan.

The main reason given for not *saving* money was a lack of surplus income to be saved (53%). In addition 14% were afraid of not getting their money back; while others did not know how to save money in financial institutions (13%) or did not regard the interest on the money saved as sufficient (13% each).

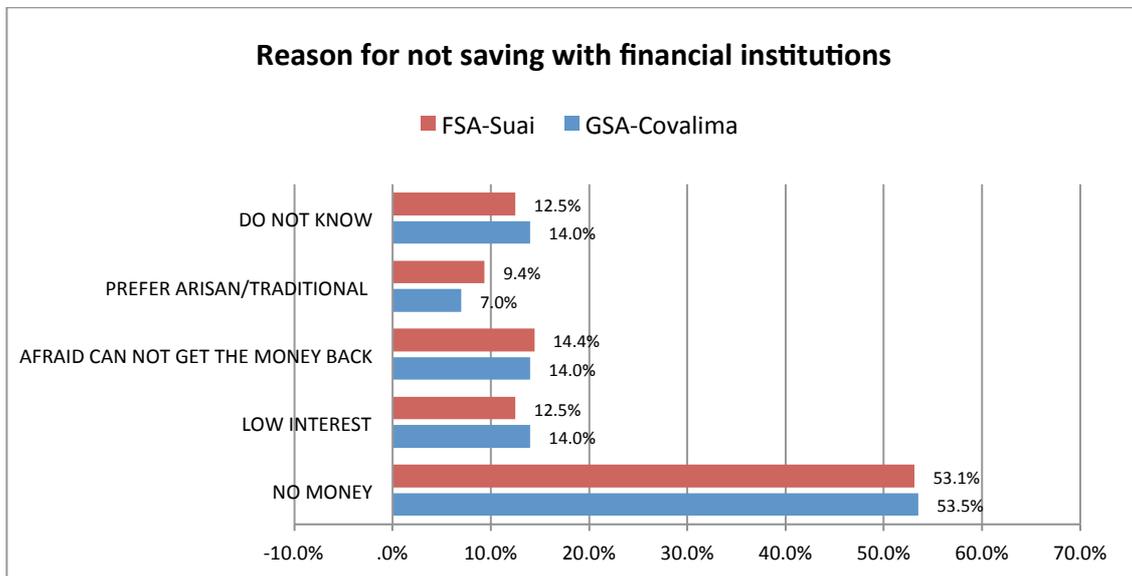


Figure 7-36. Reasons for not saving with financial institutions

### 7.6.1.5 Respondents' ability to save

FGD and IDI revealed that average daily family expenses in Suai were around \$5-10, while the average daily income from fishing was \$15. Theoretically, each family could therefore save \$5-10 per day. However, fishing was not always done daily and was also seasonal.

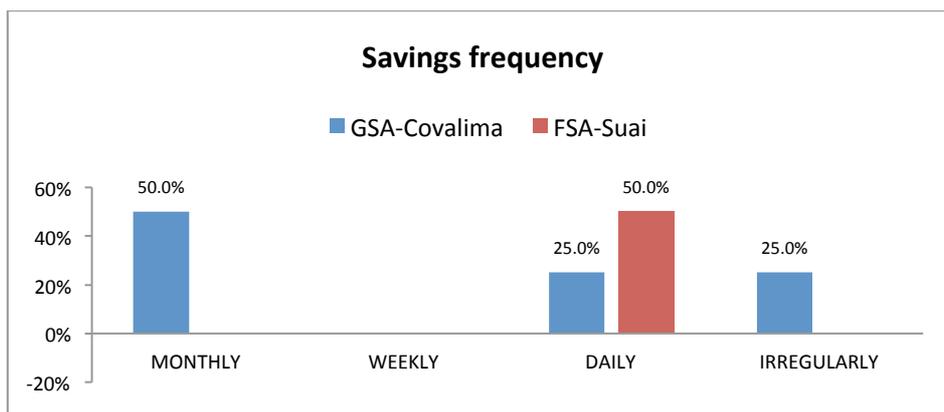


Figure 7-37. Savings frequency

From the quantitative survey, 50% (of the 3% who have borrowed from financial institutions) say that they can save money daily. However, being from such a small sample this number might not be representative of the overall situation in Suai.

Fishers who were members of a group, usually had their own group savings. These were set aside from fish sales, usually 20-30% of total sales. Fishers use these savings to pay for purchases or to repair fishing gear repair or for daily expenses during the low season.

Saving cash in households was not commonly practiced in the community. Most respondents explained that their savings were in the form of livestock, which they can easily sell if they needed cash for daily expenses, including for educational purposes. Keeping livestock was also important to supply the needs of the community for traditional feast ceremonies.

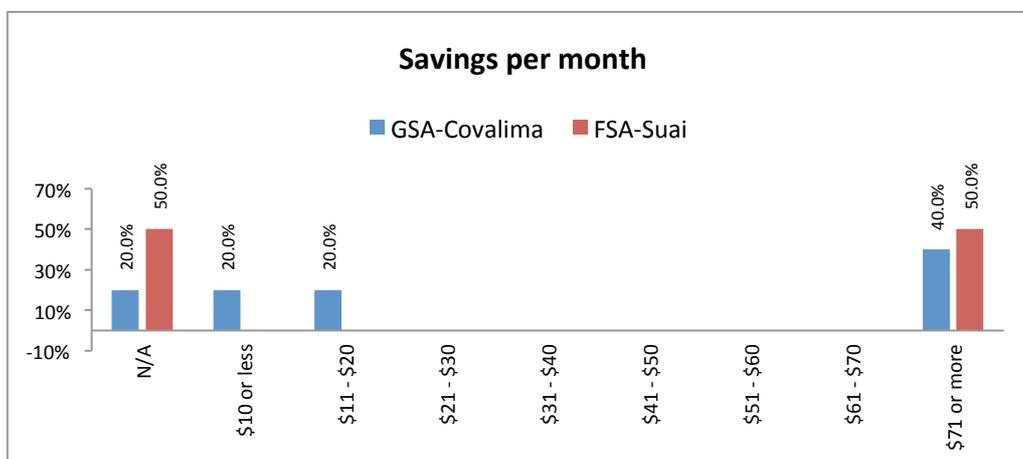


Figure 7-38. Savings per month

Half of respondents did not answer how much they saved regularly. The other half reported saving more than \$70/month. However, this percentage might not be representative to the whole district and subdistrict areas as the sample was very small.

## 7.6.2 Analysis

### 7.6.2.1 Availability of financial institutions

Although financial institutions, which could support fisher's activities were available, the majority of fishers were unaware of them. The existing financial services known to the

community were mostly those of the NGO Moris Rasik NGO (45%). The involvement of banks, credit unions and financial institutions as part of government programs was very limited.

There was no information available on the total number of finance institutions in Suai or the reasons why the community were unaware of them. Presumably, this was due to the informal character of their business operations, without formal offices or secretariats, which can be easily recognised by the community. Therefore, awareness raising of the roles and services provided by financial institutions and the benefits for the community should be conducted.

### **7.6.2.2 Community access to financial institutions**

Only 3% of respondents in Suai had experience in using financial institution services, i.e. borrowing money, while the majority (97%) had never used financial institution services. This condition indicates that the government financial assistance program in the form of micro-credit was still limited. The limited community access to financial institution is most likely due to the limited availability of information on the services provided.

### **7.6.2.3 Utilisation of loans**

As the sample was very low, analysis of the utilisation of the loan was not conducted, hence the purpose, benefits and procedures of the assistance/program for community are not well understood.

## **7.6.3 Recommendations**

- a. Improve community understanding of micro-finance services, both borrowing and saving money. Information dissemination from the financial institutions on the borrowing and saving process needs to be intensified. In parallel, training on the use of micro-finance services and basic training on household financial management should be provided to the community.
- b. Improve the service capacity of the financial institutions for fishers through the establishment of new institutions or the strengthening of existing ones. In the event that new micro-finance institutions were to be established, it is suggested that the financial institutions should focus on fishers' needs. If existing institutions are strengthened, it is recommended that the institution develop special services for fishers and should allocate loans for fishers to be used as capital.
- c. Awareness raising needs to be conducted to inform the community of the existence of financial institutions, the types of services they provide and the requirements for taking a loan.
- d. Examples of individual loans, both successful and failed, to several fishers in Atauro, which is considered a good example of a fisheries-livelihood dependent area, can be used as lessons learnt for developing micro-credit services appropriate for to fishers in Covalima district, and particularly in Suai.

## 8 RESULTS AND ANALYSIS – OECUSSE AND PANTE MAKASAR

### 8.1 Respondent Profiles

Oecusse District is located 80 km west of contiguous Timor-Leste, surrounded on land by a boundary with the Indonesian province of Nusa Tenggara Timur and to the north by the Savu Sea. It has an area of 815 km<sup>2</sup> and comprises 15% of Timor-Leste's territory.

Oecusse consists of 4 subdistricts and 18 sucos: Nitibe (5 sucos), Oesilo (3 sucos), Pante Makasar (7 sucos) and Passabe (3 sucos).

The total population of Oecusse is 65,524 with a growth rate of 2.14% pa. Average household size is 4.7 and the sex ratio is 97 males per 100 females.

Unlike the other 12 contiguous districts of Timor-Leste on the eastern end of the island, Oecusse is an enclave or a dislocated district surrounded by the sea and Indonesia. Geographically and economically, the people of Oecusse are closely linked to West Timor<sup>19</sup>. Prior to the Popular Consultation in 1999, Oecusse enjoyed a beneficial location, being more or less equidistant from Timor's main centres of Dili and Kupang. It also benefited from a relatively busy coastal trade and Oecusse was a popular source of cattle for most of West Timor. However, based on the Estatal report, these geographic relationships have been adversely affected by the imposition of a new border around the enclave.

Fishing in Oecusse is a small-scale industry with no post-catch infrastructure at present. In Oecusse town, fish tends to be available for only a few hours following catch from fish peddlers, on foot and on bicycle (Estatal, 2002).

Development of the fishing sector has been identified as a business opportunity in Oecusse, however, constraints such as inadequate transport (including roads) and communications infrastructure and poor access to credit, financial services, business advice and training have hindered progress.

There were 47 respondents in the sample for the General Survey Area (GSA) in Oecusse district (Confidence Interval CI = ±14%). Due to high confidence interval (or high margin of error) affected by low numbers of respondents in the sample, some caution should be considered in interpreting the survey results of this GSA. For the Fisheries Livelihoods Project Survey Area (FSA) in Pante Makasar subdistrict, there were 130 respondents (CI = ±9%).

Unless otherwise stated, all the percentages used in the following sections in this chapter are based on the total number of respondents in the respective survey area.

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<sup>19</sup> Source:

<http://www.estatal.gov.tl/Documents/District%20Development%20Plans%20and%20Profiles/Oecusse/District%20Profile%20Oecussi%202002.pdf>

## 8.2 Co-management

### 8.2.1 Fact-finding results

#### 8.2.1.1 Familiarity with the term co-management

In Oecusse District (GSA) 13% of the respondents were familiar with the term co-management. The result in the Project area (FSA Pante Makasar) was a little lower, i.e. 12%.

When asked about their understanding of the meaning of the term *co-management*, only 81% understood it to mean *communities working together with the government*, while a similar percentage thought it meant *collaboration among groups of fishers*. Approximately 59% considered it to be *sharing responsibility among fishers*.

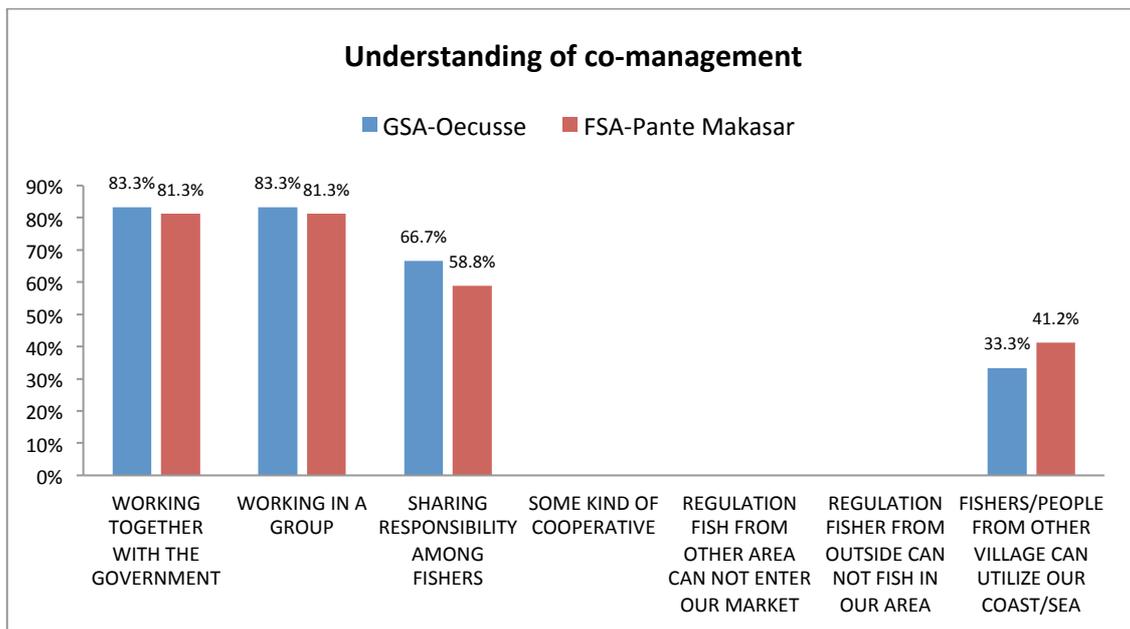


Figure 8-1. Understanding of co-management

#### 8.2.1.2 Existing collaboration

Most (82%) of the 12% of respondents who understood co-management, indicated that some forms of collaboration or group sharing of activities existed in their area in the form of *collaboration among groups of fishers*, while 38% referred to *collaboration between fishers group and government* and 21% said *sharing responsibility among fishers*.

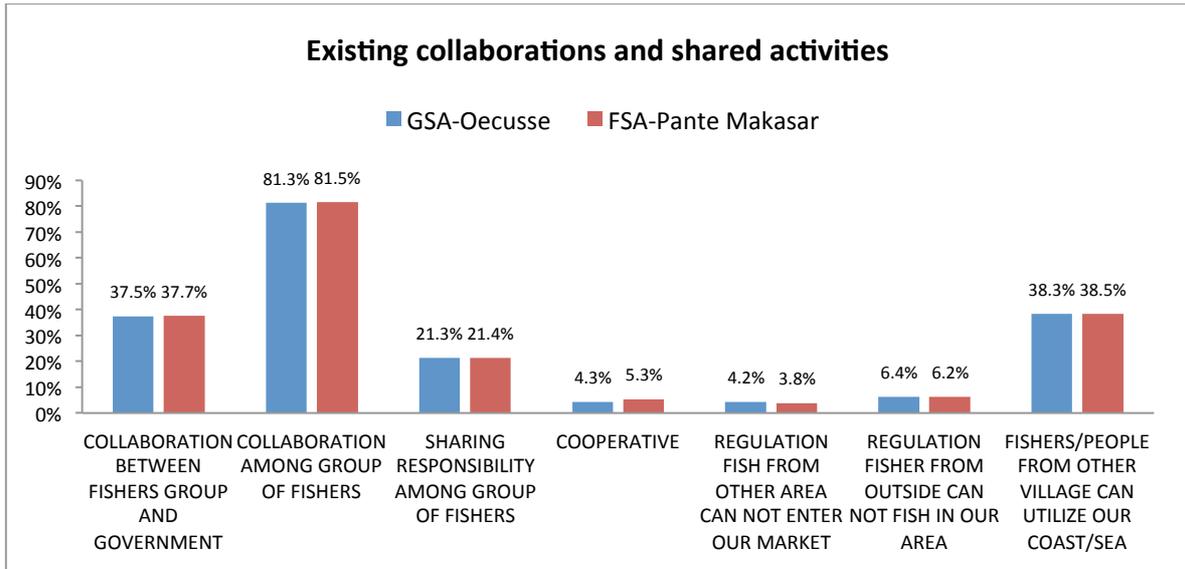


Figure 8-2. Existing collaboration and shared activities

### 8.2.1.3 Community groups

Fisher Groups were the dominant community group recognised in Pante Makasar (85% of responses). Other community groups commonly identified by the respondents were Savings and Loan Groups (30%), and Women’s Groups (58%). Savings and Loan Groups were more popular than cooperatives, with only 6% of the respondents recognizing cooperatives in comparison to around 30% mentioning Savings and Loan Groups.

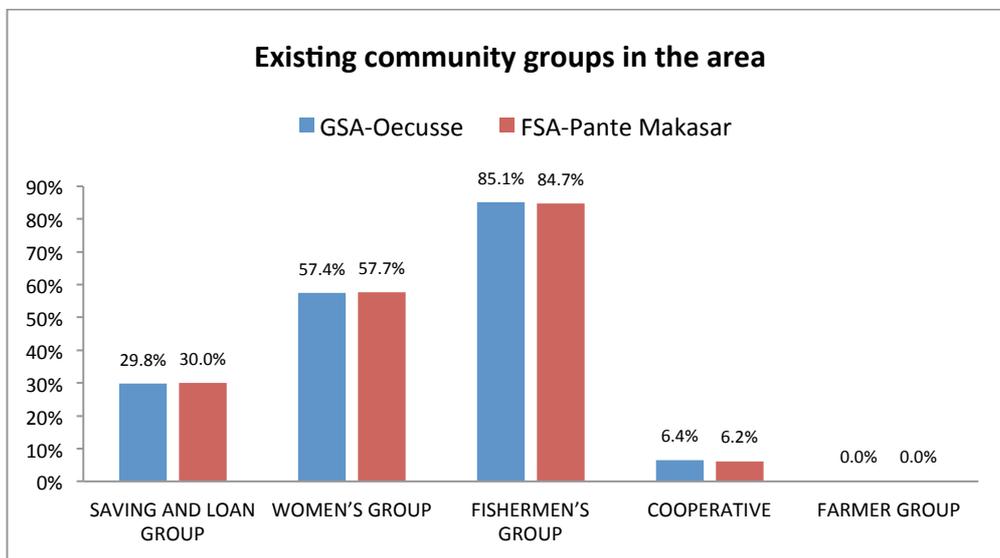


Figure 8-3. Existing community groups in the area

Approximately 62% (GSA Oecusse: FSA 63%) of the respondents had joined the activities of fisher groups. About 22% (GSA Oecusse: 23%) had participated in women’s group, but only 4% had been involved in savings and loan groups.

FGD with fishers from Suco Nipani revealed that there were 54 fisher groups. Each group consisted of 3-5 fishers, depending on the types of fishing boats used.

**External sources of assistance for community groups:** The respondents recognized several parties as providing assistance to the community groups. The Fisheries Office was mentioned by over 30% of respondents in Pante Makasar (GSA Oecusse: 30%). International NGOs accounted for 35%, while local NGOs were mentioned by 30% of respondents. District Government was identified by almost 18% of the respondents (GSA Oecusse: 17%) and Subdistrict Government was mentioned by 9% (both FSA Pante Makasar and GSA Oecusse).

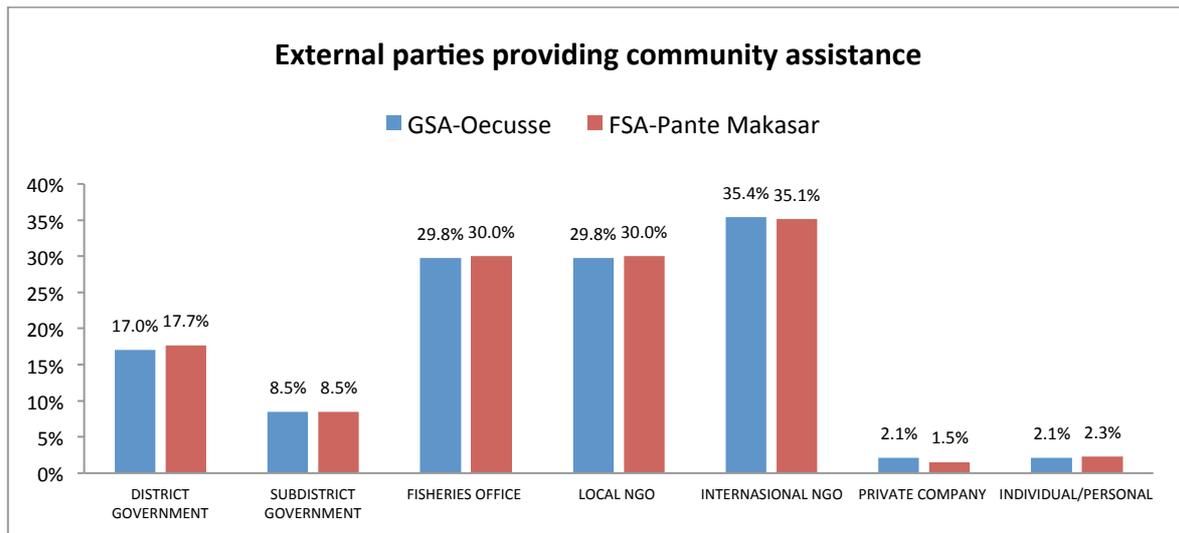


Figure 8-4. External parties providing community assistance

**Community groups receiving external assistance:** In Pante Makasar, fisher groups were identified as the type of group, which received the most external assistance (66%). They were followed by women’s groups (38%) and farmers’ groups (35%). Relatively little assistance (<8%) was reported as being provided to seaweed farmers.

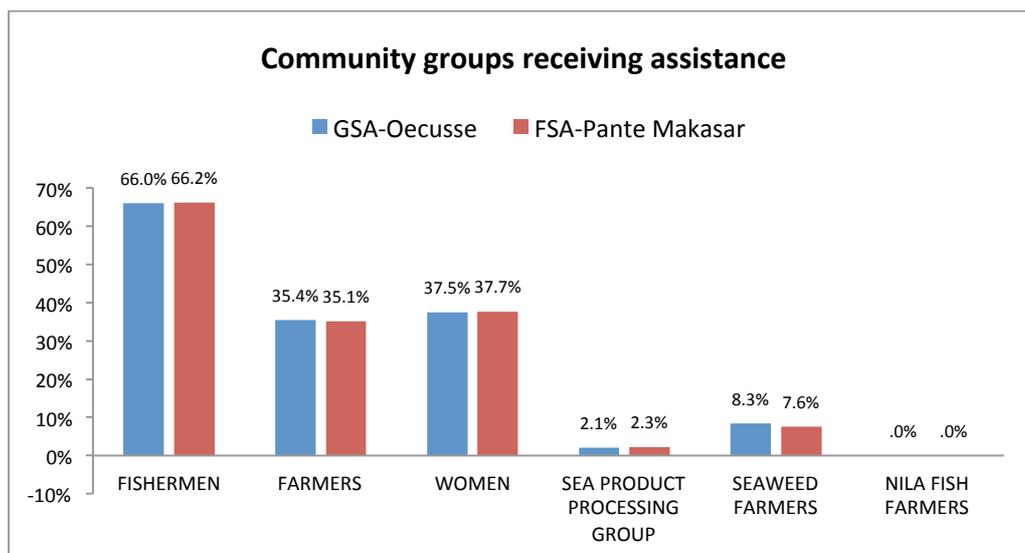


Figure 8-5. Community groups receiving assistance

FGD with fishers from Pante Makasar, confirmed that fishing groups were the ones receiving the most assistance from the government. There were several Field Extension Officers/Instructors in Oecusse and each officer/instructor focuses his/her efforts in one specific work area such as: aquaculture of freshwater and brackish-water fish, boat engines or fishing techniques.

There was formerly a group of seaweed cultivators trained and assisted by Oxfam (an International NGO), but this has stopped as the group members thought that there were no buyers in the area and/or the group members did not know where to sell their seaweed.

10 out of 54 fisher groups in Nipani have already receive assistance in the form of boat engines from the Fisheries Office. Similar assistance has also been provided to 20 fisher groups in Suco Costa and 4 groups in Nitibe.

#### 8.2.1.4 Knowledge concerning policy and regulations

The existence of a village body responsible for regulating marine resource utilisation was reported by only 11% of respondents in Pante Makasar (GSA Oecusse: 14%). 17% of respondents indicated knowledge of the existence of written regulations concerning resources utilisation in Pante Makasar (GSA Oecusse:20%).

#### 8.2.1.5 Women's roles in fisheries

Direct involvement of women in fisheries included product selling (54%) and product processing (44%). Women also had a very important role in domestic household financial management (80%). Sometimes women also helped with the cleaning and mending of nets.

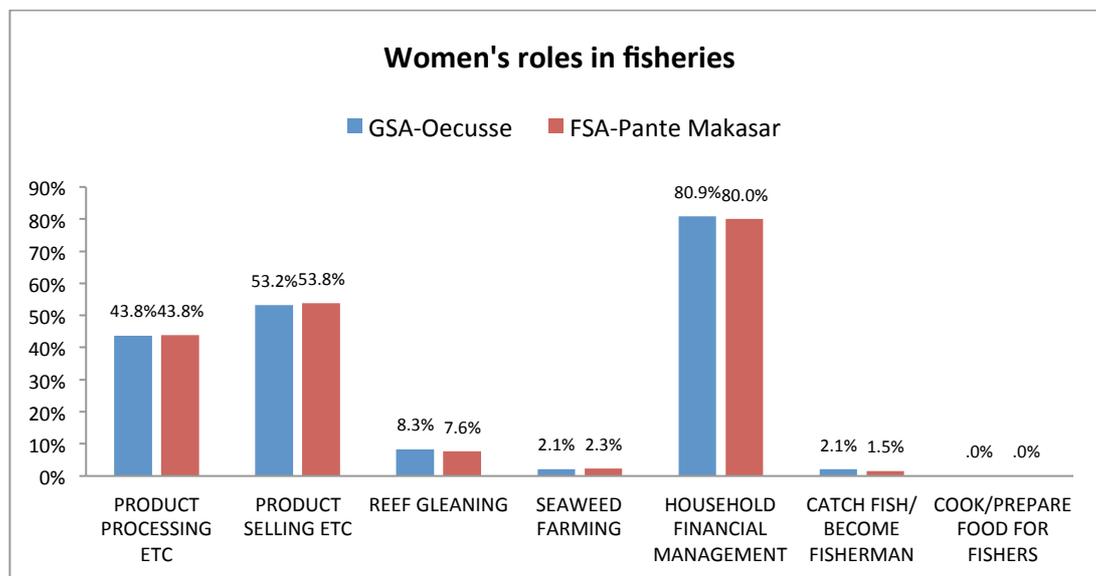


Figure 8-6. Women's roles in fisheries

Other fisheries related activities mentioned were reef gleaning (8%). Women play an important role in reef gleaning activities, which can be undertaken for 6-8 days per month at

the lowest tides. Women should be encouraged to establish women's groups and to be active in alternative livelihoods programs.

#### **8.2.1.6 Conflict resolution**

Only 11% of respondents in Pante Makasar (GSA Oecusse: 11%) mentioned the existence of conflict in the area.

Where conflict has occurred it was readily resolved according to 87% of respondents (GSA Oecusse: 83%). Conflicts were often resolved through fisher/community meetings (50%) or with the involvement of the elderly/community leaders (50%). Other government authorities also take a role in mediation and conflict resolution such as the Local Fisheries Office (23%) or the case was reported to the police (15%).

### **8.2.2 Analysis**

#### **8.2.2.1 The understanding of co-management concept**

Real understanding of the co-management concept was limited. Only 12% were familiar with the term. In Pante Makasar 82% of those (approximately 10%) correctly understand it. Most thought co-management meant *collaboration among groups of fishers*.

#### **8.2.2.2 Community groups**

There was existing collaboration among fishers. Some fisher groups in the area were actually initiated and promoted by the government as a conduit for channeling government assistance in fisheries. Fisher groups were the main groups in Oecusse and Pante Makasar (85%) followed by women's groups (58%).

FGD with fishers from Suco Nipani revealed that there were 54 fisher groups. Each group consisted of 3-5 fishers, depending on the types of fishing boats they operated.

#### **8.2.2.3 Knowledge concerning policy and regulations**

Respondents had little knowledge of policy and regulation, despite socialisation of new regulations having been conducted by Fisheries Office staff. In addition there was no reported customary law in place. Further efforts and facilitation on the implementation of the regulations, i.e. on the types of protected species, is required.

#### **8.2.2.4 Women's roles**

Direct involvement of women in fisheries was high in product selling and product processing. Women were also reported to have a very important role in domestic household financial management (80%). Because women were in control of household financial management, there is an opportunity to improve their skills through financial management training for women's groups.

Training in the making of fish balls, shredded fish meat and salted fish has been provided to the women of Suco Costa. However due to the lack of available markets they have abandoned production.

#### **8.2.2.5 Conflict resolution**

There has been little conflict among fishers in Pante Makasar. What conflict has occurred was due to the use of explosives, which were considered destructive by other fishers.

Conflicts were resolved through mediation by the community leader and the Fisheries Office. Conflicts will be significantly reduced once the regulation on prohibited fishing tools/gear is in force.

### **8.2.3 Program recommendations**

- a. Strengthening of the many existing fisher groups in Oecusse through training and facilitation is required to improve community capability to manage resources.
- b. Facilitation in group and organisational management should be conducted to increase the capacity to collaborate for mutual advantage and increased management/organisational capability.
- c. Women's groups can be strengthened to improve economic capacity and to develop alternative livelihoods activities.
- d. Continuous awareness raising of regulations on marine resources utilisation should be conducted, including the types of protected species, the needs to ban mangrove cutting, and the danger of potash to the sustainability of fish resources.
- e. There should be efforts to increase awareness of sustainable use of resources. The communities should be aware that they must participate in any efforts to maintain sustainability of their marine resources and how this links to better community welfare.
- f. The role of women in fisheries should be strengthened through training in product processing and selling.
- g. Women already play an important role in domestic household financial management; therefore, increasing their capacity in micro-finance management and micro-enterprises development would be appropriate in any initiative to increase family welfare.

## **8.3 Safety at Sea**

### **8.3.1 Fact-finding results**

#### ***8.3.1.1 Types of problems encountered at sea***

Most fishers in Pante Makasar (65%) have encountered problems at sea. Among the problems identified, most had encountered bad weather and high waves (92%), followed by overturned boats (31%), boat leakage (27%) and engine trouble (24%).

Despite this, fatalities were considered uncommon, with 77% of respondents stating that fatalities occurred only rarely or very rarely.

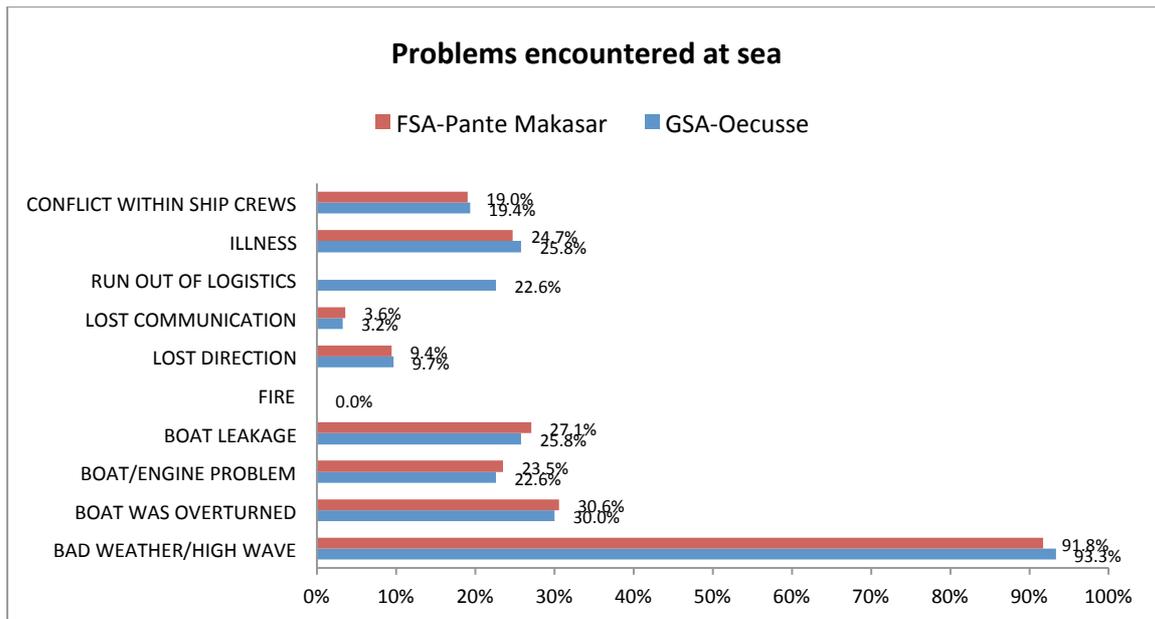


Figure 8-7. Problems encountered at sea

### 8.3.1.2 Responding to problems

When faced with dangerous events at sea, the main response (46%) was to look for other boats to provide assistance. Consistent with the perception that accidents at sea were rarely fatal, the FGD showed that fishers in Pante Makasar do not consider accidents at sea to be a serious matter. This was particularly the case because their fishing grounds were very near the shore (around 2 km from the coast or still within sight of the shore).

Overtaken boats comprise the majority of actual accidents. In this situation fishers would swim, right the boat and if possible continue their fishing activities. Safety equipment brought on board was generally limited to a 5-litre empty jerry can, which can be used for personal floatation.

Approximately 47% of fishers indicated timely assistance in emergencies, while 47% said help came, but was too late and they had to rely on their own efforts.

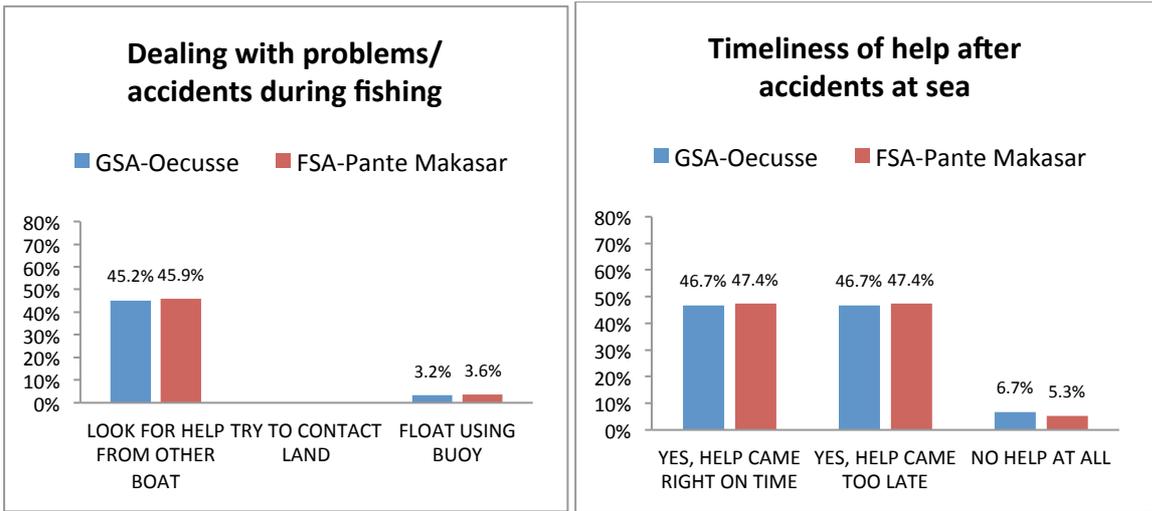


Figure 8-8. Dealing with problems at sea and timeliness of help received

### 8.3.1.3 Impact of accidents at sea

When asked about the impacts of accidents at sea 75% considered loss of income to be the main impact, followed by 19% who responded that they became sick and 6% who suffered injury. Approximately 13% said that there were no impacts at all.

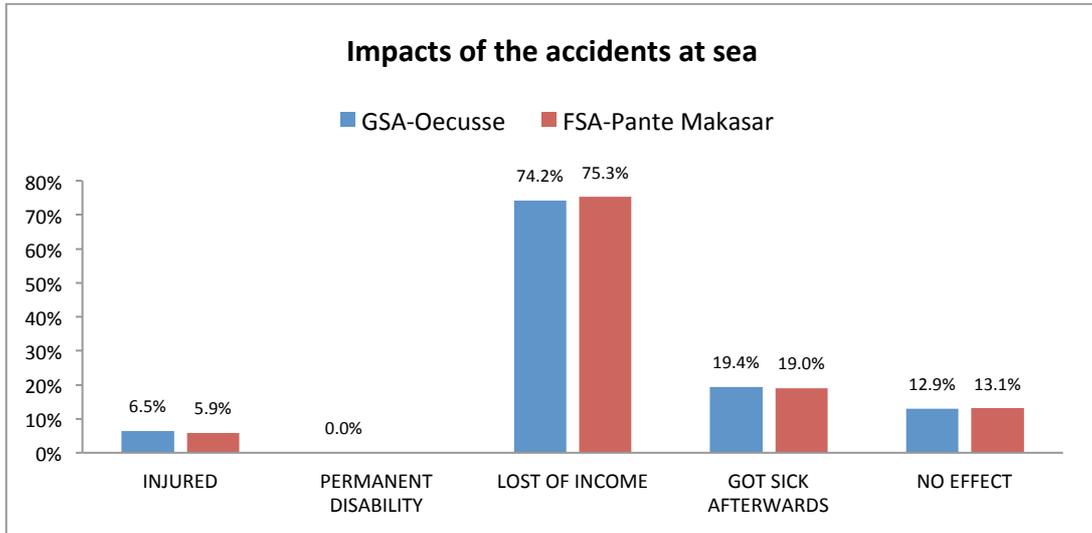


Figure 8-9. Impacts of accidents at sea

### 8.3.1.4 Attitude to risks at sea

Fishers in Pante Makasar accept the risks associated with their livelihood, with 77% agreeing or strongly agreeing that accidents at sea were an uncontrollable fate that was outside their control. Regarding the causes of accidents 67% believed that accidents were an inherent occupational risk, while 47% believed that they were caused by negligence. There was a broad mix of perception on whether incidents at sea were “pure accidents”. 4% strongly

agreed, 44% agreed, while 9% disagreed, 6% strongly disagreed and 38% did not know/had no opinion.

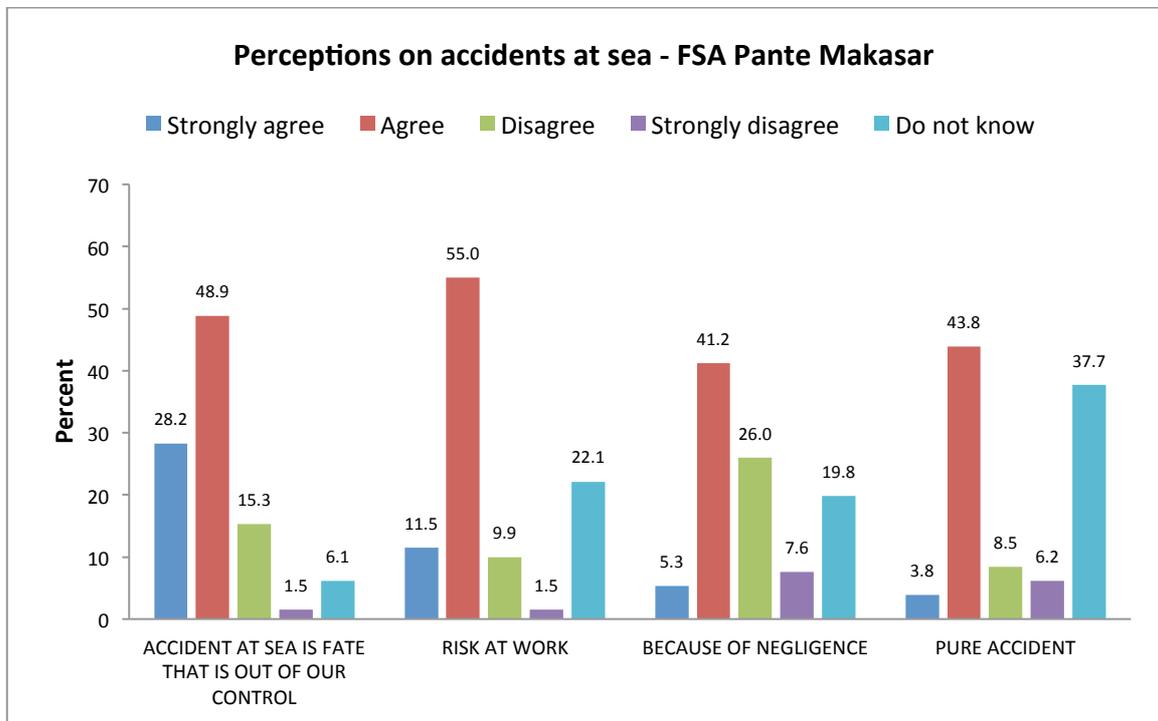


Figure 8-10. Perceptions on accidents at sea in Pante Makasar subdistrict

### 8.3.1.5 Safety regulations, equipment and information

#### 8.3.1.5.1 Awareness of regulations

A better understanding of the concept of safety at sea is needed to ensure the practice of safe and responsible fishing. Only 12% of respondents were aware of any applicable regulations concerning Safety at Sea. Those who were aware only understood that applicable regulations required them to carry safety equipment and life jackets when fishing at sea.

#### 8.3.1.5.2 Safety equipment

When asked if they took safety equipment on board when fishing, only 25% of the Pante Makasar respondents said yes. Results of the focus group discussions revealed that as the respondents rarely experienced fatalities at sea, adherence to sea safety practices was low. Safety equipment was considered to be expensive and a low priority for fishers to buy and maintain it.

#### 8.3.1.5.3 Perceptions of safety equipment required on board

A flashlight (torch) was considered to be an essential item of safety equipment by many (31% of Pante Makasar respondents) especially for traditional fishers and for those fishing at night who also use a torch to attract fish.

Also considered by many to be essential items to be carried when fishing were life jackets (36%) and floats (48%). Floats included life buoys (38%) which also includes 20-litre water bottles and tyres, and 5-litre jerry cans (10%),

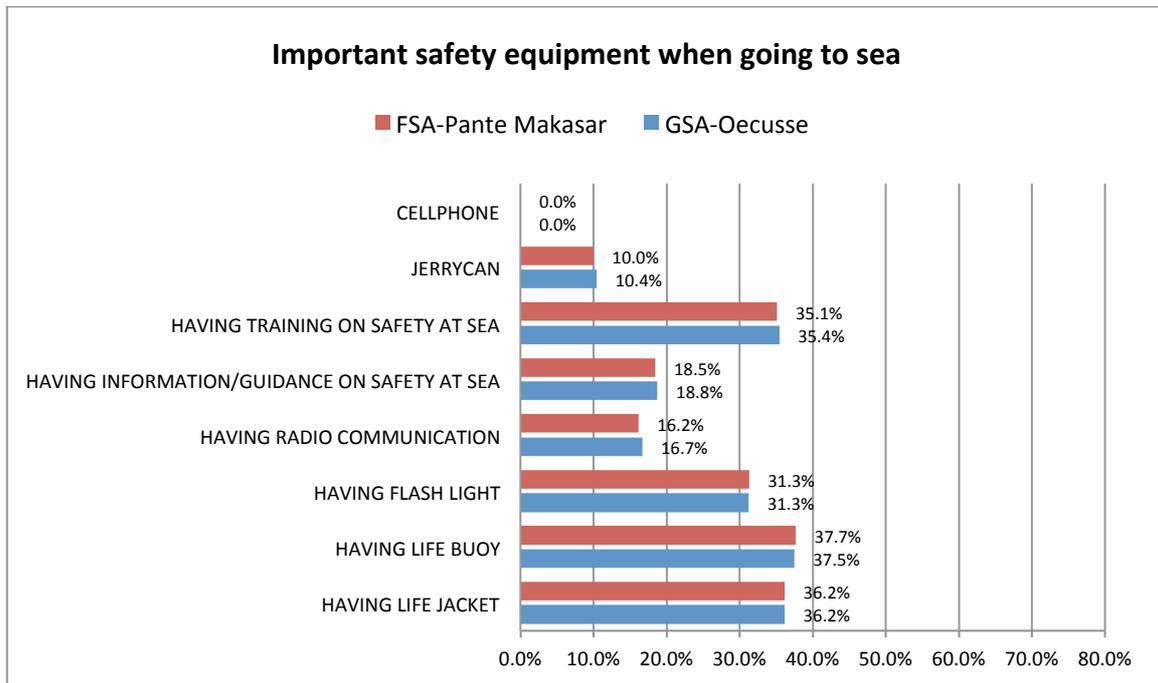


Figure 8-11. Important safety when going to sea

### 8.3.1.6 Information on safety at sea

The majority (88%) were unaware of any information on safety at sea. Of those who have received safety information (12%), the Fisheries Office (45%) was the main source followed by the community leaders (28%) and NGOs (17%).

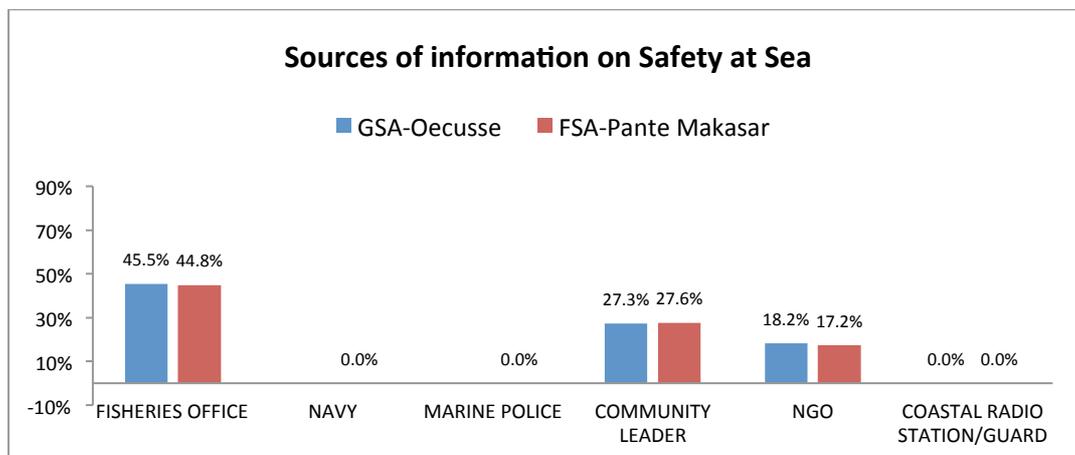


Figure 8-12. Sources of information on Safety at Sea

## 8.3.2 Analysis

### 8.3.2.1 Dealing with problems encountered at sea

Although the respondents were aware of problems encountered at sea, they considered that problems with bad weather cannot be avoided, and must simply be faced. Moreover, as accidents at sea were rarely fatal, and considering that their fishing ground was still within sight of the shore, precautions to prevent accidents at sea were still negligible. Therefore, the types of safety equipment taken on board when going fishing remained very limited. Socialisation related to safety at sea and its risks has been conducted by the Fisheries Office.

Proper safety equipment was considered expensive. Being a low priority, most fishers expected that the government should provide safety equipment.

### 8.3.2.2 Awareness raising and implementation of safety regulations

Only 12% of respondents at FSA Pante Makasar were aware of any applicable regulations on Safety at Sea. Further, their understanding was that regulations were limited to the carrying of safety equipment and life jackets when going fishing at sea. Despite their low level of understanding, training on safety at sea has been undertaken by the Fisheries Office. Training addressed equipment, preparation for sea and how to avoid accidents.

## 8.3.3 Program recommendations

Knowledge of safety at sea is important, particularly as there is a government plan to accelerate fisheries development in Timor-Leste. Fishers should be made aware of the importance of proper safety equipment. The Fisheries Office should intensify its interaction with fisher groups and providing adequate information on fishing related activities and safety as part of responsible fishery activities.

## 8.4 Post-Harvest Fisheries

### 8.4.1 Fact-finding results

#### 8.4.1.1 The use of ice for preserving the catch

The use of ice for fish preservation was very low (4%) in Pante Makasar. There was no significant difference in ice use between GSA Oecusse and FSA Pante Makasar. The low utilization of ice for preserving fish was due to the lack of an ice producer. Ice production was limited to small-scale household production with no industrial scale production. Therefore, ice used for fisheries has to be imported from Dili, a prohibitively expensive option.

Table 8-1. Ice utilisation for fish preservation

Do you use ice to store the fish?	GSA Oecusse	FSA Pante Makasar
YES	4.2	3.8

### 8.4.1.2 Pre-sale processing of fish catch

Pre-sale processing of the fish catch was quite high in Pante Makasar. While 45% of respondents reported selling all their catch fresh, 54% reported processing a small amount of their catch. There was no significant difference between GSA Oecusse and FSA Pante Makasar respondents in the degree to which they processed their catch.

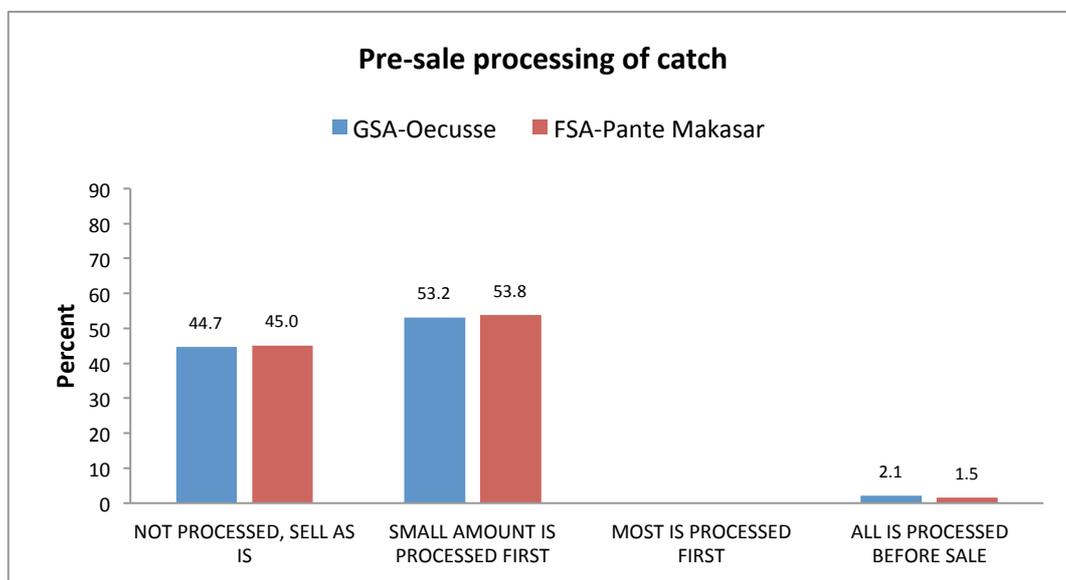


Figure 8-13. Pre-sale processing of catch

Dried salted fish (100%) was by far the most common processed fish product produced in Pante Makasar with smoked fish (4%) and mashed/salted fish (3%) as alternatives.

Table 8-2. Processed fish products

What do you make from it?	GSA Oecusse	FSA Pante Makasar
Salted fish	100.0	100.0
Smoked fish	3.8	4.2
Mashed and salted	3.8	2.8

### 8.4.1.3 Sources of post-harvest processing knowledge and skills

Family/traditional knowledge (95%) was the major source of post-harvest processing knowledge and skills in FSA Pante Makasar. The technology was also learned from community groups (9.7%). The proportion of fishers who obtained their knowledge and skills from training conducted by government or NGOs was very small (7%).

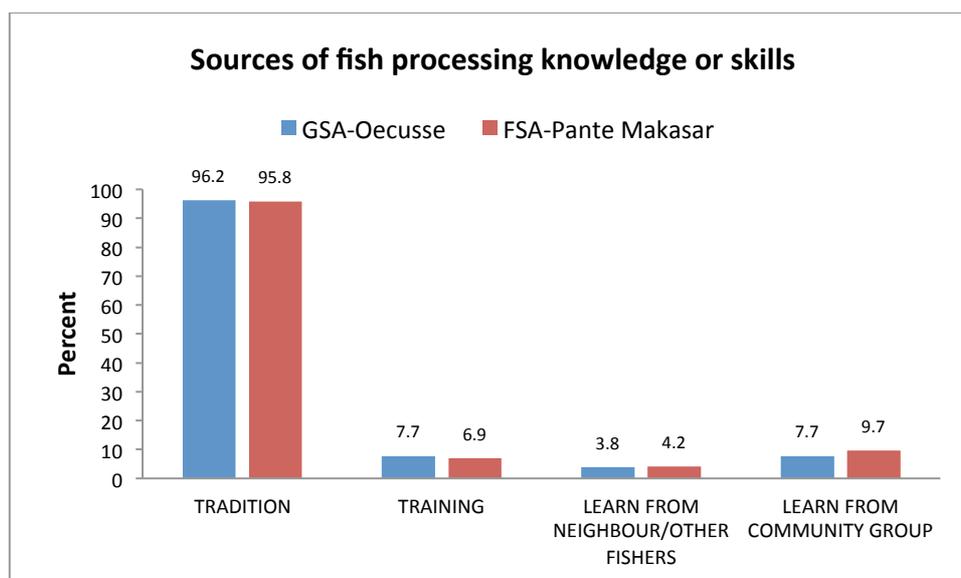


Figure 8-14. Sources of fish processing knowledge or skills

#### 8.4.1.4 Need for post-harvest processing knowledge and skills

Acceptance of the need for additional post-harvest skills and knowledge was high (96%) The most needed areas of knowledge and skills were:

- Training related to quality improvement of processed products and product diversification (90%).
- Additional fish processing knowledge (71%).

Table 8-3. Skills needed by fishers

Do you feel that you need skill/information for post-harvest skill?	GSA Oecusse	FSA Pante Makasar
Yes	96.2	95.8

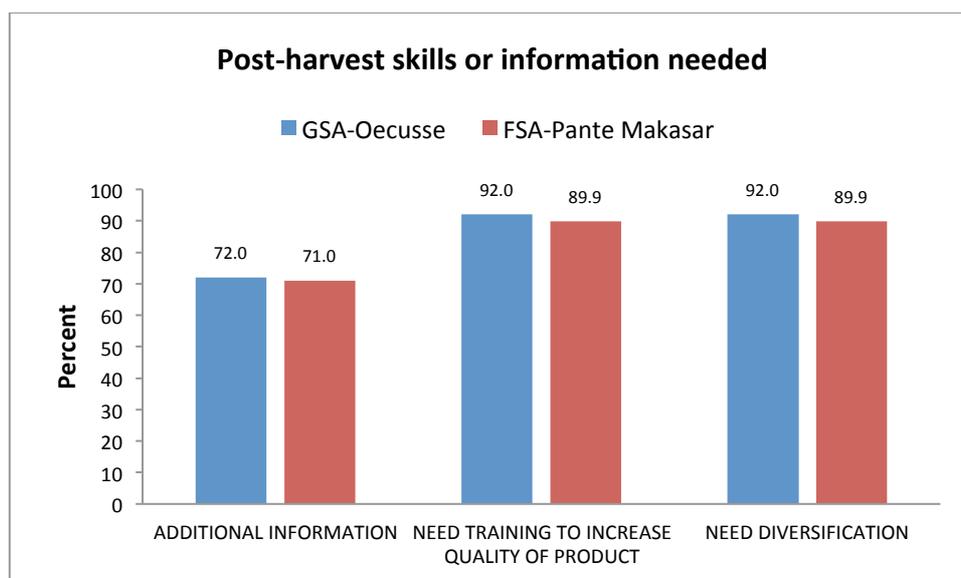


Figure 8-15. Fish processing skills or information needed

#### 8.4.1.5 Ownership of fish processing facility

Only 10% of FSA Pante Makasar fishers considered their facilities and equipment for fish processing to be adequate. On further questioning more than half indicated that a drying facility was needed (63%). Fishers also had problems with adequate access to modern equipment (39%) and knives/cutters (32%).

Table 8-4. Adequacy of processing equipment and facilities

Do you think you have adequate equipment to process fish/sea product?	GSA Oecusse (%)	FSA Pante Makasar (%)
Yes	8.0	10.1
No	92.0	89.9
What equipment/facility do you need?		
Modern processing equipment	39.1	39.3
Knife/cutter	31.8	32.3
Drying facility	63.6	62.9

#### 8.4.1.6 Selling locations of processed fish products

Locations for fishers selling processed fish products were:

- Sale in the local market (50%)
- Sale to buyers on the beach (14%)
- Sale on the road side (6.2%).

- Direct selling to consumer and local vendors, was conducted by only 1.5-4%.

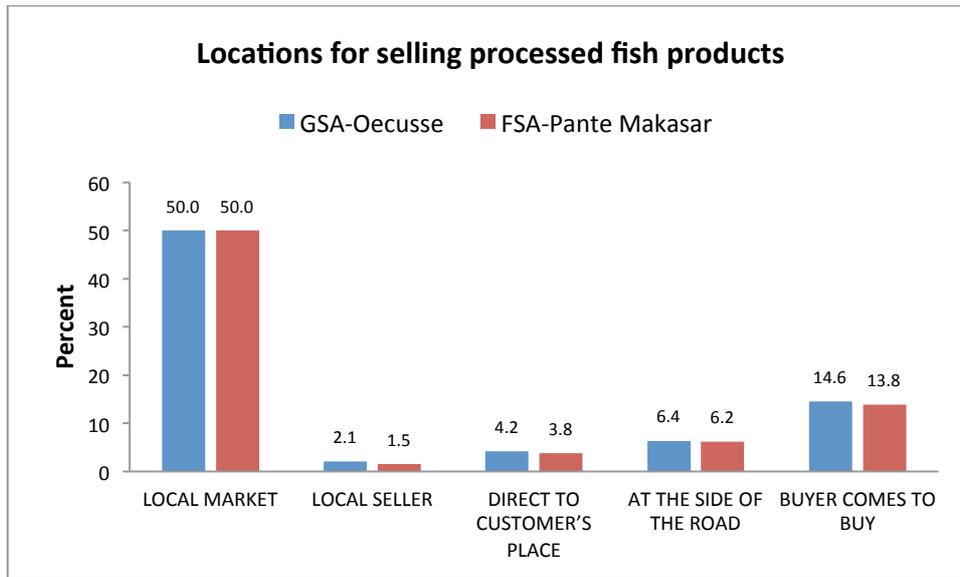


Figure 8-16. Locations for selling processed fish products

#### 8.4.1.7 Problems when selling processed fish products

Access to market (76%) and poor product quality (43%) were the biggest problems when selling processed fish products. Poor packaging of the processed products (22%) was also identified as a problem.

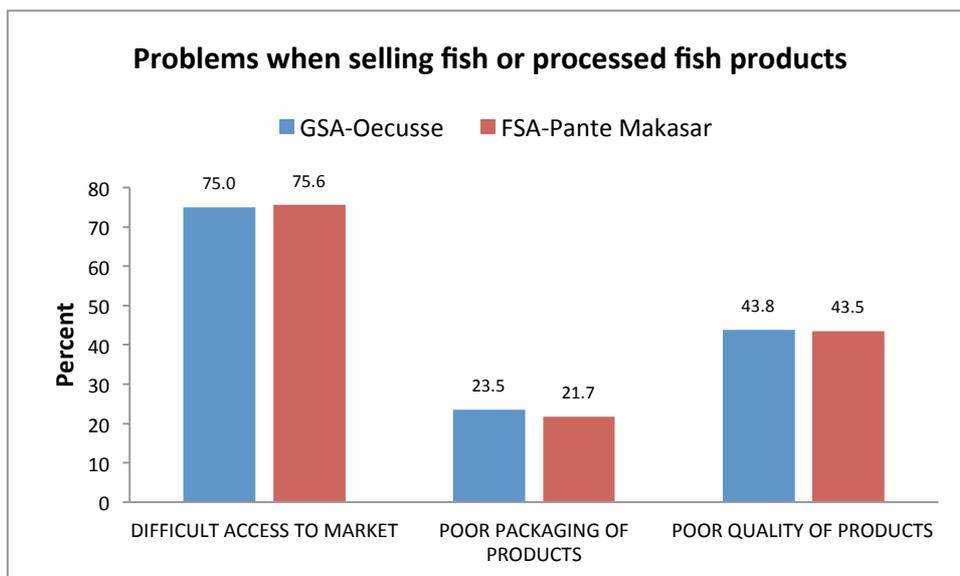


Figure 8-17. Problems when selling fish or processed fish products

### 8.4.2 Analysis

Ice production in Oecusse was very limited and larger quantities must be sourced from Dili, significantly increasing the cost of fish preservation using ice. Consequently fishers tend to sell their catch fresh, and as quickly as possible, after setting some aside for family consumption. This was readily achieved through local traders who buy most of the fresh catch however the prices paid were quite low, especially when fish were abundant.

Fishers have few alternative marketing opportunities as (i) traders only buy fresh product, (ii) there was a general absence of facilities and information about market demand for fish products, and (iii) the quality and packaging of product supplied was very low.

### 8.4.3 Recommendations

- a. Household ice production should be encouraged to support individual fishers who conduct daily fishing activities.
- b. A survey on market demand should be conducted to determine where to sell fresh and processed fish/seafood products.
- c. Training in fish processing should be coupled with awareness raising on the benefits of producing processed fish with a longer shelf life.
- d. Multi-function fish auction places should be established and promoted (i) to be used as meeting places between fishers and buyers, (ii) to keep and preserve unsold catch, (iii) as places for fish processing activities, (iv) as places for fisheries training and socialisation for the community and (v) to collect catch and effort data to be used as an indicator for both the government and fishers on the state of aquatic stocks.

## 8.5 Livelihoods Enhancement and Diversification

### 8.5.1 Fact-finding results

#### 8.5.1.1 Frequency of going to sea

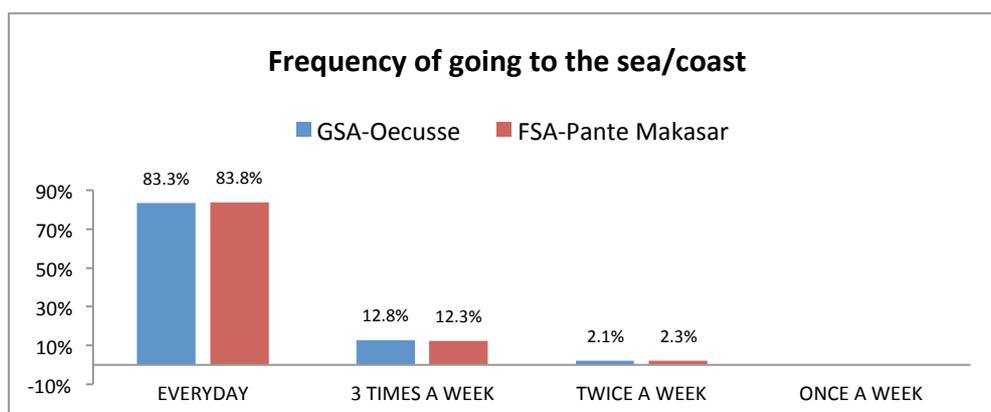


Figure 8-18. Frequency of going to sea in Oecusse district and Pante Makasar subdistrict

The pattern of fishing frequency varied depending on the season and other priorities. Some fishers fished every day, while others fished as little as one, two or three days per week.

Though their schedule varied, the responses of fishers indicate that most fish every day. From 130 respondents in Pante Makasar, 84% go to sea every day. Other respondents reported they go to sea only three times a week (12%) or twice a week (2%).

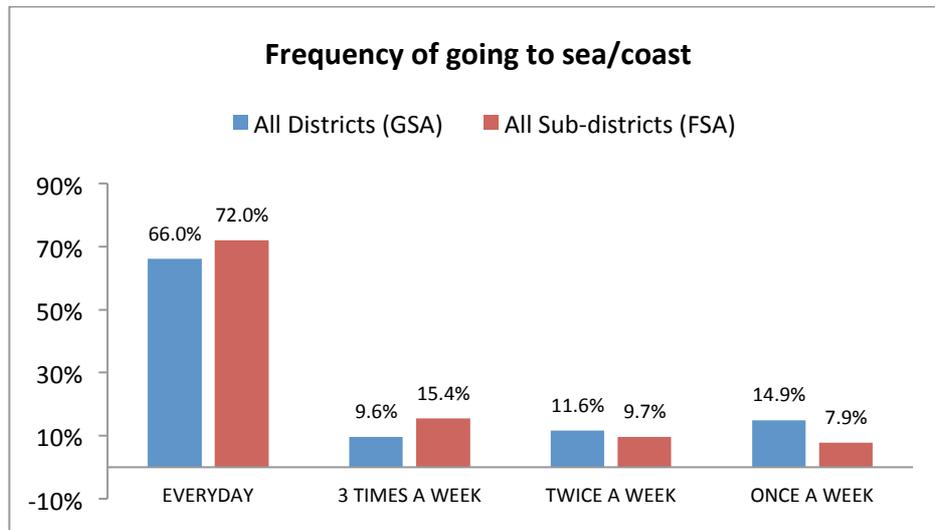


Figure 8-19. Frequency of going to sea in all 5 districts (GSA) and in all 5 subdistricts (FSA)

When compared to the average frequency in all 5 subdistricts, the frequency of Pante Makasar fishers going to the sea daily (84%) was the highest in all the subdistricts, while the frequency of fishers who go fishing twice a week (2%) was the lowest.

### 8.5.1.2 Duration of fishing trips

The greater majority (82%) were day fishers who spend less than 12 hours at sea per fishing trip. The largest group (62%) fish for periods of up to 6 hours. However, there were a significant group of fishers (20%) that spend up to 12 hours per day at sea. A relatively small numbers of fishers (12%) spend more than 12 hours a day (12-24 hrs) and multi-day trips were rare (5%).

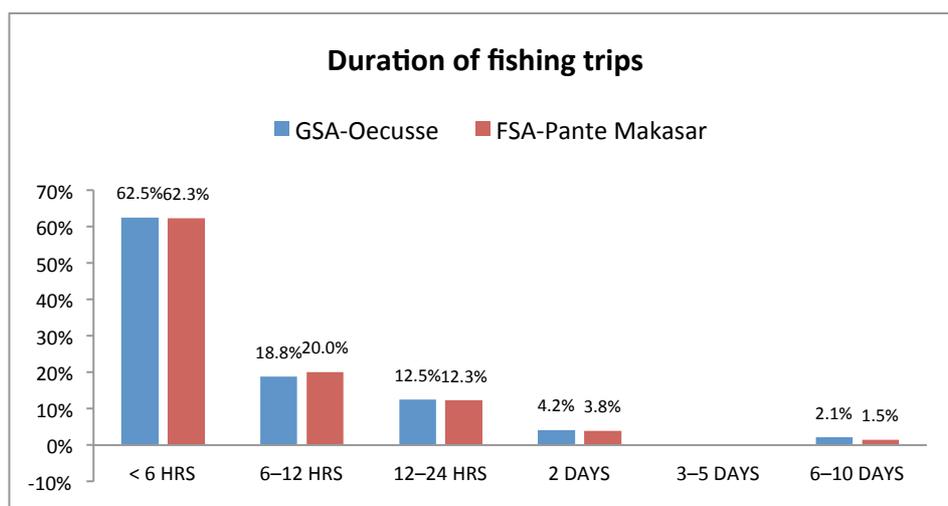


Figure 8-20. Duration of fishing trips

### 8.5.1.3 Monthly at-sea activity

Pante Makasar fishers fish all year round, but the number of fishers participating varies with seasonal weather conditions. From March to the end of December more than 88% of fishers were conducting fishing activities at sea. In January and February the proportion of fishers conducting fishing activities was less than 50% because of inclement weather. Overall the proportion of fishers going to sea was the highest of all 5 districts.

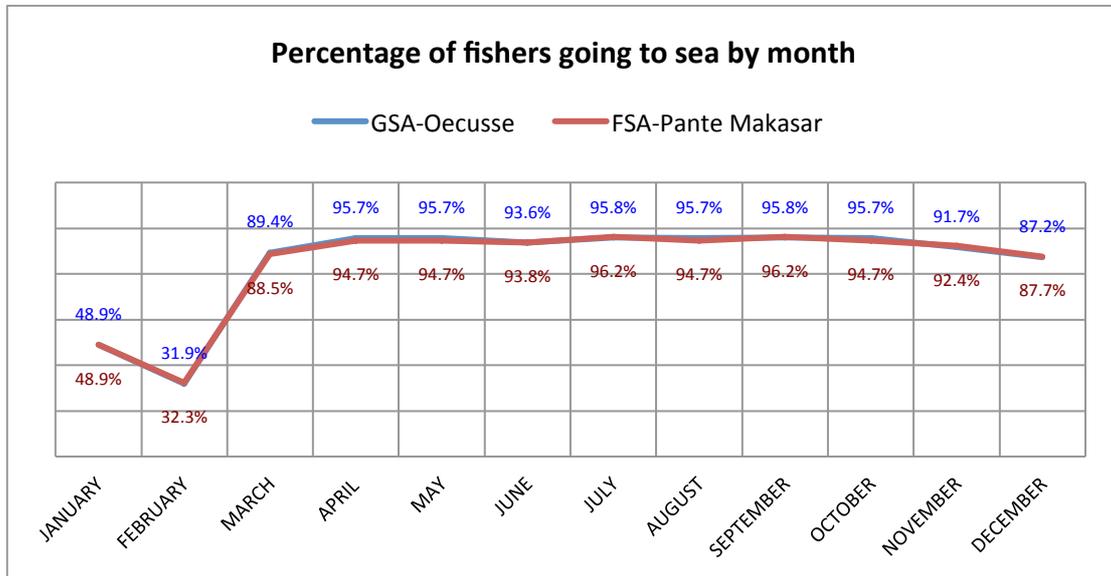


Figure 8-21. Percentage of respondents going to sea by month

### 8.5.1.4 Location of fishing grounds

Three discrete types of fishing area were described by fishers i.e. inshore along the coast, in the deep sea and on coral reefs. Pante Makasar fishers mostly fish in the deep sea (64%) and in the reef area (64%). Fishing along the inshore coast (42%) was also important.

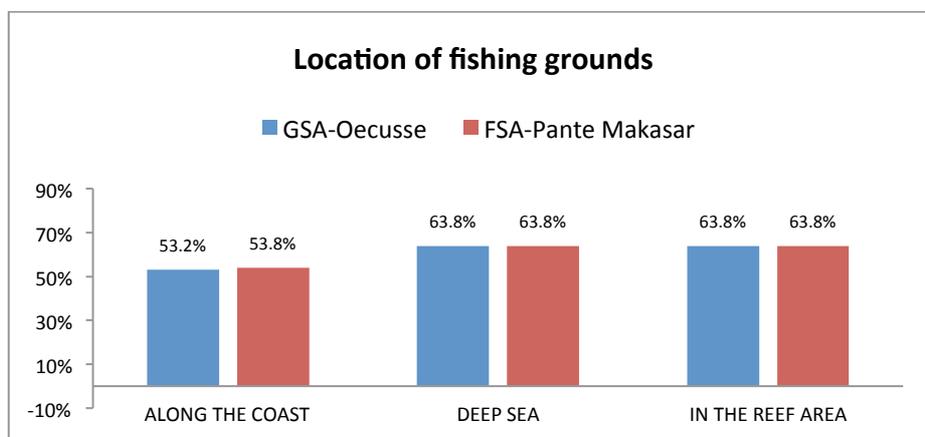


Figure 8-22. Location of fishing grounds

### 8.5.1.5 Boat and fishing gear

**1. Boat Type and Fishing Gear.** The type of boats used by fishers in Pante Makasar can be grouped into several types: large boats, motorized wooden boats, boats with outboard engines (motor attached), non-motorized jugung or wooden boats, and wooden boats with sails. 82% indicated that they use a non-motorized wooden boat (rowing boat), 20% of fishers had boats with outboards and 8% have motorized wooden boats, but other boat types were uncommon.

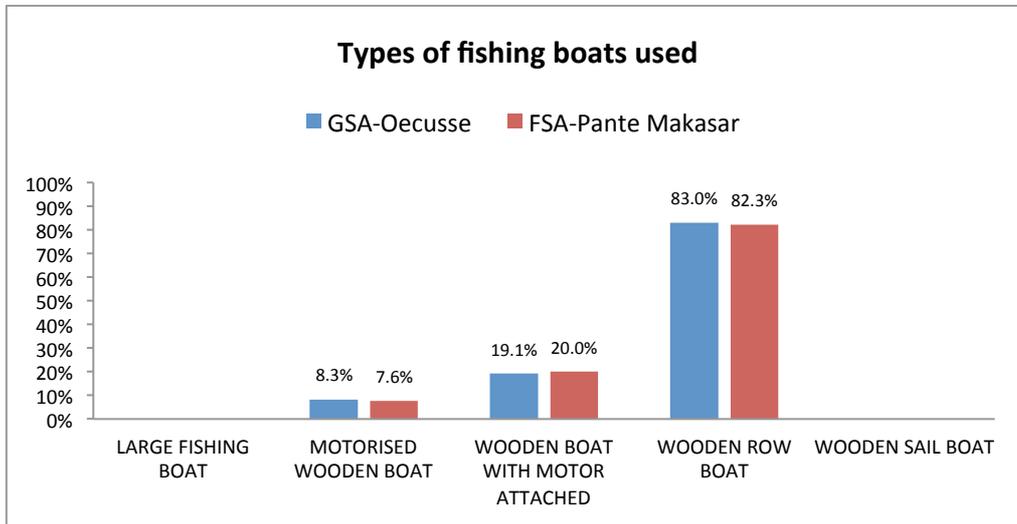


Figure 8-23. Types of fishing boats used

Hook and line and fish nets were the most common gear used in Pante Makasar. Hook and line (fish line) were used by 64% of respondents, and beach nets by 69% of respondents, fish nets by 18%, and other nets by less than 10%. A fisher may use more than one type of fishing gear.

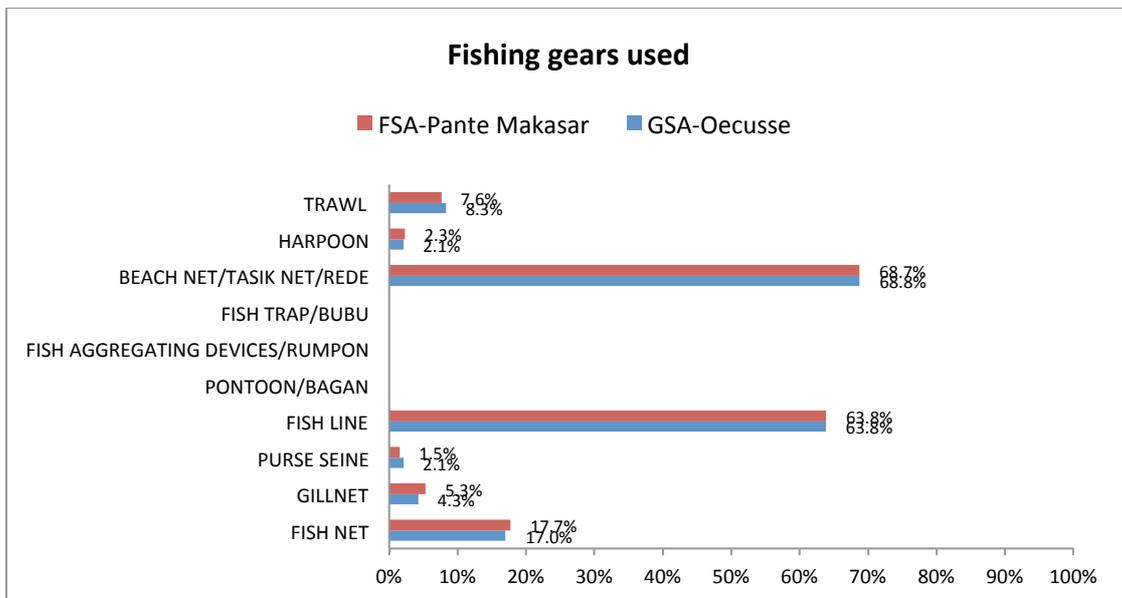


Figure 8-24. Fishing gears used

**2. Ownership:** Ownership of fishing boats fell into four categories: self/family owned, profit sharing, hired, and other status. Most fishing boats were self/family owned (75%) or hired

(22%). Other arrangements involving profit sharing made up the small balance. Most of the fishing boats were jugung type (non-motorized wooden row boats) as shown in the above figure.

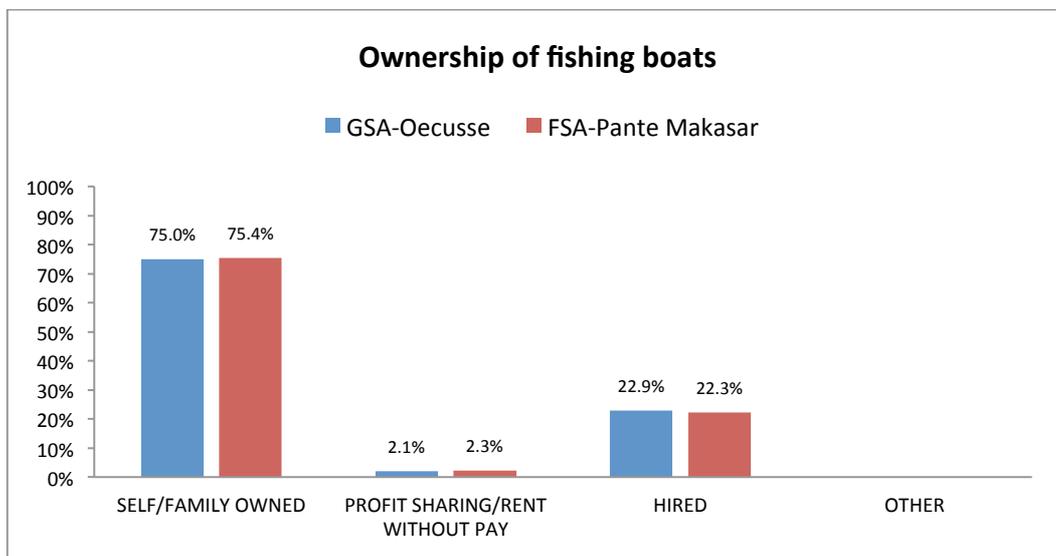


Figure 8-25. Ownership of fishing boats

The proportion of hired boats used (22%) was higher than in the other 4 subdistricts in the survey. The average percentage for all 5 subdistricts was 13%.

**3. Accessing a Fishing Boat.** Fishing boats can be acquired by means of purchase, family gift/inheritance, government aid/NGO, or borrowed from friends. Most Pante Makasar fishers (67%) had obtained their fishing boat by buying it themselves. Some fishers had been donated their boat by government or NGO aid (19%) and a smaller number of fishers had borrowed a fishing boat (8%) or the boat was a family gift (4%).

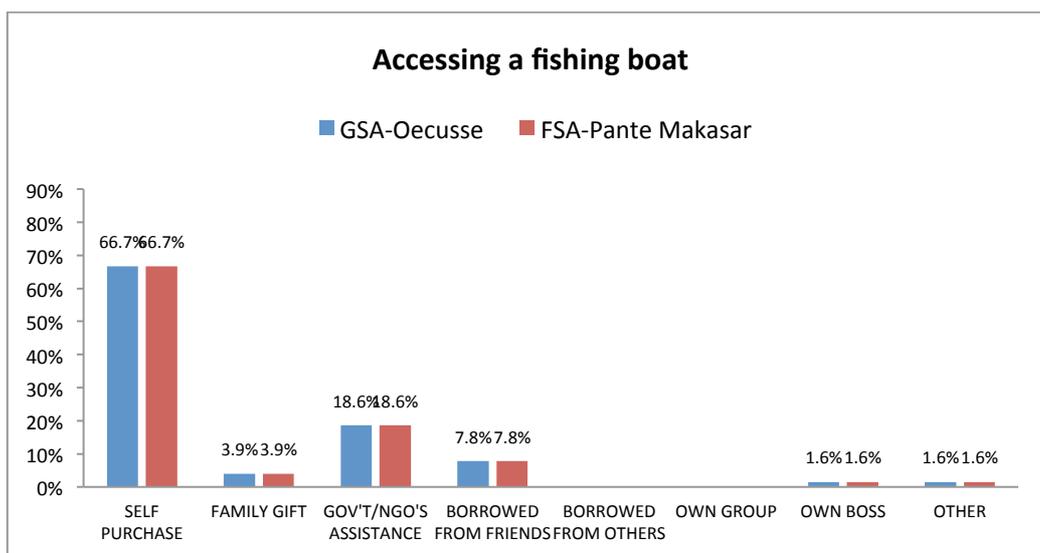


Figure 8-26. Accessing a fishing boat

### 8.5.1.6 Fishing system

Fishers either fish in a group or individually. Fishing in groups was more common. The number of fishing group members was largely dependent on the boat size. Small non-motorized wooden boats were operated by groups of 2-3 fishers. Larger boats with engines, however, were operated by a crew of 5 fishers or more. Fishing in groups with 2-5 members (92%) was the most common. Only a small proportion of fishers preferred to work individually (9%).

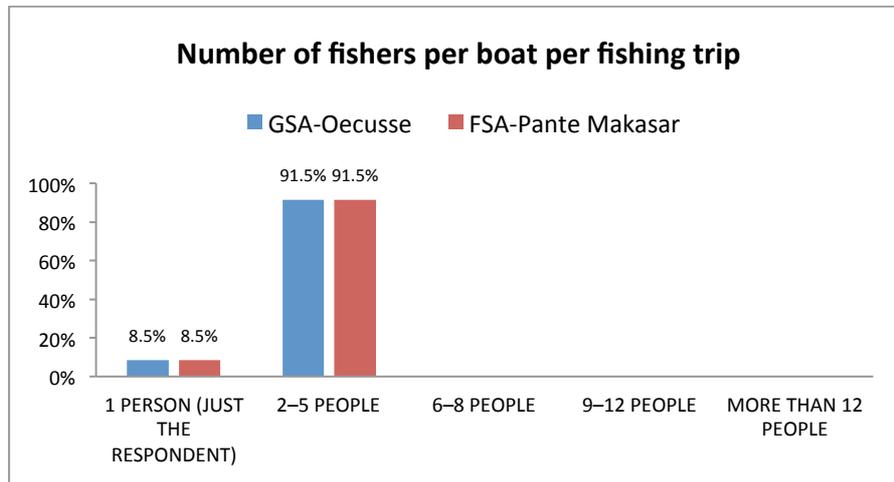


Figure 8-27. Number of fishers per boat per fishing trip

### 8.5.1.7 Fish catch

**1. Variety of Catch.** The catch in the Pante Makasar area included fish, shrimp/prawns, squid, snails, crabs, oysters/clams and seaweed. However, fish was the main target of virtually all (99%). Squid was targeted by 20% of respondents, and snails were collected by 10% of respondents. Other catches of shrimp, crabs, oysters and seaweed were relatively uncommon (2% to 9%).

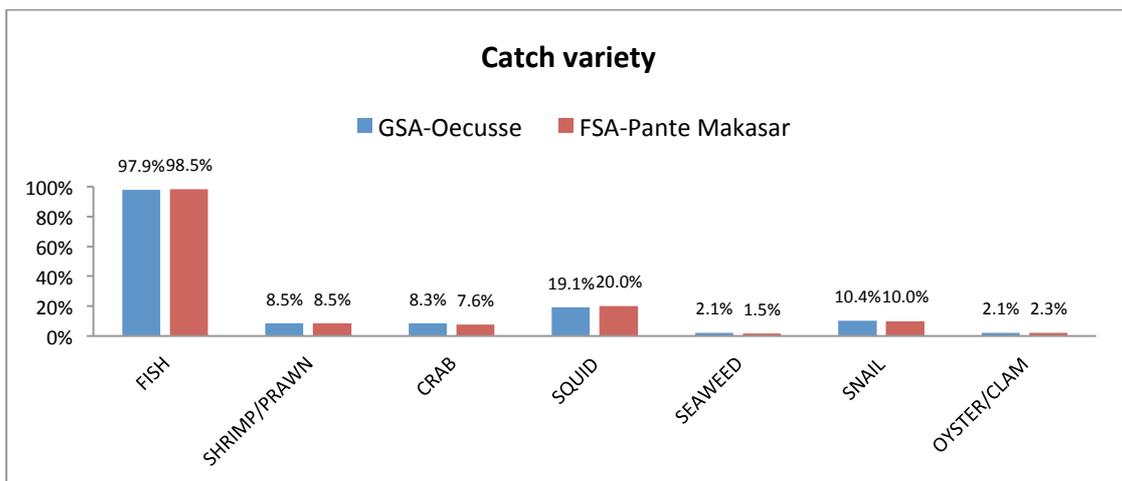


Figure 8-28. Catch variety

**2. Variety of Fish Species.** Of the fish that were targeted, species caught by fishers in Pante Makasar included ‘kombong’/mackerel, ‘kakap’/snaper, ‘sardina’/sardine, ‘samber’/garfish, ‘tongkol’/tuna, ‘koku’/trevalli and ‘bainar’/fusilier. ‘Manu’/flying fish, ‘daun’/long tom and ‘kerapu’ were also caught in small quantities. These data may serve as an indicator of the relative species abundance in the marine waters of Pante Makasar.

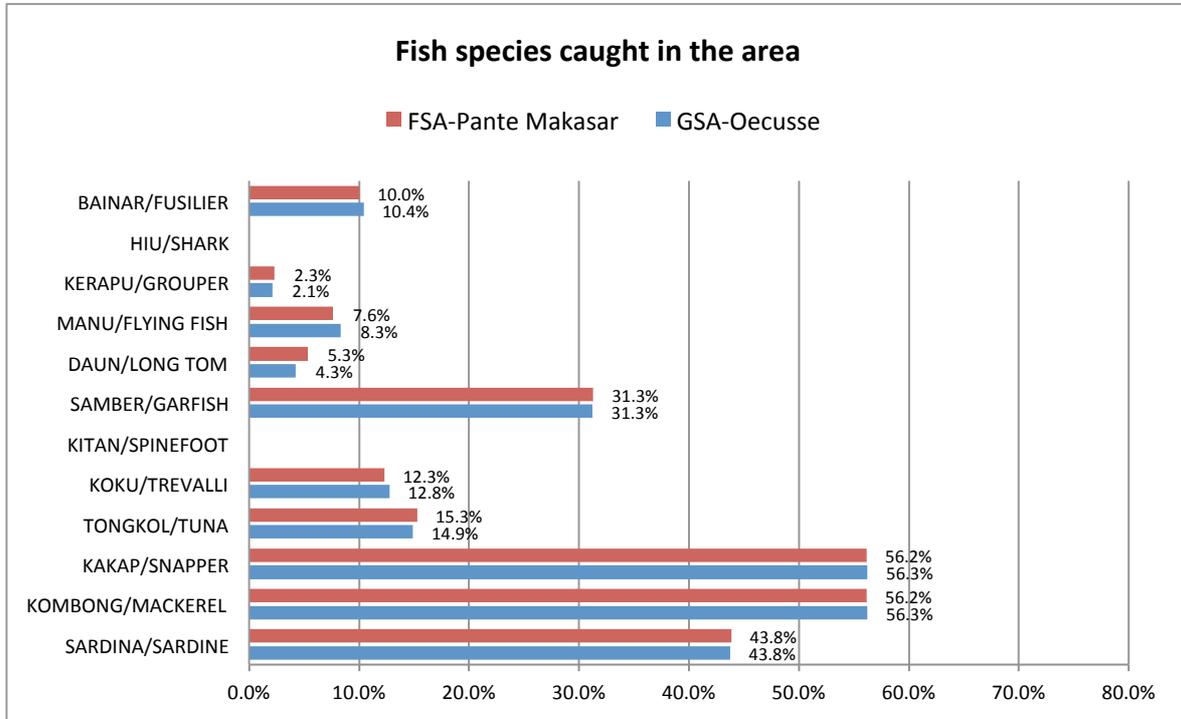


Figure 8-29. Fish species caught in the area

**8.5.1.8 Monthly average income**

The largest proportion of all respondents (74%) earned monthly incomes in the two income ranges spanning \$100-\$299. This was also confirmed from a FGD discussion with several housewives in suco Costa who reported an average monthly income of around \$180. However, fishers making more than \$300 a month comprised a significant portion of the respondents (26%). In one case of IDI, one respondent who owned his own boat and fishing gears and employed 2 fishers reported making an income only for himself of \$600-\$700 per month.

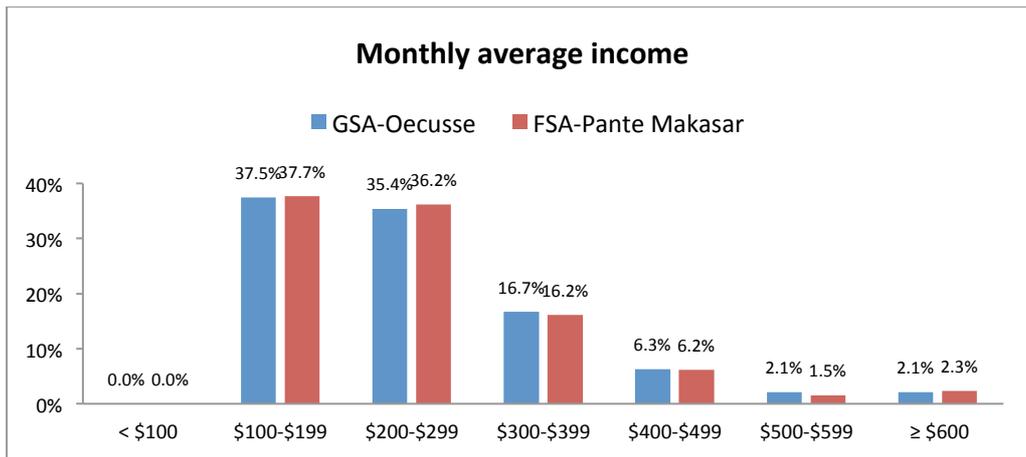


Figure 8-30. Monthly average income

It was noted through the FGD and IDI that many respondents stated that their family income was insufficient to cover their monthly living expenses and their main concern was the rising price of food and other commodities in their area. Perhaps this is partly caused by the impact of the increasing cost of transporting goods into the Oecusse enclave.

### 8.5.1.9 Additional income

A significant minority of Pante Makasar fishers (24%) indicated that they had other work besides fishing. Therefore most (76%) had no supplementary work and were reliant solely on fishing.

Of those respondents having additional work, the main secondary jobs in Oecusse were labouring (42%) and animal breeding (32%).

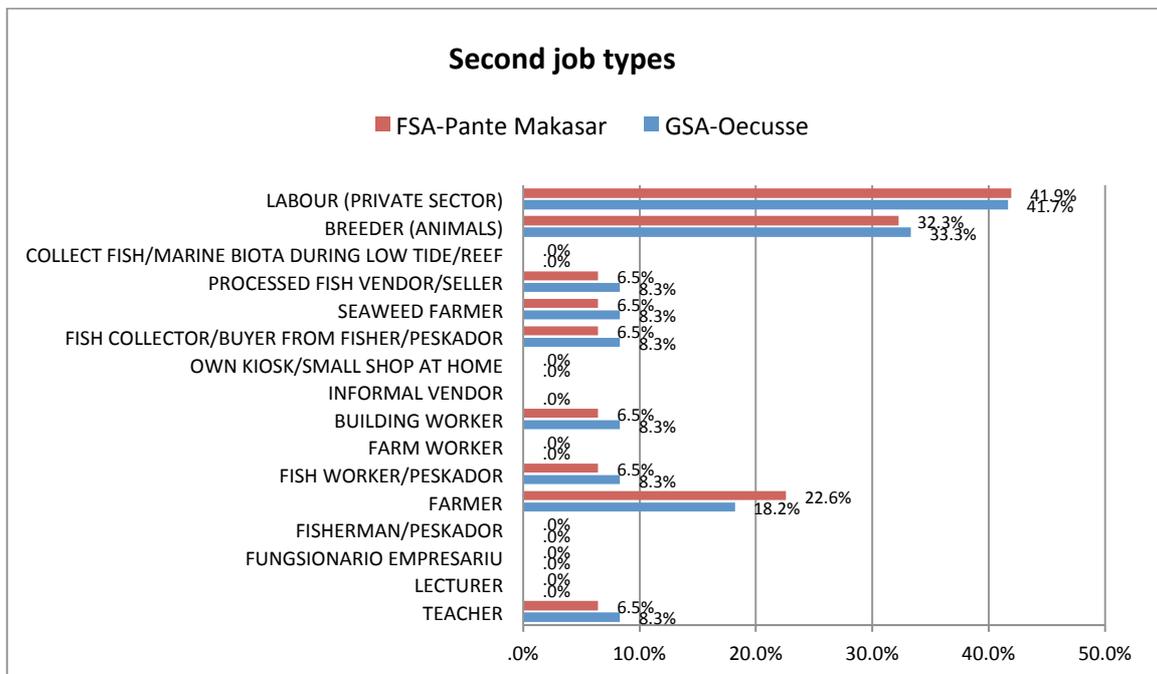


Figure 8-31. Second job types

## **8.5.2 Analysis**

### **8.5.2.1 Fishing activity and target species**

The seagoing capacity of local fishers was limited to trips of 6 to 12 hours duration. Trip duration was limited by their boats and equipment, with most operating from simple non-motorized wooden boats and using hook and line and beach nets. Most fishers owned their own boats.

Fishing activities occurred throughout the year, however, the months of January and February have rough and dangerous weather, so less fishers go to sea. January and February is also the rainy season, when many fishers work on farms.

Though other seafood was caught, fish was the main target for the fishers in Pante Makasar (99%). The main target fish species included 'kombong'/mackerel (56%), 'kakap'/snapper (56%), 'sardina'/sardine (44%), 'samber'/garfish (31%), 'tongkol'/tuna (15%), 'koku'/trevalli (12%) and 'bainar'/fusilier (10%).

### **8.5.2.2 Fishing system and the role of women and children**

The majority of fishers fish in groups. Each fishing boat, depending on its size, was operated by a group of 2 to 5 fishers. Each group was lead by a group leader, who was the owner of the boat. Group members were commonly family of the nearest neighbours. Group members were not paid, but were given a share from the catch/profit.

The role of women was quite significant in product selling and product processing after catch and very significant in household financial management. Children also helped sometimes, particularly when their families were involved in reef gleaning. In some instances, or perhaps quite commonly, children also helped to sell the fish; they were paid with a small amount of commission. For fishing activities, the main role of wives in Pante Makasar was to prepare meal for their husbands and sometimes to help their husbands cleaning and fixing their fishing nets. In the early morning before the husband went to the sea, wives prepared drink (coffee or tea) and later brought breakfast for their husband to the shore.

### **8.5.2.3 Alternative livelihoods**

24% of fishers had extra work or an additional livelihood. Alternative work included labour (42%) and animal breeding (32%). The additional income earned from these sources was not known, but was usually invested in livestock assets such as cattle or chickens. Usually they sell the cattle or the chickens or other livestock when they need cash for ceremonial events involving their family members.

## **8.5.3 Program recommendations**

To develop fishers' livelihoods the following steps are recommended:

### **a. Boat procurement**

The main constraint on fishers was access to adequate boats with engines. Non-motorized boats have a limited range and load capacity which limits both the size of the group and the catch. The lack of finance was the main obstacle for the fishers in procuring more suitable fishing boats fitted with appropriate engines and gear. A strategy to support boat procurement through micro-finance development is required.

## **b. Fishing gear procurement**

Most fishers own a boat even though it is a non-motorized wooden boat. If they were supported to purchase fishing boats fitted with appropriate engines, they will also need to be assisted to acquire appropriate fishing gear to improve catch efficiency and therefore their economic returns.

## **c. Fishing knowledge and capability**

Fishers were aware of their knowledge and capability limitations. They were keen to learn from the skills and experience of Indonesian fishers who have a longer tradition and better knowledge of fishing. Training in fishing techniques and skills should be conducted in Timor-Leste and/or by sending some fishers to Java for training.

## **d. Alternative livelihoods**

Potential alternative livelihoods in Pante Makasar include farming, cattle raising, and kiosk retailing. Local fishers mostly dwell inland, rather than along the coast. The land around their homes is fertile and can be planted with corn and paddy, or can be used to raise cattle.

# **8.6 Micro-finance**

## **8.6.1 Fact-finding results**

### ***8.6.1.1 Community knowledge concerning financial institutions***

More than half (62%) in Pante Makasar knew of the existence of finance institutions in their area that provide community assistance. This percentage was the highest among the 5 subdistricts surveyed. Some NGOs have provided community assistance, with 26% naming Moris Rasik, which has offered loans to meet the capital needs of the local community. Interestingly, Pante Makasar respondents had the highest recognition (15%) among the 5 subdistricts surveyed of financial services being provided by banks.

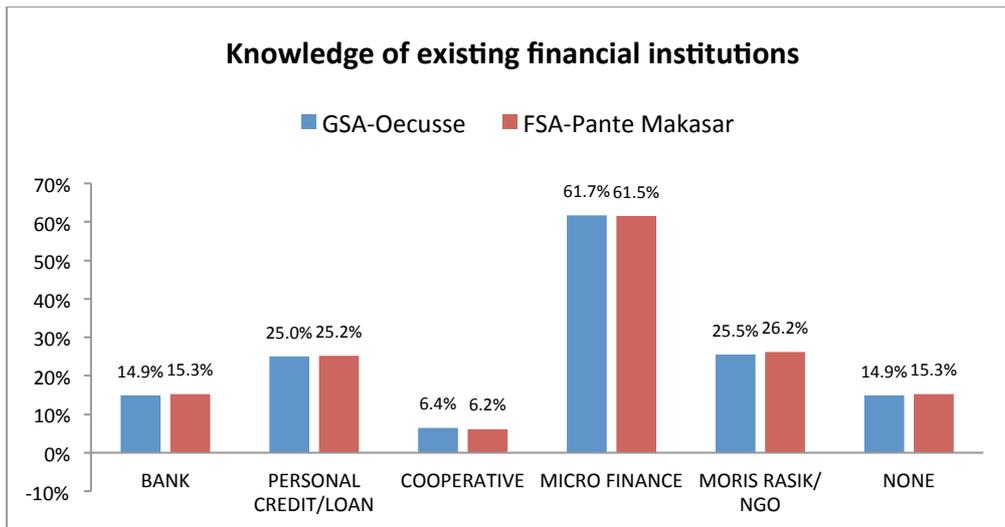


Figure 8-32. Knowledge of existing financial institutions

Although 62% know of the existence of finance institutions in their area, only 19% of all respondents surveyed, each in Pante Makasar and in Oecusse had experience in using financial services.

#### **8.6.1.2 Respondent knowledge concerning micro-credit assistance in their area**

Knowledge of micro-credit assistance was limited in Pante Makasar and Oecusse (15% each) i.e. 85% of Pante Makasar respondents had no knowledge of any available micro-credit financial support programs. These results may mean that either (i) there were no local micro-credit services available, or (ii) awareness or access of micro-credit services was low.

Of those that knew of micro-credit services, the main providers were believed to be the government (25%) and the church (16%). Pante Makasar was the only subdistrict in the survey where the church was reported to play an important role in providing financial assistance. Respondents in the other 4 subdistricts did not report any knowledge of church-based micro-credit assistance.

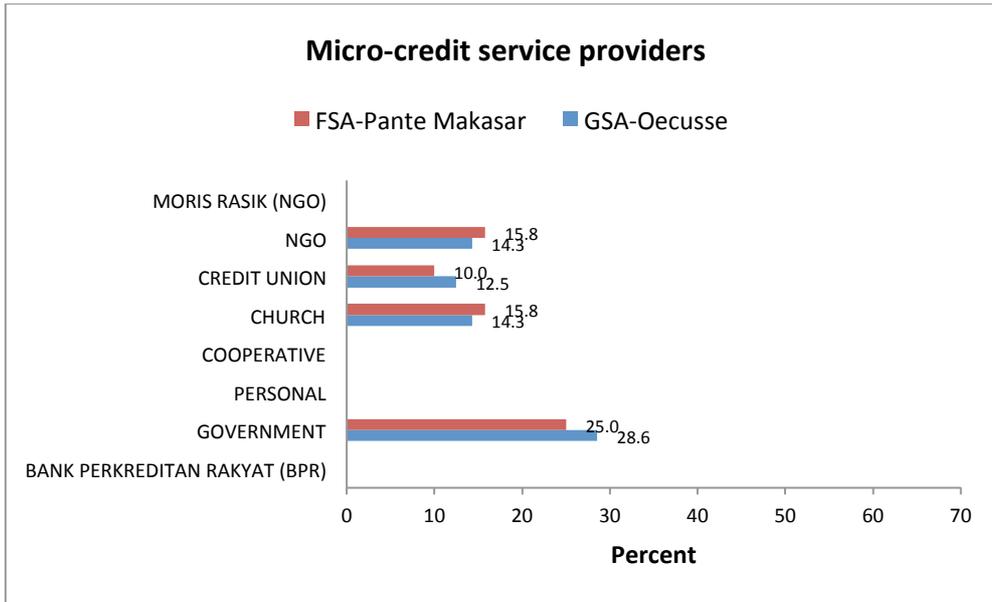


Figure 8-33. Micro-credit service providers

### 8.6.1.3 Experience of using financial institution services

The very limited number of micro-finance institutions and micro-credit assistance sources in the survey area was reflected by the small number of respondents who have received financial services or micro-credit loans. From 80 respondents in Pante Makasar, only 19% acknowledged that they had experienced utilising the financial institution services. Of these respondents, 33% said that they used personal credit/loan services and 13% had used Moris Rasik NGO's services (the lowest percentage among all subdistricts surveyed). Pante Makasar was the only subdistrict that did not report use of financial services provided by cooperatives.

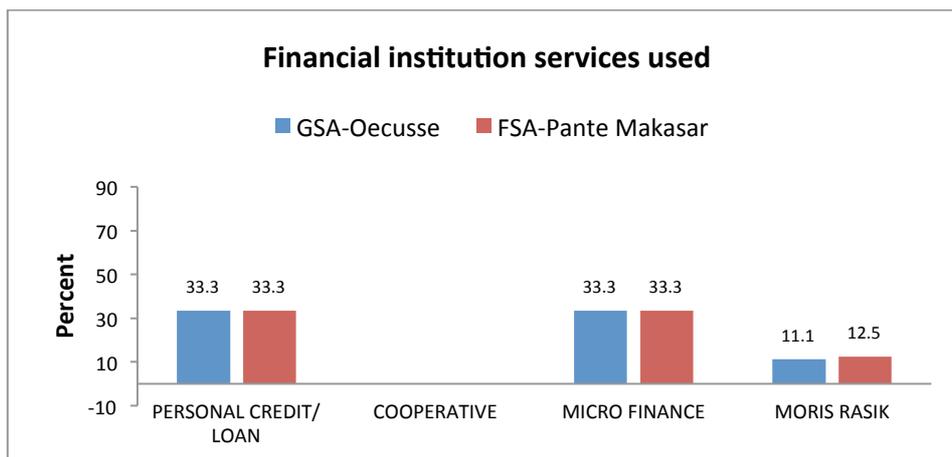


Figure 8-34. Financial institution services used

From those 19% of respondents, only 13% in Pante Makasar had used the financial institution services for saving money, but the majority of services used were to take a loan/credit (92%).

The main reason given by borrowers for using micro-credit assistance or loans was surprisingly for daily expenditure (72%). However, from the FGD and IDI it could not be determined why people tended to use loans for daily expenditure and why financial providers gave loans for consumptive expenses. This percentage was the highest among the 5 subdistricts surveyed. The other reasons were for working capita, for fishing operations, and for education of children (46% each).

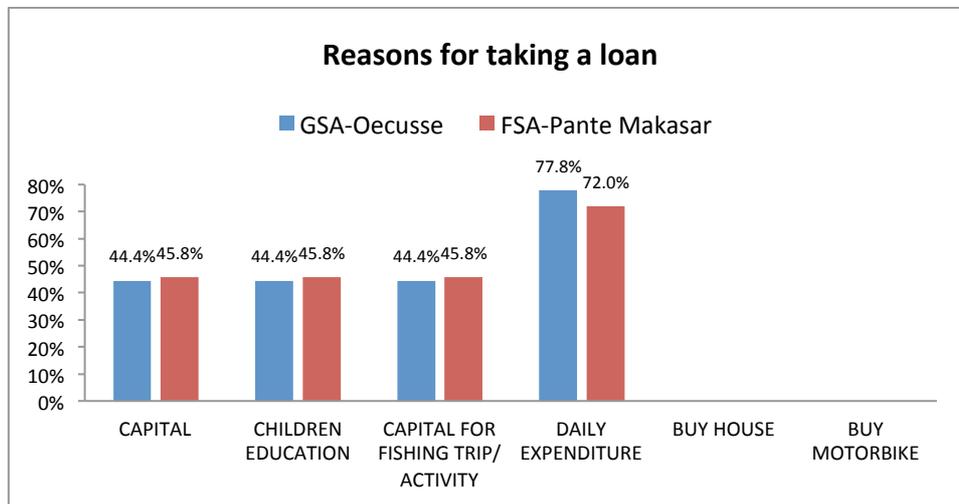


Figure 8-35. Reasons for taking a loan

Women’s groups dominated the users of financial assistance (60%) compare to 28% for fisher groups (male users). This resulted from the condition where NGOs such as Moris Rasik and others, provide their services mainly to individual women or women’s groups.

#### **8.6.1.4 Reasons for not borrowing from and not saving with financial service institutions**

As described above, community members in Pante Makasar subdistrict were quite aware of financial institutions, with only 15% of the respondents not knowing whether there was a financial institution in their area. However use of these institutions was still very limited. There was a general perception that getting loans from finance service institutions was difficult (21%) and many did not know how to obtain a loan (22%). Most had never been in debt and were afraid of being unable to repay the loan (44%). In these circumstances they preferred to borrow money from other fishers or from their relatives.

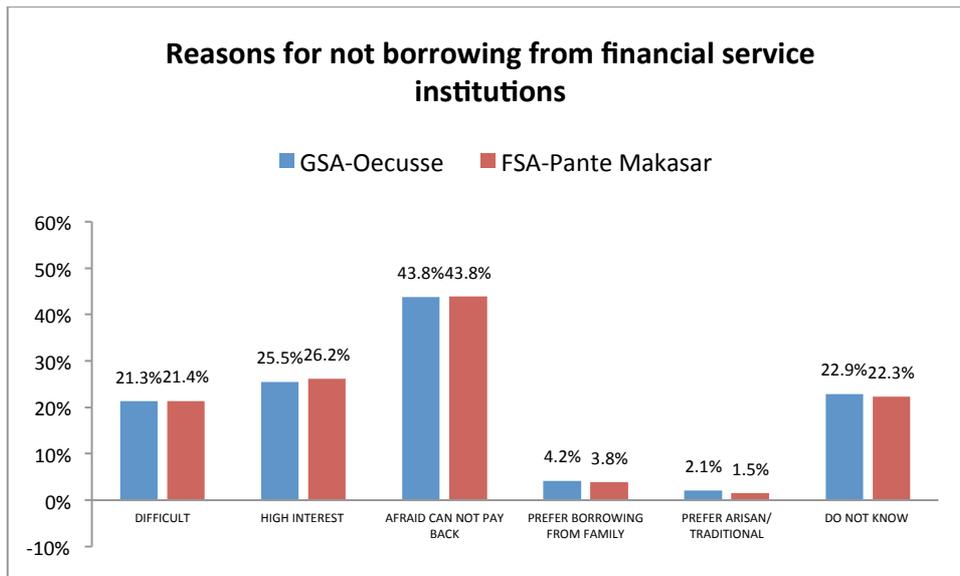


Figure 8-36. Reasons for not borrowing from financial service institutions

The main reason given by respondents for not saving money was simply there was no money to be saved (62%). In addition, 29% did not know how to save money in financial service institutions.

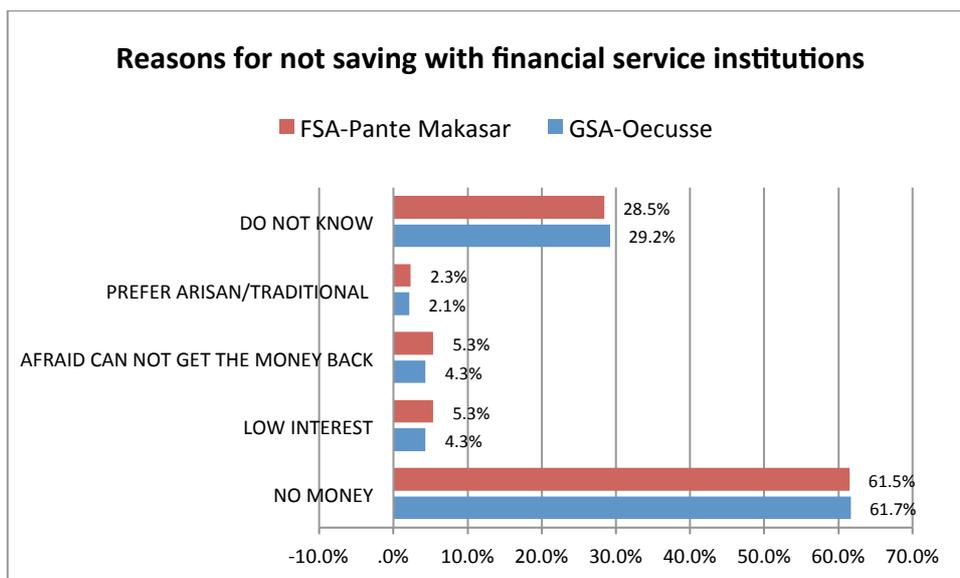


Figure 8-37. Reasons for not saving with financial service institutions

### 8.6.1.5 Respondents' ability to save

From Focus Group Discussions, the ability of respondents (66%) to save money was actually quite high; and up to 46% of respondents were regular savers. Twenty percent of them save each week. Saving cash in households was not commonly practiced in the community. Most respondents explained that their savings were in the form of livestock, which they can easily sell if they needed cash for daily expenses, including for educational purposes. Keeping

livestock was also important to supply the needs of the community for traditional feast ceremonies.

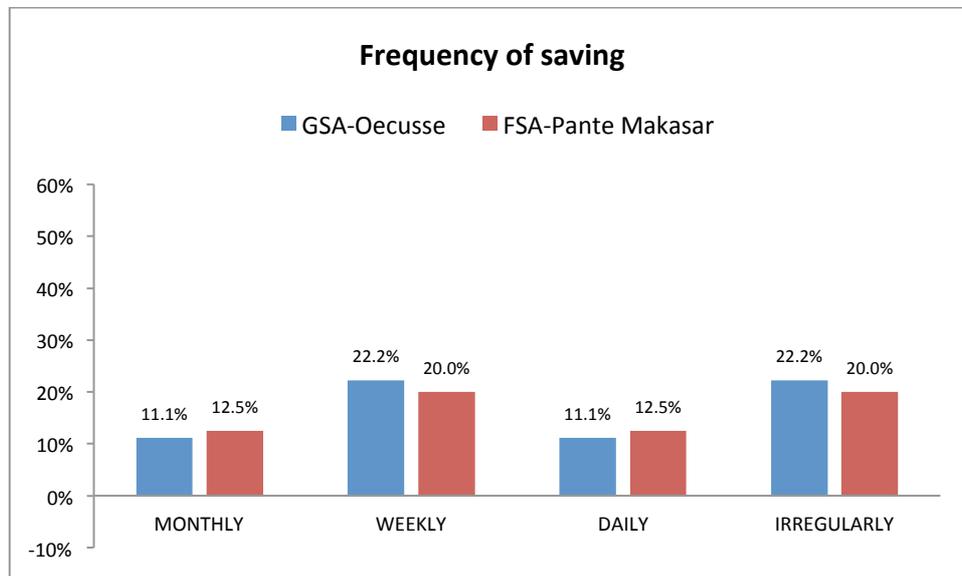


Figure 8-38. Frequency of saving

Fishers, who were members of a group, usually have their own group savings. These were set aside from fish sales, usually 20-30% of total sales. Fishers used these savings to pay for purchase or repair of fishing gear or for daily expenses during the low season.

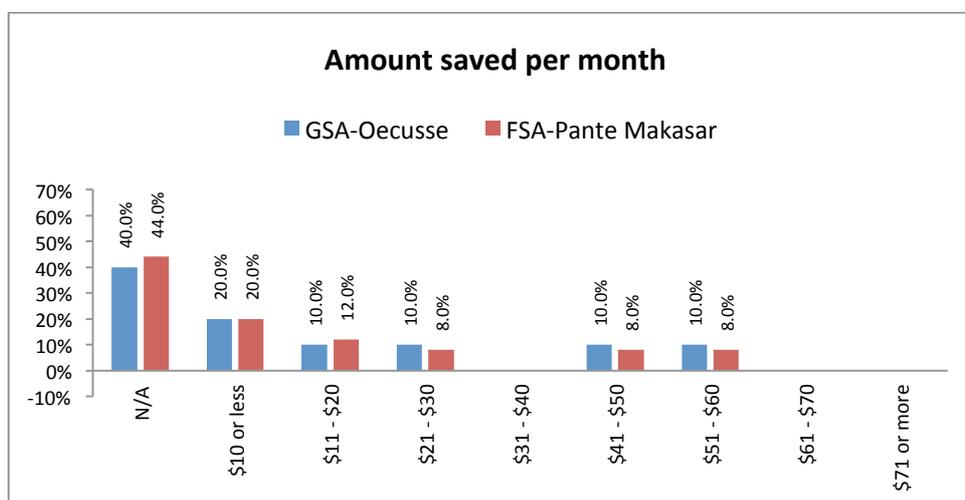


Figure 8-39. Amount saved per month

40% of respondents saved up to \$30/month, either regularly or irregularly. The range values and frequencies were not cross-tabulated here, but it can be assumed that the more regular saving were made (e.g. daily) the less the amount of money saved each time (e.g. \$10 or less).

## **8.6.2 Analysis**

### **8.6.2.1 Availability of financial institutions**

Although financial institutions, which can support fishers' activities were available, the majority of fishers were not aware of them. Only 19% of respondents were aware of the existence of financial institutions and 15% were aware of the existing micro-credit assistance in their area. The government and the church were reported to be playing significant roles in providing micro-credit assistance in Oecusse and Pante Makasar. This may be due to the fact that Oecusse is an enclave and separated from the mainland of Timor-Leste so that there are less NGOs, cooperatives and other micro-finance institutions providing services in Oecusse, compared to the other 4 districts. Moris Rasik was less recognised as a provider of micro-credit services in Oecusse and Pante Makasar. Only 13% had used Moris Rasik financial services in the past, although this NGO was very active in the other 4 districts and subdistricts surveyed.

### **8.6.2.2 Community access to financial service institutions**

Even though the types and total number of finance service institutions were considered sufficient in Oecusse, the number of financial service users or borrowers was still limited to only 19%. The main reasons the community did not borrow money were: complicated borrowing process (21%), high interest (26%), and fear of being unable to repay the loan (44%). The third reason appears to be the main reason for not obtaining loans and this percentage was the highest among all subdistricts surveyed.

The number of respondents that used personal credit/loan such as borrowing from family or relatives, was relatively high compared to the other subdistricts. Although personal credit/loan can have high interest rates compared to services provided by formal financial service institutions, some people considered that personal borrowing was a less complicated process, was easier to negotiate and had more flexible terms. Borrowing from relatives also relieved the fear of being unable to pay back the loan. Although not explicitly mentioned by any fisheries officers in the IDIs, one fisher group head mentioned that the Fisheries Office was still continuously providing counseling to fishers on financial management.

### **8.6.2.3 Utilisation of loans**

As the sample was relatively small, analysis of the utilisation of loan was not possible, hence the purpose, benefits and procedures of the assistance/program for community are not well understood.

## **8.6.3 Program Recommendations**

### **a. Training and awareness**

Further improve community understanding of micro-finance services for both borrowing and savings. Information dissemination from the financial institutions regarding borrowing and saving processes should be intensified. In parallel, training on the use of micro-finance services and basic training in household financial management should be provided to the community.

## **b. Service capacity**

Improve the service capacity of the financial institutions for fishers through establishment of new financial service institutions or by strengthening the capacity of existing ones. In the event that new micro-finance institutions were to be established, it is suggested that the financial institutions should focus on the needs of fishers. In existing institutions are strengthened, it is recommended that the institution develop special services for fishers and should allocate loans for fishers to be used as capital.

The said finance institution should be a formal institution with a secretariat or permanent office and should have an office plaque/sign showing the name of the institution so that it can be easily recognized by the community, whether fishers or the general public.

Awareness raising activities should be conducted informing the community of the existence of financial institutions, the types of services provided and the requirements for a loan.

Examples of individual loans to several fishers in other districts can be used as lesson learnt for developing micro-credit services to fishers in Oecusse District, particularly in Pante Makasar.

## 9 CONCLUSIONS AND RECOMMENDATIONS

The following section (9.1) presents a summary of the main conclusions and recommendations, firstly as they apply generally to the entire five districts/subdistricts surveyed. These are more general in nature and do not necessarily apply to every area surveyed.

For ease of reference, this is followed by a district-by-district breakdown of conclusions and recommendations (9.2-9.6). There was considerable similarity between the districts but there were also some significant differences.

### 9.1 Overall

#### 9.1.1 Conclusions

##### 9.1.1.1 Co-management

- The concepts and terminology of *co-management* were poorly understood. Few people (20%) had heard of the term and fewer still understood the concept as collaborative government/community management of marine and coastal resources.
- There were no significant groups working with the government to implement genuine co-management of marine and coastal resources. Fisher groups and women's groups were the most commonly identified groups. Fishers did cooperate among themselves as part of work systems and to qualify for government and NGO assistance.
- There was very limited knowledge of village bodies responsible for marine resource management (11%). There was also almost no knowledge of government regulations on marine resource management. With some exceptions, there was no functioning system of customary law related to marine resource management.
- Women have little direct role in fish capture or in marine resource management but were dominant in post-harvest processing activities. Their other roles were primarily domestic (cooking, cleaning, and child care).
- Conflict between fishers was rare. Sporadic examples usually related to intrusion by fishers from other areas, disputes over fishing techniques and harvest sharing. Resolution was readily achieved through community meetings, or the intervention of community leaders and/or the Fisheries Office. This strong base can be used to support co-management initiatives.
- There was a clear separation of gender roles. Though not usually involved in fishing, women were commonly active in selling and processing fish. Some reef gleaning was undertaken. Preparing meals, child-raising and domestic chores were the responsibility of women. Women were usually responsible for household financial management.

##### 9.1.1.2 Safety at sea

- Fishers commonly experience problems at sea. These included bad weather, boat leakage and engine problems, seasickness and becoming lost.
- In general fishers regarded accidents, injury and death as part of the job, but they also acknowledged the impact of negligence. Fatal accidents were rare and the level of concern was therefore quite low.

- Fishing was generally conducted close to shore in small non-motorized rowboats. If larger boats and engines extend the current fishing range, safety will become more problematic.
- Safety equipment was reported to be expensive and so was usually limited to taking an empty jerry can and a torch on a fishing trip.
- Access to reliable/meaningful weather forecasts was an issue.
- There was little awareness of safety regulations or good practice. Most fishers had not received any information, but regard the Fisheries Office as the best source.

#### **9.1.1.3 Post-harvest**

- Most fish was sold, fresh and unprocessed to traders. Sale of fish was controlled by traders with up to three layers of intermediaries between fishers and the end consumers.
- There was little market power in the hands of fishers. They had few options for marketing their catch and little bargaining power.
- Ice was used for fish preservation by very few fishers. Ice was expensive, with Dili being the main source of production. Consequently the quality of fish sold was quite low.
- Other forms of processing for preservation were also uncommon due to lack of adequate skills, equipment and marketing opportunities. Quality was poor and packaging was seen as a problem.

#### **9.1.1.4 Livelihoods**

- Fishing was conducted along the coast, in reef areas and occasionally in the deeper sea. Most fishing was conducted within sight of land, and usually within 2 km of the beach.
- Fishing was conducted year round with the lowest effort in December-February and July-August because of adverse weather conditions.
- Fishers generally fish every day, for periods of 6-12 hours. Most fishers fished in groups of 2-3 people using non-motorized wooden boats owned by themselves or their family. Hook-and-line was the most common fishing method.
- Access to larger, powered boats and better equipment would increase their range and catch capacity and spread the fishing pressure to more diverse fishing areas.
- While many types of marine life were caught and sold, including squid, prawns, crabs, snails and oysters, fish was the main target with sardines and snapper being the main species caught.
- Reef gleaning at lowest tides was common and involved the whole family.
- Monthly incomes ranged from less than \$100 (11%) to over \$600 (5%), but most earned between \$100 - \$300 (60%).
- About half the surveyed fishers also have income from farming and seaweed farming.

#### **9.1.1.5 Micro-finance**

- Financial institutions existed but were not well known and very few people (14%) used the services (savings and loan) of financial institutions.
- The NGO, Moris Rasik, provides micro-credit and was the best known (25%).
- Reasons for not borrowing included: not knowing of lending institutions, too difficult, too expensive and fear of inability to repay. Most preferred to borrow from family or friends.

- Reasons for not saving included: not knowing of the service, too difficult, interest too low, and fear that savings were unsafe.
- Fishers are generally very keen for access to micro-credit for capital (boats, engine, gear) and for working capital (for daily operations, both in fishing and in other second jobs such as farming) but also for children's education and for daily expenses.
- About half were able to save regularly (weekly/monthly) though most could only save a little with the largest group saving less than \$10/month.

## **9.1.2 Recommendations**

### **9.1.2.1 Co-management**

- Strengthen appropriate community groups (fishers, women, seaweed farming) or facilitate establishment where necessary, to provide a clear mechanism for marine resource co-management. Deliver training on technical issues and group management and provide exposure to experienced NGOs.
- Actively develop the role of community leaders in raising awareness of co-management concepts and regulations through communication, training, and program leadership.
- Conduct regular activities to raise awareness of government regulations and marine resource management concepts and skills. Field Extension Officers can simultaneously provide technical support and problem solving for target fisher groups.
- Provide training for women on fish processing techniques to increase the shelf life and value of the catch.
- Investigate suitability of increased roles for cooperatives linking resource management and increased economic benefits.

### **9.1.2.2 Safety at sea**

- Through awareness raising strategies, create a better understanding of the risks and benefits of fishing further from shore, i.e. greater returns but requiring more serious attention to safety preparations.
- Increased awareness of safety regulations and practices should be encouraged including the role of avoidable negligence and sensible precautions. Training in the use of basic safety equipment, and programs to assist with access, should be implemented by the government.
- Providing improved access to weather information would be a good first step. This could be supported by access to inexpensive radios for fishers to monitor weather forecasts.

### **9.1.2.3 Post-harvest**

- Methods of supporting ice production facilities should be investigated. Household production may be an additional option. Establishment of fish storage facilities should be examined in conjunction with ice production and marketing channels. A role may exist for cooperatives.
- An active fish auction place should be established, ideally in conjunction with the ice and storage facilities, to provide increased market power to fishers.
- The specific supply chains that exist in each location should be further studied to identify opportunities for improved efficiency and returns.

- There should be a sustained and intensive program of training covering fish processing techniques, quality improvement, hygiene, product diversification and packaging.
- Monitor the impacts of post-harvest processing improvement in the fisheries communities for increased income, more effective marketing activities and micro-finance availability and usage.

#### **9.1.2.4 Livelihoods**

- Most fishers own their own/family boat. Fishers can be assisted to increase the size and value of their catch, by supporting procurement of adequate boats with engines. Assistance by way of grants and/or financing would be effective.
- Fishers would benefit from training in more effective fishing techniques, which maximise catch and the benefit of larger, powered boats.
- Potential alternative livelihoods including farming and seaweed aquaculture can be encouraged with proper technical and marketing assistance.
- Changes in the predictability of seasonal climate (dry and wet seasons) make fishing planning difficult. The changes effect levels of sea resources, locations of fishing grounds and fishing periods and consequently produce uncertainty in income generation. It is recommended that understanding climate variability and its impacts on fishing be included in training for fishers.

#### **9.1.2.5 Micro-finance**

- Community understanding and attitudes to financial institutions and services must be improved in order to raise efficiency of livelihoods. Awareness programs should be coordinated and supported by the government, the institutions and programs such as RFLP.
- Financial institutions should be encouraged to provide services suited to the needs of fishers, and to better promote existing services. Loan capital should be specifically allocated to fishers.
- The potential for cooperatives to provide a practical source of finance should be explored and if appropriate, supported with training and capital.
- Training in the use of micro-finance services should be coupled with basic training in household financial management.

## **9.2 Vemase, Baucau District**

### **9.2.1 Conclusions**

#### **9.2.1.1 Co-management**

- The concept, collaborative government/community management of marine and coastal resources, was poorly understood in the community and among stakeholders.
- There were no significant groups applying genuine co-management systems.
- Fishers do cooperate among themselves as part of work systems and to qualify for government and NGO assistance.
- Knowledge of government regulations on marine resource management was very low.
- There was no local system of customary law related to marine resource management.
- Women had little direct role in fish capture or in marine resource management, but were dominant in post-harvest processing activities. Their other roles were primarily domestic (cooking, cleaning, childcare).
- Women were the main money managers in the households.
- Conflict between fishers was rare. Resolution was readily achieved through intervention of community leaders and the Fisheries Office.

#### **9.2.1.2 Safety at sea**

- Fishers commonly experience dangerous situations. Bad weather was the most common.
- In general fishers regarded accidents, injury and death as part of the job.
- Fishing was generally conducted close to shore in small non-motorized rowboats.
- Fatal accidents were rare and the level of concern was low.
- Fishers had little awareness of safety regulations.
- Safety equipment was considered expensive and generally, was limited to taking an empty jerry can and a torch on fishing trips.

#### **9.2.1.3 Post-harvest**

- Most fish were sold immediately, in fresh condition, to traders. Most fishers had only one trader to deal with, reducing their bargaining power and low prices.
- The use of ice for fish preservation was very low, due to lack of local ice production facilities. Ice bought from Dili was too expensive to be viable.
- Other forms of processing for preservation were also uncommon due to lack of skills and marketing opportunities. Local traders will not buy processed fish. Quality was poor and packaging was seen as a problem.
- There were no local active fish auction facilities, reducing fishers' knowledge of demand and control over price.

#### **9.2.1.4 Livelihoods**

- Some people earned their living through a mix of farming and fishing (e.g. Lor and Raha). Other areas were fully dependent on fishing (Caicua and Bahamori in Suco Cicua).
- Supply chains were weak. Government attempts to correct this have shown no clear benefit.
- Fishers generally fished every day, for periods up to 12 hours.

- Fishing was conducted year round except for January-February and July-September. There have been noticeable changes in climate variability in recent years.
- Most fishers fished in groups of 2-3 people using non-motorized wooden boats owned by themselves or their family. Hook-and-line was the most common fishing method.
- Access to larger, powered boats would increase their range and catch capacity and spread the fishing pressure to more diverse fishing areas.
- Monthly incomes were less than \$300 for 66% of respondents.
- Fish was the main catch followed by shrimp, crabs and squid.

#### **9.2.1.5 Micro-finance**

- Financial institutions exist in the district but were not well known. NGOs and cooperatives providing micro-credit also exist, but were also not well known.
- Very few people used the services (savings and loan) of financial institutions.
- Reasons for not borrowing included: not knowing lending institutions, too difficult, too expensive and fear of inability to repay.
- Reasons for not saving included: not knowing of the service, too difficult, interest too low, and fear that savings were unsafe.
- Fishers were generally very keen for access to micro-credit for capital (boats, engine, gear) and for working capital (for daily operations).
- Borrowers were generally willing to provide their home/land as collateral.
- Fishers generally borrowed from family and friends only.
- Only about a third of fishers were unable to save any money, while those that could saved less than \$10/month.

### **9.2.2 Recommendations**

#### **9.2.2.1 Co-management**

- Strengthen appropriate community groups (fishers, women) and facilitate their establishment where necessary, including training in group management.
- Actively develop the role of community leaders to raise awareness of co-management concepts and regulations through communication, training, and program leadership.
- Conduct regular activities to raise awareness of government regulations and marine resource management concepts and skills. Field Extension Officers can simultaneously provide technical support and problem solving for target fisher groups.
- Provide training to women's groups on fish processing techniques to increase the shelf life and value of the catch.
- Investigate the suitability of increased roles for cooperatives linking resource management and increased economic benefits.

#### **9.2.2.2 Safety at sea**

- Through awareness raising, create a better understanding of the risks and benefits of fishing further from shore, i.e. greater returns but requiring more serious attention to safety preparations.
- Increased awareness of safety regulations and practices should be encouraged.
- Provide improved access to weather information would be a good first step.
- Support access to inexpensive radios for fishers to monitor weather forecasts.

### **9.2.2.3 Post-harvest**

- Methods of supporting ice production facilities should be investigated. Household production may be an option.
- Establishment of fish storage facilities should be examined in conjunction with ice production and marketing channels. A role may exist for cooperatives.
- An active fish auction place should be established, ideally in conjunction with the ice and storage facilities, to provide increased market power to fishers.
- The specific supply chains that exist in each location should be further studied to identify opportunities for improved efficiency and returns.
- There should be a sustained and intensive program of training covering fish processing techniques, quality improvement, hygiene, product diversification and packaging.

### **9.2.2.4 Livelihoods**

- Fishers can be assisted to increase the size and value of their catch, by supporting procurement of adequate boats with engines. Assistance by way of grants and/or financing would be effective.
- Fishers would benefit from training in more effective fishing techniques, which maximise catch and the benefit of larger, powered boats.
- Potential alternative livelihoods including farming and aquaculture can be encouraged with proper technical and marketing assistance.

### **9.2.2.5 Micro-finance**

- Community understanding and attitudes to financial institutions and services must be improved in order to raise efficiency of livelihoods. Awareness programs should be coordinated and supported by government, the institutions and programs such as RFLP.
- Financial institutions should be encouraged to provide services suited to the needs of fishers, or to better promote existing services. Loan capital should be specifically allocated to fishers.
- The potential for cooperatives to provide a practical source of finance should be explored and if appropriate, supported with training and capital.

## **9.3 Atauro, Dili District**

### **9.3.1 Conclusions**

#### **9.3.1.1 Co-management**

- The terminology *co-management* was only recognised by a quarter of the people.
- Only half of these (1/8), correctly understand the concept as collaborative government/community management of marine and coastal resources.
- There were no significant groups working with the government to implement genuine co-management of marine and coastal resources.
- Fishers did cooperate among themselves as part of work systems and to qualify for government and NGO assistance.
- About half of fishers were not members of fisher groups; and therefore do not receive any government assistance.
- Knowledge of government regulations on marine resource management was very low.
- There was no local system of customary law related to marine resource management.
- Women have little direct role in fish capture or in marine resource management but were dominant in post-harvest processing activities. Their other roles were primarily domestic (cooking, cleaning, child care).
- Women were the main money managers in the households.
- Conflict between fishers was rare. Resolution was readily achieved through intervention of community leaders and the Fisheries Office. This strong base could be used to support co-management initiatives.

#### **9.3.1.2 Safety at sea**

- Fishers commonly experienced problems at sea. These included bad weather, vessel problems, seasickness and becoming lost.
- In general fishers regarded accidents, injury and death as part of the job, but also acknowledged the impact of negligence.
- Fatal accidents were rare and the level of concern was therefore quite low.
- Fishing was generally conducted close to shore in small non-motorized rowboats. If larger boats and engines extend the fishing range, safety will become more problematic.
- Safety equipment was considered expensive and was usually limited to taking an empty jerry can and a torch on fishing trips.
- Access to reliable weather forecasts was an issue.
- There was little awareness of safety regulations or good practice.

#### **9.3.1.3 Post-harvest**

- Most fish was sold fresh and unprocessed to traders.
- Fish prices in Dili were considered high. Sale of fish was controlled by traders with up to three layers of intermediaries between fishers and the end consumer.
- The freshness and quality of the fish was not considered good. This may be due to fishers delaying sale until they accumulate quantities sufficient to justify travel from Atauro to Dili.
- Ice was expensive in Atauro and ice was used for fish preservation by only about half of fishers. Though low, this was much higher than other surveyed districts. Most ice was produced in Dili and the use of ice in Dili was higher (70%).

- Other forms of processing for preservation were also uncommon due to lack of skills and marketing opportunities. Local traders will not buy processed fish. Quality was poor and packaging was seen as a problem.

#### **9.3.1.4 Livelihoods**

- Fishers generally fished every day, for periods up to 12 hours.
- Fishing was conducted year round with the lowest effort in December-February and July-August. Collected from FGD discussion, fisheries officers in Atauro also noticed changes in climate variability in recent years, especially noticeable around the change of seasons.
- Most fishers fished in groups of 2-3 using non-motorized wooden boats owned by themselves or their family. Hook-and-line was the most common fishing method.
- Access to larger, powered boats would increase their range and catch capacity and spread the fishing pressure to more diverse fishing areas.
- Monthly incomes were less than \$300 for 64% of respondents.
- About half the fishers also made additional income from farming and seaweed farming.
- Fish was the main catch followed by squid, seaweed, shrimp and crabs.

#### **9.3.1.5 Micro-finance**

- Financial institutions existed in the district but were barely known.
- Very few people used the services (savings and loan) of financial institutions.
- The NGO, Moris Rasik, provides micro-credit and was well known.
- Reasons for not borrowing included: not knowing of the lending institute, too difficult, too expensive and fear of inability to repay.
- Reasons for not saving included: not knowing of service, too difficult, interest too low, and fear that savings were unsafe.
- Fishers were generally very keen for access to micro-credit for capital (boats, engine, gear) and for working capital (for daily operations) but also for children's education.
- Borrowers were generally willing to provide their home/land as collateral.
- Fishers generally borrowed from family and friends only.
- Dili/Atauro had higher savings capacity than other districts. A third of fishers were able to save money monthly (mostly in the range \$21-\$70) and many were able to save weekly.

### **9.3.2 Recommendations**

#### **9.3.2.1 Co-management**

- Strengthen appropriate community groups (fishers, women, seaweed farming) and facilitate their establishment where necessary, including training in group management and exposure to the experience of NGOs.
- Actively develop the role of community leaders in raising awareness of co-management concepts and regulations through communication, training, and program leadership.
- Conduct regular activities to raise awareness of government regulations and marine resource management concepts and skills. Field Extension Officers can

simultaneously provide technical support and problem solving for target fisher groups.

- Provide training to women groups in fish processing techniques to increase the shelf life and value of the catch.
- Investigate the suitability of increased roles for cooperatives linking resource management and increased economic benefits.

#### **9.3.2.2 Safety at sea**

- Through awareness raising, create a better understanding of the risks and benefits of fishing further from shore, i.e. greater returns, but requiring more serious attention to safety preparations.
- Increased awareness of safety regulations and practices should be encouraged including the role of avoidable negligence and sensible precautions.
- Training in the use of basic safety equipment, and programs to assist with access, should be implemented by government.
- Provide improved access to weather information would be a good first step. This could be supported by access to inexpensive radios for fishers to monitor weather forecasts.

#### **9.3.2.3 Post-harvest**

- Methods of supporting ice production facilities should be investigated. Household production may be an option.
- Establishment of fish storage facilities should be examined in conjunction with ice production and marketing channels. A role may exist for cooperatives.
- An active fish auction place should be established, ideally in conjunction with the ice and storage facilities, to provide increased market power to fishers.
- The specific supply chains that exist in each location should be further studied to identify opportunities for improved efficiency and returns.
- There should be a sustained and intensive program of training covering fish processing techniques, quality improvement, hygiene, product diversification and packaging.

#### **9.3.2.4 Livelihoods**

- Most fishers own their own/family boat. Fishers can be assisted to increase the size and value of their catch, by supporting procurement of adequate boats with engines. Assistance by way of grants and/or financing would be effective.
- Fishers would benefit from training in more effective fishing techniques, which maximise catch and the benefit of larger, powered boats.
- Potential alternative livelihoods including farming and seaweed aquaculture can be encouraged with proper technical and marketing assistance.

#### **9.3.2.5 Micro-finance**

- Community understanding and attitudes to financial institutions and services must be improved in order to raise efficiency of livelihoods. Awareness programs should be coordinated and supported by government, the institutions and programs such as RFLP.

- Financial institutions should be encouraged to provide services suited to the needs of fishers, or to better promote existing services. Loan capital should be specifically allocated to fishers.
- The potential for cooperatives to provide a practical source of finance should be explored and if appropriate, supported with training and capital.
- Training in the use of micro-finance services could be coupled with basic training in household financial management.

## **9.4 Atabae, Bobonaro District**

### **9.4.1 Conclusions**

#### **9.4.1.1 Co-management**

- The terminology *co-management* was only recognised by a fifth of the people.
- Only a third of these (i.e. 1/15), correctly understand the concept as collaborative government/community management of marine and coastal resources.
- There were no significant groups working with the government to implement genuine co-management of marine and coastal resources.
- Understanding reflects practices so there was more weight on cooperation between fishers. Fishers cooperate among themselves as part of their work systems and to qualify for government and NGO assistance.
- Knowledge of government regulations on marine resource management was very low.
- There was currently no local system of customary law related to marine resource management. The Tara Bandu system was used in the past to good effect.
- Women had little direct role in fish capture or in marine resource management but were dominant in post-harvest processing activities. Their other roles were primarily domestic (cooking, cleaning, child care).
- Women were the main money managers in the households.
- Conflict between fishers was rare. Resolution was readily achieved through intervention of community leaders and the Fisheries Office. This strong base could be used to support co-management initiatives.

#### **9.4.1.2 Safety at sea**

- Fishers commonly experienced problems at sea. These included bad weather, vessel problems (leakage and engine), seasickness and becoming lost.
- In general fishers regarded accidents, injury and death as part of the job, but also acknowledged the impact of negligence.
- Fishing was generally conducted close to shore in small non-motorized rowboats. If larger boats and engines extend the fishing range, safety will become more problematic.
- Fatal accidents were rare and the level of concern was therefore quite low.
- Lost income was considered the main consequence of accidents. Safety equipment was expensive and was usually limited to taking an empty jerry can and a torch though some also carried lifejackets on fishing trips. Using safety equipment was considered a low priority.
- Access to reliable weather forecasts was an issue.
- There was little (only one fifth) awareness of safety regulations or good practice.

#### **9.4.1.3 Post-harvest**

- Sale of fish was controlled by traders with up to three layers of intermediaries between fishers and the end consumer.
- Fishers had very little knowledge of market demand and prices.
- Most fish was sold fresh and unprocessed to traders. Prices were depressed due to poor quality.

- Ice was expensive in Atabae and ice was used for fish preservation by very few fishers. There was a lack of local ice production facilities. Ice bought from Dili was too expensive to be viable.
- Beside salting fish, processing for preservation was uncommon due to the lack of skills, equipment and marketing opportunities. Local traders would not buy processed fish. Quality was poor and packaging was seen as a problem.

#### **9.4.1.4 Livelihoods**

- Fishers generally fished every day, for periods up to 12 hours.
- Fishing was conducted year round with the lowest effort in January-February.
- Most fishers fished in groups of 2-3 people.
- About half use non-motorized wooden boats and half use powered boats.
- Boats were owned by themselves or their family.
- Hook-and-line was the most common fishing method, followed by gill nets and fish nets.
- Access to larger, powered boats would increase their range and catch capacity and spread the fishing pressure to more diverse fishing areas.
- Monthly incomes were less than \$200 for 35% and between \$200-499 for 60% of respondents.
- Most (80%) earned their living solely from fishing.
- Fish was the main catch followed by shrimp, squid and crabs.

#### **9.4.1.5 Micro-finance**

- Very few people used the services (savings and loan) of financial institutions.
- The majority did not know of the existence of financial institutions in their area. If they were aware of the existence it was mostly the existence of Moris Rasik, an NGO.
- The NGO, Moris Rasik, provides micro-credit and was well known.
- Reasons for not borrowing included: not knowing of the lending institute, too difficult, too expensive and fear of inability to repay.
- Reasons for not saving included: not knowing of the service, too difficult, interest too low, and fear that savings were unsafe.
- Fishers were generally very keen for access to micro-credit for capital (boats, engine, gear) and for working capital (for daily operations) but also for children's education.
- Fishers generally borrowed from family and friends only.
- About half of fishers were able to save money weekly. Average savings per month was a maximum \$20.

### **9.4.2 Recommendations**

#### **9.4.2.1 Co-management**

- Strengthen appropriate community groups (fishers, women, seaweed farming) and facilitate their establishment where necessary, including training in group management and exposure to the experience of NGOs.
- Identify and map the roles and functions of NGOs operating in the region so that potential roles in co-management can be identified.

- Actively develop the role of community leaders in awareness raising of co-management concepts and regulations through communication, training, and program leadership.
- Conduct regular activities to awareness raising of government regulations and marine resource management concepts and skills. Field Extension Officers can simultaneously provide technical support and problem solving for target fisher groups.
- Conduct simple mapping of fisheries zones to initiate areas of focus for co-management relating to shared issues.
- Provide training to women in fish processing techniques to increase the shelf life and value of the catch.
- Investigate the suitability of increased roles for cooperatives linking resource management and increased economic benefits.

#### **9.4.2.2 Safety at sea**

- Through awareness raising, create a better understanding of the risks and benefits of fishing further from shore. i.e. greater returns, but requiring more serious attention to safety preparations.
- Increased awareness of safety regulations and practices should be encouraged including the role of avoidable negligence and sensible precautions.
- Training in the use of basic safety equipment, and programs to assist with access, should be implemented by government.
- Fishers also need information/training in diving safety.
- Provide improved access to weather information would be a good first step. This could be supported by access to inexpensive radios for fishers to monitor weather forecasts.

#### **9.4.2.3 Post-harvest**

- Methods of supporting ice production facilities should be investigated. Household production may be an option.
- Establishment of fish storage facilities should be examined in conjunction with ice production and marketing channels. A role may exist for cooperatives.
- An active fish auction place should be established, ideally in conjunction with the ice and storage facilities, to provide increased market power to fishers.
- The specific supply chains that exist in each location should be further studied to identify opportunities for improved efficiency and returns.
- There should be a sustained and intensive program of training covering fish processing techniques, quality improvement, hygiene, product diversification and packaging. This training should also be monitored for its impacts on livelihoods improvement.

#### **9.4.2.4 Livelihoods**

- Most fishers own their own/family boat. Fishers can be assisted to increase the size and value of their catch, by supporting procurement of adequate boats with engines. Assistance by way of grants and/or financing would be effective.
- Fishers would benefit from training in more effective fishing techniques, which maximise catch and the benefit of larger, powered boats.

- Potential alternative livelihoods including farming and reef gleaning can be encouraged with proper technical and marketing assistance.
- Many local fishers do not dwell along the coast. The land around their houses is fertile and can be planted with corn and paddy, or can be used to raise cattle.
- Aquaculture in 'nila' fish (nile tilapia), carp and 'mujair' (Mozambique tilapia) could be reconsidered as they were quite successful in the past.

#### **9.4.2.5 Micro-finance**

- Community understanding and attitudes to financial institutions and services must be improved in order to raise efficiency of livelihoods. Awareness programs should be coordinated and supported by government, the institutions and programs such as RFLP.
- Financial institutions should be encouraged to provide services suited to the needs of fishers, and to better promote awareness of existing services. Loan capital should be specifically allocated to fishers.
- Encourage financial institutions to more proactively reach out to the community to educate them about borrowing and saving process.
- The potential for cooperatives to provide a practical source of finance should be explored and if appropriate, supported with training and capital.
- Training in the use of micro-finance services should be coupled with basic training in household financial management.
- With government facilitation, strengthen micro-credit institutions and establish new ones that work sustainably such as cooperatives and credit unions. The institutions should focus on fishers needs.

## **9.5 Suai, Covalima District**

### **9.5.1 Conclusions**

#### **9.5.1.1 Co-management**

- The terminology *co-management* was recognised by a third of the people.
- Only a third of these (i.e. 1/9), correctly understand the concept as collaborative government/community management of marine and coastal resources.
- There were NGOs active in community development in the area but no significant groups were working with government to implement genuine co-management of marine and coastal resources.
- Understanding reflects practices so there was more weight on cooperation between fishers.
- Fishers cooperated among themselves as part of work systems and to qualify for government and NGO assistance. Other groups (women, saving, farmers) were also common.
- Knowledge of government regulations on marine resource management was high (63%).
- There was currently no local system of customary law related to marine resource management.
- Women had little direct role in fish capture or in marine resource management but were dominant in post-harvest processing activities. Their other roles were primarily domestic (cooking, cleaning, child care).
- Half of the women were the main money managers in the households.
- Conflict between fishers was rare. Resolution was readily achieved through intervention of community leaders and the Fisheries Office. This strong base could be used to support co-management initiatives.

#### **9.5.1.2 Safety at sea**

- Fishers commonly experienced problems at sea. These included bad weather (the commonest), vessel problems (e.g. leakages and engine failures), seasickness and becoming lost.
- In general fishers regarded accidents, injury and death as part of the job, but also acknowledged the impact of negligence.
- Fatal accidents were rare and the level of concern was therefore quite low.
- Most fishers reported no impact of accidents, though a minority mentioned illness, injury and loss of income as consequence of accidents.
- Fishing was generally conducted close to shore in small non-motorized rowboats. If larger boats and engines extend the fishing range, safety will become more problematic.
- Safety equipment was considered expensive and was usually limited to taking an empty jerrycan and a torch on fishing trips, though some fishers also carried life jackets.
- Access to reliable weather forecasts was an issue.
- There was little awareness of safety regulations or good practice.

### **9.5.1.3 Post-harvest**

- Sale of fish were mainly direct to end users (on roadside, market and beach) with the balance sold to traders.
- Most fish was sold fresh and unprocessed. Prices were depressed due to quick sales to a limited number of traders (possibly to only a single trader).
- Ice was expensive in Suai and ice was used for fish preservation by very few fishers (3%). There were no local ice production facilities. Ice bought from Dili was too expensive to be viable.
- A small amount of fish was salted. Other forms of processing for preservation were uncommon due to lack of skills and marketing opportunities. Local traders will not buy processed fish. Quality was poor and packaging was seen as a problem.
- There were no local active fish auction facilities in Suai, reducing fishers' knowledge of demand and control over price.

### **9.5.1.4 Livelihoods**

- Fishers generally fished every day, for periods up to 24 hours.
- Fishing was conducted year round with the lowest effort in May-Jun and December.
- Most fishers, fished in groups of 2-5 people.
- Almost all used non-motorized wooden boats.
- Boats were owned by themselves or their family.
- Hook-and-line was the most common fishing method, followed by gill nets and fish nets.
- Access to larger, powered boats would increase their range and catch capacity and spread the fishing pressure to more diverse fishing areas.
- Monthly incomes were less than \$200 for 57% of respondents.
- Most (59%) earned their living solely from fishing. Others gained income from farming, building/labouring and animal breeding.
- Fish was the main catch beside shrimps, crabs and squids.

### **9.5.1.5 Micro-finance**

- More than half had no knowledge of financial institutions, and virtually none had used the services (savings and loan) of financial institutions.
- The NGO, Moris Rasik, provided micro-credit but was not well known.
- Reasons for not borrowing included: not knowing of the lending institutions, too difficult, too expensive and fear of inability to repay.
- Reasons for not saving included: not knowing of the service, too difficult, interest too low, and fear that savings were unsafe.
- Fishers were generally very keen for access to micro-credit for capital (boats, engine, gear) and for working capital (for daily operations) but also for children's education.
- Fishers generally borrowed from family and friends only.
- A half of fishers were able to save money daily and half of those saved more than \$70/month.

## **9.5.2 Recommendations**

### **9.5.2.1 Co-management**

- Strengthen appropriate community groups (fishers, women, seaweed farming) and facilitate their establishment where necessary, including training in group management and exposure to the experience of NGOs.
- Identify and map the roles and functions of NGOs operating in the region so that potential roles in co-management can be identified.
- Actively develop the role of community leaders in awareness raising of co-management concepts and regulations through communication, training, and program leadership.
- Conduct regular activities to awareness raising of government regulations and marine resource management concepts and skills. Field Extension Officers can simultaneously provide technical support and problem solving for target fisher groups.
- Government to facilitate the establishment of new groups or stakeholders in the co-management through early design of objectives of groups' or stakeholders' achievements.
- Conduct simple mapping of fisheries zones to initiate areas of focus for co-management relating to shared issues.
- Provide training to women groups in fish processing techniques to increase the durability and value of the catch.
- Investigate the suitability of increased roles for cooperatives linking resource management and increased economic benefits.
- Government approaches to individual fishers, as one target group, needs intensification of awareness raising on the benefits of working as a member of a fisher group.
- Roles of women in fish product processing and household financial management should be improved to enhance livelihoods.

### **9.5.2.2 Safety at sea**

- Through awareness raising create a better understanding of the risks and benefits of fishing further from shore. i.e. greater returns, but requiring more serious attention to safety preparations.
- Increased awareness of safety regulations and practices should be encouraged including the role of avoidable negligence and sensible precautions.
- Training in the use of basic safety equipment, and programs to assist with access, should be implemented by government.
- Fishers also need information/training in diving safety.
- Provide improved access to weather information would be a good first step. This could be supported by access to inexpensive radios for fishers to monitor weather forecasts.

### **9.5.2.3 Post-harvest**

- Methods of supporting ice production facilities should be investigated. Household production may be an option.
- Establishment of fish storage facilities should be examined in conjunction with ice production and marketing channels. A role may exist for cooperatives.

- An active fish auction place should be established, ideally in conjunction with the ice and storage facilities, to provide increased market power to fishers.
- The specific supply chains that exist in each location should be further studied to identify opportunities for improved efficiency and returns.
- There should be a sustained and intensive program of training covering fish processing techniques, quality improvement, hygiene, product diversification and packaging. Also monitor the impacts of this training to the livelihood improvement.

#### **9.5.2.4 Livelihoods**

- Most fishers own their own/family boat. Fishers can be assisted to increase the size and value of their catch, by supporting procurement of adequate boats with engines. Assistance by way of grants and/or financing would be effective.
- Fishers would benefit from training in more effective fishing techniques, which maximise catch and the benefit of larger, powered boats.
- Potential alternative livelihoods including farming and aquaculture can be encouraged with proper technical and marketing assistance.
- To better target the fisheries communities for assistance, the project should profile areas according to their primary livelihood. Areas that are predominantly dependent on fishing for income will require different policy and program interventions than mixed income areas.

#### **9.5.2.5 Micro-finance**

- Community understanding and attitudes to financial institutions and services must be improved in order to raise efficiency of livelihoods. Awareness programs should be coordinated and supported by government, the institutions and programs such as RFLP.
- Financial institutions should be encouraged to provide services suited to the needs of fishers, or to better promote existing services. Loan capital should be specifically allocated to fishers.
- Encourage financial institutions to more proactively reach out to the community to educate about borrowing and saving process.
- The potential for cooperatives to provide a practical source of finance should be explored and if appropriate, supported with training and capital.
- Training in the use of micro-finance services could be coupled with basic training in household financial management.
- With government facilitation, strengthen micro-credit institutions and establish new ones that work sustainably such as cooperatives and credit unions. The institutions should focus on fishers needs.

## **9.6 Pante Makasar, Oecusse District**

### **9.6.1 Conclusions**

#### **9.6.1.1 Co-management**

- The terminology *co-management* was recognised by only 12%, but most of these correctly understand the concept as collaborative government/community management of marine and coastal resources.
- There were NGOs active in community development in the area but no significant groups were working with government to implement genuine co-management of marine and coastal resources.
- Understanding reflects practices, so there was more weight on cooperation between fishers. Seaweed cultivation was supported in the past.
- Fishers cooperated among themselves as part of work systems and to qualify for government and NGO assistance. Fisher groups were dominant but women's groups are also common. These two groups were the main beneficiaries of government assistance.
- Knowledge of government regulations on marine resource management was low and there was little/no formal local resource management.
- There was currently no local system of customary law related to marine resource management.
- Women had little direct role in fish capture or in marine resource management but were dominant in post-harvest processing activities. Their other roles were primarily domestic (cooking, cleaning, child care).
- Women were the main money managers in the households.
- Conflict between fishers was rare. Resolution was readily achieved through intervention of community leaders and the Fisheries Office. This strong base could be used to support co-management initiatives.
- The largest providers of assistance were NGOs, both international and national/local, followed by the government.

#### **9.6.1.2 Safety at sea**

- Fishers commonly experienced problems at sea. These included bad weather, vessel problems (leakage and engine), seasickness and becoming lost.
- In general fishers regarded accidents, injury and death as part of the job, but also acknowledged the impact of negligence.
- Fatal accidents were rare and the level of concern was therefore quite low.
- Loss of income was considered to be the major consequence of accidents.
- Fishing was generally conducted close to shore in small rowboats. If larger boats and engines extend the fishing range, safety will become more problematic.
- Safety equipment was considered expensive and was usually limited to an empty jerry can and a torch, whose use was not intended for safety reasons. Some also carried lifejackets.
- Access to reliable weather forecasts was an issue.
- There was little (only one tenth) awareness of safety regulations or good practice.

### **9.6.1.3 Post-harvest**

- Due to inability to preserve fish with ice, sale of fish through the local market was preferred (50%) with the remainder sold directly (on roadside and beach) and some (14%) sold to traders. The size of market was small as the market was only inside the Oecusse enclave.
- Most fish was sold, in fresh unprocessed condition. Prices were depressed due to problems with access to market and poor quality.
- Other forms of processing for preservation were common with more than half processing some small part of their catch. This was mostly salting for their own use.
- Ice was expensive in Oecusse and ice was used for fish preservation by very few fishers (3%). There were no local ice production facilities. Ice bought from Dili was too expensive to be viable.
- There were no local active fish auction facilities because generally the total catch volume was too low to be able to sell using the auction facility. This was also reduced fishers' knowledge of demand and control over price.
- The main problem in selling the fish or fish product in Oecusse and Pante Makasar was access to market. This was because of the separate enclave location of Oecusse from the other Timor-Leste districts.

### **9.6.1.4 Livelihoods**

- Fishers generally fished every day, most commonly for periods up to 6 hours.
- Fishing was conducted year round with the lowest effort in January-February.
- Almost all use non-motorized wooden boats.
- Three quarters of boats were owned by fishers themselves or their family and the other one quarter were hired.
- Most fishers fished in groups of 2-3 people, but sometimes in groups as large as 5.
- Hook-and-line was the most common fishing method, followed by gill nets and fish nets.
- Access to larger, powered boats would increase their range and catch capacity and spread the fishing pressure to more diverse fishing areas.
- Monthly incomes were \$100-299 for 74% of respondents.
- Most (76%) earned their living solely from fishing. Others gained secondary income from labouring and animal breeding.
- Fish was the main catch followed by squid and snails.

### **9.6.1.5 Micro-finance**

- More than half had knowledge of financial institutions, though only 19% had used the services (savings and loan) of financial institutions.
- Micro-credit services were not well known (15%).
- Reasons for not borrowing included: not knowing of the lending institutions, too difficult, too expensive and fear of inability to repay.
- Reasons for not saving included: not having any money, not knowing of service, too difficult, interest too low, and fear that savings were unsafe.
- Fishers are generally very keen for access to micro-credit for capital (boats, engine, gear) and for working capital (for daily operations) but also for children's education.
- The church was known as a significant provider of financial assistance in Oecusse and Pante Makasar, which was seen as a micro-credit provider.

- Fisher teams usually set aside 20-30% of income for repairs and to level income in the low season.
- Fishers generally borrowed from family and friends only.
- Most loans were used for daily expenditure rather than for working capital in fisheries.
- 40% of fishers were able to save money up to \$30/month. However the majority can saved only up to \$10/month.

## **9.6.2 Recommendations**

### **9.6.2.1 Co-management**

- Strengthen appropriate community groups (fishers, women, seaweed farming) and facilitate establishment where necessary, including training in group management and exposure to the experience of NGOs.
- Identify and map the roles and functions of NGOs operating in the region so that potential roles in co-management can be identified.
- Actively develop the role of community leaders in awareness raising of co-management concepts and regulations through communication, training, and program leadership.
- Conduct regular activities to awareness raising of government regulations and marine resource management concepts and skills. Field Extension Officers can simultaneously provide technical support and problem solving for target fisher groups.
- Conduct simple mapping of fisheries zones to initiate areas of focus for co-management relating to shared issues.
- Provide training to women in fish processing techniques to increase the shelf life and value of the catch and in financial management to be able to make use of micro-finance services effectively.
- Investigate the suitability of increased roles for cooperatives linking resource management and increased economic benefits.
- Government should facilitate the establishment of new groups or stakeholders in the co-management through early design of objectives of groups' or stakeholders' achievements.
- Government approach to individual fishers, as one target group, needs intensification of awareness raising of the benefits of working as a member of a fisher group.

### **9.6.2.2 Safety at sea**

- Through awareness raising, create a better understanding of the risks and benefits of fishing further from shore. i.e. greater returns, but requiring more serious attention to safety preparations.
- Increased awareness of safety regulations and practices should be encouraged including the role of avoidable negligence and sensible precautions.
- Training in the use of basic safety equipment, and programs to assist with access, should be implemented by government.
- Fishers also need information/training in diving safety.
- Provide improved access to weather information would be a good first step. This could be supported by access to inexpensive radios for fishers to monitor weather forecasts.

### **9.6.2.3 Post-harvest**

- Methods of supporting ice production facilities should be investigated. Household production may be an option.
- Establishment of fish storage facilities should be examined in conjunction with ice production and marketing channels. A role may exist for cooperatives.
- An active fish auction place should be established, ideally in conjunction with the ice and storage facilities, to provide increased market power to fishers.
- The specific supply chains that exist in each location should be further studied to identify opportunities for improved efficiency and returns. Find solutions to low supply of fish in Oecusse.
- There should be a sustained and intensive program of training covering fish processing techniques, quality improvement, hygiene, product diversification and packaging. The impacts of this training on livelihood improvement should also be monitored.
- Investigate the demand for processed fish products and how market opportunities can be developed.

### **9.6.2.4 Livelihoods**

- Most fishers own their own/family boat. Fishers can be assisted to increase the size and value of their catch, by supporting procurement of adequate boats with engines. Assistance by way of grants and/or financing would be effective.
- Fishers would benefit from training in more effective fishing techniques, which maximise catch and the benefit of larger, powered boats.
- Potential alternative livelihoods including farming and aquaculture can be encouraged with proper technical and marketing assistance.
- To better target the fisheries communities for assistance, the project should profile areas according to their primary livelihood. Areas that are predominantly dependent on fishing for income will require different policy and program interventions than mixed income areas.
- Changes in the predictability of seasonal climate (dry and wet seasons) make fishing planning difficult. The changes effect levels of sea resources, locations of fishing grounds and fishing periods and consequently produce uncertainty in income generation. It is recommended that understanding climate variability and its impacts on fishing be included in training for fishers.

### **9.6.2.5 Micro-finance**

- Community understanding and attitudes to financial institutions and services must be improved in order to raise efficiency of livelihoods. Awareness programs should be coordinated and supported by government, the institutions and programs such as RFLP.
- Financial institutions should be encouraged to provide services suited to the needs of fishers, and to better promote awareness of existing services. Loan capital should be specifically allocated to fishers.
- Encourage financial institutions to more proactively reach out to the community to educate about borrowing and saving process.
- The potential for cooperatives to provide a practical source of finance should be explored and if appropriate, supported with training and capital.

- Training in the use of micro-finance services could be coupled with basic training in household financial management.
- With government facilitation, strengthen micro-credit institutions and establish new ones that work sustainably, such as cooperatives and credit unions. The institutions should focus on fishers needs.

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## APPENDIX 1: SAMPLE SIZES, CONFIDENCE INTERVALS AND WEIGHTING SCORE

In designing the samples for both the General Survey Area (GSA) and the Fisheries Livelihoods Project Survey Area (FSA) the population data used is based on the result of Timor-Leste's 2010 Census. The population data used are both at district and subdistrict levels. With random selection of respondents or observations for the sample, a normal distribution function for sample statistics can be assumed.

### 10.1.1 Formulas for sample size and confidence intervals

The sample size (n) is calculated using the formula:

$$n = \frac{z^2 p (1 - p) + e^2}{e^2 + \frac{z^2 p (1-p)}{N}}$$

where:

n = sample size

N= population size

p = population proportion parameter, p = 50% for an unknown proportion

e = margin of error = Confidence Interval

z = standard score. z = 1.96 for 95% significant (confidence) level on a normal distribution function.

The Confidence Interval can be calculated using the formula:

$$CI = z \sqrt{\frac{p (1 - p)}{n}}$$

where:

CI = Confidence Interval

p = population proportion parameter, p = 50% for an unknown proportion

n = sample size

z = standard score. z = 1.96 for 95% significant (confidence) level on a normal distribution function.

## 10.1.2 Sample for General Survey Area

### Weight construction

District	Population size	% village population by total population	Planned sample size	% planned sample size by total sample size	Sample size (after survey)	Weighting score (based on planned sample size)
BAUCAU	111,484	0.198656781	80	0.197044335	81	1.0081831611
DILI	234,331	0.417561641	80	0.197044335	170	2.1191253303
BOBONARO	89,787	0.159994227	80	0.197044335	65	0.8119706997
COVALIMA	60,063	0.107028114	86	0.211822660	43	0.5052722569
OECUSSE	65,524	0.116759238	80	0.197044335	47	0.5925531327
Total	<b>561,189</b>	<b>1</b>	406	<b>1</b>	<b>406</b>	

### Confidence Intervals of samples at district and national level

District	Population size	Sample size (after survey)	Level	Confidence Level (CL)	Distribution parameter (unknown)	Confidence Interval (CI)
BAUCAU	111,484	81	District	95%	50%	10.88%
DILI	234,331	170	District	95%	50%	7.51%
BOBONARO	89,787	65	District	95%	50%	12.15%
COVALIMA	60,063	43	District	95%	50%	14.94%
OECUSSE	65,524	47	District	95%	50%	14.29%
Total	<b>561,189</b>	<b>406</b>	National (All districts)	95%	50%	<b>4.86%</b>

### 10.1.3 Sample for Fisheries Livelihoods Project Survey Area (FSA)

#### Weight construction

District	Subdistrict	Population size	% village population by total population	Planned sample size	% planned sample size by total sample size	Sample size (after survey)	Weighing score (based on planned sample size)
Baucau	VEMASE	8,969	0.100705127	66	0.200000000	33	0.5035256338
Dili	ATAURO	7,978	0.08957805	60	0.181818182	30	0.4926792571
Bobonaro	ATABAE	10,976	0.12323999	60	0.181818182	41	0.6778199457
Covalima	SUAI	25,980	0.29170690	64	0.193939394	96	1.5041137073
Oecusse	PANTE MAKASAR	35,159	0.39476994	80	0.242424242	130	1.6284259841
Total		<b>89,062</b>	<b>1</b>	<b>330</b>	<b>1</b>	330	

#### Confidence Intervals of samples at subdistrict and national level

District	Subdistrict	Population size	Sample size (after survey)	Level	Confidence Level (CL)	Distribution parameter (unknown)	Confidence Interval (CI)
Baucau	VEMASE	8,969	33	Subdistrict	95%	50%	17.03%
Dili	ATAURO	7,978	30	Subdistrict	95%	50%	17.86%
Bobonaro	ATABAE	10,976	41	Subdistrict	95%	50%	15.28%
Covalima	SUAI	25,980	96	Subdistrict	95%	50%	9.98%
Oecusse	PANTE MAKASAR	35,159	130	Subdistrict	95%	50%	8.58%
Total		<b>89,062</b>	<b>330</b>	National (all districts)	95%	50%	5.37%

Note: Control area outside the RFLP area that can be used in an analysis to help monitor and evaluate RFLP project achievements covers a population of 472,127 people (561,189 – 89,062). More detailed sampling design is needed to represent this whole Control area's population when comparisons need to be done towards General Survey Area and Fisheries Livelihoods Project Survey Area.

## APPENDIX 2: LIST OF SURVEY LOCATIONS

### LIST OF SURVEY LOCATIONS FOR QUESTIONNAIRE SURVEY

No.	District	Sub District	Suco/Village	Aldeia/Hamlet	Number of Respondents	
1	Baucau	Baucau	Kaibada	Ana-waru	10	
					Caibilae	10
				Buruma	Casmutu	10
		Laga	Soba		Soli-wa	10
					Heu-uai	10
		Vemase	Vemase		Fatiliri/Butu Falo	10
					Oralan	20
					Raha	10
					Betulale	20
					Lor	10
	Caicua	Caicua	*)			
		Bahamori	*)			
Sub-Total		3	5	12	120	
2a	Dili	Cristo Rei	Kulu Hun	Toko Baru II (Antigo ASLS)	10	
		Cristo Rei	Hera	Moris Foun	10	
		Metinaro	Duyung	Sahan	10	
				Manularan	10	
2b	Atauro	Atauro	Vila/Maumeta	Lliticaraquia	10	
				Eclae	10	
				Fatulela	10	
		Beloi	Usubemacu	10		
			Berao	10		
		Bikeli	llicnamo	10		
Sub-Total		3	6	10	100	
3	Bobonaro	Atabae	Aidabaleten	Tutu Baba	10	
				Suli Laran	10	
				Biacou	10	
				Meguir	10	
				Haramé	10	
				Aidabalaten	10	
		Balibo	Sanirin	Suba Lesu	10	
				Cacu	10	
			Batugade	Nu Badac	10	
Sub-Total		2	3	9	90	
4	Covalima	Suai	Camenasa	Fatuisin	10	
				Manecin	10	
				Ailoc Laran	10	
		Suai Loro		Suco Loro	10	
				Mane Icun	14	
				Sucabe Laran/Lo'o	10	
		Tilomar	Maudemo	Onu-Laran	10	
			Kasabauk	Tabolo/Coloama	10	
		Zumalai	Tashilin	Baura Icun/Coluoan	14	
Sub-Total		3	5	9	98	

No.	District	Sub District	Suco/Village	Aldeia/Hamlet	Number of Respondents
5	Oecusse	Nitibe/Pante Makasar	Bene-Ufe/Nipani	Citrana/Sacato	10
			Suni-Ufe/Nipani	Oelmanoe/Sacato	10
		Pante Makasar	Kosta	Mahata	10
				Oeseno	10
			Nipani	Bausiu	10
			Lifau	Nefobai	10
				Oemolo	10
				Tulaica	10
Sub-Total		2	5	8	80
Total	5	13	24	48	488

\*) Included to add more respondents for Oralan and Betulale

#### FACTUAL LIST OF GSA'S ALDEIA LOCATIONS

No.	Aldeia name	Number of respondents
1	Ana-Waru	10
2	Caibilae	10
3	Casmutu	10
4	Soli-Wa	10
5	Heu-Uai	10
6	Butu-Falo	10
7	Raha	10
8	Lor	10
9	Lliticaraquia	21
10	Fatulela	21
11	Usubemacu	21
12	Pala	21
13	Llicnamo	21
14	Moris Foun	21
15	Sahan	21
16	Manuleu	21
17	Suli Laran	16
18	Biacou	8
19	Meguir	8
20	Tasimean	8
21	Subalesu	8
22	Cacu	8
23	Nu Badac	8
24	Fatuisin	5
25	Ailoc Laran	5
26	Loro	5
27	Mane Iacun	7
28	Lo'o	5
29	Onularan	5
30	Coloama	5
31	Colouan	6
32	Mahata	6

33	Oeseno	6
34	Bausiu	7
35	Nefobai	6
36	Oemolo	5
37	Tulaica	6
38	Sakato	12
	Total	406

#### FACTUAL LIST OF FSA'S ALDEIA LOCATIONS

No.	Aldeia name	Number of respondents
1	Oralan	8
2	Raha	5
3	Betulale	6
4	Lor	5
5	Caicua	5
6	Bahamori	5
7	Llitaraquia	5
8	Eclae	5
9	Fatulela	5
10	Usubemacu	5
11	Pala	5
12	Llicnamo	5
13	Tutu Baba	7
14	Suli Laran	14
15	Biacou	7
16	Meguir	7
17	Tasimean	7
18	Fatuisin	15
19	Manecin	15
20	Ailoc Laran	15
21	Loro	15
22	Mane Iacun	21
23	Lo'o	15
24	Mahata	16
25	Oeseno	16
26	Bausiu	18
27	Nefobai	16
28	Oemolo	15
29	Tulaica	16
30	Sakato	33
	Total	330

# APPENDIX 3: QUESTIONNAIRE OF BASELINE SURVEY

## ENGLISH TRANSLATION

### QUESTIONNAIRE BASELINE SURVEY – TIMOR-LESTE 2011

QUESTIONNAIRE NO.:

INTERVIEWER:

1. DISTRICT : \_\_\_\_\_ 2. SUBDISTRICT: \_\_\_\_\_  
 3. SUCO : \_\_\_\_\_ 4. ALDEIA: \_\_\_\_\_  
 5. HOUSE NO: \_\_\_\_\_ 6. NAME OF HEAD OF HOUSEHOLD: \_\_\_\_\_

#### INFORMED CONSENT – MUST READ

Good Morning/Afternoon/Evening. My name is ....., I am from the Regional Fisheries Livelihood Program. We are currently conducting a survey to identify and obtain understanding on Community's knowledge, understanding and perception on various aspects of fisheries management, particularly on co-management, safety at sea, post-harvest and marketing channel, livelihood diversity, and micro-finance service. The results of this survey will be used as inputs to develop programs on the above aspects. All information will be kept as confidential and for the purpose of our survey only. Are you willing to participate in this survey?

CONTINUE ONLY IF THE ANSWER IS YES

NO	QUESTIONS	RESPONDENT ANSWERS	TO
<b>GENERAL ILLUSTRATION</b>			
A1	SEX (DON'T ASK JUST WRITE)	MALE..... 1 FEMALE .....2	
A2	How old are you? PLEASE BE POLITE AND LOOK AT THE SITUATION	<input type="text"/> <input type="text"/> YEAR	
A3	When is your birthdate? PLEASE BE POLITE AND LOOK AT THE SITUATION	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> MONTH - YEAR	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
A4	How many people live in this house?  ANYBODY, AS LONG AS THE PERSON STAY/SLEEP IN THE HOUSE, INCLUDING SERVANTS.	<div style="border: 1px solid black; width: 100px; height: 30px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 50px; height: 30px; display: inline-block;"></div>	
A5	What is your religion?	CATHOLIC ..... 1 CHRISTIAN ..... 2 MOSLEM ..... 3 HINDU ..... 4 BUDDHIST ..... 5 OHTER, WRITE ..... 6	
A6	What is your marriage status?	MARRIED ..... 1 NOT MARRIED/SINGLE ..... 2 DIVORCE 1 (BY DIVORCE) ..... 3 DIVORCE 2 (BY DEATH)..... 4	
<b>SOCIOECONOMIC BACKGROUND OF THE RESPONDENTS</b>			
B1	Have you attended school?	YES ..... 1 NO ..... 2	→ B3
B2	What level has been completed?	ELEMENTARY NOT COMPLETED ..... 1 ELEMENTARY COMPLETED ..... 2 JUNIOR HIGH SCHOOL NOT COMPLETED ..... 3 JUNIOR HIGH SCHOOL COMPLETED ..... 4 SENIOR HIGH SCHOOL NOT COMPLETED ..... 5 SENIOR HIGH SCHOOL COMPLETED ..... 6 DIPLOMA NOT COMPLETED ..... 7 DIPLOMA COMPLETED ..... 8 BACHELOR NOT COMPLETED ..... 9 BACHELOR COMPLETED ..... 10 OTHERS, WRITE ..... 11	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
B3	<p>Are you or those living in this house own the following goods?</p> <p>PLEASE TRY TO BE REAL POLITE AND IF FEEL THAT YOU STILL FEEL AWKWARD, DO AN OBSERVATION ONLY (MAKE A NOTE IF YOU DO OBSERVATION ONLY) AND MOVE TO THE NEXT QUESTIONS.)</p>	BICYCLE ..... A MOTORBIKE ..... B CAR ..... C CAR PICK UP ..... D TRUK ..... E RADIO ..... F TV ..... G PARABOLE ..... H DVD/ VCD/CD PLAYER ..... I REFRIGERATOR ..... J TELEPHONE ..... K HANDPHONE ..... L OWN HOUSE ..... M COW ..... N GOAT/SHEEP ..... O PIG ..... P CHICKEN ..... Q MOTORIZED BOAT ..... R WOODEN SAILBOAT ..... S WOODEN ROW BOAT ..... T	
B4	<p>In the last month, did you work for money?</p>	YES ..... 1 NO ..... 2	→ B6
B5	<p>What is your main job/occupation?</p>	TEACHER ..... 11 LECTURER ..... 12 DIRETOR ..... 13 MENISTRU MEMBRU PARLEMENTU ..... 14 MEDICAL DOCTOR/ANIMAL DOCTOR ..... 15 FUNGSIONARIA PNTL/ F-FDTL ..... 21 FUNGSIONARIO EMPRESARIU ..... 22 FISHER/PESKADOR ..... 23 FARMER ..... 24 FISH WORKER ..... 31 FARM WORKER ..... 32 MARKET/SHOP WORKER ..... 33 BUILDING WORKER ..... 34 SELLER AT MARKET/MALL/SHOP ..... 41 INFORMAL VENDOR ..... 42 OWN KIOSK/SMALL SHOP AT HOME ..... 43 FISH COLLECTOR/BUYER FROM FISHER ..... 51 SEAWEED FARMER ..... 52 PROCESSED FISH VENDOR/SELLER ..... 53 COLLECT FISH/MARINE BIOTA DURING LOW TIDE ..... 54 OTHER, WRITE ..... 55	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
B6	What other job do you do to make money?	TEACHER ..... A LECTURER ..... B DIRETOR ..... C MENISTRU MEMBRU PARLEMENTU ..... D MEDICAL DOCTOR/ANIMAL DOCTOR ..... E FUNGSIONARIA PNTL/ F-FDTL ..... F FUNGSIONARIO EMPRESARIU ..... G FISHER/ PESKADOR ..... H FARMER ..... I FISH WORKER/ PESKADOR ..... J FARM WORKER ..... K MARKET/SHOP WORKER ..... L BUILDING WORKER ..... M SELLER AT MARKET/MALL/SHOP ..... N INFORMAL VENDOR ..... O OWN KIOSK/SMALL SHOP AT HOME ..... P FISH _____ COLLECTOR/BUYER _____ FROM FISHER/PESKADOR ..... Q SEAWEED FARMER ..... R PROCESSED FISH VENDOR/SELLER ..... S COLLECT FISH/MARINE BIOTA DURING LOW TIDE/REEF GLEANER ..... T OTHER, (WRITE) _____ .. U	
B7	What is the other family member job to make money?	TEACHER ..... A LECTURER ..... B DIRETOR ..... C MENISTRU MEMBRU PARLEMENTU ..... D MEDICAL DOCTOR/ANIMAL DOCTOR ..... E FUNGSIONARIA PNTL/ F-FDTL ..... F FUNGSIONARIO EMPRESARIU ..... G M FISHER/ PESKADOR ..... H FARMER ..... I FISH WORKER/ PESKADOR ..... J FARM WORKER ..... K MARKET/SHOP WORKER ..... L BUILDING WORKER ..... M SELLER AT MARKET/MALL/SHOP ..... N INFORMAL VENDOR ..... O OWN KIOSK/SMALL SHOP AT HOME ..... P FISH _____ COLLECTOR/BUYER _____ FROM FISHER/PESKADOR ..... Q SEAWEED FARMER ..... R PROCESSED FISH VENDOR/SELLER ..... S COLLECT FISH/MARINE BIOTA DURING LOW TIDE/REEF GLEANER ..... T OTHER, (WRITE) _____ .. U	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
B8	Is there a woman in the house working as fisher/peskador? IF YES, who is she?	WIFE HEAD OF HOUSEHOLD..... A DAUGHTER HEAD OF HOUSEHOLD ..... B NONE ..... C OTHER, (WRITE) _____... D	
B9	What is the average income received by you and your family in a month? REFER TO LAST MONTH	.....	
<b>NOTE : IF THE OCCUPATION IS FISHER/FISH WORKER/SEAWEED FARMER/COLLECT MARINE BIOTA DURING LOW TIDE, IN C1 CIRCLE NO 1 (NO NEED TO ASK RESPONDENT)</b>			
<b>UTILISATION OF MARINE AND COASTAL RESOURCES – SPECIAL FOR FISHER</b>			
C1	Do you utilise marine and coastal resources for a living?	YES ..... 1 NO ..... 2	→ I1
C2a	What sea resources/animal do you utilise from the sea?	FISH ..... A SHRIMP/PRAWN ..... B CRAB ..... C SQUID ..... D SEAWEED ..... E SNAIL ..... F OYSTER/CLAM..... G OTHER, WRITE _____... H	
C2b	What kind of fish do you take? HELP WITH DRAWING	WRITE _____ /LOCAL NAME _____ WRITE _____ /LOCAL NAME _____ WRITE _____ /LOCAL NAME _____ WRITE _____ /LOCAL NAME _____ WRITE _____ /LOCAL NAME _____	
C3	How frequent do you go to the sea/fishing?	EVERYDAY ..... A ONCE EVERY TWO DAYS..... B ONCE EVERY THREE DAYS ..... C ONCE A WEEK ..... D OTHER, WRITE ..... E OTHER, WRITE ..... F	
C4	Where do you usually fish? FOR FOLLOWING QUESTIONS, SAY THE SEA ANIMAL/RESOURCES	ALONG THE COAST ..... A DEEP SEA ..... B IN THE REEF AREA ..... C OTHER, WRITE _____ . D OTHER, WRITE _____ ... E	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
C5	<p>How far is it from coast?  How long does it take to get there?  How long does it take from your house to coast?  HELP CONVERT WITH THE DESIGNATED MEASUREMENT AND IF ANSWER IN RANGE WRITE THE FARTHEST/LONGEST TIME</p>	<p>A) ..... METRE  B) ..... MINUTES  C) ..... MINUTES</p>	
C6	<p>How long usually one fishing trip takes?</p>	<p>LESS THAN 6 HOURS ..... 1  6 – 12 ..... 2  12 – 24 HOURS (1/2-1 DAY) ..... 3  2 DAYS ..... 4  3 – 5 DAYS ..... 5  6 – 10 DAYS ..... 6  MORE THAN 10 DAYS ..... 7</p>	
C7	<p>Which month of the year do you usually go fishing?</p>	<p>JANUARY ..... A  FEBRUARY ..... B  MARCH ..... C  APRIL ..... D  MAY ..... E  JUNE ..... F  JULY ..... G  AUGUST ..... H  SEPTEMBER ..... I  OCTOBER ..... J  NOVEMBER ..... K  DECEMBER ..... L</p>	
<b>GEAR/VESSEL TO CATCH FISH/OTHER SEA RESOURCES</b>			
D1	<p>What kind of vessel do you use to go to the sea?</p>	<p>LARGE FISHING BOAT ..... A  MOTORIZED WOODEN BOAT ..... B  WOODEN BOAT WITH MOTOR ATTACHED ..... C  WOODEN ROW BOAT ..... D  WOODEN SAIL BOAT ..... E  OTHER, WRITE ..... F  _____ ..... F  OTHER, WRITE ..... G  _____ ..... G</p>	
D2	<p>Whose is SAY ANSWERS D1?  IF NOT OWNED, EXPLORE IF RENTED?</p>	<p>OWN VESSEL/FAMILY OWN ..... 1  RENT WITHOUT PAY ..... 2  RENT WITH PAY ..... 3  OTHER, WRITE ..... 4</p>	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
D3	Where/whom do you get it from?	BOUGHT MYSELF..... 1 GIFT FROM FAMILY.....2 GRANT FROM..(WRITE) .....3 OTHER, WRITE .....4	
D4	How many people are involved in one fishing time per boat?	1 PERSON (JUST THE RESPONDENT)..... 1 2 – 5 PEOPLE .....2 6 – 8 PEOPLE .....3 9 – 12 PEOPLE .....4 MORE THAN 12 PEOPLE .....5	
D5	What kind of fishing gear do you use to catch fish? HELP WITH DRAWING	FISH NET ..... A GILLNET ..... B PURSESEINE ..... C FISH LINE ..... D PONTOON ..... E RUMPON (FISH AGGREGATING DEVICE).....F FISH TRAP/BUBU..... G POTASH..... H EXPLOSIVE ..... I OTHERS, WRITE ..... J OTHERS, WRITE ..... K OTHERS, WRITE ..... L	
D6	How do you get (SAY ANSWER FROM D4) ?	BUY READY MADE ..... A BORROW ..... B RENTA ..... C BUY MATERIAL DAN SEW MYSELF ..... D BUY READY MADE AND MODIFY..... E BUY BASE MATERIAL AND MIX MYSELF .....F NATURAL MATERIALAND MIX MYSELF .....G OTHERS, WRITE ..... H OTHERS, WRITE ..... I	
D7	In your opinion, is using this equipment dangerous for environment?  1 = very dangerous 2 = dangerous 3 = medium 4 = safe 5 = very safe 6 = do not know	FISH NET ..... 1 – 2 – 3 – 4 – 5 – 6 GILLNET ..... 1 – 2 – 3 – 4 – 5 – 6 PURSESEINE ..... 1 – 2 – 3 – 4 – 5 – 6 FISH LINE ..... 1 – 2 – 3 – 4 – 5 – 6 PONTOON ..... 1 – 2 – 3 – 4 – 5 – 6 RUMPON (FISH AGGREGATING DEVICE)..... 1 – 2 – 3 – 4 – 5 – 6 FISH TRAP..... 1 – 2 – 3 – 4 – 5 – 6 POTASH..... 1 – 2 – 3 – 4 – 5 – 6 EXPLOSIVE ..... 1 – 2 – 3 – 4 – 5 – 6 OTHER EQUIPMENT (SEE D5) 1 – 2 – 3 – 4 – 5 – 6	
<b>SAFETY</b>			

NO	QUESTIONS	RESPONDENT ANSWERS	TO
E1	Have you ever encountered any problem when you go fishing/to the sea?	YES ..... 1 NO ..... 2	
E2	What kind of problem? Have you ever encountered during fishing.....?  ASK ALSO ALTHOUGH E1 = 2  IF NO ANSWER, TO E6	BAD WEATHER/HIGH WAVE ..... A BOAT WAS OVERTURNED ..... B BOAT/ENGINE PROBLEM ..... C BOAT LEAKAGE ..... D FIRE ..... E LOST DIRECTION ..... F LOST COMMUNICATION ..... G RUN OUT OF LOGISTICS ..... H SICKNESS/ILL ..... I CONFLICT WITHIN SHIP CREWS ..... J OTHERS, WRITE _____ .. K OTHERS, WRITE _____ .. L NEVER ENCOUNTERED PROBLEM WHEN FISHING ..... M	
E3	What did you and the crews do at the time?  IF NO A OR B, GO TO E5	LOOK FOR HELP FROM OTHER BOAT ..... A TRY TO CONTACT LAND, WRITE WHO _____ B FLOAT USING BUOY ..... C OTHERS, WRITE _____ .. D OTHERS, WRITE _____ .. E	
E4	Did you get help?  IF YES, how does it go?	YES, HELP CAME RIGHT ON TIME ..... 1 YES, HELP CAME TOO LATE ..... 2 NO HELP AT ALL ..... 3	
E5	What is the impact of the accident to yourself? Are you....?	INJURED ..... A PERMANENT DISABILITY ..... B LOST OF INCOME ..... C GOT SICK AFTERWARDS ..... D OTHERS, WRITE _____ .. E OTHERS, WRITE _____ .. F	
E6	The last time you went fishing/to the sea, did you bring safety equipment on-board?	YES ..... 1 NO ..... 2	→ E8
E7	What kind of safety equipment you bring ?	LIFE JACKET ..... A LIFE BUOY ..... B FLASH LIGHT ..... C RADIO COMMUNICATION ..... D OTHER, WRITE _____ .. E OTHER, WRITE _____ .. F OTHER, WRITE _____ .. G	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
E8	(DO NOT REPEAT ANSWERS, IF ALREADY MENTIONED IN E6) Did you bring.....?	LIFE JACKET ..... A FLASH LIGHT ..... B RADIO COMMUNICATION ..... C LIFE BUOY..... D NONE OF THE ABOVE ..... E	
E9	Have you ever given information regarding life safety at sea?	YES ..... 1 NO ..... 2	→ E11
E10	Where do you get information regarding life safety at sea from?	FISHERIES OFFICE ..... A NAVY ..... B MARINE POLICE ..... C COMMUNITY LEADER ..... D NGO ..... E COASTAL RADIO STATION/GUARD ..... F COAST MASTER/SYAHBANDAR ..... G OTHER, WRITE ..... H OTHER, WRITE ..... I	
E11	What is your expectation regarding safety at sea?	HAVING LIFE JACKET ..... A HAVING LIFE BUOY ..... B HAVING FLASH LIGHT ..... C HAVING RADIO COMMUNICATION ..... D RECEIVE INFORMATION/GUIDENCE ON SAFETY AT SEA ..... E RECEIVE TRAINING ON SAFETY AT SEA ..... F OTHER, WRITE ..... G OTHER, WRITE ..... H NONE ..... I	
E12	Have you ever heard of sea accidents with fishers dying because of it?	YES ..... 1 NO ..... 2	→ E16
E13	Did it happen a lot?	VERY OFTEN ..... 1 QUITE OFTEN ..... 2 RARELY HAPPEN ..... 3 VERY RARELY HAPPEN ..... 4	
E14	How often?	EVERY WEEK ..... 1 ONCE A MONTH ..... 2 ONCE EVERY SEVERAL MONTH ..... 3 ONCE EVERY 6 MONTHS ..... 4 ONCE A YEAR OR LONGER ..... 5	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
E15	In your knowledge, what is the reason(s) of the accident at sea ?	BAD WEATHER/HIGH WAVE ..... A BOAT WAS OVERTURNED ..... B BOAT/ENGINE PROBLEM ..... C BOAT LEAKAGE ..... D FIRE ..... E LOST DIRECTION ..... F LOST COMMUNICATION ..... G RUN OUT OF LOGISTICS ..... H SICKNESS/ILL ..... I CONFLICT WITHIN SHIP CREWS ..... J OTHERS, WRITE _____ K OTHERS, WRITE _____ L	
E16	What is your opinion on these statements? 1 = Strongly agree 2 = Agree 3 = Disagree 4 = Strongly disagree 5 = Do not know	ACCIDENT AT SEA IS FATE THAT IS OUT OF OUR CONTROL ..... 1 – 2 – 3 – 4 – 5 RISK AT WORK ..... 1 – 2 – 3 – 4 – 5 BECAUSE OF NEGLIGENCE ..... 1 – 2 – 3 – 4 – 5 PURE ACCIDENT ..... 1 – 2 – 3 – 4 – 5	
E17	Are you aware of any regulation related to safety at sea?	YES ..... 1 NO ..... 2	→ F1
E18	What is regulated? What is the content of the regulation?	MUST BRING SAFETY EQUIPMENT ..... A MUST HAVE LIFE JACKET ..... B OTHER, WRITE _____ C OTHER, WRITE _____ D OTHER, WRITE _____ E	
<b>FISH/OTHER MARINE BIOTA COLLECTOR DURING LOW TIDE –REEF GLEANER</b>			
E19	Do you or other family members look for fish/other marine biota during low tide?	YES ..... 1 NO ..... 2	→ F1
E20	Do your children also participate?	YES ..... 1 NO ..... 2	→ F1
E21	When looking for fish during low tide, do the children wear shoes?	YES ..... 1 NO ..... 2	
<b>QUANTITY OF FISH CATCH</b>			

NO	QUESTIONS	RESPONDENT ANSWERS	TO
F1	In the last few months, every time you go fishing, how much do you catch per trip?	<p>A) FISH, WRITE _____ :          _____PIECE; _____BUCKET</p> <p>FISH, WRITE _____ :          _____PIECE; _____BUCKET</p> <p>B) NON FISH :          WRITE _____; _____KG; _____PCS;          _____BUNDLE; _____BUCKET</p> <p>WRITE _____; _____KG; _____PCS; _____          BUNDLE; _____BUCKET</p>	
F2	Usually, how much of your catch do you consume for yourself/family?	<p>A) FISH, WRITE _____ :          _____PIECE; _____BUCKET</p> <p>FISH, WRITE _____ :          _____PIECE; _____BUCKET</p> <p>B) NON FISH :          WRITE _____; _____KG; _____PCS;          _____BUNDLE; _____BUCKET</p> <p>WRITE _____; _____KG; _____PCS; _____          BUNDLE; _____BUCKET</p>	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
F3	Is there a change in the amount of fish you catch over the year?	YES, DECREASING ..... 1 THE SAME ..... 2 YES, INCREASING ..... 3 YES, FISH DECREASING AND NON FISH INCREASING ..... 4 YES, FISH INCREASING AND NON FISH DECREASING ..... 5	→ G1
F4	Since when did you experience it?	WITHIN THE LAST YEAR ..... 1 THE LAST TWO YEARS ..... 2 THE LAST THREE – FOUR YEARS ..... 3 MORE THEN FIVE YEARS AGO ..... 4	
F5	What do you think the reason for this?	BAD WEATHER/HIGH WAVE ..... A BOAT TROUBLE/NOT GOOD ..... B FISHING GEAR NOT ADEQUATE ..... C CAPITAL NOT ENOUGH ..... D COMPETITION AMONG FISHERS ..... E FISH DECREASING ..... F OTHER, WRITE ..... G OTHER, WRITE ..... H	
<b>COST AND INCOME</b>			
G1	How much is the cost of one time fishing at sea?	A) FUEL ..... \$ ..... A B) BAIT ..... \$ ..... B C) FOOD/DRINK ..... \$ ..... C D) OTHER ..... \$ ..... D E) OTHER ..... \$ ..... E	
G2	How much do you get for one time fishing at sea? <b>GROSS</b> BEFORE EXPENSES (FUEL, BAIT ETC)	.....\$	
G3	How much do you get for one time fishing at sea? <b>NETT</b> AFTER EXPENSES (FUEL, BAIT ETC)	.....\$	
G4	What needs to be done to get more income?	_____ A _____ B _____ C _____ D	
G5	Approximately, in one month, how much do you get from fishing/other sea animal? HELP COUNT BASE ON G1	\$.....	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
G6	What kind of activities do you do to get additional income?	FISH PROCESSING ..... A SHOP/KIOSK ..... B FOOD STALL ..... C FARMING ..... D NONE ..... E OTHER, WRITE ..... F OTHER, WRITE ..... G	→ H1
G7	Approximately, how much do you get from other activities (SAY ACTIVITY FROM G6) outside fishing per month?	FISH PROCESSING= \$ _____ SHOP/KIOSK = \$ _____ FOOD STALL = \$ _____ FARMING = \$ _____ OTHER = \$ _____ OTHER = \$ _____	
G8	In your opinion, what are the constraints this community experienced in achieving better economy	LOW MARKET SUPPORT/LOW BUYING POWER A LIMITED MARKETING CHANNEL..... B LOW SKILLS ..... C LOW EDUCATION ..... D POOR ACCESS TO DISTRICT CAPITAL ..... E DOMINATED BY TENKULAK/CANNOT SELL TO OTHERS..... F LOW PRICE FROM TENKULAK..... G FISHING GEAR/VESSEL NOT ADEQUATE ..... H NO CAPITAL ..... I OTHER, WRITE ..... J OTHER, WRITE ..... K	
G9	Other than fishing/sea resources, what kind of business is potential to be developed?	FISH/OTHER SEA ANIMAL PROCESSING ..... A MAKE KAIXA IKAN MORIS PACKAGE ..... B SHOP/KIOSK ..... C FOOD STALL ..... D FARMING ..... E LIVESTOCK ..... F FISH/SHRIMP EMBANKMENT ..... G SEAWEED FARMING ..... H OTHER, WRITE ..... I OTHER, WRITE ..... J	
<b>POST-HARVESTING, MARKETING</b>			
H1	Do you use ice to store the fish?	YES ..... 1 NO ..... 2	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
H2	Where or to whom do fishers in this area sell their fish/sea animal catch?	FISH COLLECTOR ..... A ALREADY PAID FOR BEFORE FISHING/ IJON/ TENGKULAK..... B FISH AUCTION ..... C AT THE BEACH ..... D AT THE SIDE OF THE ROAD..... E OTHER, WRITE .....F OTHER, WRITE .....G	
H3	Where or to whom do you usually sell your fish/sea animal catch?	FISH COLLECTOR ..... 1 ALREADY PAID FOR BEFORE FISHING/ IJON/ TENGKULAK.....2 FISH AUCTION .....3 AT THE BEACH .....4 AT THE SIDE OF THE ROAD.....5 OTHER, WRITE .....6 OTHER, WRITE .....7	
H4	Are there any constraints in selling your catch?  IF YES, What is the constraint	NO ..... A YES, CHEAP PRICE ..... B YES, NO STORAGE ..... C YES, WRITE .....D YES, WRITE .....E	
<b>POST-HARVESTING : PROCESSING AND PUBLIC FACILITIES</b>			
I1	Do you do any processing for fish/other sea products before selling?  EXPLAIN PROCESS = MAKE SPECIAL FOOD, PRESERVES ETC	NO, SELL AS IS ..... A DO NOT FISH ..... B YES, SMALL AMOUNT IS PROCESSED FIRST ... C YES, MOST IS PROCESSED FIRST ..... D YES, ALL IS PROCESSED BEFORE SALE ..... E	→ K1 → K1
I2	What do you make?	SALTY FISH..... A SMOKED FISH..... B PRESERVED SEE WEED ..... C MASHED AND ..... D OTHER, WRITE ..... E OTHER, WRITE .....F	
I3	How do you learn about post-harvest processing SAY I2?	TRADITION ..... A TRAINING ..... B LEARN FROM NEIGHBOUR/OTHER FISHERS.... C LEARN FROM COMMUNITY GROUP ..... D OTHER SOURCE, WRITE .....E OTHER SOURCE, WRITE .....F	
I4	Do you feel that you need skill/information for post-harvest skill?	YES..... 1 NO.....2	→ I6

NO	QUESTIONS	RESPONDENT ANSWERS	TO
15	What is your expectation about post-harvest skill?	ADDITIONAL INFORMATION..... A NEED TRAINING TO INCREASE QUALITY OF PRODUCT..... B NEED DIVERSIFICATION ..... C OTHER, WRITE ..... D OTHER, WRITE ..... E	
16	Do you think you have adequate equipment to process fish/sea product?	YES ..... 1 NO ..... 2	→ I8
17	What kind of equipment or assistance to increase SAY THE PRODUCT quality?	WRITE ..... A WRITE ..... B WRITE ..... C	
18	Is there public facility/ies that you can use to process fish/other sea product? IF YES, what is it?	NONE ..... A YES, WRITE ..... B YES, WRITE ..... C	→ J1
19	Do you use the facility/ies?	YES, OFTEN ..... 1 YES, QUITE OFTEN ..... 2 YES, RARELY ..... 3 YES, VERY RARELY ..... 4 NEVER ..... 5	
<b>PRODUCT MARKETING</b>			
J1	Where do you usually sell SAY THE PROCESSED PRODUCT?	LOCAL MARKET ..... A LOCAL SELLER ..... B DIRECT TO CUSTOMER'S PLACE ..... C AT THE SIDE OF THE ROAD ..... D BUYER COMES TO BUY ..... E OTHER PLACE, WRITE ..... F OTHER PLACE, WRITE ..... G	
J2	Is it easy for you to sell SAY THE PROCESSED PRODUCT?	YES ..... 1 NO ..... 2	→ K1
J3	What are the constraints in marketing of products?	DIFFICULT ACCESS TO MARKET ..... A POOR PACKAGING OF PRODUCTS ..... B POOR QUALITY OF PRODUCTS ..... C OTHER, WRITE ..... D OTHER, WRITE ..... E	
<b>SEA WEED → SPECIAL FOR SEA WEED FARMER</b>			
K1	Do you plant seaweed?	YES ..... 1 NO ..... 2	→ L1

NO	QUESTIONS	RESPONDENT ANSWERS	TO
K2	What processing do you do after harvesting seaweed for sale?	NONE ..... A DRYING THE SEA WEED ..... B PROCESSED IT INTO OTHER PRODUCT, WHICH IS (WRITE)..... C	
K3	What kind of product do you make from seaweed?	NONE ..... A MAKE...WRITE ..... B MAKE...WRITE ..... C	
K4	What are the problems in planting/farming seaweed?	UNSTABLE PRICE ..... A PLANT DISEASE .....WRITE..... B NO SEA WEED COLLECTOR/BUYER..... C LOW PRODUCT QUALITY ..... D OTHERS, WRITE ..... E	
<b>LIVELIHOOD AND FINANCIAL SERVICES</b>			
L1	In your opinion, what kind of assistance do you need to increase your income?	TRAINING FOR ADDITIONAL SKILL ..... A REPAIR/PROCUREMENT OF FISHING EQUIPMENT ..... B FISH PROCESSING ..... C PRODUCT MARKETING..... D CAPITAL ..... E OTHER, WRITE ..... F	
L2	In your knowledge, what sort of financial/credit institution is available in the area?	BANK..... A PERSONAL CREDIT/LOAN..... B COOPERATIVE ..... C MICRO FINANCE..... D OTHER, WRITE ..... E OTHER, WRITE ..... F	
L3	Have you ever used or are using the financial services?	YES ..... 1 NO ..... 2	→ L10
L4	Which financial institutions have you used or is using?	BANK..... A PERSONAL CREDIT/LOAN..... B COOPERATIVE ..... C MICRO FINANCE..... D OTHER, WRITE ..... E OTHER, WRITE ..... F	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
L5	What kind of services have you used or is still using?	CREDIT/LOAN ..... A SAVING ..... B OTHER, WRITE ..... C  ATTENTION:  IF ONLY A → L6, L7, SKIP AND GO TO L11  IF A & B → L6 – L9 SKIP AND GO TO L12  IF ONLY B → L8, L9, L10 SKIP AND GO TO L12	
L6	What do you use the money for?	CAPITAL ..... A CHILDREN EDUCATION ..... B CAPITAL FOR FISHING TRIP/ACTIVITY ..... C DAILY EXPENDITURE ..... D BUY HOUSE ..... E BUY MOTORBIKE ..... F OTHER, WRITE ..... G OTHER, WRITE ..... H	
L7	How do you pay the loan/instalment?	DAILY ..... A WEEKLY ..... B MONTHLY ..... C OTHER, WRITE ..... D	
L8	How do you save?	MONTHLY ..... A WEEKLY ..... B DAILY ..... C IRREGULAR ..... D	
L9	How much approximately can you save a month? AVERAGE FOR THE LAST 6 MONTHS	.....US\$	
L10	Why did not you use the services (borrow)?	DIFFICULT ..... A HIGH INTEREST ..... B AFRAID CANNOT PAY BACK ..... C PREFER BORROW FROM FAMILY ..... D PREFER ARISAN/TRADITIONAL ..... E DO NOT KNOW ..... F OTHER, WRITE ..... G OTHER, WRITE ..... H	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
L11	Why did not you save at the financial institution	NO MONEY ..... A LOW INTEREST ..... B AFRAID CANNOT GET THE MONEY AFTER ..... C PREFER ARISAN/TRADITIONAL..... D DO NOT KNOW ..... E OTHER, WRITE .....F OTHER, WRITE .....G	
L12	According to your knowledge, is there micro credit assistance in the area?	YES ..... 1 NO .....2	→L19
L13	From which institutions?	BANK PERKREDITAN RAKYAT/BPR ..... A GOVERNMENT, WRITE ..... B PERSONAL ..... C COOPERATIVE ..... D CHURCH ..... E CREDIT UNION ..... F NGO ..... G OTHER, WRITE ..... H OTHER, WRITE ..... I	
L14	Do you utilize the assistance?	YES ..... 1 NO .....2	→L18
L15	Why?	EASY ..... A LOW INTEREST ..... B NO NEED TO PAY BACK/GRANT ..... C OTHER, WRITE ..... E	
L16	Are you going to continue the assistance after you paid it out?	YES ..... 1 NO .....2	→ L18
L17	Why?	INCREASE INCOME..... A RECIEVE MARKETING ASSISTANCE ..... B RECEIVE TRAINING/TECHNICAL ASSISTANCE . C RECEIVE KNOWLEDGE ON FINANCIAL MANAGEMENT..... D MEMBER SOLIDARITY ..... E OTHER, WRITE .....F OTHER, WRITE .....G OTHER, WRITE ..... H	
L18	In your knowledge, which community group usually use the assistance?	MALE GROUP ..... A FEMALE GROUP ..... B OTHER, WRITE ..... C OTHER, WRITE ..... D	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
L19	What kind of financial assistance/credit do you need most, if any?	OPERATIONAL COST FOR FISHING..... A REPLACING FISHING GEAR..... B CAPITAL FOR NEW ACTIVITY ..... C OTHER, WRITE ..... D OTHER, WRITE ..... E OTHER, WRITE ..... F	
<b>CO-MANAGEMENT</b>			
M1	Have you ever heard co-management terminology?	YES ..... 1 NO ..... 2	→ M3
M2	What does it means?	WORKING TOGETHER WITH THE GOVERNMENTA WORKING IN A GROUP..... B SHARING RESPONSIBILITY AMONG FISHERS .. C SOME KIND OF COOPERATIVE ..... D REGULATION FISH FROM OTHER AREA CANNOT ENTER OUR MARKET ..... E REGULATION FISHER FROM OUTSIDE CANNOT FISH IN OUR AREA.....F FISHERS/PEOPLE FROM OTHER VILLAGE CAN UTILIZE OUR COAST/SEA.....G OTHER, WRITE ..... H	
M3	Does it exist in this area?	COLLABORATION BETWEEN FISHERS GROUP AND GOVERNMENT ..... A COLLABORATION AMONG GROUP OF FISHERSB SHARING RESPONSIBILITY AMONG GROUP OF FISHERS..... C COOPERATIVE ..... D REGULATION FISH FROM OTHER AREA CANNOT ENTER OUR MARKET ..... E REGULATION FISHER FROM OUTSIDE CANNOT FISH IN OUR AREA.....F FISHERS/PEOPLE FROM OTHER VILLAGE CAN UTILIZE OUR COAST/SEA.....G OTHER, WRITE ..... H	
M4	Does this aldeia/village have sea border area, so that fishers from other area cannot get in?	YES ..... 1 NO ..... 2 DO NOT KNOW ..... 3	
M5	Is there a village body responsible to regulate sea resources utilization?	YES ..... 1 NO ..... 2 DO NOT KNOW ..... 3	→ M9 → M9
M6	Is the body still active?	YES ..... 1 NO ..... 2	

NO	QUESTIONS	RESPONDENT ANSWERS	TO
M7	Is there a regulation or written agreement to regulate sea resources utilization?	YES ..... 1 NO ..... 2 DO NOT KNOW ..... 3	→ M9 → M9
M8	Who acknowledge the regulation/agreement?	ACKNOWLEDGED BY VILLAGE ..... A ACKNOWLEDGED BY SUB DISTRICT GOVERNMENT ..... B ACKNOWLEDGED BY DISTRICT GOVERNMENT .. C ACKNOWLEDGED BY MINISTER ..... D OTHER, WRITE ..... E DO NOT KNOW ..... F	
M9	What kind of community groups exist in your area?	SAVINGS AND LOAN GROUP ..... A WOMEN'S GROUP ..... B FISHERS' GROUP ..... C COOPERATIVE ..... D OTHER, WRITE ..... E OTHER, WRITE ..... F NONE/NO COMMUNITY GROUP ..... G	
M10	Among those activities, which do you/family members participate in? WRITE ANSWER M9, ANSWERS CAN BE MORE THAN 1	_____ _____ _____	
M11	Is there institution(s) from outside the village that assist and help the community here? IF YES, who are they?	DISTRICT GOVERNMENT ..... A DISTRICT GOVERNMENT ..... B FISHERIES OFFICE ..... C LOCAL NGO ..... D INTERNASIONAL NGO ..... E PRIVATE COMPANY ..... F INDIVIDUAL ..... G OTHER, WRITE ..... H OTHER WRITE ..... I NONE ..... J	→ M13
M12	Which group do they help/assist?	FISHERS ..... A FARMER ..... B WOMEN ..... C SEA PRODUCT PROCESSING GROUP ..... D SEA WEED FARMER ..... E FARMER GROUP OF NILA FISH ..... F OTHER, WRITE ..... G OTHER, WRITE ..... H	M12

NO	QUESTIONS	RESPONDENT ANSWERS	TO
M13	What kind of roles women have in fishing activities?	PRODUCT PROCESSING ETC ..... A PRODUCT SELLING ETC ..... B REEF GLEANING ..... C SEAWEED FARMING ..... D HOUSEHOLD FINANCIAL MANAGEMENT ..... E CATCH FISH/BECOME FISHER ..... F OTHER, WRITE ..... G OTHER, WRITE ..... H NONE ..... I	
M14	Is there ever occurred a conflict in your area or between your area with other areas?	YES ..... 1 NO ..... 2	→ E1
M15	What is the problem?	<u>WITH FISHERS WITHIN THE AREA</u> CONFLICT REGARDING FISHING AREA ..... A CONFLICT REGARDING FISHING GEAR ..... B CONFLICT IN HARVEST SHARING ..... C CONFLICT DUE TO DISTRUCTION OF RESOURCES WITH THE USE OF POTASH OR EXPLOSIVE ..... D OTHER, WRITE ..... E  <u>WITH FISHERS OUTSIDE THE AREA</u> CONFLICT REGARDING FISHING AREA ..... F CONFLICT REGARDING FISHING GEAR ..... G CONFLICT DUE TO DISTRUCTION OF RESOURCES WITH THE USE OF POTASH OR EXPLOSIVE ..... H OTHER, WRITE ..... I OTHER, WRITE ..... J	
M16	Can the conflict be solved?	YES ..... 1 NO ..... 2	→ N1
M17	What sort of conflict resolution is taken?	FISHERS COMMUNITY MEETING ..... A ELDERLY/COMMUNITY LEADER INVOLVEMENT ..... B THROUGH LOCAL FISHERIES OFFICE ..... C REPORT TO THE POLICE ..... D ENFORCING FINES TO OUTSIDE FISHERS ..... E SOLUTION DECIDED BY CHEFE DE ALDEIA ..... F SOLUTION DECIDED BY CHEFE DE SUKO ..... G OTHER, WRITE ..... H OTHER, WRITE ..... I OTHER, WRITE ..... J	
<b>PHYSICAL PROFILE OF HOUSEHOLD MEMBERS</b>			

NO	QUESTIONS	RESPONDENT ANSWERS	TO
N1	<p>Is anybody in this household is physically disabled?</p> <p>PLEASE TRY TO BE REAL POLITE AND IF FEEL THAT YOU STILL FEEL AWKWARD, DO AN OBSERVATION ONLY (MAKE A NOTE IF YOU DO OBSERVATION ONLY) AND MOVE TO O1</p>	<p>YES ..... 1</p> <p>NO ..... 2</p>	
N2	Who are they?	<p>HEAD OF THE HOUSEHOLD ..... A</p> <p>WIFE ..... B</p> <p>SON/DAUGHTER ..... C</p> <p>GRANDCHILD..... D</p> <p>PARENTS ..... E</p> <p>IN LAWS..... F</p> <p>DAUGHTER/SON IN LAW ..... G</p> <p>RELATIVES..... H</p> <p>OTHER, WRITE ..... I</p>	
N3	What is the reason/why?	<p>ACCIDENT ..... A</p> <p>GENETICS ..... B</p> <p>OTHER, WRITE ..... C</p>	

**- OBSERVATIONS -**

O1	SEE HOUSE WALL TO DETERMINE TYPE OF HOUSE	<p>PERMANENT (CEMENT, BRICK, CONBLOCK)..... 1</p> <p>SEMI PERMANENT (HALF CEMENT) ..... 2</p> <p>NON PERMANENT (BAMBOO, WOOD ETC)..... 3</p>	
O2	SEE THE DOMINANT FLOORING IN THE HOUSE	<p>GROUND ..... 1</p> <p>BAMBOO ..... 2</p> <p>WOOD..... 3</p> <p>CEMENT ..... 4</p> <p>CEMENT FLOORING ..... 5</p> <p>CERAMIC..... 6</p> <p>OTHER, WRITE ..... 7</p>	
O3	OBSERVE VENTILATION CONDITION SUBJECTIVELY. MEDIUM = FEEL THE BREEZE, HOT= NOT ENOUGH	<p>MEDIUM..... 1</p> <p>NOT ENOUGH..... 2</p>	
O4	LOCATION OF ALDEA	<p>RIGHT BY THE COAST ..... 1</p> <p>NEXT TO ALDEA BY THE COAST ..... 2</p> <p>FAR FROM COAST ..... 3</p>	

O5	CONDITION OF ROAD IN FRONT OF HOUSE	GROUND ..... 1 ASPHALT/ CEMENT/ PAVING BLOCK ..... 2	
O6	MODE OF TRANSPORTATION FROM DISTRICT CAPITAL TO ALDEA	PUBLIC TRANSPORT ..... 1 NO PUBLIC TRANSPORT ..... 2	
O7	DISTANCE FROM DISTRICT CAPITAL TO ALDEA	LESS THAN 1/2 HOUR BY MOTORIZED VEHICLE 1 1/2-1 HOURS BY MOTORIZED VEHICLE ..... 2 MORE THAN 1 HOUR BY MOTORIZED VEHICLE 3 OTHERS, WRITE _____ ..... 4	
O8	FARE FROM DISTRICT CAPITAL TO ALDEA	LESS THAN \$ 3 (CHEAP)..... 1 AROUND \$ 3-5 (MEDIUM)..... 2 MORE THAN \$ 5 (EXPENSIVE)..... 3	
O9	GARBAGE	FISH/SEA PRODUCT GARBAGE ..... A GARBAGE FROM FISH/SEA PRODUCT PROCESSING..... B GARBAGE INSIDE HOUSE..... C GARBAGE IN THE YARD..... D GARBAGE OUTSIDE HOUSE ..... E	
O10	CONDITION OF EXISTING INFRASTRUCTURE (GOOD, LIGHTLY DAMAGE, SEVERELY DAMAGE), FUNCTIONAL OR NOT	FISH AUCTION, WRITE _____ ..... 1 BOAT PARKING LOCATION, WRITE _____ ..... 2 COLD STORAGE, WRITE _____ ..... 3 FISH DRYING PLACE, WRITE _____ ..... 4 FISH PROCESSING PLACE, WRITE _____ ..... 5 OTHER, WRITE _____ ..... 6 OTHER, WRITE _____ ..... 7 OTHER, WRITE _____ ..... 8	

**BAHASA INDONESIA (USED IN THE SURVEY)**

**KUESIONER *BASELINE* SURVEI – TIMOR LESTE 2011**

NO KUESIONER :

PEWAWANCARA:

1. DISTRIK : \_\_\_\_\_ 2. SUB DISTRIK : \_\_\_\_\_

3. SUKO : \_\_\_\_\_ 4. ALDEIA: \_\_\_\_\_

5. NOMOR RUMAH: \_\_\_\_\_ 6. NAMA KEPALA RUMAH TANGGA: \_\_\_\_\_

***INFORMED CONSENT – WAJIB DIBACAKAN***

Selamat pagi/siang/sore, saya ..... Kami dari Program Mata Pencaharian Perikanan Daerah sedang melakukan survai rumah tangga tentang mata pencaharian penduduk di sektor perikanan. Hasil survai akan membantu pemerintah menyusun program-program. Informasi dari Ibu/Bapak bersifat rahasia dan tidak diberikan pada orang lain. Lama wawancara sekitar 30 menit. Sifatnya sukarela, tidak ada paksaan dan kami tidak memberi bantuan apapun. Apakah kami boleh mewawancarai Ibu/ Bapak? LANJUTKAN HANYA BILA JAWABANNYA YA

NO	PERTANYAAN	JAWABAN RESPONDEN	KE
<b>PROFIL RESPONDEN – WAWANCARA KEPALA KELUARGA</b>			
A1	JENIS KELAMIN	LAKI-LAKI .....1 PEREMPUAN .....2	
A2	Berapa usia Ibu/ Bapak? PERHATIKAN SITUASI	<input type="text"/> <input type="text"/> TAHUN	
A3	Kapan Ibu/ Bapak lahir? PERHATIKAN SITUASI	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> BULAN - TAHUN	
A4	Berapa orang tinggal di rumah ini? SIAPAPUN, ASALKAN SEHARI-HARI TIDUR DI RUMAH YANG DIWAWANCARA, TERMASUK PEMBANTU	<input type="text"/> <input type="text"/> ORANG	

A5	Agama yang Ibu/ Bapak anut?	KATOLIK ..... 1 KRISTEN ..... 2 ISLAM ..... 3 HINDU ..... 4 BUDHA ..... 5 LAINNYA (TULISKAN) ..... 6	
A6	Apakah Ibu/ Bapak menikah?	MENIKAH ..... 1 BELUM MENIKAH ..... 2 DUDA/ JANDA KARENA CERAI ..... 3 DUDA/ JANDA KARENA DITINGGAL MATI ..... 4	
<b>LATAR BELAKANG SOSIAL EKONOMI</b>			
B1	Apakah Ibu/ Bapak pernah bersekolah?	YA ..... 1 TIDAK ..... 2	→ B3
B2	Tingkat pendidikan apa yang diselesaikan?	SD TIDAK SELESAI ..... 1 SD SELESAI ..... 2 SMP TIDAK SELESAI ..... 3 SMP SELESAI ..... 4 SMA TIDAK SELESAI ..... 5 SMA SELESAI ..... 6 D3 TIDAK SELESAI ..... 7 D3 SELESAI ..... 8 S1 TIDAK SELESAI ..... 9 S1 SELESAI ..... 10 LAINNYA, TULISKAN ..... 11	
B3	Apakah Ibu/ Bapak atau orang di rumah ini memiliki barang-barang sbb?  MOHON SOPAN. BILA MERASA KURANG NYAMAN, LOMPATI SEMENTARA ATAU LAKUKAN OBSERVASI (BUAT CATATAN BILA OBSERVASI)	<b>SEPEDA</b> ..... A <b>SEPEDA MOTOR</b> ..... B <b>MOBIL</b> ..... C <b>MOBIL PICK UP</b> ..... D <b>TRUK</b> ..... E <b>RADIO/ TAPE</b> ..... F <b>TV</b> ..... G <b>PARABOLA</b> ..... H <b>DVD/ VCD/CD PLAYER</b> ..... I <b>KULKAS</b> ..... J <b>TELEPHONE</b> ..... K <b>HANDPHONE</b> ..... L <b>RUMAH SENDIRI</b> ..... M <b>SAPI/ KERBAU</b> ..... N <b>KAMBING/ DOMBA</b> ..... O <b>BABI</b> ..... P <b>AYAM</b> ..... Q <b>KAPAL MOTOR</b> ..... R <b>PERAHU LAYAR</b> ..... S <b>PERAHU DAYUNG</b> ..... T	

B4	Dalam sebulan terakhir, apakah Ibu/ Bapak bekerja untuk mendapatkan uang?		YA .....1 TIDAK .....2	→ B6
B5	Apa pekerjaan utama Ibu/ Bapak ?	GURU ..... 11 DOSENTE..... 12 DIRETOR..... 13 MENISTRU MEMBRU PARLEMENTU..... 14 DOKTER UMUM/ HEWAN ..... 15 FUNGSIONARIA PNTL/ F-FDTL .....21 FUNGSIONARIO EMPRESARIU .....22 <u>NELAYAN/ PESKADOR .....23</u> PETANI .....24 <u>BURUH NELAYAN/ PESKADOR .....31</u>	BURUH TANI ..... 32 PELAYAN PASAR/ TOKO ..... 33 BURUH BANGUNAN ..... 34 PEDAGANG PASAR/ PERTOKOAN ..... 41 PEDAGANG DI TEMPAT INFORMAL ..... 42 PUNYA KIOS ..... 43 <u>PENGEPUL/PEMBELI IKAN DARI PESKADOR ..... 51</u> <u>PETANI BUDIDAYA RUMPUT LAUT ..... 52</u> <u>PENGOLAH HASIL IKAN/ LAUT ..... 53</u> <u>PENGUMPUL IKAN DLL DI SAAT AIR SURUT ..... 54</u> LAINNYA (TULISKAN)..... 55	
B6	Apa kerja lain yang Ibu/ Bapak lakukan untuk mendapatkan uang?	GURU ..... A DOSENTE..... B DIRETOR..... C MENISTRU MEMBRU PARLEMENTU..... D DOKTER UMUM/ HEWAN ..... E FUNGSIONARIA PNTL/ F-FDTL .....F FUNGSIONARIO EMPRESARIU .....G NELAYAN/ PESKADOR ..... H PETANI .....I BURUH NELAYAN/ PESKADOR .....J	BURUH TANI .....K PELAYAN PASAR/ TOKO .....L BURUH BANGUNAN .....M PEDAGANG PASAR/ PERTOKOAN ..... N PEDAGANG DI TEMPAT INFORMAL ..... O PUNYA KIOS .....P PENGEPUL/PEMBELI IKAN DARI PESKADOR ..... Q PETANI BUDIDAYA RUMPUT LAUT ..... R PENGOLAH HASIL IKAN/ LAUT .....S PENGUMPUL IKAN DLL DI SAAT AIR SURUT ..... T LAINNYA (TULISKAN)..... U	
B7	Apa pekerjaan anggota rumah tangga yang lain untuk mendapatkan uang?	GURU ..... A DOSENTE ..... B DIRETOR ..... C MENISTRU MEMBRU PARLEMENTU ..... D DOKTER UMUM/ HEWAN ..... E FUNGSIONARIA PNTL/ F-FDTL.....F FUNGSIONARIO EMPRESARIU ..... G <b>NELAYAN/ PESKADOR ..... H</b> PETANI..... I <b>BURUH NELAYAN/ PESKADOR..... J</b> BURUH TANI..... K PELAYAN PASAR/ TOKO..... L BURUH BANGUNAN ..... M PEDAGANG PASAR/ PERTOKOAN ..... N PEDAGANG DI TEMPAT INFORMAL ..... O PUNYA KIOS..... P <b>PENGEPUL/ PEMBELI IKAN DARI NELAYAN/ PESKADORQ</b> <b>PETANI BUDIDAYA RUMPUT LAUT ..... R</b> <b>PENGOLAH HASIL IKAN/ LAUT ..... S</b> <b>PENGUMPUL IKAN DLL DI PANTAI SAAT AIR SURUT .....T</b> LAINNYA (TULISKAN)..... U		

B8	Apakah ada perempuan yang menjadi nelayan/ peskador (menangkap ikan di laut)? BILA YA, siapakah dia?	ISTRI KEPALA KELUARGA ..... A ANAK KEPALA KELUARGA ..... B TIDAK ADA ..... C LAIN-LAIN, TULIS _____ D	
B9	Kira-kira, dalam sebulan berapa banyak uang yang dihasilkan Ibu/ Bapak dan anggota rumah tangga ini? RUJUK BULAN TERAKHIR	.....\$	
PERHATIKAN: BILA PEKERJAANNYA ADALAH NELAYAN/ PESKADOR/ BURUH NELAYAN/ PESKADOR/ PEMBUDI DAYA RUMPUT LAUT/ PENGANMBIL IKAN WAKTU AIR SURUT, C1 LINGKARI 1 (TIDAK PERLU TANYAKAN)			
<b>PENGUNAAN SUMBER DAYA LAUT &gt; WAWANCARA DENGAN NELAYAN/ PESKADOR LANGSUNG</b>			
C1	Apakah Ibu/ Bapak mengambil menangkap ikan atau binatang atau tumbuhan laut untuk penghidupan?	YA ..... 1 TIDAK ..... 2	→ I1
C2a	Apa saja yang Ibu/ Bapak ambil dari laut?	IKAN ..... A UDANG ..... B KEPITING ..... C CUMI ..... D RUMPUT LAUT ..... E SIPUT ..... F KIMA / TIRAM ..... G HASIL LAIN, TULISKAN _____ H	
C2b	Jenis ikan apa saja yang diambil? BANTU DENGAN GAMBAR TULIS	TULISKAN _____ /NAMA LOKAL _____ TULISKAN _____ /NAMA LOKAL _____ TULISKAN _____ / NAMA LOKAL _____ TULISKAN _____ / NAMA LOKAL _____ TULISKAN _____ / NAMA LOKAL _____	
C3	Seberapa sering Ibu/ Bapak pergi melaut/ ke laut?	SETIAP HARI ..... A DUA HARI SE ..... B TIGA HARI SEKALI ..... C SEKALI SEMINGGU. .... D LAINNYA, TULIS ..... E LAINNYA, TULIS ..... F	
C4	Di mana biasanya Ibu/ Bapak menangkap ikan/ binatang/ tumbuhan laut? BERIKUTNYA SEBUT BINATANG/ TUMBUHAN LAUTNYA	PANTAI/ PESISIR ..... A DAERAH KARANG ..... B LAUT DALAM ..... C LAINNYA, TULIS ..... D LAINNYA, TULIS ..... E	

C5	<p>Berapa jauh itu letaknya dari pantai?</p> <p>Berapa jam perjalanan ke tempat itu?</p> <p>Berapa lama perjalanan dari rumah ke pantai?</p> <p>BANTU KONVERSIKAN KE SATUAN TERCANTUM DAN BILA DIJAWAB DALAM RANGE AMBIL YANG TERJAUH/TERLAMA</p>	<p>A) ..... METER - ..... METER - ..... METER-..... METER</p> <p>B) .....MENIT.....MENIT- ..... MENIT - .....MENIT</p> <p>C) ..... MENIT</p>	
C6	<p>Berapa lama biasanya Ibu/ Bapak gunakan sekali melaut/ ke laut?</p>	<p>KURANG DARI 6 JAM .....1</p> <p>6 – 12 JAM .....2</p> <p>12 – 24 JAM .....3</p> <p>1 – 2 HARI .....4</p> <p>3 – 5 HARI .....5</p> <p>6 – 10 HARI .....6</p> <p>LEBIH DARI 10 HARI .....7</p>	
C7	<p>Pada bulan-bulan apa saja Bapak/ Ibu melaut/ ke laut?</p>	<p>JANUARI ..... A</p> <p>FEBRUARI ..... B</p> <p>MARET ..... C</p> <p>APRIL ..... D</p> <p>MEI ..... E</p> <p>JUNI ..... F</p> <p>JULI ..... G</p> <p>AGUSTUS ..... H</p> <p>SEPTEMBER ..... I</p> <p>OKTOBER ..... J</p> <p>NOPEMBER ..... K</p> <p>DESEMBER ..... I</p>	
<b>ALAT UNTUK MENANGKAP IKAN/ BINATANG LAUT</b>			
D1	<p>Untuk mengambil hasil laut itu, jenis perahu/kapal apa yang digunakan?</p>	<p>KAPAL MOTOR..... A</p> <p>PERAHU MOTOR ..... B</p> <p>PERAHU MESIN TEMPEL ..... C</p> <p>PERAHU DAYUNG ..... D</p> <p>PERAHU LAYAR..... E</p> <p>LAINNYA, TULISKAN .....F</p> <p>LAINNYA, TULISKAN .....G</p>	
D2	<p>Milik siapakah SEBUT JAWABAN D1?</p> <p>KALAU BUKAN MILIK SENDIRI, GALI SEWAKAH?</p>	<p>MILIK SENDIRI/ KELUARGA .....1</p> <p>PINJAM TANPA SEWA .....2</p> <p>PINJAM DENGAN SEWA .....3</p> <p>LAINNYA, TULISKAN.....4</p>	

D3	Dari mana Ibu/ Bapak mendapatkannya?	MEMBELI SENDIRI ..... 1 DIBERI KELUARGA ..... 2 BANTUAN DARI TULIS ..... 3 LAINNYA, TULISKAN ..... 4	
D4	Berapa banyak orang yang ada di SEBUT JAWABAN D1?	1 ORANG/ RESPONDEN SAJA ..... 1 2 – 5 ORANG ..... 2 6 – 8 ORANG ..... 3 9 – 12 ORANG ..... 4 LEBIH DARI 12 ORANG ..... 5	
D5	Apa yang biasanya digunakan untuk menangkap ikan/ binatang/ tumbuhan laut?  BANTU DENGAN GAMBAR	JALA ..... A GILLNET/JARING INSANG ..... B PURSE SEINE/JARING LINGKAR ..... C PANCING ..... D BAGAN ..... E RUMPON ..... F BUBU ..... G POTAS / RACUN ..... H BAHAN PELEDAK/ BOM ..... I LAINNYA, TULISKAN ..... J LAINNYA, TULISKAN ..... K LAINNYA, TULISKAN ..... L	
D6	Bagaimana Ibu/ Bapak memperoleh JAWABAN D4?	BELI JADI ..... A PINJAM ..... B SEWA ..... C BELI BAHAN DASAR DAN JAHIT SENDIRI ..... D BELI JADI DAN DI MODIFIKASI ..... E BAHAN DASAR DIBELI DAN DIRAMU SENDIRI ..... F BAHAN DASAR DARI ALAM DAN DIBUAT SENDIRI ..... G BANTUAN, TULISKAN ..... H LAINNYA, TULISKAN ..... I	
D7	Menurut Ibu/ Bapak apakah penggunaan alat berikut ini berbahaya bagi lingkungan?  1 = sangat berbahaya 2 = cukup berbahaya 3 = biasa saja 4 = aman 5 = sangat aman 6 = tidak tahu	JALA ..... 1 – 2 – 3 – 4 – 5 – 6 GILLNET/JARING INSANG ..... 1 – 2 – 3 – 4 – 5 – 6 PURSE SEINE/JARING LINGKAR ..... 1 – 2 – 3 – 4 – 5 – 6 PANCING ..... 1 – 2 – 3 – 4 – 5 – 6 BAGAN ..... 1 – 2 – 3 – 4 – 5 – 6 RUMPON ..... 1 – 2 – 3 – 4 – 5 – 6 BUBU ..... 1 – 2 – 3 – 4 – 5 – 6 POTAS / RACUN ..... 1 – 2 – 3 – 4 – 5 – 6 BAHAN PELEDAK/ BOM .... 1 – 2 – 3 – 4 – 5 – 6 PERALATAN LAIN (LIHAT D5) ..... 1 – 2 – 3 – 4 – 5 – 6	
<b>KESELAMATAN</b>			
E1	Apakah pernah mengalami kesulitan waktu mencari ikan/ binatang laut?	YA ..... 1 TIDAK ..... 2	

E2	<p>Kesulitan semacam apa? Apakah selama melaut pernah.....?</p> <p>TANYAKAN JUGA MESKI E1 = 2</p> <p>BILA TAK ADA JAWABAN, KE E6</p>	<p><b>CUACA BURUK/DIHANTAM OMBAK BESAR/LALARONG KAPAL/ PERAHU TERBALIK..... B</b></p> <p><b>MESIN KAPAL/ PERAHU MOGOK..... C</b></p> <p><b>KAPAL/PERAHU BOCOR..... D</b></p> <p><b>KEBAKARAN ..... E</b></p> <p><b>HILANG ARAH ..... F</b></p> <p><b>HILANG KOMUNIKASI..... G</b></p> <p><b>KEHABISAN PERBEKALAN ..... H</b></p> <p><b>SAKIT DI KAPAL/ PERAHU..... I</b></p> <p><b>KONFLIK/ KERIBUTAN/ PERKELAHIAN ANTARAWAK..... J</b></p> <p>LAINNYA, TULIS _____ K</p> <p>LAINNYA, TULIS _____ L</p> <p>TIDAK MENGALAMI KESULITAN APAPUN SELAMA MELAUT ..... M</p>	
E3	<p>Apa yang dilakukan Bapak dan orang-orang kapal saat itu?</p> <p>BILA TAK ADA A,B KE E5</p>	<p><b>MENCARI PERTOLONGAN KAPAL/ PERAHU LAIN ..... A</b></p> <p><b>BERUSAHA HUBUNGI DARAT, TULIS SIAPA _____ .. B</b></p> <p><b>MENGAPUNG DENGAN PELAMPUNG..... C</b></p> <p>LAINNYA, TULIS _____ D</p> <p>LAINNYA, TULIS _____ E</p>	
E4	<p>Apakah Ibu/ Bapak memperoleh pertolongan? BILA YA bagaimana datangnya pertolongan itu?</p>	<p><b>YA, PERTOLONGAN DATANG TEPAT WAKTU ..... 1</b></p> <p><b>YA, PERTOLONGAN DATANG TERLAMBAT ..... 2</b></p> <p><b>TIDAK ADA ADA PERTOLONGAN DATANG..... 3</b></p>	
E5	<p>Apa kemudian akibat kecelakaan itu pada Ibu/ Bapak? Apakah.....?</p>	<p><b>TERLUKA ..... A</b></p> <p><b>LUKA TETAP/ CACAT ..... B</b></p> <p><b>KEHILANGAN PEMASUKAN ..... C</b></p> <p><b>KEMUDIAN JATUH SAKIT ..... D</b></p> <p>LAINNYA TULIS _____</p> <p>LAINNYA TULIS _____</p>	
E6	<p>Terakhir melaut, apakah Bapak membawa perlengkapan keselamatan di kapal/ perahu?</p>	<p>YA ..... 1</p> <p>TIDAK..... 2</p>	→ E9
E7	<p>Apa saja yang dibawa?</p> <p>TULIS SPESIFIK UNTUK LAIN-LAIN. CONTOH: BOTOL AQUA/ KELAPA/ KAYU</p>	<p><b>JAKET / BAJU PELAMPUNG..... A</b></p> <p><b>PELAMPUNG PENOLONG..... B</b></p> <p><b>SENER ..... C</b></p> <p><b>RADIO KOMUNIKASI..... D</b></p> <p>LAINNYA, TULIS _____ E</p> <p>LAINNYA, TULIS _____ F</p> <p>LAINNYA, TULIS _____ G</p>	
E8	<p>(JANGAN ULANGI JAWABAN, BILA SUDAH DISEBUT DI E7). Apa Ibu/ Bapak membawa.....?</p>	<p><b>JAKET / BAJU PELAMPUNG ..... A</b></p> <p><b>PELAMPUNG PENOLONG ..... B</b></p> <p><b>SENER ..... C</b></p> <p><b>RADIO KOMUNIKASI ..... D</b></p> <p><b>TIDAK BAWA SATUPUN DI ATAS ..... E</b></p>	

E9	Apakah Ibu/ Bapak pernah memperoleh informasi mengenai keselamatan jiwa di laut?	YA .....1 TIDAK.....2	→ E 11
E10	Dari mana Ibu/ Bapak menerima informasi itu?	DEPARTAMEN TU PESKAS ..... A MARINA/ ANGKATAN LAUT ..... B POLISI MARITAMA ..... C TOKOH MASYARAKAT ..... D LSM ..... E STASIUN RADIO PANTAI/PENJAGA PANTAI ..... F KANTOR SYAHBANDAR ..... G LAINNYA, TULISKAN ..... H LAINNYA, TULISKAN ..... I	
E11	Menurut Ibu/ Bapak, agar selamat selama melaut, apa yang diperlukan?	<b>JAKET / BAJU PELAMPUNG</b> ..... A <b>PELAMPUNG PENOLONG</b> ..... B <b>SENER</b> ..... C <b>RADIO KOMUNIKASI</b> ..... D <b>MENDAPAT INFORMASI PANDUAN KESELAMATAN</b> ..... E <b>MENDAPAT PELATIHAN KESELAMATAN DI LAUT</b> ..... F LAINNYA, TULIS ..... G LAINNYA, TULIS ..... H TIDAK PERLU APA-APA ..... I	
E12	Apakah Bapak pernah mendengar ada kecelakaan di laut yang sampai merenggut jiwa nelayan/ peskador?	YA ..... 1 TIDAK ..... 2	→ E 16
E13	Apakah hal itu sering terjadi?	<b>SANGAT SERING</b> ..... 1 <b>CUKUP SERING</b> ..... 2 <b>JARANG</b> ..... 3 <b>SANGAT JARANG</b> ..... 4	
E14	Seberapa sering?	<b>SETIAP MINGGU</b> ..... 1 <b>SEBULAN SEKALI</b> ..... 2 <b>BEBERAPA BULAN SEKALI</b> ..... 3 <b>ENAM BULAN SEKALI</b> ..... 4 <b>SETAHUN SEKALI ATAU LEBIH JARANG</b> ..... 5	

E15	Sepengetahuan Ibu/Bapak, apa penyebab kecelakaan di laut?	<b>CUACA BURUK/ DIHANTAM OMBAK BESAR ..... A</b> <b>KAPAL/ PERAHU TERBALIK..... B</b> <b>MESIN KAPAL/ PERAHU MOGOK..... C</b> <b>KAPAL/ PERAHU BOCOR..... D</b> <b>KEBAKARAN ..... E</b> <b>HILANG ARAH .....F</b> <b>HILANG KOMUNIKASI..... G</b> <b>KEHABISAN PERBEKALAN ..... H</b> <b>SAKIT DI KAPAL/ PERAHU.....I</b> <b>KONFLIK/ KERIBUTAN/ PERKELAHIAN ANTARAWAK.....J</b> LAINNYA, TULIS _____ K LAINNYA, TULIS _____ .L	
E16	Bagaimana sikap Ibu/ Bapak terhadap pernyataan berikut? <b>1 = Sangat setuju</b> <b>2 = Setuju</b> <b>3 = Tidak setuju</b> <b>4 = Sangat tidak setuju</b> <b>5 = Tidak tahu</b>	<b>KECELAKAAN DI LAUT ADALAH TAKDIR YG TAK BISA DIHINDARI ..... 1 - 2 - 3 - 4 - 5</b> <b>RESIKO/ BAHAYA DARI PEKERJAAN ..... 1 - 2 - 3 - 4 - 5</b> <b>KARENA KETIDAKHATI-HATIAN/ KELALAIAN .. 1 - 2 - 3 - 4 - 5</b> <b>MURNI KECELAKAAN/ TERJADI BEGITU SAJA 1 - 2 - 3 - 4 - 5</b>	
E17	Setahu Ibu/ Bapak, apakah ada peraturan mengenai keselamatan jiwa di laut?	YA..... 1 TIDAK ..... 2	→ E 19
E18	Apa yang diatur? Apa isinya?	<b>HARUS BAWA ALAT2 KESELAMATAN ..... A</b> <b>HARUS BAWA PUNYA JAKET/ BAJU PENOLONG ..... B</b> LAINNYA TULIS _____ ..... C LAINNYA TULIS _____ ..... D LAINNYA TULIS _____ ..... E	
<b>PENGUMPUL IKAN/ HASIL LAUT KETIKA AIR SURUT</b>			
E19	Apakah Ibu/ Bapak atau anggota keluarga lain mencari ikan atau hasil laut lainnya ketika air surut?	YA..... 1 TIDAK..... 2	→ F1
E20	Apakah anak-anak Ibu/ Bapak juga ikut mencari?	YA..... 1 TIDAK..... 2	→ F1
E21	Sewaktu cari ikan, apakah anak-anak menggunakan alas kaki?	YA..... 1 TIDAK..... 2	
<b>JUMLAH TANGKAPAN</b>			

F1	Dalam beberapa bulan terakhir, sekali melaut/ ke laut, biasanya berapa banyak tangkapan/ hasil laut yang Ibu/ Bapak dapatkan?	<p>A) IKAN, TULIS _____ : _____ EKOR; _____ EMBER          IKAN, TULIS _____ : _____ EKOR; _____ EMBER</p> <p>B) NON IKAN :          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER</p>	
F2	Biasanya berapa banyak hasil tangkapan/ hasil laut yang Ibu/ Bapak makan untuk keluarga sendiri?	<p>A) IKAN, TULIS _____ : _____ EKOR; _____ EMBER          IKAN, TULIS _____ : _____ EKOR; _____ EMBER</p> <p>B) NON IKAN :          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER          TULIS _____; _____ KG; _____ EKOR; _____ IKAT;          _____ EMBER</p>	
F3	Apakah jumlah hasil tangkapan/ hasil laut yang didapat berubah dari tahun ke tahun?	<p><b>YA, MENURUN</b> .....1  <b>TETAP SAJA</b> .....2  <b>YA, BERTAMBAH</b> .....3  <b>YA, IKAN MENURUN DAN NON IKAN BERTAMBAH</b>.....4  <b>YA, IKAN BERTAMBAH DAN NON IKAN MENURUN</b>.....5</p>	→ G 1
F4	Sejak kapan Ibu/ Bapak mengalaminya?	<p>SETAHUN TERAKHIR .....1          2 TAHUN TERAKHIR .....2          3 – 4 TAHUN TERAKHIR .....3          LEBIH DARI 5 TAHUN LALU .....4</p>	

F5	Kira-kira, apa penyebabnya?	CUACA BURUK/ OMBAK BESAR ..... A KAPAL RUSAK/ KURANG BAGUS..... B ALAT TIDAK MEMADAI ..... C MODAL KERJA KURANG ..... D PERSAINGAN ANTARNELAYAN/ PESKADOR ..... E IKAN BERKURANG ..... F LAINNYA, TULISKAN ..... G LAINNYA, TULISKAN ..... H	
<b>ONGKOS DAN PENGHASILAN</b>			
G1	Ongkos apa saja yang dikeluarkan setiap kali melaut/ ke laut? Berapa?	A) BAHAN BAKAR ..... \$ ..... A B) UMPAN ..... \$ ..... B C) BAHAN MAKANAN ..... \$ ..... C D) LAINNYA ..... \$ ..... D E) LAINNYA ..... \$ ..... E	
G2	Biasanya berapa banyak uang yang didapat sekali melaut/ ke laut? KOTOR BELUM DIPOTONG ONGKOS BAHAN BAKAR, UMPAN DLL		.....\$
G3	Biasanya berapa penghasilan bersih yang Ibu/ Bapak dapat sekali melaut/ ke laut? PEMASUKAN BERSIH SETELAH DIPOTONG PENGELUARAN		.....\$
G4	Kira-kira apa yang perlu dilakukan agar hasil yang didapat lebih banyak?	..... A ..... B ..... C ..... D	
G5	Kira-kira, dalam satu bulan, berapa penghasilan yang didapat dari menangkap ikan/ hasil laut lainnya? BANTU HITUNG BERDASARKAN G1		\$.....
G6	Apa saja kegiatan yang dilakukan Ibu/ Bapak untuk menopang hidup/ mendapatkan penghasilan tambahan?	MENGOLAH IKAN..... A MEMBUKA WARUNG/ KIOS ..... B MENJUAL MAKANAN ..... C BERTANI/ BERLADANG ..... D BETERNAK ..... E TIDAK ADA KEGIATAN LAIN ..... F LAINNYA, TULIS ..... G LAINNYA, TULIS ..... H	→ H 1

G7	Kira-kira berapa penghasilan yang dapat Ibu/ Bapak peroleh dari kegiatan (SEBUT G6) setiap bulan?	A) MENGOLAH IKAN = \$ _____ B) USAHA WARUNG/KIOS = \$ _____ C) MENJUAL MAKANAN = \$ _____ D) BERTANI/BERLADANG = \$ _____ E) BETERNAK = \$ _____ F) LAINNYA = \$ _____ G) LAINNYA = \$ _____
G8	Menurut Ibu/ Bapak apa saja hambatan yang dialami nelayan/ peskador di sini untuk mendapat ekonomi yang lebih baik?	PERMINTAAN PASAR KURANG / PEMBELI SEDIKIT ..... A JALUR PEMASARAN TERBATAS ..... B KEAHLIAN/ KETERAMPILAN RENDAH ..... C PENDIDIKAN RENDAH ..... D PRASARANA/AKSES KE KOTA JELEK ..... E TENGGULAK MENGUASAI/ TIDKA BISA JUAL KE LAIN ..... F HARGA BELI TENGGULAK RENDAH ..... G PERALATAN MENANGKAP IKAN TIDAK MEMADAI ..... H MODAL KURANG ..... I LAINNYA, TULIS ..... J LAINNYA, TULIS ..... K
G9	Selain menangkap ikan/ hasil laut lainnya, jenis usaha apa yang potensial untuk dikembangkan di sini ?	MENGOLAH IKAN/ HASIL LAUT LAINNYA ..... A MEMBUAT PAKET KAIXA IKAN MORIS ..... B USAHA WARUNG/KIOS ..... C MENJUAL MAKANAN ..... D BERTANI/ BERLADANG ..... E BETERNAK ..... F TAMBAK IKAN/UDANG ..... G BUDIDAYA RUMPUT LAUT ..... H LAINNYA, TULIS ..... I LAINNYA, TULIS ..... J
<b>PASCAPENANGKAPAN: MENJUAL TANGKAPAN</b>		
H1	Apakah Ibu/ Bapak menggunakan es untuk menyimpan ikan?	YA ..... 1 TIDAK ..... 2
H2	Ke mana atau ke siapa saja orang-orang di sini bisa jual hasil tangkapan/ laut lainnya?  Lainnya?	<b>PENGEPUL/PENGUMPUL IKAN ..... A</b> <b>SUDAH DIBELI SEBELUM MENANGKAP/ IJON/ TENGGULAK ..... B</b> <b>PELELANGAN IKAN ..... C</b> <b>PINGGIR PANTAI ..... D</b> <b>PINGGIR JALAN RAYA ..... E</b> LAINNYA TULIS ..... F LAINNYA TULIS ..... G

H3	Ke mana atau ke siapa saja Ibu/ Bapak paling sering menjual hasil tangkapan/ laut?	PENGEPUK/PENGUMPUL IKAN ..... 1 SUDAH DIBELI SEBELUM MENANGKAP/ IJON/ TENGKULAK ..... 2 PELELANGAN IKAN ..... 3 PINGGIR PANTAI ..... 4 PINGGIR JALAN RAYA ..... 5 LAINNYA TULIS ..... 6 LAINNYA TULIS ..... 7	
H4	Apakah ada kesulitan dalam menjual hasilnya? BILA ADA apa hambatannya?	TIDAK ..... A YA, HARGA MURAH ..... B YA, TIDAK ADA TEMPAT PENDINGIN/ PENYIMPANAN ..... C YA, TULIS ..... D YA, TULIS ..... E	
<b>PASKAPENANGKAPAN: MENGOLAH HASIL TANGKAPAN DAN FASILITAS UMUM</b>			
11	<p>Apa Ibu/ Bapak mengolah ikan/hasil laut lainnya untuk dijual?</p> <p>JELASKAN DIOLAH = DIBUAT MAKANAN TERTENTU, DIAWETKAN, DLL</p> <p>LANGSUNG I2 BILA B5 = 52</p>	<p>TIDAK, LANGSUNG DIJUAL ..... A → K1</p> <p>TIDAK MENANGKAP IKAN ..... B → K1</p> <p><b>YA, SEBAGIAN KECIL DIOLAH DULU ..... C</b></p> <p><b>YA, SEBAGIAN BESAR DIOLAH DULU ..... D</b></p> <p><b>YA, SEMUANYA ..... E</b></p>	
12	Apa yang dibuat?	<p>BUAT IKAN ASIN ..... A</p> <p>DIASAP ..... B</p> <p>MANISAN RUMPUT LAUT ..... C</p> <p>DIHALUSKAN/MOLEN DAN DIGARAMI ..... D</p> <p>LAINNYA, TULIS ..... E</p> <p>LAINNYA, TULIS ..... F</p>	
13	Dari mana Ibu/ Bapak belajar cara SEBUT I2?	<p>KEBIASAAN TURUN TEMURUN ..... A</p> <p>PERNAH ADA PELATIHAN ..... B</p> <p>BELAJAR DARI TETANGGA/ NELAYAN/ PESKADOR LAIN C</p> <p>BELAJAR DARI KELOMPOK MASYARAKAT DI SINI ..... D</p> <p>SUMBER LAIN, TULIS ..... E</p> <p>SUMBER LAIN, TULIS ..... F</p>	
14	Apakah Ibu/ Bapak merasa memerlukan keahlian/ informasi lain untuk mengolah hasil tangkapan ikan/ hasil laut ?	<p>YA ..... 1</p> <p>TIDAK ..... 2</p>	→ 16
15	Keahlian/ informasi apa yang diharapkan?	<p>INFORMASI TAMBAHAN ..... A</p> <p>BUTUH PELATIHAN UTK MENINGKATKAN KUALITAS ..... B</p> <p>MEMBUAT PRODUK YANG LEBIH BERAGAM ..... C</p> <p>LAINNYA, TULIS ..... D</p> <p>LAINNYA, TULIS ..... E</p>	
16	Apakah Ibu/ Bapak merasa memiliki sarana/ alat yang memadai untuk mengolah hasil tangkapan ikan/ hasil laut lainnya?	<p>YA ..... 1</p> <p>TIDAK ..... 2</p>	→ 18

17	Apa sarana atau alat yang dibutuhkan untuk memperbaiki SEBUT HASIL OLAHAN?	TULIS _____ A TULIS _____ B TULIS _____ C	
18	Apakah ada fasilitas bersama (umum) yang bisa digunakan oleh Ibu/Bapak dalam mengolah ikan dan hasil laut lainnya? BILA ADA apakah itu?	TIDAK ADA ..... A ADA, TULIS _____ ..B ADA, TULIS _____ ..C	→ J1
19	Apakah Ibu/ Bapak menggunakan fasilitas itu?	YA, <b>SERING</b> ..... 1 YA, <b>CUKUP SERING</b> ..... 2 YA, <b>JARANG</b> ..... 3 YA, <b>JARANG SEKALI</b> ..... 4 TIDAK PERNAH ..... 5	
<b>PENJUALAN PRODUK OLAHAN</b>			
J1	Di mana biasanya Ibu/ Bapak menjual SEBUT HASIL OLAHAN?	PASAR SETEMPAT ..... A PENJUAL SETEMPAT ..... B LANGSUNG KE TEMPAT PEMBELI ..... C PINGGIR JALAN ..... D PEMBELI DATANG ..... E DI TEMPAT LAIN, TULIS _____ ..F DI TEMPAT LAIN, TULIS _____ ..G	
J2	Apakah mudah bagi Ibu/ Bapak menjual SEBUT HASIL OLAHAN?	YA ..... 1 TIDAK ..... 2	→ K1
J3	Kesulitan apa saja yang biasanya Ibu/ Bapak temui?	SULIT MENEMBUS PASAR ..... A PACKAGING / KEMASAN YANG KURANG BAGUS ..... B PRODUK KURANG BERKUALITAS ..... C LAINNYA, TULIS _____ ..D LAINNYA, TULIS _____ ..E	
<b>RUMPUT LAUT → KHUSUS UNTUK YANG MENANAM RUMPUT LAUT</b>			
K1	Apakah Ibu/ Bapak menanam rumput laut?	YA ..... A TIDAK ..... B	→ L1
K2	Tindakan pengolahan apa saja yang Ibu/ Bapak lakukan setelah memanen rumput laut?	TIDAK ADA ..... A PENGERINGAN ..... B PENGOLAHAN MENJADI PRODUK PANGAN LAIN YAITU, (TULISKAN) _____ C	
K3	Apa yang bisa Ibu/ Bapak buat dari rumput laut? Produk pangan apa saja?	TIDAK ADA ..... A MEMBUAT, TULISKAN _____ B MEMBUAT, TULISKAN _____ C	

K4	Kesulitan apa yang Ibu/ Bapak temui dalam menanam/ membudidayakan rumput laut?	HARGA NAIK TURUN TAK MENENTU ..... A DISERANG PENYAKIT/ PERUSAK ..... B TIDAK ADA PENGUMPUL/ PEMBELI ..... C PRODUK KURANG BERKUALITAS ..... D LAINNYA, TULIS ..... E	K4
<b>PENGHIDUPAN DAN JASA KEUANGAN</b>			
L1	Jenis-jenis bantuan apa yang dibutuhkan untuk meningkatkan penghasilan Ibu/ Bapak?	PELATIHAN KETRAMPILAN TAMBAHAN ..... A PERBAIKAN / PENGADAAN ALAT TANGKAP ..... B PENGOLAHAN HASIL ..... C PEMASARAN HASIL ..... D PERMODALAN ..... E LAINNYA, TULIS ..... F	
L2	Sepengetahuan Ibu/ Bapak, apa saja lembaga pelayanan jasa keuangan yang ada di desa ini?	<b>BANK</b> ..... A <b>USAHA SIMPAN PINJAM</b> ..... B <b>KOOPERATIVA</b> ..... C <b>MIKRO FINANSA</b> ..... D LAINNYA, TULIS ..... E LAINNYA, TULIS ..... F	
L3	Apakah Ibu/ Bapak pernah/ sedang memanfaatkan jasa keuangan tersebut?	YA ..... 1 TIDAK ..... 2	→ L1 0
L4	Lembaga mana yang Ibu/ Bapak pernah/ sedang manfaatkan?	<b>BANK</b> ..... A <b>USAHA SIMPAN PINJAM</b> ..... B <b>KOOPERATIVA</b> ..... C <b>MIKRO FINANSA</b> ..... D LAINNYA, TULIS ..... E LAINNYA, TULIS ..... F	
L5	Jasa apa yang pernah/ sedang Ibu/Bapak manfaatkan?	PINJAMAN ..... A SIMPANAN/ TABUNGAN ..... B LAINNYA, TULIS ..... C  PERHATIKAN: BILA HANYA A → L6, L7, LONCAT KE L11 BILA A & B → L6 – L9 LONCAT KE L12 BILA HANYA B → L8, L9, L10 LONCAT KE L12	
L6	Untuk apa Ibu/ Bapak meminjam?	MODAL USAHA ..... A PENDIDIKAN ANAK ..... B MODAL MENANGKAP IKAN/MELAUT ..... C KEBUTUHAN HIDUP SEHARI-HARI ..... D BELI RUMAH ..... E BELIMOTOR ..... F LAINNYA, TULIS ..... G LAINNYA, TULIS ..... H	

L7	Bagaimana Ibu/ Bapak membayar pinjaman tersebut?	HARIAN..... A MINGGUAN..... B BULANAN..... C LAINNYA, TULIS _____ D	
L8	Bagaimana Ibu/ Bapak menabung?	SETIAP BULAN ..... A SETIAP MINGGU ..... B SETIAP HARI..... C TIDAK MENENTU ..... D	
L9	Berapa banyak yang bisa menabung dalam sebulan? RATA-RATA DALAM 6 BULAN TERAKHIR	.....\$	
L10	Kenapa Ibu/ Bapak tidak meminjam uang dari lembaga keuangan?	SULIT ..... A BUNGA TINGGI ..... B TAKUT TIDAK BISA MENGEMBALIKAN..... C LEBIH SUKA PINJAM KE SAUDARA/ KELUARGA ..... D LEBIH SUKA ARISAN/ TRADISIONAL ..... E TIDAK TAHU ..... F LAINNYA, TULIS _____ G LAINNYA, TULIS _____ H	
L11	Kenapa Ibu/ Bapak tidak menabung di lembaga keuangan?	TIDAK ADA UANG ..... A BUNGA RENDAH..... B TAKUT TIDAK BISA AMBIL ..... C LEBIH SUKA ARISAN/ TRADISIONAL ..... D TIDAK TAHU ..... E LAINNYA, TULIS _____ F LAINNYA, TULIS _____ G	
L12	Apakah ada program bantuan keuangan untuk usaha kecil/ mikro finansa di sini?	YA..... 1 TIDAK..... 2	→L1 9
L13	Dari lembaga apa?	BPR ..... A PEMERINTAH, TULIS _____ B PINJAMAN PRIBADI ..... C KOPERASI ..... D GEREJA ..... E CREDIT UNION..... F LSM ..... G LAINNYA, TULIS _____ H LAINNYA, TULIS ..... I	
L14	Apakah Ibu/ Bapak ikut memanfaatkan bantuan itu?	YA..... 1 TIDAK..... 2	→L1 8
L15	Mengapa?	MUDAH ..... A BUNGA RINGAN..... B TIDAK PERLU DIKEMBALIKAN ..... C LAINNYA _____ D	

L16	Apa Ibu/ Bapak akan terus menggunakan bantuan setelah pinjaman lunas?	YA.....1 TIDAK.....2	→L1 8
L17	Mengapa?	MENINGKATKAN PENGHASILAN ..... A DIBANTU PEMASARANNYA ..... B DAPAT PELATIHAN/ BANTUAN TEKNIS ..... C DAPAT PENGETAHUAN TTG PENGELOLAAN KEUANGAND MENINGKATKAN KEBERSAMAAN ANTAR ANGGOTA ..... E LAINNYA, TULIS ..... F LAINNYA, TULIS ..... G LAINNYA, TULIS ..... H	
L18	Kelompok masyarakat mana yang banyak menggunakan bantuan tsb?	<b>KELOMPOK BAPAK-BAPAK</b> ..... A <b>KELOMPOK IBU-IBU</b> ..... B LAINNYA, TULISKAN ..... C LAINNYA, TULISKAN ..... D	
L19	Menurut Ibu/ Bapak, bantuan keuangan apa yang dibutuhkan warga di sini?	BANTUAN UNTUK MELAUT/ OPERASIONAL..... A MENGGANTI PERLENGKAPAN/ PERALATAN LAMA ..... B MODAL UNTUK KEGIATAN BARU ..... C LAINNYA, TULIS ..... D LAINNYA, TULIS ..... E LAINNYA, TULIS ..... F	
<b>PENGELOLAAN BERSAMA</b>			
M1	Apakah Ibu/ Bapak pernah mendengar istilah pengelolaan atau pemanfaatan bersama?	YA ..... 1 TIDAK..... 2	→ M 3
M2	Apa artinya?	BEKERJASAMA DENGAN PEMERINTAH..... A BEKERJASAMA DALAM KELOMPOK ..... B BERBAGI TANGGUNG JAWAB ANTARKELOMPOK NELAYAN/ PESKADOR... C BENTUK KOPERASI ..... D ATURAN IKAN WILAYAH LAIN TIDAK BISA MASUK PASAR DI SINI ..... E ATURAN NELAYAN/ PESKADOR WILAYAH LAIN TAK BISA AMBIL IKAN DI WILAYAH KITA ..... F NELAYAN/ PESKADOR/ WARGA DESA LAIN BISA MEMANFAATKAN PANTAI/ LAUT KITA ..... G LAINNYA, TULISKAN ..... H	

M3	Apakah di sini ada.....?	<b>KERJASAMA ANTAR KELOMPOK NELAYAN/ PESKADOR DENGAN PEMERINTAH . A</b> <b>KERJASAMA DALAM KELOMPOK NELAYAN/ PESKADOR..... B</b> <b>PEMBAGIAN TANGGUNG JAWAB ANTARKELOMPOK NELAYAN/ PESKADOR..... C</b> <b>KOPERASI ..... D</b> <b>ATURAN IKAN WILAYAH/ DESA LAIN TAK BISA MASUK PASAR DI SINI..... E</b> <b>ATURAN NELAYAN/ PESKADOR WILAYAH/ DESA LAIN TAK BISA AMBIL IKAN DI PANTAI/ LAUT KITA..... F</b> <b>KEBEBASAN NELAYAN/ PESKADOR/ WARGA DESA LAIN UNTUK MEMANFAATKAN PANTAI/ LAUT KITA.....G</b> <b>TIDAK ADA SATUPUN YANG DI ATAS..... H</b>	
M4	Apakah di desa ini ada batas wilayah laut desa di mana nelayan/ peskador dari desa lain tidak bisa masuk?	YA ..... 1 TIDAK ..... 2 TIDAK TAHU ..... 3	
M5	Apakah ada lembaga di desa yang bertanggung jawab mengatur pemanfaatan hasil laut?	YA ..... 1 TIDAK ..... 2 TIDAK TAHU ..... 3	→ M9 → M9
M6	Apakah lembaga tersebut masih berfungsi?	YA ..... 1 TIDAK ..... 2	
M7	Apakah ada peraturan atau kesepakatan tertulis yang mengatur pemanfaatan hasil laut?	YA ..... 1 TIDAK ..... 2 TIDAK TAHU ..... 3	→ M9 → M9
M8	Disahkan oleh siapakah peraturan tersebut?	DISAHKAN OLEH DESA ..... A DISAHKAN OLEH PEMERINTAH SUB DISTRIK ..... B DISAHKAN OLEH PEMERINTAH DISTRIK..... C DISAHKAN OLEH MENTERI ..... D LAINNYA TULISKAN ..... E TIDAK TAHU ..... F	
M9	Kelompok-kelompok masyarakat apa saja yang ada di lingkungan Ibu/ Bapak?	KELOMPOK SIMPAN PINJAM ..... A KELOMPOK PEREMPUAN..... B KELOMPOK NELAYAN/ PESKADOR..... C KOPERASI ..... D LAINNYA, TULISKAN ..... E LAINNYA, TULISKAN ..... F TIDAK ADA KELOMPOK MASYARAKAT ..... G	
M10	Di antara kelompok-kelompok diatas, mana yang Ibu/ Bapak atau anggota keluarga ini ikuti? TULISKAN NO JW B M9. BERGANDA		

M11	Apakah ada lembaga dari luar desa yang mendampingi dan membantu kelompok warga di sini? BILA ADA siapa mereka?	PEMERINTAH DISTRIK ..... A PEMERINTAH SUB DISTRIK ..... B KANTOR PERIKANAN ..... C NGO LOKAL ..... D NGO INTERNASIONAL ..... E PERUSAHAAN SWASTA ..... F INDIVIDU ..... G LAINNYA, TULISKAN ..... H LAINNYA, TULISKAN ..... I TIDAK ADA ..... J	→ M 13
M12	Kelompok warga apa yang dibantu?	NELAYAN/ PESKADOR ..... A PETANI/ PELADANG ..... B PEREMPUAN ..... C PENGOLAH HASIL LAUT ..... D PEMBUDIDAYA RUMPUT LAUT ..... E KELOMPOK PETANI IKAN NILAI ..... F LAINNYA, TULIS ..... G LAINNYA, TULIS ..... H	
M13	Apa saja yang dilakukan perempuan dalam membantu urusan nelayan/ peskador/ menangkap ikan?	MEMPROSES IKAN DLL ..... A MENJUAL IKAN DLL ..... B MENGUMPULKAN KARANG ..... C MEMELIHARA RUMPUT LAUT ..... D PENGELOLAAN UANG RUMAH TANGGA ..... E MENANGKAP IKAN/ JADI NELAYAN/ PESKADOR ..... F LAINNYA, TULIS ..... G LAINNYA, TULIS ..... H TIDAK ADA ..... I	
M14	Pernahkah ada konflik/ masalah, baik di lingkungan Ibu/ Bapak atau dengan daerah lain?	YA ..... 1 TIDAK ..... 2	→ N1
M15	Apa masalahnya?	<u>DENGAN NELAYAN/ PESKADOR DI SATU LINGKUNGAN</u> WILAYAH PENANGKAPAN IKAN ..... A PERALATAN PENANGKAPAN IKAN ..... B PEMBAGIAN HASIL TANGKAPAN ..... C KERUSAKAN LINGKUNGAN AKIBAT PENGGUNAAN POTAS / BAHAN PELEDAK ..... D LAINNYA ..... E  <u>DENGAN NELAYAN/ PESKADOR DARI LINGKUNGAN LAIN</u> WILAYAH PENANGKAPAN IKAN ..... F PERALATAN PENANGKAPAN IKAN ..... G KERUSAKAN LINGKUNGAN AKIBAT PENGGUNAAN POTAS / BAHAN PELEDAK ..... H LAINNYA ..... I LAINNYA ..... J	
M16	Apakah konflik/ masalah itu bisa diselesaikan?	YA ..... 1 TIDAK ..... 2	→ N1

M17	Bagaimana penyelesaiannya? cara	PERTEMUAN WARGA NELAYAN/ PESKADOR..... A TOKOH/ TETUA MASYARAKAT TURUN TANGAN ..... B DINAS KELAUTAN DAN PERIKANAN TURUN TANGAN ..... C LAPOR POLISI ..... D MEMBERI DENDA PADA NELAYAN/ PESKADOR LUAR .... E SOLUSI DITENTUKAN OLEH CHEFE DE ALDEIA.....F SOLUSI DITENTUKAN OLEH CHEFE DE SUKO ..... G LAINNYA, TULISKAN ..... H LAINNYA, TULISKAN ..... I LAINNYA, TULISKAN ..... J	
<b>PROFIL FISIK ANGGOTA RUMAH TANGGA</b>			
N1	Apakah ada anggota rumah tangga yang mengalami cacat fisik?  MOHON SOPAN. APABILA MERASA TIDAK NYAMAN, OBSERVASI, CATAT DAN PINDAH KE O1	YA ..... 1 TIDAK ..... 2	
N2	Siapakah mereka?	KEPALA KELUARGA ..... A ISTRI ..... B ANAK ..... C CUCU ..... D ORANG TUA ..... E MERTUA ..... F MANTU ..... G SAUDARA ..... H LAINNYA, TULISKAN ..... I	
N3	Apa sebabnya?	KECELAKAAN ..... A BAWAAN LAHIR ..... B LAINNYA TULIS ..... C	
<b>PENGAMATAN</b>			
O1	LIHAT DINDING UNTUK MENENTUKAN TIPE RUMAH SECARA UMUM	PERMANEN (SEMEN, BATA, BATAKO) ..... 1 SEMI PERMANEN (SETENGAH TEMBOK) ..... 2 TIDAK PERMANEN (BAMBU, PAPAN, GEDEK DLL) ..... 3	
O2	LIHAT WILAYAH TERBANYAK BAHAN LANTAI RUMAH	TANAH ..... 1 BAMBU ..... 2 PAPAN ..... 3 SEMEN ..... 4 UBIN ..... 5 KERAMIK ..... 6 LAINNYA (TULIS) ..... 7	

O3	NILAI KONDISI VENTILASI SECARA SUBYEKTIF. CUKUP = TIDAK TERASA SUMPEK = TERASA ADA ANGIN		CUKUP ..... 1 TIDAK CUKUP ..... 2	
O4	LOKASI ALDEA	BERBATASAN DENGAN PANTAI..... 1 BERBATASAN DGN ALDEA YG DIPINGGIR PANTAI ..... 2 JAUH DARI PANTAI ..... 3		
O5	LIHAT KONDISI JALAN DEPAN RUMAH	TANAH .....1 DI ASPAL/ SEMEN/ PAVING BLOCK .....2		
O6	ALAT TRANSPORTASI DARI IBU KOTA DISTRIK KE ALDEA	ADA TRANSPORTASI UMUM .....1 TIDAK ADA TRANSPORTASI UMUM .....2		
O7	JARAK DARI IBU KOTA DISTRIK KE ALDEA	KURANG DARI 1/2 JAM DENGAN KENDARAAN BERMOTOR .....1 ½ - 1 JAM DENGAN KENDARAAN BERMOTOR .....2 LEBIH DARI 1 JAM DENGAN KENDARAAN BERMOTOR .....3 LAINNYA, TULISKAN .....4		
O8	ONGKOS DARI IBUKOTA DISTRIK KE ALDEA	KURANG DARI \$3 (MURAH) .....1 ANTARA \$3-5 (SEDANG) .....2 LEBIH DARI \$5 (MAHAL) .....3		
O9	SAMPAH	SAMPAH IKAN/ HASIL LAUT ..... A SAMPAH HASIL PENGOLAHAN IKAN/ HASIL LAUT ..... B SAMPAH DI DALAM RUMAH ..... C SAMPAH DI HALAMAN RUMAH ..... D SAMPAH DI LUAR RUMAH ..... E		
O10	KONDISI INFRASTRUKTUR PERIKANAN YANG ADA (BAIK, RUSAK RINGAN, RUSAK BERAT), BERFUNGSI ATAU TIDAK	TEMPAT PELELANGAN IKAN, TULIS .....1 TEMPAT Pendaratan KAPAL, TULIS .....2 COLD STORAGE, TULIS .....3 TEMPAT PENJEMURAN IKAN, TULIS .....4 TEMPAT PENGOLAHAN IKAN, TULIS .....5 LAINNYA, TULISKAN .....6 .....7 .....8		