

Socio-economic Survey of Small-scale Fisheries in Milne Bay Province, Papua New Guinea



Milne Bay Province. Canoe racing, 2005



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CONTENTS

Introduction	7	HH-Q52 Community fishing rules and enforcement.....	51
Approach and Methods.....	8	HH-Q53 Knowledge of changes in resources	52
Results	14	HH-Q58 Participation in the community	53
Survey Weaknesses	17	HH-Q59 Influencing community decisions	54
Summary of Findings	18	HH-Q60 Decision-making.....	55
Household Survey	18	Focus Group Survey	56
HH-Q7 People in household	19	FG-Q1-Q2 Group details	57
HH-Q8 Age & Gender.....	19	FG-Q3-Q4, Q7 Group structure and history	57
HH-Q9-Q11 Occupations & Education	20	FG-Q6 Objectives.....	58
HH-Q12 Land ownership	22	FG-Q8 Income opportunities	58
HH-Q13 Public transport.....	23	FG-Q9 Most common sources of income.....	59
HH-Q14 Vehicles & Boats	24	FG-Q10 Roles in fishing & collecting.....	60
HH-Q15 Costs of schooling	25	FG-Q12 People restricted in fishing / collecting	61
HH-Q17-Q18 Malaria.....	26	FG-Q13 Increasing income from fishing.....	61
HH-Q20 Meals of seafood	27	FG-Q17 Concerns for natural resources	62
HH-Q22 Changes in fishing & collecting activities.....	28	FG-Q18 Abundance of seafoods.....	62
HH-Q23 Important seafoods for subsistence & sale.....	29	FG-Q19 Future abundance of seafoods.....	63
HH-Q24 Timing of fishing / collecting activities.....	30	FG-Q20 Income opportunities from marine environment.....	64
HH-Q26-Q27 Fishing effort.....	31	FG-Q21 Is management needed?.....	64
HH-Q28 Catches	32	FG-Q22 Control over marine areas.....	65
HH-Q29 Use of ice.....	32	FG-Q23 Control over resources	65
HH-Q30 Costs of fishing.....	33	FG-Q24 Management of resources.....	66
HH-Q31 Seafood processing.....	34	FG-Q25 Expectations of management.....	66
HH-Q32 Income from fishing	35	FG-Q26 Education	67
HH-Q33 Income from all sources	35	FG-Q27 Health	67
HH-Q34 Loans.....	36	FG-Q30 Social problems.....	68
HH-Q35 Contributions from different sources of income.....	37	FG-Q31 Control of money	68
HH-Q36 Costs of living	38	FG-Q32 Women in fishing / collecting.....	69
HH-Q39 Disposal of seafoods not sold.....	39	FG-Q36 Changes in the environment	69
HH-Q40-Q42 Past, present and future catches.....	40	Key Informant Survey	70
HH-Q43 Factors affecting catches.....	43	KI-Q1 Cost of items	71
HH-Q45 Solving problems with fishing	44	KI-Q7 Population growth	72
HH-Q46 Role in addressing problems with fishing	45	KI-Q9 Illness	72
HH-Q47 Changes in the environment.....	46	KI-Q11 Schooling	73
HH-Q48 Reef tenure.....	47	KI-Q12 Involvement in fishing	74
HH-Q49 Access to resources	48	KI-Q18 General community concerns	74
HH-Q50 Fishing rules	49	KI-Q19 Fisheries issues	75
HH-Q51 Effectiveness of rules	50	KI-Q20 Improving fishing.....	76
		KI-Q37 Alcohol and drugs	77
		KI-Q38-39 Clan conflicts and resolution.....	78
		KI-Q41 Increasing women's involvement in Fisheries.....	78
		Annex 1. Timetable for Socio-economic Survey	79

ACRONYMS & TERMS

ADB	Asian Development Bank
CBM	community-based management
CFMDP	Coastal Fisheries Management and Development Project
EU	European Union
FAD	fish aggregating device
GIS	geographic information system
GPA	Gillett, Preston and Associates
GPS	global positioning system (using Garmin Gecko)
K	PNG kina
LLG	local-level government
MBP	Milne Bay Province
MOR	Morobe Province
NFA	National Fisheries Authority
NGO	non-governmental organisation
NIP	New Ireland Province
PNG	Papua New Guinea
UPNG	University of Papua New Guinea
VDC	Village Development Committee
WDC	Ward Development Committee
WFG	women's fellowship group



Galahi Village, Bwanabwana LLG, Milne Bay

INTRODUCTION

Background

This report presents the findings of socioeconomic surveys undertaken in Milne Bay Province during late 2005, as part of the National Fisheries Authority (NFA) Coastal Fisheries Management and Development Project (CFMDP). This report is the third in a series focused on fish catches, market sales, buyers and socioeconomic surveys. These surveys were designed to characterise small-scale fisheries and to monitor project outcomes in the PNG provinces of New Ireland, Milne Bay and Morobe.

The characterisation of small-scale fisheries, and their role in these three provinces, form a part of the CFMDP, which is implemented by NFA with loan funding from the Asian Development Bank (ADB) (1925 PNG-SF). The overall aim of the CFMDP is to contribute to the reduction of poverty in rural areas through increasing, or preventing, a further decline in the incomes of coastal communities. This is being done by promoting improved management of resources, and by creating sustainable earning and employment opportunities for coastal communities, including mechanisms that improve access to information on fisheries, and through the construction of wharves, jetties and other infrastructure.

This part of the project comprises surveys undertaken by enumerators employed by the CFMDP, and the collation of existing historical data being collected by the Provincial Fisheries Office, and by buyers under the conditions of their fishing and processing licences. Data collected and/or collated include:

1. Surveys of marine products landed by small-scale fishers, usually using canoes or small powered “dinghies” or “banana boats” (open outboard-powered fibreglass dories);
2. Surveys of deep-water and pelagic fishes landed by small-scale fishers and people involved in the European Union Rural Coastal Fisheries Development Project scheme for purchasing longer-range vessels (the so-called “Ducklings”);
3. Surveys of marine products sold at local markets and their relative importance in relation to other items sold, including direct surveys of marine products purchased by buyers;
4. Existing buyer receipts retained by the Provincial Fisheries Office;
5. Purchasing data collected by buyers and NFA;

6. Household surveys examining socioeconomic conditions and contribution of small-scale fisheries undertaken in all three provinces; and
7. Focus group and key informant surveys undertaken in conjunction with the household surveys.

These surveys and data collections were undertaken to provide basic information on the relative importance of fisheries to the livelihoods of people in Milne Bay Province. The surveys were also designed to provide information on the types and quantities of marine organisms being collected/caught in the province with a view to assessing the status of the resources and to identify threats and opportunities for the future.

Aims of CFMDP socioeconomic surveys

These surveys were designed to access information from individuals and groups through interviews and meetings conducted with randomly selected people who could provide information on their lifestyles, livelihoods and opinions on the issues that affect them. The purpose of the surveys was to:

- establish existing baseline socioeconomic conditions in selected parts of Milne Bay Province, particularly as they may relate to benefits derived from small-scale fisheries;
- monitor the direct and indirect benefits/effects of the CFMDP at the village and household level in Milne Bay Province; and
- collect information relevant to designing an appropriate community-based management strategy for individual villages, and villages in the province in general.

Project management was provided by Gillett, Preston and Associates Inc. and Tautai Ltd.

APPROACH AND METHODS

Study design

Twenty wards, selected within four local level governments (LLGs) in the central parts of Milne Bay Province (Fig. 1), were visited by teams of trained enumerators between 7 November and 10 December 2005. The study's surveys were focused at the ward level because of the great dispersion of people into small numbers of households in many villages throughout the province. This is a similar approach to that used by the PNG national census. The number of wards surveyed was distributed evenly among the selected LLGs, so that a total of five wards were surveyed in each (Fig. 2). For each ward, enumerators spread their sampling among the villages and isolated houses within the ward boundary, collecting information on the position of each sample location.

Within each ward, surveys were undertaken with:

- households (30 per ward, total of 600 interviews),
- focus groups — NGOs, Youth/Fishermen's/Women's Groups (5 per ward, total of 100 interviews), and
- key informants — LLG representatives, community leaders, others (5 per ward, total of 100 interviews).

This design was expected to yield 800 interviews across all wards and LLGs. These three groups were separately approached in an effort to obtain a general overview and detailed information on the special interests of identifiable groups of people.

Several options for the sampling framework were considered prior to the study to ensure that the design could meet the needs of the project. Most of the considerations referred to optimizing the household level surveys in an effort to

ensure the aims of the survey could be adequately examined. These included a consideration of the 1) distribution of sampling effort among LLGs and wards, 2) repeated measures vs random sampling, 3) number of households to be sampled for an optimal design, and 4) sampling period.

Distribution of sampling effort

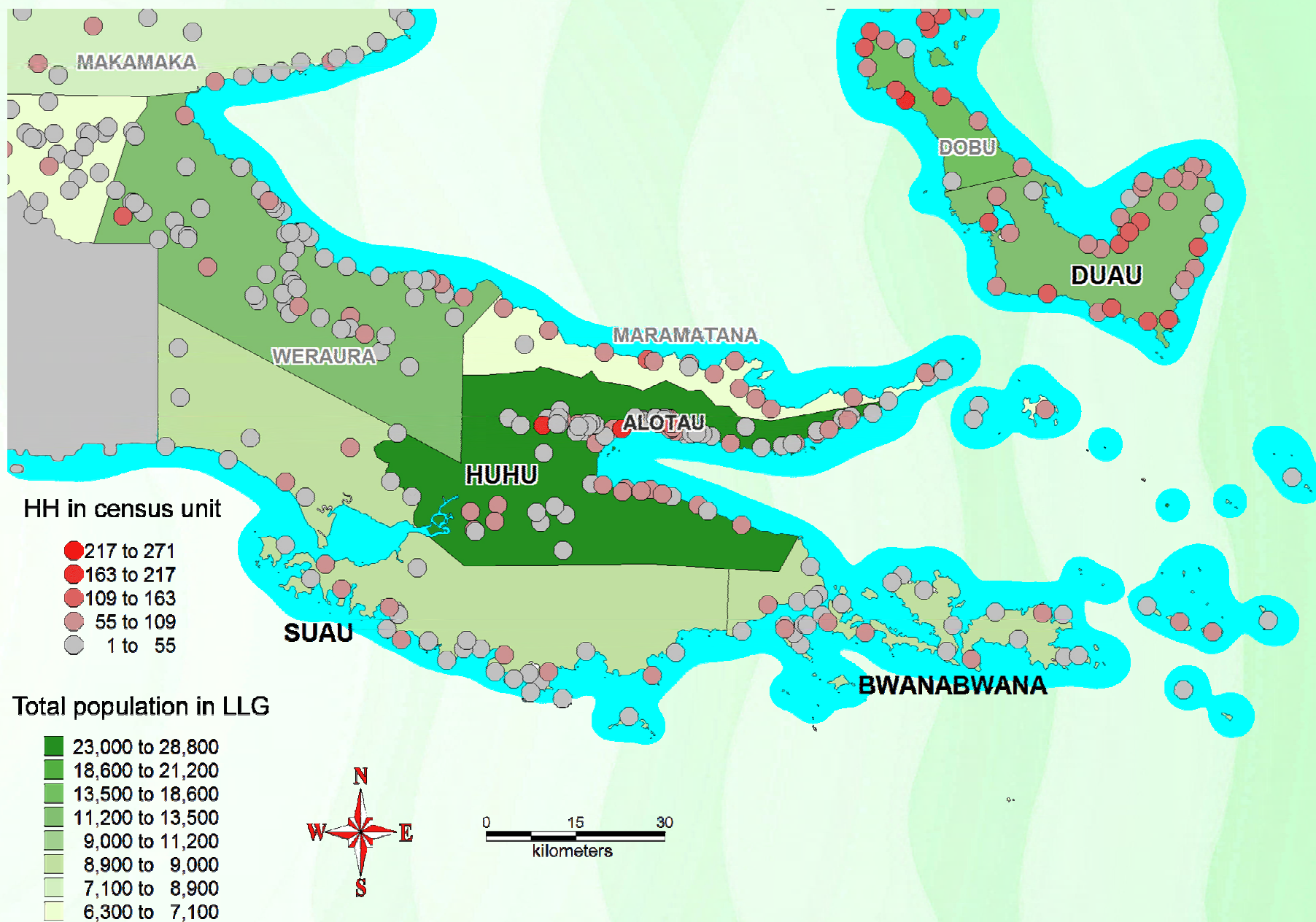
Two main approaches could have been used for distributing sampling effort in the household surveys. The first, using proportional sampling, places more effort in areas with the highest populations, and can be used to optimise for a good overall picture of socioeconomic conditions. Sampling in this case is more focused on population centres and is often used for population studies. The second approach calls for equal sampling effort in all wards, and is geographically based and often used for detecting change through time.

We chose to use the equal sampling effort strategy, in which sampling effort is equally distributed among wards (same number of households per ward, regardless of number of villages or population size). This method is best suited for detecting changes through time and ensures that people in remote/low density areas are represented, in addition to those living in population centres. With the CFMDP's focus on poverty alleviation, we considered it important that the conditions being experienced by people in remote areas should be adequately represented.


REPEATED MEASURES VS RANDOM SAMPLING

Sampling of households through time can be accomplished either by using a "repeated measures" or a "random sampling" design, each having different properties in terms of sampling outcomes. Repeated measures sampling designs require that the specific households randomly selected during an initial first survey are sampled again in subsequent surveys. Such designs can be associated with better precision in the results obtained for some kinds of surveys. There are, however, several disadvantages of using this approach to sampling for our purposes: 1) the total exposure to households over the entire survey (now and at

► Figure 1: Milne Bay Province showing approximate locations of the four LLGs included in this survey. Also shown is the population distribution within the LLGs and census units used during the national census.



▼ Figure 2: Distribution of sampling effort for the socioeconomic surveys in MBP. Values in the table indicate the actual number of questionnaires completed at each site and for each type of survey.



LLG	WARD	Household	Focus Group	Key Informant
BWANA-BWANA	Gigia-Yokowa	30	0	5
	Hamama-Gotai-Sekuku	30	2	5
	Kwato-Logea	30	2	5
	Loani-Kuiaro	29/30	1	5
	Samarai	22/30	1	5
DUAU	Bunama	30	0	5
	Isumaimai	30	5	5
	Kasikasi	30	1	5
	Kurada	30	0	5
	Sapisapia	30	2	5
HUHU	Bubuleta	30	5	5
	Divinai	30	5	5
	Gabugabuna-Maiwara	30	5	5
	Gwavili	29/30	1	1
	Wagawaga-Daio	29/30	5	5
SUAU	Dahuni	30	5	5
	Iloilo-Koukou	29/30	5	5
	Isudau-Isuisu	30	5	5
	Savalala-Ipulai	30	5	5
	Silosilo	30	4	4
		589/600	30/100	95/100

a later date) is limited to the same 600 households, reducing generalisation (in random sampling up to 1,200 households could be sampled during two surveys); 2) people may react to the survey and give answers they would not otherwise have with less exposure, depending on their attitude. The intent was to minimise this (but not eliminate, as there will still be considerable discussion within communities) by randomly sampling another subset of 600 houses at a later date; and 3) all of the households surveyed during the first sample may not be available by the final survey, so some samples may be lost.

Under a random sampling design, households are selected independently at each survey. There may be overlap in the houses selected, but usually this is minimal and arises only by chance. This method measures change more generally among households in wards, but does not track the specific outcome for any one household. The benefits of this design are that it can generalise outcomes more easily, and can minimise biases generated if people included in the survey react specifically to the enumerators or the survey itself.

CHOICE OF WARDS, NUMBER OF HOUSEHOLDS AND SAMPLING PERIOD

The LLGs included in the design were the four closest to the provincial centre, Alotau, and include Bwanabwana, Duau, Huhu and Suau. The more remote LLGs in the north, east and west (Maramatana, Weraura, Daga, Makamaka, Dobu, West Ferguson, Yaleyamba, Louisiade, Murua, Kiriwina and Goodenough) were not included for two reasons. The first was that they are too remote to interact regularly with the markets and facilities in Alotau, other than through occasional visits. This is notwithstanding the traditional trading routes of the Kula Ring, which are not focused on seafood products. The second reason was one of logistics. With increasing distance from Alotau, the condition of roads declines, and travelling times for boats increases to unworkable levels. Further, support (e.g. medical, emergency, mechanical) for the field teams becomes difficult or non-existent.

Within each of the four selected LLGs, wards were chosen haphazardly from those present to ensure a good geographical spread. There are 23 wards in Bwanabwana, 28 in Duau, 30 in Huhu and 28 in Suau LLGs. Selected wards are listed in Figure 2, and their locations shown in Figure 3.

The number of households interviewed in each ward (30) was designed to ensure good coverage of the ward without over-sampling the number of available households. Only households within 1 km of the coast were surveyed, but in Milne Bay, many of the wards were too small and contained too few households for independent sampling. To work around this problem, we coupled neighbouring wards into a single unit for the study (e.g. Gigia/Yokawa). The total percentage of households interviewed per ward or ward group averaged 23%, and varied between 14% and 31% of those available. Because most of the survey data collected by interview in households and groups were non-numerical, we were unable to apply standard statistical optimisation techniques to determine the best number of sample units for good precision.

It is envisaged that the socioeconomic surveys described in this report might be repeated at the conclusion of the project, in 2007. For this survey, results have been analysed to provide a snapshot of socioeconomic conditions as they relate to current coastal fisheries. After a second survey, with a focus on indicators of change, further analysis would be targeted on identifying possible outcomes of this project.

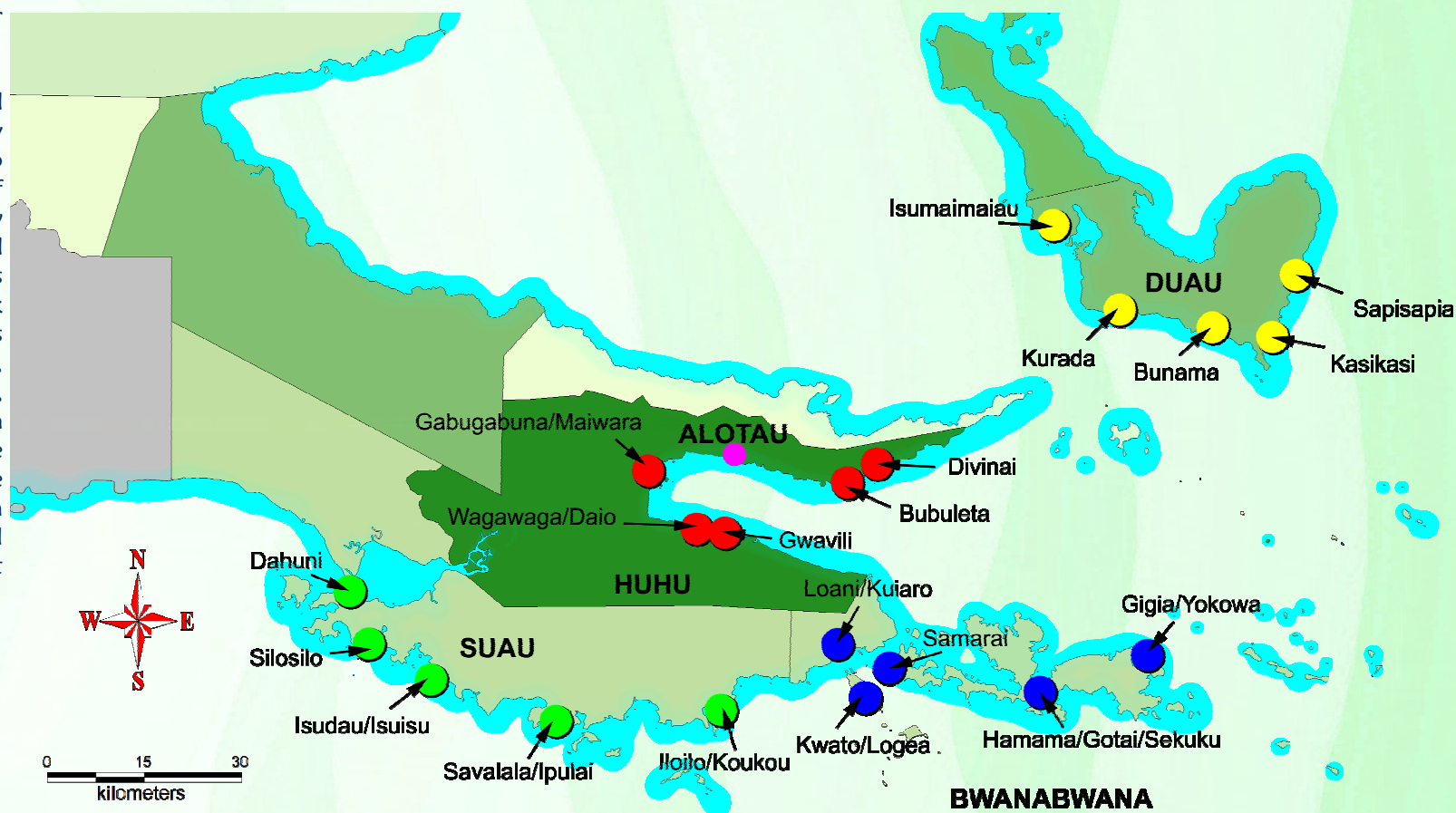
SAMPLING METHODS

Questionnaires

Socioeconomic information was collected using guided interviews. With the assistance of an expert from the University of Papua New Guinea and an external reviewer, we developed three separate detailed questionnaires that would be used by enumerators to gather information (see Table 1).

Each survey was accompanied by introductory text used by enumerators to explain to interviewees the purpose of the project and the interview to be conducted. At the end of each survey, interviewees were also invited to ask questions or make comments in connection with the project, natural resources in general, and their concerns. Although surveys were conducted at the ward level, many of the questions focused on conditions found in individual villages, the more important social unit for most people.

Survey forms were produced in English, with some translations to the local language where necessary. Questions were asked in English or the local dialect by the enumerators at the time of each interview. The main topics covered by the survey focused on establishing a rapport with the interviewee(s), obtaining general information on social conditions, services, and resources available and used, income levels and sources, perceptions on how resource levels might be changing, and traditional/existing forms of management (see Table 2 for overview of questionnaires used).



► Figure 3: The four LLGs surveyed showing approximate locations of wards. This map was derived from the PNG Census GIS 2000.

▼ Table 1: Overview of survey questionnaires developed, their target individuals or groups, and the number of questions posed.

Survey	Target(s)	Questions
Household survey	Head of household + others present	62
Key informant	Individual with standing in and/or knowledge of the	42
Focus groups	Identifiable and/or registered groups of youth, women or fishermen	37

ENUMERATORS

All interviews of households, individuals and groups were carried out by locally hired and trained enumerators. Fifteen people who were already familiar with local conditions, customs and dialects were trained during a short course held at Education Milne Bay in Alotau (1–5 November 2005). Course participants included individuals who had previously worked in fisheries-related areas or for government departments or nongovernmental organisations (NGOs). Participants were shown the survey design and the questionnaires, and were invited to comment and improve on them based on their own experience working and living in villages. Through a combination of lectures, role-playing and mock-interviews, the group worked through all of the questionnaires and refined them while becoming familiar with the approaches and etiquette to be used. An emphasis was placed on ensuring that each enumerator understood all of the questions and would ask them in the same way to reduce variance among them.

Successful participants signed on for a five-week field schedule as enumerators to carry out interviews in all LLGs and wards included in the survey (see Annex). Four concurrent teams of three people were deployed every week over the survey period to visit all sites. A team leader was selected for each team to ensure data were completely and properly collected and returned to us for incorporation into a database.

Indicators of change for comparison over time

In order to detect change in socioeconomic conditions and the role of fisheries over the life of the CFMDP, we posed a series of *a priori* questions (hypotheses) against which data and responses collected at the first survey could be compared with those collected later. These questions were designed in an effort to isolate, as much as possible, the effects of this project against other events occurring over the same time frame. We acknowledge, however, that because we cannot establish control communities that are unaware of the project, there is likely to be confounding of results. That is, even in communities not included in our community-based management (CBM) processes,

▼ Table 2: Details of topics covered in each of the three questionnaires.

Topic	Questions on:	Number
Household Survey		
General information about the household	Persons living there, religion, village affiliations, occupations, education, land ownership, transportation used, health	19
Fishing	Consumption, fishing activities, changes over time, subsistence and market activities, seasonal fishing patterns, fishing effort and equipment, handling, income from fishing	13
Income (all sources)	Income, loans, contributions by members of the household, marketing options, market conditions	7
Fisheries management	Changes in catch over time, perceived reasons for any changes, changes in the environment, fisheries rules, role of women	16
Community	Participation, perceived ability to influence decision-making, information needs.	7
Key Informant Survey		
General	Information on the key informant, general features of the village and population	11
Fishing	Village involvement, fuel prices, distances to fishing grounds and markets	3
Income	Main sources for village, outside employment, changes in natural resources, general community concerns	4
Fisheries management	Issues, past community approaches to addressing them, effects of using these approaches, existing mechanisms of community communication and decision-making, conflicts, traditional management practices, tenure	14
Village life	Education, organisations, basic services, problems and conflicts	7
Gender	Role of women and expected impacts if increased	3
Focus Group Survey		
Group type	Registration, affiliations, officers, activities	7
Differences among groups in village	Opportunities, participation, income, roles, restrictions	5
Resources & Income	Supply and marketing of marine products	8
Management of resources	Needs, tenure, control of resources	5
Community & services	Education, medical, social issues	6
Trends & the future	Roles of women and youth, under- and over-utilised resources, environmental change	6

word-of-mouth transfers of information are expected to occur. There are also likely to be widespread impacts of our NGO contacts with communities through radio and other media over the life of the project.

In addition to positive influences by CFMDP on communities, we acknowledged that there could also be negative influences. Therefore, to provide an assessment of the project that is as unbiased as possible, we have included hypotheses of both types to be assessed after a second survey, as shown in the blue boxes.

Data storage and analysis

All data collected onto questionnaires by enumerators during the survey were entered by trained data entry staff into a purpose-built Microsoft Access database. These data included numeric values (such as amounts of income in kina) in addition to text replies to questions aimed at peoples' opinions on issues of concern to them. They also included numeric data on votes given by individuals with differing opinions during group consultations.

All data were exported into separate Excel "flat files" for analysis. These were Excel spreadsheets that contained the resulting data for a particular question (the dependent variables), together with all of the header information (independent variables) on which an analysis would depend (e.g. LLG, ward, date, etc). Numeric data were usually analysed directly, but text information was read by the analyst, interpreted, and re-coded into separate concepts so that frequencies of certain types of ideas could be examined. In this way, non-

numeric text information was converted to numerics on responses. All data were then summarised using Pivot tables in Excel, either as frequencies or averages across the survey, or by breaking down responses by LLG and ward. All flat files and reprocessed data are held by the project and can be made available to interested parties.

Overall patterns of similarities and differences among LLGs and wards were assessed using a multivariate cluster analysis of selected questions (the numeric ones) in the household survey data. This technique was applied using questions 7–8, 11–13, 15, 18, 20, 23, 26, 28, 30, and 32–36. This and other standard statistical analyses were done using the software Statsoft Statistica Version 7. All graphs presented in this report were drawn either using Excel, Statistica or Grapher.

INDICATORS OF POSITIVE CHANGE

1. Income from fishing increases
2. Income from other activities (marketing vegetables, *buai* (betel nut), crafts) increases as the local economy is stimulated through increased fishing incomes
3. The market for fisheries increases so that more people can participate and derive their income from fishing/collecting
4. People are more aware of resource issues and how to address them
5. People are more aware of sustainable development issues and the need to optimise livelihoods in a way that ensures the future
6. People are enabled to protect and manage their own resources
7. Management plans are established in villages
8. There is some way to assess whether management is leading to improvements/benefits that people can see
9. There is increased access to education and medical facilities through better incomes
10. Community activities and benefits increase
11. Increased income goes to women who use it to improve quality of life for the family
12. Other opportunities for income generation are made possible through project initiatives such as training, better management, etc.

INDICATORS OF NEGATIVE CHANGE

1. More income leads to more problems with alcohol and *buai*
2. Increased women's participation leads to family problems if traditional roles are disrupted
3. Resource depletion
4. Increased damage to ecosystems that support fisheries
5. The project increases prospects for people already participating in fisheries, but does not increase opportunities for poor families (i.e. benefits not equally distributed and do not target poverty)
6. The fisheries market becomes saturated and those already participating can no longer derive sufficient income from fisheries
7. There is a drain of people from villages through increased centralised employment opportunities
8. Fisheries legislation confuses stakeholders in determining who has the right to control resources
9. Alternative income generation opportunities result in a negative impact on reefs (e.g. anchors, tourists)
10. FADS (fish aggregating devices) cause safety problems due to fishers going further offshore.

RESULTS

The results given in this section concern overall patterns observed and are summarised under topic headings incorporating information from the three types of interviews. The results of individual questions under each of the household, focus group, and key informant surveys are given in the sections that follow. Not all questions were analysed, largely because this report is intended as a general overview. In some cases, data were incomplete, or there was evidence the question was misunderstood. In some cases, questions were better answered by households, and responses given by focus groups or key informants added little to the results.

In many cases, the total number of responses given for a question is less than the number of interviews completed because data were missing, incomprehensible or did not answer the question (the number of valid responses “*n*” is given for each). This was a problem in only a few percent of cases, so is not considered significant to the overall result on a question-by-question basis.

For reasons of privacy, the identity of all persons interviewed during this survey has been withheld. All responses described below are the opinion of those interviewed and may not accurately reflect a given situation. We considered people’s *perceptions* the most important results of the survey, and a shift in these will be an important outcome of the project. For example, although we may know that fisheries regulations for sea cucumbers exist, a lack of knowledge of them by interviewees indicates that there is scope for improving public awareness.

Overall results across all LLGs and wards

Overall, the surveyed population is characterised by moderate numbers of people living in households (<6 on average), with a gender ratio that is significantly unequal and biased towards males (Table 3). The population is young, with 51% of people aged from 0–20 years, and only 9% of the population over age 60. Education levels are generally low, with 70% of the population attaining education levels to Grade 6 or lower. Very few people present in the survey area (3.5%) achieved college, technical or university levels of education. Most people own their land, many by customary mechanisms, but only 7% with a formal title. The average cost of schooling a child in the area is K 199 per year. The average number of cases of malaria per household is 4.2 per year, with most household members having at least one case per year (average 1.85).

The average household income is K 3,240/year, while average household costs are K 3,108/year. Some households have loans from financial institutions and other sources, averaging K 1,846. This includes assistance from relatives (*wantoks*) to cover costs such as schooling. People in the areas of Milne Bay Province we surveyed derive their incomes from a wide range of activities including farming, fishing, raising livestock, providing transport services, and hunting. Most households in the area derive a large part of their living from, in rank order of occurrence, fishing, farming crops, marketing and *buai* (betelnut) sales. Cash income from these livelihoods is low, ranging between K113 and K146 per month per household.

Fishing is an important livelihood in the area with around 34% of the population involved. Fishing contributes an average of just over K 130/month in cash income to each household involved in that activity. Seafood is heavily used for consumption and for sale, with only moderate amounts used for giving away to *wantoks*, and small amounts for community purposes (Table 3). There is evidence that catches are declining in the area, particularly sea cucumbers, trochus and finfish (not necessarily in all areas). People believe that income from fishing could be increased through more people becoming involved, an improvement in facilities (especially for processing and storage), better community cooperation and education.

The main concerns raised about the state of marine resources were the use of *Derris* roots (“poison rope”) in fishing, overfishing, pollution and damage to reefs. The outlook for the future of marine resources is not good. Many people believe that resources will continue to decline, while some believe they may increase if steps are taken to manage them.

People see themselves as only moderately involved in community activities, and with average power to influence community decision-making. The decision-makers in the communities are mostly the ward councillor and community elders, with about half of the communities (51%) seeing it as a whole community process. There is a range of social problems, including issues associated with alcohol use and drugs, fighting, crime (especially theft), and land disputes. Communities are generally concerned with alcohol abuse, law and order, land, and education. Not many see fisheries as a major issue in community discussions or as an opportunity for community development.

Characteristics of households		
HH7	Number of people in household	5.9
HH8	Number of males	3.1
HH8	Number of females	2.7
HH8	Gender balance	53% Male : 47% Female
HH8	Percent of the population in different age groups	Aged 0-10: 28%; 11-20: 23%; 21-30: 18%; 31-40: 13%; 41-50: 9%; >60: 9%
HH11	Education as cumulative percentages for different levels	Elementary=11%; Grade 6=59%; Grade 10=82%; Grade 12=83%
HH11	Education college, technical & university	3.50%
HH12	Land ownership	78%
HH12	Who owns the land?	Individuals 10%; Families 41%; Clans 49%
HH12	Title held for land	7%
HH13	Cost of public transport to usual places / trip	K48
HH15	Cost of schooling / child / yr (K)	K199
HH17	Cases of malaria in household / year	1.85 / person; 4.2 / HH
HH18	Cost malaria treatment / case (adults) (K)	K 2.49
HH18	Malaria treatment	12% Hospital; 83% Aid post or clinic

Characteristics of groups		
FG1,2	Number of each type of group interviewed	Fishers 4; Women 13; Youth 10
FG1,2	Registration	Registered 53%; Unregistered 47%
FG6	Activities undertaken (ranked most important)	Church, Helping people, Community, Fundraising, Education

Fishing and collecting		
FG12	Groups of people sometimes restricted from fishing	Pregnant women, Men with pregant wives, Burying the dead, New widows
HH20	Meals of seafood / week	4.3
HH22	Changes in fishing grounds	Have to go further; Seasonal effects; Declining catches
HH22	Reasons for changes in fishing grounds	To increase catch; Fish moved; Overfishing
HH23	Uses of seafoods (ranked)	Household 42%; Selling 37%; Wantoks 16%; Community 5%
HH26	Fishing & collecting trips / month	7.2
HH28	Seafoods caught / trip	15 kg; 20 pieces
HH30	Costs / fishing trip (K)	K 38
HH31	Processing of seafoods for sale	Yes 90%
HH31	Reasons for processing of seafoods	Preservation 94%; Buyer requirements 10%
HH32	Income / fishing trip (K)	K 78
FG13	Income from fishing could be increased by	More participation in fishing; Facilities; Community cooperation; Education

Income and costs		
FG8	Income opportunities in the village	Fishing; Farming, Market selling
FG9	Most common sources of income	Marketing (especially Buai); Fishing; Farming
HH33	Monthly Income in household (all sources) (K)	K 270
HH34	Loans (K)	K 1,846
HH35	Fishing income / month (K)	K 130
HH35	Farming income / month (K)	K 113
HH35	Buai income / month (K)	K 128
HH35	Selling income / month (K)	K 146
HH35	Employment income / month (K)	K 320
HH36	Household costs / month (K)	K 259

◀▶ Table 3: Summary of indicative overall results from the surveys of households, focus groups and key informants (n=714).

Community		
HH58	People's articpation in the community	Very high 12%; High 21%; Average 44%; Low 15%; Very low 9%
HH59	Influence in community decision-making	Very high 9%; High 22%; Average 36%; Low 20%; Very low 13%
HH60	Decision-makers	Community 51%; Elders 37%; Councillor 35%; WDC 27%
FG30	Social problems	Alcohol; Drugs (marijuana); Fighting; Crime; Land disputes
KI18	General communities concerns as raised in meetings	Alcohol; Law & order, Land disputes; Education
KI37	Problems arising because of alcohol and drugs	Community disturance, fighting / violence, Verbal abuse
KI38	Clan conflicts	Yes 74%; No 26%
KI38	Reasons for clan conflicts	Land disputes, Marriage disputes

Women in fishing		
FG32	Women should become more involved in fishing	Yes 59%; No 41%
FG32	Women should be more involved because:	Income; Equality; More fishing / collecting
FG32	Women should not become more involved in fishing because:	Neglect housework, traditional duties

Fisheries management		
FG17	Concerns about marine resources	Derris; Overfishing; Pollution; Reef damage
FG18	Marine resources are abundant	Agree 61%; Disagree 22%
FG18	Reasons for thinking they are abundant	Can see plenty; Catches are good
FG18	Reasons for thinking they are not abundant	Catches poor
HH42	Reasons catches of seafoods might decline in future	Overfishing; too many fishers; population growth; use of modern methods
HH42	Reasons catches of seafoods will improve or stay good in future	New gear; resources sufficient; has always been good; management
HH43	Factors affecting catches (drivers)	Human population; Commercial fishing
HH43	Factors affecting catches (activities)	Derris; Overfishing; Netting
HH43	Factors affecting catches (environment)	Pollution; Oil plam; Reef damage
HH45	Solving problems with fishing	Community discussions; Rules; Leaders; Education
HH45	Who should solve fishing problems?	Community; Church; Buyers; NGOs
HH46	Role of individuals and households in addressing problems with fishing	Awareness; Reporting to Authorities; Approach Leaders; Discuss
HH47	Changes in the environment	Declining stocks; Reef damage; Sea level rise; Erosion
HH48	Reef tenure?	Yes 58%; No 15%
HH48	Type of control	Customary; Exclusion of outsiders; Control Trochus & sea cucumbers
HH51	Fishing rules are effective because:	People respect rules; Avoid penalties; Court Not enforced; Ignorance; Leaders not respected
HH51	Fishing rules are ineffective because:	
HH52	Who / how are rules implemented?	Councillor 22%; WDC 18%; Community 9% Very poor 3%; Poor 10%; Not sure 42%; Good 38%; Very good 7%
HH53	Knowledge of changing resources	
FG20	Other income opportunities from the marine environment	Ecotourism; Diving; Pearls
FG21	Management is needed	Agree 67%; Disagree 19%
FG24	Types of management actions needed	Watch prawn nurseries, reefs, resources; Don't catch undersized
FG25	Outcomes expected of management	Better income, harvest; Sustainability

General information on LLGs and wards

The surveyed wards tended to form several groups in terms of overall similarity, but these did not generally relate to the LLG to which they belonged (Fig. 4).

Group 1. Bubuleta and Isumaimaiiau form the first identifiable grouping of wards. The conditions in these wards, despite being in different LLGs, are relatively similar. People living in Group 1 have the lowest household incomes and the lowest number of university graduates. It also has the largest number of people who are educated to Grade 12 and college levels. This group has the youngest population, with the largest number of under 10 year olds, as well as the most 51–60 year olds. People living in these wards eat the most seafood meals per week, have moderate incomes from fishing, but the highest fishing costs. Income from market selling is moderately high.

Group 2. This group is formed by Gwavili (Huhu LLG), and Kurada and Sapisapia (Duau LLG). These wards tend to have the greatest number of older people (aged 40 and older) and the greatest number of over 70 year olds. People living here tend to have the greatest income from market selling and employment of all wards, and high levels of university and vocational education. They eat moderately low amounts of fish and have relatively low incidences of malaria (still >5 per household per year). Fishers in these wards tend to catch the least amount of fish per fishing trip, and fishing costs are low. This group also tends to travel the least.

Group 3. This ward grouping is the largest, encompassing 12 wards along the southern coasts of the studied area, in the head of Milne Bay, and on the eastern side of Duau. These wards have high numbers of older people. People are relatively mobile, making many trips per month, many using public motor vehicles (PMVs), but relatively few using boats. These wards have more than six people living in each household and the second highest household costs. The average seafood catch per fishing trip is high and much of the catch is given to *wantoks*.

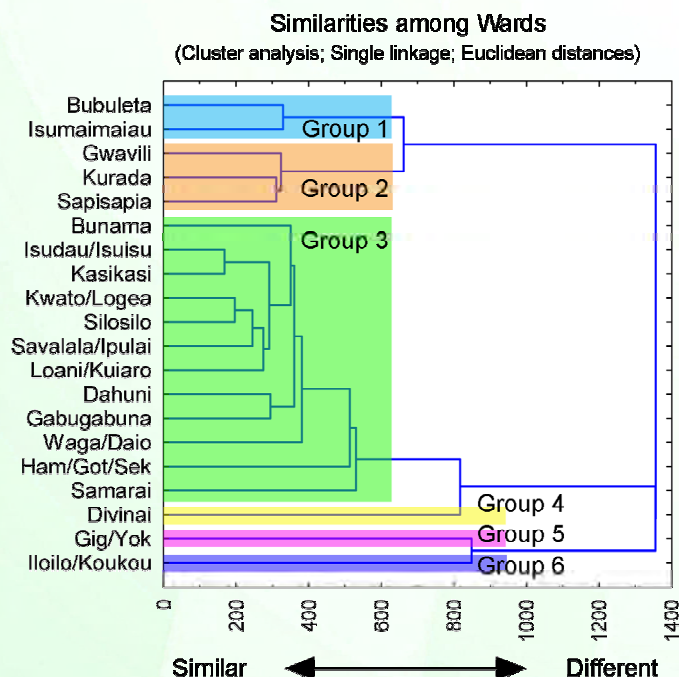
Group 4. Divinal ward is in a cluster alone, being partially related to Group 3 but recognisably different from it. Divinal has the highest number of people per household and the greatest number of 20–30 year olds (the main workers). Many people in this ward own their land. They are mobile, particularly by boat, and make the most income from buai sales. Many different seafoods are used in the

household and in the community. Fishing, schooling and medical costs are high. Income from employment is lowest in Divinal as is the total loading of loans in the community. People eat the least fish, and use the least amount of seafood for sale. The rate of malaria is the lowest of all wards.

Group 5. This group is formed by the Giga and Yokowa wards in the eastern-most reaches of Bwanabwana LLG. Many people in these wards hold title to their land, and are highly mobile, making large numbers of boat trips per month. They heavily use seafood within the house, for sale and for *wantoks*. They have the greatest amount of loans and the greatest income from farming. Household costs are the highest in these wards.

Group 6. The combined wards of Iloilo and Koukou form the last identifiable group in terms of ward characteristics. This ward grouping has the largest number of females in the population and the greatest incidence of malaria per year. Household incomes are relatively high, with income from fishing the highest of all ward groupings. This ward has a low number of people per household and low ownership of land.

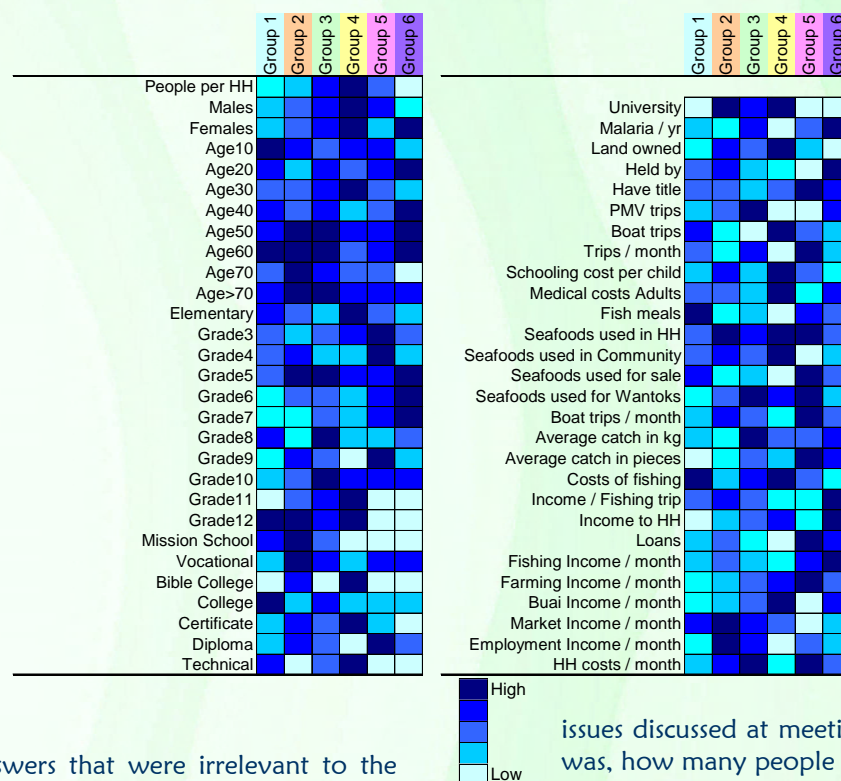
► Figure 4: Results of a cluster analysis of wards based on numerical values obtained during the household survey. Wards have been grouped in terms of 47 variables (from 23 questions) to illustrate degree of similarity. In this graph, wards most similar to each other are linked by shorter connections on the “linkage distance” axis. Wards linked by long lines are less similar than those linked by short lines. For example, Bubuleta and Isumaimaiiau are similar, while Iloilo/Koukou and Giga/Yokowa are dissimilar in terms of the variables included.



Survey weaknesses

- Interview teams did not clarify answers well for interviewees. Although considerable emphasis was placed on pursuing clarifications during the training of enumerators and during debriefing sessions throughout the survey, enumerators were generally reluctant to ask the question “What do you mean by that?” Despite repeated attempts to improve rigor in the sampling we were unable to solve this problem.
- Some interviewers did not fill in questions completely, and a “no” or “not applicable” or “don’t know” answer could not be distinguished from interviewers simply not completing the form properly. It was stressed repeatedly during training and debriefing sessions that all parts of the questionnaire had to be filled in, even if the answers were negative. Despite this, there were many questionnaires with blank sections that could not be included in the analyses.
- Some questions were not answered at all, and were apparently forgotten.
- In some cases, enumerators recorded answers that were irrelevant to the question asked. For example, in question FG-Q10, in the focus groups surveys, the roles of community members in areas of life *other* than fisheries were recorded.
- Inappropriate shortcuts in recording data invalidated some information.

▼ Figure 5: Summary of main characteristics of groupings of wards.



The use of “as above” or unexplained (and later forgotten) acronyms in a database context is not interpretable.

- Questions requiring units of measurement were often reported without their units. Rather than requiring enumerators to convert gallons to litres, hours per week to hours per month, etc. in the field, we allowed all quantities to be reported as given as long as the units used by the person interviewed were also recorded at that time. This approach was not successful. Enumerators often failed to record the units associated with a measurement, rendering some of the results unusable (e.g. HH-Q9).
- Questionnaires often contained examples of the kinds of answers being sought in order to assist enumerators, however, there were cases where it was clear that these specific examples were what were often read aloud to respondents. Answers were often almost entirely limited to the few options given as examples (e.g. HH-Q9). This occurred despite repeated training, briefings and error checking. Short of going into the field with the teams, it was impossible to prevent enumerators from reading out options, thereby “leading” the responses by interviewees.
- Key informants were not good sources of numerical information about their villages. They seemed able to summarise attitudes and issues discussed at meetings, but could not tell us how large their village was, how many people lived in it, or what the annual growth rate of the population was.
- It was not possible to complete the surveys for the required number of focus groups. There do not seem to be sufficient numbers of focus groups in the areas we surveyed — an interesting result of its own.

Summary of Findings



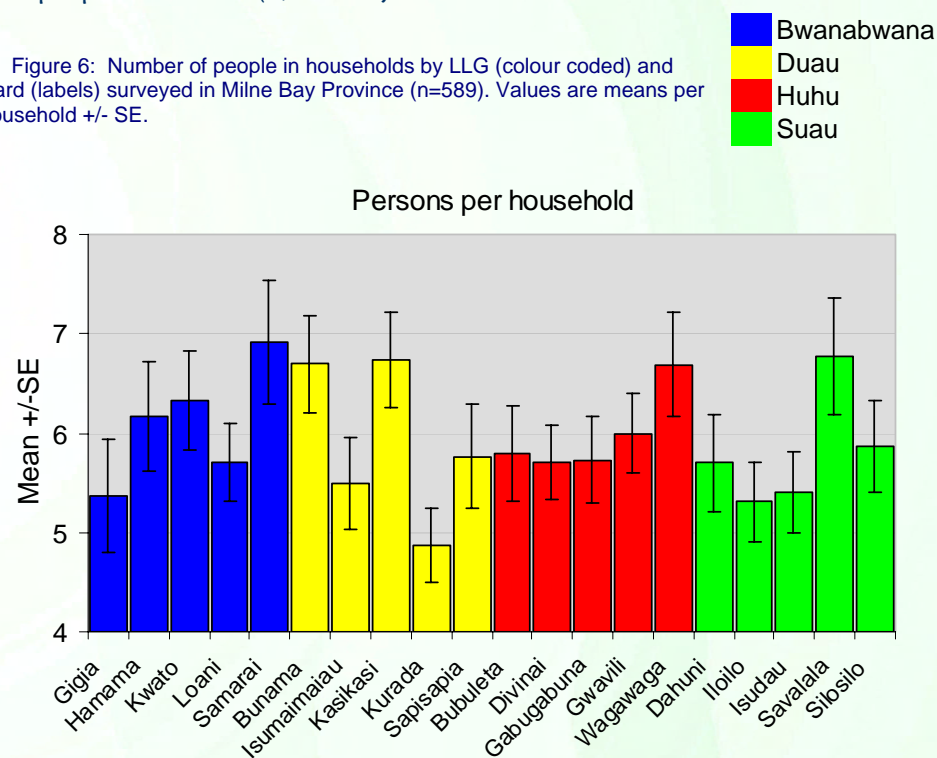
Household Survey

HH-Q7 NUMBER OF PEOPLE IN HOUSEHOLDS

HOW MANY PEOPLE LIVE IN THIS HOUSEHOLD AT PRESENT? IS THIS THE USUAL NUMBER OF PEOPLE WHO LIVE HERE? IF NOT, WHO ARE THE OTHERS AND ARE THEY LEAVING/COMING BACK?

The mean number of people in living in households across the survey was 5.9 +/- 2.6 SD (standard deviation). This value was calculated across 589 households surveyed. The greatest numbers of people living in households were recorded in Bwanabwana LLG with little difference among the remaining LLGs. Variation among wards was stronger (Fig. 6). The greatest numbers of people living in households were recorded in Samarai, Bunama, Kasikasi, Wagawaga/Daio and Savalala wards (6.7–6.9), with high density wards present in all LLGs. The lowest number of people in households was recorded in Kurada at 4.9 people per household (+/- 2.1 SD).

▼ Figure 6: Number of people in households by LLG (colour coded) and ward (labels) surveyed in Milne Bay Province (n=589). Values are means per household +/- SE.



HH-Q8 AGE AND GENDER

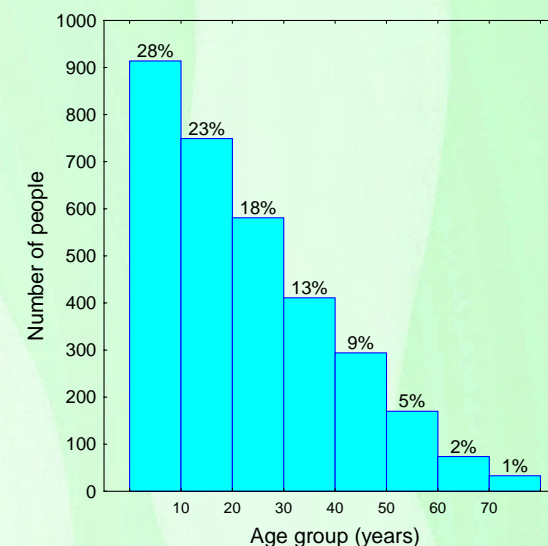
WHAT IS THE AGE AND GENDER OF ALL THE PEOPLE LIVING IN THIS HOUSEHOLD?

Age information was collected for 3,226 people, although 3,463 people were reached during this survey. Many people did not know their age, or the spokesperson answering the survey did not know the ages of everyone living in the household.

The population of Milne Bay is very young and appears to be growing rapidly. More than half of the population is 20 years old or less, with only 8% of the population over 50 years of age. The oldest person recorded, thought to be around 100 years old, was in Silowa village (Iloilo/Koukou ward, Suau LLG). There were also nine people aged 80 years or older found in the study (Fig. 7).

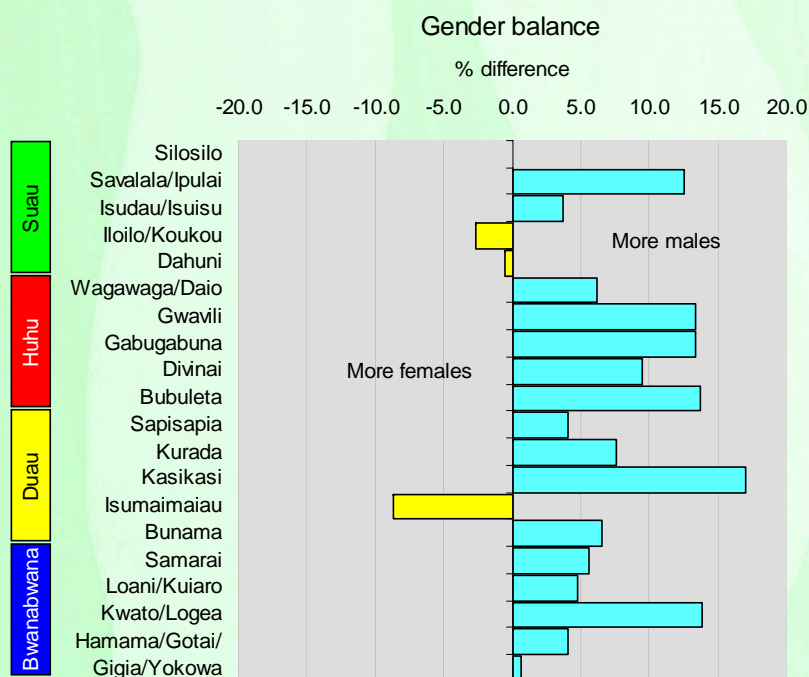
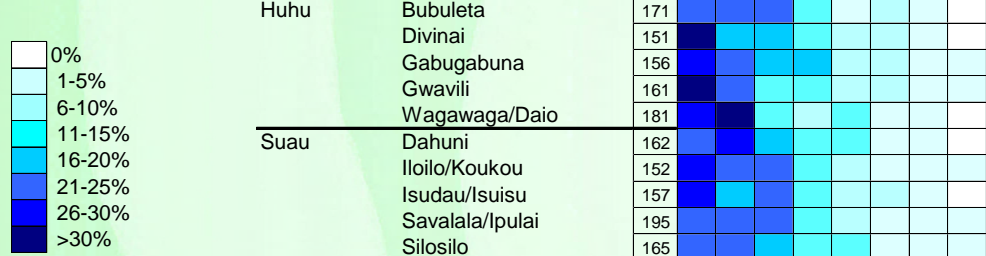
Wards in Suau tended to have fewer very young people (up to 10 years old) (Fig. 8). Gabugabuna ward had the highest average age of people (26 years old), while Kasikasi had the lowest average age (20 years). The lowest maximum age (58) was recorded in Wagawaga/Daio.

Overall, the gender balance over the study area was heavily biased towards more males than females (53:47%), with 6% more males than females in the population. This pattern was reversed in Isumaimai and Iloilo/Koukou wards (Fig. 9).



▲ Figure 7: Age distribution of population across all LLGs and wards. Data are percent of total sampled population in each age group (n=3,226 from 589 households). Age categories show the upper limit of the age in each group (e.g. "20" means people from 11–20 years old).

► Figure 8:
Population distribution
across age groups by
LLG and ward. Intensity
of colour indicates a
higher proportion of the
population in a given
age group (n=3,226
from 589 households).

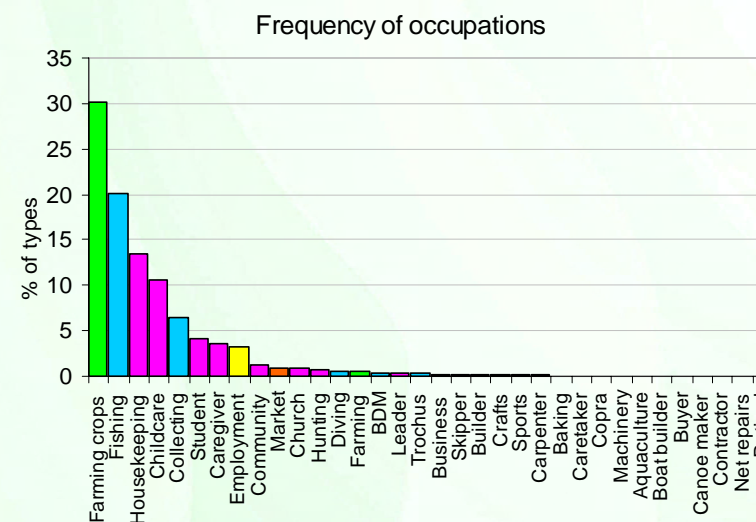


◀ Figure 9:
Gender balance by
LLG and ward. Values
are percent
difference in the proportion
of males:
females in the
population,
with a positive
value on the
graph
indicating
more males
than females
(n=3,441 from
589
households).

HH-Q9-Q11 OCCUPATIONS & EDUCATION

WHAT ARE YOUR OCCUPATIONS? WHAT PART OF YOUR TIME IS SPENT ON EACH ACTIVITY? WHAT IS YOUR HIGHEST LEVEL OF EDUCATION? WHAT ARE THE MAIN OCCUPATIONS AND LEVELS OF EDUCATION FOR ALL OTHER MEMBERS OF THE HOUSEHOLD? (INCLUDE SCHOOL CHILDREN).

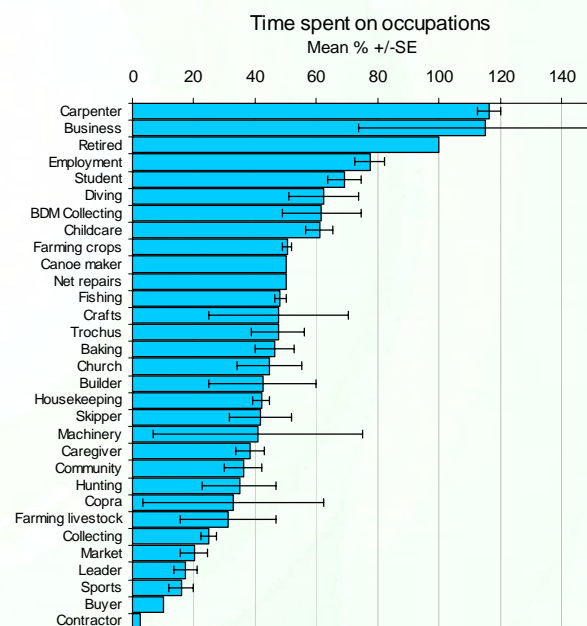
People are, on average, engaged in four occupations as part of his/her livelihood. The most common occupation across the survey was farming (including cash crops and garden produce), both for sale and home consumption (Fig. 10), and was an occupation for over 30% of people. Fishing was the second most common occupation, with about 20% of people being involved. Housekeeping, childcare and seafood collecting accounted for another 31% of all occupations in the area we surveyed. Paid employment accounts for about 3% of all the occupations reported by those interviewed.



▲ Figure 10: Occupations of people in each household. Values are percent of all occupations reported across the survey (n=2,350 occupations across 589 households). "Collecting" refers to harvesting seafood, such as shellfish, from the mangroves and reefs.

In terms of the amount of time spent on each type of occupation reported, most time was spent in carpentry (takes 116% of a 40-hour work week) and small businesses (115%) (Fig. 11). There is a large drop in the amount of time needed in the occupations below this, with paid employment on average taking about 77% of people's time. Diving and collecting sea cucumbers (BDM) were the most time consuming fisheries-related occupations, taking around 62% of people's time, while crop farming takes around half of someone's work week. The occupations that require the least time are contractors, buyers and market sellers who spend 2.5 up to 20% of their time in those occupations.

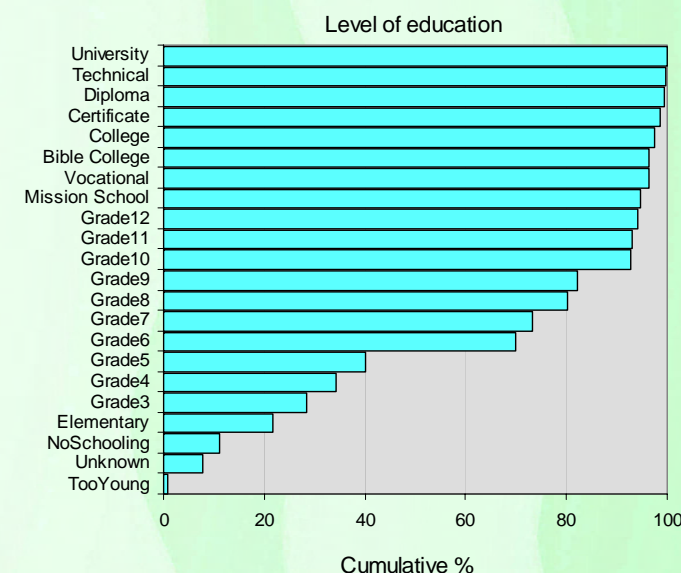
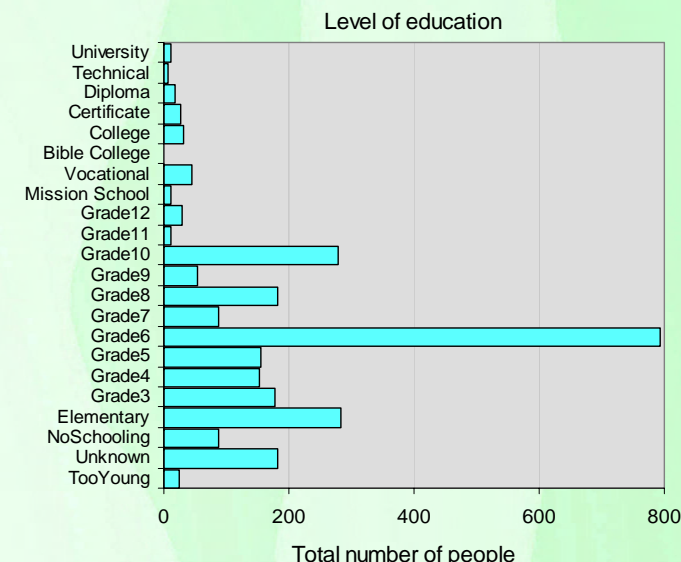
Over 90% of the population is educated to Grade 10 level or lower, with only 3.5% of the population having attained college, technical or university level education (Fig. 12). There is a strong peak in education at Grade 6. This is, in part, related to the youth of the population and many of these people should go on to increase their education levels. It is possible, however, that the peaks of numbers of people educated to Grade 6 and 10 represents real patterns in attendance and/or access to primary and secondary schools and their distribution within the project area.



◀ Figure 11: Percent of time spent by interviewees on each of their occupations. Data are mean percent of the person's time +/- SE for main categories reported (n=1,755 responses across 589 households).

► Figure 12: Maximum levels of education attained at the time of the survey by all members of the household in total numbers and cumulative percent.

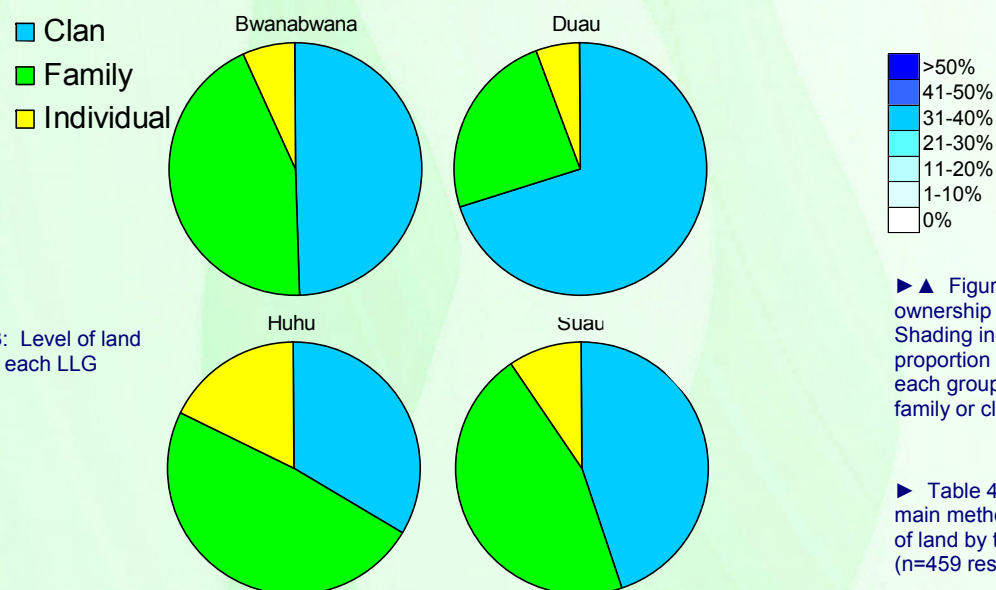
Note: At least some of those with low levels of attained education are still young and could not have yet attained higher levels (see age structure in HH-Q8). Even in the adult population, education may be ongoing. These data are therefore a "snapshot" of education currently found in the community, with the potential for increase in most of the age groups (n=2,655 responses).



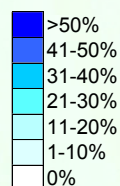
HH-Q12 LAND OWNERSHIP

DO YOU OR ANYONE IN THE HOUSEHOLD OWN LAND? IS THE LAND HELD BY THE: CLAN/
FAMILY/INDIVIDUAL? IS THERE A TITLE? IF NOT, PLEASE DESCRIBE HOW THE LAND IS HELD.

Overall, 78% of the people interviewed said that they had some form of ownership of the land they occupied. Overall, 10% of people owned their land individually, 41% at the family level, and 49% through the clan. The greatest percentage of family ownership of land was in Huhu, followed by Suau LLG, while clan ownership was most common in Duau (Fig. 13). By ward, the highest level of individual land ownership was in Wagawaga/Daio (41%), which is roughly twice the rate in the next highest ward, Bubuleta (24%). Most other wards had very low levels of individual ownership. Family ownership was high in Huhu and Suau (51% and 46%, respectively), and at ward level at least eight wards had high to very high levels of family ownership. The highest recorded was at Gwavili, which had 79% ownership of land at the family level. Overall, the most common form of land ownership (47%) was at the clan level. Clan ownership was highest in Duau LLG (71%) and lowest in Huhu. At the scale of wards, the highest levels of clan ownership of land were found in Kasikasi, Isudau/Isuisu and Sapisapia (Duau and Suau LLGs).



► Figure 13: Level of land ownership in each LLG (n=468).



► ▲ Figure 14: Level of land ownership by ward (n=468). Shading indicates the relative proportion of land held by each group (individuals, family or clan).

► Table 4: Summary of main methods of acquisition of land by the current owners (n=459 responses).

		n	Clan	Family	Individual
Bwanabwana	Gigia/Yokowa	27			
	Hamama/Gotai/Sekuku	27			
	Kwato/Logea	27			
	Loani/Kuiaro	22			
	Samarai	0			
Duau	Bunama	24			
	Isumaimai	18			
	Kasikasi	28			
	Kurada	14			
	Sapisapia	26			
Huhu	Bubuleta	25			
	Divinai	24			
	Gabugabuna	24			
	Gwavili	19			
	Wagawaga/Daio	27			
Suau	Dahuni	26			
	Iloilo/Koukou	29			
	Isudau/Isuisu	28			
	Savalala/Ipulai	27			
	Silosilo	26			

How land was acquired	#	%
Customary		
As payment for traditional service	5	1.1
As payment for service	1	0.2
Compensation	2	0.4
Bride price	1	0.2
Paid for traditionally	4	0.9
Marital ties	2	0.4
Unspecified	43	9.4
Purchased		
From landlord	1	0.2
Inherited		
From clan	3	0.7
Maternally	8	1.7
Paternally	3	0.7
Uncle	1	0.2
Grandparents	8	1.7
Not specified	6	1.3
Under dispute	1	0.2
Not specified	370	80.6
Not applicable	12	2.6
Total responses	459	100

HH-Q13 PUBLIC TRANSPORT

DO PEOPLE IN THIS HOUSEHOLD USE PUBLIC AND HIRED TRANSPORT? USUAL DESTINATION FOR CAR (HIRED, TAXI)/BUS, PMV/BOAT (HIRED, FERRY); FREQUENCY (TOTAL TRIPS PER MONTH FOR HOUSEHOLD); COST (KINA-K).

Most people in the area surveyed relied on only two main forms of transport, boat and bus (or public motor vehicle — PMV), with very few people having access to a car. The use of boats was very high at 78% overall, while PMVs accounted for around 27% of all forms of transport used. No other forms were reported in this question, but “aeroplanes” turn up in KI-Q11, and in HH-Q14, on vehicle ownership, various other forms of transport were reported, including bicycles and motorbikes. Forms of transport used depended on the LLG. People living in Huhu were reliant on PMVs 59% of the time, while those in Bwanabwana used them only around 1% of the time. This result is not surprising given the distribution of roads. From Huhu, people have access to Alotau via roads, but Bwanabwana LLG comprises mostly islands. There are six wards where transport is restricted to boats only, four in Bwanabwana and one each in Huhu and Suau. People living in Divinai appear to be entirely reliant on PMVs and do not use boats for transport (though they may still use them for fishing) (Fig. 15).

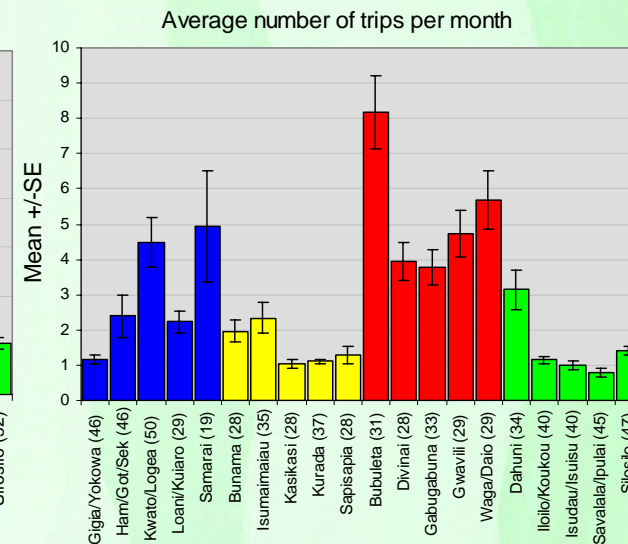
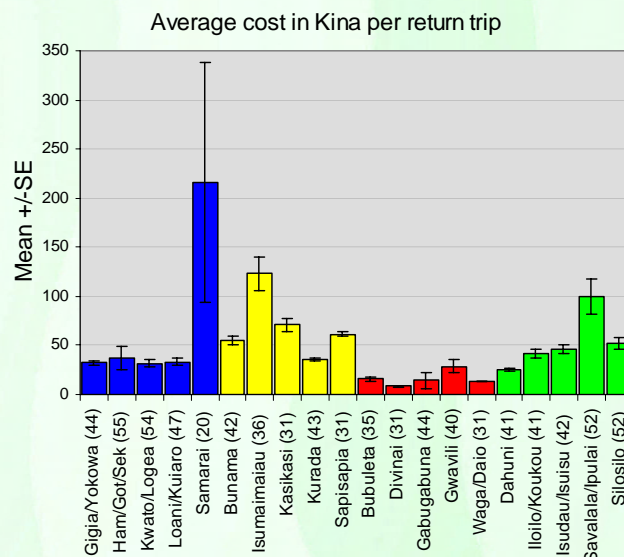
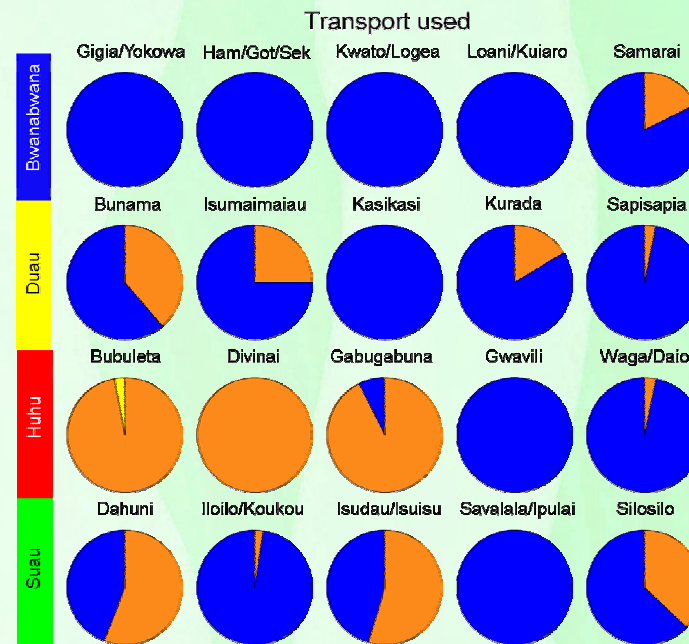
The number of trips made per month per household averaged 2.8 across the survey (+/-3.5 trips). People living in Huhu LLG were the most mobile, while those in Duau and Suau tended to travel less. Bubuleta ward had the greatest number of trips taken on average per month (Fig. 16).

Costs of transport averaged K 48 per trip across the survey, but were much higher than this in Samarai. The average cost per trip for Samarai people to visit those places they normally choose is around K 216. The cheapest transport costs were recorded in Wagawaga/Daio at K 13 per trip. These figures are not comparable on a per kilometre basis, but represent the real costs people must pay for trips they usually need or choose to make from their homes.

► Figure 15: Relative use of different forms of transport broken down by LLG and ward (n=868 responses, over 555 households).

► Figure 16: Trips per month and cost per return trip using all forms of transport by LLG and ward. Data are means +/- SE for all forms of transport used in households showing (n) for each ward. ! Bwanabwana ! Duau ! Huhu & ! Suau LLGs (n=702 responses for trips per month and n=812 for cost per trip).

Car
Bus/PMV
Boat



HH-Q14 VEHICLES & BOATS

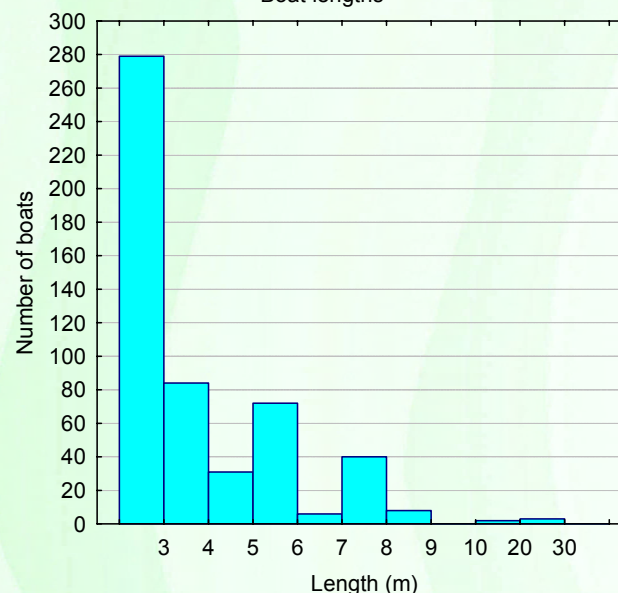
HOW MANY CARS, BOATS, BICYCLES, CANOES OR OTHER FORMS OF TRANSPORT ARE OWNED BY THIS HOUSEHOLD? BY WHOM? WHAT IS THE SIZE OF BOAT AND MOTOR AND THE TYPE OF FUEL USED BY BOATS?

The total number of vehicles reported by the people interviewed was 740. The most commonly owned vehicles were canoes (owned by 99% of households), followed by banana boats and bicycles (Table 5). The average number of vehicles per household was 1.3 across the study area. The maximum number of vehicles in one household was seven, which were all canoes. Surprisingly, no cars or trucks were owned by any of the interviewed households, despite the fact that key informants reported trucks used for getting to school in at least seven wards.

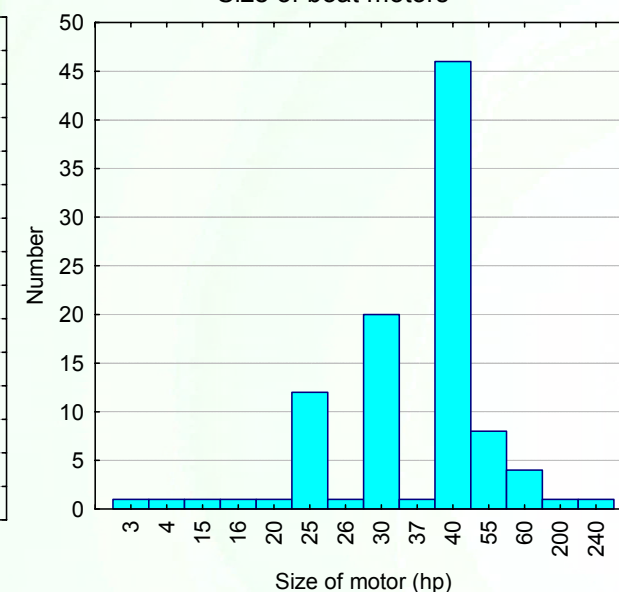
Around 81% of all boats owned did not have a motor, including 11% of all banana boats and dinghies. Most boats were reported as under 3 m in length, and some reached up to 30 m. Among those with motors, the most common size was 40 hp (Fig. 17), and ranged between 3 and 240 hp. Over 90% of these used “zoom” (petrol + oil 2-stroke) as fuel, the remainder using diesel.

	#	% Vehicles	% HH
Canoe	583	78.8	99.0
Banana boat	101	13.6	17.1
Bicycle	21	2.8	3.6
Work Boat	9	1.2	1.5
Other boat	8	1.1	1.4
Dinghy	7	0.9	1.2
PMV	3	0.4	0.5
Barge	3	0.4	0.5
Motorbike	1	0.1	0.2
Car	0	<0.1	<0.1
Truck	0	<0.1	<0.1
Other vehicle	4	0.5	0.7
Households	589	79.6	100
Total vehicles	740	100	

Boat lengths

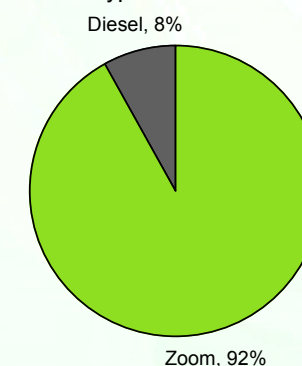


Size of boat motors



▲► Figure 17: Boat lengths, motor sizes, and fuel types used for boats owned in the households surveyed in MBP (n=99).

Fuel types used in boats



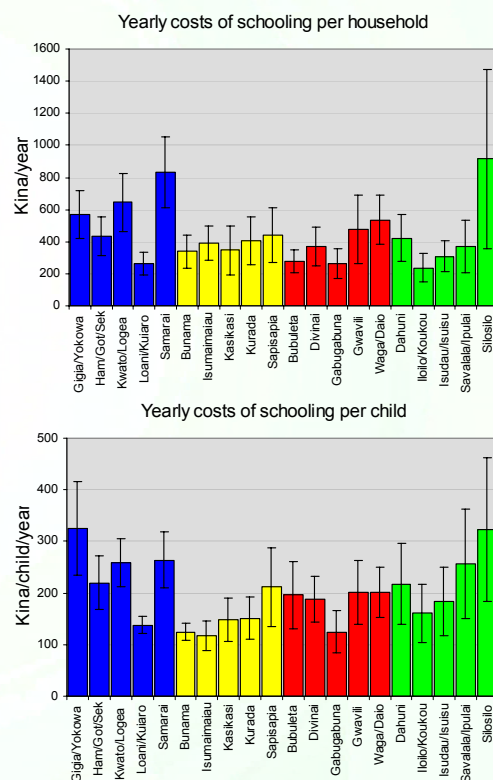
Motors	#	With	Without
Canoe	439	4	435
Banana boat	96	86	10
Dinghy	7	6	1
Work boat	9	8	1
Barge	3	0	3
Other boat	2	1	1
Households	556	19%	81%

◀ Table 5: Details of vehicles owned by households in all LLGs and wards. (a) Data are totals of vehicles owned and recorded in the survey, with %HH referring to the percent of households reporting ownership of each type of vehicle. (b) Statistics on boats with and without motor (n=556).

HH-Q15 COSTS OF SCHOOLING

HOW MUCH DOES IT COST TO SEND ALL THE CHILDREN IN THE HOUSEHOLD TO SCHOOL EACH YEAR? (INCLUDE COST OF FEES, BOOKS, UNIFORMS, TRANSPORT, FUNDRAISING ETC). ARE YOU ABLE TO MEET THIS COST? IF NOT, WHAT DO YOU DO?

The average household cost of schooling per year in all wards was around K 440 (+/- K 748 SD). The average cost of schooling per child per year was K 199 (+/- K 257), with the highest costs per household and per child being reported in Silosilo (Suau LLG) (Fig. 18). The lowest cost of schooling a child was recorded in Loani/Kuiaro Ward (K 65 per year). The most expensive LLG for per child per year costs was Suau (K 351), which was more than twice the amount reported for Duau (K 170/child/year).

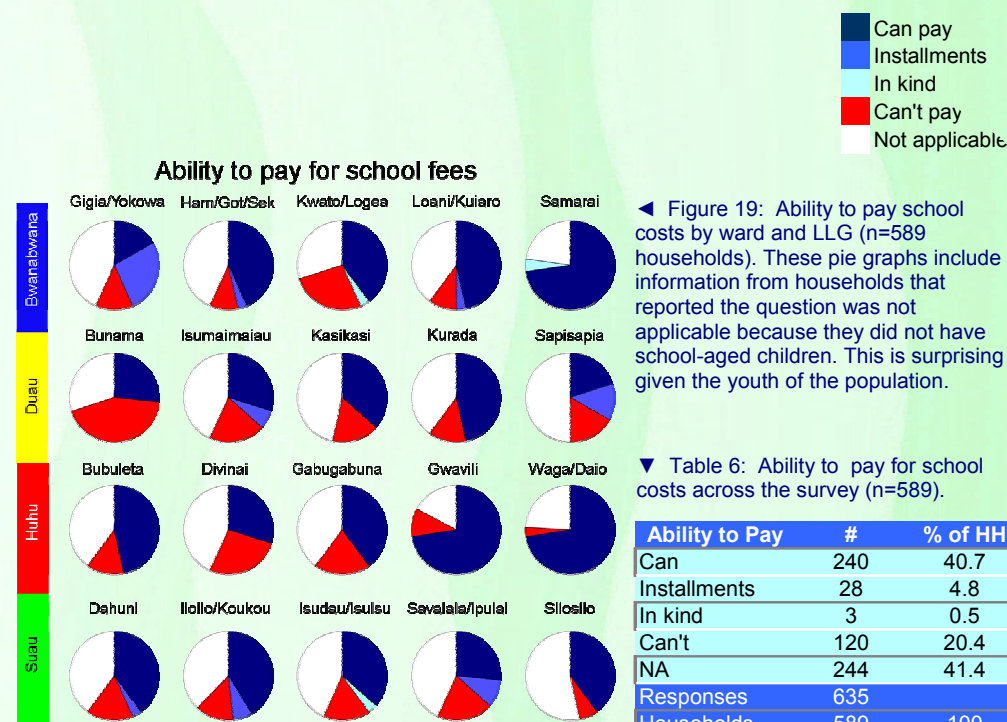


Over 40% of households reported that they were able to meet the costs of schooling, while 20% reported that they could not meet the costs (Table 6). Some households reported alternative approaches to paying for their children's school fees. About 5% of households paid in instalments and another 0.5% paid at least part of their fees "in-kind", through parents doing maintenance work at the school, or through the exchange of goods. The perceived ability to pay for schooling varied

◀ Figure 18: Cost of schooling per household and per child for each LLG and ward. Data are average costs (K) +/-SE for households that send children to school, i.e. excludes zero values reported by people who do not have children at school (n=358 and 342 respectively).

among LLGs and wards, with a larger proportion of people in Huhu LLG saying they could afford to pay. In the wards of Samurahi, Silosilo and Wagawaga/Daio, more than 85% of people with school-aged children reported that they were able to pay for their school fees (note Figure 19 accounts for all families, showing proportions for which the question is not applicable because they have no children in school). More than 50% of households in Bunama and Gabugabuna said they had difficulties paying for school fees. People reported a wide range of approaches to meeting school costs, including marketing, fishing and obtaining assistance from relatives.

A large number of children do not attend school because of the cost, distance to school, and in some cases because they dislike school or have lost interest in it. In a few cases, children did not attend school because there were no teachers, and in at least one case, because of threats made against the family. The parents of one asthmatic child were afraid to let him go to school, and there were reports of disabled children not attending.



◀ Figure 19: Ability to pay school costs by ward and LLG (n=589 households). These pie graphs include information from households that reported the question was not applicable because they did not have school-aged children. This is surprising given the youth of the population.

▼ Table 6: Ability to pay for school costs across the survey (n=589).

Ability to Pay	#	% of HH
Can	240	40.7
Installments	28	4.8
In kind	3	0.5
Can't	120	20.4
NA	244	41.4
Responses	635	
Households	589	100

HH-Q17-Q18 MALARIA

ON AVERAGE, HOW MANY TIMES PER YEAR DOES EACH HOUSEHOLD MEMBER GET MALARIA?

Of 2,450 people for whom the frequency of malaria cases per year was reported, 41% had one case per year, and 12% reported having no malaria cases. Around 8.5% of people were recorded as having four or more cases per year (Fig. 20). One person reported having more than seven cases of malaria in a year.

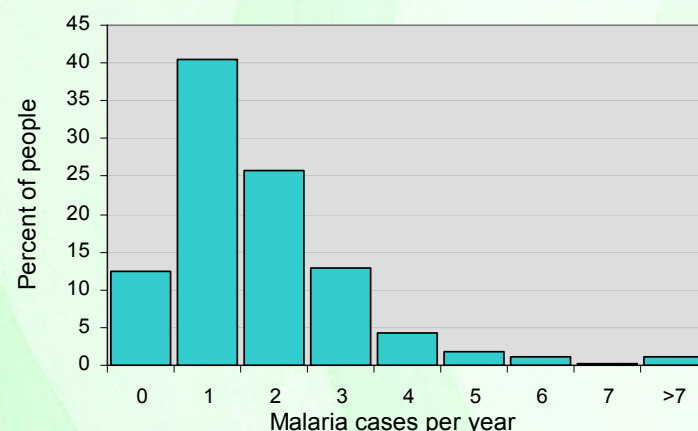
Cases of malaria were most common in Huhu and Bwanabwana LLGs. The wards with the greatest number of cases per year were Kwato/Logea and Isumaimai (365,377 cases) and the fewest cases reported in Sapisapia (69). For Kwato/Logea this translates into an average of 1.94 cases for each person each year. In Sapisapia and Savalala/Ipulai more than 40% of the households reported zero cases of malaria per year (see also Fig. 20).

Most interviewees (83%) said that they and their family received treatment for malaria through the their local aid post and 12% at hospital (Table 7). A small number (5.8%) either consulted a traditional healer or used traditional herbs to treat cases. Around 7% medicated themselves through purchasing medicines directly from the pharmacy or store. Fifteen people either did not treat their malaria or used other methods for dealing with the disease. In one case this included “steaming”.

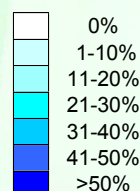
The vast majority of people (91%) thought that the treatments they used (all included) were effective, while 1% reported that treatments were ineffective,

and around 8% said that treatment effectiveness was conditional (Table 7). The main reasons given for ineffectiveness of treatments were: that medicine was not available, that there were side effects, and that quinine was not effective against the disease (Table 7).

The cost of treating a case of malaria varied according to the services accessed and where. For treatment at a hospital or clinic, the average cost was between K 3 and K 15 per adult per case (Table 8). Treatment costs were generally higher in Suau LLG, where a maximum of K 300 for treating a case was recorded. The lowest treatment costs were in Bwanabwana and Huhu LLGs, where the cost for treating each case of malaria averaged K 1.40 per adult and between 30 and 80 toea per child.



▲ Figure 20: Number of cases of malaria experienced by members of households per year for (a) all LLGs and wards and (b) ► broken down by LLG and ward. Values are percent of people in each frequency category (n=2,450 people).



Malaria per Year		n	0	1	2	3	4	5	6	7	>7
Bwanabwana	Gigia/Yokowa	160									
	Ham/Got/Sek	175									
	Kwato/Logea	188									
	Loani/Kuiaro	169									
	Samarai	146									
Duau	Bunama	200									
	Isumaimai	164									
	Kasikasi	201									
	Kurada	145									
	Sapisapia	173									
Huhu	Bubuleta	174									
	Divinai	170									
	Gabugabuna	171									
	Gwavili	173									
	Waga/Daio	194									
Suau	Dahuni	171									
	Iloilo/Koukou	153									
	Isudau/Isuisu	162									
	Savalala/Ipulai	199									
	Silosilo	175									

Effectiveness:	#	% HH
Yes	456	90.8
No	5	1.0
Sometimes	41	8.2
Households	502	100.0

Treatment is effective because:		
The correct medicine was used	170	55.7
The course was completed	42	13.8
Chloroquine / Camoquine are effective	40	13.1
The dose given was correct	18	5.9
Herbs were effective	14	4.6
The disease was recognised and treated early	11	3.6
Mosquito nets were given / bought	10	3.3
Artesunate was effective	6	2.0
Admitted to hospital if necessary	5	1.6
Fansidar was used	3	1.0
Staff at clinics and hospitals well trained	2	0.7
Medication was available	2	0.7
Depends on having adequate rest	1	0.3

Treatment is ineffective because:		
Medicine was not available	8	2.6
There were side effects	7	2.3
Malaria was not cleared / chronic	7	2.3
Chloroquine is ineffective	6	2.0
Had to go to General Hospital	2	0.7
Herbs are needed to really eradicate symptoms	2	0.7
The course of drugs was not completed	1	0.3
Need Fansidar	1	0.3

Responses	358	
Households	305	100.0

Malaria Treatment	#	% HH
Aid Post / Clinic	433	83.3
Hospital	64	12.3
Self	32	6.2
Herbs	24	4.6
None	12	2.3
Traditional Doctor	6	1.2
Doctor	5	1.0
Pharmacy / Store	3	0.6
Other	3	0.6
Responses	582	
Households	520	100

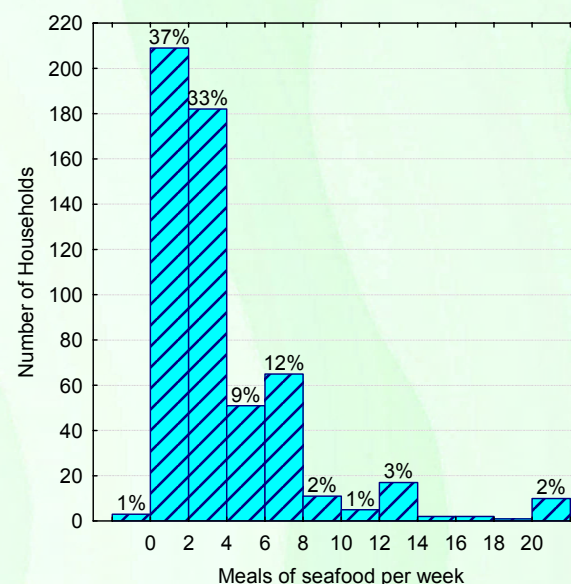
◀ Table 7: Treatments used for cases of malaria, and their effectiveness.

▼ Table 8: Average cost (kina-K) for treatment of a case of malaria in all LLGs and wards (n=508 households).

	Adults	Children
Admission to Hospital	K 14.73	K 3.62
Outpatient	K 2.90	K 2.76
Yearly fee for medical	K 9.80	K 4.53
Medicine only	K 1.86	K 0.26
Responses	499	371

HH-Q20 MEALS OF SEAFOOD

HOW MANY MEALS OF LOCALLY CAUGHT SEAFOOD ARE NORMALLY EATEN IN THIS HOUSEHOLD EACH WEEK? (THINK ABOUT THE LAST 2–3 MONTHS)

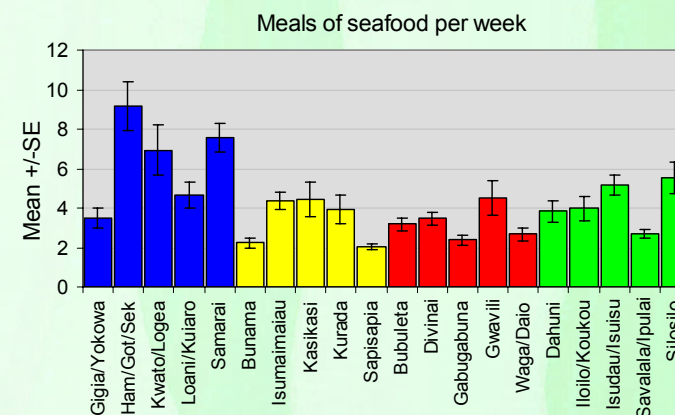


The average number of meals of seafood eaten in households per week across all LLGs and wards was 4.3, and varied between 0 and 28. 70% of households ate between 1 and 4 seafood meals per week, and 10 households ate more than 20 meals of seafood per week (Fig. 21). People living in Bwanabwana LLG tended to eat more seafood meals than other LLGs. Three households reported not eating any seafood meals. The wards with the lowest general levels of seafood consumption were Sapisapia and Bunama (Fig. 22).

◀ Figure 21: Frequency of seafood meals per week per household across the survey (n=558).

► Figure 22: Meals of seafood eaten in households per week in each LLG and ward. Data are means \pm SE (n=589).

! Bwanabwana !
Duau ! Huhu and !
Suau LLGs.

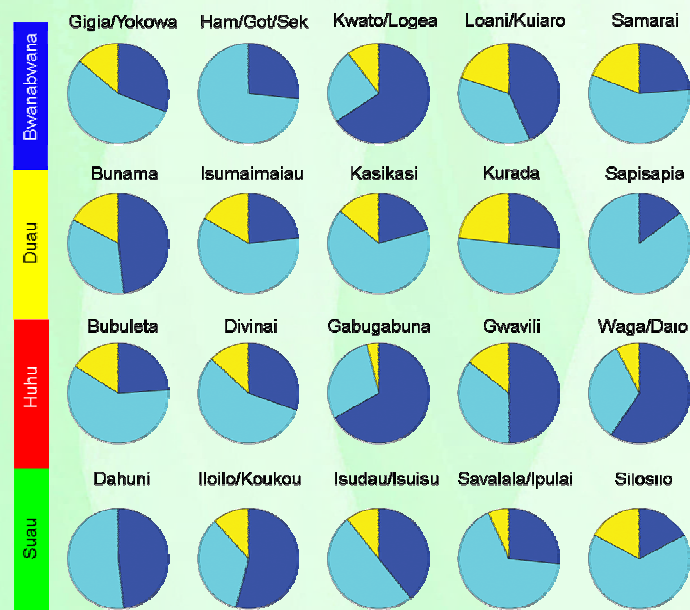


HH-Q22 CHANGES IN FISHING AND COLLECTING ACTIVITIES

HAS THERE BEEN ANY CHANGE IN THE LOCATIONS USED FOR FISHING OVER THE PAST 5-10 YEARS? DESCRIBE THE CHANGE AND REASONS WHY LOCATIONS ARE CHANGING.

Thirty-seven percent of the people interviewed said that they had changed the locations of their fishing grounds over the past 5–10 years, while 51% said there was no change. The greatest number of people reporting changes in the location or characteristics of fishing grounds were those from Huhu LLG, and the least number from Duau. In terms of wards, the greatest changes in fishing grounds were recorded from Gabugabuna, Kwato/Logea and Wagawaga/Daio (Fig. 23). The types of changes reported included declining catches, changes to fishing spots themselves, and a range of changes in environmental variables (Table 9). In about 7.5% of households people were not sure about what changes had actually occurred to result in changed fishing grounds. The main reasons given for changes in fishing grounds were to increase the catch, follow fish that had moved, or as part of normal practices surrounding seasons. Environmental changes such as climate change, changes in sea-level and the patterns of currents, pollution and loss of reefs or corals were also cited. Significantly less often, people raised issues of destructive fishing practices (e.g. *Derris* and “Taiwan” fishing), problems with outsiders poaching their resources and increasing numbers of fishers as reasons why their grounds were having to change (Table 10).

Changes in fishing / collecting grounds



■ Change
■ No change
■ Not sure

◀ Figure 23:
Changes in
fishing / collecting
grounds over the
past 5-10 years
(n=571).

▶ Table 10:
Reasons given in
rank order for
reported changes
in fishing grounds
(n=190).

Taiwan fishing ...
Involves the use of a stone folded within a leaf which is hooked onto a line deployed in relatively deep water (50 m⁺). The line is lowered into the water using the stone as a weight. When the bottom is reached, a sharp tug on the line pulls the hook through the leaf detaching the stone. The hook, supplied with a lure of feathers, is then pulled up through the water in a form of vertical trolling.

What changes?	#	%
Use new fishing spots	50	25
Have to go further	39	19.5
Cycle through alternate spots	38	19
Catch has declined	24	12
Seafoods have declined	18	9
Don't know	15	7.5
Fish don't bite as in past	13	6.5
Fishing spots have changed / moved	9	4.5
Tide level has risen / changed	4	2
Takes longer to get the catch	3	1.5
Size of seafoods has decreased	3	1.5
Reefs / corals are changing / dying	3	1.5
Lost fishing spots	1	0.5
Fish not feeding on hooks	1	0.5
Markets have moved	1	0.5
Reefs are rising	1	0.5
Shore erosion	1	0.5
Deposition on seabed	1	0.5
Seaweed growing	1	0.5
Sea level rise	1	0.5
Change in weather	1	0.5
Change in fishery / techniques	1	0.5
Responses	229	
Households	200	100

▲ Table 9: Types of changes to fishing grounds reported by people interviewed across all LLGs and wards (n=200).

Reasons for changes	#	%	Reasons for changes	#	%
To increase catch	39	20.5	Because derris root (rotenone) used	2	1.1
Because fish moved	31	16.3	Changing fishing methods	2	1.1
Overfishing	29	15.3	Reefs / corals dying / disappearing	2	1.1
Changes in tides, currents, waves	28	14.7	Divers disturb fish	2	1.1
Normal seasonal patterns	16	8.4	Areas now under Tambu	1	0.5
Don't know	15	7.9	Outsiders are fishing more	1	0.5
Fish / catch decreased	10	5.3	Boats make noise and frighten fish	1	0.5
Changes in weather / seasons	10	5.3	Fishing is increasing	1	0.5
Increasing human population	6	3.2	Fishing itself disturbs fish	1	0.5
Changed fish feeding grounds	5	2.6	Disputes over old grounds	1	0.5
Fish are educated	5	2.6	Use of nets	1	0.5
To allow recovery of stocks	5	2.6	Destructive techniques	1	0.5
Fish don't bite in the same places	4	2.1	Changed fishing gears	1	0.5
The number of fishers increased	4	2.1	Prone to natural disasters	1	0.5
Pollution	4	2.1	Temperature of sea changed	1	0.5
Change with normal seasons	3	1.6	Disturbance from lime producers	1	0.5
Because of dead / damaged corals	3	1.6	Increase in corals	1	0.5
Changes are natural	3	1.6	Siltation	1	0.5
Because Taiwan fishing is done	2	1.1	Responses	222	
			Households	190	100.0

HH-Q23 IMPORTANT SEAFOODS FOR SUBSISTENCE & SALE

RANK THE MOST IMPORTANT FISH SPECIES FOR SUBSISTENCE/SALE. ARE THEY THE SAME? (RANK WITH 1 BEING MOST IMPORTANT, USE 0 IF NOT IMPORTANT).

The most important seafood for subsistence or sale are mostly finfish, including reef fish (in 76% of households), tuna (33%), other pelagic species, and deep-water fish. Shellfish, including trochus (41%), as well as sea cucumbers (22%) are very important in many households across the surveyed communities (Table 11). It is therefore not surprising that in terms of activities, handlining, trolling

▼ Table 11: The fishing/collecting activities and species caught by households. People usually reported their fishing activities either in terms of target species, or fishing activity. Interviewees were not required to reorganise how they normally think of their activities, but were allowed to report them according to the way they normally considered them. Some people appeared to target particular species or groups of organisms, while others took whatever species were captured using a particular fishing method. Values are frequencies that a species was caught or that an activity was used in the households interviewed. In some cases, people reported species and activities together, so the values in the table do not sum to the total number of responses (n=2,018 responses across 553 households for species, and 131 for activities).

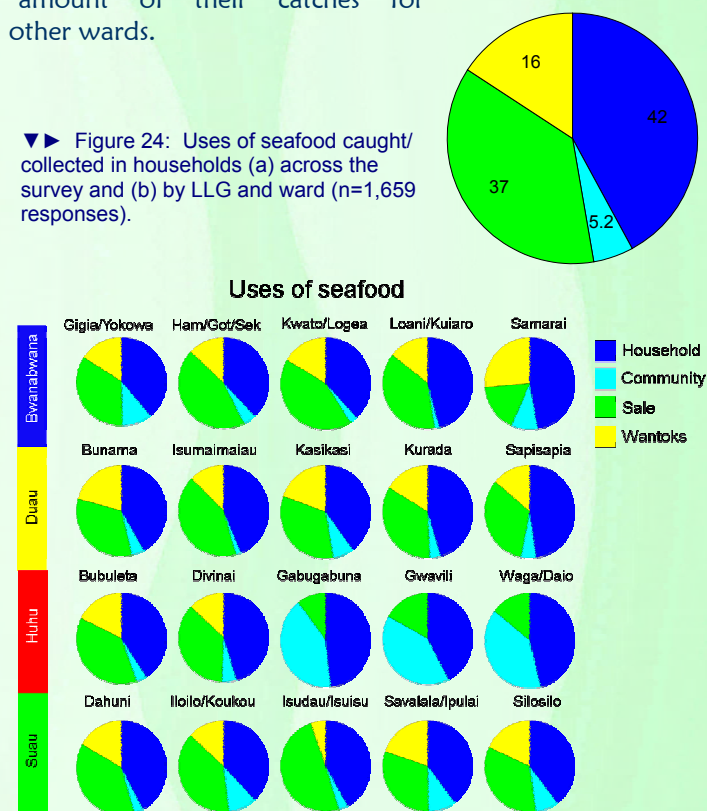
Target species / groups	#	% HH	Parrotfish	4	0.7
Fishes			Billfish / Marlin	2	0.4
Reef fish	423	75.9	Mangrove fish	2	0.4
Tuna	187	33.6	Riverfish	1	0.2
Pelagic	158	28.4	Catfish	1	0.2
Deepwater fish / snapper	88	15.8	Crustaceans		
Mackerel	51	9.2	Crabs	56	10.1
Other fish	50	9.0	Lobsters	24	4.3
Snappers	48	8.6	Prawn	2	0.4
Kingfish	45	8.1	Molluscs		
Longtom / Pike	31	5.6	Shells	114	20.5
Trevallies / Scads	28	5.0	Trochus	112	20.1
Mullet	23	4.1	Clam	23	4.1
Surgeonfish	21	3.8	Mudsnails	15	2.7
Sharks	17	3.1	Squid	4	0.7
Emperors	16	2.9	Octopus	3	0.5
Barramundi	13	2.3	Pearl shell	1	0.2
Baitfish	11	2.0	Spider shells	1	0.2
Groupers / Trout	10	1.8	Sea cucumbers	122	21.9
Barracuda	6	1.1	Turtles	15	2.7
Silver biddies	4	0.7	Responses	1732	
			Households	557	100

Fishing Methods	#	% HH
Handline	61	11.0
Troll	50	9.0
Hand collecting	39	7.0
Diving / Snorkelling	37	6.6
Net	30	5.4
Taiwan	28	5.0
Spear	10	1.8
Bottom fishing	9	1.6
Longlines	8	1.4
Deep bottom handline	4	0.7
Lamp	4	0.7
Trap	3	0.5
Casting	2	0.4
Torch diving	1	0.2
Responses	286	
Households	557	100

and hand collecting are the most important fishing/collecting activities recorded. About 5% of houses reported using Taiwan fishing method, an activity that raises concern in several of the questions about the health of resources (e.g. HH-Q22, Q43 and others). No households reported that they used *Derris* root for fishing, despite it being seen as a major reasons for resource declines in other questions.

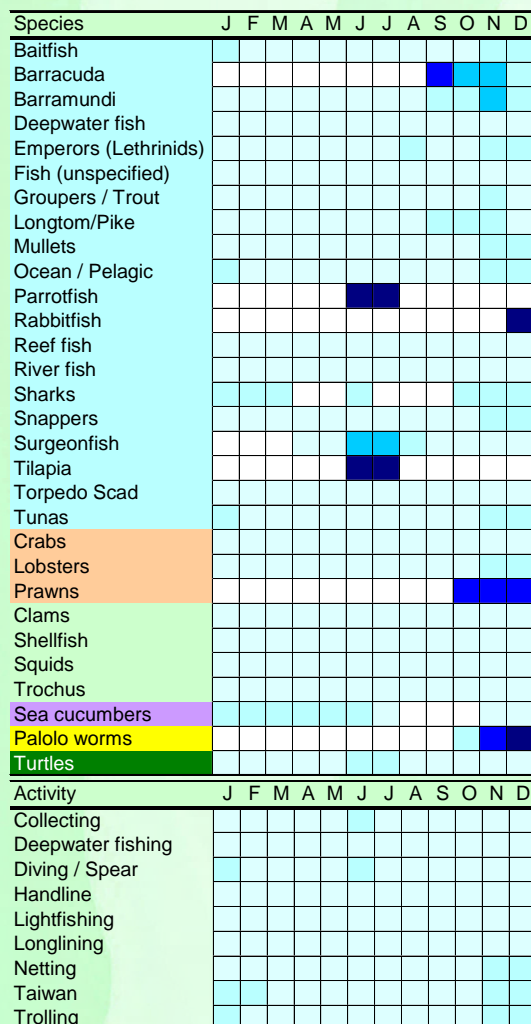
Seafood caught/collected by members of the household were mostly used within the household (42%) and for selling to earn income (37%). That is, almost 80% of all seafood were used for direct benefit to the household. The remaining seafood were given to *wantoks* (16%) or used in community activities (5.2%) (Fig. 24). This pattern varied only moderately among wards and LLGs. People in Isudau/Isuisu, Savalala/Ipulai and Silosilo (Huhu LLG) used a significantly larger amount of their catches for community uses than other wards.

▼► Figure 24: Uses of seafood caught/collected in households (a) across the survey and (b) by LLG and ward (n=1,659 responses).



HH-Q24 TIMING OF FISHING/COLLECTING ACTIVITIES

IS THERE A SEASON DURING THE YEAR FOR EACH FISHING ACTIVITY? HOW LONG?
WHICH MONTHS/MOON PHASES FOR WHICH SPECIES?

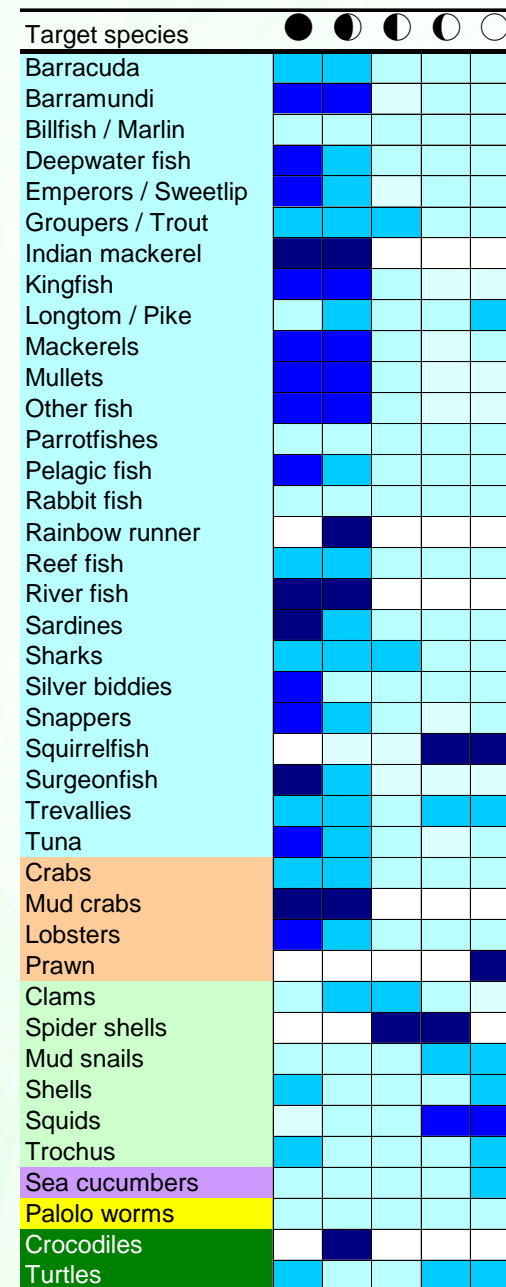
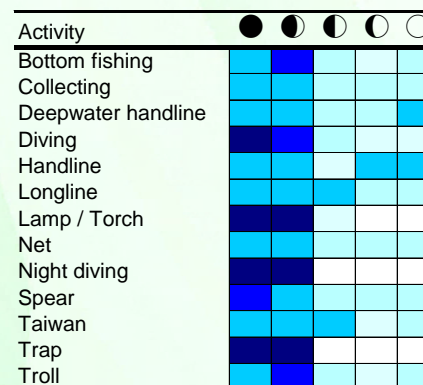


People reported some seasonal fishing patterns in terms of moon phases, but relatively little in terms of time of the year (months). There was a tendency for people to report the June–July period as a time for fishing for surgeonfish. Although a pattern appears for parrotfish and tilapia, this is based on very few samples and may not represent a general pattern. Barracuda tend to be fished from September through the end of the year, and rabbitfish, prawns and Palolo worms (damasi) are sought after in the last three months of the year (Fig. 25).

We interviewed people regarding only the waxing half of the moon cycle. Most of the targeted species of fish and all of the fishing/collecting activities are heavily biased towards a new and first quarter moon (Fig. 26). However, squirrelfish tend to be targeted at the time of the third quarter to full moon. Prawns, many kinds of shellfish, including trochus, are also targeted at this time.

◀ Figure 25: Distribution of fishing/collecting activities over the months of the year. Intensity of shading indicates focus on particular months (n=7,622 responses).

▼▶ Figure 26: Distribution of fishing/collecting activities over the waxing moon phases (n=4,237 responses). Darker shading indicates focus on moon phases, with no colour (white) indicating no activity. ● New ◐ First quarter ◑ Half ○ Third quarter ○ Full Moon.



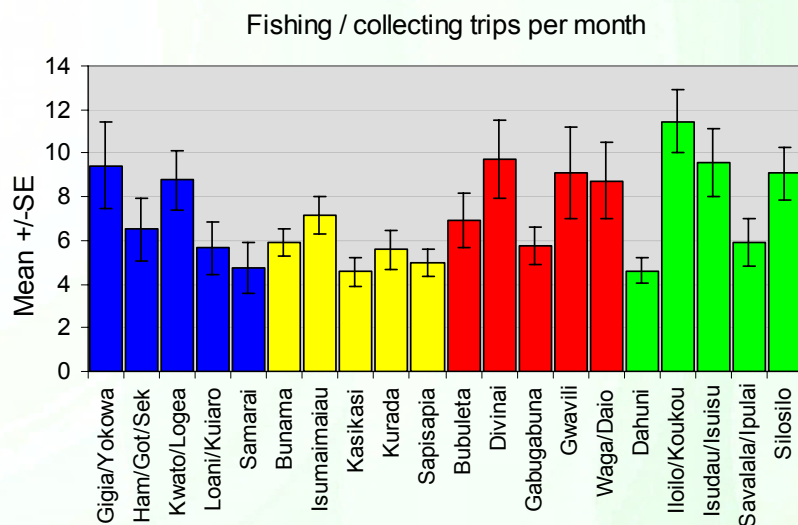
HH-Q26-Q27 FISHING EFFORT

HOW MANY FISHING TRIPS ON BOATS PER MONTH? HOW LONG (HOURS) DOES AN AVERAGE FISHING TRIP LAST? WHEN DURING THE DAY OR NIGHT DO YOU USUALLY FISH?

The average number of fishing trips in boats made per month across the entire survey was 7.2 per household (+/-7 trips SD). The number of trips made varied to some extent by LLG, with the greatest average number of fishing trips per month undertaken in Suau (8.2) and the least number in Duau (5.6). Variation among wards was more significant. People living in Iloilo/Koukou made the most frequent fishing trips, averaging around 11 per month. The wards that made the fewest number of fishing trips per month were Sapisapia, Samurai, Dahuni and Kasikasi (at between 5.5 to 6, around half that of Iloilo/Koukou (Fig. 27).

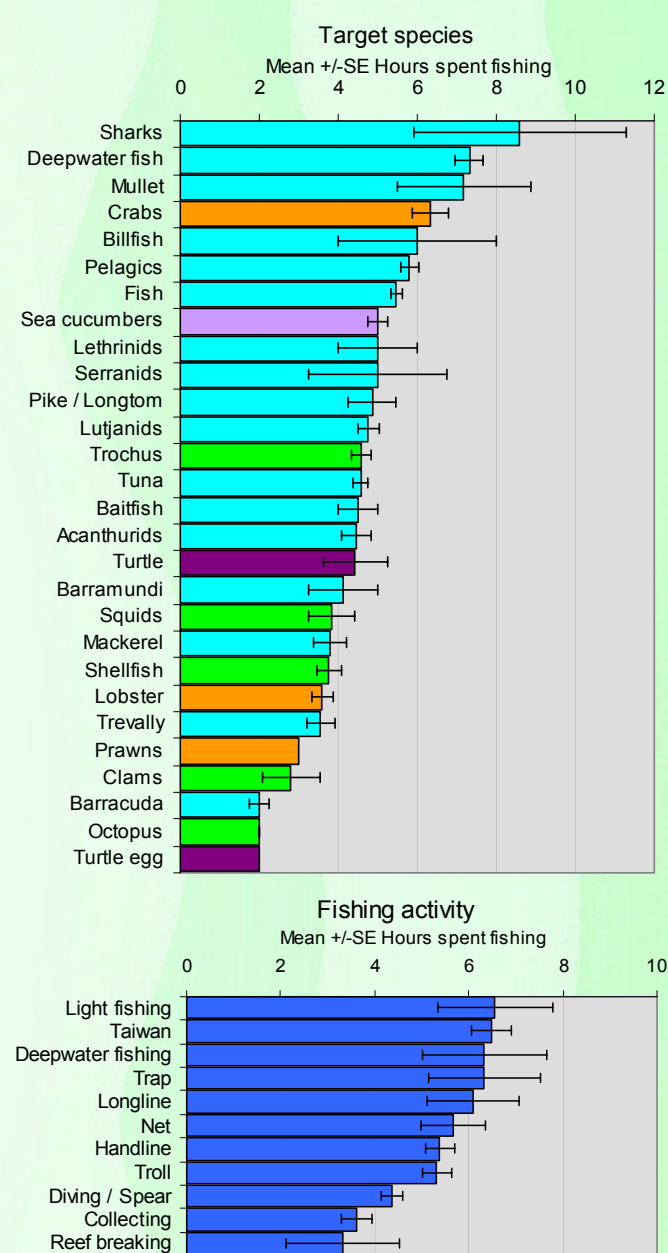
The overall average amount of time spent on fishing or collecting trips was around five hours, with people from Duau and Huhu LLGs spending the most time fishing. People in Kasikasi spent the most time on each trip (note they also make few trips in a month, see above), closely followed by Gabugabuna and Bubuleta. People in Loani/Kuiaro and Iloilo/Koukou make the shortest fishing trips (between 3.1 and 3.8 hours).

▼ Figure 27: Number of fishing trips on boats per month by LLG and ward (n=334 responses). Data are mean number of trips +/-SE of estimated number of fishing trips undertaken in households each month (n=335). ! Bwanabwana ! Duau ! Huhu and ! Suau LLGs..



In terms of target species, the greatest amount of time spent fishing was for sharks, deepwater fish and mullets (around seven hours per trip), and the least for turtle eggs, octopus, barracuda, clams and prawns (Fig. 28).

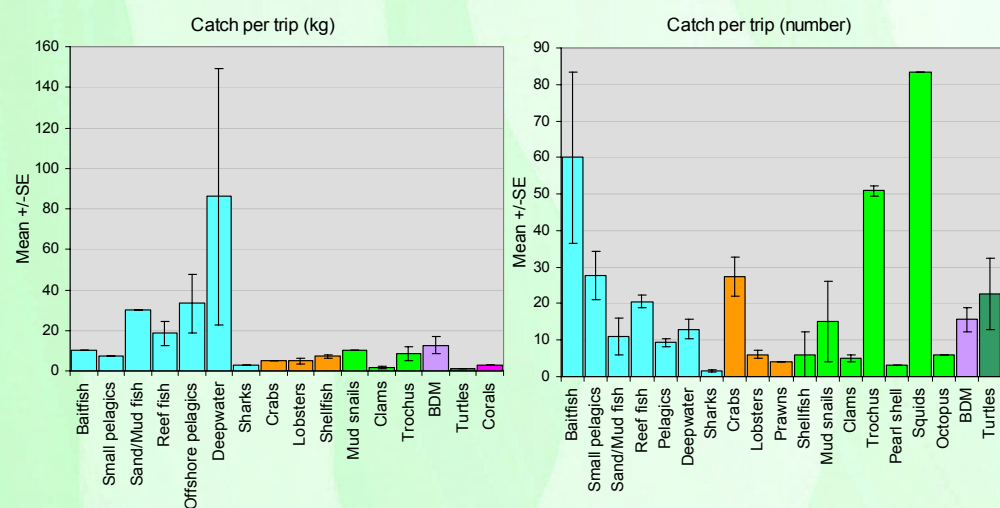
► Figure 28: Time taken for each fishing or collecting trip. Values are mean hours +/-SE taken for each trip (n=1,039).



HH-Q28 CATCHES

WHAT IS THE AVERAGE CATCH PER TRIP IN NUMBERS OF FISHES, CUCUMBERS, SHELLS, CLAMS, SEAWEED, CRABS, LOBSTERS AND OTHER THINGS YOU COLLECT FROM THE SEA?

In terms of the number of kilograms caught per fishing or collecting trip, the largest recorded catches were of baitfish (sardines; 86 kg/trip) and offshore pelagics (mackerel, ocean fish and rainbow runners; 33 kg/trip) (Fig. 29). These data should be interpreted with caution, as very few people have access to facilities for weighing their catch. Only those people selling their catch to buyers have reliable access to scales, so the weight estimates for other species are likely to be estimates. For sea cucumbers, most reported weights are likely to be for dried animals (the form commonly presented to buyers) but may include estimates of wet weight. In terms of the numbers of animals caught or collected, values varied between 3 and 83 individuals per fishing trip. Shellfish, baitfish, mudsnails, small pelagic fish, and sand or mud fish made up the largest number of animals collected during a single trip.



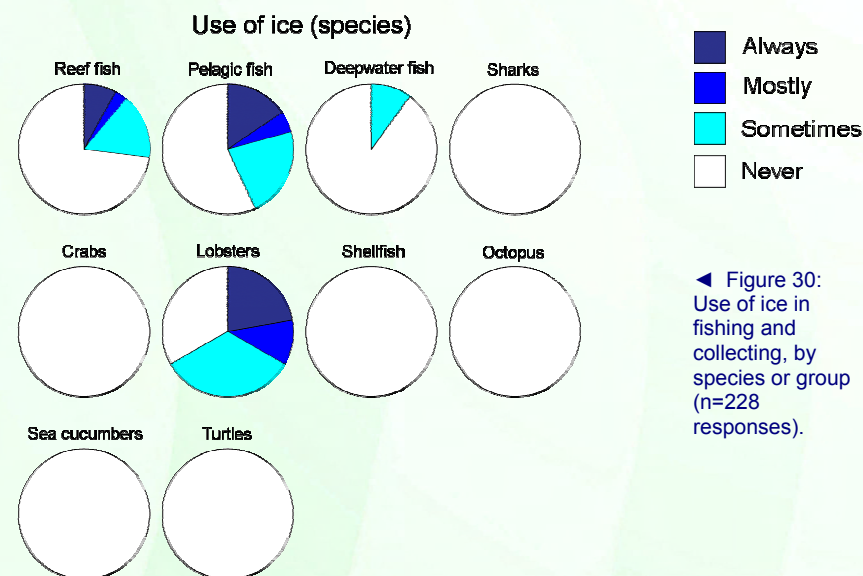
▲ Figure 29: Catches per fishing / collecting trip in Milne Bay in (a) kilograms or (b) numbers of animals. Data are means \pm SE. The two data sets are complementary with some responses provided as kg ($n=131$) and some as number of pieces ($n=1,179$) over a total of 534 households that provided information for this question. The weights are mostly wet, though for sea cucumbers are likely to be dry weights.

HH-Q29 USE OF ICE

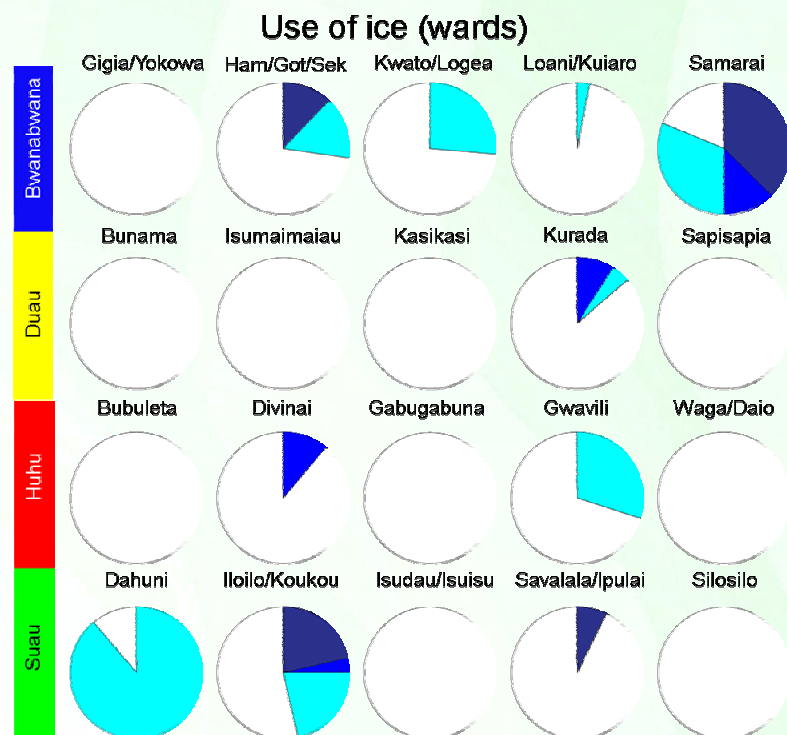
IS THE CATCH CHILLED ON ICE? WHICH ONES? HOW MUCH OF THE TIME?

Overall, only 4% of people reported that they used ice “all the time” when they went fishing, and 87% said that they never used ice. About 2% said that they used ice most of the time, and a further 8% use it sometimes when fishing. Some of the differences in the use of ice can be related to the species/groups that are targeted. Ice was most commonly used for lobsters, pelagic fish, and reef fish (Fig. 30). About one-fifth of lobster fishers used ice on every trip, 11% most of the time, and 33% sometimes. Ice was not used for sharks and sea cucumbers (normally dried), crabs (usually sold live), shellfish, octopus, or turtles.

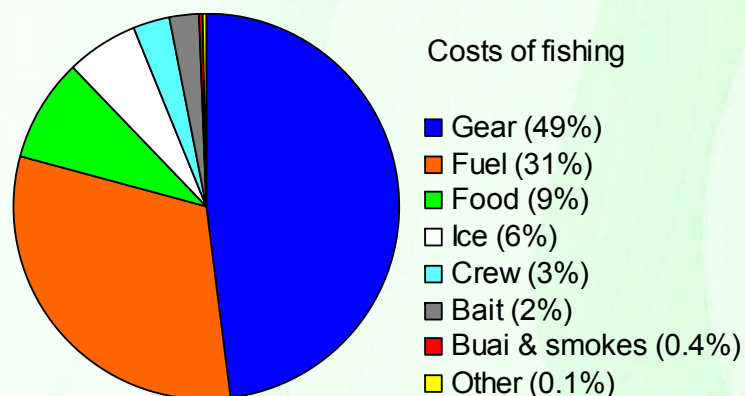
Ice usage varied with LLG and ward. People in Bwanabwana and Suau tended to use ice more than the remaining two LLGs, with about 8% of people in each saying they used it on every fishing trip. People in Samarai ward were the heaviest users of ice in fishing, with 38% saying they used it all of the time and a further 44% most or some of the time.



◀ Figure 30: Use of ice in fishing and collecting, by species or group ($n=228$ responses).



▲ Figure 31: Use of ice in fishing by LLG and ward (n=228).



► Figure 33: Breakdown of costs of fishing trips for all LLGs and wards (n=375).

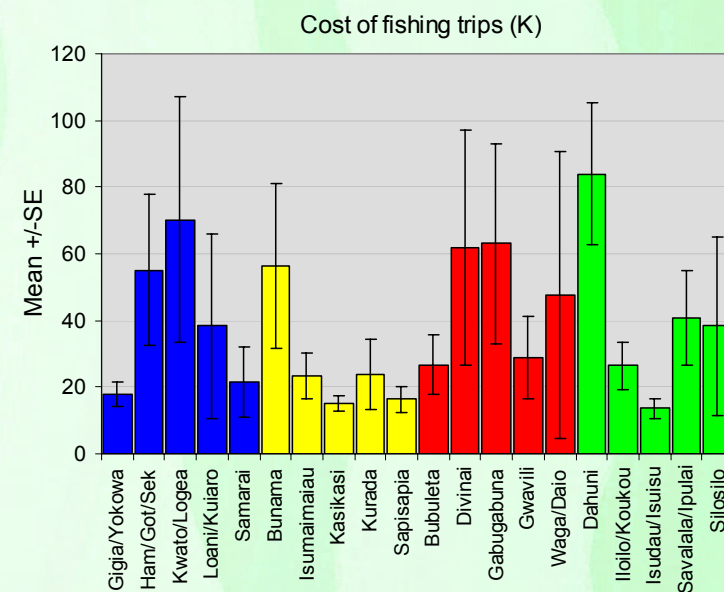
HH-Q30 COSTS OF FISHING

WHAT IS THE ESTIMATED COST PER FISHING TRIP OF FUEL, BAIT, ICE, FISHING GEAR, CREW, FOOD, ETC?

The average cost of a fishing trip in the survey area was around K 35 and ranged between K 1 and K 760. The highest average costs of fishing trips were recorded in Huhu LLG at K 42 per fishing trip, and lowest in Duau at around K 23 per trip. Among the wards surveyed, Dahuni had the highest average costs of fishing at K 84 per trip, followed by Kwato/Logea at around K 70. In Isudau/Isuisu, Kasikasi, Sapisapia and Gigia/Yokowa, the average costs were all under K 20 per trip (Fig. 32).

When the costs of fishing were broken down, the most expensive items across the survey were gear and fuel, which accounted for around 80% of all costs.

► Figure 32: Cost per fishing trip by LLG and ward (n=375). Values are mean costs (kina) +/- SE. ! Bwanabwana ! Duau ! Huhu and ! Suau LLGs..



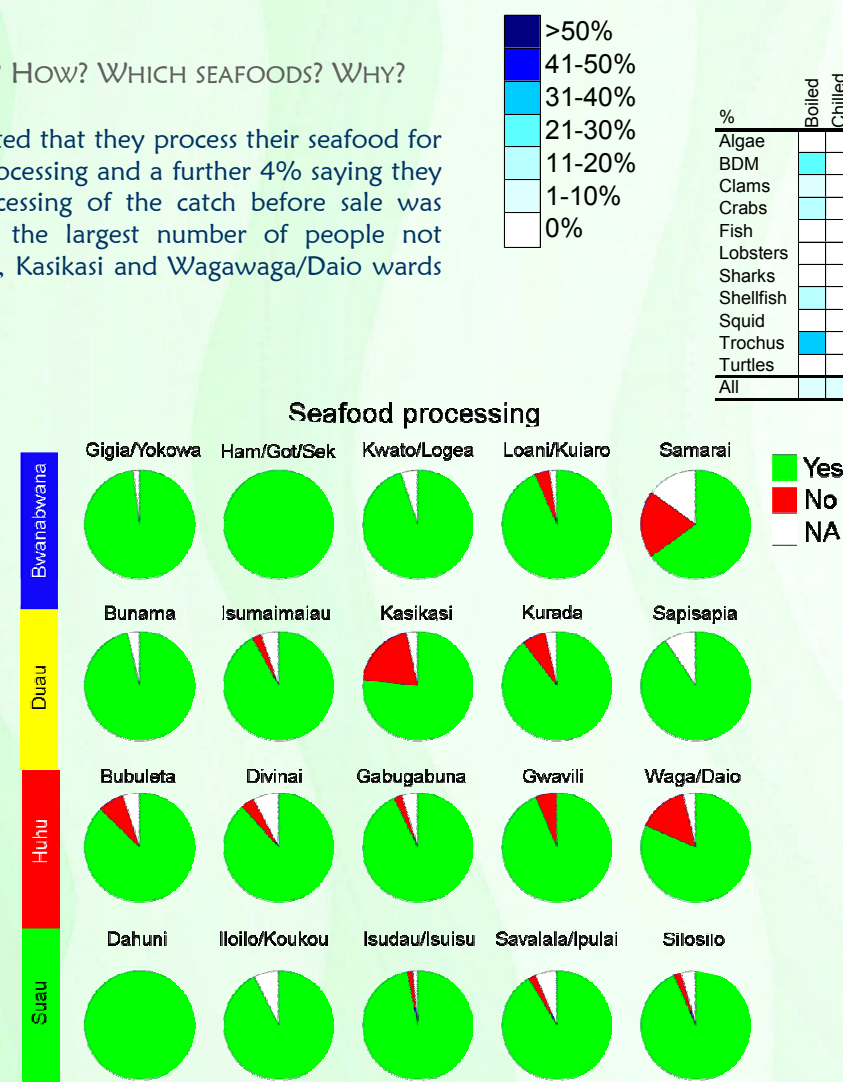
HH-Q31 SEAFOOD PROCESSING

DO YOU PROCESS YOUR CATCH FOR SALE? HOW? WHICH SEAFOODS? WHY?

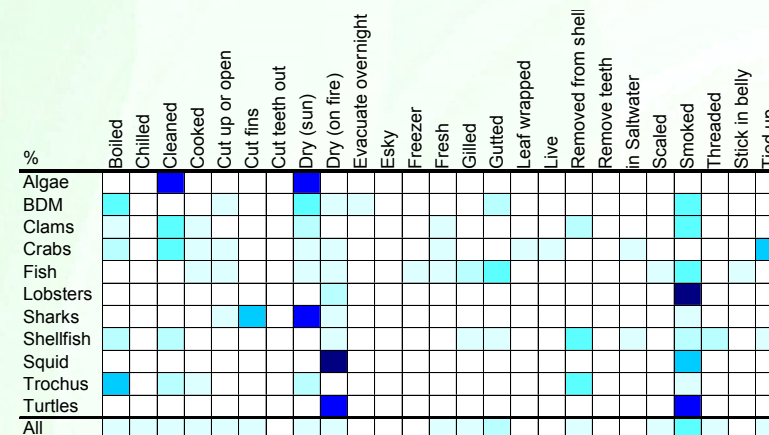
The vast majority (92%) of people reported that they process their seafood for sale, with only 4% saying they did no processing and a further 4% saying they did not sell their catch (Table 12). Processing of the catch before sale was common in all wards, but those with the largest number of people not processing their catch were from Samarai, Kasikasi and Wagawaga/Daio wards (Fig. 34).

The types of processing depended on the seafood caught or collected (Fig. 35). Fish were generally gutted, and many gilled, before being smoked (or “fire dried”) or sold fresh. In Milne Bay, it was also relatively common to cook fish for sale as “fast food” and/or to cut it into pieces before selling it (suggesting large fish). Few people scaled their fish for sale. Squid and turtles were “dried on the fire” (smoked) and sea cucumbers were processed “in the manner that buyers required it”.

The most common reason given for processing seafood was to preserve them and prevent spoilage (94% of people, Table 12). Other common reasons given were to meet buyer requirements, control smell, and improve their appeal for sale. About 4% said they processed seafood to ensure hygiene and food safety. Seven households said that processing was necessary in order to allow them to accumulate enough product and be efficient in taking their catch to markets.



▲ Figure 34: Breakdown, by LLG and ward, of proportion of people processing their catch before sale. NA means that the catch was not sold, so any processing was irrelevant to this question (n=573 households).



▲ Figure 35: Catch processing for sale of major groups of organisms caught or collected (n=381 instances of seafood processed over 331 households).

Reason	#	%HH
Preservation	463	94
Buyer requirements	49	10
Control smell	42	9
Appeal for sale	36	7
Increase Price	26	5
Hygiene / safety	19	4
Customer demand	16	3
To accumulate product	7	1.4
Prevent escape (crabs)	7	1.4
Improve taste	6	1.2
Easier to eat	5	1.0
It's the normal procedure	5	1.0
Quality control	3	0.6
Clean / remove rubbish	2	0.4
To remove the meat	2	0.4
To keep animals away	1	0.2
Responses	689	
Households	492	100

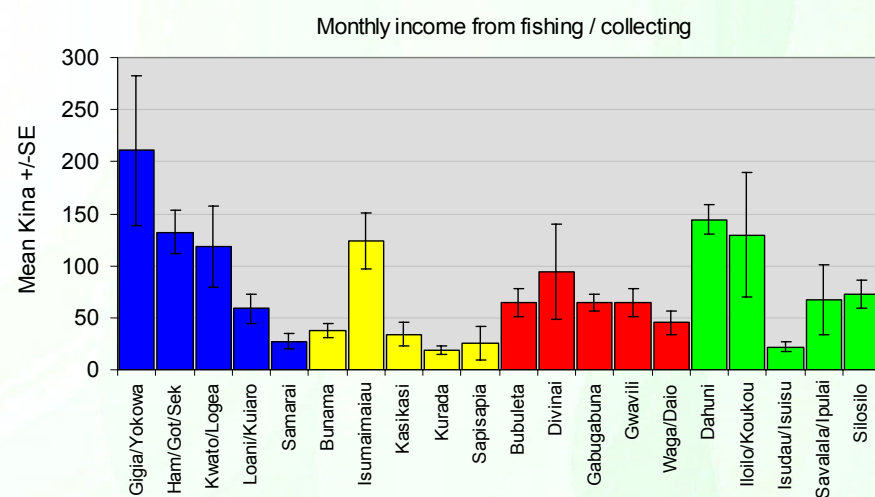
▲ Table 12: Catch processing by response and household (n=624 responses over 573 households). Note: There are more responses than households because people reported more than one type of processing per household to cover different species of seafood.

HH-Q32 INCOME FROM FISHING

WHAT IS THE ESTIMATED AVERAGE INCOME PER FISHING TRIP? HOW MANY PEOPLE SHARE THIS INCOME INSIDE AND OUTSIDE THE HOUSEHOLD?

The overall average income for each household from fishing trips across all LLGs and wards was around K 82, and ranged between K 2 and K 1,600. The highest incomes derived from fishing and collecting trips were found in Bwanabwana LLG at an average of K 126 per trip. People in Duau derived an income of around K 50 per fishing or collecting trip. Gigia/Yokowa ward had the highest income returns from fishing trips (around K 211 per trip), while Kurada ward had the lowest (K 19 per trip) (Fig. 36). This income is, on average, shared with 3.2 (+/- 16 SD) people outside of the household.

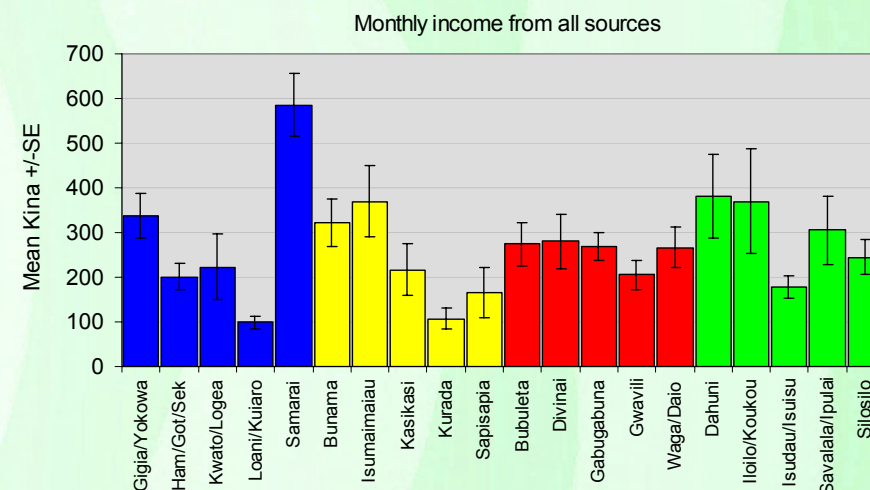
▼ Figure 36: Income derived from fishing and collecting per household per fishing or collecting trip in each LLG and ward (n=481). Values are mean income (after costs) (kina) +/-SE. ! Bwanabwana ! Duau ! Huhu and ! Suau LLGs.



HH-Q33 INCOME FROM ALL SOURCES

WHAT IS THE ESTIMATED TOTAL MONTHLY INCOME FROM ALL SOURCES TO THIS HOUSEHOLD?

The average monthly income to households from all sources across the survey was K 263 (+/-308 SD). Household incomes varied little among LLGs but varied significantly among wards. The average monthly household incomes in Samarai and Dahuni are K 586 and K 381, respectively. The lowest monthly household incomes are in Loani/Kuiaro and Kurada (Fig. 37).



▲ Figure 37: Monthly income to households from all sources by LLG and ward (n=504). Values are means +/-SE. ! Bwanabwana ! Duau ! Huhu and ! Suau LLGs.

HH-Q34 LOANS

DO YOU OR ANYONE IN THIS HOUSEHOLD HAVE ANY LOANS (INCLUDE BANK OR *WANTOK*)? HOW MUCH? WHERE ARE LOANS FROM? WHAT ARE THEY USED FOR?

A total of K 61,864 was reported on loan to surveyed households at the time of this study. The total number of loans reported was 33, which were spread over 29 households. About 30% of these loans were from *wantoks* (relatives), while 39% came from the Teachers Savings & Loans, Kwila Insurance, and the Bank South Pacific (BSP) (Table 13). Most of the remaining loans were from friends and employers.

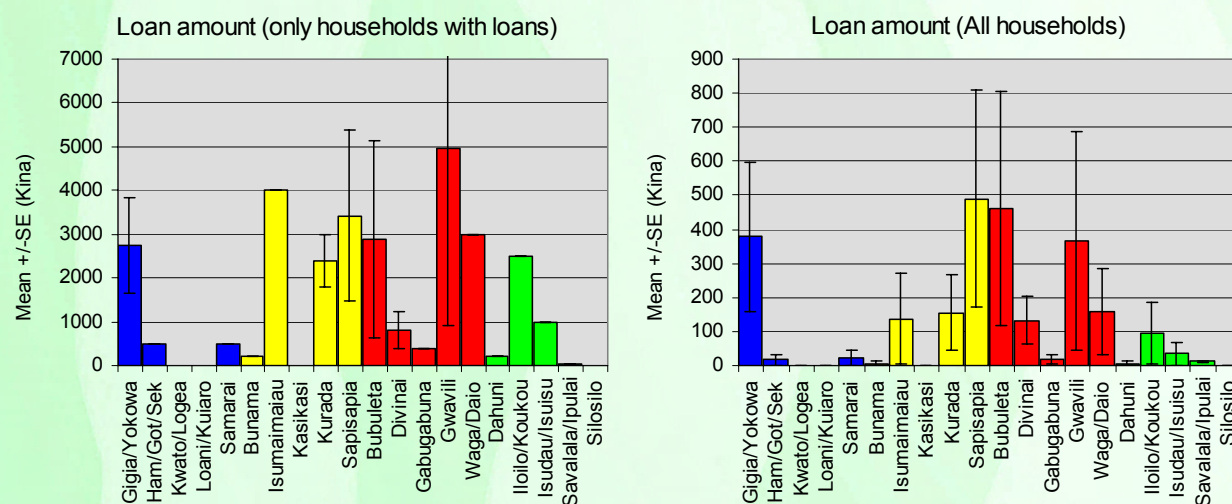
The average loan amount owed per household (excluding households without any reported loans) was K 2,133 across the entire survey with large variations among households. The wards with the largest average household loans were Gwavili and Kurada with between K 4,800 and K 4,950 owed (but this occurs in a total of three households). The smallest loans were recorded in Savalala/Ipulai at K 39.

People reported taking out loans for a range of reasons, including to pay for school fees (45%) and to buy food (12%). In one case the loan was acquired simply because the recipient had no money (Table 14).

Source of loans	#	% of Loans
Wantoks	10	30
Teachers S&L	5	15
Kwila Insurance	4	12
BSP Bank	4	12
Friends	4	12
Employers	1	3
Westpac Bank	1	3
Agriculture Bank	1	3
PNG Teachers Assoc.	1	3
Kiwali Co.	1	3
Poyee S/L	1	3
Total loans	33	100
Households	29	

▲ Table 13: Loans held by households in all wards and LLGs (n=33 loans across 29 households).

▼ Table 14: Loan uses across all wards and LLGs.



◀ Figure 38: Breakdown of average size of loans in households by ward and LLG for (a) just those households with loans (n=36 loans over 30 households), and (b) all households. Data are averages +/- SE. ! Bwanabwana ! Duau ! Huhu and ! Suau LLGs.

Use of loan	#	% of loans
School fees	15	45
Buy food	4	12
Personal	3	9
Boat motor	3	9
Start business	1	3
House maintenance	1	3
Family needs	1	3
Buy fuel	1	3
Feasts	1	3
Buy oven	1	3
Buy boat & motor	1	3
No money	1	3
Total loans	33	100
Households	29	

HH-Q35 CONTRIBUTIONS FROM DIFFERENT SOURCES OF INCOME

HOW MUCH INCOME COMES EACH MONTH FROM EACH OF THE ACTIVITIES CARRIED OUT BY ALL MEMBERS OF THE HOUSEHOLD?

People derive their incomes from a wide range of sources, with more than 22 different income-generating activities being recorded across the surveyed area (Fig. 39). Fishing, farming, selling at the market, and *buai* sales were the most commonly cited sources of contribution to household monthly incomes. About 34% of people were engaged in some kind of fishing or collecting activity in order to earn at least part of their income (Table 15). Fishing was especially common as an income-generating activity in Gigia/Yokowa, Hamama/Gotai/Sekuku and Loani/Kuiaro wards in Bwanabwana LLG. In contrast, crop farming was common in Huhu LLG and Isumaimaiu ward (Fig. 39).

Sources of income	#	% People
Fishing	575	34
Farming crops	300	18
Selling / marketing	265	16
Buai sales	230	14
Employed	81	4.8
Baking	55	3.2
Farm animals	38	2.2
Carpentry / crafts	31	1.8
Remittance / inheritance	29	1.7
Forest (sago, fruits, nuts)	25	1.5
Transport	16	0.9
Retailing	15	0.9
Timber	12	0.7
Tobacco	12	0.7
Hunting	11	0.6
Self employed / business	8	0.5
Rentals	4	0.2
Sewing	3	0.2
Voluntary	2	0.1
Buyer	1	0.1
Canoe builders	1	0.1
Peddlers	1	0.1
Other	1	0.1
Responses	1716	
People	1697	100
Households	553	

The most lucrative income was derived from timber cutting, providing more than twice the income per month on average (more than K 2,000) than the next closest activity of seafood buying (around K 900/month) (Fig. 40). Fishing contributed an average of K 90/month to household incomes, and farming of crops around K 70/month.

Table 15: Income sources across all wards and LLGs.

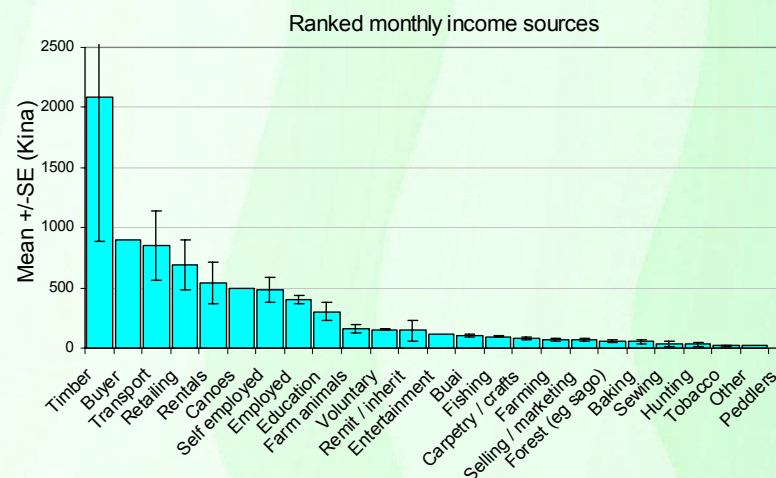
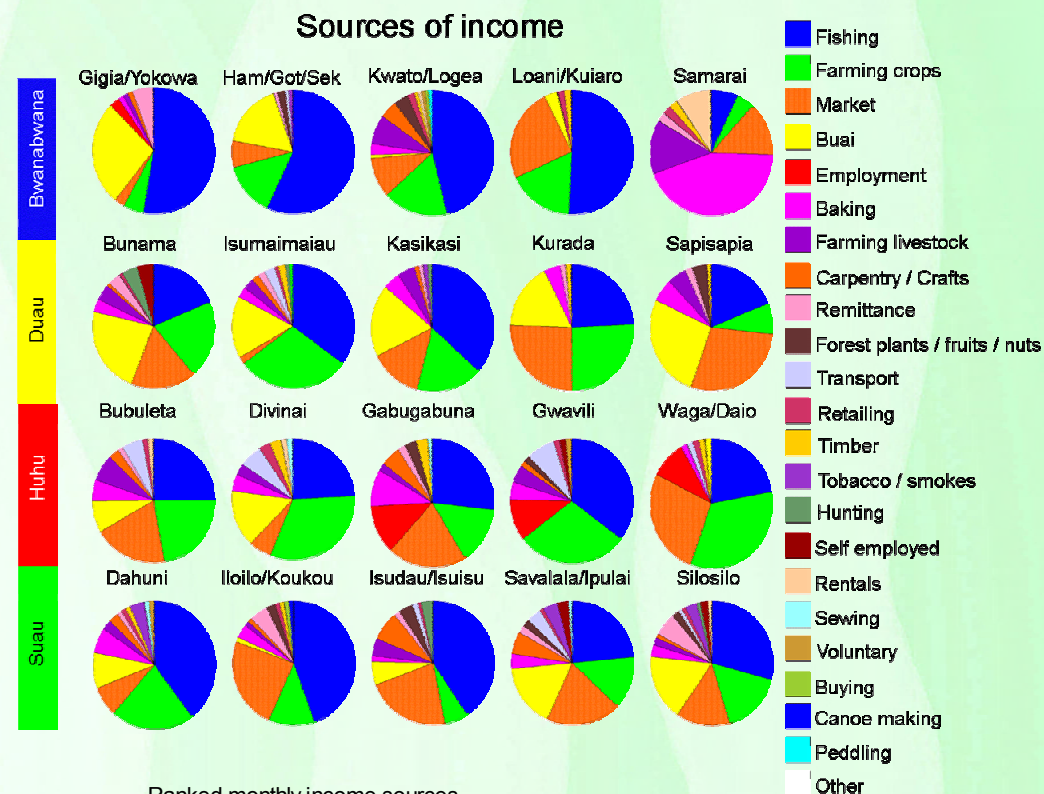


Figure 39: Relative frequency of involvement in all sources of income to households by LLG and ward (n=1,726 sources).

Figure 40: Income sources in rank order of average kina contributions to total household income across the survey (n=1,707 sources).

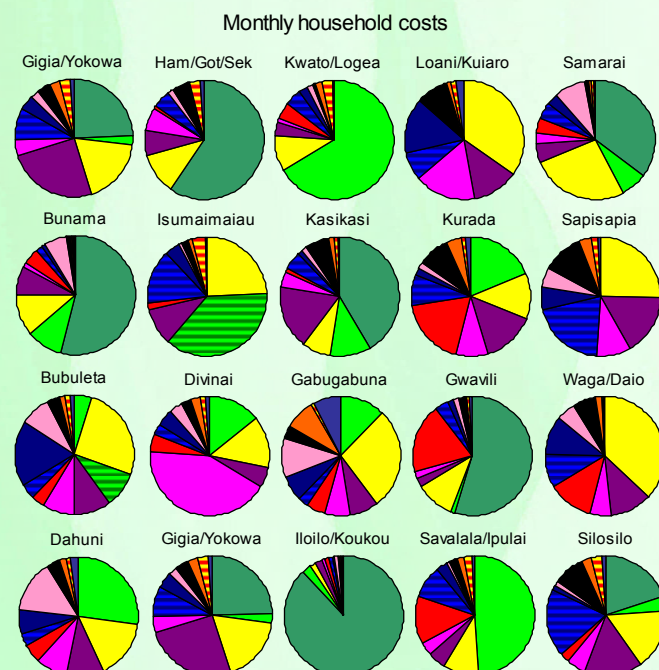
HH-Q36 COSTS OF LIVING

HOW MUCH MONEY DO YOU ESTIMATE IS SPENT ON THE FOLLOWING ITEMS PER MONTH? PLEASE ADD OTHER ITEMS NOT LISTED HERE. FOOD, MEDICAL, OTHER HOUSEHOLD ITEMS, *BUAI*, CLOTHING AND SHOES, ALCOHOL, SCHOOL FEES, CHURCH, SCHOOL SUPPLIES, WANTOKS, FUEL FOR CARS, FUEL FOR FISHING, FUEL FOR OTHER BOAT TRANSPORT, PUBLIC TRANSPORT.

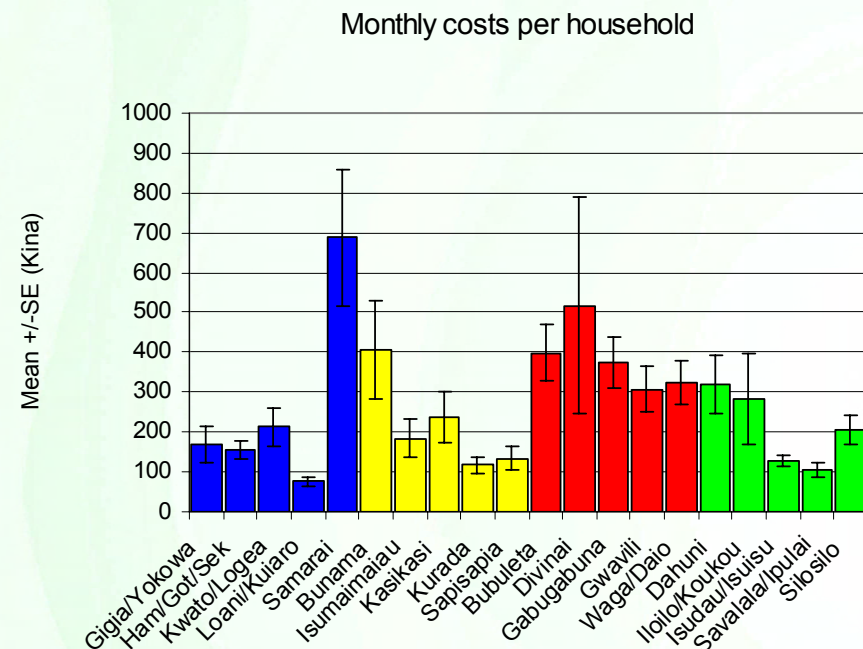
The average monthly cost of running a household in the survey area was K 259 (+/- 436 SD), which is approximately K 4 less than our estimate of average monthly income (HH-Q33). Households in Huhu LLG tended to have the highest living costs (averaging K 378/month), while in Suau, average living costs were less (around K 198/month). In the wards, Samarai reported the highest per household costs per month at an average of K 688 (average income was K 585/month), and Diviani, the ward with the next highest cost of

living, was around K 516/month. The lowest average household costs per month were reported in Loani/Kuiaro at just K 76/month, where monthly income to households was K 99 (Fig. 41).

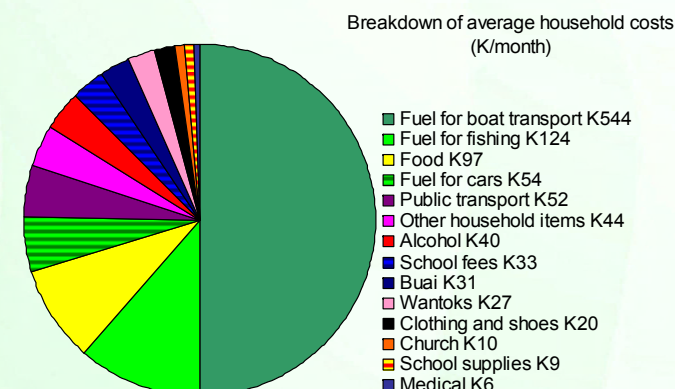
Fuel was the largest expense in households across the survey area (Fig. 42), which accounted for anywhere between 50% and 65% of overall costs, depending on the household. Food was the third most costly expenditure, accounting for around 9% of all costs. On average, households spent around K 40/month on alcohol, and a further K 31/month on betelnut (*bua*). School fees ranked eighth of all household costs at K 33/month, with another K 9/month required for school supplies. Expenditures for medical requirements was the lowest of all reported expenses, at just K 6/month for an average household.



► Figure 41: Average aggregated costs per household per month across all LLGs and wards (n=494). ! Bwanabwana ! Duau ! Huhu and ! Suau LLGs.



◄ Figure 42: Breakdown of monthly household costs for each ward and over all LLGs and wards (n=2,995 cost items).



HH-Q39 DISPOSAL OF SEAFOOD NOT SOLD

DO YOU EVER HAVE FISH LEFT OVER THAT YOU CANNOT SELL? VERY OFTEN/OFTEN/SOMETIMES/RARELY/NEVER. WHAT DO YOU DO WITH THEM?

At times, seafood is left over after an attempt to sell it. Only about 3% of households reported that seafood was often not sold after attempting to sell it, but the majority, 50%, reported that seafood was not sold only some of the time. About 37% of people said they never have unsold seafood left over after attempting to sell it (Fig. 43). Huhu LLG generally had fewer seafood left over from sale than the other LLGs surveyed. The wards that had the most difficulty in selling fish were Kwato/Logea, Loani/Kuiaro, Kasikasi, Isudau/Isuisu and Savalala/Ipulai (Fig. 43). Samarai, Divinai, Gabugabuna and Gwavili wards had the least difficulty selling all of their seafood.

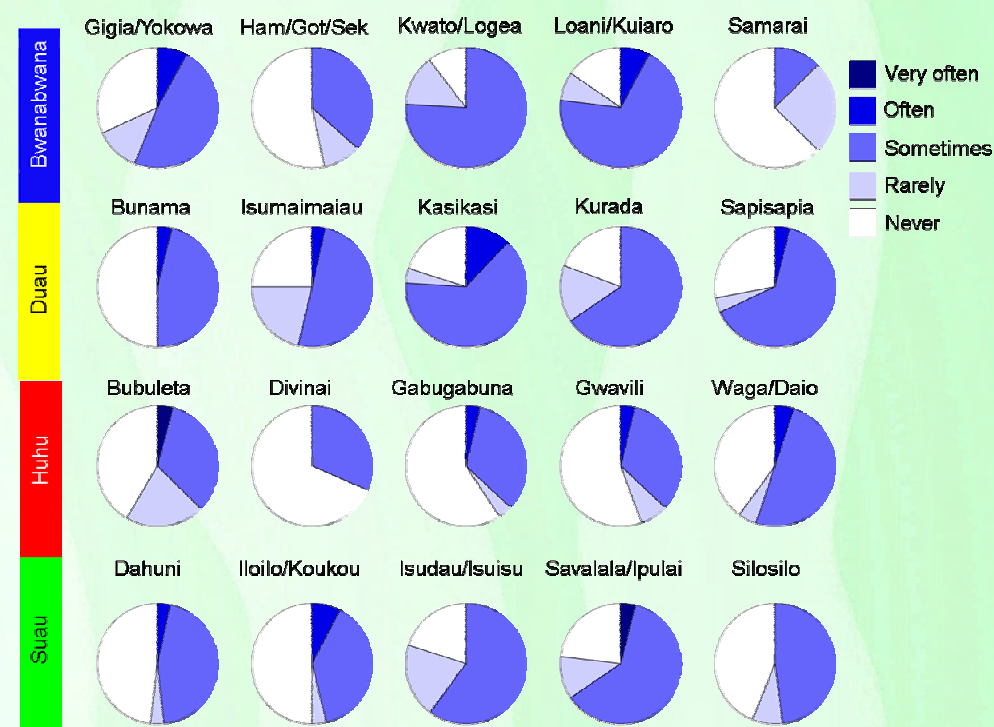
Seafood that was offered for sale but not sold were mostly disposed of by household consumption (68%), or by giving away to *wantoks* and friends (a total of 58%) (Table 16). Around 2.3% of seafood was re-offered for sale at a later time and/or smoked if it had initially been offered fresh.

There were some enterprising solutions for unsold fish. About 4% of households used left-over fish to barter for other goods. Other households gave fish away on credit to be paid for at a later date when the purchasers had sufficient funds to complete the transaction.

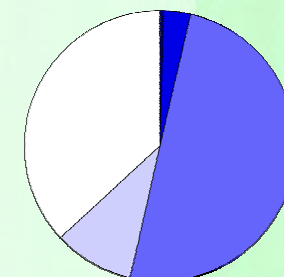
Uses	#	%HH
Eat in household	205	68
Wantoks	134	44
Friends	42	14
Barter	13	4.3
Smoke/Preserve	8	2.6
Sell later	7	2.3
Credit	5	1.7
Neighbours	4	1.3
Discard	4	1.3
Freeze	1	0.3
Charity	1	0.3
Domestic feed	1	0.3
Reduced price	1	0.3
Responses	426	
Households	302	100

◀ Table 16: Disposal of seafood left over from sales (n=288).

Seafood left over from sale



▶ Figure 43: Seafood left over from sales (a) across the survey and (b) by LLG and ward (n=532).



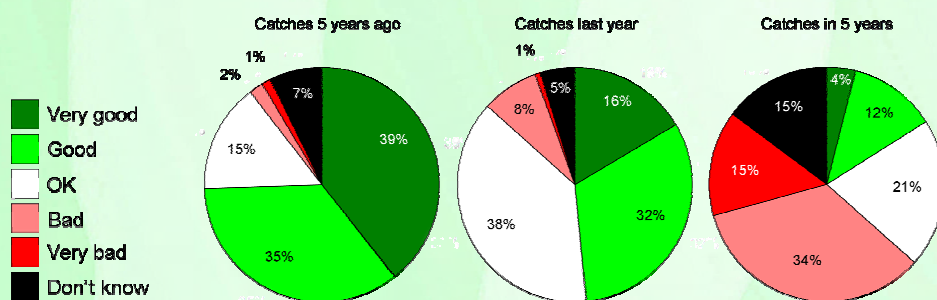
HH-Q40-Q42 PAST, PRESENT AND FUTURE CATCHES

Q40 HOW WOULD YOU DESCRIBE THE CATCHES OF ANY MARINE RESOURCES MADE BY MEMBERS OF THIS HOUSEHOLD OVER THE PAST YEAR? VERY BAD/BAD/OK/GOOD/VERY GOOD. EXPLAIN. **Q41** HOW WOULD YOU DESCRIBE THE CATCHES 5 YEARS AGO? EXPLAIN. **Q42** WHAT DO YOU THINK CATCHES WILL BE LIKE 5 YEARS FROM NOW? EXPLAIN.

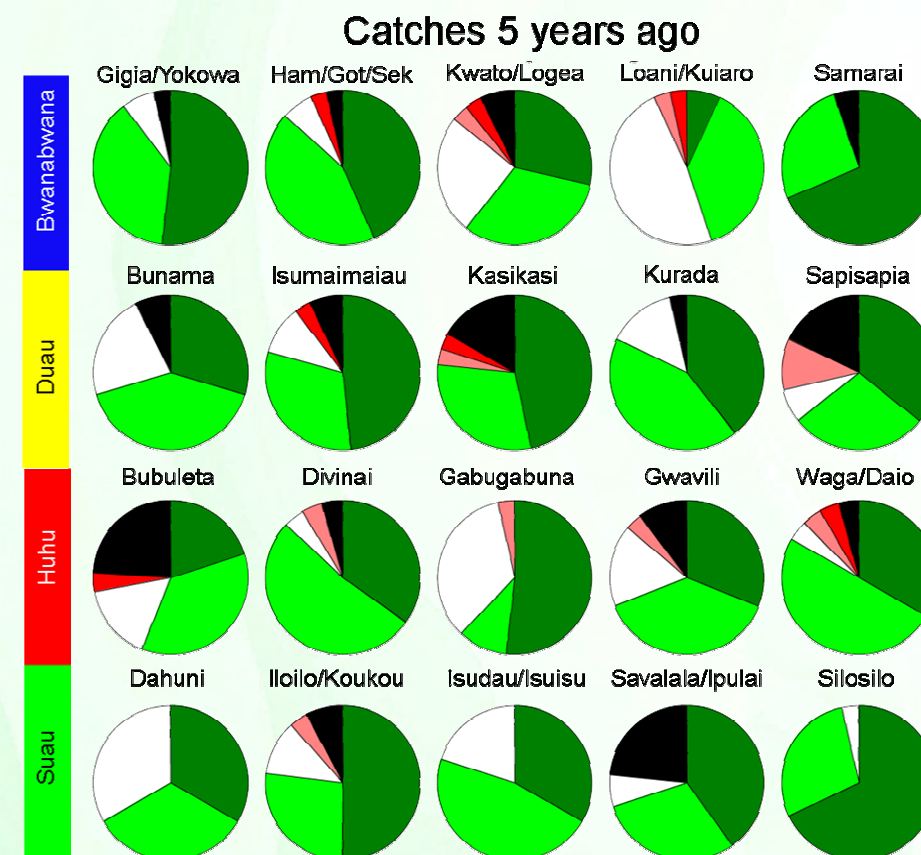
People's perceptions of past, present, and future fishing conditions shows a strong belief by most people that catches are decreasing. Figure 44 shows people's opinions (based on opinions of "very good" through to "very bad") of fishing conditions for the three timeframes (past, present, future). An intuitive colour coding of responses was used, with green = things are good, and red = things are bad (see legend for details). Figure 44 shows a significant shift from dark green (good) towards red (bad) from past to future. The number of people believing that catches were "very good" in the "five years ago" category declined from 39%, to 16% for the category over the "last year". People expected a further decline to 4% for the "catches in five years" category. At the same time, there was a large increase in the number of people who thought catches were "very bad", from 1% in the past up to 15% in the future.

This pattern was generally consistent throughout the survey area, in all LLGs and wards. Interestingly, people in Samarai ward generally believed that fish catches were better in the past, and did not expect them to decline as much in the future compared with present levels.

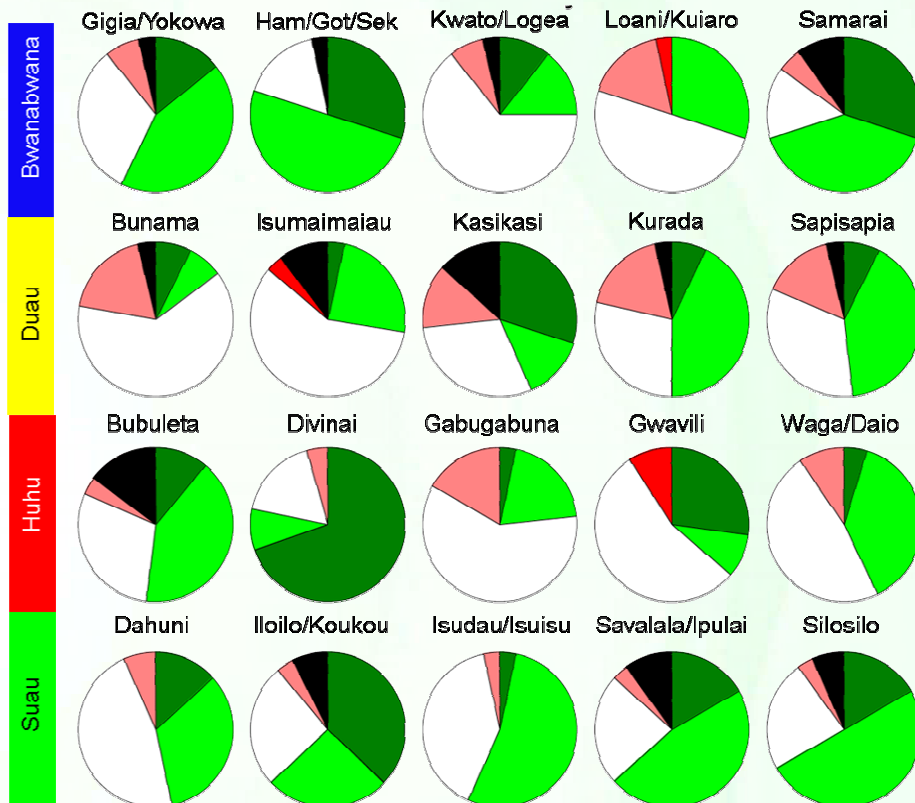
▼ Figure 44a: Perceived fishing/collecting conditions past, present and future combined across all LLGs and wards. Data are proportions of people who believed catches were very bad, bad, OK, good, very good, or not sure (don't know).



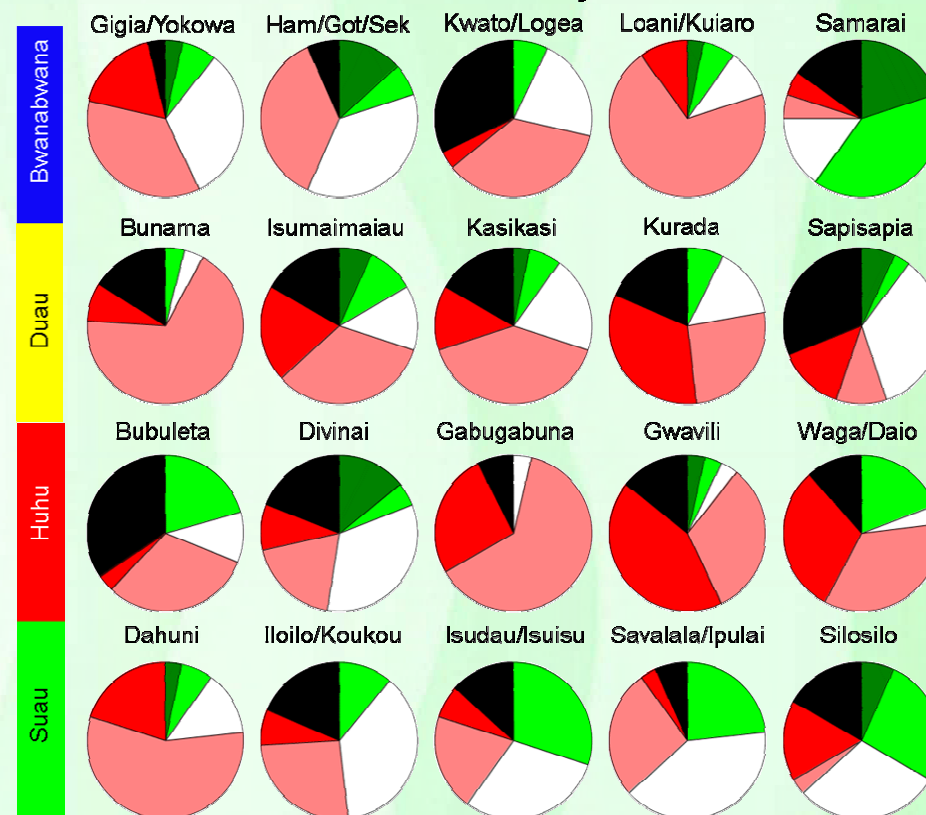
▼► Figure 44b: Perceived fishing/collecting conditions past, present and future by LLG and ward. Data are proportions of people who believed catches were very bad, bad, OK, good, very good, or who were not sure. ! Bwanabwana ! Duau ! Huhu and ! Suau LLGs.



Catches last year



Catches in 5 years



A wide range of reasons were given for why people expected declining, steady or improving catches in the future (i.e. in five years) (Table 17). People gave about three times as many reasons why catches would decline in the future, than they gave for why they might stay steady or improve (467 versus 148 reasons).

The most common reasons given for why catches might decline in the future were: overfishing, too many fishers, human population growth, and a continuation of an already declining trend (Table 17). People were very concerned about the effects of modern fishing methods and methods they saw as destructive (e.g. the use of *Derris* root, Taiwan fishing, light or night fishing, spearfishing and dynamite fishing). One of the most interesting concerns raised was that fish would get “smarter” and “evolve a resistance to fishing”, and that they might avoid commonly used fishing techniques, either by identifying lines and hooks (and thus avoiding them), or by getting used to the “tricks that we use to catch them”. Another concern was that fish were so responsive to humans that they would wait until fishers went home before they would eat bait (burley) that had been thrown on the reef to attract them.

About 8% of respondents said that catches were likely to increase in the future because new technology (new gear or fishing methods) would improve catches. Some households (7%) said that there were sufficient resources to last the next 5 or 10 years, or that the trend of good catches should continue into the future (5% of households).

▼ Table 17: Reasons given for why seafood catches would (a) decline or (b) improve in the future (n=678 reasons given). Note towards the bottom of column (b) are additional categories of people who said they did not know why they thought things would decline or improve, and who said that God was responsible for the outcome in either direction.

Reasons for decline	#	%HH
Overfishing	59	14
Too many fishers	55	13
Human population growth	53	13
Resources are already declining	53	13
Use of new / modern fishing methods	48	12
Fish evolve / get smart / won't bite	31	7
Pollution	21	5
Netting	19	5
Fish move away	16	4
Derris used	14	3
Fish will be used up	14	3
Destructive fishing	12	3
Commercial fishing	11	3
Pressure for money	7	2
Habitat damage	6	1
Too much disturbance of sea / resources	6	1
Outsider fishing	5	1
Taiwan fishing	5	1
Motorised boats disturb sea / fish	5	1
Light / night fishing	5	1
There is no management / control of harvesting	5	1
Changes in weather / climate	3	1
Changes in tides / currents / waves	3	1
Spearfishing	2	0.5
Dynamite used	2	0.5
Lack of awareness of effects of fishing	1	0.2
Black magic	1	0.2
Buyers coming around	1	0.2
Young people don't know techniques	1	0.2
People are catching the breeders	1	0.2
Development in Milne Bay	1	0.2
Global changes	1	0.2

Reasons resources stay steady or improve	#	%HH
New gear / techniques to improve catches	32	8
There are sufficient resources	27	7
Has been good so far, fish always there	20	5
Resources are managed	9	2
Plentiful if it's the correct season for fishing	7	2
Plentiful if you have the skills to catch them	6	1
Small human population, plenty reefs	5	1
No commercial fishing	4	1
Reefs undisturbed / good condition	4	1
Control over reefs / resources / methods	3	1
Fish migrate in and replenish	3	1
No nets used	3	1
No destructive methods used	3	1
Plenty of reefs for feeding / breeding	3	1
Can use alternative fishing areas	2	0.5
If outsiders don't steal	2	0.5
Plenty mangrove breeding areas	2	0.5
Laws are in place	1	0.2
Laws are enforced	1	0.2
Depends on effort: More effort = more catch	1	0.2
No derris used	1	0.2
No SCUBA used	1	0.2
Community has better awareness	1	0.2
People follow harvesting rules	1	0.2
God / nature will fix	1	0.2
New reefs are appearing, these support more fish	1	0.2
Resources are now underutilised	1	0.2
Fishing is limited to subsistence only	1	0.2
Have reserve area to resupply fishing grounds	1	0.2
People are not fishing excessively	1	0.2
Responses	615	
Households	414	100

HH-Q43 FACTORS AFFECTING CATCHES

WHAT DO YOU THINK CAN AFFECT THE NUMBERS OF FISH, CUCUMBERS, SHELLS, CLAMS, SEAWEED, CRABS, LOBSTERS AND CORALS IN THE SEA? RANK THE THREATS TO FISHERIES IN ORDER OF IMPORTANCE.

The factors thought by people to affect the abundance of sea foods in their areas fell into three broad categories: 1) broad “drivers” that affect how people fish and how much they fish, 2) specific fishing/collecting practices or activities, and 3) environmental conditions. Of these, the factors considered of most importance in the survey area tended to be those concerning specific fishing/collecting activities (Table 18).

The top four activities, that is, those ranked the most important and mentioned the most often were the use of *Derris* root (poison), general overfishing, the use of nets (which in some cases was refined to target small mesh sizes), and harvesting undersized seafood. Quite a few people were concerned about the use of modern fishing gear or methods, and sometimes people singled-out using lights to fish at night and Taiwan fishing, which were both practices commonly reported by households as one of their methods of fishing or collecting. Several households were concerned about the effects of spells cast by others on their reefs, which “chased fish away”.

In terms of environmental effects on catches, people generally saw pollution (often from oil palm), oil palm itself, coral reef damage and the effects of changing weather the most significant factors. One household was concerned about ‘vibration’ (it is not clear what this may mean, but it is possible the respondent was referring to earthquakes).

The main drivers thought to be operating behind the scenes to cause these effects include increasing human population, too many fishers and the presence of commercial fishing, particularly by longliners. The pressure to earn money to live a modern lifestyle was also considered highly important.

◀▶ Table 18: Factors thought to affect the numbers of seafood (n=553 responses). Values are weighted scores for each factor identified, calculated by summing the ranked scores using values of Rank 1 (most important)=4; Rank 2=3, Rank 3=2 and Rank 4=1.

Activities	Weighted score
Derris	981
Overfishing	869
Netting / small mesh	562
Harvest undersize	310
Modern gear / methods	188
Night / light fishing	173
Harvest BDM / trochus	133
Taiwan fishing	132
Harvest coral	78
Dynamite	67
Spearfishing / diving	61
Destructive fishing	38
Habitat destruction	36
SCUBA	26
Disturbance of breeding	20
Use of baits	19
Chemicals used to kill fish	18
Black magic	18
Trolling	7
Harvesting females	7
Theft of resources	6
Sharkfin fishing	6
Anchor damage	5

Environmental	Weighted score
Pollution	485
Oil palm	216
Coral reef damage	147
Weather	126
Climate / tide change	67
Petroleum / oil spills	56
Wave damage	42
Mining	30
Logging	26
Erosion	17
Fish migrate	13
Strong sunlight / low tides	12
Mangrove damage	10
Strong winds	7
Vibration	5
Sand deposition	4
Drivers	Weighted score
Human population	362
Too many fishers	132
Commercial fishing	127
Money / buyer pressures	73
Outsiders	68
No / poor management	41
Foreign fishing	28
Tourism	24
Improper use	14
Many boats / outboards	9
people break rules	7
Illegal vessels	5
Other	5
Totals	Number
Nothing	33
Don't know	126
Total of weighted values	5918
Total No. factors	955
Households	394

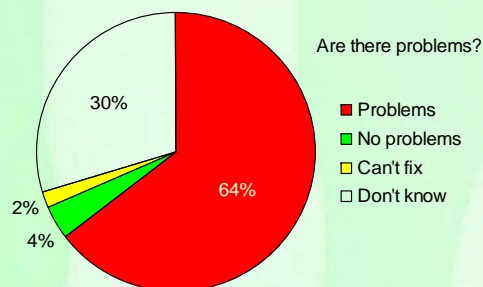
HH-Q45 SOLVING PROBLEMS WITH FISHING

ARE THERE ANY PROBLEMS WITH FISHING/COLLECTING (FOR FISH, SEA CUCUMBERS, SHELLS, CLAMS, SEAWEED, CRABS, LOBSTERS, CORALS ANY OTHERS) AROUND THIS VILLAGE? WHAT ARE THE PROBLEMS? IF THERE ARE ANY PROBLEMS WITH FISHING, WHAT DO YOU THINK SHOULD BE DONE TO IMPROVE THINGS? WHAT SHOULD BE DONE? WHO SHOULD DO IT?

Most people (64%) interviewed thought that there were problems with fishing or collecting in their areas (Fig. 45a). Most of the problems raised concerned declining resources, particularly sea cucumbers, destructive fishing methods, failure of outsiders, especially youth to respect boundaries, lack of transport and markets, and weather problems. In a few cases, problems with tourists damaging the reef through diving or anchor damage were raised.

A large number of suggested actions for addressing the problems with fishing were proposed by interviewees (Table 19). These included steps to be taken to manage fisheries and improve the environment in addition to steps to increase fishing effort or effectiveness. Many people suggested that there needs to be community discussions on the issues, and the creation of regulations to protect and

▼ Figure 45a: Opinions on whether there are any problems with fishing/collecting in respondent's areas (n=494).



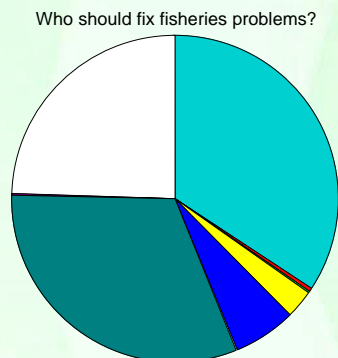
improve fishing. About 11% of respondents suggested consulting with leaders or authorities as a mechanism for addressing problems. Better awareness and education, sometimes on the effects of destructive methods and sometimes on improving fishing efficiency, were called for by about 13% of those interviewed.

About 34% of people interviewed suggested that the communities themselves should fix their problems with fisheries, usually in conjunction with other actions (Fig. 45b). About 31% of households suggested that the government should do it,

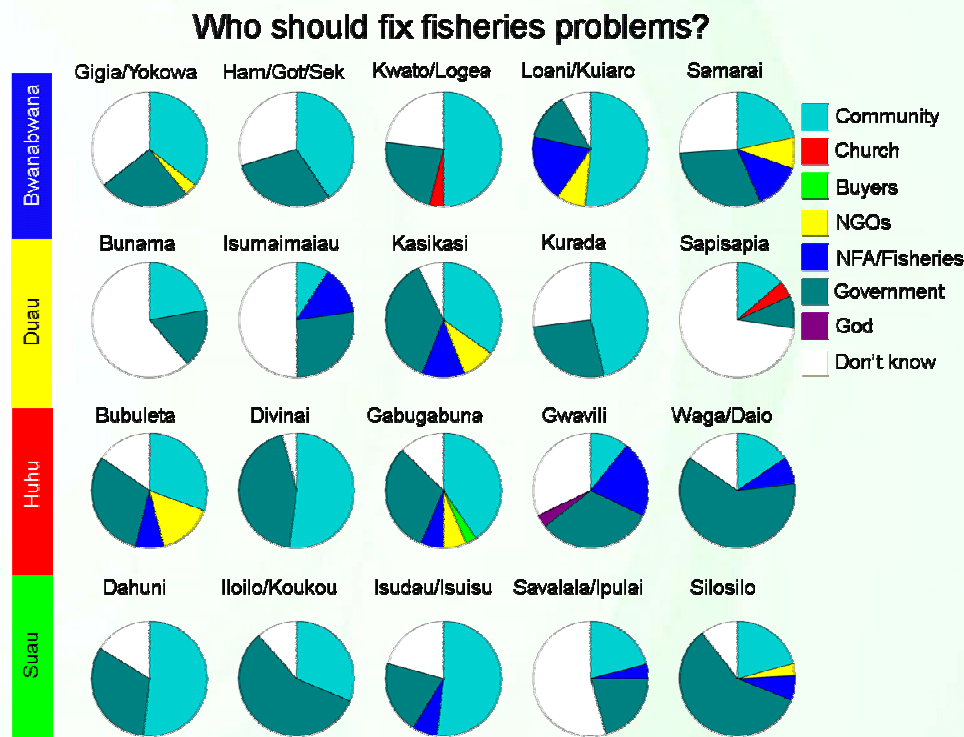
▼ Table 19: Proposed actions for addressing fisheries problems (n=539 responses).

Management			Fishing & Environmental Actions		
	#	% HH			
Need community discussions	45	14	Restrict / ban destructive fishing	14	4
Consider and address problem	39	12	Care for Environment / Resources	13	4
Create Rules / Laws / Regulations	38	12	Obtain permission / Respect other's areas	12	4
Consult leaders	36	11	Stop fishing undersize	12	4
Awareness / education	35	11	Reduce / Minimise fishing	9	3
Report to (unspecified) authorities	29	9	Change fishing gear or fishing techniques	6	2
Mediation is needed	18	5	Restrict use of nets	5	2
Resolve in meetings with village elders	16	5	Ban new fishing methods	4	1
Enforce rules / regulations	11	3	Stop damage to corals	3	1
Improve control of areas or resources	10	3	Ban use of derris	3	1
Court / Village court	10	3	Restrict nights & diving	3	1
Establish boundaries / marks	9	3	Fish during correct seasons / spots	2	1
Improve resource owners' control	9	3	Change fishing locations	2	1
Establish community rules	8	2	Establish MPAs	2	1
Seek advice	8	2	Equalise fisher's catches	1	0.3
Stop overharvesting	7	2	Prevent fishing from increasing	1	0.3
Report infringements	7	2	Expansion of fishing / collecting		
Ward meetings	7	2	Need more and more affordable gear	4	1
Closures / time restrict	6	2	Improve fishing methods/technology	7	2
Stop outsiders	6	2	Establish / improve access to fish markets	3	1
Community effort / action	6	2	New boats / canoes	2	1
Monitor and/or control methods of fishing	6	2	Increase catch	2	1
Moratorium till stocks recover	6	2	Other		
People voluntarily agree / comply	4	1	Don't know how to fix the problems	14	4
Warn offenders	4	1	Look for alternative to fishing	6	2
Revive traditional methods	3	1	Problems have natural causes	6	2
Form groups (e.g. Fishers Assoc)	3	1	Ignore problems. Fishing is too important to stop.	3	1
Stop magicians	2	1	Fishing is difficult. That protects resources	1	0.3
Monitor commercial / foreign fishing	2	1	It is all God's plan	1	0.3
Provide boat / motor / patrol	2	1	Use all of shark (not just fins)	1	0.3
Unaware of rules / laws	2	1	Total Responses	539	
Use traditional management	2	1	Total Households	328	100
Have discussions with traditional owners	1	0.3			

but only 6% thought that NFA or the Provincial Fisheries Office should be involved. Three percent of respondents thought that NGOs should fix fisheries problems. Roughly one-fifth of respondents could not suggest any individuals or organisations who should fix fisheries problems in their areas.



▲ ▼ Figure 45b: Proportion of people with different ideas on who should solve fisheries-related problems (a) overall and (b) by ward and LLG (n=659 responses).



HH-Q46 ROLE IN ADDRESSING PROBLEMS WITH FISHING

WHAT ROLE CAN YOU AND MEMBERS OF YOUR HOUSEHOLD PLAY TO ADDRESS ANY FISHING PROBLEMS?

About one-half of those interviewed believed that they had a role to play in addressing fisheries problems, with only 9% of households believing that they had no role or no power to do so. Forty-one percent of people did not know whether they could play a role, with one household suggesting that NFA should define their role.

The most commonly cited roles that people in the community could play, as suggested by respondents, were to increase (other people's) awareness (19% of households), assist with surveillance, and keep discussing, complaining or advising. About 11% of respondents suggested that people could just take responsibility and abide by the rules (Tables 20, 21).

► Table 21: Actions that household members could take to assist with dealing with fisheries problems.

Is there a role?	#	% HH
There is a role	221	51
Don't know	179	41
No role	21	5
No power	17	4
Leaders should do it	5	1
Responses	443	
Households	432	100

▲ Table 20: Role of household members in addressing fisheries problems.

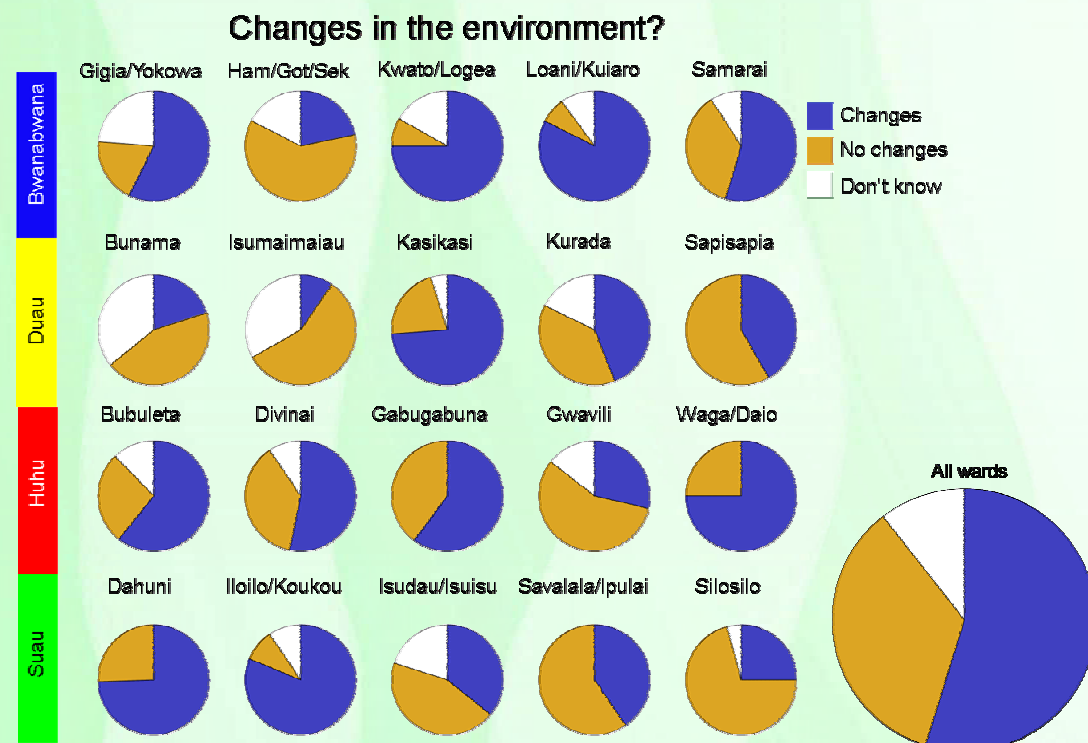
Role respondents could take	#	% HH
Awareness	42	19
Report to leaders or authorities	34	15
Approach Ward Councillor / Members & Committee	34	15
Discuss / complain / encourage / advise	33	15
Participate in community discussions and solutions	28	13
Self responsibility. Abide by the rules / laws	24	11
Family actions & discussions	17	8
Stop destructive / environmentally harmful practices	15	7
Approach those concerned	13	6
Assist with enforcement	11	5
Support leaders or community action	10	5
Act as watchdog	7	3
Seek government assistance	7	3
Throw back undersized seafoods	7	3
Mediate between disputing parties	6	3
Ask others to abide by rules / seek permission	6	3
Resource owners have to be responsible for own area	5	2
Summons / Court / Magistrate	5	2
Put up signs	5	2
Chase outsiders away	4	2
Stop / limit / suspend fishing	6	3
Stop polluting	2	1
Help by creating groups / committees	2	1
Help unspecified	2	1
Lead by example	2	1
Share resources / surplus	2	1
Stop buying undersized fish from market	2	1
Find fish more easily with better gear / boats	2	1
Ask villagers to help	2	1
Advise care with new fishing methods	2	1
Ask people to reverse their spells / magic	2	1
Negotiate 'traditional' solutions (e.g. marriage)	1	0.5
Need NFA to define our role	1	0.5
Pray to God	1	0.5
Apologise for offences	1	0.5
Report to pastor	1	0.5
Responses	344	
Households	221	100

HH-Q47 CHANGES IN THE ENVIRONMENT

HAVE YOU NOTICED ANY CHANGES IN THE MARINE ENVIRONMENT AROUND YOUR VILLAGE IN THE LAST 5 YEARS? WHAT CHANGES? RANK THEIR IMPORTANCE. HOW GREAT IS THE CHANGE? HAVE THESE CONDITIONS IMPROVED OR DECLINED?

Fifty-five percent of the responses to this question were reports of observed changes in the environment in the respondent's area over the past five years, and 35% were responses of no change (Fig. 46). Eleven percent of households were not sure whether there had been changes or not.

Most of the changes reported were considered negative by respondents, with very few people reporting good news, such as stocks increasing (Table 22). The most commonly-reported changes were declining stocks, reef damage, sea level rise, and changes in currents, erosion and pollution. One interesting response we have not been able to clarify was recorded as "certain type of liquid like blood killing corals when it comes in". It is possible this refers to a plankton bloom or "red tide".



Environmental changes	#	%HH	Importance (1-10)
Declining stocks	104	21	7
Reef damage / dying	90	18	7
Sea-level rise	52	11	7
Erosion	47	10	8
Change tides / currents	46	9	6
Pollution	35	7	7
Human pressure increasing	34	7	6
Coral reefs growing	15	3	6
Mangrove damage	15	3	6
Wave strength	13	3	8
Climate change	12	2	6
Strong winds	11	2	7
Fish and other kills	10	2	6
Stocks increased	9	2	5
Species loss some areas	8	2	8
Species moved deeper	7	1	6
Accretion beaches / land	7	1	8
Seaweeds declining	7	1	5
Sand / sedimentation reefs	6	1	5
Increasing distance to fishing	5	1	7
Shallowing lagoon / reefs / rivers	5	1	2
Coral bleaching	2	0.4	6
Turbidity	2	0.4	8
Wave damage / strong	2	0.4	8
Less freedom to fish	2	0.4	5
Fish educated	2	0.4	8
Plankton bloom??	2	0.4	
Seaweeds growing	1	0.2	1
Responses	551		
Households	492	100	

▲ Table 22: Summary of responses on environmental changes seen by respondents in their areas (n=550 responses over 492 households answering this question). Most households also gave information on importance. Data are number and percent of responses reporting a change (some households reported more than one response, including changes and no changes) and a measure of perceived importance as an average value calculated for each response based on whether the change was "Not very big"=1; "Some"=5; and "Very big"=10.

◀ Figure 46: Observations on changes in the environment over the past five years a) over all wards and b) by LLG and ward (n=790 responses). Note that some households reported change for some environmental factors, and no change for others.

HH-Q48 REEF TENURE

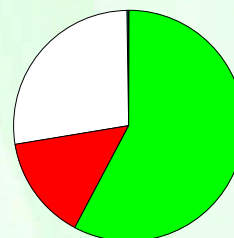
DO PEOPLE IN THIS VILLAGE HAVE TENURE OVER THE REEF AREAS? WHAT KIND OF CONTROL? IF SO, WHO OWNS THE REEF: COMMUNITY, CLANS, INDIVIDUALS, OTHER?

Most people (58%) said that they had some kind of control over reefs in the area in which they lived, while 15% said that they were not part of some kind of marine tenure system (Fig. 47). In one case, tenure was held in the past but was no longer effective. Interestingly, 27% of households reported that they did not know whether they had marine tenure.

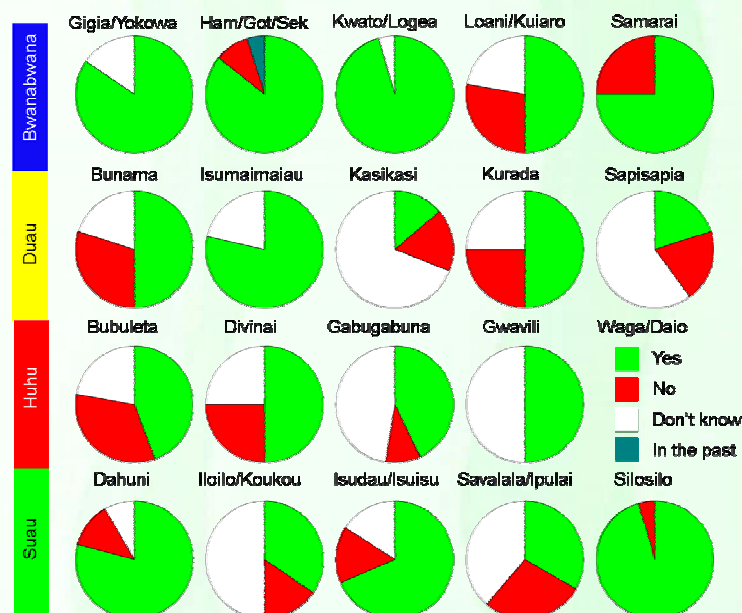
Of those that said they did theoretically have some form of control over reefs, 73 households went on to describe the nature of that tenure. Fifty-seven percent of those said that in reality they had no effective control, 10 households that the control was weak, and 12 said that control worked only on certain reefs or islands (Table 23). Most of the control when it applied was applicable under customary rules and excluded outsiders and/or protected sea cucumber or trochus stocks. For 10 respondents, the control was in place to ensure that fishing was done for food and not for economic benefit.

Most control applied to reefs, with some applying to the areas in front of villages. Unlike land tenure, most marine tenure was under the control of the whole community (Table 23).

► Table 23: Summary of presence, types, implementation and who has tenure over reef areas (n=585 responses).



Marine tenure



▼► Figure 47: Marine tenure (a) overall and (b) by LLG and ward.

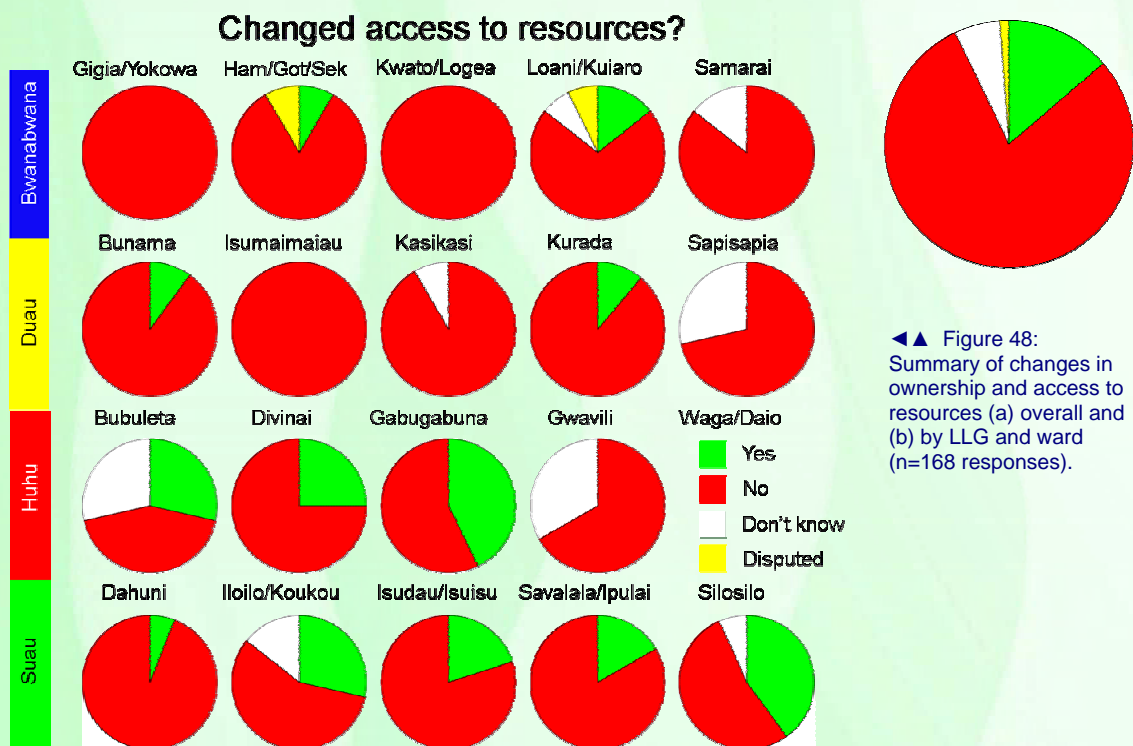
Do you have tenure?	#	%HH
Yes	209	58
Don't know	99	27
No	54	15
In the past but not now	1	0.3
Households	363	100

Level of control	#	%HH
No control	42	11
Only on certain islands/areas	12	3
Little control	10	3
Open access	6	2
Control is not strict	2	1
Good control	1	0.3
Types of control	#	%HH
Customary control	62	17
Exclude outsiders	55	15
Cucumbers / trochus restricted	34	9
Fish for food, not economic benefit	10	3
Chase outsiders off areas	10	3
Restrictions are verbally enacted / enforced	9	2
Boundaries / borders used	7	2
Leaders mediate / define	7	2
Certain fishing methods restricted	5	1
Open for community to fish at will	5	1
Permission must be sought	4	1
Restrict netting	4	1
It is generally understood	3	1
Not allowed to overfish	3	1
Restrict coral harvest	3	1
Restrict shellfish	3	1
Restrict fishing	3	1
Stop commercial fishing	2	1
Control diving	1	0.3
Intermarriages have enabled boundary crossing	1	0.3
Restricted times	1	0.3
People must use own areas for sea cucumbers / trochus	1	0.3
Sea cucumbers / trochus are for community uses	1	0.3
Confiscate catches	1	0.3
People used to respect other's reefs	1	0.3
Restrict derring	1	0.3
What areas?	#	%HH
Reefs	72	20
Front of village	10	3
Coastlines	5	1
Within Ward area	4	1
Who has tenure / control?	#	%HH
Community	18	5
Clan	8	2
Individuals	7	2
Family	2	1
Church	1	0.3
Government control	1	0.3
Responses	800	219
Households	366	100

HH-Q49 ACCESS TO RESOURCES

HAS OWNERSHIP ACCESS CHANGED OVER THE YEARS?

Ownership and access to resources has not changed significantly for the majority of people over the years in Milne Bay Province. Seventy-nine percent of respondents said that their ownership and access to resources has not changed over the past years, and only 14% said that it had changed (Fig. 48). About 6% of respondents said that they were not sure, and 1% indicated that there was some kind of dispute. This, however, varied with wards. Respondents in Gigia/Yokowa, Kwato/Logea, and Isumaimaiu wards were unanimous in their opinion that access to marine resources has not changed in those areas. People in Huhu and Suau LLGs were more likely to report that access has changed. In Gabugabuna and Silosilo wards, over 40% of households said that things had changed over the past years.



▲▲ Figure 48:
Summary of changes in
ownership and access to
resources (a) overall and
(b) by LLG and ward
(n=168 responses).

Types of changes	#	%HH
No change; Things are as in the past	134	95
No ownership	13	9
Still under community tenure	11	8
Open access	8	6
No access now	6	4
State owned	6	4
Previously no ownership, now there is	4	3
New generation have changed rules	3	2
Access has changed with modern land buying	2	1
Passed down by inheritance	2	1
Have boundary marks / borders now	2	1
No boundaries / restrictions in harvesting or fishing	2	1
Not clear who owns now	2	1
Previously reefs not owned (only land)	2	1
Changes in freedom of movement of fishing	1	1
Church ownership / control	1	1
Increasing awareness of benefits of marine resources	1	1
Moved from clan to community	1	1
People not obeying / respecting rules	1	1
Reefs in front / nearby villages no longer belong to villages	1	1
Resource changes and awareness of conservation issues	1	1
Transfer of ownership	1	1
Responses	205	
Households	141	100

▲ Table 24: Summary of opinions on changes in ownership and access to resources (n=454).

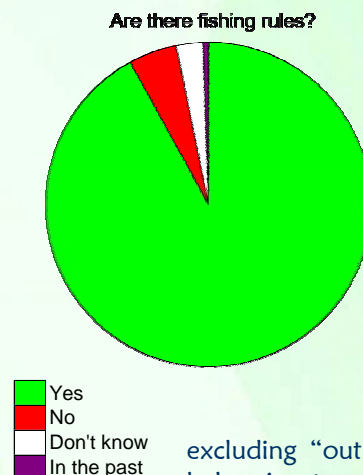
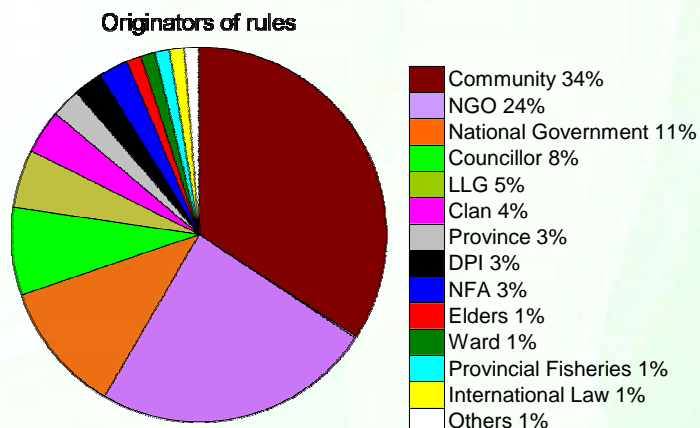
The most commonly reported changes were that there is now “no ownership” (where there was in the past), and that the marine areas were now accessible to everyone. In some cases, people reported that they had been shut off from areas they used to have access to, that the state owned their resources, or that the “new generation” have changed the old rules (Table 24).

HH-Q50 FISHING RULES

ARE YOU AWARE OF ANY GOVERNMENT (NATIONAL, PROVINCIAL AND LLG), NGO OR COMMUNITY RULES ON FISHING IN THIS VILLAGE OR THE SURROUNDING AREA? WHAT ARE THESE?

Ninety-two percent of respondents said that they were aware of certain rules or laws governing fishing in their area. Only 5% said that there were no rules, and 3% said they were not aware of any restrictions on fishing, collecting or the environment on which resources depend. In a small number of cases (1%) people said that there had been rules in the past (Fig. 49).

At least 13 different groups, organisations, and individuals were quoted as being the originators of fishing rules (Fig. 50). Most of the rules reported were developed and enforced within the community (34%). Interestingly, 24% of households said that the fisheries rules in their areas were established by NGOs (and often Conservation International was mentioned). Very few people said that fisheries rules were established by NFA or the Provincial Fisheries Office (total of 4%).



◀ Figure 49: Proportion of people saying that they were aware of fisheries rules applicable in their area (n=189 responses).

The most commonly reported rules included restrictions on: the use of *Derris* root (poison rope or rotenone), excluding “outsiders” from fishing in areas belonging to communities or clans, the use of nets, harvesting of turtles and use of dynamite in fishing (Table 25). About one-fifth of all households said that endangered species were protected, and that “people are not supposed to catch endangered animals or fish, such as dugongs and turtles”. Many of the community rules were concerned with the use of nets, catching undersized animals, and the use of lights at night to fish. Taiwan fishing was considered destructive in connection with the use of rocks that might damage the reef.

◀ Figure 50: Overall breakdown of the authorities responsible for fishing rules in the survey area as indicated by the people interviewed. DPI = Department of Primary Industries (n=341 responses).

► Table 25: Fisheries rules known and reported by those interviewed during the household survey. Percentages relate to the total number of people responding to this question (n=578). Blue shading indicates the authority/enactor for each rule, as indicated by the person interviewed.

Fisheries rules	#	%HH
General		
Don't know what the rules are	2	1
Fisheries Act	1	1
Tambus	1	1
Specific rules		
Derris ban	39	23
Restrict / exclude outsiders	25	15
Fish in own areas, not others	24	14
Use of nets	23	13
Dynamite ban	11	6
Undersize seafoods	10	6
Type / size / foreign fishing vessels	7	4
Use of lights / torches	5	3
200 Mile Zone	5	3
Compressors / SCUBA	5	3
Restrict areas / tambu	4	2
No spearguns / spears	4	2
Net mesh size	3	2
Care for environment / resources	2	1
Overfishing	2	1
Pollution	2	1
No fishing on Community Day	2	1
Protected areas / species	2	1
Limit on fish caught	1	1
Fishers get permission from Elders	1	1
Royalties paid in owned areas	1	1
Tourists diving on reefs	1	1
Crustaceans		
Prawns females / spawning	5	3
Crabs use of bait	1	1
Molluscs		
Trochus only in own areas	10	6
Shellfish seasons	5	3
Trochus size	2	1
Trochus at night	1	1
Sea cucumbers		
Collect only in own areas	15	9
Collection at night	8	5
Season	8	5
Size	6	3
Not using SCUBA	3	2
Others		
Turtles harvest	21	12
Mammals harvest (Dugong)	17	10
Endangered species	4	2
Turtles for sale	2	1
Mangrove damage	1	1
Damage to coastal / island trees	1	1
Coral / lime harvest	1	1
Turtle eggs	1	1
Coral / reef damage	1	1
Responses	296	
Households	172	100

HH-Q51 EFFECTIVENESS OF RULES

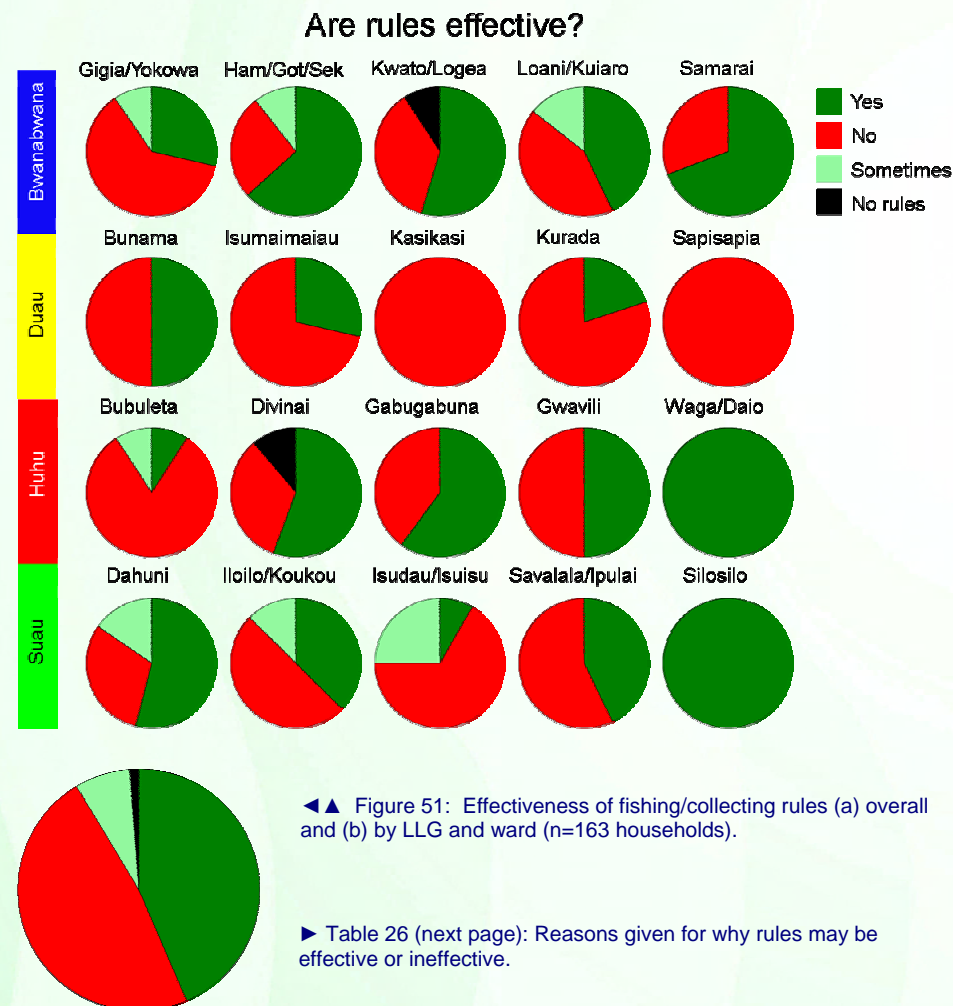
DO YOU THINK THESE RULES ARE EFFECTIVE? WHY /WHY NOT?

Overall, 48% of people said that fisheries rules were ineffective in their area, while 44% of people said that rules were observed and effective (Fig. 51). Some 7% of the people interviewed said that the effectiveness of rules was conditional on the areas to which they were applied, the nature of the rules, or the resources in question. One respondent reported that “honest people follow the rules, others not”, with another saying that some people were “pigheaded”.

There were quite large differences in the perceptions of interviewees among wards. Those interviewed in Sapisapia and Kasikasi all reported that fishing rules were ignored in their areas. In contrast, people in Wagawaga/Daio and Silosilo said that rules on fishing and collecting were very well observed in their areas.

In cases where people thought that the rules were effective, the most common reason given was that people tended to respect or follow the rules of their own accord (18% of households), or because they respect their leaders (Table 26). For some people the motivation was to avoid penalties, or to avoid conflicts.

More people offered explanations for why rules were ineffective (117) than for why they were effective (84). Where the rules were generally not being followed, the reasons given were that the rules were not enforced, that people were ignorant of the rules, or that “people do what they want”. Or, as one respondent put it, “most people think that the sea belongs to everyone and so everyone uses it”. Problems with outsiders coming and fishing in what people saw as their areas were commonly reported, and there was no mechanism for preventing it because those violating the rules lived in another community. In several cases, destructive methods of fishing or collecting were used because banned methods result in easier catches and there is considerable pressure to earn money and/or meet basic needs. Stopping or reducing fishing was not seen as an option by one interviewee who put said, “because if they stop us, do they have other options for us? They haven't created other avenues, you see?”



Rules are EFFECTIVE because:	#	%HH
People respect / follow rules	27	18
Follow rules to avoid penalties	8	5
People are taken to court	5	3
People respect leaders	4	3
Protect what we own	4	3
There are penalties	4	3
Individual or community enforcement	3	2
LLG /Ward enforces the rules	3	2
National laws more effective than local rules	3	2
Councillor / WDC monitor fishing areas	3	2
People understand consequences	3	2
Leaders warn / reinforce regularly	3	2
The community watches	3	2
Community cares / people have good attitudes	2	1
Enforced by Government	2	1
Companies / Outsiders follow rules	1	1
Follow rules to avoid conflict	1	1
Good awareness has been done	1	1
Small area; Easy to monitor and enforce	1	1
People told to follow rules	1	1
People complain / vocal	1	1
It is the law	1	1
Rules are INEFFECTIVE because:		
Not enforced / monitored	22	15
Ignorance / No proper awareness	20	13
People do what they want	19	13
People break rules if they can / if not seen	15	10
Councillor / WDC ineffective / not respected	9	6
No respect / bad attitude / careless	7	5
Outsiders violate rules	5	3
Commercial gain / high value	5	3
Lack of resources/manpower for enforcement	3	2
Foreign / commercial vessels in grounds	3	2
Boundaries not monitored	1	1
Can do as they please on own areas	1	1
Banned methods are easier	1	1
Need to meet basic needs	1	1
No wise leaders / not doing duty	1	1
No other options	1	1
Need to eat turtle	1	1
Resource owners can't penalise	1	1
Open access to all	1	1
Responses	201	
Households	149	100

HH-Q52 COMMUNITY FISHING RULES AND ENFORCEMENT

IF THERE ARE COMMUNITY LEVEL FISHING RULES, HOW ARE THEY ENFORCED IN THIS VILLAGE?

Nearly 40% of people responding to this question said there were community rules and an attempt was made to enforce them. A larger number of people (43%) said that there were no community rules to enforce (Fig. 52), while 11% said that rules had been made, but that they were not enforced.

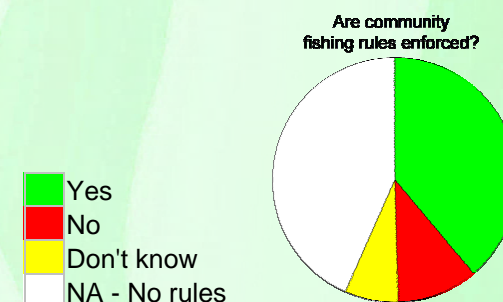
Of those people who said that the community had fishing rules, these were mostly enforced by the ward councillor or Ward Development Committee (WDC) (40% of all households). The community itself was considered the enforcer in 9% of cases. A range of other authorities (e.g. village leaders, the village court system, and even church leaders and NGOs) were mentioned as enforcers of fishing rules in communities (Table 27).

The most common mechanisms quoted for enforcing the rules were through increasing awareness and public meetings, and verbal reinforcement, usually by leaders. Self or community discipline was reported by 10% of the households that responded to this question.

► Figure 52: Are community fishing rules enforced? (n=357).

Rules enforced by	#	%HH
Councillor	32	22
Ward Development Committee	26	18
The Community	13	9
Community Leaders	11	8
Village Court / Traditional	10	7
Village Elders	7	5
Through LLGs	5	3
Resource owners	5	3
Individuals	4	3
Law and Order authorities	4	3
Church Leaders	3	2
Area manager / LLG Coordinator	2	1
District Manager	1	1
Clan Leaders	1	1
NGOs	1	1
Enforcement actions		
Awareness / Community meetings	47	33
Verbal reinforcement	18	13
Self / community discipline	15	10
Physical force / chasing	12	8
Confiscating gear	4	3
Having to do extra community work	3	2
Traditional means	2	1
Arrests	2	1
Public notices	1	1
Markers / flags over reef boundaries	1	1
Fines	1	1
Confiscating catch	1	1
No penalties	3	2
Not very effective	2	1
Responses	237	
Households	144	100

▲ Table 27: Mechanisms for the enforcement of community rules.

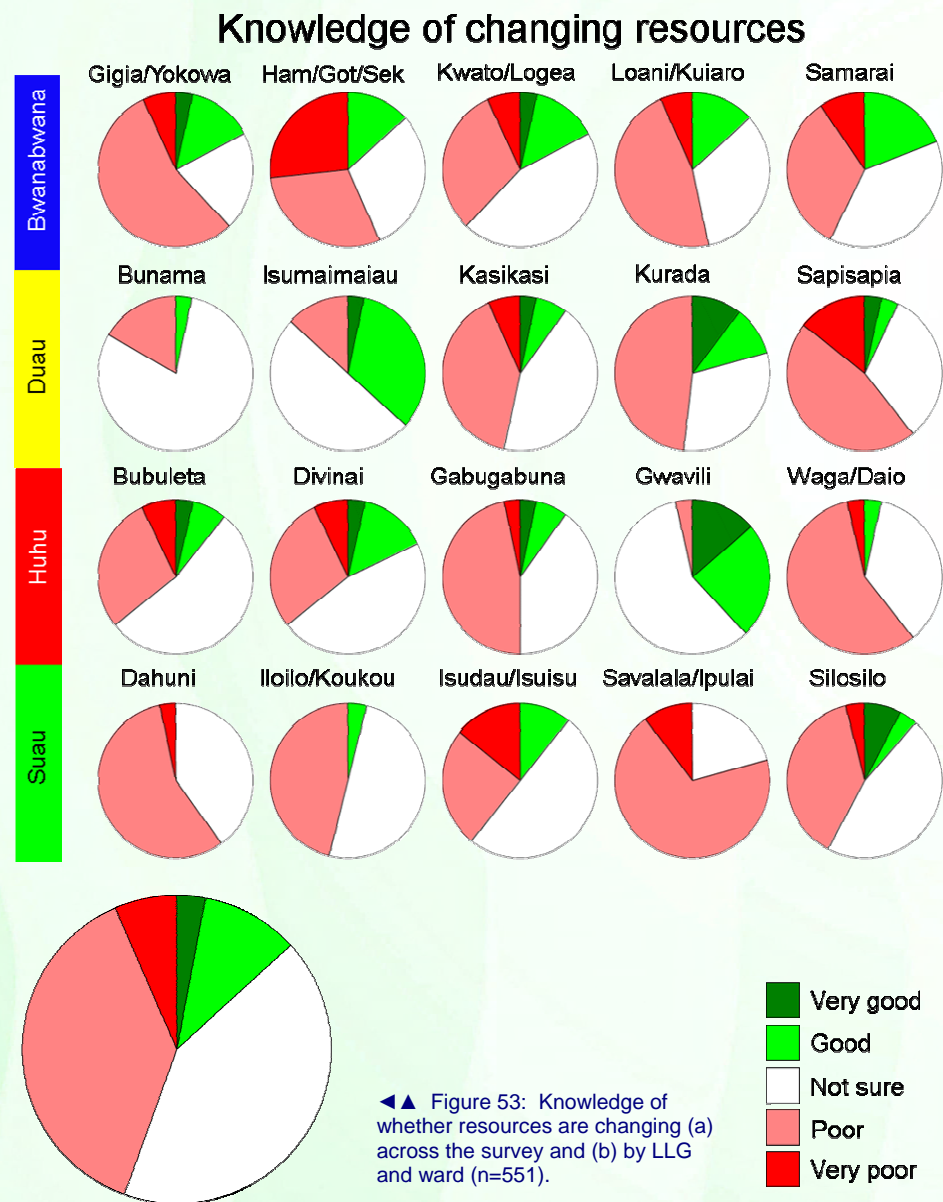


HH-Q53 KNOWLEDGE OF CHANGES IN RESOURCES

DO YOU THINK YOU HAVE A GOOD IDEA OF THE CONDITION OF THE MARINE RESOURCES IN THIS AREA? HOW WOULD YOU RANK YOUR KNOWLEDGE OF WHETHER RESOURCES ARE INCREASING, DECREASING OR STAYING THE SAME? VERY POOR/POOR/NOT SURE/GOOD/VERY GOOD.

Only 13% of people felt that they had a good or very good idea of how, and by how much, marine resources might be changing over time. About 45% of those interviewed said that they had a poor knowledge of the state of their marine resources, with 7% rating themselves as having very poor knowledge (Fig. 53). A large proportion, 42% of people interviewed, were unsure about their ability to assess the state of their resources.

People's opinions on their ability to assess the condition of their resources showed only a few differences among LLGs and wards. In some wards, people felt less able to assess their resources than in others, such as in Dahuni and Savalala/Ipulai where no one said that they had a "good" or "very good" idea of the state of their marine resources. More people in Gwavili, Isumaimaiiau and Kurada felt they had a good idea of the state of their resources than in other wards.

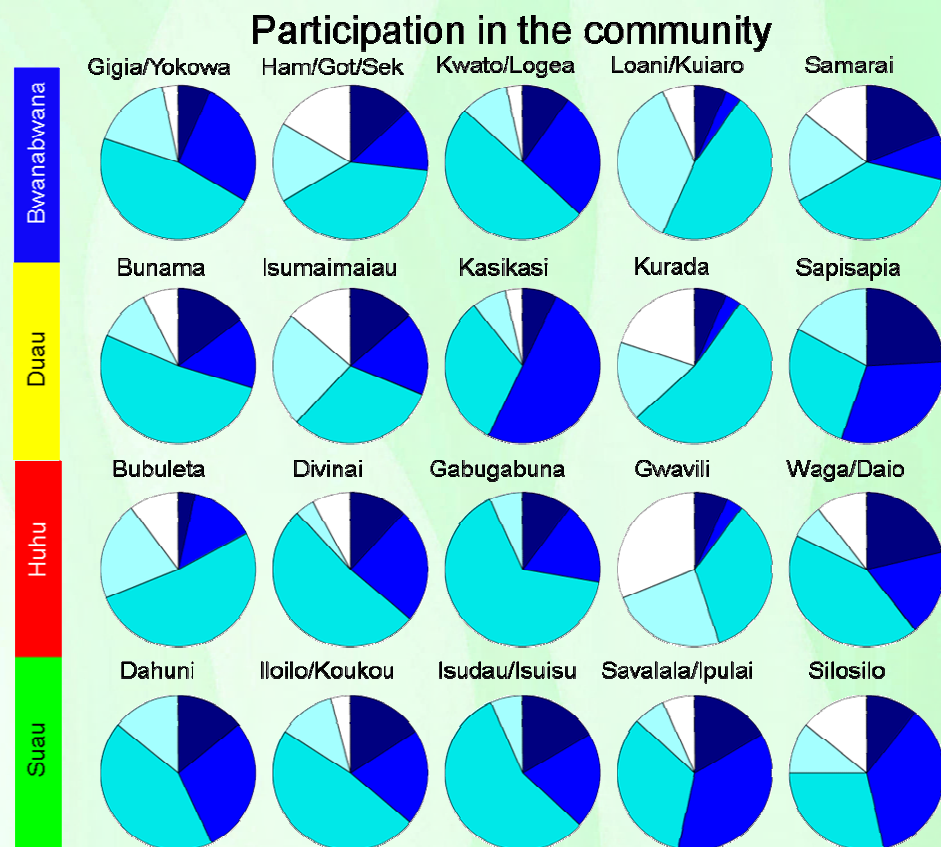
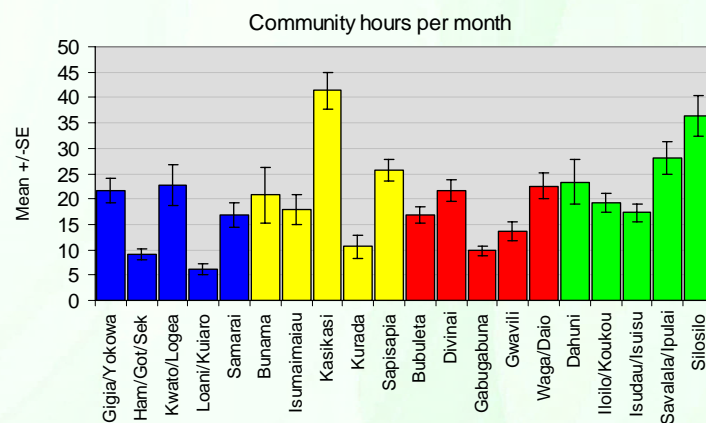


HH-Q58 PARTICIPATION IN THE COMMUNITY

HOW WOULD YOU RATE YOUR LEVEL OF PARTICIPATION IN COMMUNITY AND CHURCH ACTIVITIES IN THIS VILLAGE? (DO NOT INCLUDE GOING TO CHURCH, SCHOOL OR EMPLOYMENT). VERY LOW /LOW /AVERAGE /HIGH /VERY HIGH.
HOW MANY HOURS PER MONTH WOULD YOU AND MEMBERS OF THE HOUSEHOLD SPEND ON COMMUNITY ACTIVITIES?

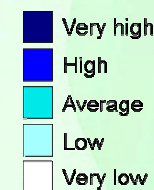
As might be expected, the most common rating for level of community participation across the survey was “average” reported by 44% of those interviewed. More people considered that they contributed to community activities at above average levels (33%) than below (24%) (Fig. 54). There were some differences among the wards surveyed. Greater numbers of people in Dahuni, Sapisapia and Isudau/Isuisu felt they participated more in community activities than in other wards. The wards in which people felt they participated the least in the community were Gwavili and Kurada, and to a lesser extent in Samurahi and Hamama/Gotai/Sekuku wards.

Using estimated hours spent on community activities per month as an estimate, the situation appears a little differently (Fig. 55). The wards with the greatest number of hours spent in community activities were Kasikasi and Silosilo. For wards reporting the least involvement in community activities, the self-assessment of people in Hamama/Gotai/Sekuku (Fig. 54) is in relatively good agreement with the actual hours spent (Fig. 55). In Loani/Kuiaro the self-assessment differs from actual hours contributed.



▲► Figure 54: Level of participation in community activities (a) across the survey and (b) by LLG and ward (n=565).

◀ Figure 55: Average (+/-SE) hours per month spent in community activities by all members of households (n=1,416).



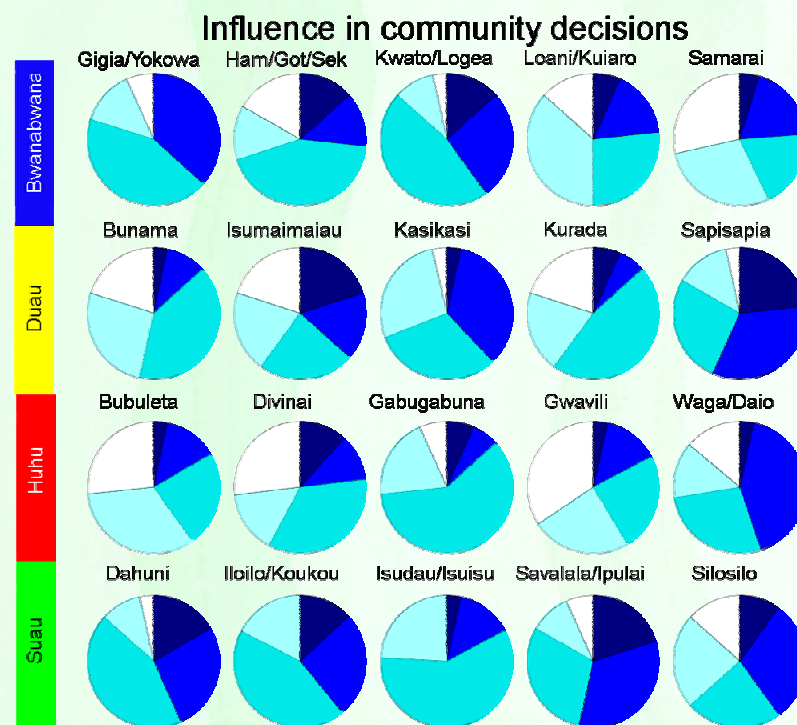
HH-Q59 INFLUENCING COMMUNITY DECISIONS

HOW WOULD YOU RATE YOUR ABILITY TO INFLUENCE COMMUNITY DECISION-MAKING IN THIS VILLAGE? VERY LOW /LOW/AVERAGE/ HIGH/VERY HIGH. EXPLAIN.

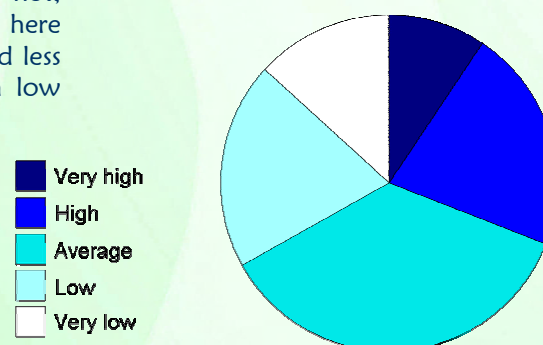
Across the survey, people rated themselves remarkably *normally* (i.e. statistically), in terms of their ability to influence decision-making in their communities. The largest group of people rated themselves with “average” ability to influence decisions (36%). More people felt that they had a lower than average ability to influence decision-making in their communities (43%), and (31%) felt they had a higher than average ability (Fig. 56).

The wards in which the most people felt they could influence community decision-making were Sapisapia, Iloilo/Koukou and Isudau/Isuisu. No people in Gigia/Yokowa felt they had a “very high” rating for influencing community decision-making.

Some people reported that their influence in community decision-making was low because they had married in to the community and were not, therefore, considered fully local. One respondent said “I am married here and am a tambu to these people”. Other groups which said they had less than average levels of influence were single mothers, people with low levels of education, youth, and sometimes old people. One interviewee said “not all elderly people in this community listen to young people like me much”. In some villages women have less influence: “in this village women don't make decisions”.



▲ ▼ Figure 56: Results of self-rating on people's ability to influence community decision-making (a) across the survey and (b) by LLG and ward (n=576).



▼ Table 28: The decision-makers in the community (n=566).

Decision-makers	#	HH%
Whole Community	286	51
Village Elders	206	37
Councillor	195	35
Ward Development Committee	153	27
Church Leaders	138	25
Community Leaders	99	18
By Voting	54	10
Magistrate	28	5
Clan Leaders	21	4
By Consensus	21	4
Family Leaders	17	3
LLG Members	11	2
Group leaders	9	2
Head teachers	7	1
Youth Reps	6	1
Youth	5	1
Peace Officer	5	1
District Manager	4	1
Women's Fellowship	3	1
Women's Representatives	2	0.4
Groups	2	0.4
The educated	2	0.4
Ward members	1	0.2
Men	1	0.2
Workforce Committee	1	0.2
Health Authorities	1	0.2
Don't know	17	3
Responses	1295	
Households	561	100

HH-Q60 DECISION-MAKING

HOW ARE DECISIONS MADE IN THE VILLAGE AND WHO ARE THE MAIN PEOPLE INVOLVED IN THIS PROCESS? DO YOU THINK THAT ALL PEOPLE IN THE COMMUNITY HAVE A “FAIR SAY” IN DECISIONS AFFECTING THE VILLAGE? (WOMEN, YOUTH, OLD PEOPLE, OTHERS?). IF NOT, WHAT GROUPS OF PEOPLE ARE HAVING LESS SAY?

The most important decision-makers reported during the survey were the communities themselves (51% of households), followed by village elders (37%) and the ward councillor (Table 28). Most respondents actually reported combinations of these three, working simultaneously following two routes: (1) in which the community raises an issue and takes it to leaders to be dealt with, or (2) in which the leaders bring an issue to community meetings for a vote on how to respond.

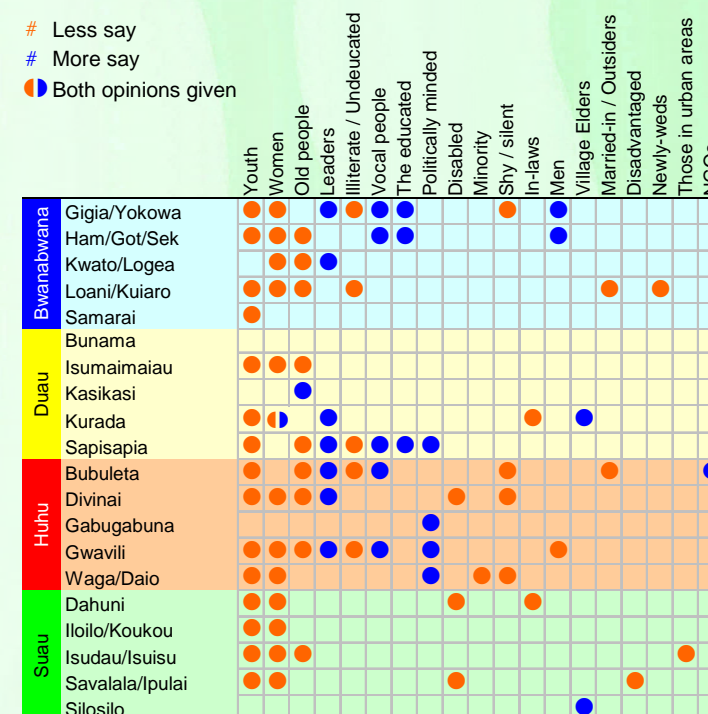
People who have LESS say	#	HH%
Youth	56	10
Women	36	6
Old people	21	4
Illiterate / Undeucated	7	1
Disabled	3	1
Minority	3	1
Shy	2	0.4
In-laws	2	0.4
Silent majority	2	0.4
Men	1	0.2
Married-in	1	0.2
Outsiders	1	0.2
Disadvantaged	1	0.2
Newly-weds	1	0.2
In cities / towns	1	0.2
People who have MORE say		
Leaders	11	2
Vocal people	6	1
Educated	6	1
Politically minded	4	1
Men	2	0.4
Village Elders	2	0.4
Women	1	0.2
Old people	1	0.2
NGOs	1	0.2
Overall - Do people have a fair say?		
Everyone has fair say	400	71
Not everyone has a say	136	24
Not sure	23	4
No meetings	3	1
Responses	734	
Households	563	100

Over 70% of those interviewed said that people in their communities all had a fair say in community decision-making (Table 29). In one village it was thought everyone had a fair say, and a comment was made to the effect that “everybody is a resource owner one way or the other”. About 25% of interviewees said that not everyone has a fair say in decisions made (but see also HH-Q59).

The people identified as having less of a say in community affairs were youth, women, old people, and the uneducated. This corresponds with the results on how people felt about their influence (HH-Q59). People with more say in the community were the leaders, vocal people, and those with the most education. This raises some concerns. One respondent said “old people are neglected sometimes.” But that, “They are wiser” (Fig. 57).

◀ Table 29: People who have more and less say in community decision-making (n=556).

▼ Figure 57: People or groups with more or less influence on decision-making by LLG and ward (n=172).



Summary of Findings



Focus Group Survey

FG-Q1-Q2 GROUP DETAILS

IS THIS A FORMAL/REGISTERED GROUP? YES /NO. IF THE GROUP IS REGISTERED, PLEASE DESCRIBE WHERE AND/HOW IT IS OFFICIALLY CLASSIFIED OR RECOGNIZED. IS THIS GROUP AFFILIATED WITH ANY OTHER ORGANISATIONS? WHICH ONE(S)?

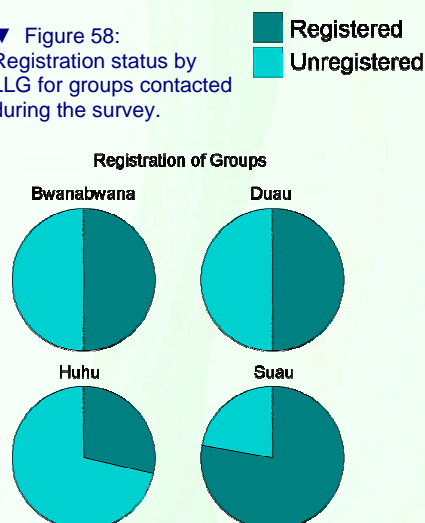
Although the target number of focus groups to be contacted for this survey was 100 across the survey area, only 30 were located and met with. It appears that people in Milne Bay Province form fewer groups than in other provinces (Table 30). Organised groups of fishers were especially difficult to locate, and only four such groups were found.

Overall, just over half of the groups interviewed (53%) were registered with some authority, with the remaining groups formed without formal recognition (Fig. 58). Many of the groups were affiliated with churches (e.g. United or Kwato Churches), with one youth group saying it was recognised by the government. Most other groups were informal, recognised only by the village.

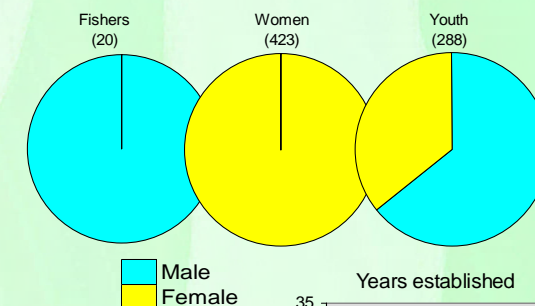
▼ Table 30: Focus groups interviewed during the survey (n=30).

Ward	Fishers	Women	Youth
Bwanabwana			
Gigia/Yokawa			
Ham/Got/Sek		1	1
Kwato/Logea		2	
Loani/Kuiaro		1	
Samarai		1	
Dua			
Bunama			
Isumaimai	3	1	1
Kasikasi			1
Kurada			
Sapisapia		1	1
Bubuleta			2
Huhu			
Divinai		1	
Gabugabuna		1	
Gwavili			1
Waga/Daio			
Suau			
Dahuni	1	1	1
Iloilo/Koukou		1	
Isudau/Isuisu			
Savalala/Ipulai		2	1
Silosilo			1
Total	4	13	10

▼ Figure 58: Registration status by LLG for groups contacted during the survey.



► Figure 59: Gender of group members interviewed during this study. Numbers indicate n for each group type.



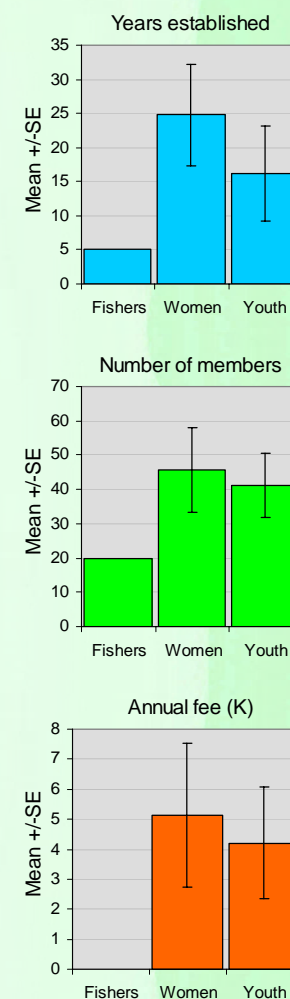
FG-Q3-Q4, Q7 GROUP STRUCTURE AND HISTORY

WHAT OFFICERS DOES THIS GROUP HAVE? HOW ARE POSITIONS SELECTED? HOW LONG HAS THIS GROUP EXISTED? HOW MANY MEMBERS? MALES /FEMALES. IS THERE A MEMBERSHIP FEE?

The fishers groups contacted were entirely made up of males, and the women's groups entirely of females (Fig. 59). In contrast, youth groups comprised 64% males. Most groups had a hierarchical structure, with a leader and office holders usually selected by voting.

Women's groups tended to be the longest established (averaging 25 years) and fishers groups only averaging 5 years. The size of groups was about the same for women and youth (41–46 members), while for fishers, size information was received for only one group of 20 members. Most women's and youth groups charged an annual fee for membership (around 5 kina) (Fig. 60).

► Figure 60: Membership, years of operation and annual fee charged in community groups contacted during the survey.



FG-Q6 OBJECTIVES

WHAT ARE THE GROUP'S MAIN OBJECTIVES? WHY /HOW WAS IT FORMED?

The focus groups visited in Milne Bay Province are involved in a range of activities designed to improve the well-being of people and the community in general (Table 31). Both women's and youth groups cover a diversity of issues, focusing on the church and on human development activities, as well as providing services to the community (such as aiding people in need). Surprisingly, none of the fishers groups stated any support of fishing activities as one of their goals.

▼ Table 31: Ranked activities undertaken by focus groups interviewed in this survey (n=96). Data are total number of times an activity was mentioned across all groups. Although 100 groups were contacted, 179 activities were reported because many groups addressed more than one issue. Percentages refer to groups of one type engaging in an activity.

Group activities	Fishers	Women	Youth	All
Church activities		●	●	11
Help people / Service	●	●	●	6
Keep people / community together	●		●	5
Fund raising		●	●	4
Vocational / Educational		●	●	4
Help needy / sick / Disabled		●	●	3
Recreation		●		3
Develop spiritual self		●		2
Youth outreach			●	2
Promote social harmony			●	2
Reduce social problems			●	2
Community work			●	2
Craft making		●		1
Responses				47
Groups				30

FG-Q8 INCOME OPPORTUNITIES

WHAT ARE THE INCOME OPPORTUNITIES FOR PEOPLE IN THIS VILLAGE? ARE THERE ANY GROUPS OF PEOPLE WHO CANNOT PARTICIPATE OR ARE NOT ALLOWED TO? IF SO, WHY?

The opportunities for income generation for people in their village or area, as identified by groups, were fishing, farming, marketing fish and produce, and betelnut (*buai*) selling (Table 32). Trochus and sea cucumbers were ranked fifth and sixth as options for income, with a range of other small-scale fishing, hunting, collecting and farming activities forming most of the rest of the list.

When asked whether there were any disadvantaged groups within the community, in terms of opportunities for employment, the focus groups identified old and disabled people, children, and people they termed "religious backgroups" or "back sliders".

Opportunities	% Fishers	% Women	% Youth
Fish/fishing	100	92	90
Farming / Garden	75	62	70
Market selling	25	69	50
Buai selling	75	23	30
Trochus	50	23	40
Sea cucumbers	75	23	20
Livestock / eggs		15	30
Baking		31	
Coconut / copra		15	20
Crafts		15	20
Shellfish		23	
Crabs		8	10
Sago		15	
Logging / timber	25		10
Mustard		10	10
Collecting		8	
Contract work			10
Sewing		8	
Shark fin	25		
Youth group hire			10
Hunting			10
Lobsters			10
Number responses	18	57	44
Number groups	4	13	10

◀ Table 32: Details of perceived income opportunities separated by focus group type (n=30 groups).

FG-Q9 MOST COMMON SOURCES OF INCOME

WHAT IS THE MOST COMMON SOURCE OF INCOME IN THIS VILLAGE?

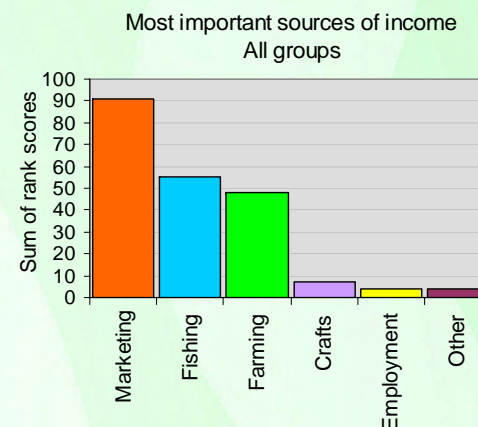
Focus groups reported that the most important ways to earn income in their villages were selling goods in markets, farming, and fishing (Figs. 61 and 62). All other categories of income earning were much lower than these three, and appeared to contribute little to overall income in each place.

The most commonly-cited source of income in marketing was through betelnut (*buai*) sales, and although mustard is also mentioned separately, it is likely that the selling of betelnut in many cases includes lime and mustard. General marketing largely involves the selling of garden produce, smoked or fresh fish, crustaceans and shellfish, and a variety of other items.

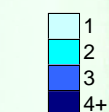
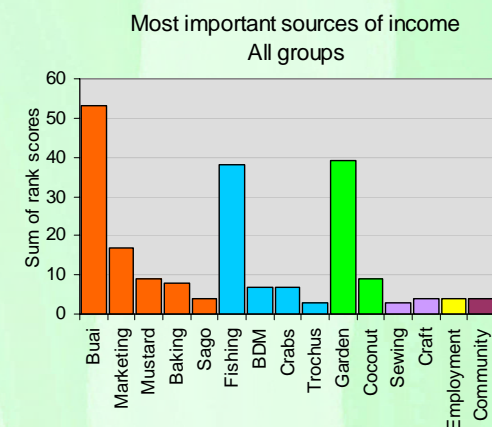
The most important income from fishing or collecting comes from capturing fish, with surprisingly little emphasis placed on sea cucumbers and trochus, which can fetch high prices with buyers in Alotau.

Most of the farming income comes from sales of garden produce, mostly vegetables and fruits. Although some other activities such as sewing, crafts, and employment are listed, they were seen by focus groups as relatively minor sources of income to the communities they belonged to (Table 33).

▼ Figure 61: The most important income categories reported for their area by focus groups (n=209).



▼ Figure 62: The actual sources of income considered by focus groups to be the most important in their area. BDM=sea cucumbers (n=209).



► Table 33:
Summary of the most important sources of income as described by focus groups. Increasing intensity of colour indicates a higher frequency of this activity being identified as one of the most important activities by focus groups in that ward. BDM=sea cucumbers.

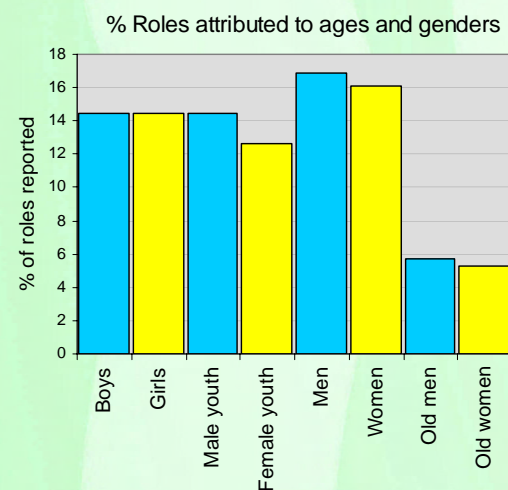
		Mustard	Marketing	Buai	Sago	Baking	Fishing	Crabs	BDM	Trochus	Coconut	Garden	Craft	Sewing	Employment	Community work
Bwanabwana	Ham/Got/Sek															
	Kwato/Logea															
	Loani/Kuiaro															
	Samarai															
Duau	Isumaimaiiau															
	Kasikasi															
	Sapisapia															
Huhu	Bubuleta															
	Divinai															
	Gabugabuna															
	Gwavili															
Suau	Dahuni															
	Iloilo/Koukou															
	Savalala/Ipulai															
	Silosilo															

FG-Q10 ROLES IN FISHING & COLLECTING

WHAT ARE THE ROLES OF MEN, WOMEN, CHILDREN, YOUTH AND OLD PEOPLE IN FISHING AND COLLECTING?

According to the focus groups consulted, males and females, and people of different age groups play different roles in the entire work load associated with procuring, processing and using marine resources. Both genders remain involved throughout their lives. There is a large degree of equality between the genders in terms of overall involvement (Fig. 63) and some differences among age groups. Men and women appear to have the greatest role in utilising marine resources (16% and 17%, respectively of tasks attributed to each), with old people having a diminishing role (5–6%). Children and youth contribute

significantly, taking between 13% and 14% of tasks in each group. This translates to about 55% of the roles across the survey taken by young people.

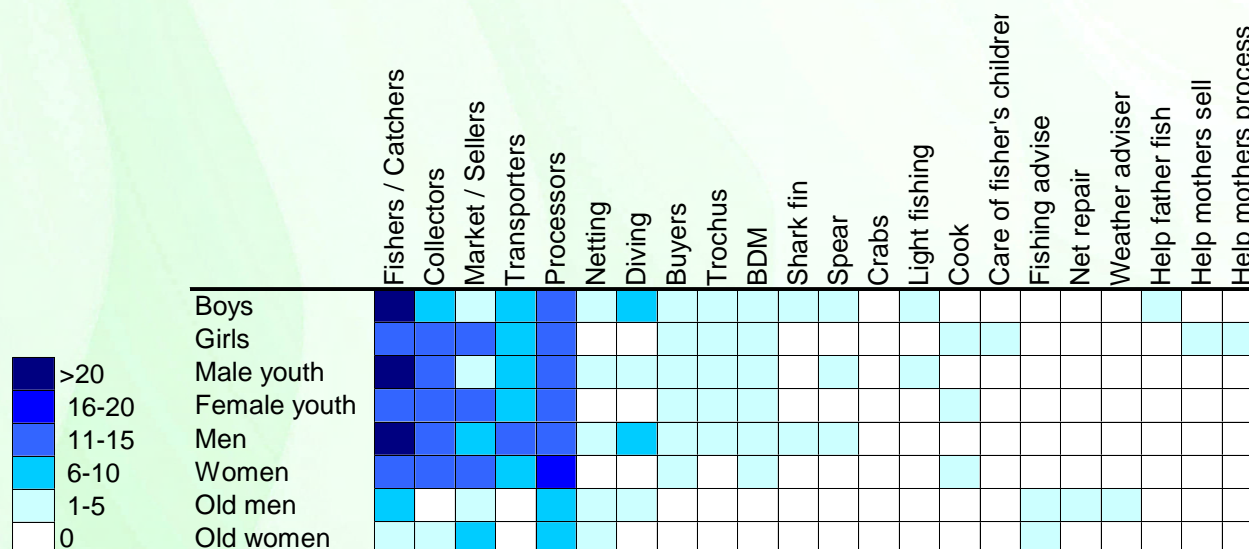


▲ Figure 63: The roles of different members of the community in utilising marine resources (n=546 roles reported). Data are percentages contributed by each to the total effort of utilising resources. These were calculated by totalling frequencies of all roles attributed to each group (see Fig. 64) across the focus group surveys. Percentages are calculated over the total number of times that a role was attributed to any group. Boys and girls <16 years; youth 17–30 years, men and women 31–60 years; and old men and women 60+ years of age.

A breakdown of the tasks (Fig. 64) shows that old men and women tend to be involved in some fishing, collecting, processing and marketing. They may also play a role in providing fishing advice, and particularly weather advice.

Boys, male youths, and men tend to be more heavily involved in fishing than girls and women, and males do most of the netting, diving or spearfishing. According to the focus groups, girls, female youth, and women tend to have a more even spread of roles across fishing, collecting, market selling and processing marine products.

▼ Figure 64: Breakdown by gender and age group of roles of members of the community in utilising marine resources (n=509 roles). Data are frequencies that particular roles were attributed to males and females and age groups across all LLGs and wards, and as attributed by all focus groups. The frequency with which a role appears for any group of people is taken here as an indicator of importance.



FG-Q12 PEOPLE RESTRICTED IN FISHING / COLLECTING

ARE THERE ANY GROUPS OF PEOPLE RESTRICTED BY ANY CUSTOMARY TABOOS IN FISHING AND COLLECTING ACTIVITIES?

According to the focus groups surveyed, the majority of communities (57%) do not impose restrictions on the fishing activities of particular members of the community. For the remainder, the most important restrictions on fishing or collecting activities is focused on pregnant women, men with pregnant wives, and people who are currently affected by the death of a community or family member (e.g. widows, buriers, pall bearers) (Table 34). Old people and disabled people are also restricted, although it is not clear whether this means they are forbidden from participating or are just unable to do so.

The restrictions on pregnancies and breast-feeding women appear partly aimed at protecting the women and children themselves: “new mothers are not allowed to fish whilst breast feeding because the sea will dry the breast milk”. In other cases, the restriction seems more aimed at protecting the resources from bad luck: “pregnant women [are] not allowed to fish or sit on canoes that are used for fishing”. In some cases, these practices have changed “after joining [the] new church, all customary beliefs have changed”.

Restricted people	#	% FG
Pregnant women	5	17
Men with pregnant wives	2	7
People who will bury the dead	1	3
Pall bearers	1	3
Generally no fishing when a death	1	3
Pregnant women may not sit on fishing canoes	1	3
New widows	1	3
Breast-feeding mothers	1	3
Old people	1	3
Disabled people	1	3
In the past	2	7
Nobody is restricted	17	57
Responses	34	
Focus Groups	30	100

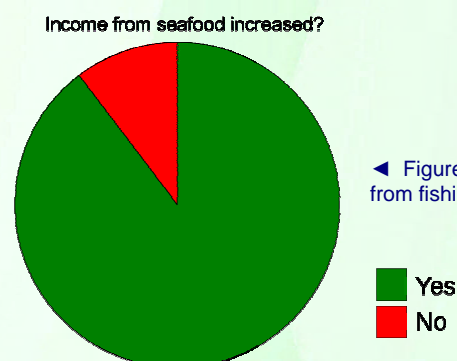
◀ Table 34: Summary of restrictions imposed on groups of people living in the survey area as reported by focus groups.

FG-Q13 INCREASING INCOME FROM FISHING

DO YOU THINK THAT INCOME FROM FISHING COULD BE INCREASED IN THIS VILLAGE? IF SO, WHY HAS THIS NOT HAPPENED ALREADY? HOW COULD IT BE INCREASED?

When asked whether they thought that income from fishing activities could be increased in their communities, the majority of focus groups (90%) replied yes (Fig. 65). The greatest impediments to increasing income from fishing were seen as a lack of markets and the high costs transport to more distant markets (Table 35). One respondent said that fishing income could not be increased because the resources were already overfished.

The actions that would be needed to increase the income from fishing would include greater participation by members of the community, better facilities, community cooperation and education.



◀ Figure 65: Can income from fishing be increased?

Impediments	#	% FG
No proper market for seafoods	8	27
Transport problems	5	17
Insufficient knowledge / skills	4	13
No buyers	3	10
Insufficient participation	3	10
Fuel too expensive	2	7
Insufficient facilities	2	7
No financial need in the past	2	7
People are careless / Ignorant	2	7
Lack of finance	1	3
Lack of new methods	1	3
Lack of community cooperation	1	3
Youth are unproductive	1	3
The resources are overfished	1	3
Don't want it to increase	1	3
Responses	37	
Groups	30	100

▲ ▼ Table 35: Summary of the perceived impediments and actions needed to increase income from fishing.

Needed actions	#	% FG
More participation in fishing	4	13
Facilities (e.g. freezers)	4	13
Community cooperation	3	10
Education	3	10
Gear	2	7
Fish to earn income	2	7
Improve road	2	7
Local buyer	2	7
Don't know	2	7
Proper markets	2	7
Government help	1	3
Improve transport	1	3
Advice	1	3
Revive fish plant	1	3
New fishing activities	1	3
Control harvest for a while	1	3
Youths contribute	1	3
Awareness	1	3
Proper management	1	3
Proper concern for resources	1	3
Responses	36	
Groups	30	100

FG-Q17 CONCERNS FOR NATURAL RESOURCES

ARE THERE ANY CONCERNS ABOUT NATURAL MARINE RESOURCES IN THIS VILLAGE? DESCRIBE THEM.

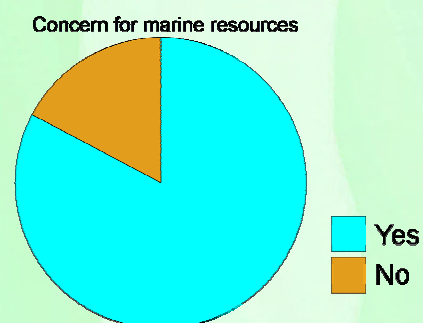
Most of the people within the focus groups interviewed (83%) were concerned about the state of their marine resources, with only 17% not being concerned (Fig. 66). The concerns raised fell into several broad categories, including fishing-related problems, effects of outside forces and management-related issues (Table 36). The most commonly-raised concern was the effects of using *Derris* root (27% of all groups), overfishing (17%), and pollution (17%). Most of the concerns about pollution related to oil palm run-off and the use of fertilisers. Declining stocks and disappearing species were mentioned by several groups, who were concerned that dugongs are gone.

What people refer to as “new fishing methods and techniques are destroying marine life e.g. during the night beche-de-mer reproduce and feed, however people swim in the night disturbing the process”.

▼ Table 36: Summary of concerns about natural resources raised by focus groups.

Concerns	#	% FG
Poison / derris	8	27
Overfishing	5	17
Pollution	5	17
Damage to reefs	4	13
Oil palm	4	13
Stocks decreasing	3	10
Coral for lime	3	10
Seafoods dying	3	10
Undersize harvesting	3	10
Rare / vanishing species	2	7
Increasing use of nets	2	7
Reef structure changing	2	7
Very low tides / hot sun	1	3
Rough weather	1	3
Outsiders fishing in area	1	3
Fertilizers (Oil palm)	1	3
Chemical spill	1	3
Careless harvesting	1	3
Breeding habitats lost	1	3
New methods destructive	1	3
Night fishing disturbs species	1	3
Sealevel rise	1	3
Loss mangroves	1	3
Responses	55	
Groups	30	100

▼ Figure 66: Level of concern for the state of marine resources expressed by focus groups.

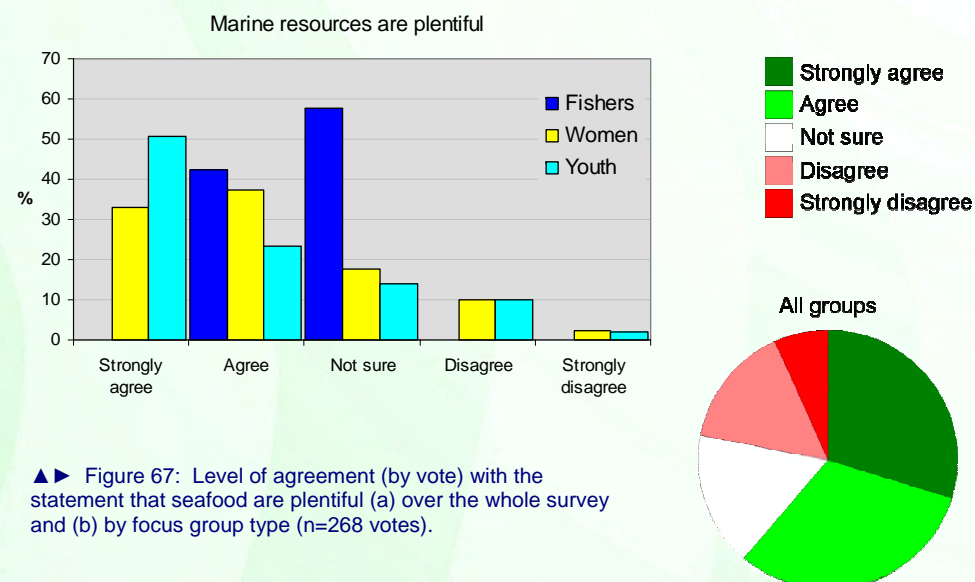


FG-Q18 ABUNDANCE OF SEAFOODS

THERE ARE PLENTY OF SEAFOODS TO CATCH IN AND AROUND THIS VILLAGE. (ASK FOR SHOW OF HANDS AND COUNT THE NUMBER OF PEOPLE WITH EACH OPINION). STRONGLY AGREE/AGREE/NOT SURE/DISAGREE/STRONGLY DISAGREE. EXPLAIN.

Over 60% of all voters either strongly agreed or agreed that marine resources were plentiful in their area, while 17% were unsure and 22% believed that the statement was untrue. Although fisher's groups were few, they tended to be more pessimistic than women's and youth groups, tending to not be sure whether resources would be plentiful in the future (Fig. 67).

The reasons given for people's opinions tended to be based on the visibility or ease with which seafood could be caught (53% of all responses, argued on both sides (Table 37). People also based their assessments on fishing behaviour. That is, if people didn't fish much, or didn't do it unnecessarily, it was thought that resources were plentiful.



▲► Figure 67: Level of agreement (by vote) with the statement that seafood are plentiful (a) over the whole survey and (b) by focus group type (n=268 votes).

FG-Q19 FUTURE ABUNDANCE OF SEAFOODS

THERE WILL BE PLENTY OF SEAFOOD TO CATCH IN AND AROUND THIS VILLAGE IN THE FUTURE. (ASK FOR SHOW OF HANDS AND COUNT THE NUMBER OF PEOPLE WITH EACH OPINION). STRONGLY AGREE /AGREE /NOT SURE / DISAGREE /STRONGLY DISAGREE. EXPLAIN.

Very few people (7%) agreed that there would be plenty of marine resources in the future (Fig. 68). Most people (65%) were concerned about the future and gave a range of reasons for the expected state of their marine resources.

People who expected resources to be plentiful in the future said that was because it was good now, there was no reason to expect it would not be in the future (7% of focus groups), and that “God will give more and more, there’s no end of marine resources” (Table 38). Other reasons included that there were “still lots of small fish that can grow up to replace the ones caught”. The conditional answers for plentiful resources in the future included control of harvests and increased awareness.

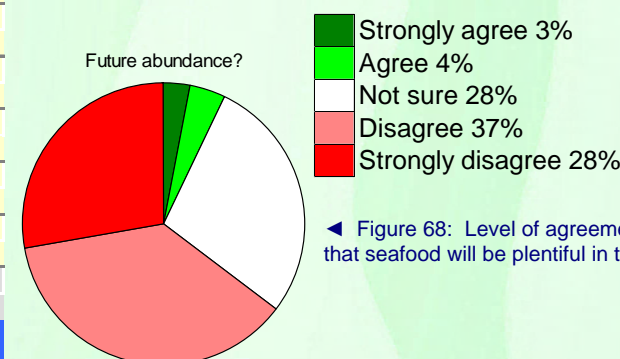
The most common reasons given for expecting resources to decline were overfishing (23%) and human population increases (23%). The use of *Derris* root (poison rope or rotenone) and “carelessness” were also considered important.

▼ Table 37: Summary of reasons given for why people agree or disagree that there are plenty of seafood to catch (n=27 responses).

There is plenty of seafood	#	% FG
Agree		
Can see plenty	8	27
Catches are good	2	7
God's blessing	1	3
Don't fish much	1	3
Don't fish unnecessarily	1	3
Current overharvesting	1	3
Surplus of seafoods	1	3
Always find what looking for	1	3
Disagree		
Catches poor	2	7
Expect problems in future	2	7
Diving catches poor	1	3
Hard to find some seafoods	1	3
Longer time to catch	1	3
Overharvesting	1	3
Seasonal	1	3
Can't tell	2	7
Responses	27	90
Groups	30	100

Seafood in the future	#	% FG
Expect plenty		
Good now	2	7
God will give more	1	3
Lots of small fish to grow	1	3
Control harvest	1	3
Awareness	1	3
Expect less		
Overfishing	7	23
Increasing population	7	23
Use of derris	3	10
No more to catch	2	7
Declining over years	2	7
Carelessness	2	7
Too many ways of fishing	1	3
Eat a lot of fish	1	3
Fishers not careful	1	3
Use of nets	1	3
Plenty of markets	1	3
Undersize	1	3
Use light to fish	1	3
No management	1	3
Not sure	3	10
Changes natural	1	3
Responses	41	
Groups	30	100

◀ Table 38: Reasons given for agreeing or disagreeing with the idea that there will be plenty of seafood to catch in the future (n=136 reasons).



◀ Figure 68: Level of agreement (by vote) with the statement that seafood will be plentiful in the future (n=1058 votes).

FG-Q20 INCOME OPPORTUNITIES FROM MARINE ENVIRONMENT

APART FROM FISHING AND COLLECTING, ARE THERE ANY OTHER ACTIVITIES OR INCOME OPPORTUNITIES OFFERED BY THE MARINE ENVIRONMENT (E.G. DIVING, ECOTOURISM)

Focus groups had a difficult time identifying income earning opportunities from the marine environment that were not already in use in the area. Most people who answered this question said there were no other opportunities, and a few said that they didn't know (Table 39).

Only three opportunities were identified by focus groups. These were ecotourism, diving and pearl culture. Several people responded that they had a lack of knowledge of such things and that they needed to have ideas introduced and then taught.

▼ Table 39: Income earning opportunities from the marine environment identified by Focus Groups.

Other income opportunities	#	% FG
Sum of Ecotourism	1	3
Sum of Diving	2	7
Sum of Pearls	1	3
Sum of None	22	73
Sum of Don't know	3	10
Responses	29	
Groups	30	100

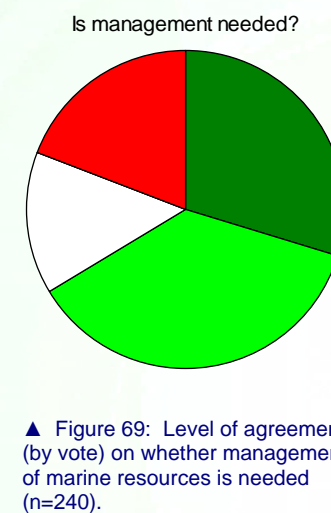
FG-Q21 IS MANAGEMENT NEEDED?

MANAGEMENT OF NATURAL MARINE RESOURCES IS NEEDED. (ASK FOR SHOW OF HANDS AND COUNT THE NUMBER OF PEOPLE WITH EACH OPINION). STRONGLY AGREE/ AGREE/NOT SURE /DISAGREE /STRONGLY DISAGREE. HOW SHOULD THEY BE MANAGED?

The majority of people polled during Focus Group meetings said that management of marine resources is needed (67%), with 19% strongly opposing the idea (Fig. 69).

The top ranked mechanisms suggested for management of marine resources were to establish rules or fisheries laws (17%) and increase information and awareness on management and the need for it (Table 40). Some of the other suggestions made were to ban destructive practices and allow time for stocks to recover.

► Table 40: Suggested mechanisms, banned practices, and limits for the management of marine resources as suggested by focus groups .



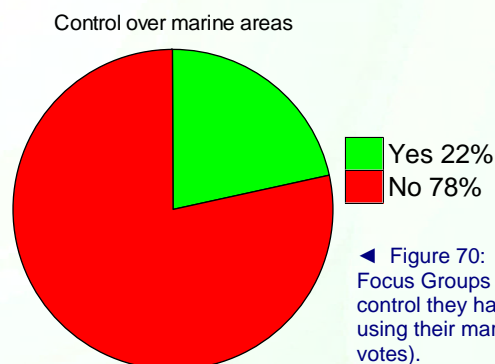
Strongly agree 30%
Agree 37%
Not sure 15%
Disagree 0%
Strongly disagree 19%

Suggested mechanisms	#	% FG
Establish rules / Fisheries laws	5	17
Information on how to manage	4	13
Awareness needed	3	10
Ban derris	2	7
Time for stocks recover	2	7
Fisheries / experts course	2	7
Selective methods	2	7
Care of Breeding animals	2	7
Ban harvest of undersize	2	7
Control areas fished	2	7
Control times of fishing	1	3
Control harvesting	1	3
Establish village committee to monitor harvest	1	3
New income opportunities	1	3
Ban destructive fishing	1	3
Information on management of each species	1	3
Carry out survey	1	3
Conserve breeding spots	1	3
Introduce freshwater fishing	1	3
Introduce fish farming	1	3
Have penalties	1	3
LLG to develop strategies	1	3
Don't know	3	10
Responses	41	
Groups	30	100

FG-Q22 CONTROL OVER MARINE AREAS

DO PEOPLE IN THIS VILLAGE HAVE ANY CONTROL OVER ANY MARINE AREAS OR SPECIES (TENURE, TAMBUS OR OTHERS)?
Yes /No.

The majority of Focus Groups reported that they had little or no control over marine areas (78%) (Fig. 70). Many reported that the marine areas close to their village were open access or that outsiders came in spite of their efforts to exclude or control them. Only 22% of Focus Groups reported that they thought they had relatively good control over their reef areas.



◀ Figure 70: Results of voting by Focus Groups on the degree of control they have over outsiders using their marine areas (n=23 votes).

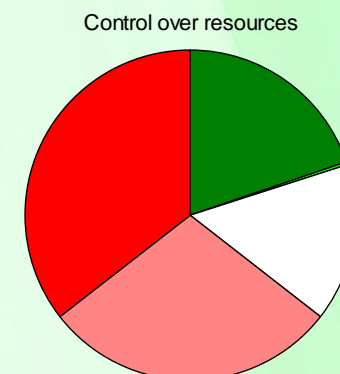
FG-Q23 CONTROL OVER RESOURCES

PEOPLE IN THIS VILLAGE HAVE VERY GOOD CONTROL OVER OUTSIDERS USING THEIR MARINE RESOURCES. (ASK FOR SHOW OF HANDS AND COUNT THE NUMBER OF PEOPLE WITH EACH OPINION). STRONGLY AGREE /AGREE / NOT SURE /DISAGREE /STRONGLY DISAGREE. EXPLAIN.

Sixty-four percent of people in focus groups disagreed or strongly disagreed that they had very good control over outsiders using their marine resources (Fig. 71), with only 21% of people reporting they did have good control. The people reporting good control said that they can easily chase outsiders away or that everyone understands and respects the rules (Table 41).

▶ Figure 71: Results of voting by focus groups on the degree of control they have over resources (n=254 votes).

Strongly agree 20%
 Agree <1%
 Not sure 15%
 Disagree 29%
 Strongly disagree 35%



Good control over resources		
Can chase outsiders away	5	17
Everyone understands rule	2	7
Outsiders don't use our resources	2	7
Outsiders have to seek permission	1	3
Little / No control over resources		
Councillor / WDC have no power marine	1	3
Island belongs to state	1	3
Foreigners use resources	1	3
Need a way to to have control	2	7
Christian- allow people to fish	1	3
No way to monitor or control	1	3
No penalties	2	7
No rules / restrictions	3	10
Outsiders fish & dive anyway	4	13
Outsiders don't seek permission	1	3
Not sure	7	23
Responses	34	
Groups	30	100

For those with little or no control, most people reported that their councillor/WDC has limited power, or that the community has no strict control over their areas and need a “policy”. “Nothing is done to outsiders who come here to fish”. In some cases foreigners are a concern and people have no “logistic support to monitor or control high powered boats”. Tourists are a concern, particularly divers. People reported that “many times tourists come and dive without any notice and when sighted, we don't have the access to approach them”.

▲ Table 41: Summary of the types and extent of control resource owners have over outsiders and the reasons why control may be poor. Data are opinions of focus groups.

FG-Q24 MANAGEMENT OF RESOURCES

ARE MARINE RESOURCES MANAGED AROUND THIS VILLAGE NOW? HOW? IS THIS SYSTEM OF MANAGEMENT WORKING? PLEASE DESCRIBE.

Seventy-six percent of focus groups reported that marine resources are not currently being managed around their area, while 17% said that they were (Fig. 72).

The management measures reported on in this question were very few and were limited to watching over prawns in their known nursery grounds, watching over reefs and resources, and controlling destructive fishing practices (Table 42). It seems, however, that many of these are “not really working because the ward is really big and the landscape does not allow him (councillor) to visit it within one day. Also people are just too ignorant and careless.”

▼ Figure 72: Are marine resources managed?



▼ Table 42: How marine resources are managed as reported by focus groups.

Management	#
Prawns watched in nursery ground	3
Watch over reefs / resources	1
Undersized not harvested	1
Derris banned	1
Nets confiscated	1
Responses	7
Groups	30

FG-Q25 EXPECTATIONS OF MANAGEMENT

IF MARINE RESOURCES WERE MANAGED (OR MANAGED BETTER), WHAT WOULD YOU EXPECT WOULD HAPPEN TO THE FISHING AND COLLECTING IN THIS VILLAGE?

Not all of the expected effects of resource management were positive. The majority of expectations (87%) were that management would be able to increase incomes, harvests and ensure the future (Table 43). In 13% of focus groups, some people said that they expected people would become happy.

On the negative side, one focus group mentioned that some people might become upset if management were put in place, while another recognised that there might be more illegal fishers.

▼ Table 43: People's expectations of what would happen if resources were managed, as reported by focus groups.

Expectations	#	% FG
Better income	9	30
Better harvest	7	23
Plentiful / surplus resources	6	20
Sustainability / Resources for future	4	13
People happy	4	13
Easier to fish / collect	3	10
Bigger size	2	7
Increased resources	2	7
Continuous harvesting	2	7
More efficient	1	3
Some people may be upset	1	3
More illegal fishers	1	3
More fishing activity	1	3
More protein	1	3
Don't know	2	7
Responses	46	
Groups	30	100

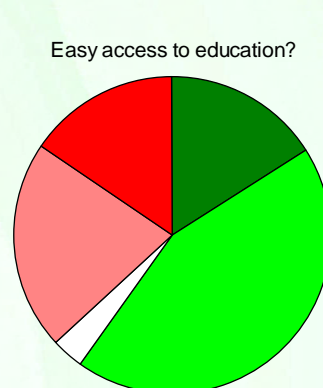
FG-Q26 EDUCATION

CHILDREN IN THIS VILLAGE CAN EASILY GET AN EDUCATION. STRONGLY AGREE / AGREE /NOT SURE /DISAGREE /STRONGLY DISAGREE. EXPLAIN.

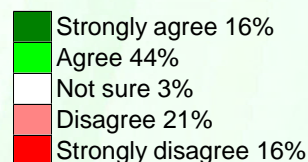
People were relatively polarised when asked whether they thought it was easy to get an education in their village. About 60% of people said that it was easy (strongly agree or agree), and about 37% disagreed or strongly disagreed (Fig. 73).

The main reasons given for poor access to education were that schools were too far away, or that there were financial constraints (Table 44). As one group put it “because of the geography, children have to go over mountains, pass very long points, walk over rocky trails to get to the school”.

Easy access to education was the result of schools being close by, cheap fees and access to income earning activities.



▲ Figure 73: Opinions of people (by vote) in focus groups of how easy it is to get an education (n=249 votes).

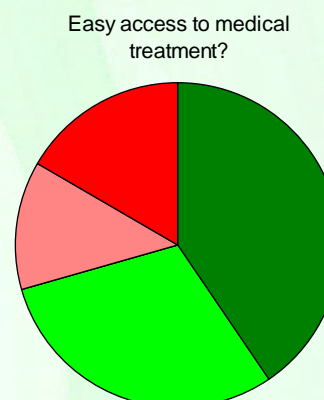


◀ Table 44: Reasons given by focus groups on why they thought it either easy or difficult to access education in their area.

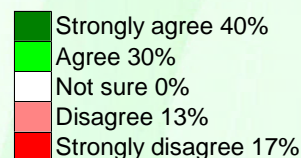
FG-Q27 HEALTH

PEOPLE IN THIS VILLAGE CAN EASILY GET MEDICAL TREATMENT. STRONGLY AGREE/AGREE/NOT SURE/DISAGREE/STRONGLY DISAGREE. EXPLAIN.

Seventy percent of people thought that access to medical services was easy, while 30% said that it was difficult (Fig. 74). Those that agreed that medical treatment was easy to access said that services were nearby, relatively cheap, and that medicine were readily available (Table 45).



▲ Figure 74: Opinions of people (by vote) in focus groups on the question of the ease of access to medical treatment (n=235).



▶ Table 45: Reasons given for why people believe that access to medical treatment in their area is easy or not (n=93).

People who said access to medical treatment was difficult said that they either did not have an aid post in their area, or that the distance to medical help was far. Some people said there was a lack of drugs available, that there was a problem for people who needed transporting to medical centres for treatment.

Easy access to education		
School close by	14	47
Fees are relatively cheap	3	10
Children work to help pay	1	3
Pay easily	1	3
Marketing provides the money	1	3
Children have right to education	1	3
Parents can afford school	1	3
Difficult to access education		
Schools too far	4	13
Problem paying	4	13
Cost is high	3	10
Fees determine who is educated	1	3
Waitlist for closer school	1	3
Responses	35	
Groups	30	100

Access is easy		
Services close by	18	60
Relatively cheap	4	13
24hrs service	2	7
Traditional medicine	1	3
Don't run out of medicines	1	3
Access is difficult		
Distance	4	13
No service here	4	13
Lack drugs / supplies	3	10
Very sick need transport	1	3
Population too high	1	3
Very expensive	1	3
Only services simple needs	1	3
Responses	41	
Groups	30	100

FG-Q30 SOCIAL PROBLEMS

ARE THERE ANY SOCIAL PROBLEMS IN THIS VILLAGE? WHAT ARE THEY? HOW COULD THEY BE ADDRESSED?

Most focus groups reported on social problems in their communities that needed to be addressed, though some groups reported that problems were only occasional and of little significance (Table 46). Thirteen percent of groups said that they had no social problems in their areas.

The most commonly cited problems were with alcohol and drugs (marijuana), fighting, crime and land disputes. Most of the proposed solutions involve village court, mediation, awareness raising, or rely on the councillor (or WDC) to act (Table 47). One comment for dealing with social problems suggested an entirely different approach: “addressing the concerns of the youths”.

▼ Table 46: Social problems reported by focus groups.

Problems	#	% FG
Alcohol / Homebrew	21	70
Drugs	12	40
Violence / Fighting	5	17
Crime	4	13
Land disputes	4	13
Domestic violence	3	10
Rascals	2	7
Theft	2	7
Noise	2	7
Clan clashes	2	7
Unwanted pregnancies	2	7
Verbal abuse	2	7
Homebrew	1	3
Outsider marriages	1	3
Gossip	1	3
Occasional	1	3
Only holidays	1	3
No	4	13
Responses	70	
Groups	30	100

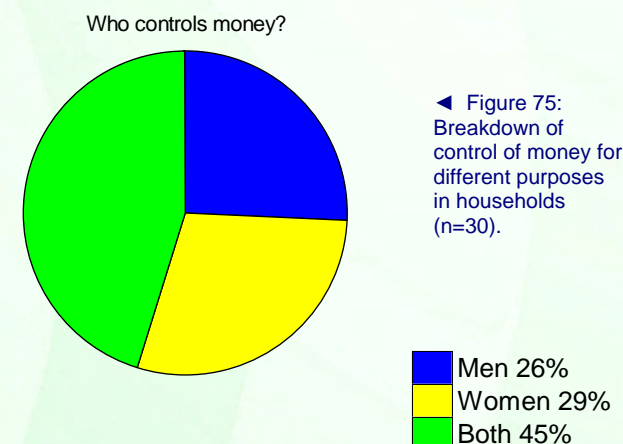
▼ Table 47: Solutions to social problems as suggested by focus groups.

Solutions to social problems	#	% FG
Court / Village court	6	20
Mediation	5	17
Councillor & WDC should act	3	10
Awareness	3	10
Enforcement	3	10
Educate	2	7
Community punishment	2	7
Punish offenders	1	3
Address youth concerns	1	3
Advise children	1	3
Bring to God	1	3
Pray for them	1	3
Elect new Councillor	1	3
Arrest	1	3
Community work	1	3
Forced marriages	1	3
Law & Order Officers	1	3
Community meetings to discuss	1	3
Make rules	1	3
Parental discipline	1	3
Responses	37	
Groups	30	100

FG-Q31 CONTROL OF MONEY

WHO CONTROLS MONEY IN THE HOUSEHOLD? WHO DECIDES HOW MUCH IS SPENT ON FOOD, ALCOHOL, EDUCATION AND MEDICAL EXPENSES?

According to focus groups, men and women jointly control the money in 45% of the households, while men are in control in 26% and women in control in around 29% (Fig. 75). There was no discernible difference in the types of expenditure controlled by either gender, but this may be related to the small number of groups available for consultation and the limited answers received. In one answer we were told that “money is controlled by the ladies but the break up on how it should be used for the household is between the man and woman”.

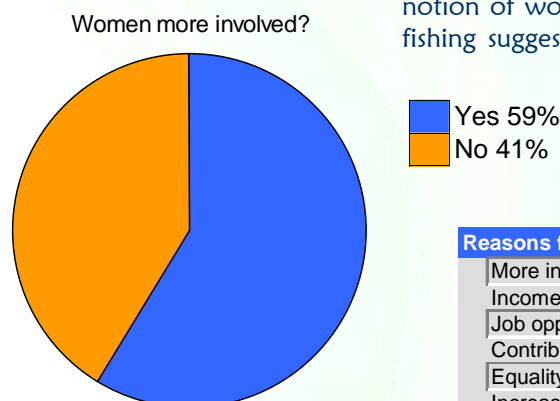


FG-Q32 WOMEN IN FISHING /COLLECTING

DO YOU THINK WOMEN SHOULD BECOME MORE INVOLVED IN FISHING AND COLLECTING? WHY OR WHY NOT?

Most people (59%) said that women should become more involved in fishing and collecting, while 41% said that they should not (Fig. 76).

The main reasons given for why women should become more involved included an increase in income, and particularly an income for women (Table 48). Some people said that women becoming more involved in fishing would be good because they could then take over the feeding of the family if the father goes away. Another response was that: “women with a motherly behaviour would have a sense of management to bring the catch back and decide to have some in the house and sell some for cash”. Those that did not support the notion of women becoming more involved in fishing suggested that they might neglect their housework or traditional duties or cause overfishing.



▲ Figure 76: Responses by focus groups to the question of whether women should become more involved in fishing and collecting (n=29).

► Table 48: Reasons given for why women should or should not become more involved in fishing and collecting.

Reasons for MORE involvement	#	%
More income	6	20
Income for women	4	13
Job opportunity	3	10
Contribute to income	2	7
Equality	1	3
Increase fishing / collecting	1	3
Increase markets	1	3
Women interested	1	3
Feed family if father away	1	3
Help men	1	3
Reasons for NOT becoming more involved		
Neglect housework	5	17
Traditional duties	3	10
Happy with current level	1	3
Overfishing	1	3
Night fishing not safe	1	3
Responses	32	
Groups	30	100

FG-Q36 CHANGES IN THE ENVIRONMENT

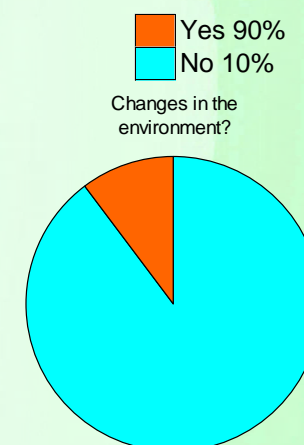
HAVE YOU NOTICED ANY CHANGES IN THE MARINE ENVIRONMENT OVER THE LAST 5–10 YEARS? WHAT CHANGES?

Ninety percent of focus groups reported that they had noticed changes in the marine environment over the past few years (Fig. 77). Changes reported included damage or death of corals or reefs, changes in the level of the sea or tides, and declining resources (Table 49). In some cases, observations were site dependent, with some groups reporting reefs growing in some areas, while in others reefs were dying.

Environmental changes	#	% FG
Corals/reefs dying or breaking	8	27
Sea level rise	7	23
Less resources (fish / invertebrates)	6	20
Higher tides	5	17
Coastal erosion	4	13
Stronger currents	2	7
New sand banks	2	7
Seafoods dying	2	7
Overharvesting	2	7
Seaweeds dying	2	7
Catch / trip declining in numbers & size	1	3
Coral growth	1	3
Tiny fish that never grow	1	3
Fish hide from spears	1	3
New reefs forming beneath old, raising them	1	3
Climate change	1	3
Very low tides	1	3
Stronger winds	1	3
Fish going to deeper water	1	3
Fishing takes longer	1	3
No Barramundi magic dance	1	3
Coastal trees lost	1	3
Mangroves cut	1	3
Resources now further away	1	3
Breeding habitats destroyed	1	3
Seagrass dying	1	3
Oil palm pollution	1	3
Responses	57	
Groups	30	100

◀ Table 49: Changes in the environment reported by focus groups.

▼ Figure 77: Overall responses by focus groups to question of whether there had been changes in the environment (n=29).



Summary of Findings



Key Informant Survey

KI-Q1 COST OF ITEMS

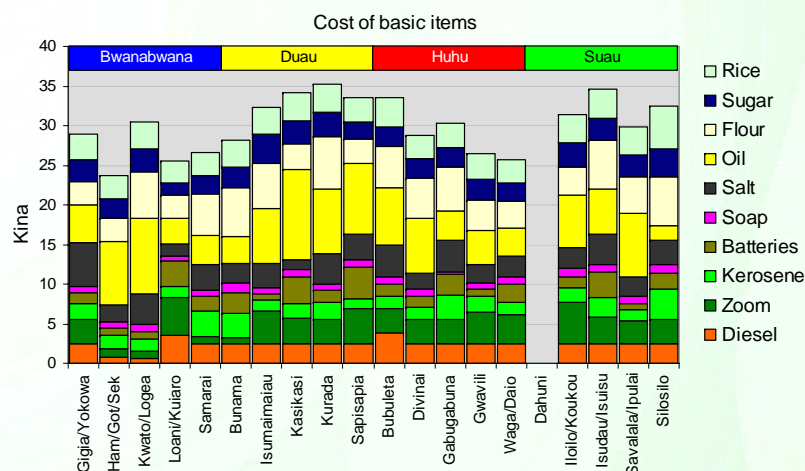
HOW MUCH DO THE FOLLOWING ITEMS COST AT ONE SHOP IN THIS VILLAGE:
RICE (1 KG); SUGAR (500 G); FLOUR (1 KG); SOAP (CAKE); COOKING OIL (1 LITRE); SALT (500 G); AA BATTERIES (2 PACK); KEROSENE (375 ML); ZOOM (GALLON=5 LITRES); DIESEL (GALLON=5 LITRES).

The cost of common household goods varied significantly among wards. Of the 10 items surveyed, fuels, batteries and cooking oil were the most variable in price (Table 50).

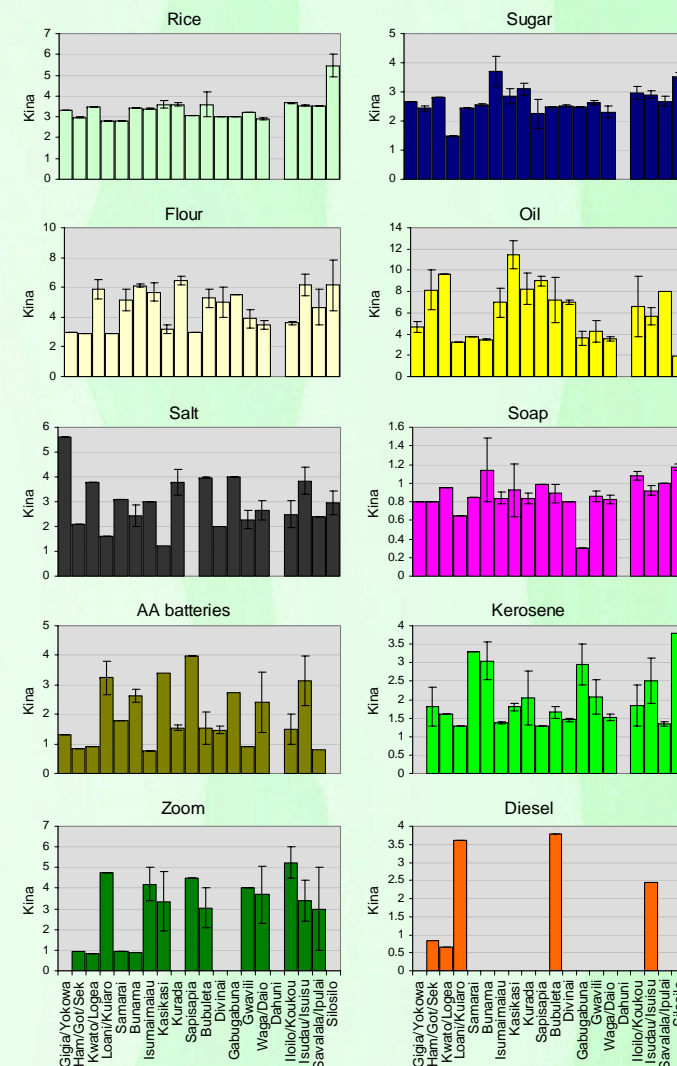
Overall costs were highest in Kurada and Isudau/Isuisu, and lowest in Hamama/Gotai/Sekuku (Figs. 78 and 79).

▼ Table 50: Summary of overall average costs (kina) of common consumer goods across the survey (n=30-95 depending on goods).

Goods	Units	Cost (K)	SD	n
Rice	kg	3.34	0.61	83
Sugar	500g	2.65	0.60	83
Flour	kg	4.59	1.64	81
Oil	litre	6.09	3.19	73
Salt	kg	3.12	1.19	66
Soap	cake	0.88	0.28	81
Batteries AA	2 pack	1.94	1.29	63
Kerosene	375ml	1.99	0.95	70
Zoom	litre	3.21	1.94	46
Diesel	litre	2.40	1.48	15



◀ Figure 78: Comparison of accumulated costs of items for each ward. One unit of each item has been added to each bar as a proxy indicator of overall costs and how these might vary from place to place (n=83). Note: Values were missing for some items in some wards. These were substituted with the overall mean for that item across the survey (means substitution method) to allow for comparisons among wards. This was done because omitting missing values would have given an artificially low overall value for costs, but using this method, missing values do not contribute to patterns, but merely hold the place for that item. Results should be interpreted with caution. For missing values see next Figure 79 (missing bars).



▲ Figure 79: Cost of common consumer goods in a store selected in each ward. Kina values are given as means +/-SE of samples taken with each key informant survey (note values are not from the Key Informants themselves).

KI-Q7 POPULATION GROWTH

WHAT IS THE POPULATION GROWTH RATE? % PER YEAR (OR) IS THE NUMBER OF PEOPLE INCREASING/DECREASING/STEADY? WHY?

According to key informants, the populations of most wards included in this survey is increasing or staying steady (Table 51). That is, in all wards, except Samarai, at least one key informant said that the population was increasing or staying steady. Only in Samarai and Gabugabuna did some key informants say that the population was decreasing.

Most informants felt that in those areas where the population was increasing, the most important reasons were because people were marrying earlier, that there were fewer deaths, improved medical facilities, and more unplanned or unmarried pregnancies (Table 52). Other reasons given were that people that had been living in other areas were returning to their village and that the population was getting younger with more females being born. Where populations were said to be decreasing, reasons included lack of income opportunities, low birth rates and family planning.

	Ward	↑	↔	↓
Bwanabwana	Gigia/Yokowa	●	●	
	Ham/Got/Sek	●		
	Kwato/Logea	●		
	Loani/Kuiaro	●	●	
	Samarai			●
Duau	Bunama	●	●	
	Isumaimaiau	●	●	
	Kasikasi	●		
	Kurada	●		
	Sapisapia	●		
Huhu	Bubuleta	●	●	
	Divinai	●		
	Gabugabuna	●		●
	Gwavili	●	●	
	Waga/Daio	●		
Suau	Dahuni	●	●	
	Iloilo/Koukou	●		
	Isudau/Isuisu	●		
	Savalala/Ipulai	●	●	
	Silosilo	●	●	

◀ Table 51: Summary of population trends by LLG and ward. Information given is the opinion of key informants only (no data were given). For each ward ↑ =population is increasing; ↔ =population is steady; and ↓ =population is decreasing (n=92).

▶ Table 52: Summary of reasons given for reported population trends.

Why is population increasing?	#	% KI
More births	38	43
Lots marriages / newlyweds	10	11
Younger marriage	8	9
Fewer deaths	8	9
Improved medical	7	8
Unmarried / young pregnancies	7	8
Births outnumber deaths	7	8
Unplanned pregnancies	3	3
Outsiders marrying into village	3	3
Younger couples, more babies	3	3
More women / girls being born	3	3
People returning to village	2	2
Immigration	2	2
Fewer old people	1	1
No education family planning	1	1
People want families	1	1
Good health	1	1
Low infant mortality	1	1
Baby boom	1	1
Why is population decreasing?		
Lack employment	3	3
Emigration	3	3
Low birth rate	2	2
Family planning	2	2
Infant mortality	1	1
No development	1	1
Most too young	1	1
Sterility in some people	1	1
Most young people in towns	1	1
Don't know	2	2
Responses	124	
Key Informants	88	100

KI-Q9 ILLNESS

WHAT ARE THE MAIN SICKNESSES IN THE VILLAGE?

Malaria was the most often reported illness reported by key informants. It was also by far the highest ranked disease, in terms of importance, of the 16 different types of diseases that were identified, including minor ailments such as headaches and colds, as well as serious diseases such as asthma and tuberculosis (Table 53). One key informant told us that asthma was on the increase in young people.

Diseases	Importance	#	% KI
Malaria	324	84	88
Flu / Colds	65	24	25
Asthma	58	21	22
Cough	42	16	17
Diarrhoea	39	14	15
Fever	33	10	11
Tuberculosis	20	7	7
Pneumonia	19	7	7
Headache	11	3	3
Shortwind	6	3	3
Boils	4	2	2
Constipation	4	1	1
Food poisoning	3	1	1
Pig belly	3	1	1
Minor pains	2	1	1
Witchcraft	2	1	1
Responses		196	
Key Informants		95	100

▲ Table 53: Illnesses reported by key informants. The value importance was calculated by using the ranked importance supplied by Key Informants as follows: most important=score 4; intermediate values of 3 or 2 and least important=score 1. Ranked scores were then summed across the survey to indicate importance (n=454 responses).

KI-Q11 SCHOOLING

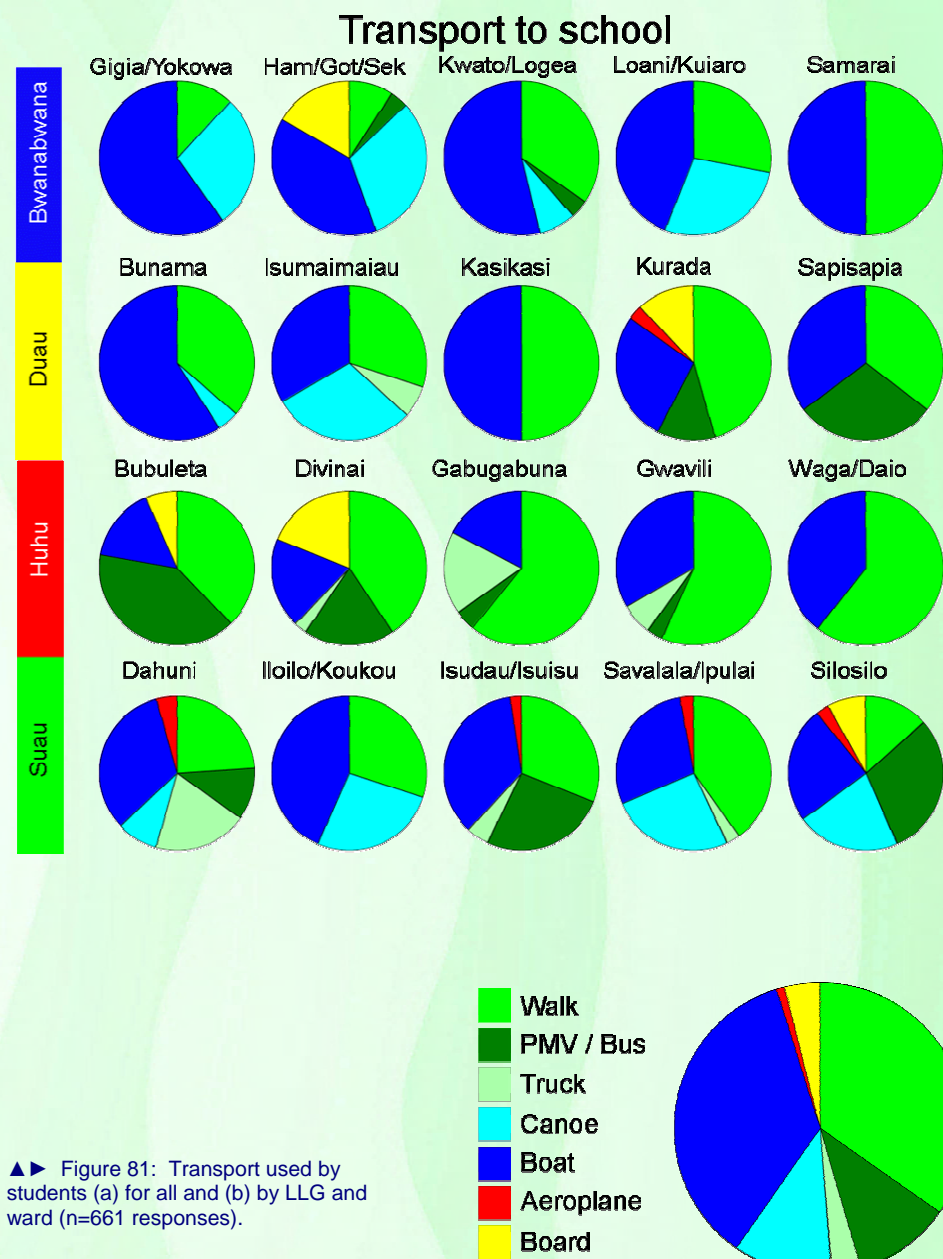
WHERE DO CHILDREN IN THE VILLAGE GO TO SCHOOL? HOW DO THEY GET THERE? GIVE NAME(S) OF SCHOOL(S)/LOCATION(S) (VILLAGE)/USUAL TRANSPORT; FOR: PRE-SCHOOL (<5 YRS); ELEMENTARY (5–6 YEARS); PRIMARY (GRADES 1–6); SECONDARY (GRADES 7–10); SECONDARY GRADES (11–12); VOCATIONAL.

According to key informants, students in all wards were able to access education at all levels from primary up to vocational training. This included using schools in the village or nearby, as well as accessing more remote schools through travelling daily or boarding. Access to pre-school and elementary school was more ward-dependent (Fig. 80).

	Ward	Pre-school	Elementary	Primary	Secondary (7-10)	Secondary (11-12)	Vocational
Bwanabwana	Gigia/Yokowa			●	●	●	●
	Ham/Got/Sek	●	●	●	●	●	●
	Kwato/Logea	●		●	●	●	●
	Loani/Kuiaro		●	●	●	●	●
	Samarai	●	●	●	●	●	●
Duau	Bunama			●	●	●	●
	Isumaimaiiau	●	●	●	●	●	●
	Kasikasi	●	●	●	●	●	●
	Kurada	●	●	●	●	●	●
	Sapisapia		●	●	●	●	●
Huhu	Bubuleta	●	●	●	●	●	●
	Divinai	●	●	●	●	●	●
	Gabugabuna	●	●	●	●	●	●
	Gwavili	●	●	●	●	●	●
	Waga/Daio	●	●	●	●	●	●
Suau	Dahuni	●	●	●	●	●	●
	Iloilo/Koukou			●	●	●	●
	Isudau/Isuisu	●	●	●	●	●	●
	Savalala/Ipulai	●	●	●	●	●	●
	Silosilo	●		●	●	●	●

The most common ways students get to school is by boat (36%) or by walking (Fig. 81). Boat or canoe were the most important forms of transport in Bwanabwana LLG and almost half of students walk to school in Huhu LLG. Aeroplanes were reported for Duau and Suau LLGs, despite the absence of any air services in those areas. It is possible that this refers to children attending school in other provinces. Boarding, although most common in Huhu and Bwanabwana, was an option in all LLGs.

◀ Figure 80: Summary of education accessed from each LLG and ward (n=534 institutions reported, but many of these would be the same ones reported by different key informants).



▶ Figure 81: Transport used by students (a) for all and (b) by LLG and ward (n=661 responses).

KI-Q12 INVOLVEMENT IN FISHING

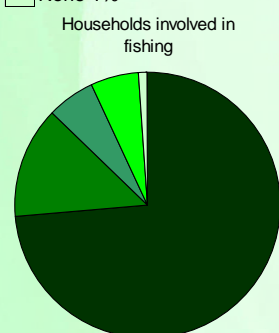
WHAT IS THE ESTIMATED NUMBER OF HOUSEHOLDS IN THE VILLAGE INVOLVED IN FISHING? IF THERE ARE ANY HOUSEHOLDS THAT DON'T PARTICIPATE, WHY DON'T THEY?

Seventy-four percent of key informants told us that all or nearly all of the households in their village are involved in fishing and/or collecting activities. Only one key informant said that the people in their area were not involved (Fig. 82).

For the villages where not everyone is involved in fishing, the main reasons given were that people were involved in other activities, had no canoe, or could not afford fishing gear (Table 54). Other activities included running businesses, farming or being employed. In some households, people did not fish because there were no men around to do it. In any one village, there are many reasons why people do fish, and as one key informant put it: "some don't have fishing gears, others are lazy, others go fishing but don't catch anything so they just lose hope to go fishing".

▼ Figure 82: Proportions of households reported by key informants as involved in fishing and collecting (n=87 key informants).

All 74%
 Most 14%
 Half 6%
 Some 6%
 None 1%



Reasons for not fishing	#	% KI
Other activities	11	32
No canoe	6	18
Too old	6	18
Can't afford / no gears	5	15
Lazy	5	15
Women-only households	4	12
Not fishers	3	9
No interest in fishing	2	6
Disabled	2	6
Don't know how to fish	2	6
Lose hope (too hard)	1	3
Sick	1	3
Don't like fish	1	3
No skills	1	3
Responses	50	
Key Informants	34	100

▼ Table 54: Reasons given for why some households are not involved in fishing and collecting.

► Table 55: General concerns of communities across the survey area as indicated by key informants.

KI-Q18 GENERAL COMMUNITY CONCERNS

WHAT ARE SOME OF THE GENERAL CONCERNS IN THE COMMUNITY? (WHAT SUBJECTS OF IMPORTANCE COME UP IN COMMUNITY MEETINGS?)

A range of concerns reportedly come up regularly in community meetings and discussions (Table 55). The most commonly cited were problems with alcohol, law and order issues, land disputes, theft, levels of education, and a lack of development. Fisheries-related issues were rarely mentioned.

Community concerns	#	% KI
Social concerns		
Alcohol	25	26
Law & Order / Disturbance	13	14
Land disputes	12	13
Stealing	11	12
Drugs	9	9
Social problems	6	6
Spiritual growth	2	2
Smoking	1	1
Gossip	1	1
Respect elders / community	1	1
Laziness	1	1
Traditions	1	1
Adultery	1	1
Urban returns - aimless	1	1
Education		
Education facilities & services	11	12
School fees	6	6
Awareness / education / training	2	2
Children not in school	1	1
Education for jobs	1	1
Church		
Church	6	6
Build or new church	4	4
Community development		
Development	11	12
Infrastructure	10	11
Water	9	9
Increase incomes	8	8
Markets	7	7
Transport & costs	7	7
More effort on farming	6	6
Housing (especially teachers)	6	6
Youth involvement	3	3
Sanitation	3	3
Councillor not doing duty	2	2

Community work programs	1	1
Tourism benefits?	1	1
Finance for new projects	1	1
have to produce for food and \$	1	1
Info commerce	1	1
Info forestry	1	1
Market for vanilla	1	1
Supermarket	1	1
Postal services	1	1
Lack community meetings	1	1
More government services	1	1
No bank	1	1
Planting more buai	1	1
Politics	1	1
Shortage of land	1	1
Squatters	1	1
Employment	1	1
Environment		
Pigs unhealthy / destroy things	4	4
Fence pigs	3	3
Impact oil palm	1	1
Oil palm	1	1
Marine resources		
Information on fishing	3	3
Protection marine resources	2	2
Outsiders using resources	1	1
Poison rope	1	1
Night diving	1	1
More fishing	1	1
Health		
Health services	11	12
Info HIV/AIDS	3	3
Info health	1	1
Don't know	1	1
No concerns	1	1
Responses	188	
Key informants	95	100

Development	#	% KI
Fish market	20	21
Fishing facilities	10	10
Limited gear	8	8
Transport	5	5
Lack boats	4	4
Fishing skills	3	3
Finance	3	3
Buyers	2	2
Preservation skills	2	2
Low prices	2	2
Increase income	2	2
Gear shop	1	1
Maintain wharf	1	1
Difficult processing	1	1
Fuel costs	1	1
Gear expensive	1	1
Practical: No more surveys / awareness	1	1
Buyer coop	1	1
Pearl farming	1	1
Access to fishing	1	1
How to harvest	1	1
Catch storage	1	1
Boat repairs	1	1
Training	1	1
Industry management	1	1
Management		
Declining stocks	10	10
Nets	9	9
Destructive	6	6
Derris	6	6
Night fishing	6	6
Fisheries management	4	4
Undersized	4	4
Coral / lime	2	2
Overfishing	1	1
Dynamite	1	1
Spearfishing	1	1
Use new methods / gears	1	1
Outside influences		
Outsider fishing	11	11
Ecotourism / Divers	3	3
Commercial fishing	2	2
No royalties commercial	2	2
NFA / Fisheries	1	1
New boundaries	1	1
Environmental		
Weather	2	2
Pollution damage resources	2	2
Coral reefs dying	1	1
None	17	18
Responses	168	
Key informants	96	100

KI-Q19 FISHERIES ISSUES

WHAT ARE THE MAJOR ISSUES CONCERNING FISHERIES IN THIS VILLAGE? WHAT NEEDS TO BE DONE TO ADDRESS THEM?

WHAT HAS THE COMMUNITY TRIED TO DO TO ADDRESS THE ISSUES? WHAT WAS THE RESULT?

Despite the apparent overall low level of concern with fisheries issues compared with social, education, church and community development issues identified in KI-Q18, a wide range of fisheries issues are being discussed in Milne Bay communities. Through the key informants, issues of fisheries development, management of resources, effects of outside forces, and environmental concerns discussed by fishers and the general community were identified (Table 56). The issues of most concern to communities were the lack of fish markets and fishing facilities (infrastructure), declining stocks, and the impacts of “outsider fishing”.

According to the key informants, the most important actions needed to address these fisheries issues were to obtain the support of leaders, and to raise community awareness or increase education. There was also a need to bring in businesses, markets or buyers and obtain assistance from NFA, the PNG government, or expert advisers (Table 57).

Most key informants reported that communities had not yet taken any actions, or had no idea of what steps to take to address their fisheries problems (Table 58). A few communities had begun doing addressing their fisheries problems, mostly by discussing the issues. Overall, most attempts made within communities to solve their fisheries problems were unsuccessful, but there were some cases in which key informants reported good or some results (Table 59).

Actions	#	% KI
Awareness / Education	11	14
Bring businesses / markets / buyers	9	12
Stop destructive methods	6	8
Preservation facilities	5	6
Manage stocks	5	6
Penalties	5	6
Discuss at meetings	3	4
Stop illegal ecotourism	3	4
Collect royalties	3	4
Rules / laws	3	4
Financial assistance	2	3
Remind outsiders	2	3
Harvest sustainably	2	3
Regular transport system	1	1
Government should help, not revenue	1	1
Return to traditional methods	1	1
Slow population growth	1	1
Boundary laws	1	1
Mark official Ward boundaries	1	1
Obtain permission from other Wards	1	1
New technology	1	1
Provide incentives for fishing	1	1
No more surveys & awareness	1	1
Provide practical help	1	1
Allow stocks to breed	1	1
Infrastructure	1	1
Surveys for better advice	1	1
Community cooperation	1	1
Players		
Support of leaders	14	18
NFA	9	12
Government	4	5
Advisers	4	5
NGOs (Conservation International)	3	4
Create Fisheries Associations	2	3
Need rangers	1	1
Dept Primary Industries	1	1
Not sure	2	3
Responses	114	
Key informants	77	100

▲ Table 57: Solutions to fisheries problems proposed by key informants.

◀ Table 56: Fisheries issues raised in villages over the survey area as reported by key informants.

Actions tried	#	% KI
Meetings / Discussions	12	16
Raised with Councillor / WDC	3	4
Raised with LLG / Province	2	3
Made boundary laws	1	1
Warned Ward outsiders	1	1
5 Year Plan	1	1
Community follow Elders' advice	1	1
Ward Constitution rules	1	1
Leaders 5 years stop on Sandfish	1	1
Chased off outsiders	1	1
Tried to establish buying project	1	1
Tried to arrange transport	1	1
Petitioned Oil Palm	1	1
Look for market	1	1
Setting up fishing project	1	1
Asked for freezer	1	1
Nothing	50	65
Responses	80	104
Key Informants	77	100

▲ Table 58: Actions tried by communities to solve their fisheries problems.

▼ Table 59: Outcomes of community attempts to solve their fisheries problems.

Results	#	% KI
Nothing	51	80
Some results	4	6
Good result	3	5
Fines effective	1	2
Business now	1	2
Freezer broke	1	2
Don't listen	1	2
Disagreement	1	2
Still planning	1	2
Responses	64	
Key Informants	64	100

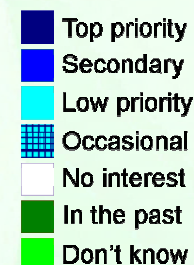
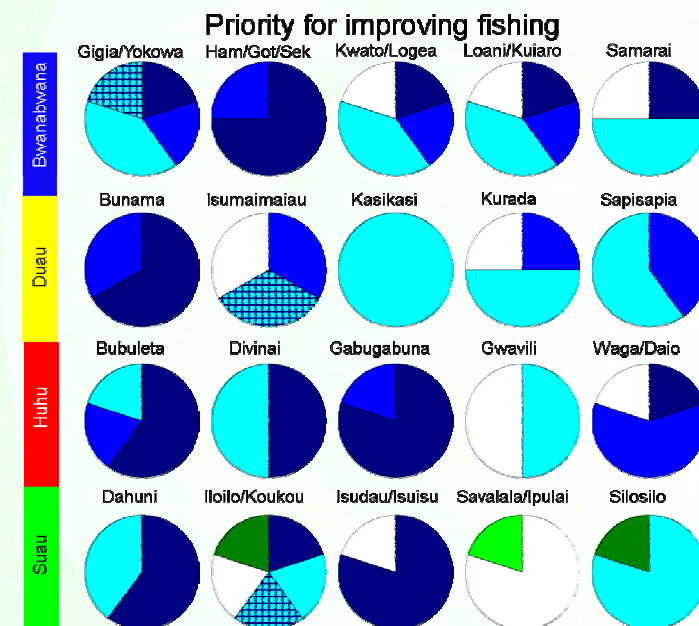
KI-Q20 IMPROVING FISHING

HOW MUCH OF A PRIORITY IS IT TO IMPROVE FISHING CONCERNS IN THIS VILLAGE? HOW OFTEN DOES THE COMMUNITY TALK ABOUT FISHING ISSUES IN MEETINGS?

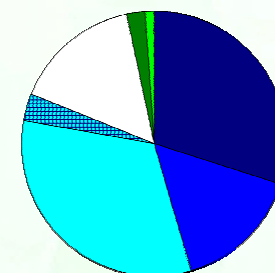
Based on the opinions of key informants, communities varied greatly in terms of the importance of addressing fisheries-related problems at community meetings (Fig. 83). Overall, 30% of key informants thought that their communities considered fishing issues a top priority, while 35% considered fisheries a low priority or an occasional issue. About 16% of key informants said that there was currently no interest in improving fishing in their areas.

The wards with the most interest in improving fishing appear to be Gabugabuna, Hamama/Gotai/Sekuku and Bunama. People in Savalala/Ipulai appear to be uninterested in fishing concerns. The result in Iloilo/Koukou is interesting with key informants giving divergent opinions. This ward and shows a spread from top priority through to no interest or only interest in the past.

Some of the communities see fisheries as a priority because they need to discuss the sea cucumber and trochus harvest. For others there are issues of outsiders: "not much of a priority because we have a lot of marine resources still available. We only talk about reef boundaries when people don't keep to their traditional marks."



▲► Figure 83: Relative interest in fisheries issues during community meetings as reported by key informants (n=90).



KI-Q37 ALCOHOL AND DRUGS

HOW COMMON ARE PROBLEMS WITH ALCOHOL OR DRUGS IN THE VILLAGE (DRUNKEN PEOPLE DISTURBING OTHERS, VIOLENCE). NO PROBLEM/HAPPENS RARELY/HAPPENS OCCASIONALLY/PROBLEMS ARE COMMON/PROBLEMS ARISE WEEKLY AND CAUSE CONCERN. DESCRIBE THE TYPES OF PROBLEMS.

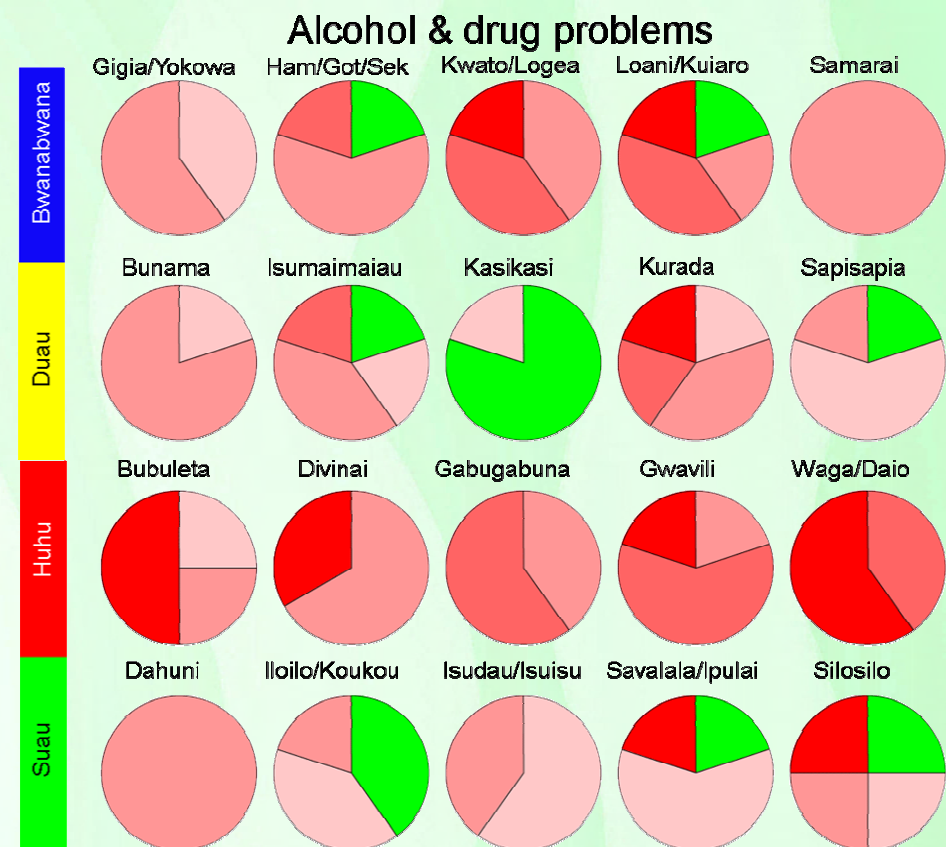
Overall, 13% of key Informants reported that their communities had no problems with alcohol or drugs, and a further 20% reported that problems were rare. Thirty-nine percent of key informants said that problems with alcohol and drugs were occasional in their communities. Problems were considered common by 16% of informants and common by 13%.

The most consistent problems appeared to be in Wagawaga/Daio, Gwavili and Bubuleta wards in Huhu LLG. The least number of problems appeared to be in Kasikasi and Iloilo/Koukou wards (Fig. 84).

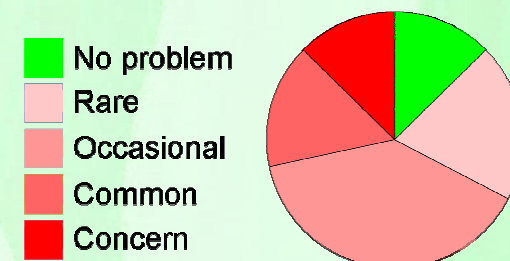
The most frequently reported effects of alcohol and drugs in the community were disturbance of the community, fighting and other forms of violence (particularly against women), verbal abuse and vandalism (Table 60). As one key informant said, alcohol and drugs cause “disharmony and fear in the community, among women and young girls”. Another informant said, “people under the influence of liquor disturb the community during weekends — it’s quite common in this village”.

Problems	#	% KI
Alcohol / Drunk	61	76
Disturbance	38	48
Drugs / High	20	25
Fighting/Violence	18	23
Verbal abuse	14	18
Vandalism	5	6
Stealing	5	6
Harass women	2	3
Domestic violence	1	1
Arguments	1	1
Harass Elders	1	1
Break-Enter	1	1
Responses	167	
Key Informants	80	100

◀ Table 60: Problems relating to alcohol and drugs in the community as reported by key informants.



▶▶ Figure 84: Assessment by key informants of alcohol and/or drug problems in villages (n=99). Green indicates an opinion of “no problem”, while red indicates an increasing perception of problems.



KI-Q38-39 CLAN CONFLICTS AND THEIR RESOLUTION

ARE THERE ANY CONFLICTS BETWEEN CLANS? WHAT ARE THE MAIN ISSUES?
HOW ARE CLAN CONFLICTS RESOLVED?

Seventy-four percent of all key Informants interviewed said that clan disputes were an issue in villages (and between them), while 26% said that they were not an issue in their area (Table 61). Note, however, that clan disputes were not raised as a general community concern in KI-Q18. The most important reasons given for disputes were ownership or land boundaries, marriages (including bride price), and resources such as fishing grounds and sago.

Are there Clan disputes?	#	% KI
Yes	70	74
No	25	26
Church Elders mediate & prevent	1	1
Types		
Land disputes	70	74
Marriage disputes	4	4
Bride price	1	1
Resources	1	1
Fishing grounds	2	2
Sago	2	2
Timber	1	1
Gardens	1	1
Responses	178	
Key Informants	95	100

▲ Table 61: Presence, importance and types of clan disputes as reported by key informants (n=100).

► Table 62: Mechanisms used for resolving clan conflicts as reported by key informants (n=132 responses).

Resolution of Clan conflicts	#	% KI
Land mediators	52	63
Village Court	37	45
Magistrates	5	6
Councillors	5	6
Ward Authorities	2	2
Church Elders	4	5
Village Elders	4	5
Clan mediation	3	4
Meetings	3	4
Lands Official	1	1
Law & Order	1	1
Peace Officer	1	1
Responses	118	
Key Informants	83	100

The most common way that communities resolve clan conflicts, is through the Land Mediators or Village Court, mostly because many disputes concern land (Table 62). For some problems the church plays a role: “if problem is not big, church elders solve them, if big problem, magistrate solves them”.

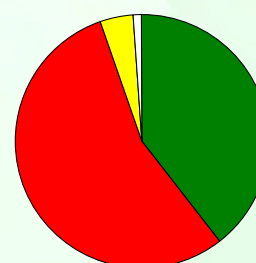
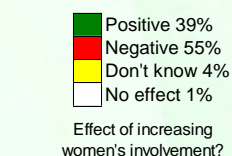
KI-Q41 INCREASING WOMEN’S INVOLVEMENT IN FISHERIES

WHAT IS THE LIKELY EFFECT OF INCREASING INVOLVEMENT BY WOMEN IN FISHING ACTIVITIES?

Most key informants (55%) predicted that with the increased involvement of women in fishing activities, there would be negative impacts on the community (Fig. 85). For those predicting positive effects from women’s involvement (39%), the expected community benefits were an increase in income and standards of living, more seafood to eat, and more equality and respect for women (Table 63). On the negative side, key informants said that the increased involvement would result in the neglect of households and children, and increased domestic disputes. There was also a concern that if women were to participate, there would be further declines in resources.

► Table 63: Opinions of key informants on the likely impacts of increasing women's involvement in fisheries.

▼ Figure 85: Overall opinions regarding likely effects of increasing women's involvement in fishing (n=87).

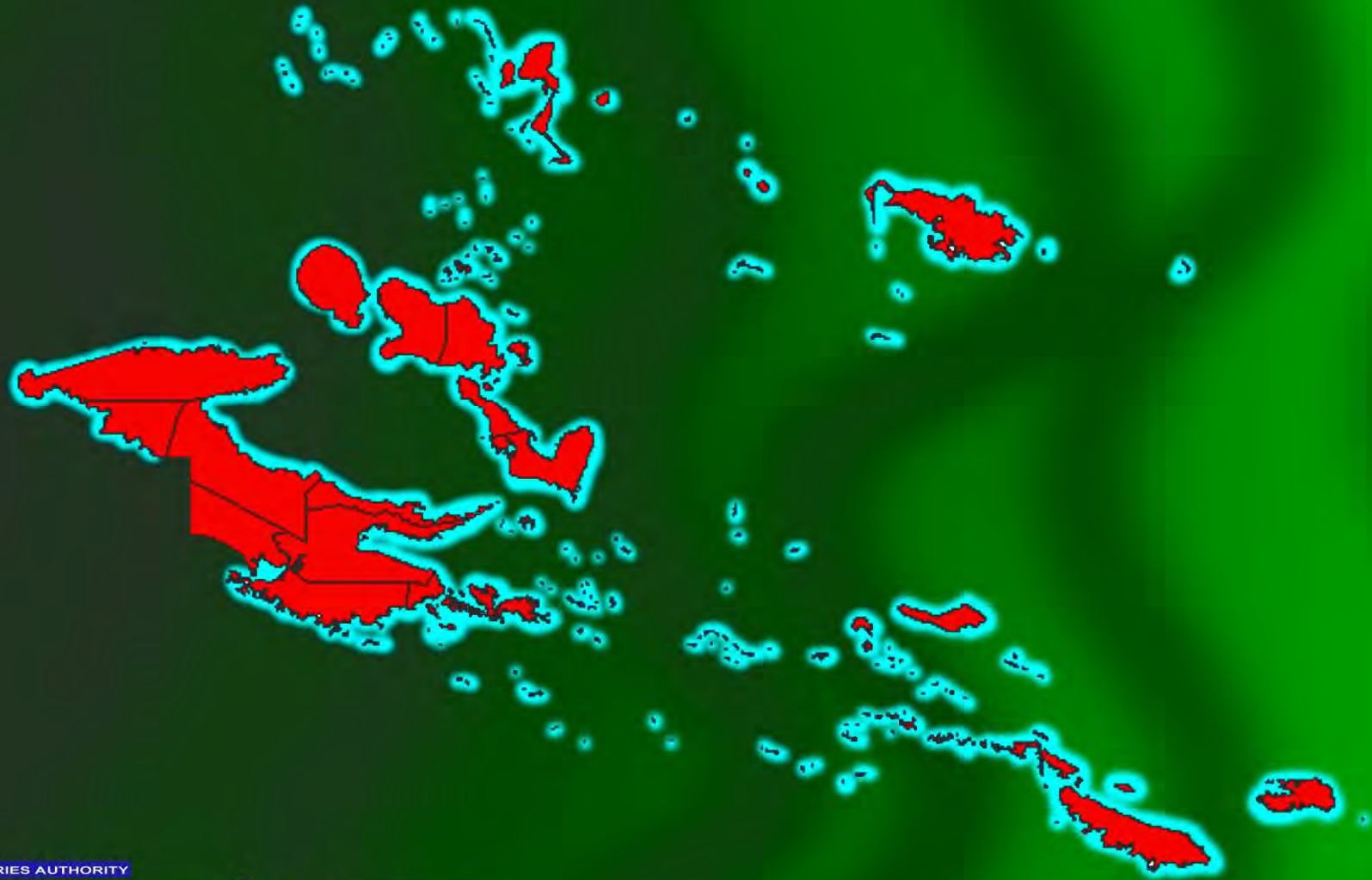


Positive effects			#	% KI
Income increases			29	33
People / community happy			5	6
Living standards increase			4	5
More fish for sale			3	3
Equality			3	3
More seafood in household			2	2
Catch increases			2	2
Men's burden is relieved			2	2
School fees can be paid			1	1
Security for women			1	1
Security for the household			1	1
More respect for women			1	1
Healthier children			1	1
Increased knowledge of fishing			1	1
Negative effects			#	% KI
Neglect the household			29	33
Domestic disputes			24	28
Garden neglected			13	15
Children neglected			10	11
Overfishing / resources decline			9	10
Water fetching neglected			1	1
Spoil the sea (traditional)			1	1
Break traditions			1	1
Need separate canoes for women			1	1
Household work is a burden for men			1	1
Marital problems			1	1
Women will become lazy			1	1
Responses			148	
Key Informants			87	100

ANNEX 1. TIMETABLE FOR SOCIOECONOMIC SURVEY

Week 1	Transport	Sun 06 Nov	Mon 07 Nov	Tue 08 Nov	Wed 09 Nov	Thu 10 Nov	Fri 11 Nov	Sat 12 Nov	Team members		
			Kurada Ward (Duau LLG)						Randal	Henry	Ipunesa
			Bubuleta Ward (Huhu LLG)						Elizabeth	Flora	Taylor
			Loani-Kularo Wards (Bwanabwana LLG)						Ato	Nellie	Lance
			Savalala-Ipulai Wards (Suau LLG)						Ebo	Joseph	Matthew
Week 2	Transport	Sun 13 Nov	Mon 14 Nov	Tue 15 Nov	Wed 16 Nov	Thu 17 Nov	Fri 18 Nov	Sat 19 Nov	Team members		
			Kasikasi Ward (Duau LLG)						Lance	Matthew	Taylor
			Gwavili Ward (Huhu LLG)						Edward	Flora	David
			Gigia-Yokowa Wards (Bwanabwana LLG)						Joseph	Randal	Ebo
			Dahuni Ward (Suau LLG)						Nellie	Henry	Ipunesa
Week 3	Transport	Sun 20 Nov	Mon 21 Nov	Tue 22 Nov	Wed 23 Nov	Thu 24 Nov	Fri 25 Nov	Sat 26 Nov	Team members		
			Isimaimai Ward (Duau LLG)						Elizabeth	Flora	David
			Gabugabuna Ward (Huhu LLG)						Edward	Nellie	Matthew
			Hamama-Gotai-Sekuku Wards (Bwanabwana LLG)						Sine	Ato	Henry
			Iloilo-Koukou Wards (Suau LLG)						Taylor	Randal	Joseph
Week 4	Transport	Sun 27 Nov	Mon 28 Nov	Tue 29 Nov	Wed 30 Nov	Thu 01 Dec	Fri 02 Dec	Sat 03 Dec	Team members		
			Sapisapia Ward (Duau LLG)						Joseph	Ebo	Mathew
			Wagawaga-Daio Wards (Huhu LLG)						Edward	Sine	Randall
			Kwato-Logea Wards (Bwanabwana LLG)						Flora	Ato	Ipunesa
			Silosilo Ward (Suau LLG)						Lance	David	Taylor
Week 5	Transport	Sun 04 Dec	Mon 05 Dec	Tue 06 Dec	Wed 07 Dec	Thu 08 Dec	Fri 09 Dec	Sat 10 Dec	Team members		
			Bunama Ward (Duau LLG)						Elizabeth	Ipunesa	Nellie
			Divinai Ward (Huhu LLG)						Taylor	Henry	Ebo
			Samarai Wards (Bwanabwana LLG)						Lance	David	Flora
			Isudau-Isuisu Wards (Suau LLG)						Sine	Mathew	Ato

NATIONAL FISHERIES AUTHORITY



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