Socioeconomic Monitoring Guidelines For Coastal Managers Of The Western Indian Ocean

SocMon WIO

April, 2006

Delphine Malleret-King, Alison Glass, Innocent Wanyonyi, Leah Bunce and Bob Pomeroy

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WCPA World Commission on Protected Areas
NOAA National Oceanic and Atmospheric Administration, U.S. Department of Commerce
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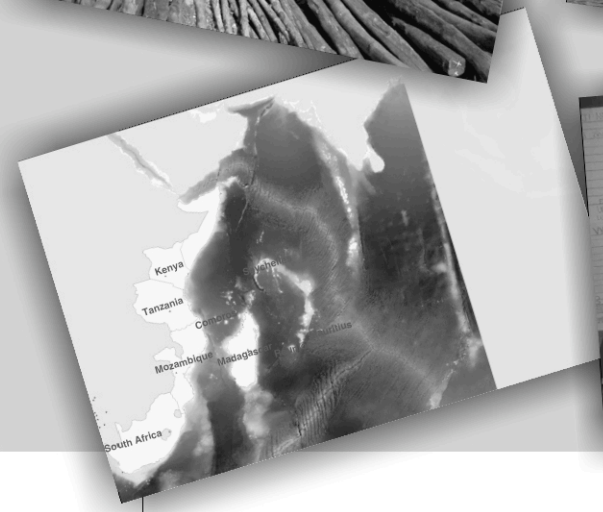

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Copies of *SocMon WIO* as well as the *GCRMN Manual (2000)* can be downloaded from the NOAA SocMon site http://ipo.nos.noaa.gov/socioeconomic/, from the WIOMSA SocMon Web site: http://www.wiomsa.org and from www.cordio.org

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Comments on SocMon and feedback on how it was used would be most appreciated. Please send to Delphine and Innocent at socmon@cordioea.org

Front cover photos clockwise from top:

Mangroves poles in waiting for transportation in Lamu, Kenya - Innocent Wanyonyi
Traditional basket trap fishing, Pemba, Tanzania - Alison Glass
SocMon data collection Msambweni, Kenya - Innocent Wanyonyi
Map of SocMon WIO countries - CORDIO GIS
SocMon results dissemination Diani-Chale, Kenya - Innocent Wanyonyi
Fisheries products-Octopus drying, Baladiron, Rodrigues, Mauritius - Joseph Tunje

Back cover photos clockwise from top:

SocMon WIO Partnership workshop, Mombasa, Kenya - Alison Glass
Coastal recreation, Mombasa - Sarah Ater
SocMon data collection training session, Tana delta, Kenya - Innocent Wanyonyi
Boat building in Lamu, Kenya - Innocent Wanyonyi
SocMon training session, Msambweni, Kenya - Innocent Wanyonyi
Fisheries products Msambweni, Kenya - Innocent Wanyonyi

Case study photo - Women using mosquito net "tandilo" fishing method in Mnazi Bay, Tanzania - Melita Samoilys

Recurrent box drawing - Representation of a typical sail boat "mtumbwi" commonly used by fishers in Eastern Africa - Patrick Kimani

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PREFACE

The *SocMon Western Indian Ocean (WIO) Guidelines* and its companion, the *GCRMN Socioeconomic Manual for Coral Reef Management (GCRMN Manual)*, were developed from a need for a greater understanding of the human dimension of coastal and marine resource management. The *GCRMN Manual* was released in 2000 at the 8th International Coral Reef Symposium in Bali. *SocMon Caribbean* and *SocMon Southeast Asia (SocMon SEA)*, which were released in 2003, and *SocMon WIO released in 2005* were developed to complement the *GCRMN Manual* by providing a simpler, more structured set of guidelines, which can then be tailored to regional needs. The regional guidelines and manual are meant to be used together - *SocMon Guidelines* for the priority variables to assess, the questions to ask and the tables to analyze the data, and the *GCRMN Manual* for details of how to do it.

SocMon WIO is the product of substantial collaboration among social scientists and coastal managers in the region. In particular the SocMon WIO Drafting Group, which is a balance of social scientists and coastal managers, provided significant project direction and technical input. The *SocMon WIO* goals of socioeconomic information, variables and overall structure were developed by building on *SocMon Caribbean* during a drafting workshop held in June 2005 in Mombasa, Kenya. Delphine Malleret-King and Alison Glass then developed the ideas into this document. The Drafting Group included: Delphine Malleret-King (Chair, CORDIO, East Africa), Alison Glass (CORDIO, East Africa), Modesta Medard (WWF, EAME, Tanzania), Rodney Quatre (SCMRT-MPA, Seychelles), Jason Rubens (Seascape Project, WWF, Tanzania), Joseph Tunje (CORDIO, Kenya), Innocent Wanyonyi, (CORDIO, Kenya), Simon Harding (WCS, Madagascar), Anna Blomberg (WIOMSA), John Muturi (Department of Fisheries, Kenya), and Joshua Cinner (WCS).

The draft of *SocMon WIO* was critiqued by an extensive network of reviewers. Particular appreciation goes to the following people for their contributions and insightful comments: Anju Nihilani and Blue Ventures, Narriman Jiddawi, Josh Cinner, Jennifer Simbua.

This Manual will be updated every 5 years on the basis of the feedback from the coastal managers, institutions and community based organizations who use the manual.

SocMon WIO is part of a continuing regional program to enhance understanding of communities and their relationship to coastal and marine resources. A SocMon WIO strategy is being developed by the region, coordinated by CORDIO East Africa. Training and support will be provided at sites on a needs basis to establish an extensive SocMon WIO network. The need for expanding SocMon was illustrated by the enthusiastic participation of 29 scientists and managers from the region to a Partnership Workshop with the aim of assessing progress in socioeconomic activities and methods used to date, to share lessons learned, and set priorities for the progress of socioeconomic monitoring in the region, as well as providing input to the Drafting Group for developing this SocMon WIO manual.

David Obura & Innocent Wanyonyi
CORDIO East Africa, Mombasa.
November 2005

HOW DO I USE THIS MANUAL?

Read through each of the sections (***1-5***) in the manual to give an overview of how to set up a monitoring programme at your site. The greyed sections are the steps that will form the basics of your site monitoring plan: choosing your variables in relation to the goals of the monitoring, methods, analysis and communicating results.

INTRODUCTION

Read sections 1 3:

- *What is this all about?*
- *Why should I do this?*
- *What's involved*

… to **find out all about what SocMon is**, how socioeconomic monitoring can be useful to you, and all the practicalities of doing the monitoring (who, how, methods, how long, how much, how often, where, audience)…

CHOOSING YOUR VARIABLES

- *Section 4 What data do I collect?* describes the types of variables that the manual covers, those which can be used for your management goals, and how to prioritise them
- *Section 2* - read again, and **decide what the goals of socio-economic monitoring are for your site**.
- *Table 4.1* - the suggested variables are listed here, with basic information and reference numbers (e.g. K1, S15)
- *Appendix A* - lists all the variables by their reference number, and describes them in full detail
- *Table 4.2* - lists all the goals in the first column of the table, and then indicates the variables you need to measure to fulfil each goal. Using this table, **make a list of all the variables you need to monitor to achieve your site goals**.

Monitoring is an iterative process, you may have to adapt your list of variables as the socioeconomic context evolves

STARTING THE MONITORING

- *Section 5 What do I do with these data?* - before you start monitoring, read section 5.1 and Appendices D & E. You might need to add other variables to your monitoring plan for the sake of analysis, and knowing how the results will be used might also influence how you undertake monitoring
- *Appendices B & C* are the monitoring guides containing sample questions for the key informant/ secondary sources/focus groups and the survey methods. **Make up your own interview sheets by using the relevant questions for the variables you have chosen**
- *Appendices D & E- s*ample analysis sheets which will help you visualise what you will need to do with the data in order to get meaningful results. **Create sample sheets of your own, for the variables you have chosen**.
- *SocMon WIO database guidelines* - Data entry sheets, which will help you enter the data in the site database?

Sections 5.2, 5.3 &5.4 Communication of results and using them to improve management - finally, the most important part of monitoring is **integrating the information into management**, and **communicating the results to all stakeholders**

SECTION 1: WHAT IS THIS ALL ABOUT?

1.1 WHY SOCMON?

Coastal resource managers realize that coastal resources can no longer be managed from a biophysical focus alone. Community attitudes towards, and uses of, coastal resources have serious implications on the biophysical health of coastal marine systems. The management of coastal resources has equally serious implications for the socioeconomic health of the community. Socioeconomic information is critical for effective coastal management. For example:

- A no-fishing area is proposed in part of a larger fishery to protect a spawning aggregation and threatened habitat. The fishing community is protesting the zoning for fear of loosing their livelihoods. Systematically collected information on fishing patterns, number of fishers and fishers' perceptions can help managers accurately determine who will be affected and identify acceptable alternative livelihood options.

- Policy-makers and the public want to know, "Has the marine protected area been effective?" Information on changes in people's perceptions of compliance and enforcement of rules and regulations can indicate success or failure of management activities as well as the acceptability of the marine protected area.

- A major new education program is proposed for a coastal community. By understanding the means of communication in the community (e.g. meetings, television, newspaper), literacy and education levels of the various user groups and their perceptions of threats, the managers can tailor the program to use the most appropriate means of communication and ensure the messages are audience-appropriate.

SocMon is a set of guidelines for establishing a socioeconomic monitoring program at a coastal management site in the WIO.

It is important to emphasize that SocMon is not a rigid set of guidelines. The user of SocMon, ***the socioeconomic monitoring team, is expected to select variables and methods appropriate to its site's needs*** *as discussed in Section 4.2 (see the case study at the end of this section)*

Clearly, to successfully manage coastal resources, managers must balance sustainable use, resource protection and conservation with their community's need for food security, livelihood and the fair use of resources. It is critical to recognize the close link between how a community uses coastal resources and the socioeconomic context of the community. Understanding this context is essential for assessing, predicting and managing coastal resource use. Socioeconomic information provides an understanding of the social, cultural, economic and political characteristics and conditions of individuals, households, groups, organizations and communities. It can help coastal managers identify potential problems and focus management priorities accordingly.

Similarly coastal and marine resource management can only be effective if managers collaborate and share socioeconomic information. Users move along the coasts, as do the resources. SocMon is also a network of socio-economists and coastal managers who form an advisory group which is regularly consulted for guidance on the development of the SocMon process as well a to provide technical expertise. SocMon is based on a strong collaboration between organizations in the region, which will ensure a better coordination of efforts in coastal and marine resource management.

1.2 WHAT IS SOCMON?

SocMon is a set of guidelines for establishing a socioeconomic monitoring program at a coastal management site in the WIO. *SocMon* is most appropriate at the study site level. The guidelines provide a prioritized list of socioeconomic variables useful to coastal managers as well as the questions for data collection and the tables for data analysis. It is expected that **the guidelines will be tailored to each site's needs**. *SocMon* is a companion to the *GCRMN Socioeconomic Manual for Coral Reef Management (GCRMN Manual).*

SocMon is intended to:

- Provide a methodology for regularly collecting basic socioeconomic data useful for coastal management at the site level; and

Socioeconomic monitoring is about measuring and detecting changes over time in order to make timely and informed management decisions. It involves the long-term collection of social, cultural, economic and governance information of people, groups, communities and organizations at regular intervals, which is analyzed and fed back into the planning and decision making process. ***Monitoring is not an end*** *in itself* ***but a means*** *to improve or evaluate management.*

- Provide a basis for a regional system by which site-level data can feed into national, regional and international databases for comparison.
- Provide a platform for improving regional collaboration on managing coastal and marine resources through the network of experts it involves.

SocMon is also intended to provide insight to managers, many of whom come from biology backgrounds, into what "socioeconomics" means, how socioeconomic information can be useful to their management, and what socioeconomic data might be useful for management at their site.

There are other existing socioeconomic programs in the region, which tend to be site-specific. The user of *SocMon* may have a socioeconomic monitoring program currently in use. Social scientists are currently conducting socioeconomic research throughout the WIO. *SocMon* is intended to complement these programs by providing a simple, standardized set of guidelines for the region. It is also intended to provide a platform to share experiences, provide guidance, and share socioeconomic information in the region.

1.3 HOW DOES SOCMON WORK?

A socioeconomic monitoring program, as explained in this document and in the GCRMN Manual, includes six key phases: 1) preparatory activities (GCRMN Manual, Chapter 1), including identifying goals of the socioeconomic monitoring, selecting the relevant variables, defining the process to conduct the socioeconomic monitoring, identifying and consulting with stakeholders, and identifying the monitoring team; 2) data collection through secondary sources (see Chapter 2); 3) data collection through key informants and focus groups (see Chapter 3); 4) data collection through surveys (see Chapter 3); 5) data collection through observation (see Chapter 3); and 6) data entry, data analysis, communication and adaptive management (see Chapter 4) This is an iterative process, so the results of the phases will likely affect earlier decisions and may require repeating previous steps. This will require flexibility and adaptability.

The SocMon variables (see Section 4 and Appendix A) are presented based on the categories of variables as well as on the means of data collection: secondary sources, key informants, and/or focus groups and surveys. They were divided this way to correlate with the two types of interview guides: one for secondary sources, key informants and focus groups, the other for surveys. The variables are also categorized according to their general importance to collect (see Section 4.2.2).

It is important to emphasize again that SocMon is not a rigid set of guidelines. The user of SocMon, the socioeconomic monitoring team, is expected to select variables (add to, and delete from, the variables prioritized in SocMon) and methods appropriate to its site's needs as discussed in Section 4.

1.4 WHO IS SOCMON FOR?

The target audience for SocMon is coastal managers, including the staff managing coastal areas, local government authorities, non-governmental organizations and local people (e.g. community organizations, fisheries associations, local resource users). Secondary audiences include academics and international and regional organizations.

1.5 WHAT ARE SOCMON's LIMITATIONS?

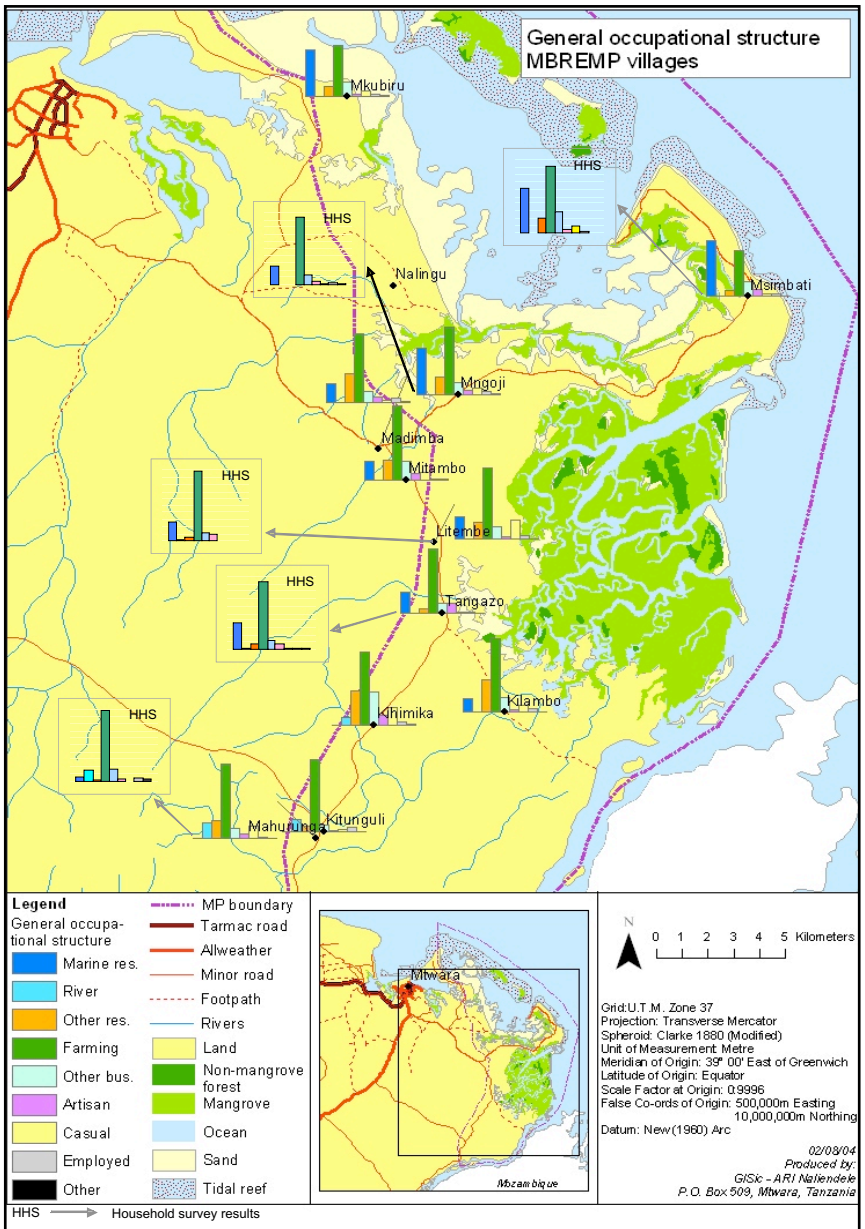
SocMon is a basic set of guidelines. It does not cover all the possible variables for socioeconomic monitoring (e.g. it does not specifically discuss economic performance). It was designed to be a minimum set of prioritized and relatively simple variables from which to work and was designed as a companion to the GCRMN Manual, which does provide detail on the full range of variables possible for a socioeconomic assessment. It is therefore expected that the team will consult the GCRMN Manual (particularly Appendix A: Socioeconomic Parameters) if it decides to go beyond the variables prioritized for SocMon.

SocMon also does not provide detail on how to collect data (e.g. how to conduct an interview). This information is provided in the GCRMN Manual, which includes comprehensive explanations of how to conduct socioeconomic data collection, including interviews, focus group interviews, observations and secondary data collection (see Chapter 3: Field Data Collection). It is therefore suggested that the reader use both documents SocMon for the priority variables to assess, the questions to ask and the tables to analyze the data, and the GCRMN Manual for how to do it.

Finally, socioeconomic monitoring based on SocMon will not provide answers to all questions that are important for coastal management. However, it will provide coastal managers with a better understanding of the current situation in the community, how this changes and what to expect in the future.

For example, fisheries catch data and resource valuation would provide invaluable information to managers, however these are complex programs to establish and are not covered in the scope of SocMon WIO. Information from such monitoring programs would be complementary to that provided by that of the SocMon WIO monitoring.

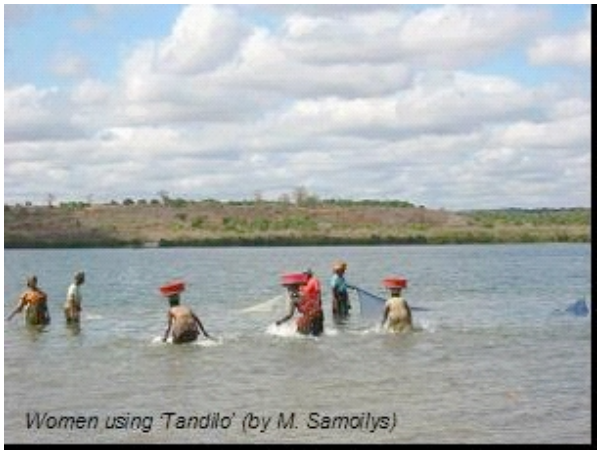
Delphine Malleret-King[2]



Map 1: MBREMP Occupational structure at the community level

The Mnazi Bay - Ruvuma Estuary Marine Park (MREMBP), gazetted in 2000, is located in Mtwara Region, at the Southern tip of Tanzania's coast. It covers an area of 650 km^2, 430 km^2 of which are marine, river and mangroves. The remaining 220 km^2 are Land. It is rich in biodiversity and has outstanding beaches and seascapes, coral diversity, an important population of turtles and marine mammals such as whales migrating through the area on a seasonal basis. The rationale behind incorporating such a wide area of land into the Marine Park was to constitute a buffer zone and control human activities that impact the protected marine environment, as well as to include marine resource users into the management and planning process. However, it also meant that 11 villages and 3 sub-villages with a population of approximately 28,000 people were incorporated into the Marine Park. In the Tanzanian context, a Marine Park is a marine protected area where restricted use of marine resources is allowed.

A biodiversity assessment was conducted to establish baseline knowledge on biodiversity and health status of mangroves forests, corals reefs, intertidal and seagrass areas. At the same time a socioeconomic assessment was carried out; with such a high population included in the Park this was considered essential.



Women using 'Tandilo' (by M. Samoilys)

Thus the objectives of the socioeconomic assessment were to: 1) identify and understand the socioeconomic conditions of MBREMP and relate them to natural resource uses and conditions; 2) inform the development of the MBREMP General Management Plan; 3) establish a baseline socioeconomic context for future monitoring of the impact of MBREMP activities on the socioeconomic conditions of the stakeholders; 4) establish a monitoring plan enabling the MBREMP to monitor its progress in achieving its goals and enable adaptive management. In addition, another objective of the socioeconomic assessment was to familiarize the MBREMP staff with conducting socioeconomic studies and start building a relationship with the stakeholders.

[1] *This study was funded through the UNDP/GEF/ MPRU Development of Mnazi Bay Ruvuma Estuary Marine Park Project*
[2] *CORDIO - SocMon Regional Technical Advisor.*

To achieve these objectives, the recommendations of the *Socioeconomic Manual for Coral Reef Managers* (Bunce et.al, 2000) were followed with adaptations from the *Socioeconomic Monitoring Guidelines for Coastal Managers in the WIO* (Malleret-King et.al, 2006). The focus was on occupational structure, use patterns, stakeholders, conflict, perception on management authorities and material style of life. The assessment team was composed of a project leader (a social and economic scientist working for CORDIO, resident in the MBREMP area), a social scientist from Dar es Salaam University, two staff from the MBREMP, Tanzania Marine Parks and Reserve Unit, a team of 6 local facilitators, and a team of 8 MBREMP community members who assisted in surveys. The team was relatively large due to the large number of villages included in the Park. Being a baseline, the socioeconomic assessment had to be rigorous, collecting a large amount of information, which will not be the case during the monitoring process.

The following table summarizes the data collection process:

DATA COLLECTION PHASE	TIME	VARIABLES OR GOALS	WHAT WAS DONE
Secondary data assessment	Two months before the assessment started and throughout fieldwork	All variables except Attitudes and Perceptions	Interviews with representatives from government agencies, universities, non-governmental organizations, private sector and research institutions, as well as an extensive literature review of papers, reports, files, and internet sites.
Reconnaissance survey	2 days	Introduction with community leaders, key authorities, MBREMP liaison committees	Introductory and informal interviews were done with community leaders, and representatives of MBREMP liaison Committees (made up of community members with a diversity of occupations)
Assessment	One Month	Area, Stakeholders All variables of Marine Activities, Sources of Credit, perception on management	Through key informant interviews, a list of households and an occupational structure were done. Key informants were chosen in all villages, including women and men. On the basis of the findings of the occupational structure, user based focus groups were carried out to establish a baseline on methods, use patterns, resource based conflicts, resource conditions and change, stakeholder characteristics etc. Participants were chosen randomly within their activity groups (e.g. fishers according to gear, fish traders according to products) Mapping as described in Socioeconomic Manual for Coral Reef Managers (Bunce et al, 2000)was done to identify important fishing and trading zones
Material Style of Life Survey	2 weeks	Material Style of Life Demographics Use patterns Methods Occupations Marine activities Income	A questionnaire was developed on the basis of results of key informant interviews (relevant information on material style of life for the area) and on the basis of findings from the assessment on stakeholders, methods, use patterns etc. It was then applied to a random sample of households in 5 villages selected according to their geographic location in the MBREMP. 2810 households were sampled (56% of the MBREMP estimated households). In addition, semi-structured interviews, informal communications and observations were used to enrich the results obtained with the questionnaire, and to compare these results with opinions of key informants interviewed during the fieldwork. A database was specifically designed, using a coding sheet.

The data analysis involved synthesizing the results, generating tables and figures, and calculating descriptive statistics. The analysis also had a spatial component, in order to define zones of intense use. A written report was prepared and submitted to the management body (MBREMP) and IUCN. The report provides information on the dependence of the communities on marine resources, on the way they use the marine and coastal resources and how the MBREMP is likely to affect their livelihoods, on groups which will be most vulnerable to fishing restrictions. The report proposes a monitoring plan which was designed on the basis of the findings of the socioeconomic assessment. A list of recommendations and further research is also included in the report.

The socioeconomic assessment showed that:

a) the number of people involved in marine resource extraction (estimated to be 1400 people);

b) the dependence of the communities in general on marine resources for their livelihoods; at the village level up to 60% of households were found to be involved in marine and coastal activities, with fishing the most important source of income for fishers surveyed; at the Park level, 35% of households were involved in marine and coastal activities

c) poverty/lack of access to funds/capital forced people to exploit nearshore resources and use small mesh size nets;

d) increased demand for marine products and the volume of trade of specific marine products (e.g. sea cucumbers, octopus and lobster which are now declining in size and numbers); and

e) destructive fishing methods (especially small mesh size nets).

2) One of the most destructive gears, is the '*tandilo*' which is a method used exclusively by women and is extremely widespread. The '*tandilo*' is a very small mesh size net (often a mosquito net or a piece of cloth) which 3 to 6 women drag along the shore.

3) The dried fish trade was found to be one of the most profitable marine based activities, and has developed in response to an increasing demand from inland.

4) Shells represent an important source of subsistence and income (operculum trade and ornaments), however little was known on the biological aspects. Stakeholders in the shell activities are extremely varied ranging from fishers in Mtwara to exporters in the Middle East. There is need for further investigations on the sustainability of the current level of shell exploitation and the contribution of shell meat to the households' animal protein supply. This would provide the Park with a basis on which to take decisions on how to regulate shell collection/fishing.

5) MBREMP is located close to the Mozambican border. One of the findings of this assessment was that as resource use become restricted in the MBREMP area, fishers increase their activities on the Mozambican side where there is little management.

6) The health status of Marine Park resources is subject to a complex web of international/global, national, regional, and local influences that are determined by aspects such as basic food needs, taste, aesthetics, culture, and religious practices. The Marine Park does not have the power to influence all these aspects, however, by working in close partnership with as wide a spectrum of stakeholders as possible who impact MBREMP resources and who will be impacted by Marine Park regulations, the Park may contribute to changing consumer preferences (e.g. in relation to threatened species, including exporters).

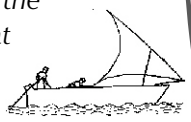
7) It was found that miscommunication and misinformation are often at the root of negative attitudes from the communities towards the MBREMP. It would be worth strengthening MBREMP's community awareness activities.

These baseline data will be used for the establishment of a socioeconomic monitoring program (occupations, use patterns and methods, perception of the MBREMP by stakeholders, prices of key products, sea cucumber and shell number of traders and quantity exported) that is an important component of the General Management Plan of the MBREMP. The MBREMP staff is assessing the effectiveness of the Management Plan's strategies in light of this socioeconomic information. The socioeconomic assessment showed the diversity of the aspects that MBREMP has to take into consideration when designing the management plan. It also pointed to areas where more information is needed to take decisions.

SECTION 2: WHY SHOULD I DO THIS?

Socioeconomic information can be used by coastal managers for a number of goals. It is important for the coastal manager and socioeconomic monitoring team to determine the relevant goals for their monitoring so that they can select the appropriate variables for data collection. *Section 4*, where the variables are introduced and the process of selecting variables is discussed, includes a table noting which variables are important to collect for each goal. Although, *SocMon* WIO is written from the perspective of the 'manager', it is important to note that socioeconomic monitoring is also of use to the other stakeholders. This will be emphasized for each variable in Appendix A.

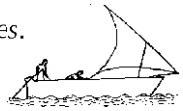
These goals are generic to the region. The coastal manager and monitoring team need to tailor these goals to the needs at their site.



2.1 IDENTIFYING THREATS, PROBLEMS, SOLUTIONS AND OPPORTUNITIES

When collected as part of an ongoing monitoring program, rather than a one-time assessment, socioeconomic information can be used to identify trends and changes in community and household demographic and economic characteristics, coastal activities, and people's perceptions about coastal and community issues. These can be used to identify threats, problems, solutions and opportunities for coastal resource management. For example, an increase in in-migration of people to the area can indicate potential threats from increased fishing effort and land use development, such as cutting of mangroves.

"Stakeholder" refers to people who make direct use of the coastal resources as well as people whose actions may affect the coastal resources.



2.2 DETERMINING THE IMPORTANCE, VALUE AND CULTURAL SIGNIFICANCE OF RESOURCES AND THEIR USES

Socioeconomic information can be used to demonstrate the importance and value of coastal resources and services, such as coral reefs and cultural traditions, to the general public, stakeholders groups and decision-makers, which can help generate greater support for coastal resource management programs. For example, an understanding of the value of coral reefs can be used to evaluate the benefits and costs of alternative development, management and conservation scenarios (e.g. a decision to allow diving in an area may be based on the expected occupations and income to the community from tourism activities).

2.3 ASSESSING POSITIVE AND NEGATIVE IMPACTS OF MANAGEMENT MEASURES

Socioeconomic information can be used to determine the impacts of management decisions on the stakeholders, which can help improve policy decisions to minimize negative impacts and maximize positive impacts to stakeholders. For example, a policy to restrict a certain type of fishing gear may affect occupational structure in the community and the market value of fish. By documenting the changes in occupational structure and market value before and after the policy is implemented, the managers can better determine the effects of the policy. Similarly, managers can use socioeconomic information to predict the effects of alternative policies on the community. For example, by knowing the number of people fishing various areas, managers can predict how many fishers will be displaced by a proposed no-fishing zone.

2.4 ASSESSING HOW THE MANAGEMENT BODY IS DOING (MANAGEMENT EFFECTIVENESS)

Socioeconomic information can be used to measure the effectiveness of coastal resource management programs in achieving their goals and objectives. For example, if a goal of the coastal resource management program is to improve the participation of local stakeholders in the management process, in order for the management body to be judged effective, there should be improvements in people's perceptions of participation in coastal resource management decision-making.

Socioeconomic monitoring can allow for the improvement of coastal resource management through learning and adaptation and identifying specific issues influencing the success of the coastal resource management program in achieving its goals and objectives. For example, changes in people's perceptions of compliance and enforcement of rules and regulations, can indicate success or failure of the management activities and the possible need for a change in enforcement activities.

2.5 BUILDING STAKEHOLDER PARTICIPATION AND APPROPRIATE EDUCATION AND AWARENESS PROGRAMS

Socioeconomic information can be used to guide the incorporation of stakeholder group participation, concerns and interests into the management process. Taking part in the monitoring, particularly by providing information will lay the path for better involvement of the stakeholders in the management process. Similarly, socioeconomic information (e.g. perception of stakeholders of management) will provide stakeholders with a direct opportunity to give feedback on management.

It can also be used to plan and direct education and awareness programs for coastal resource management. For example, the identification of community and stakeholder organizations in the area can assist coastal managers in ensuring that critical stakeholders have opportunities to participate in the coastal resource management process.

At the same time, socioeconomic information will provide managers with an opportunity to learn from traditional knowledge and management systems, which then can be incorporated in more formal coastal resource management.

2.6 VERIFYING AND DOCUMENTING ASSUMPTIONS OF SOCIOECONOMIC CONDITIONS IN THE AREA, COMMUNITY DYNAMICS AND STAKEHOLDER PERCEPTIONS

Socioeconomic data collection and analysis are important to scientifically verify and document the community conditions. With any natural resource management program, there are often widely held perceptions of the local conditions. For example, it may be generally agreed that the health of the mangroves is in decline. Managers need scientific data to prove and document this perspective. Without scientific proof, the statement is only a hypothesis. Verification and documentation of people's perspectives is equally important for socioeconomic conditions since they are easily biased by people's concerns and values. By having an objective, systematic study conducted, the manager can determine the true local socioeconomic conditions, including resource use, community dynamics and stakeholder perceptions.

2.7 ESTABLISHING BASELINE HOUSEHOLD AND COMMUNITY PROFILE

Socioeconomic information collected at the start of a coastal resource management program, often known as a socioeconomic assessment, provides a snapshot of the community and household situation at a certain time, and can help the manager understand the community and households, and establish baseline conditions for future comparison. This baseline information can be especially useful in adaptive management. As the goals and activities of the program change, the manager can compare current conditions with the baseline to identify causes of changes as well as effects of change. For example, if "support local traditions" was not one of the original goals of a coastal management program, then the status of local traditions may not have been monitored over time. However, by having a baseline set of information on local traditions, managers can refer to this initial set of information to assess how conditions have changed over time.

SECTION 3: WHAT'S INVOLVED?

3.1 WHO SHOULD DO THE MONITORING?

The socioeconomic monitoring can be undertaken by an individual, but ideally the socioeconomic monitoring will be conducted by a monitoring team led by someone from the coastal management staff (e.g. monitoring coordinator from marine protected area or fisheries authority, education officer from environmental organization) with a background in one of the social sciences (i.e. sociology, anthropology, economics, political science, psychology, or geography). The involvement of a staff member in the socioeconomic monitoring is important for establishing long-term consistency and ensuring that the coastal management staff have access to the data for use in improving coastal management.

The team leader is responsible for planning the monitoring; collecting, analyzing and presenting the data; and ensuring the program continues over the long-term. The rest of the monitoring team assists with the data collection, particularly the interviews, analysis, report writing and presentations.

Ideally the team members should have a background in one of the social sciences, and be familiar with the study area. It would also be ideal if the team members were trained and experienced in conducting interviews in the area. Whether they have a social science background or not, it is important that the team members have good interpersonal skills, are motivated and analytical, and are interested in the project. Since most coastal management program staff have natural science degrees, *SocMon* was written assuming the team members have limited socioeconomic knowledge, but at least a high school level education. In addition, it is useful to involve community members to assist in the data collection process. This will increase the communities' involvement and interest, and will help build the relationship between resource users and managers.

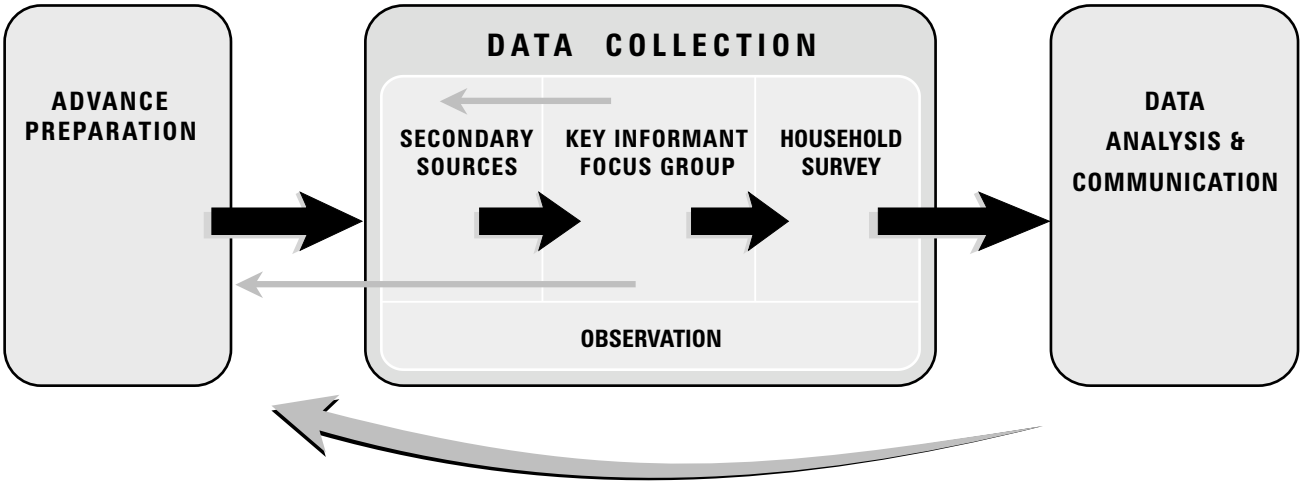
If the leader and/or members have limited socioeconomic expertise, it is particularly important that they review the *GCRMN Manual*, which provides a comprehensive review of how to conduct socioeconomic assessments. The *GCRMN Manual, Chapter 1: Preparatory Activities, Identify the assessment team* also provides tips on developing the team.

If there isn't a trained social scientist on the team, the socioeconomic monitoring can still be conducted. There are resources, including the *GCRMN Manual*, available for skill development (also see *GCRMN Manual, References* for additional sources). In addition to researchers in academic institutions, the S*ocMon WIO* regional coordinating institution can assist with technical guidance and/or with making contact with appropriate experts. As stated above, motivation and interest are the most critical characteristics of team members.

3.2 WHAT'S THE PROCESS FOR DOING THE MONITORING?

As noted in *Section 1.3*, there are generally six steps in conducting the socioeconomic monitoring, including:

1. Preparatory activities, including identifying goals of the socioeconomic monitoring, selecting the relevant variables, defining the process to conduct the socioeconomic monitoring, identifying and consulting with stakeholders, and identifying the monitoring team
2. Data collection through secondary sources
3. Data collection through key informants and/or focus groups
4. Data collection through surveys
5. Data collection through observation
6. Data entry, data analysis, communication and adaptive management.



This is an iterative process that needs to be repeated over time to update and add new data and information. It is also a process that must be flexible as the steps involved in the actual socioeconomic monitoring do not always follow this process directly and often need to be repeated. New information may create new requirements, so the team should review progress and change plans to fit the new conditions, including modifying the list of variables for data collection and analysis.

3.3 HOW DO I COLLECT THE DATA?

The variables presented in *SocMon* are divided into four main methods of data collection:

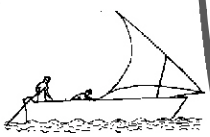
1. secondary sources (Sec)
2. key informant (KI) /focus groups interviews (FGI)
3. surveys (S)
4. observation

Generally, data should be collected from secondary sources first, followed by key informant interviews and/or focus groups. If data collected on the key informant and secondary variables are sufficient to meet the team's goals, then there is no need to conduct surveys. However, in most cases a survey will be conducted to obtain more specific data about individuals and households in the study area (see Table 4.1 for lists of variables for key informant/focus group/secondary source data collection and for surveys, respectively). Observation is on-going while in the community. These methods are discussed in detail in the *GCRMN Manual, Chapter 3: Field Data Collection*, where the weaknesses and strengths of each method are emphasized. Rigorous research is key to carrying out an effective monitoring program, including how to minimize biases, build trust with the communities etc., all of which is discussed in the GCRMN Manual.

The team should adhere to the following guiding principles throughout the data collection:

- *respect the stakeholders and community, such as work schedules, local customs, and religion*
- *recognize informant biases*
- *address gender issues*
- *reach less accessible areas*
- *address language differences (e.g. have interpreters)*
- *take detailed notes.*
- *cross check information*

These and other guiding principles for field data collection are more fully discussed in the GCRMN Manual, Chapter 3: Field Data Collection.



3.3.1 SECONDARY SOURCES

The monitoring team should start by conducting a thorough assessment of all relevant secondary data on the identified variables. Secondary data (Sec) are those that have already been collected, analyzed and published in various forms, including:

- official and unofficial documents
- statistical reports

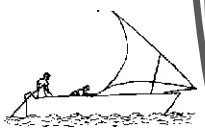
- reports of previous assessments and surveys
- research reports
- documentation of previous or ongoing projects, including monitoring and evaluation reports
- maps
- aerial photographs and satellite images
- historical documents and accounts
- Web sites on the Internet.

The assessment of secondary data involves compiling, evaluating and reviewing the data related to the variables.

3.3.2 KEY INFORMANT AND FOCUS GROUP INTERVIEWS

Key informants (KI) are individuals whose? experience and/or knowledge, because of their position, can provide insight and information into the larger population and/or a particular group. For example, a community leader can provide insight into the entire community, the president of the fishers's association can provide insight into fishers's activities and the minister of the local church can provide insight into Christians' perceptions in the community. Key informants can therefore provide common knowledge, shared knowledge and specialized knowledge. Because it is often not possible to speak with everyone in the study area, these individuals with experience and knowledge are often sought. They are often used when the team does not need to know the perspective at the individual level. For example, the team does not need to interview community members to determine whether there is a fisheries management plan; instead, the team can ask the Fisheries Office Director. Most of the variables collected using key informants address basic facts (e.g. demographics of the community, existence of a formal management body). It is important to interview several key informants to gain a breadth of perspective. A rule of thumb to determine when enough key informants have been interviewed regarding a particular variable is when the answers to the same questions become repetitive. For example, if the team is asking about the types of activities in the study area and the informants are all noting the same activities, then the team can stop interviewing about this variable.

*There are many definitions of a household. It is important to define **what a household is** at the beginning of the monitoring and stick to this definition. This is very important in this region where multiple wives families are common and the extended family often lives under the same roof. A common definition is 'the cooking pot' definition, that is 'the people eating together and sharing income'. It is important to agree on the definition with informants prior to interviewing them.*



Focus Group Interviews (FGIs) involve a selected group of informants (usually 4 to 10) who share a common background or knowledge (e.g. use patterns, language, organization membership). Participants to focus groups can be chosen like key informants, because of their knowledge or experience, or because of their activity or interest. Participants can also be chosen randomly from a group of users. Like key informants, focus groups are chosen to give insight to or information on the larger population or group they represent. FGIs are usually based on a set of discussion points. This flexible method allows the facilitator to probe for answers, and follow-up the original questions and pursue new lines of question during the interview. The flexibility and openness of this method encourage two-way interaction, including exchanges of information between the facilitator and the informants. Grouping informants together can, if facilitated well, provide more precise information at one time than one key informant.

It is important for the team to have a good understanding of stakeholder groups (this can be investigated through key informant interviews and observation), their priority concerns and internal dynamics. The team can use this knowledge to focus the FGIs on particular topics and to ensure the appropriate participants are invited.

3.3.3 SURVEYS

The *SocMon* surveys involve questionnaires with highly structured, close-ended questions. The questionnaire has specific questions with limited answers (e.g. multiple choice, yes/no) resulting in quantitative data that can be analyzed statistically.

Surveys are important for understanding households' and individuals' perspectives. For example, if the team wants to understand what people think about coastal management practices, then it needs to ask a spectrum of people. Most of the variables studied through surveys address perceptions (e.g. non-market and non-use values, perceived community problems). The surveys have the advantage that they do not need a highly trained person to administer the questionnaire, are relatively easy to administer, and require little time compared to key informant interviews. However, the surveys have disadvantages in that it is difficult to determine if the respondents are providing information they think the interviewer wants to hear and it is difficult to ask questions about sensitive issues such as income. The interviewers are also limited in the questions they can ask.

The *SocMon* survey guide (*Appendix C*) is structured with the intention that the respondent speaks on behalf of his or her household. The results, therefore, will be at the household level. However, if the team is interested in the individual level, they can modify the questions to ask about the individual perspective. For example, for the variable *Marine activities (S12)*, the respondent could be asked to identify all his or her uses of coastal and marine resources (not uses by household members).

To obtain more depth on some of the variables, it may be useful to include some open-ended semi-structured questions. These questions may be added directly into the interview guides. To develop these questions, it may be useful to consider "who, what, when, how and why". For example, the variable *enforcement* (*S23*) asks to what extent rules and regulations are enforced. Follow-up semi-structured questions could include: "Who does the enforcement?" and "Why aren't rules and regulations fully enforced?" (see *GCRMN Manual, Chapter 3, Semi-structured Interviews).*

3.3.4 OBSERVATION

In some cases data can be collected through observation. Observations are qualitative and sometimes quantitative descriptions of what the team member sees, and are obtained by attentively watching and recording the surroundings. For example, a team member may collect information on material style of life by observing a respondent's house and noting roof, wall, floor and window construction materials. Observation is a useful method because the team can learn first-hand information about complex activities, such as fishing patterns. Much of the behavior involved in these activities is learned non-verbally by observing and doing, therefore, it is difficult to describe e.g. it is difficult for fishers to describe all they do at sea. Observations are conducted throughout the field data collection although observations at the start of data collection are particularly useful to prepare interview and survey questions. Opportunities for observation often arise during surveys and interviews.

3.4 WHO SHOULD BE INTERVIEWED FOR THE SURVEYS?

The monitoring team should develop its own sampling approach to determine whom to interview for the surveys. The *GCRMN Manual, Appendix B: Sampling Approaches* provides a comprehensive explanation of how to select the appropriate *number of people* to interview and how to identify *the people* to interview (both randomly and non-randomly). The selection of survey respondents will depend on the goal of the socioeconomic monitoring. For example, if the goal is to understand fishing, then a sample of fishers would be surveyed. If the goal is to understand general community perceptions about coastal issues, then a sample of households would be surveyed. The team might also discuss plans for sampling and sample size with the statisticians at the central statistical office or nearby university.

An important decision is whether to interview a random or non-random sample of people. This decision will depend on whether the results need to be statistically representative of the community. If they do, then it is important to collect a statistically representative sample of people through random sampling (see the *GCRMN Manual, Appendix B: Sampling Approaches, p. 233,* for a sampling table*)*. In cases where the team does not need a statistically representative sample of the population, then smaller sample sizes may be used. Although not statistically representative of the entire population, the results will provide a useful understanding of the population. In these cases, the following sample sizes are suggested:

Population	Sample Sizes
100	25
200	40
300	60
400	70
500	80
1000	100

For non-random sampling, it is important to sample from the different types of stakeholder groups to ensure the breadth of perspectives are assessed. The information collected from the secondary sources and key informant interviews can be useful for ensuring the breadth of people in the community are interviewed. The secondary and key informant data will include information on the different types of stakeholders in the community as well as distribution of basic demographics, including age, gender, education, ethnicity and religion. The team needs to interview people in approximately the same proportions from these groups. For example, if there are 30% Catholics, 40% Baptists and 30% Evangelicals in a community, then the team needs to conduct interviews with approximately these same percentages of people.

3.5 HOW LONG SHOULD THE MONITORING TAKE?

The time it will take to conduct each socioeconomic assessment will vary depending on the situation, including the size of the community, skills and resources of the team, size of the team and number of variables selected. The first time will generally take the longest, since the process is new and the list of variables may be longer than those selected for future monitoring. Overall, it is generally estimated it will take between 3 and 6 weeks (17 to 30 actual working days) to conduct the monitoring as follows:

Preparatory activities: 3 - 5 days

Data collection through secondary sources: 3 - 5 days

Data collection through key informants and/or focus groups: 3 - 5 days

Data collection through surveys: 5 - 10 days

Data entry: 3 - 5 days

Data analysis, report writing, presentations and consultations: 5 -10 days

These actual working days may be spread out over a longer period, as each activity may not follow directly after the other.

3.6 HOW MUCH WILL THE MONITORING COST?

The budget will also vary depending on site needs, existing resources and local costs. Generally it is expected that the budget items will include, but not be limited to:

- transportation to government offices for collection of secondary data
- salary for 3-4 interviewers
- pen, paper, notepads, other office supplies
- maps, nautical charts
- transportation to study area (car, boat)
- photocopying
- computer with basic word processing software
- personnel time for data entry, database management and organizing on computer and in files.
- optional: camera, binoculars, tape recorder, video camera, Geographic Position System

3.7 HOW OFTEN SHOULD THE MONITORING BE DONE?

Typically a socioeconomic monitoring program begins with a baseline socioeconomic assessment using the full range of variables, which provides a foundation of data for future reference. The subsequent monitoring efforts may involve a shorter list of variables than the baseline monitoring, as some variables should be collected on a more frequent basis than others. *Tables 4.1* and *4.2* in *Section 4*, where the variables are introduced, give suggested frequency of data collection for each variable that ranges from a minimum of every 2 to 5 years. The team will need to determine the most appropriate frequency depending on the situation and data needs for its site. For example, in areas where there is a high rate of demographic and economic change, the data may need to be collected on a more frequent basis to assess trends, while in more stable communities, the data may not need to be collected as frequently.

Seasons strongly affect marine and coastal activities in the WIO. This will have to be taken into consideration in the monitoring and it may be appropriate to monitor some of the variables in different seasons, for each monitoring cycle (e.g. use patterns, activities).

3.8 WHERE SHOULD THE MONITORING TAKE PLACE?

The data collection will generally take place in two places:

- Outside of the study area the secondary source data is typically located in government, academic, research, non-government organization and other offices, which are usually outside of the study area.
- Inside the study area the surveys, observations and majority of key informant interviews and focus group interviews will be conducted in the study area.

3.9 WHAT IS THE AUDIENCE FOR THE RESULTS?

Before undertaking the socioeconomic monitoring effort, it is important to identify the audience for the results. By understanding the target audience for the socioeconomic information, the process and results can be oriented in such a way as to effectively generate and communicate results.

In determining the audience, it is important to consider who will be affected by the results, both positively and negatively. Who is affected may depend upon the goals of socioeconomic information as discussed in *Section 2.* For example, if the purpose of the monitoring is to assess the management body's performance, then the management body will be the audience as well as anyone else who is interested in its effectiveness, such as the agency overseeing the management body (e.g. Marine Parks and Reserve Department), the general public and particular stakeholder groups (e.g. fishers, tourism operators).

It is also important to consider who can take action related to the results. For example, if the goal is to build stakeholder participation, then the stakeholders are an important part of the audience.

Finally, it is important to consider who needs to be kept informed of coastal management activities and the related socioeconomic conditions. In some cases this may be the entire community, in other cases particular government agencies or advisory boards.

3.10 WHAT ELSE SHOULD I KNOW?

It is important to identify any development projects or studies that have been conducted recently that may have included a socioeconomic assessment. The process and resulting information should be reviewed as data for comparison and before starting *SocMon* data collection to prevent duplication. If there are any on-going activities in the area conducting a socioeconomic analysis, it is important to determine if the analysis is relevant to the *SocMon* monitoring and attempt to integrate or merge the activities. This is particularly important to minimize intrusion into communities. It is not uncommon for community members to get interview fatigue from being interviewed too much.

As noted in *Section 1*, this document is designed to be used in conjunction with the *GCRMN Manual.* It is particularly important to review *Chapter 1: Preparatory Activities* and *Chapter 2: Reconnaissance and Planning* before starting the data collection. *Chapter 3: Field Data Collection* is also critical for understanding how to conduct interviews.

Finally, it is important for the monitoring program to use consistent methods to allow valid comparisons of results over time. For example if some variables have been monitored in one season, it may be appropriate to always monitor these in the same season. Similarly if a definition of 'household' has been agreed upon at the start of a monitoring program, this should always be used afterwards, so that the data represents the same unit of the community, and can be compared in the future.

SECTION 4: WHAT DATA DO I COLLECT?

4.1 WHAT ARE THE VARIABLES?

SocMon is focused on 54 socioeconomic variables, which are presented according to the means of data collection: secondary sources/key informant interviews/focus group interviews and surveys (*Table 4.1*). *Appendix A* provides detailed information on each of the variables, including what it is, how to collect it, how to analyze it, and how the resulting information can be useful to managers and stakeholders. For more extensive descriptions of these variables and how to conduct interviews see the *GCRMN Manual, Appendix A: Socioeconomic Parameters* and *Chapter 3: Field Data Collection, Semi-structured Interviews, Focus Group Interviews*.

To set the context for the data collection, the team first needs to develop an understanding of the study area (K1), stakeholders (K2), population (K4), number of households (K5) and activities (K18) . These variables may be more fully assessed during the interviews; however, in order to determine where to conduct the study and how many people to interview, these four variables need to be at least preliminarily determined.

A few of the variables, such as age, gender and education, are collected through key informants/focus groups/ secondary sources as well as through surveys. This is done to cross-check the results and also because the two sets of data complement each other. The key informant/ focus groups and secondary source data provide community-level, or group-level aggregate information useful for assessing changes and trends over time; whereas, the survey data provide more precise information on the households and individuals in the study area. For example, the community-level information on occupation and demographics provides an overall understanding of the percentage of the community that is employed in each occupation and what percentage of the community is in which age group, level of education, etc. In contrast, survey information on occupation and demographics can be used to determine the ethnicity of stakeholders, such as fishers and tour guides.

For the first assessment, the team may need to collect data on more variables than for the subsequent monitoring. Typically a baseline assessment is conducted using a full range of variables that provides a foundation of data for future reference. The subsequent monitoring may involve a shorter list of variables than the baseline monitoring since some variables should be collected more frequently than others. See Tables 4.1 as a reference for when to collect data on which variables.

For the survey variables it should be noted that the first half of the variables ask about the respondent's household demographics and coastal and marine activities while the second half ask about the respondent's individual perceptions. This is done to gain as much information as possible about the community from the respondent while realizing that the respondent can only accurately speak regarding his or her perceptions, not those of the other household members.

Observation is not specifically noted for any of the variables because it is important for all of them. The monitoring team is expected to use observation as a preliminary means of gaining an understanding of the study area and as a cross-check on the data collected through the secondary sources, key informant interviews and surveys.

4.2 WHICH VARIABLES DO I USE?

If it is not possible to assess all of the variables in *SocMon*, then it is recommended that the monitoring team prioritize variables based on the following considerations:

4.2.1 GOALS OF THE SOCIOECONOMIC INFORMATION

Most important, the team needs to clarify why the data is being collected, and specifically how it will be used once collected. For example, if the team is most concerned about identifying threats, then it might focus on the variables listed for identifying threats. *Section 2* discusses the various goals of collecting socioeconomic information. The variables prioritized for data collection in *SocMon* were selected because they address these goals. *Table 4.2* notes which variables are relevant to which goals so that the team can

easily identify which variables are relevant to its needs. A discussion of how the variables can be used to understand each of these goals is provided in the *How the information can be useful to managers and to other stakeholders* section of each variable in *Appendix A.*

4.2.2 GENERAL IMPORTANCE OF DATA COLLECTION

It is agreed that all the demographic variables listed are of importance, and if the data exist, they should be monitored if possible. If reliable information does not exist on demographics, and resources need to be prioritized, the managers should focus on variables directly relevant to his/her established management goal. In some cases the goals of the socioeconomic monitoring may not be clear and available time and resources may not allow the team to assess all the variables. For these situations a * indicates variables considered to be the most important variables to collect if monitoring resources are limited and only a subset can be measured, based on 1) usefulness to management, 2) ease of data collection, and 3) likelihood of providing new information.

4.2.3 SITE-SPECIFIC CONDITIONS

Perhaps most important, the team needs to select variables based on local issues of importance in the study area. For example, if waste management is an important issue, then the team may want to prioritize community infrastructure and add more questions specific to waste disposal practices.

The team also needs to consider expected future changes in management and in the community. For example, if tourism is increasing, then the team may want to add more questions related to the tourism industry and its impacts.

Table 4.1 - **INSTRUCTIONS**

The table lists the variables according to category and means of data collection. The table notes particularly useful aspects of each variable, including the main means of data collection, minimal frequency of data collection and general importance of data collection. A * indicates that the variable is considered as important for managers when monitoring objectives are unclear.

SocMon variables (see *Section 4* and *Appendix A)* are presented based on categories of variables as well as according to the means of data collection: secondary sources, key informants, and/or focus groups are grouped together with the code 'K', and surveys 'S'. They were divided this way to correlate with the two types of interview guides: one for secondary sources, key informants and focus groups, the other for surveys.

It is important to emphasize again that *SocMon* is not a rigid set of guidelines. The user of *SocMon*, the socioeconomic monitoring team, is expected to select variables (add to, and delete from, the variables prioritized in *SocMon*) and methods appropriate to its site's needs as discussed in *Section 4.2*.

Generally, data should be collected from secondary sources first, followed by key informant interviews and/or focus groups. If data collected on the key informant and secondary variables are sufficient to meet the team's goals, then there is no need to conduct surveys. However, in most cases a survey will be conducted to obtain more specific data about individuals and households in the study area (see Tables 4.1 for lists of variables for secondary source/key informant/focus group data collection and for surveys, respectively). Observation is on-going while in the community.

Table 4.1 SocMon Variables and corresponding means of data collection - (K) Secondary Source/Key informant/Focus group interview; (S) Survey.

Interview Guide Codes		Variables	Main means of data collection Survey: S Interviews: KI, FGI Secondary sources: Sec.	Minimal frequency of data collection (years)	General importance of data collection
Area					
K1		Study area	Sec.,KI, FGI	5	*
Stakeholders					
K2		Stakeholders	KI	3	*
K3		Gender roles and responsibilities	KI, FGI	5	
Demographics					
K4		Population	Sec.	5	*
K5		Number of households	Sec., KI	5	
K6		Migration rate	Sec.	5	
K7	S1	Occupation	Sec., S	5	*
K8	S2	Age	KI, FGI, S		*
K9	S3	Gender	All	5	*
K10	S4	Ethnicity	Sec., S	5	*
K11		Literacy	Sec.		
K12	S5	Education	Sec., S	5	
K13	S6	Religion	Sec., S	5	
K14	S7	Language	All	5	
	S8	Household size	Sec., S	5	
	S9	Household structure	S	5	
	S10	Sources of income	S	5	*
	S11	Residency	S	3	
Health					
K15		Infant mortality rate, prevalence of diseases	Sec., KI	3	
Infrastructure and business					
K16		Community infrastructure Business development and ownership	KI, FGI	5	*
K17		Source of and access to credit	KI, FGI	3	

Interview Guide Codes		Variables	Main means of data collection Survey: S Interviews: KI, FGI Secondary sources: Sec.	Minimal frequency of data collection (years)	General importance of data collection
Coastal and marine activities					
K18	S12	Activities	All	2	*
K19	S13	Goods and services	KI, FGI, S	2	*
K20	S14	Methods	KI, FGI, S	2	*
K21		Value of goods and services	KI, FGI	2	*
K22	S15	Target markets and marketing mechanisms	KI, S	2	*
K23		Use patterns	KI, FGI,	2	
K24		Levels of use by outsiders	KI, FGI	2	*
K25		Levels and Types of Impact	KI, FGI	2	*
K26		Use of Goods and Services	KI, S		
K27	S16	Tourist profile	Sec., KI, FGI	3	
Governance					
K28		Management body	Sec., KI	3	
K29		Management plan	Sec., KI	3	
K30		Enabling legislation	Sec., KI	3	*
K31		Management resources	Sec., KI	3	
K32		Formal tenure and rules	Sec., KI	3	*
K33		Informal tenure and rules, customs and traditions	Sec., KI, FGI	3	
K34		Community incentives	Sec., KI, FGI		
K35	S17	Stakeholder participation and satisfaction	Sec. KI, S	3	*
K36		Community and stakeholder organizations	Sec., KI	3	*
	S18	Membership in organization and groups	S	3	
K37		Power and influence	KI, FGI	2	*
Attitudes and perceptions					
	S19	Perceptions of resource conditions	S	3	
	S20	Perceived Threats	S	3	
	S21	Awareness of rules and regulations	S	3	
	S22	Compliance	S	3	*
	S23	Enforcement	S	3	*
	S24	Perceived coastal management problems and solutions	S	3	
	S25	Perceived community problems	S	3	*
	S26	Successes in coastal management	S	3	*
	S27	Challenges in coastal management	S	3	*
	S28	Non-market and non-use values	S	3	
Socioeconomic status					
	S29	Material style of life	S	3	*

Table 4.2 is aimed at helping managers to prioritize variables to monitor according to the goals and aims of the site's coastal and marine resources management.

Table 4.2 Goals of socioeconomic monitoring and relevant variables

TABLE 4.2 GOALS OF SOCIOECONOMIC MONITORING AND RELEVANT VARIABLES

	Basics			***Demographics***								
GOALS	Study area	Stakeholders	Gender roles & responsibilities	Population	Number of households	Migration rate	Occupation	Age	Gender	Ethnicity	Literacy	Education
	K1	**K2**	**K3**	**K4**	**K5**	**K6**	**K7S1**	**K8S2**	**K9S3**	**K10S4**	**K11**	**K12S5**
Identifying threats, problems, solutions and opportunities												
Threats	●			●	●	●	●					
Problems			●									
Solutions and opportunities												
Determine the importance, value and cultural significance of resources and their uses												
Importance/Value												
Cultural Significance			●									
Assessing positive and negative impacts of management measures												
Livelihood			●	●			●			●	●	●
Marketing and Production												
Food security							●					
Attitudes and Perceptions		●										
Coastal, Marine Activities							●					
Governance												
Assessing how the management body is doing												
Management effectiveness												
Building stakeholder participation and appropriate education and awareness programs												
Stakeholder Participation		●	●	●			●	●	●	●	●	●
Awareness Program						●			●			
Verifying and documenting assumptions on socioeconomic conditions in the area, community dynamics and stakeholder perceptions	●	●	●	●	●	●	●	●	●	●	●	●
Establishing baseline household and community profile	●	●	●	●	●	●	●	●	●	●	●	●

TABLE 4.2 GOALS OF SOCIOECONOMIC MONITORING AND RELEVANT VARIABLES *(CONTINUED)*

Demographics						Health	Infrastructure & Business		Coastal and marine activities									
Religion	Language	Household size	Household structure	Sources of income	Residency	Infant mortality, prevalence of disease	Infrastructure, business development and ownership	Credit, source and access	Marine activities	Goods and services	Methods	Value of G and S	Target markets marketing mechanisms	Use patterns	Level of use by outsiders	Levels and types of impact	Use of goods and services	Tourist profile
K13S6	K14S7	S8	S9	S10	S11	K15	K16	K17	K18S12	K19S13	K20S14	K21	K22S15	K23	K24	K25	K26S16	K27
							●	●	●	●	●			●	●	●		
					●	●	●	●						●				
		●						●						●				
				●									●	●	●		●	
●				●	●		●		●	●	●	●					●	
								●		●	●	●	●					
			●	●	●	●				●	●	●	●				●	
									●	●	●				●	●		
									●	●	●			●	●	●		
●	●										●				●			
					●	●	●		●	●	●				●	●		
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

TABLE 4.2 GOALS OF SOCIOECONOMIC MONITORING AND RELEVANT VARIABLES *(CONTINUED)*

	Governance										
GOALS	Management body	Management plan	Enabling legislation	Management resources	Formal tenure and rules	Informal tenure rules, customs traditions	Community incentives	Stakeholder participation & satisfaction	Community & stakeholder organizations	Membership in organizations and groups	Power and influence
	K28	**K29**	**K30**	**K31**	**K32**	**K33**	**K34**	**K35S17**	**K36**	**S18**	**K37**
Identifying threats, problems, solutions and opportunities											
Threats											
Problems											●
Solutions and opportunities											●
Determine the importance, value and cultural significance of resources and their uses											
Importance/Value								●		●	
Cultural Significance						●					
Assessing positive and negative impacts of management measures											
Livelihood											
Marketing and Production											
Food security											
Attitudes and Perceptions											
Coastal, Marine Activities											
Governance											
Assessing how the management body is doing											
Management effectiveness	●	●	●	●	●	●	●	●	●	●	
Building stakeholder participation and appropriate education and awareness programs							●				
Stakeholder Participation							●	●	●	●	●
Awareness Program							●				
Verifying and documenting assumptions on socioeconomic conditions in the area, community dynamics and stakeholder perceptions	●	●	●	●			●	●	●	●	●
Establishing baseline household and community profile	●	●	●	●		●	●	●	●	●	●

TABLE 4.2 GOALS OF SOCIOECONOMIC MONITORING AND RELEVANT VARIABLES *(CONTINUED)*

Attitudes and perceptions										***Socioeco. Status***
Perception of resource conditions	Perceived threats	Awareness of rules and regulations	Compliance	Enforcement	Perceived coastal management problems and solutions	Perceived community problems	Successes in coastal management	Challenges in coastal management	Non-market and non-use values	Material Style of Life
S19	**S20**	**S21**	**S22**	**S23**	**S24**	**S25**	**S26**	**S27**	**S28**	**S29**
●	●									
			●	●	●	●				
					●		●	●		
									●	
										●
●	●	●	●	●	●	●	●	●	●	
	●									
				●						
							●	●		
	●	●	●				●	●		
●	●	●							●	
●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●

SECTION 5: WHAT DO I DO WITH THESE DATA?

5.1 ANALYSIS

The data analysis is typically conducted as a team. Throughout the data collection the team should meet several times to review and validate the data, discuss and refine key learning, interpret the results, validate the key learning and plan communication of results. As a result, much of the data analysis, particularly of qualitative data, should be completed during the field data collection. The final analysis at the end of the data collection will be to review and finalize the field analyses.

Key learning refers to issues identified or lessons learned by the team that are essential to the goals of the monitoring or are needed to understand the socioeconomic context of the stakeholders. See GCRMN Manual, Chapter 4: Final Data Analysis for more information on key learning and basic principles for analysis.

There are several critical steps the team should conduct together for the data analysis:

1. **Compile all the data** by gathering all the completed secondary sources and key informant interview guides and survey guides (*Appendices B & C*).
2. **Prepare the data** by transferring the collected secondary source, key informant interview and survey data to the analysis sheets (*Appendices D & E*).
3. and /or directly *enter the data for storage and analysis* into the SocMon WIO database provided (*see separate SocMon WIO database guidelines*). This is essential for ensuring the correct organization and security of the data, and will simplify analysis, reporting and regional networking
4. **Interpret the data** by reviewing the results from the analysis sheets to identify and organize information related to the originally identified goals of the socioeconomic monitoring (see *Section 2*). The team should select the data relevant to the goals of the monitoring (see *Table 4.2* in *Section 4* to determine which variable data are useful for analyzing which goal). These data then need to be reviewed, correlated and contrasted to identify emerging patterns and trends. These patterns and trends become a **key learning**. The results are then compiled to identify data that support the key learning.

   For example, if the goal of the monitoring is to identify socioeconomic impacts of a no-fishing regulation, then two of the variables of interest are *occupation* (*K7, S1)* and *activities (K18)*. For the analysis, there may be trends in changes in occupations and activities as people shift from fishing to other occupations and activities. If there are shifts out of fishing, a key learning may be that the regulation has had an impact on fishing activities as demonstrated by people leaving fishing as an occupation. The results on occupation and activities would support this key learning. By reviewing, correlating and contrasting these different pieces of data, it is possible to identify changes in each of the variables. For each variable there is a discussion of how to analyze and use the information in the *How to analyze the data* and *How the information can useful to managers and other stakeholders* sections in *Appendix A*.
5. **Agree on key learning** by agreeing on the most important key learning to highlight, and selecting the information to support the key learning.
6. **Validate the findings** by discussing the key learning with stakeholders as part of communication discussed below. Any noticeable differences should be checked with original sources.

5.2 COMMUNICATION/FEEDBACK

The **most important** aspect of the entire monitoring process **is to communicate the results** related to the goals back to the audience. This involves discussing the findings with the audience, seeking feedback and validation, and seeking appropriate decisions and actions to make use of the results. This communication process is critical to adaptive coastal management, which uses the information to improve the way management will be done in the future. For example, if the goal of the socioeconomic monitoring is to understand the value and importance of coral reefs, then the results regarding people's perceptions of non-market and non-use values can be used to understand value and importance. If the results show that more and more people have positive perceptions of the value of protecting coral reefs, then this demonstrates a high value of coral reefs. This information can then be used by the manager to demonstrate to the public and to policy-makers, the importance of putting resources into protecting the coral reefs.

As discussed in *Section 3.9*, the audience may range from community members to policy-makers and coastal resource managers. From an ethical standpoint, it is highly recommended that the results of the socioeconomic monitoring be reported back to the community even if they are not the target audience. This is done as a courtesy to the community members who provided their time for the interviews. This will help ensure good relations for future work with the community. Interview fatigue is a serious concern in any socioeconomic monitoring effort and the more people are involved in the process and have access to the results the greater people's willingness to participate in subsequent monitoring activities. It is therefore important to discuss with community members how the results will be used and how they will affect management. The monitoring will also be useful to the communities directly, especially by giving them an opportunity to give feedback, approve, or evaluate policies or projects, which have affected them.

When determining which results to highlight and share with the audiences, the team needs to consider what it expects each audience to do with the results presented to them, including actions it expects them to take. It also needs to consider the critical pieces of information that each target audience will be looking for from the results.

5.2.1 COMMUNICATION MECHANISMS

The results of the socioeconomic monitoring can be communicated to the various audiences through both one-way and two-way communication mechanisms. One-way communication mechanisms include:

- written material (report, papers)
- visual material (posters, pictures)
- oral presentations
- mass media (newspapers, magazines, radio, television)
- Web sites

Two-way communication mechanisms include:

- Public/village meetings (e.g. 'baraza' in Kenya and Tanzania)
- group discussion
- one-on-one discussion
- remote communications (telephone, video phone, Web camera)
- e-mail

Two-way communication mechanisms have the benefit of bringing the audience into the monitoring process by allowing them to provide feedback on the findings. If they have a mechanism for being involved, then they are more likely to support and take action related to the results.

When deciding which mechanisms to use, the team should consider the following questions:

- What is their preferred method of receiving information? This may be closely related to their educational level and technological capacity. The literacy rate is important to consider as well as whether they prefer to read information, listen to a radio or watch television. Are they computer literate? Do they use the Internet regularly? Do they gather together periodically at meetings or conferences? If so, when?

- Do they prefer technical or academic prose to that of a more casual, conversational style? Where and how are spoken communications typically conducted? What language is used?

- Do they prefer 'village meeting' or public meetings such as the 'baraza' in Kenya and Tanzania where there is an opportunity for open dialogue ? What language is used in these meetings? Who should be present?

If there are marginalized or disadvantaged groups in the area, it is especially important to develop a communication process to meet their special needs, such as holding special group discussions with them.

5.2.2 WRITTEN REPORTS

If the results are going to be communicated in a written form, then a report is presented for the target audience. The report can take several forms depending upon the audience for the report. Some end-users, such as senior policy-makers or decision-makers, may have little interest in a general description of the area and communities studied, but may be interested in issues, problems and potential solutions. Other end-users, such as researchers, development agencies planning to work in the area and coastal resource managers, may want detailed descriptions of all socioeconomic conditions and factors relating to coastal resource stakeholders.

Typically, the report will include:

Executive Summary - a summary discussion of issues, problems, opportunities and solutions identified in the monitoring.

Introduction - a discussion of the major and specific goals of the socioeconomic monitoring (related to the different uses of socioeconomic information presented above) and some background on the biological, physical, social, economic and political characteristics of the area.

Methods - a discussion on the sampling methods, the data collection methods, and the qualitative and quantitative data analysis methods used.

Results - a presentation of the main results from the monitoring effort including tables, diagrams, correlations between variables and a narrative discussion. The specific results that may be presented for each variable are noted in the analysis sections for each variable in *Appendix A* and in the *Analysis Sheets* in *Appendices D* and *E*.

Discussion - a discussion on key learnings and implications from the results organized around the originally identified goals of the monitoring.

Recommendations - recommended management actions and potential solutions to be undertaken as a result of the monitoring.

5.3 ADAPTIVE MANAGEMENT

The ultimate purpose of conducting socioeconomic monitoring is to provide information to adapt and improve coastal resource management, and to improve the lives of individuals and households who use and depend upon coastal resources. The results of *SocMon* can be used for adaptive management, a process that emphasizes learning by doing and feedback, and links the progressive accumulation of information and knowledge with management. Adaptive management consists of using socioeconomic information to review the results of management actions taken in the past and assessing whether these actions have produced the desired results. Based on this assessment, necessary changes are made in management plans to improve the way that management is done in the future. For further discussion, see the *How the information can be useful to managers and other stakeholders* sections within each variable description in *Appendix A*.

5.4 A USEFUL SUMMARY TABLE FOR COMMUNICATION AND ADAPTIVE MANAGEMENT

As discussed above, one of the important steps in the monitoring is to identify the target audience of the monitoring results and ways to communicate information as effectively as possible in order for this information to enable management to adapt to socioeconomic changes. This table summarizes points which have been discussed in previous sections and adds further step to ensure better effectiveness.

The table below summarizes what the socioeconomic monitoring team has to think about in order to ensure the most effective uptake of *SocMon* findings for adaptive management. This table will help the socioeconomic monitoring team plan a communication strategy for the monitoring findings.

TABLE 5.1. A FRAMEWORK FOR COMMUNICATION AND ADAPTIVE MANAGEMENT

Who needs to be informed of *SocMon* findings and their implication for planning, management, policy?	What needs to change or not?	What is the best media to use?	Does it already exist?	Resources required?

1. The team needs to identify the stakeholders who need to be informed of the findings (this column will include the target audience (see sections 3.9) as well as stakeholders which, in the light of the monitoring findings need to be included. For example, if during the monitoring process it is found that specific products (e.g. shells) are exported, it may be important to communicate results to "exporters" in order to involve them more in the coastal and management process. This was found to be important in Mnazi Bay where exporters have a strong influence on the types of resources that are exploited. The stakeholders to be informed include policy makers, managers as well as users.

2. The second step is to summarize clearly, what the SocMon findings mean for the stakeholders identified. The question is what needs to change or what does not need to change for coastal and marine resource management goals to be achieved. Changes are related to stakeholders identified. For example, if monitoring shows that the demand for juvenile sea cucumbers is increasing for export, and no laws exist on the exploitation of sea cucumbers, a law may have to be developed to regulate the activity, sea cucumber fishers, buyers and exporters have to be informed, and made aware of the impact of the fishery so that behavior changes. The manager as well as the policy makers may need to be informed.

3. The team then has to identify the best media to use in order to communicate the findings and their implications for management to the different targeted stakeholders, whether the media exists already or if it needs to be created. For example if a good media to communicate monitoring finding to the tourism operators is a newsletter, it may be useful to know whether a newsletter targeting this audience already exists and is successful. If so, monitoring findings may be published in the existing Newsletter. Similarly synergies with existing web sites that target the right audience may be used. For example, *SocMon WIO* will use the Western Indian Ocean Marine Science Association internet site to communicate with SocMon sites and to disseminate information at the regional level, as a platform.

4. Finally it will be useful to plan the budget requirement for communicating SocMon findings to the stakeholders identified from the very first stages of SocMon planning.

APPENDIX A: THE VARIABLES

Section 4 provided a brief listing of the *SocMon* variables. This appendix describes everything you need to know about each variable, including:

This appendix describes the full set of variables that may be monitored. From this set the monitoring team needs to select the variables appropriate for its goals and site conditions as discussed in Section 4.

What it is - description of the variable

How to collect the data - description of how to collect the data (e.g. type of key informants, sources of secondary data) and relevant interview questions that are all compiled in *Appendix B* and *Appendix C*. In some cases a section, *Additional data collection,* is provided suggesting additional information that may be useful to collect.

How to analyze the data - explanation of what to do with the data, including comparisons to make with other data and the tables or narrative text to prepare, which are compiled in *Appendix D* and *Appendix E.* In most variables a section, *Additional analysis,* is provided noting analysis that can be done beyond what is included in the *Appendices D & E* analysis sheets.

How the information can be useful to managers and other stakeholders - discussion of how the information can be useful relating back to the goals noted in the previous section, *Section 2.*

Appendix B and Appendix C include the questions noted for each variable in the following sections. Appendix D and Appendix E include the data analysis tables for the calculations described in the following sections.

The variables are organized into 8 categories (i.e. study area, stakeholders, demographics, health, community infrastructure and business, marine activities, governance, attitudes and perception, socioeconomic status). For some variables (e.g. age, gender, education, literacy, religion, ethnicity) alternative means of data collection are proposed. The two basic means of data collection are:

- (K) secondary sources, key informant interviews and focus group interviews for community level information and
- (S) surveys, for household or individual level information.

The data collection and analysis sections for the different means of data collection are presented in boxes stating clearly which level of information they refer to. Refer to *Table 4.1* in *Section 4* for lists of all the variables.

THE AREA

K1. Study Area

What it is
The study area refers to the location of the coastal and marine resources and the stakeholders where the study is being conducted. The boundaries of the study area are determined by the physical location of the resources and by where the stakeholders live and work. The study area will therefore often encompass a coastal area and the adjacent water catchment area. The stakeholders may be highly mobile and spread far wider than the area that is managed. There may be one or several communities in the defined study area that include all important stakeholders. See the *GCRMN Manual, Chapter 1: Preparatory Activities, Identify study area and study sites* for further discussion.

How to collect the data
Information on the study area is usually obtained from maps of the area and discussions with key informants, such as a community leader. As noted in the *Secondary Source/Interview Guide*, it is important to answer the question: What are the boundaries of the study area? The area needs to be noted on a map.

Additional data collection: It may also be useful to use symbols and colors to identify sites and coastal and marine resources of importance, particularly in the community (e.g. fish market, community center).

Note: Communities may be reluctant at first to map their area. These is because they may fear that, on the basis of the map, a MPA will be introduced and restrict access to resources on which they depend for their livelihood. Gaining communities' trust and explaining clearly what the socioeconomic monitoring is about is thus essential.

How to analyze the data
Summarize the information from the key informants and maps onto a single map, which will be used throughout the monitoring and presented along with the results. The boundaries of the study area, based on the coastal and marine resources and the location of the stakeholders, should be identified on the map. Sites of importance may also be noted. It will be useful, if possible, to involve a partner that can provide a computerized Geographic Information System (GIS) in which to include all the mapped information, the resulting map needs to be included with the *Interview/Secondary Source Analysis Sheet.*

How the information can be useful to managers and other stakeholders
Clearly identifying the study area is important to identifying use patterns and potential threats to the resources. By noting the areas on a map, the managers can see the geographical features that are included in the area, such as watersheds, agricultural areas and high-density residential developments.

From the perspective of the socioeconomic monitoring program, it is critical to define the study area since this is the focus of monitoring over time. In order to be able to make comparisons over time, the monitoring team must be clear on the communities within the boundaries of the study area.

Mapping the area will often be an important step in building a relationship between management and communities. The map will be useful for all resource users to understand they are part of the socioeconomic monitoring programme and that their activities fall under an area of active management.

THE STAKEHOLDERS

K2. Stakeholders

What it is
Stakeholders are individuals, groups or organizations of people who are interested, involved or affected (positively and negatively) by coastal resource management. These stakeholders may or may not actually live within or adjacent to the site, but are people who have an in interest in or influence on coastal resource management. See *GCRMN Manual, Chapter 1: Preparatory Activities, Identify the reef stakeholders* for further discussion. They are the focus of any management activities as they are the ones whose behaviour may have to evolve to improve management of the coastal and marine resources.

How to collect the data
Key informants (e.g. government officials, elected officials, fishers, business leaders, fish traders) in the area are interviewed to identify the three main stakeholder groups for each coastal activity (e.g. fishing, aquaculture, tourism). The coastal activities are identified as part of the variable, *activities (K18)* and noted in the *Secondary Source/Interview Guide* table as illustrated.

Additional data collection: In order to understand power structures (political, economic and social) within the community, key informants may be asked how much the various stakeholder groups influence each other.

How to analyze the data
Summarize the data from the key informants into the table in the *Interview/Secondary Source Analysis Sheet* as shown.

Coastal Activity*	Stakeholder Group 1	Stakeholder Group 2	Stakeholder Group 3
Fishing	Fishers at East Landing Site	Fishers at West Landing Site	Fishers at North Landing Site
Aquaculture	Aquaculture owners, managers & staff		
Tourism	Hotel owners, managers and staff	Water sports operators	Tourists
develop list according to activities identified in activities (K18)			

Additional analysis: A short paragraph may be written to identify the stakeholder groups involved in each coastal activity.

How the information can be useful to managers and other stakeholders
Coastal resource managers have come to realize that the active participation of coastal resource stakeholders in planning and management can improve success of coastal resource management. If local people are involved in coastal resource management and feel an ownership over it, they are more likely to support coastal resource management. An understanding of stakeholders will allow the manager to better identify individuals that may be impacted by management measures and to address these impacts with these stakeholders.

Stakeholders are also identified to determine which ones should be the focus of the monitoring.

Helping managers identify all the stakeholders will provide the opportunity for stakeholders to ensure that **all** user groups are included in management activities and potentially benefit from programs specifically suited to their needs.

K3. Gender roles and responsibilities

What it is
Gender roles and responsibilities is an indicator of the division of activities and responsibilities according to gender in the study area.

How to collect the data
Information is typically collected through focus group (gender focused). Focus groups are asked to discuss a daily calendar (one for men, and one for women).

In our region, seasons are important thus calendars will include the seasonal elements. Activities not performed by one gender, and the reasons why, should be discussed.

Informants are asked to list all the activities that are done at the household level, and the subsistence/income generating activities they are involved in.

For each activity, informants are asked who (gender, age) does the activity, who (age, gender) makes decisions at the household level on what (e.g. time use, use of income, where, when and how to do the activity) and who takes decision on coastal and marine activities.

Informants are also asked:
Which activities at the household level Men/Women are not allowed to do?

Why?_____

Which marine and coastal activities Men/Women are not allowed to carry out?_____

Why?_____

How to analyze the data

Summarize the information from the key informants and the different focus groups into the tables in *Interview/Secondary* Sources Analysis sheet. Activities are listed along with the gender and age of those who do them. A list of reason as to why men and women are not allowed to carry out some activities should be developed and noted in the tables *Interviews/Secondary Sources Analysis sheet* as shown in the example below. A short explanation may be provided on each reason identified.

Activities	Gender and age*		Why some activities only carried out by one gender?					
Household	**Women**	**Men**	**Legal**	**Cultural**	**Physical**	**Education**	**Religious**	**Economic**
Water collection	All							
Fuelwood	All							
Caring for children	Child							
Cooking		Adult						
Subsistence/income								
Employment hotel		Adult					X	
Fishing guides		Adult						
Fish trading	Elder	Adult			X			
Shell fish collection	All							

**Age category: Children, Adult, Elder.*

Participation in decision making: household and marine and coastal activities

Household	**Women only**	**Men only**	**Usually Women**	**Usually Men**	**Both**
Income use				X	
Time use					X
Saving / Investment	X	X			
Education			X		
Health				X	
Marine and Coastal Activities - extractive					
Location		Elder			
Methods					
Timing					
Restriction		Elder			
Marine and Coastal Activities - Non-extractive					
Location					
Methods				X	
Timing			X		
Restriction		Elder			

Additional analysis: Compare the roles and responsibilities over the years. Also compare them with *methods (K20 & S14), levels and types of impacts (K25).* Cross check the information with *stakeholders (K2)* and the *occupational structure (K7&S1)* where gender roles in coastal and marine activities should also be grasped.

How is this useful to the managers and other stakeholders

Understanding the division of activities and responsibilities according to gender and or/age will help managers target groups to develop awareness programmes on resource use. Similarly it will also help managers target activities to groups that may be more affected than others by the rules and regulations being developed.

For example restricting beach seining in Kenya affects not only fishers but also women fish traders who specialized in selling undersize fish.

It will enable the manager to develop appropriate approaches to ensure that involvement in management and decision making includes the whole spectrum of people responsible for the diversity of activities to be managed.

Finally it will help managers to understand how to approach stakeholders (the ones carrying out the activities and the ones making decisions if different) in order to help change attitudes or behaviour. For example, if elder men are responsible for making decision on where women go and collect shellfish, then managers have to approach both elder men and women to regulate shell fish collecting.

Monitoring gender roles and responsibilities will help communities understand better the structure of their society. It may also help different groups to become aware of the way workload is distributed.

DEMOGRAPHICS

COMMUNITY LEVEL: K4-14

K4 & K5. Population & Number of Households

What it is

The population is the total number of people residing in the study area. The number of households is the number of units defined as households at the beginning of the SocMon process (e.g. people sharing food and income) in the study area, regardless of the number of families residing in the houses.

How to collect the data

Data on population and household number are usually obtained from national, regional and/or local census statistics, which may be available from local government offices or the town council. It is important to cross-check these data with key informants, such as a community leader. As noted in the *Secondary Source/Interview Guide,* the critical questions to address are:

How many people live in the study area? _____

How many households are in the study area? _____

Additional data collection: It may also be useful to ask about changes in population throughout the year and the causes of these changes.

How to analyze the data

Use the data from the secondary sources and key informants to determine the population size and number of households and note them on the *Interview/Secondary Source Analysis Sheet*.

Additional analysis: Subtract the results from previous years to calculate changes over time. Compare changes in population and households and number of households over time with changes in resource conditions and the data from *levels and types of impact (K25)* to see if population changes are correlated to conditions and impacts.

How the information can be useful to managers and other stakeholders

Understanding the study area population levels and number of households is important to understanding threats. Population levels provide a general sense of the level of pressure on the natural resources. Higher populations generally place greater pressure on the

resources. The information on changes over time can also be useful in determining if these pressures are increasing, decreasing or staying the same. Comparisons with resource conditions and levels of use help determine how much increases in population are influencing resource conditions.

From the perspective of the socioeconomic monitoring program, population and number of households are important in determining the sample of households to interview. It is therefore important to collect this information from the key informant interviews before starting the surveys.

K6. Migration Rate

What it is

Migration rate refers to the percentage change in population size as a result of people moving into or out of the study area in the past year.

How to collect the data

Migration data are usually available from national, regional and/or local census statistics, which may be available from the local government offices or town council. It is important to cross-check these data with key informants, such as a community leader . As noted in the *Secondary Source/Interview Guide*, the critical question to address is:

What was the net increase or decrease in people moving into and out of the study area in the last year? _____ (note + or to reflect moving in or out)

How to analyze the data

Use the data from the secondary sources and key informants to determine the migration rate and note on the *Interview/Secondary Source Analysis Sheet*. For example, if there were 1000 people in a community in 1999 and 500 moved into the study area by 2000, then the migration rate would be 500/1000 = 50%.

Additional analysis: Subtract the results from previous years to calculate changes over time. Compare changes in migration rates over time with changes in resource conditions and the *levels and types of impact (K25)* to see if migration rates are correlated to conditions and impacts.

How the information can be useful to managers and other stakeholders

Migration rates are also useful for understanding threats. As people move into an area, pressures on the resources increase. The comparison with resource conditions and levels of impacts is particularly useful to see if the newcomers are associated with changing conditions and impacts.

Migration rates are also important for interacting with stakeholders, particularly for developing awareness programs. Immigrants can be expected to have less awareness of the coastal resources and management programs than long-term residents. A coastal management program with a high migration rate into the community may want to develop programs tailored to this growing population with a limited base understanding and appreciation of that environment. For example, the manager may want to have community meetings with traditional resource users and immigrants to introduce the newcomers to existing tenure systems. Furthermore, if the manager knows what activities the immigrants are involved in, he or she can target those activities. For example, if there is a large number of new hotel operators coming in and clearing mangroves with little understanding of the coastal ecology, then the manager may want to develop an educational video about the importance of marine resources as tourist attractions and the impacts of hotel practices on these valuable resources.

K7. Occupation

What it is

Occupation refers to an activity that provides livelihood, such as income, food or other means of sustenance. The primary occupation is the main source of livelihood, whereas the secondary and tertiary occupations are the second and third most important sources of livelihood.

How to collect the data

Data on occupation may be available through secondary sources, such as census statistics, fisheries records and community

development plans. However, it may not be presented to the level of occupation that is useful to the manager. For example, "tourism" may be noted as an occupation; yet, the manager may want to know the percent of watersports operators and hotel workers separately. It is therefore important to interview key informants, such as the community leaders and representatives of various sectors (e.g. fisheries associations, hotel associations). The information needs to be included in the *Secondary Source/ Interview Guide* table as illustrated below.

Additional data collection:
The team may ask about the existence of illegal occupations, such as fish poaching and drug running. Since this information is difficult to obtain from the survey respondents, it is especially important to collect from key informants. Observation can also provide information on illegal activities in the study area.

The team may also want to ask about levels of unemployment or underemployment - high levels may indicate greater pressure on the resources.

How to analyze the data
Using the data from the secondary sources and key informants, determine the percentage of the working population in each of the categories and the number of people primarily engaged in each occupation as their primary occupation. Note this information on the *Interview/Secondary Source Analysis Sheet* as in the following example.

Major occupations in community	Percent of working population conducting this occupation as primary occupation	Number of people conducting this occupation as primary occupation	Percent of working population conducting this occupation as secondary occupation	Percent of working population conducting this occupation as tertiary occupation
1. Fishers	60%	600	20%	10%
2. Watersports operators	10%	100	0%	0%
3. Aquaculture workers	20%	200	5%	1%
4. Hotel workers	5%	50	0%	0%
5. Farmers	5%	50	10%	4%

Additional analysis: Subtract the results from previous years to calculate changes over time. Compare these results with changes in resource conditions, *methods (K16), levels and types of impact (K25)* and *perceived threats (S20)* to see if there is a correlation. It may also be useful to give a short description of the major occupations, their importance given the percent and number of people engaged in each of them, and how this has changed over time.

The percentages of primary and secondary occupations may be combined as an indication of dependence on each occupation. In this example 80% of the working population is dependent on fishing while another 10% consider it a tertiary occupation.

Similar data are collected as part of the surveys. Comparison between results allows for a check on the accuracy of the data. If there is a large difference between results, then a full census survey may be necessary. Note that the survey data are based on the entire population (not just the *working population)*, which includes those unemployed. To accurately compare, the survey percentages will need to be recalculated based only on the people listed as working (i.e. not the people who noted "student", "unemployed", etc., as their occupation).

How the information can be useful to managers and to other stakeholders
Occupational structure is one of the most useful sources of information regarding threats. It provides an understanding of the number of people engaged in coastal activities, many of which are potential threats to the resources. The changes over time and comparisons with *levels and types of impact (K25)* and resource conditions can be particularly insightful regarding threats. For example, if more and more people are seen to be shifting into fishing as their primary occupation over time, then over-fishing may be a growing concern. Comparisons with resource conditions should indicate a decline in number of fish as the number of people fishing increases. Comparisons with *methods (K20)* and *levels and types of impact (K25)* can also be useful in seeing how those activities are

likely to be increasing. Comparison with *perceived threats (S20)* is useful for seeing how the community perceives these increases whether they are seen as impacting the resources. If the number of fishers is increasing, but resource conditions are good, the types of uses are relatively benign, and the community does not consider fishing a medium or high level of impact, then fishing may not be a threat.

Occupational structure is also useful for determining the importance of marine resources. The greater the percentage of people using the resources, the greater the dependency, and therefore the more important the resources. Increases in number and/or percent of people working in coastal-related activities over time indicate the importance is also increasing. The distribution of people in various occupations also indicates the level of community economic stability, which is also important for understanding the importance of the resources. If the majority of people depend on fishing, then the community will be severely impacted by a collapse in the fishing industry. Many households in the Western Indian Ocean are multi-occupational, which is a useful economic strategy to ensure adequate and regular income for the household.

Finally, occupational structure is also important for determining the effects of management strategies on community livelihoods. For example, managers can see whether occupations shift after alternative livelihood training is conducted, or they can see if the establishment of a no-fishing area coincides with a shift out of fishing and into other occupations.

This information will be useful for stakeholders to understand better their level of dependence on the marine and coastal resources. Knowing the importance of different activities will help the community contribute more effectively and representatively to management and ensure that decisions take into consideration impacts on resource users and are better tailored to stakeholders' situation.

K8-14 . Age, Gender, Ethnicity, Literacy, Education, Religion, Language

What it is

Age, gender, education, literacy, ethnicity, and religion are basic demographic variables. Education is measured by the average number of years of formal schooling completed by study area members over 16 years old. Literacy is measured by the percentage of study area members able to read and write. Age is measured by the percent of study area members in different age categories. Gender is measured by the percentages of the population that are male and female. Ethnicity and religion are measured by the percent of study area members of various ethnic origins and religious affiliations, respectively.

How to collect the data

Basic demographic information on the study area is typically available from secondary sources, such as government census departments, town offices and community centers. It is important to cross-check these data with key informants, such as the community leaders.

The data collection should focus around determining the percent of the people in the study area that are in various categories of age, gender, education, religious affiliation and ethnic affiliation. As noted in the *Secondary Source/Interview Guide*, the key questions to address are:

What percent of the people in the study area are currently in the following age categories?:
0-18 _____;19-30 _____;31-50 _____; over 50_____

What percentage of the population is male or female?: male _____; female ___

What is the average number of years of education for people over 16 years old in the study area? _____

What percentage of the population is literate (can read and write)? _____

What is the ethnic make-up of the study area (percent of each major ethnic group in the study area?
(write-in) _____; (write-in) ____; (write-in) _____

What is the religious make-up of the study area (percent of each major religious group in the study area?
(write-in) _____; (write-in) ____; (write-in) _____

What are the major languages spoken in the study area (percent of each major language in the study area?
(write-in) _____; (write-in) ____; (write-in) _____

Additional data collection: The team may want to get information on the political affiliations of the stakeholders, at the community level. This is highly sensitive information and may be best obtained through key informants or secondary information. Political affiliation can prevent people from working together. Political affiliation can also provide insight into people's perceptions and values of the resources.

It also may be appropriate in some areas to collect information about clanship. This could be of importance where responsibilities and roles are dictated by clans. This information could also be cross checked with results of *informal tenure and customs* (K34) and *power and influence* (K37).

How to analyze the data

From the secondary sources and key informants information determine the percentage of people in each of the categories and note in the *Interview/Secondary Source Analysis Sheet*. An example for age follows:

Percent of community age: 0-18__23%_; 19-30 _41%_; 31-50 _16%_; over 50_20%

Additional analysis: Three pie charts may be prepared to visually illustrate the age and religious and ethnic distribution in the study area. Subtract the results from previous years to calculate changes over time. In addition, it may be useful to describe the demographic make-up of the study area and how it has changed over time.

Similar data are collected as part of the surveys. Comparison between results allows for a check on the accuracy of the data. If there are differences between results, then it may be useful to consult with the key informants to identify the cause of the discrepancy. Otherwise a full census survey (surveys of all households, not just a sample) should be conducted to accurately understand the study area demographics.

How the information can be useful to managers and other stakeholders

All of these variables are important for developing stakeholder participation in management. Education, literacy and age can be predictors of receptivity to new ideas. Generally, as age increases, openness to new ideas (e.g. establishment of a no-take area) decreases. And as education levels increase, open-mindedness increases. For example, an educated young fisher may be more willing than a non educated fisher to go through extensive training for a new career. By understanding these variables, managers gain a sense of likelihood of awareness, support and compliance with management measures.

Ethnicity and religion are also important to gaining stakeholder participation. Both of these variables are important aspects of social structure and frequently related to group membership, loyalty and other aspects of social behavior. Similarity often leads to a greater willingness to work together. By understanding ethnic and religious affiliation, managers can better understand how the stakeholders behave and therefore how to interact with them. A relatively homogenous, or similar, community will likely be more capable of working together than an area with divergent ethnic and religious interests.

This information can also be useful in determining entry points to groups. For example, if religious affiliation is strong, then the religious services or meetings may be a means of reaching people and religious leaders may be appropriate representatives of the community members. Ethnicity and religion can also provide insight into people's perceptions and values of the resources, although this requires an understanding of their religious, ethnic beliefs.

Depending on the culture, gender can also be a strong indicator of participation since in some cultures women are not actively engaged in politics and management. It may be more difficult in these cases to actively involve them in management.

Education, literacy, and religious and ethnic affiliations are important to understanding impacts of management on livelihood and well being over time. Increases in education levels associated with a particular management strategy indicate a positive impact. Severe reductions in the population percent of particular ethnic groups may indicate that a management strategy is having an inequitable impact on that group. The difficulty in these interpretations is making the correlation to management strategies amidst all the other policies and programs that may be causing these changes.

Age is useful for predicting future pressures on the resources. A very young population, which is common in many Western Indian Ocean nations, indicates there will be more pressure on the resources in the coming years.

Also, from the perspective of the socioeconomic monitoring program, the information on distribution of age, gender, education, ethnicity, religion and occupational structure will be useful for ensuring the breadth of people in the study area are interviewed. For example, if there are 30% Baptists, 40% Catholics and 40% Evangelicals, then the team needs to ensure interviews are conducted

with approximately the same percent from each group. It is important to collect this information from the key informant interviews before starting the surveys. See *Section 3.4* for a discussion on selecting respondents.

HOUSEHOLD LEVEL: S1-9

S1-9. Occupation, Age, Gender, Ethnicity, Education, Religion, Language, Household size, Household structure

What it is

In addition to occupation, age, gender, ethnicity, education, religion, language and occupation (see 'what it is' K7- 14), the team will be able to investigate the household size and structure at the household level. The household size indicates what the average size of households in the study area is. The household structure relates to whether the household is headed by a man or a woman (widow or not). Household structure also relates to the average number of men, women and children compose the household.

Additional data collection: At the household level, the team may want to ask more details about foreign languages spoken by household members. This could provide information on whether local communities are in a good position to be able to take opportunities offered by an emerging or potential tourism sector.

The team may also want to ask about the existence of illegal occupations, such as fish poaching and drugs. It should be noted that this may be a highly sensitive issue and, therefore it may be easier to obtain this information from key informants (see *K7*).

How to collect the data

Information on all these demographic variables (S1-9) is collected by asking about all the members in the respondent's household. In this way, the team collects information on the range of demographic characteristics of members of the household, not just about the individual respondent.

The team asks the respondent to complete the following table as noted in the *Survey Guide*. Each household member is noted in the first column and the relevant information provided to the right:

Household Members*	Age	Gender	Education level completed (only ask if >16 yr)	Religion**	Ethnicity	Language (mother tongue and others)	Primary Occupation	Secondary Occupation
~~HH~~								

** identify all living in respondent's house by name or role (e.g. grandmother)*
*** Information on religious affiliations may be too sensitive to ask at the household level.*
It may be more appropriate to get it at the community level by key informant or secondary sources.
HH: indicate who is the household head (e.g. mother) and if a woman whether she is a widow (w).

How to analyze the data

Occupation analysis

For the occupation analysis, first identify all the occupations noted during the interviews and list them in the table in the *Survey Analysis Sheet* (see example below). For simplicity, group all the occupations that have less than 5% of the population together under "Miscellaneous."

Next calculate the total number of people from all the household tables who listed this occupation as their primary occupation. Then calculate the percentage of people who are employed in each occupation as their primary occupation by dividing the number of people noted for each occupation by the total number of people in all the households as noted in the *Survey Analysis Sheet* and illustrated in the table.

Conduct the same calculations for the secondary occupations by first calculating the total number of people from all the households who noted each occupation was their secondary occupation. Then calculate the percentage of people from the households who noted each occupation was their secondary occupation by dividing the number of secondary people for each occupation by the total number of people in all the households interviewed as illustrated in the table. Also note that the total percentage of household members with secondary occupations is less than 100%. This is because not all household members have a second occupation. In the example below, 80% have secondary occupations, 20% do not.

Finally, add the percentages from the primary and secondary occupations for each occupation to determine the total percent of community members dependent on each occupation as illustrated in the table. Note that the total adds up to more than 100%. This is because the total percent includes primary and secondary occupations of household members. They are therefore counted twice if they have a second occupation.

Occupation	PRIMARY		SECONDARY		Total percent of community members dependent on this occupation (primary and secondary)
	Number of household members listed as primary occupation	Percent household members that listed as primary occupation	Number listed as secondary occupation	Percent household members that listed each occupation as secondary	
Fishing	65	32.5%	50	25%	57.5%
Hotel development	50	25%	20	10%	35%
Aquaculture	30	15%	60	30%	45%
Misc.* (coral mining, farming)	5	2.5%	30	15%	17.5%
No occupation**	50	25%	0	0%	25%
TOTAL	200	100%	160	80%	180%

** record together all occupations that were noted for <5% of the household members*
*** for example, unemployed, students, retired*

Additional analysis: Compare these results with the data from the key informant/secondary source *occupation (K7),* which asks the percent of population conducting this occupation as primary occupation and secondary occupation. If there are significant differences, then consult with the key informants to determine the cause. If the difference cannot be explained, then it may be necessary to interview all the households to accurately determine occupational structure. Note that the key informant/secondary source data are based on the *working* population and therefore do not include people who are students, retired or otherwise not working. To accurately compare, the household percentages will need to be recalculated based only on the people listed as working (i.e. not including the people who noted "student", "unemployed", etc., as their occupation).

Compare changes in the number of people in each occupation over time with data on changes in *methods (K20)*, *levels and types of impact (K25)*, and resource conditions over time to identify any correlations.

Also, calculate changes in occupational structure over time. Take the current year's percentages and numbers and subtract the previous year's to see if there is an increase, decrease or no change.

Demographic Analysis

For each primary occupation, calculate the percent of people in each age category, education category, ethnic category, religious category and gender category and note these percentages in the *Survey Analysis Sheet* (see example below for age and education table).

	PERCENT RESPONSES						
Primary Occupation	**Age 0-15**	**Age 16-25**	**Age 26-45**	**Age over 45**	**< 6 years schooling**	**6-9 years schooling**	**>9 years schooling**
Fishing	6%	20%	39%	35%	10%	60%	30%
Hotel development	0%	45%	30%	25%	5%	30%	65%

Additional analysis: Compare these demographic data for all the occupations together with the *Interviews/Secondary Source, age, gender, education, literacy, ethnicity, religion and language (K8-14)* data. If there are significant differences, then consult with the key informants to determine the cause. If the difference cannot be explained, then it may be necessary to interview all the households to accurately determine community demographics. In addition, a short narrative may be prepared describing the characteristics of each occupational group.

Household size analysis and household structure

Calculate average household size by adding up the number of people in each household and dividing by the number of households.

Calculate the average number of men per household by adding the number of male household members and dividing it by the total number of households. Calculate the average number of women per household by adding the number of female household members and dividing it by the total number of households. Do the same thing for the children.

Calculate the percentage of women headed households and the percentage of widow headed households by adding the number of households headed by women, and those headed by widows. Divide these numbers by the total number of households surveyed and multiply by 100 (see *Survey Analysis sheet*).

How the information can be useful to managers and other stakeholders

In addition to the demographic data provided from the key informants/ secondary sources, the data from the surveys are analyzed specific to each occupation. This provides the manager with an understanding of the type of person employed in the different occupations that can help him/her tailor management programs. For example, if the manager knows most of the aquaculture owners are illiterate and most of the hotel owners are highly educated, then he/she may develop education programs based on visual imagery for the aquaculture owners and an education program based on scientific references for the hotel owners.

Women headed households and particularly widow headed households have a tendency to be poorer in the community. The manager can tailor programs for these households which may be identified as particularly vulnerable groups to changes in resource management.

By contributing to the gathering of information on the make up of the communities, stakeholders will help ensure that managers have a good knowledge of the wide spectrum of stakeholders and are able to design management activities that are better suited to their context.

S10. Household Sources of Income

What it is

Household income refers to the main sources of income for a household. This information is collected in addition to occupational structure to identify any sources of income that are not associated with an occupation, such as remittance from abroad.

How to collect the data

As noted in the *Survey Guide*, data on household incomes are obtained by asking each respondent:

What is your household's most important source of income? _____
What is your household's second most important source of income? _____

Note that the collection of this data could be sensitive to some individuals as it is personal. The team needs to carefully consider their study area and community members to determine if it is appropriate to ask this question.

How to analyze the data

For each occupation, calculate the percent of respondents that noted it was their household's primary source of income and the percent of respondents that noted it was their household's secondary source of income, and note these percents in the *Survey Analysis Sheet*.

Additional analysis: Compare these results with the data on *occupation (K7 and S1)* to verify the same occupations are of critical importance. Note that there may be differences due to sources of income that are not occupations (e.g. remittance). Monitor these results over time to identify changes in the importance of the various occupations.

How the information can be useful to managers and other stakeholders

Information on primary and secondary sources of incomes is useful for determining the importance of the resources to the community. For example, if over 80% of the community considers fishing a primary or secondary source of income, then this demonstrates a high community dependence on fishing and consequently on the marine resources.

By better understanding the importance of different activities for their income, communities can make an informed contribution to help managers improve management activities and take into consideration the impact of some rules and regulations on the stakeholders' main livelihoods.

S11. Residency status

What it is

Residency indicates whether household members are long term residents or not and if not their length of stay. Residency will provide more detailed information on migration patterns and complement *migration rate (K6)* information.

How to collect the data

Information on residency is collected through a survey. Respondents are asked whether they live on a permanent basis in the study area or on a seasonal basis. Then they are asked about the length of their stay and their origin if they are settled on a seasonal basis.

Household Member*	Permanent / Seasonal	Permanent Number of Years	Seasonal Number of years	Seasonal Origin	Seasonal Which Months	Primary Occupation	Secondary Occupation
** identify respondents by name or role (e.g. father)*							

Note: It will be important to carry out key informant interviews on migration patterns of different stakeholder groups as this will help design the survey (i.e. for the team to know where seasonal migrants live and when they come mainly). The questions on residency may be included with the basic demographic survey. It may be more appropriate in some cases to investigate seasonal migration patterns through key informant or focus group interviews by purposively sampling seasonal migrants. The key informants are then asked about the number of seasonal migrants (according to the activities of interest), their origins and the season in which they come.

A large number of seasonal fishers from the South Coast go to fish in Kilifi, North Coast of Kenya, during the North East monsoon and live on the beach. It will be important to interview key informants to detect migration patterns in order to capture this in the survey (i.e. make sure that the sampling is representative)

How to analyze the data

Determine the percentage of permanent stakeholders, and calculate the percent of people in the seasonal/permanent categories. Then for each permanent/seasonal category, calculate the percentage of population which has stayed/visited for less or more than 5 years.

For the seasonal population calculate the percentage of seasonals coming in different seasons, the percentage of seasonals for each time category, and the percentage of seasonals for each origin category. Also calculate the average length of stay of the seasonal population and the percentage of seasonals per season. Note these percentages and averages in the *Survey Analysis Sheet* (see examples below for years and origin).

PERCENT RESPONSES						
Primary Occupation	**ALL POPULATION**			**PERMANENT**		
	Permanent	**Seasonal**	**Total**	**Years 1-5**	**Years >5**	**Total**
Fishing	70%	30%	**100%**	20%	80%	**100%**
Hotel development	50%	50%	**100%**	55%	45%	**100%**

For the origin analysis of the seasonals, list the origins noted during the interviews and in a table as shown in the *Survey Analysis Sheet* then group them in representative geographical categories (for example Zone 1, Zone 2 and Zone 3, or north Coast, South Coast etc.) and calculate the percentage of the percentage of seasonals coming from the different areas. Categories will have to be defined precisely.

PERCENT RESPONSES								
Primary Occupation	**SEASONALS**							
	Years 1-5	**Years >5**	**Total**	**Original National North Coast**	**Original National South Coast**	**Original National Inland**	**Original Foreign**	**Total**
Fishing	50%	50%	**100%**	30%	40%	0%	30%	**100%**
Hotel development	55%	45%	**100%**	33%	17%	40%	10%	**100%**

Additional analysis: Results can easily be presented in bar charts or pie charts.

Compare changes over the years in the percentage of seasonals/permanents for each occupation. Compare over the years changes in origin and length of stay of the seasonals. Take the current year's percentage and substract the numbers and percentages of the previous year's to see if there is an increase, a decrease or no change.

Compare changes over time of the number of permanent and seasonal stakeholders, and the origins of the seasonals with data on changes in the *occupational structure* (S1) and in *levels and types of impacts (K25).* Compare changes in the seasonal population and the recently settled population and the *methods' (K20)* to see if they are correlated. Compare also the results with the changes in *migration rate (K6)* and *level of use by outsiders (K24).*

How is this information useful to managers and other stakeholders.

Residency gives more details about the migration rate and will be useful to understand threats. As people move into an area whether on permanent or seasonal basis, pressures on the resources increase. The comparison with resource conditions and levels of impacts is particularly useful to see if the newcomers are associated with changing conditions and impacts.

Understanding residency will also be important for interacting with stakeholders, particularly for developing awareness programs. Seasonal populations and recently settled people may be less aware of the coastal and marine resources management programs than long-term residents. A seasonal population may be less aware and have less incentives to comply with the coastal and management rules and regulations developed. Furthermore, if the manager knows what activities the seasonal migrants are involved in, he or she can target those activities. For example, if there are seasonal mangrove cutters with little understanding of the coastal ecology, then the manager may want to develop an educational video about the importance of mangroves for the sustainability of other marine an coastal resources.

Information on residency will be of direct use the community. This could be a way for the community to appreciate whether there has been improvement in the employment opportunities created under the management program (e.g. if one of the objectives is to promote alternative income generating activities). From the seasonal population point of view, information on residency will help ensure that managers can involve them in management decisions that may have great impact on them.

K15. Infant mortality rate, deaths from diseases

What it is

Deaths caused by diseases (including water borne diseases) and infant mortality rate are a measure of the quality of human health in the study area. It is the number of infant deaths (18-24 months) in relation to the total number of children of this age, and the percentage of deaths caused by diseases in the study area.

How to collect the data

This information is collected in secondary sources, such as a health report for the area (NGO or governmental agencies), or the health department. It can also be collected from a key informant such as a hospital director, director of health awareness association etc. Sometimes deaths and births are recorded at the village level by community leaders.

Additional data collection: The team may want to collect information on the prevalence of HIV/AIDS in the study area. This is often sensitive information. It is also difficult information to get as death is often caused by diseases other than HIV/AIDS. To get information on HIV/AIDS it might be more appropriate to approach NGOs or other organizations that concentrate on HIV/AIDS awareness and treatment (e.g. MSF). These organizations may be able to give the team an estimation of percentage of the population with HIV/AIDS in the study area.

As noted in the *Secondary Sources/Interview Guide*, the key questions are:

What is the death rate of infants between 18-24 months of age per year?: _____(per thousand)

What percentage of death per year in the study area is caused by (list most common diseases including water borne diseases):
Malaria: _____; Cholera/Dysentry: _____; Typhoid: _____ .

How to analyze the data

Determine the percentage of deaths in each of the category and note *Interview/Secondary Sources Analysis Sheet*. An example for diseases follows.

Percent of deaths caused by: Malaria 10% ; Cholera/Dysentry 15% ; Thyphoid 3%

Additional analysis: compare these percentages to the previous years (substract percentage of this year to the previous years to determine whether the percentage has increased, decreased or stayed the same). Compare the changes in health with changes in *community infrastructure* and businesses *(K16)* and *community problems (S25).*

How the information can be useful to managers and other stakeholders

By monitoring these indicators of health, the manager can see if community health and well being are increasing, decreasing or staying the same. If the percentage of deaths due to these diseases is high, in particular if water borne or treatable diseases are a prevalent cause of deaths in the study area, it may mean that the community has poor access to clean water, poor hygiene awareness, or/and that health services are not adequate.

If coastal management is providing improvements in livelihood and income, and overall improvements in wealth in the community, then it could be expected that the quality of human health could increase. The difficulty is tying these changes to coastal management initiatives. In some cases these are closely linked; for example, if a management program has provided water access or sewage treatment to a community, it would be assumed that cases of water borne disease would decrease. But in other cases, when management is not involved in infrastructure projects, the link may be more difficult to detect.

Understanding the quality of health in the study area will also help the managers determine realistic management goals sensitive to constraints that stakeholders may face. For example, if quality of health is very low managers may expect it more difficult to engage communities in conservation activities.

Changes in quality of health can increase stakeholders' awareness of how quality of life increase, decrease or stays the same over the years.

K16. Community Infrastructure, business development and ownership

What it is

Community infrastructure is a general measure of the local community development and wealth. It is a description of the level of community services (e.g. hospital, school) and infrastructure (e.g. roads, utilities), which can include information essential to determining sources of man-made impacts on coastal resources (e.g. sewage treatment). Business development is a general measure of local community and economic development. It is based on the number and type of commercial businesses in the area and who owns them (whether the owners are overseas, national but non resident or resident and whether they are foreigners, national but non-local or local). Business ownership will give an idea of whether income from these businesses is likely to be spent in the area, and thus have a large or medium impact on the development of the local area.

How to collect the data

This information is collected by interviewing key informants, community leaders or town engineers; reviewing secondary data from town records, particularly the community development office; and walking through the community, observing and inventorying community infrastructure.

For community infrastructure it is important to determine whether the following items exist in the study area:

schools, resident doctors, resident nurses, hospitals, functioning dispensaries, electricity, telephone, internet access, radios, televisions, newspapers, sewage treatment plant, ice plant, tarmac road access, water supply to homes, banking services, religious buildings (mosques, churches, temples)

For business development it is important to determine whether the following items exist in the study area:

food markets, restaurants, food stalls, gas stations, banks, specialty shops, gift shops, dive shops, tour operations, fishing guides, guesthouses/ hotels/ inns/ resorts, yacht charters.

For each of the items listed it will be important to understand who owns the businesses (i.e. owners' place of residence and their origin). The different categories of owners will be ranked according to their importance in numbers as shown in the table below. Residence and origin categories will have to be clearly defined.

Business	Origin and Place of Residence	Rank*
Rank in order of frequency: the least numerous category of owners will be ranked 1.		

Place of residence relates to where the owner actually lives (overseas, in the country, in the area) and the origin is where the owner comes from.

In some cases these lists may need to be modified to more accurately reflect variables of community infrastructure and business development within the study area. It is important to include the range of infrastructure in the region. For example, if televisions are already prevalent in the region, but satellite receivers are only beginning to appear, then it may be more appropriate to include satellite receivers in the list. Accurate scale construction is needed to make meaningful comparisons between communities and over time, such as pre- and post-marine protected area establishment.

Additional data collection: The team may also collect more specific information on the number and characteristics of these items.

How to analyze the data

List the infrastructure items obtained from observations, key informant interviews and secondary sources in the *Interview/Secondary Source Analysis Sheet*.

An example of results on business ownership is provided below.

Business	Origin and Place of Residence	Rank*
Fishing Guides	Locals, Residents, Foreigners, Residents	1 2
Fish Traders	Locals, Residents, National Non-Local	1 2
Tour Operators	Overseas, Foreigners National Non-resident, Non-local Foreigners, Residents	1 2 3

Additional analysis: Compare these lists over time. A short description based on this list may be prepared describing the infrastructure in the study area and how it has changed over time. Compare the types of owners and see how the ranking evolves over time and other categories of owners emerge.

How the information can be useful to managers and other stakeholders

Community infrastructure and business development are useful for determining the wealth in the study area, and for determining overall impacts of management on communities in the study area. By monitoring the existence of the listed items, the manager can see if community wealth and well being are increasing, decreasing or staying the same. For example, an increase in commercial businesses, such as dive shops, hotels and restaurants for tourists, indicates an increase in overall community economic development. The difficulty is tying these changes to coastal management initiatives. In some cases these are closely linked; for example, if a management program has provided water access or sewage treatment to a community. In other areas coastal managers have no responsibility for infrastructure in the community.

The information on the availability of banking services, ice for fishers and hard top roads can be useful for identifying the ability of fishers to build their businesses. At the same time, information on sewage treatment provides insight as to whether raw sewage may be affecting coastal water quality. Information on guesthouses/hotels/inns and restaurants is useful for determining the general level of tourism in the area.

Understanding the diversity of business owners will enable managers to tailor awareness and activity programs to the different types of owners and involve them more effectively in coastal and marine management activities. Origin of owners will indicate whether the economic benefits from businesses are in fact remaining within the community, or whether profits are sent elsewhere.

Finally, the information on the existence of telephones, Internet access, radios, televisions and newspapers is useful for developing education and outreach programs in the community. Awareness campaigns can be tailored to the most prevalent medium.

K.17 Sources and availability of credit

What it is

Sources and availability of credit is a general measure of access to credit by the stakeholders, and opportunities for stakeholders to develop and expand their businesses. It is a list of the sources of credit whether formal or informal (e.g. banks, revolving funds, cooperatives), conditions to access credit and the amount of credit distributed in a year by these sources of credit.

How to collect the data

This information is collected through key informants such as community leaders, cooperative secretaries, revolving fund members, bank directors, micro credit schemes and by observation in the community.

It is important to establish a list of formal and informal sources of credit in the study area: banks, micro credit schemes, cooperatives, revolving funds, money lenders. For each of these items the respondents are asked about the interest rates, limiting conditions to access credit (e.g. employment conditions, gender limitations, residency etc.) and the team should note whether the source of credit is formal or informal.

Additional data collection: the team may want to get information on the amount of credit granted in a year, and the percentage of loans reimbursed. This will give a sense of the importance of the credit source and its likely sustainability (e.g. if most loans are not paid back, the source may not last long).

How to analyze the data

List the credit sources and their characteristics obtained through key informant interviews and secondary sources into the *Interview/Secondary Source Analysis Sheet.* Calculate the total number of sources of credit, the percentage of informal credit sources and the percentage of formal credit sources. Calculate the average interest rate for the different types of sources of credit (formal and informal) and summarize the conditions according to the type of sources of credit.

Additional analysis: Compare how the list, the conditions of access and the interest rates change over the years. Compare these changes with changes in '*Methods (K20, S14)*, and with changes in '*business development and ownership*' (K16) to see whether these are correlated. Compare also the changes in sources and availability of credit with changes in *material style of life (S29)* and see if they are linked.

How is this useful to the managers and other stakeholders

Difficulty in accessing credit is often a constraint to the development of livelihood opportunities for coastal communities. Understanding the availability and the rules for access to credit to the communities will give the managers a understanding of the opportunities which exist for different stakeholders to develop their business. This will also help the managers target management activities to groups which may have little or no access to credit, thus are likely to be more vulnerable to changes in management regimes if these are restrictive. In time if credit sources develop, it may contribute to improvements in community well being.

COASTAL AND MARINE ACTIVITIES

K18&S12. Activities

What it is

'Coastal and marine activities' is the identification of the uses of coastal and marine resources in the study area. These are activities directly or indirectly using or affecting the coastal and marine resources. These may include, for example: fishing, fish trading, tourism, aquaculture, marine transportation, agriculture, coral mining, sand mining, dredging, oil-gas development, military bases, mangrove clearing, forest clearing, industry and conservation.

COMMUNITY LEVEL: K18

Coastal and Marine Activities
Fisheries
Tourism
Aqua-culture

How to collect the data

Data on coastal and marine activities is obtained by interviewing local key informants, such as the village leaders, businessmen, fishers, fish traders and tour guides to identify the coastal and marine activities in the area. Observation is also used to identify the use activities in the area. A list is compiled of coastal and marine activities and noted in the *Secondary Source/Interview Guide* as illustrated.

Since some coastal and marine activities may be seasonal, take place at odd hours or take place out of sight of land, it is important to use a multi-method approach including observation at various times and to interview a range of key informants to ensure that the range of coastal and marine activities are identified.

Additional data collection: The coastal and marine activities can be identified on the study area map. For example, hotel areas can be identified in one color and diving areas in another color. The data can be placed on the map in a general or a very specific manner. It is also useful to note the seasonality of the activities as certain activities, such as fishing and tourism, may change throughout the year

The team may also ask about the existence of illegal activities, such as fish poaching and drug running. Since this information is difficult to obtain from the survey respondents, it is especially important to collect from key informants. Observation can also provide information on illegal activities in the study area.

How to analyze the data

Note the data from the various key informants and observation and complete the table in the *Interview/Secondary Source Analysis Sheet* as shown.

Additional analysis: it may be useful to explain the major coastal and marine activities in the study area in a short description.

HOUSEHOLD LEVEL: S12

Coastal and Marine Activities
Fishing
Tourism

How to collect the data
The respondent is asked to identify all uses of coastal and marine resources by household members. This information is noted in the *Survey Guide* table as illustrated.

Additional data collection: The team may also want to ask about the existence of illegal activities, such as fish poaching and drug running. It should be noted that it may be easier to obtain this information from key informants (see *K18*).

How to analyze the data
The data from all the household surveys are sorted and ranked according to the most important activities by all the households. The activity reported most by all the households should be listed first, followed by the second most often reported activity, etc. This information is noted in the *Survey Analysis Sheet* as shown.

Additional analysis: It may be useful to explain the different coastal and marine activities of households in the community in a short description.

How the information can be useful to managers and other stakeholders
The identification of coastal and marine activities is important for the manager to have an understanding of the various uses of coastal and marine resources, the dependence of households on certain marine activities (S12 specifically), and the potential for conflict in the area. For example, a major port in the area where there are large movements of ships and potential discharges of waste may potentially conflict with the tourism sector.

Improved understanding of marine and coastal uses will enable communities to contribute more effectively to management decisions, particularly when user based conflicts arise.

K19& S13. Goods and Services

What it is
Coastal and marine goods and services are the specific products produced from the identified coastal and marine activities. These include extractive goods such as lobster, mangrove wood, coral products and sand; and non-extractive services such as diving, snorkeling, glass bottom tours, mangrove tours and recreational fishing.

COMMUNITY LEVEL: K19

How to collect the data
Data on coastal and marine goods and services is obtained by interviewing key informants from the relevant activities (e.g. long-time fishers, president of the hotel association, long-time dive boat operators, tour leaders) as well as other key informants knowledgeable about the activities (e.g. government officials). It is also important to observe coastal activities and their physical evidence for further information and as a check on the information obtained from the interviews.

Coastal And Marine Activities	Coastal and Marine Goods and Services
Fisheries	Lobster
	Grouper
Tourism	Hotel
	Diving
Aqua-culture	Oyster

For each coastal and marine activity, the key informant is asked to identify the coastal and marine goods and services produced. For example, for tourism these might include hotels and diving. A list of goods and services is compiled for each activity and noted in the *Secondary Source/Interview Guide* as illustrated.

Since some coastal and marine goods and services may be seasonal, take place at odd hours or take place out of sight of land, it is important to use a multi-method approach, including observation at various times and interviewing a range of key informants to ensure that all of the coastal and marine goods and services are identified.

How to analyze the data at the community level

Summarize the information from the various key informants and observations into one table in the *Interview/Secondary Source Analysis Sheet* as shown.

Additional analysis: In addition it may be useful, on the basis of the above table to provide a short description of the coastal and marine goods and services produced in the study area.

HOUSEHOLD LEVEL: S13

How to collect the data

The respondent is asked to identify all goods and services produced from each coastal and marine activity of the household. This information is noted in the *Survey Guide* table as illustrated.

Coastal And Marine Activities	Coastal and Marine Goods and Services
Fishing	Grouper
	Octopus
	Shrimp
Tourism	Hotel Development
	Diving
	Recreational Fishing

How to analyze the data

The data from all the household surveys are sorted and ranked according to the most important coastal and marine goods and services from each activity for the households. The good or service reported most often by the households should be listed first, followed by the second most often reported good or service, etc. This information is noted in the *Survey Analysis Sheet* as shown.

Additional analysis: It may be useful to explain the household coastal and marine goods and services in the community in a short description.

How the information can be useful to managers and other stakeholders

Information on household coastal and marine goods and services is useful for determining the overall impacts of management, particularly marketing and production on households in the study area. As a result of management measures, there may be a shift in the coastal and marine goods and services produced in the area, with positive and negative impacts on the household. For example, if a marine protected area actively promotes tourism in the area, then it would be expected that the value of diving would increase and more household members would shift to diving operations.

K20&S14. Methods

What it is

Methods identify the specific technique or type of service being employed (e.g. traps, nets, guest houses, SCUBA diving) for each coastal and marine good and service.

COMMUNITY LEVEL: K20

How to collect the data

Data on methods are obtained by interviewing key informants who are representatives of the various stakeholder groups (e.g. president of the fishers's association, manager of the oldest sand mining operation). In addition, it is important to cross-check this information by observationwalking around the community, particularly where the various activities take place.

The key question to address is what method is used for each good and service. For example, for fish goods (e.g. grouper, lobster), the responses may include traps, nets, line, spearfishing or gleaning. For hotel services under

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods (Primary)
Fisheries	Lobster	Trap
	Grouper	Handline
Tourism	Hotel	Guest houses (1-7 rooms)
	Diving	SCUBA
Aqua-culture	Oyster	Line

tourism activities, the responses may range from guests houses (1-7 rooms) to inns (5-50 rooms) to hotels/resorts (>50 rooms). For aquaculture, the responses may include pond, line or cage. For fish trading, responses can include selling fish door to door by foot or bicycle, or selling fish nationally with refrigerated truck. For marine transportation, responses may include port development, shipping and recreational boating. These are only examples. The team will need to develop categories of potential responses according to its area. For example, if there are only large hotels, then the team may decide to categorize responses for hotels according to whether they are all-inclusive. The resulting information is noted in the *Secondary Source/Interview Guide* table as illustrated.

Additional data collection: For each of these types of uses, the team may want to ask about the level of use, such as the number of traps and handlines. These numbers could then be compared over time to see if levels have increased, decreased or stayed the same.

For the fisheries data, the team may want to add another column to further identify the type of fisheries based on the following categories:

Large-scale - powered, high-investment, machine-made equipment, electronics, division of hired labor, products found worldwide, operating in distant waters.

Industrial - powered, high-investment, machine-made equipment, electronics, division of hired labor, products found worldwide, operating in national exclusive economic zone.

Small-scale - small boat, small engine, partly or wholly machine made equipment that is operator assembled, full- or part-time labor, mechanized and manual gear, national and local markets, operating in nearshore coastal waters.

Artisanal - small boat, small engine, partly or wholly machine made equipment which is operator assembled, full- or part-time labor, mechanized and manual gear, local markets, operating in nearshore coastal waters.

Subsistence - one operators, family or community group, part-time labor, small boat, unpowered, non-mechanized, operator-assembled fishing gear, primarily for home consumption, operating in coastal waters.

How to analyze the data

Summarize the data from the interviews and observations to compile a list of methods used in the study area. Note this information in the *Interview/ Secondary Source Analysis Sheet* as shown.

Additional analysis: Compare the results over time to determine shifts in methods. Compare changes in types of uses with changes in resource conditions and the *levels and types of impact (K25)* to see if the methods are correlated to conditions and impacts. Compare the changes in methods with changes in *residency (S11)* and see if these are correlated.

HOUSEHOLD LEVEL: S14

How to collect the data

The respondent is asked to identify the specific method or development being used for each coastal and marine good and service. This information is noted in the *Survey Guide* table as illustrated.

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods
Fishing	Grouper	Trap Line Cyanide
	Octopus	Spear Line
	Shrimp	Trawl
Tourism	Hotel development	Guest houses All-inclusives
	Diving	Scuba
	Recreational fishing	25 People boats

How to analyze the data

The data from all the household surveys are sorted and ranked according to the most important coastal and marine goods and services from each activity for the households. The good or service reported most often by the households should be listed first, followed by the second most often reported good or service, etc. This information is noted in the *Survey Analysis Sheet* as shown.

Additional analysis: It may be useful to explain the household coastal and marine goods and services in the community in a short description.

How the information can be useful to managers and other stakeholders

Information on the methods is particularly useful for identifying threats, such as mangrove clearing, to the coastal and marine resources. By monitoring this information over time, the manager can also see what impact management has had on these methods.

For example, if the coastal management program initiated a mangrove replanting campaign, yet mangrove clearing continues to be listed as a method, then this indicates that the campaign is not preventing continued mangrove clearing. This information also helps to determine the effectiveness of coastal management programs.

Understanding what methods are taking place in the study area is also critical to developing stakeholder participation and awareness programs in coastal management. The managers need to know how people are tied to the resources in order to work with them and communicate with them regarding threats to the resources.

This information will also enable stakeholders to have a better picture of the importance of different methods used in the study area. This may help resolve user based conflicts, by understanding the scale of issues for example caused by specific fishing gear, conflicts may be resolved by the stakeholders themselves or suggest to the managers solutions on how to deal with some of the conflict areas.

K21. Value of Goods and Services

What it is

The value of coastal and marine goods and services is the relative and/or the actual monetary value for each product in the market.

How to collect the data

Data on the value of coastal and marine goods and services is obtained by interviewing local key informants such as fishers, buyers, traders, hotel operators, and dive operators. They are asked to put a value (high, medium, or low) on the product of each coastal and marine good and service. High, medium, and low will need to be specifically defined in advance by the team for the study area to ensure consistency in responses. For example, a value of high may be placed on lobster if it has high demand and high monetary value in both the local and international markets. A value of medium may be placed on hotel development if it is composed of only a few guesthouses. A value of low may be placed on a cleared mangrove area that does not support much bird life and therefore has low potential for ecotourism. The information is noted in *the Secondary Source/Interview Guide table* as illustrated.

Coastal And Marine Activities	Coastal and Marine Goods and Services	Value of Goods and Services
Fisheries	Lobster	High
	Grouper	High
Tourism	Hotel	Medium
	Diving	Low
Aqua-culture	Oyster	Medium

Additional data collection: The team may want to ask the prices for key goods and services. The seasonal change in prices has to be considered. Thus it may be appropriate to note an average price for each season for key products identified by the team. The results will be added in Secondary Source/Interview Guide table

How to analyze the data

Summarize the data from the various key informants into the table in the *Interview/Secondary Source Analysis Sheet* as shown. The definitions of high, medium, and low should be noted.

Additional analysis: It may be useful to provide a description of the value of the coastal and marine goods and services.

How the information can be useful to managers and other stakeholders

The value of coastal and marine goods and services is useful for determining the overall impacts of management on communities in the study area, including livelihood, marketing, production and food security. For example, if the management authority begins promoting products from an aquaculture cooperative the authority initiated, then it would be expected that the value of these products would increase as demand increased.

The value of coastal and marine goods and services is also useful in demonstrating the importance of managing the area for sustainable use. For example, if SCUBA diving brings in a large number of international visitors with a high value due to demand for rooms, restaurants and dive operators, the coastal manager has justification for putting management efforts into ensuring the sustainability of coral reefs and fisheries in the study area. In contrast, if the coral reefs have been fished with dynamite and have a low value for diving, the manager may have a more difficult time justifying the importance of the reefs for diving.

The value of coastal and marine goods and services is also useful in determining which resources are under greatest harvesting pressure and may therefore need particular attention by managers. The value is a measure of the product's relative importance. Since prices influence human behavior, harvesting pressure is likely to be strongest on the most valuable products. A higher value fish, for example, will demand greater attention and fishing effort than a lower value fish and therefore may require particular attention from the coastal manager.

The value of coastal and marine goods and services is also useful in understanding the level of household income and the well being of the household. If, for example, product values shift from high to low, then a decline in income and well being would be expected.

K22&S15. Target markets of Goods and Services

What it is

Target markets of goods and services is the identification of the market in which each product is primarily sold.

COMMUNITY LEVEL: K22

How to collect the data

Data on coastal and marine goods and services target markets are obtained by interviewing local key informants such as fishers, buyers, hotel operators and dive operators. These key informants can be used to obtain information on the primary market for each coastal and marine good and service.

The key informants are asked to identify the primary market in which each good or service is sold (international, national, regional, or local). The resulting information is noted in *Secondary Source/Interview Guide* table as illustrated.

Coastal And Marine Activities	Coastal and Marine Goods and Services	Goods and Services Target Markets (Primary)
Fisheries	Lobster	International
	Grouper	Regional
Tourism	Hotel	International
	Diving	International
Aqua-culture	Oyster	Local

Additional data collection: Alternatively, the key informant is asked to list all markets for each good or service and to rank them in order of importance of each market. This is useful for understanding the full range of markets. In addition, the team may want to ask information about marketing mechanisms (e.g. is fish sold in auctions, fixed price by cooperative etc.) for the different goods and services produced.

How to analyze the data

Summarize the data from the various key informants into the table in the *Interview/Secondary Source Analysis Sheet* as shown.

Additional analysis: It may be useful to describe, on the basis of the table above, the market for each of the goods or services. A flowchart may show better the flow of each good or service from source to market.

HOUSEHOLD LEVEL: S15

How to collect the data

For each coastal and marine good or service that the household is involved with, the respondent is asked to note the primary market in which it is sold (international, national, regional or local). The responses are noted in the *Survey Guide* table as illustrated. The team needs to define in advance the types of market orientation (international, national, regional or local) to ensure consistency in responses.

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods	Target Markets
Fishing	Grouper	Trap Line Cyanide	Regional
	Octopus	Spear Line	Local
	Shrimp	Trawl	Regional
Tourism	Hotel development	Guest houses All-inclusives	International
	Diving	Scuba	National
	Recreational fishing	25 People boats	Local

How to analyze the data

List the goods and services and calculate the percentage of respondents who noted each good or service sold in international, national, regional or local markets. This information is noted in the *Survey Analysis Sheet* as shown. The definitions of types of market orientation (international, national, regional or local) should be noted.

Coastal and Marine Goods and Services	% Noted International Market	% Noted National Market	% Noted Regional Market	% Noted Local Market
Grouper	0%	30%	40%	30%
Octopus	0%	15%	35%	50%
Shrimp	20%	20%	35%	35%
Hotel development	60%	35%	3%	2%
Diving	50%	40%	8%	2%
Recreational fishing	10%	10%	30%	50%

Additional analysis: It may be useful to describe the different markets in which the goods and services are sold in a short explanation.

How the information can be useful to managers and other stakeholders

Target markets information is useful for determining the overall impacts of management on communities, particularly marketing, production and food security. For example, investments in community infrastructure, such as roads to major cities, can result in greater access to national, regional and international markets.

Since the livelihood and income of people in the community are linked to markets, the fish market orientation is important as it provides for an understanding of where aquatic products produced in the area are sold. This variable allows for an analysis of changes over time in the markets for major aquatic products. It shows the relationship of local producers and traders with various markets, for example, linkages with international markets, which may affect harvesting practices.

Target markets information can also be useful as an indication of how much pressure may be put on the resource. For example, fishers may put intense fishing effort on a high valued fish for international markets. It can also give an indication over time of shifts in markets for aquatic products. The impact of management measures can be assessed through changes in markets. For example, management measures may result in higher value fish being available in the area that may be marketed in regional or national markets.

Understanding better their links with the different markets will provide the stakeholders with a better knowledge of the change in opportunities for business.

K23. Use Patterns

What it is
Use patterns refers to the location and timing of coastal and marine activities.

How to collect the data

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods (Primary)	Location	Timing	Season
Fisheries	Lobster	Trap	bays	Low tide	All
	Grouper	Handline	reefs	Low tide	Season 1
	Octopus	Spears	Reefs	Low spring tides	All
Tourism	Hotel	Guest houses (1-7 rooms)	coast		Season 2
	Diving	SCUBA	reefs	Low tide	Season 2
Aqua-culture	Oyster	Line	bay		

Data on use patterns are collected first from secondary sources, including community and town offices, which may have maps noting the location of various activities in the area (e.g. a zoning map that notes farming areas, a fisheries study that documents fishing areas). Next, key informant interviews are conducted with representatives of the various activities (e.g. president of the hotel association, chairman of the fish traders). Participatory mapping techniques could also be used (*see GCRMN Manual, Chapter 3: Field Data Collection, Visualization Techniques, Maps*). Finally observations are used to identify and verify use patterns.

Information is collected on the location and timing/season of each activity according to the good or service and noted in the *Secondary Source/Interview Guide* table as illustrated.

Additional data collection: The team can record the locations of the various activities on the base map, which will provide much more information on locations than simply noting bays or reefs. The team might also ask about changes in use patterns throughout the year and the causes of these changes.

How to analyze the data
Determine the locations of the activities which you obtained from the key informant and secondary sources. , Record them in the *Interview/Secondary Source Analysis Sheet* as shown.

Additional data analysis: By comparing the locations of the various activities, the team can identify areas of overlap and therefore potential conflict. Compare the locations over time to see how use patterns are shifting. A brief explanation may be prepared describing the activities, their location and how they have changed over time.

How the information can be useful to managers and other stakeholders
Similar to *methods (K20)*, information on use patterns is useful for identifying threats to the coastal and marine resources. By understanding the locations of activities, the manager can better determine the impact. For example, if hotel development is occurring near a coral reef, there is potential for impacts from sediment run-off and sewage release. The size of the area also is an indicator of the level of impact. This is particularly useful since the information from *methods* provides an understanding of the activities taking place, but not how much.

By monitoring this information over time, the manager can also see the impact management has had on these activities. For example, if the coastal management program initiated a mangrove replanting campaign and mangrove clearing continues to be listed as an activity, the manager can look at the size of the area being cleared and see if it has increased, decreased or stayed the same from previous years. If it has declined, then the program may have had some positive effect. This information also helps to determine the effectiveness of coastal management programs.

Finally, by mapping the use patterns, managers can better understand problems, particularly conflicts over access to resources and overlapping uses among stakeholder groups. This can help determine if measures, such as zoning of activities, are appropriate for an area.

By understanding better use patterns and the characteristics of the areas where they operate, stakeholders will be able to understand better the impact they may have on the coastal environment and the consequences for their business in the future. Stakeholders can then contribute more effectively to management decision on protecting sensitive areas.

K24. Level of Use by Outsiders

What it is

Level of use by outsiders refers to the amount of outsiders using the coastal resources relative to the amount of local users from the study area. For example, if there are 1000 foreign fishers and only 10 local fishers, then the level of use by outsiders is high. Outsiders are people who do not live in the study area (or live in the area on a seasonal basis). They may be from a neighboring community or another country.

How to collect the data

This information is obtained by conducting interviews with key informants, such as community leaders and town officials, as well as representatives from the various stakeholder groups.

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods (Primary)	Level of Use by Outsiders
Fisheries	Lobster	Trap	L
	Grouper	Handline	L
Tourism	Hotel	Guest houses (1-7 rooms)	H
	Diving	SCUBA	H
Aqua-culture	Oyster	Line	M

The key informants are asked what the current level of use by outsiders for each coastal and marine activity is using a scale of high, medium and low. The scale will need to be defined for each study area, but high could mean a great deal of use by outsiders, such as the majority of fishing in the study area is conducted by outsiders; medium could mean moderate use by outsiders, such as a few international tourists, and low could mean minor use by outsiders, such as one guest house out of twenty in the study area is owned by a foreigner. The level of use (high, medium, and low) will need to be specifically defined in advance by the team for the study area to ensure consistency in responses. The responses are noted in *the Secondary Source/Interview Guide* table as illustrated. See also *business ownership (K16).*

Additional data collection: The key informants may be asked to identify from where the outsiders originate.

How to analyze the data

Synthesize the data from the key informants to determine the level of use by outsiders for each activity and enter into the table in the *Interview/Secondary Source Analysis Sheet* as shown. The definitions of high, medium, and low should be noted.

Additional data analysis: Compare these levels over time. It may be useful to provide an explanation on the extent of use by outsiders and how that has changed over time. Compare this information with the household level information on residency. It will be also useful to compare with *migration rate (K6)* and *residency status (S11).*

How the information can be useful to managers and other stakeholders

Information on levels of use by outsiders is useful for developing stakeholder participation and awareness programs. Non-residents are often overlooked because they are not immediately visible. By understanding the relative numbers of people coming from other areas, managers can determine the importance of building relationships with people from outside the community. If the manager knows where the outsiders are coming from, he/she can target those areas. In cases where there are users coming from overseas (e.g. foreign fishing vessels), the manager may decide to work through customs and immigration offices. In other cases it may be a matter of expanding education and outreach programs to neighboring communities.

Outside use is also important to understand coastal management problems. For example, increasing numbers of foreigners can often be a source of conflict in a community.

This information can also be useful for determining the value and importance of the resources. If people outside the study area are using the resources, then this shows that the resources are important to a larger area than just the immediate community. This can be important for informing politicians and the public about the need for additional resources for coastal management.

K25. Levels and Types of Impact

What it is

Levels and types of impacts are measures of the perceptions of the general public and types of impact of coastal and marine activities on coastal and marine resources. This is not a scientific assessment of levels and types of impacts, but rather a documentation of what people think.

How to collect the data

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods (Primary)	Level of Impact	Types of Impact (Primary)
Fisheries	Lobster	Trap	L	Overfishing
	Grouper	Handline	M	Overfishing
Tourism	Hotel	Guest houses (1-7 rooms)	M	Pollution
	Diving	SCUBA	L	Anchor Damage
Aqua-culture	Oyster	Line	L	Nutrient Loading

The data are collected by interviewing key informants or focus groups, including community leaders and officials, longstanding members in the community and others who represent the general views of the community.

The key informants are asked to identify, using a scale of high/ medium/ low/ none, the level of impact of each coastal and marine activity according to its goods and services. While they will need to be adapted for each study area, high could mean severe and irreversible impacts on the resources, such as cutting and filling mangrove areas; medium could mean moderate impacts on the resources, such as cutting mangrove areas; low could mean minor impacts on the resources, such as a small percentage of mangrove area being disturbed; and none could mean no impact. The levels of impact (High, Medium, and Low) will need to be specifically defined in advance by the team for the study area to ensure consistency in responses.

The primary types of impacts are then briefly noted. For example, if hotel development is causing pollution, then pollution would be noted. The resulting information is noted in *the Secondary Source/Interview Guide* table as illustrated.

Additional data collection: The types of impacts can be described in greater detail to identify direct and indirect impacts. For example, sewage outflow is a direct impact on water quality, and up-stream agriculture causes sedimentation during the rainy season.

How to analyze data

The data are summarized to determine the general level of impacts and types of impacts and entered into the table in the *Interview/Secondary Source Analysis Sheet* as shown. The definitions of level of impact (High, Medium, and Low) should be noted.

Additional analysis: The results are compared with results from previous years to identify shifts in types and levels of impacts. The changes are compared with resource conditions to determine if there is a correlation.

Similar data are collected as part of the surveys where people are asked what they think are the top five major threats to coastal resources. Comparison between results allows for a check on the accuracy of the data. The activities identified by the individuals should be noted as high in the table completed by the key informants. If there is a large difference between results, then the key informants should be consulted to clarify. A full census survey may be necessary to accurately determine perceptions.

How the information can be useful to managers and other stakeholders

Similar to *methods (K20)* and *use patterns (K23)*, information on levels and types of impacts is useful for identifying threats to the coastal resources. Community members, particularly people who directly use the resources, are often the most knowledgeable about what is affecting the resources they use on a regular basis. This information can be critical for identifying activities in need of scientific study. For example, community members may note oil and gas development as high impact because they have seen a few substantial spills. This impact may be missed by scientific studies only conducted once a year.

By monitoring this information over time, the manager can also see the impact management has had on these activities and therefore how effective management has been. For example, if the coastal management program initiated a program to reduce the use of pesticides and other chemicals in upland agricultural areas, yet this continues to be identified as a type of impact, then this suggests that the program may not have been effective.

Finally, this information is critical for developing awareness programs and seeking stakeholder participation. If community members do not consider there to be impacts on the coastal resources, then it will be difficult to engage them in coastal management. If community members consider only one or two activities to be impacting the resources, yet scientific research shows there are several other impacts, then an awareness program may need to be initiated to increase understanding of the full breadth of activities impacting the resources.

K26&S16. Use of Goods and Services

What it is

The use of coastal and marine goods and services is a measure of how households in the study area utilize coastal and marine goods and services for consumption, leisure and sale. This variable is most relevant to extractive activities (e.g. fishing, aquaculture).

COMMUNITY LEVEL: K26

How to collect the data

Data on household use of coastal and marine goods and services is obtained by interviewing key informants, such as community officials and business people. The key informants are asked to identify and rank the general household use of each good or service. They are asked if resources are generally used for personal consumption, leisure or sale. Personal, or 'own consumption', means use in the household, such as fish for food; leisure means for recreation; and sale means selling to obtain money or to barter for other goods. The responses are recorded in the *Secondary Source/Interview Guide* table as illustrated.

Coastal and Marine Activities	Coastal and Marine Goods and Services	Household Use (Primary)
Fisheries	Lobster	Sale
	Grouper	Own
Tourism	Hotel	Sale
	Diving	Sale
Aqua-culture	Oyster	Sale

Additional data collection: If food security is a concern, then the key informants may be asked questions relating to food security issues such as whether there are a variety of reasonably priced food products available throughout the year and whether the locally caught seafood products are regularly available at a reasonable price.

How to analyze the data

Summarize the data from the various key informants into the table in the *Interview/Secondary Source Analysis Sheet* as shown.

Additional analysis: Similar data are collected as part of the surveys. Comparison between results allows for a check on the accuracy of the data. If there are differences between results, then it may be useful to consult with the key informants to identify the cause of the discrepancy. Otherwise a full census survey (interviews of all households, not just a sample) should be conducted to accurately understand the study area demographics.

HOUSEHOLD LEVEL: S16

How to collect the data

Each respondent is asked to identify the primary household use for each good or service --own consumption, recreation activity or sale--which is noted in the *Survey Guide* table as illustrated.

Coastal and Marine Activities	Coastal and Marine Goods and Services	Household Uses
Fishing	Grouper	Own consumption
	Octopus	Sale
	Shrimp	Sale
Tourism	Hotel development	Sale
	Diving	Sale
	Recreational fishing	Recreational activity

Additional data collection: If food security is a concern, then the informants may be asked questions relating to food security. The informant can be asked to rank sources of protein according to prices (e.g. lowest price per kilo=1) and see how fish and other main products locally caught consumed at the household levels rank. The informants also can be asked how many times, per week or per month they consume marine products such as fish in relation to other common sources of protein (e.g. beef and goat). The seasonality of coastal activities must be taken into consideration in investigation the relative prices of marine products and in their consumption. Questions on the availability of marine products throughout the year consumed by households may also be asked, particularly if they are a relatively cheap source of protein.

How to analyze the data

Similar to the household market orientation variable, list the goods and services and calculate the number and percentage of respondents who noted each good or service used for own consumption, leisure or sale. This information is noted in the *Survey Analysis Sheet*.

If questions on the frequency of consumption of marine products are asked, group the responses into appropriate categories for frequency of consumption (e.g. more than 3 times per week, weekly but less than 3 times, once or twice per month, less than once per month but regularly, on special occasions, never). Do the same for other sources of protein. Then calculate the percentage of households in each category for the different sources of protein investigated. Compare the frequency of consumption of common meats and fish.

Look at changes over time. Compare changes in frequency of fish and other sources of protein with *material style of life (S29)* and see if they are correlated.

Additional analysis: It may be useful to describe the different household uses of the coastal and marine goods and services by the community and the different sources of protein available and their prices at the local level.

How the information can be useful to managers and other stakeholders

Information on households' use of coastal and marine goods and services provides insight into household dependence on coastal and marine resources for food and income. It is therefore important for understanding issues of food security in the household. This information can be useful for understanding how management measures may impact upon the livelihood of resource users and the food security of households. For example, if households primarily consume their catch, then a restriction on fishing can be expected to affect food availability and therefore impact food security of the household. Investigating the frequency of fish or other marine consumption can also increase the managers' understanding of the dependence on marine resources of the wider community.

Understanding better their dependence on marine and coastal resources for their livelihood and food security, the stakeholders will be able to help managers design better suited management activities ensuring that these take the level of dependence on marine resources into consideration.

K27. Tourist Profile

What it is

Tourist profile refers to characteristics of tourist visitors to the study site. Tourists may be both national and foreign.

How to collect data

Data on tourists is collected at the study site level. Data on tourists can be collected from several sources, such as the national tourist board, local tourist board, department of immigration, census bureau, non-governmental organizations, businesses (e.g. hotels), and tourist attractions (e.g. marine reserves, national parks). Most countries will have tourist and travel statistics compiled and presented in a report. Additional data may be obtained from key informants such as a director of tourism board, a hotel marketing director, and travel agents.

The questions to address are:

How many visitors are there in total per year? _____

How many tourists visit from the following countries?:

(home country)_____; (write-in country)_____; (write-in country)_____;

(write-in country)_____; (write-in country)_____

How many tourists visit in the following months?:

January_____; February_____; March_____; April_____; May_____; June_____; July_____;

August_____; September_____; October_____; November_____; December_____

How many tourists arrive by the following means of transportation?: air_____; cruise ship_____; other_____

What percent of the tourists are in the following age categories?: 0-18 _____; 19-30_____; 31-50_____; over 50_____

What percent of the tourists are male or female?: male _____; female_____

What percent of the tourists are interested in the following activities?:

nature _____; beaches _____; diving/snorkeling _____; fishing _____;

culture _____; other _____; other _____

Additional data collection: The team may also want to collect this data at the national level for comparison purposes. Additional data may be collected such as average length of stay, average daily expenditure, destinations and types of accommodations.

How to analyze the data

Much of the data may already be analyzed and available in annual reports. The secondary source and key informant data may be summarized into the table in the *Interview/Secondary Source Analysis Sheet* to provide a profile of tourism in the study area.

Additional analysis: If time series data on tourism is available, trends and changes in tourism characteristics in the study area can be analyzed.

How the information can be useful to managers and other stakeholders

Tourism profile is important for the manager to understand threats and opportunities from tourism, such as level of pressure on the marine and coastal resources. The information on changes over time can be useful in determining if these pressures are increasing, decreasing or staying the same. Comparisons with the variables *activities (K18), use patterns (K23) and levels and types of impacts (K25)* can be useful to determine how change are influencing resource conditions. Also it may be important for managers to make decisions on other resource activities if tourism is declining and the community are then losing out on tourism related benefits.

The information on demographics (age, nationality, gender) can indicate different demands for tourism goods and services. For example, younger people are likely to be more active than older tourists and, therefore possibly place greater pressure on the resources. Similarly, understanding tourists' interests and seasonality is also useful for predicting which resources will be under greatest pressure and when.

Understanding tourists' interests better will also help stakeholders adapt their businesses to the demand. It will also be an opportunity for the management and tour operators, fish guides etc. to work together and design a strategy to mitigate the pressure on the resources and educate the tourists on the marine and coastal environment issues of the area.

K28. Management Body

What it is

A management body is an institution that governs how coastal resource management is undertaken and ensures that there is a transparent process for planning, establishing and enforcing rules and regulations. Management bodies may be government, non-government or community organizations and may operate at the international, national, state/provincial or local level. There may be multiple management bodies in the study area for different coastal activities such as coastal zone management, fisheries, aquaculture, mangroves, tourism, marine transportation and residential development.

How to collect the data

Information on management bodies may be obtained by reading the management plans for the various activities. This information may also be obtained by interviewing key informants who are knowledgeable about coastal resource management or coastal activities (e.g. government agency representatives, elected officials, representatives of non-governmental organizations). It is important to confirm the existence and name of each management body for each coastal activity by identifying and interviewing a person responsible for the management body's operation. The information on whether a management body exists (yes or no) and the name of the management body is recorded in the *Secondary Source/Interview Guide* table as shown.

Coastal Activity*	Management Body(s) (Yes/No) & Name
Fisheries	Y – Dept. of Fisheries
Tourism	Y – Tourism Authority
Aqua-culture	N
*develop list according to activities identified in activities (K18)	

Additional data collection: Key informants may also be asked to identify the mandate and key leaders of each management body for each coastal activity.

How to analyze the data

Summarize the data from the management plans, key informants and responsible persons into the table in the *Interview/Secondary Source Analysis Sheet* as illustrated.

How the information can be useful to managers and other stakeholders

Information on management bodies is useful for determining the overall impacts of management on communities, particularly on governance. The identification of a legally mandated decision-making authority for coastal activities will allow the manager to better understand the range of management activities taking place in the area, coordinate with the other management bodies, be more transparent in the management process and be more effective in terms of management.

Also, the identification of management bodies will provide those with concerns about the impacts of management measures with which authorities to consult.

K29. Management Plan

What it is

The management plan sets out the strategic directions for the coastal resources management program. The management plan is a document that states the overall management program goals and objectives, the institutional structure of the management system and a portfolio of management measures.

How to collect the data

Information on management plans can be obtained through interviews with key informants from the relevant national, regional and local government agencies with authority and responsibility for coastal resource management. There may be several management plans in existence for the study area depending on the coastal activities, including an integrated

Coastal Activity*	Management Plan (Yes/No)
Fisheries	Y
Tourism	Y
Aqua-culture	N
*develop list according to activities identified in activities (K18)	

coastal zone management plan, a fisheries management plan, a coastal development plan, a mangrove management plan and/or a tourism development plan. It may be useful to request a copy of the relevant management plans to help determine what activities are addressed.

For each coastal activity, identify whether (yes or no) a management plan exists and note it in the *Secondary Source/Interview Guide* table as illustrated.

Additional data collection: Information on the management plan components (e.g. enforcement, education) can also be collected when asking about the plan.

How to analyze the data

Note the data from the various key informants and secondary sources into the table in the *Interview/Secondary Source Analysis Sheet* as shown.

Additional analysis: It may be useful to give a description of the plan for each coastal activity. It may also be useful to compare the changes in the existence of management plans over time with changes in use patterns and resource conditions to determine if there is a correlation.

How the information can be useful to managers and other stakeholders

Knowing whether management plans exist for various activities is useful for determining the overall impacts of management on the study area, particularly on governance. The existence and adoption of a management plan informs managers that coastal resource management is guided by goals and objectives to achieve certain outcomes (for example, conservation and protection), that there is a basic strategy to achieve these goals and objectives and that the overall plan has a legal mandate for implementation.

The analysis comparing the existence of a management plan and other governance variables (e.g. formal rules and tenures) with resource use patterns and resource conditions is useful for determining whether these governance measures are influencing behavior and the health of the resources.

Knowing whether a management plan exists for the different activities will enable stakeholders to consult these plans, and with management, determine the impact of management on the study area.

K30. Enabling Legislation

What it is

Enabling legislation is the formal legislation in place from government to provide coastal resources management with a sound legal foundation so that the plan, management structures, rules and regulations, and enforcement procedures can be recognized, explained, respected and enforced. For example, a national fisheries law or code is considered to be enabling legislation since it defines how fisheries will be used and managed in the country.

How to collect the data

Information on enabling legislation is obtained by interviewing key informants from relevant national, regional and local government agencies with authority and responsibility for coastal resource management. During the interviews it may be useful to request copies of the published legal documents of pertinent enabling legislation to help determine the enabling legislation that is in place.

Activity (develop list according to activities identified in *Activities [K18]*)	Enabling Legislation (Yes/No)
Fisheries	Y
Tourism	N
Aqua-culture	N

Enabling legislation may exist at international, national, state/provincial, and local levels. The form and extent of enabling legislation for coastal resources management will vary widely by country. The legal arrangements may depend upon many elements, including the form of government, available finances, public administrative structures, level of government, state of centralization/decentralization, lines of jurisdiction and decision-making, and types of coastal resources and activities.

The interviews and document reviews are conducted to determine the existence (yes or no) of enabling legislation to support the management plan for each coastal activity. This information is recorded in *the Secondary Source/Interview Guide* table as illustrated.

How to analyze the data

Note the information from the various key informants and secondary sources into the table in the *Interview/Secondary Source Analysis Sheet* as shown.

Additional analysis: It may be useful to explain the enabling legislation for each coastal activity in a short description. Compare the changes in the existence of enabling legislation over time with changes in use patterns and resource conditions to determine if there is a correlation.

How the information can be useful to managers and other stakeholders

Enabling legislation is useful for determining the overall impacts of management on communities in the study area, particularly on governance. An understanding of the enabling legislation is useful to ensure that the management plan and strategies are supported by adequate legislation for their successful implementation. An understanding of the enabling legislation will ensure that any management measures undertaken are supported in the law. Concerns over impacts of the management measures can be related back to the management plan and enabling legislation.

The analysis comparing the existence of enabling legislation and other governance variables (e.g. formal rules and tenures) with resource use patterns and resource conditions is useful for determining whether these governance measures are influencing behavior and the health of the resources.

Improving the understanding of existing laws will help stakeholders operate within the law.

K31. Management Resources

What it is

Management resources refers to the human and financial resources that carry out the activities of the management plan.

How to collect the data

Coastal Activity*	Number of Staff	Budget
Fisheries	5	1,000
Tourism	25	25,000
Aqua-culture	0	0
*develop list according to activities identified in activities (K18)		

Information on management resources can be collected by interviewing the manager or director of each management body in the study area. The manager or director is requested to present the organization chart which should identify staff allocations by program or activity. The number of staff (full-time, part-time, volunteer) assigned to each program or activity is identified. Where no organization chart exists, one can be developed with the manager or director by first identifying each of the programs or activities of the management body and then identifying the staff members. The manager or director is also asked for the overall budget for the management body and for implementation of the management plan. The responses are noted in the *Secondary Source/Interview Guide* table as illustrated.

Additional data collection: Additional information may be collected on individual line item budget allocations for different management activities, such as education or enforcement. Information may also be obtained on technical and equipment allocations for various management activities.

How to analyze the data

Note the information from the various key informants and secondary sources into the table in the *Interview/Secondary Source Analysis Sheet* as shown.

Additional analysis: An explanation on current staff allocations and budget for coastal management may be provided.

How the information can be useful to managers and other stakeholders

Understanding management resources is useful for determining the overall impacts of management on communities in the study area, particularly on governance. For example, an understanding of the staff allocations to undertake each program or activity is useful in order to understand the importance of the various activities and also for estimating the number and frequency of certain activities, such as enforcement patrols. The extent of management resources is also an indication of how effective management is, and its ability to achieve its goals and implement the management plan.

This information will be useful for other stakeholders to appreciate the importance given to the marine and coastal resources management, resources on which they depend for their livelihood.

K32. Formal Tenure and Rules

What it is

Formal tenure is concerned with use rights with respect to coastal activities. Formal tenure is considered to be legally written into law. For example, a formal tenure arrangement is the right given to a fisher to access an area to fish.

Formal rules are legally written into law and define specifically what acts are required, permitted and forbidden by stakeholders and government agencies concerning the use of coastal resources. Rules establish how use rights are to be exercised. For example, for those fishers with a formal tenure use right to access an area to fish, a formal rule is that they may only use handlines to fish in the area.

For this variable the focus is on formal operational rules and regulations which directly affect day-to-day decisions made by resource users concerning when, where and how to use coastal resources. These rules and regulations are specific to a coastal activity and will be established by an agency with legal responsibility for managing that coastal activity.

How to collect the data

Formal legislation concerning tenure can be identified from secondary information such as written legislation at the national, regional or local levels. This legislation is written and legally published by the government. These include the national fisheries code or law, environmental laws concerning extraction of mangroves, laws concerning coral use and extraction, and laws concerning coastal residential development. Additional information can be obtained from key informant interviews with government officials in relevant agencies with responsibility for managing each coastal activity.

Coastal Activity*	Formal Tenure and Rules (Yes/No)	Relevant Rules and Regulations (Yes/No)
Fisheries	Y	Y
Tourism	N	N
Aqua-culture	Y	N
**develop list according to activities identified in activities (K18)*		

Formal rules and regulations can be identified from secondary information such as written legislation at the national, regional or local levels. This legislation is written and legally published by the relevant government agency. Additional information can be obtained from key informant interviews with government officials in relevant agencies with responsibility for managing each coastal activity.

The formal legislation concerning tenure and the formal rules for coastal activities should be obtained at national, regional and local government levels. For each coastal activity, identify (yes or no) if there exists a formal tenure arrangement(s) and a formal rule(s) at the community level. This information is noted in the *Interview/Secondary Source Guide* table as illustrated.

How to analyze the data

Summarize the data from the various key informants and secondary sources into the table in the *Interview/Secondary Source Analysis Sheet* as shown.

Additional analysis: It may be useful to describe the formal tenure arrangements and rules for each of the coastal activities. Compare the changes in the existence of *management plans (K29)* over time with changes in *use patterns (K23)* and *perception of resource conditions (S19)* to determine if there is a correlation.

How the information can be useful to managers and other stakeholders

Formal tenure is useful for determining the overall impacts of management on communities, particularly on governance. The formal tenure over coastal resources ranges from full ownership and control over the uses and allocation of coastal resources by certain groups, such as a fisher organization, to no legal use rights at all. For the manager, it is critical to understand this information so that management arrangements can be equitably and efficiently designed and implemented, and the impacts understood and addressed. It is necessary to understand the existence, nature and strength of formal tenure that local stakeholders, including the management authority, have over coastal resources in the area so that management structures can operate effectively.

This variable is useful to determine the existing levels of control over human activities in the coastal area and the extent to which people are likely to accept additional rules governing use of coastal activities and be impacted by the formal rules. Resource users may violate rules if they are not well understood or if the rules don't make sense to them.

Comparing the existence of formal tenure arrangements and rules with resource use patterns and resource conditions is useful for determining whether these governance measures are influencing behavior and the health of the resources.

By being aware of formal tenure rules, stakeholders will be able to operate within the rules. Furthermore, stakeholders may be able to help contribute to increase the compatibility of these rules to informal tenure and rules, customs and traditions.

K33. Informal Tenure and Rules, Customs and Traditions

What it is

In many coastal communities, a dual system of coastal resource management exists. An informal management system, devised and implemented by a community of resource users, often coexists with a formal government management system. These informal systems may be complex or simple, easily observed or carefully protected.
Customs and traditions for coastal resource use and management are practices that reflect the social and cultural ethnic, class or gender make-up of the community. They may include, for example, the identification of a senior fisher to direct fishing activities, the saying of prayer before fishing, a conflict management mechanism or a decision-making arrangement.

Informal tenure and rules refer to the unwritten, informal (customary and traditional) practices through which people gain use rights, and define specifically which acts are required, permitted and forbidden by resource users with respect to coastal activities. It also refers to the level of compliance of these informal rules.

How to collect the data

Information on informal tenure and rules for each coastal activity (as appropriate) can be obtained by a combination of key informant interviews and observation. The most relevant people for key informants include senior community members and government officials. Key informants are asked to briefly describe the customs/traditions, informal tenure and rules for each coastal activity as noted in the *Secondary Source/Interview Guide* table below. They are then asked for each tenure and rules, customs/traditions whereas, the level of compliance by community members (High, Medium or Low). Observation is also essential because information obtained through interviews may only reflect ideal, not real, behavior. Resource users can be observed as they carry out the informal tenure and rules to determine if they are being implemented as described.

Coastal Activity*	Customs and Traditions	Informal Tenure Arrangements	Informal Rules	Level of compliance (High, Medium, Low)
Grouper fishing	*Closed area or season around grouper spawning activity*			
*develop list according to activities identified in *activities (K18)*				

When collecting information on informal governance, it should be noted that it may take more time to fully understand these arrangements. This may involve spending additional time with community members to actually learn in detail about these systems. It will also be useful for the team to understand which groups (user, age, genders, outsiders…) comply or not with the informal rules, tenure, customs and traditions.

How to analyze the data

Note the information from the key informants into the table in the *Interview/Secondary Source Analysis Sheet*.

Additional analysis: It may be useful to describe the informal tenure and rules and the customs and traditions related to coastal resource use and management for each of the coastal activities in a brief explanation.

How the information can be useful to managers and other stakeholders

Customs and traditions for coastal use and management and informal tenure and rules are useful for determining the overall impacts of management on communities and for understanding the cultural significance of resources and their uses. An understanding of informal tenure and rules is important since resource users may feel that the informal tenure and rules are more legitimate to them than formal use rights and rules, and thus disregard laws and legislated restrictions. An understanding of informal tenure and rules will allow the manager to develop a management program that respects customs and traditions and builds on these arrangements, while also including legislated measures. This may be more acceptable to resource users and lead to higher levels of compliance. By understanding these customs and traditions, the manager can recognize and integrate them in the management program so as to minimize or have no impact on social and cultural practices in the community. Understanding whether these rules and traditions are respected and by whom will help the managers appreciate better the impact of integrating them in the management regime being developed.

Also informal tenure and rules can also provide a traditional method of protection for natural resources, such as closed seasons, taboo areas, and may comprise an integral part of the management plan for the area that will complement formal management schemes.

Understanding better informal tenure rules and customs and traditions of other stakeholder groups, will help improve relationships and respect between stakeholders if conflicts are an issue in the study area. By providing information on informal rules and traditions, stakeholders can ensure managers are aware of them and try to integrate them in the management programs.

K34. Community incentives

What it is

Community incentive relates to existing incentive programs established to promote community involvement in better management of marine and coastal resources. These may include bed/nights levies (e.g. a percentage of the fee paid by a tourist is given to community trust or fund), community funds, micro credit schemes

How to collect the data

Information is collected with key informants such as stakeholder representatives, coastal managers, President of the hotel association, President of the fishers's association etc.
Respondents are asked to list the community incentives that they have access to or are developing in order increase conservation benefits to communities and/or promote stakeholders' involvement in management activities.

How to analyze the data

Note the information from the key informants into the *Interview/Secondary Source Analysis Sheet as shown below:*

Stakeholder Group	Benefit from Provides to	Type of incentive
Large hotels	Provides	30 USD per Bed/night to local community trust
Fishers	Benefit	Subsidized prices for buying traps and reduce seine nets use from the Fisheries Department

Additional analysis: Compare changes in community incentives and changes in *level of impacts*, changes in *methods (K20)* and the changes in *use patterns (K23)* over the years.

How is this useful to the manager and other stakeholders

Knowing incentives programs exist is useful for determining their overall impacts on the management of resources in the study area. The managers can gauge whether a type of incentive works more than another and if they are useful in increasing stakeholders' involvement in management activities.

Knowing these schemes exist will increase the transparency of their use in the communities for example. Increasing the stakeholders' awareness of these community incentives will also enable stakeholders to apply for them and become involved.

K35&S17. Stakeholder Participation and Satisfaction

What it is

Stakeholder participation and satisfaction is a measure of the extent of people's involvement in coastal management (decision-making and implementation) and how satisfied they are with their current level of involvement. Implementation activities include activities such as enforcement, awareness raising, monitoring.

COMMUNITY LEVEL: K35

How to collect the data

Stakeholder participation (from no participation to fully active participation) and satisfaction (High, Medium, Low) can be obtained through key informant interviews with community officials, leaders, stakeholder organizations, coastal management staff, and/or focus groups with representatives of stakeholders. As noted in the *Secondary Source/Interview Guide* table below, informants are asked about the level of involvement of stakeholders in making coastal management decisions and in the implementation of activities (1= no participation; 5= Fully active participation) and whether they are satisfied with their level of involvement (High, Medium, Low).

Stakeholder Group*	Activity**	Stakeholder Participation (1 to 5)***	Level of satisfaction with Participation (H/M/L)
Fishers	Decision making	3	H
	Monitoring	1	M
	Enforcement	2	L
Fish traders	Decision making	1	M
	Monitoring	1	H
	Enforcement	1	M

*develop list according to stakeholder groups identified in *stakeholders (K2)*
***Develop list of management activities according to the management plan if it exists (K29)*
***1=no participation, 5=fully active participation

Additional data collection: Stakeholder participation can also be obtained through observation of coastal management meetings to see if the stakeholders attend the meetings and express their opinions, and determine if their opinions are considered by the management body. The team may find it useful to investigate why people are not happy with their level of involvement and how it may need to change.

How to analyze the data

Note the data from the key informants and observations into the table in the *Interview/Secondary Source Analysis Sheet.*

Additional data analysis: It may be useful to provide an explanation on the level and types of stakeholder participation in coastal management.

HOUSEHOLD LEVEL: S17

How to collect the data

Data on participation in coastal management are obtained by asking each respondent:

On a scale of 1 to 5 (1=no participation, 5=fully active participation), to what extent do you participate in coastal management:

decision-making? _____

monitoring?_____

awareness raising?

enforcement/surveillance? _____

On a scale of 1 to3 (1=Low, 2=Medium, 3=High), to what extent are you satisfied with your level of participation in coastal management:

decision-making? _____

monitoring?_____

awareness raising?

enforcement/surveillance? _____

The list of management activities will have to be adapted to the activities prioritized by management (consult the management plan if it exists).

Additional data collection: Respondents can also be asked: "Can you participate in decision-making/coastal management activities?", and "What kind of participation would you like to see?" If not satisfied with their level of participation in coastal management it may be useful to ask respondents "why?" or "how can participation be improved?" These questions are asked to determine if respondents feel that they do actually have the opportunity to participate in decision-making and coastal management activities and how they would like to participate in the future.

How to analyze the data

Calculate the percent of respondents from the surveys for each scale of perceived participation and satisfaction and note in the *Survey Analysis Sheet* according to the management activity. Calculate for each level of participation and each activity identified, the percent of High, Medium and Low satisfaction (see the *Survey Analysis Sheet*)

Additional analysis: Compare these results over time to determine if participation and satisfaction are increasing, decreasing or staying the same. Compare these results with data on people's *perceptions of resource conditions and threats (S19& S20)* and *awareness of rules and regulations (S21)* to see if there is a correlation. For example, if people are not aware of rules and regulations and consider the resources with minimal threats, then they may not have an incentive to participate in management. A short discussion on participation and satisfaction, how it they have changed over time and how it is linked to people's perceptions may be provided.

How the information can be useful to managers and other stakeholders

The active participation of stakeholders in coastal management can improve the success of coastal management activities. If stakeholders are more involved in decision-making and implementation and feel ownership over the process, they are more likely to support coastal management activities. Stakeholder support is important for the success of coastal management.

By monitoring participation over time, the manager can see how effective the program has been in engaging stakeholders in management, often an objective of management. Monitoring the level of satisfaction of the stakeholder with their level of involvement in the coastal and management process will also provide feed back on the satisfaction of stakeholders with the management programs and the likelihood of their sustained support.

The level of stakeholder participation is useful to understanding the importance of the coastal resources to the public. The more people value the resources, the more likely they are to participate in management. There are other reasons as well, such as a crisis situation (e.g. oil spill), but generally the level of stakeholder participation can be used to demonstrate the importance of the resources.

Monitoring the level of participation and satisfaction with the participation will give stakeholders an opportunity to give feedback to managers on the management process to managers. It will help stakeholders help managers to target efforts on specific stakeholders.

K36. Community and Stakeholder Organizations

What it is

Community and stakeholder organizations are means for representing resource users and stakeholders in coastal resource management and for influencing the direction of decision-making and management.

How to collect the data

Information on community and stakeholder organizations is obtained from secondary sources and from interviews with key informants or focus groups. Key informants and focus groups may include officials from the coastal resource management agency offices, other relevant government officials, community leaders, members of other associations in the community, senior fishers, representatives of religious organizations and representatives of non-governmental organizations.

As noted in the *Secondary Source/Interview Guide* table, for each organization information is collected on whether the organization is formally or informally authorized and on the organization's main functions. Key informants are asked whether the organization influences coastal management issues, community issues, both coastal management and community issues, or has no influence.

Community Organization	Formal or Informal	Main Functions	Influence (on coastal management; community issues; both; none)

How to analyze the data

Summarize the data from the key informants, focus groups and secondary sources into the table in the *Interview/Secondary Source Analysis Sheet.*

Additional analysis: Identify the number of community and stakeholder organizations, whether they are formal or informal, and their functions/responsibilities. Calculate the percentage of informal and formal organizations.

How the information can be useful to managers and other stakeholders

An understanding of community and stakeholder organizations can assist managers in improving participation and representation of stakeholders in management and decision-making. The results need to be interpreted against the background of the level of community or collective action in the country or area. An understanding of organizations will allow the manager to identify different groups that may be impacted by management measures and to address these impacts with the organizations.

By having a better knowledge of the different stakeholders organizations, stakeholders will have a better understanding of their level of representation in coastal resource management and the potential power to influence decision making. It may show the need for increased collective action.

For example, the lack of collective action in some areas of coastal Kenya and Tanzania was identified as an issue for livelihood development.

S18. Membership in Stakeholder Organizations

What it is

Membership in resource use stakeholder organizations refers to both formal membership and informal membership. The stakeholder organizations include direct users (e.g. fishers's cooperative, diving club) as well as people whose activities impact the resources (e.g. foresters association, hotel association), and people who do not use or impact the resources, but have a stake in management (e.g. environmental organizations).

How to collect the data

Data on membership in stakeholder organizations are obtained by asking each respondent:

Is anyone from your household a member of a organization? _____

Which organization(s)? _____

Additional data collection: The team may also ask about membership in civic organizations (e.g. church, youth organizations, women's groups) to gain an understanding of community participation in general.

How to analyze the data

Calculate the percent of respondents who are members of at least one organization. Then list the noted organizations and calculate the percent of respondents who noted they were a member of each organization. Note this information in the *Survey Analysis Sheet*.

Percent noted membership in at least one organization: ____82%___

Noted organizations for membership	% respondents noted organization
Fishers Cooperative	67%
Watersports Association	32%
Tourism Association	10%
Aquaculture Business Owners Group	25%

Additional analysis: Compare the results over time to see how membership shifts. Compare the membership percentages of the various stakeholder organizations to the *occupation (K7)* percentages to see if there is a correlation (e.g. if 90% of the community members are fishers, then is there an equally high membership percentage for the fishers's association). A short description of the membership may be provided, how it is related to occupational structure and how it has changed over time.

How the information can be useful to managers and other stakeholders

If the noted organizations are involved in coastal management, then membership can be a useful indicator of stakeholder participation in management. For example, if the fishers's association is responsible for closing certain areas to fishing, then a high membership indicates high participation in coastal management.

The comparison between membership and occupational structure is useful for determining if particular organizations have disproportionally high membership. The occupations employing the most people would be expected to have the highest levels of membership. Differences from this expectation may indicate that the issues an unexpectedly high-membership group deals with are of great importance, or the organization is considered highly effective. If an occupation with small employment has a high level of membership it may be because people not employed in the occupation are interested in the occupation (e.g. as a community shifts out of fishing into tourism, people may continue to be members of the fishers's cooperative out of interest). It may be useful to talk with key informants to explain the results.

The shifts in membership over time may also be useful in identifying changes in priorities and interests. For example, growing membership in environmental organizations may reflect increasing community interest in conservation. Again, it may be useful to consult with the key informants to explain the results.

K37. Power and influence

What it is
Power and influence refers to which individuals or groups hold influence in the community particularly in relation to access, use and control of marine and coastal resources.

How to collect the data
Information on power and influence is obtained from interviews with key informants or focus groups. Key informants or focus groups will include representatives of the different stakeholder groups who are familiar with the resource control and access mechanisms within the community. Gender and age are often of importance, selection of groups and/or key informants will have to take this into consideration.

Additional data collection: The team may also want to investigate if there are conflicts between stakeholders.

Key informants/ groups or stakeholders will be asked for identified activities (K18):

List which organizations or individuals are involved in making decisions about your activities (i.e. where, when, how, and who can carry out this activity)?_____

Who (activity, age, gender) else (not necessarily part of an official process) **has** to be consulted for the activity to be carried out, expanded or changed?_____

Where do you get information from about marine and coastal resources (e.g. NGO, social group, news paper)?_____

How to analyze the data
Summarize the information in the *Interview/Secondary Source Analysis Sheet* and rank groups, individuals and source of information according to the number of times they have been mentioned (the more frequently mentioned; the more powerful and therefore the higher the rank).

How is this information useful to managers and other stakeholders
Groups/individuals who hold power and influence in a community are often crucial to the success of any activity in this community whether they are directly involved with coastal and marine resources or not. Thus, understanding who these groups are will enable the manager to ensure that they are considered in management interventions and increase management effectiveness.

Clarifying who holds power and influence will help the community members to refine decision making processes to improve the management of their activities.

ATTITUDES AND PERCEPTIONS

S19. Perceptions of Resource Conditions

What it is
Perceptions of resource conditions measure what people think about the condition of the coastal resources.

How to collect the data
Data on perceptions of resource conditions are obtained by asking each respondent:

How would you describe current conditions of each of the following resources using the scale of very good (5), good (4), not good or bad (3), bad (2) to very bad (1) (edit list of resources to reflect site resources): mangroves _____; coral reefs _____; fresh water (rivers) _____; upland forests _____ sea grasses_____

How to analyze the data
For each resource calculate the percent responses for each level of the scale and note in the *Survey Analysis Sheet*.

RESOURCES*	PERCENT RESPONDENTS THAT DESCRIBED RESOURCE CONDITIONS AS:				
	Very good (5)	Good (4)	Neither good nor bad (3)	Bad (2)	Very bad (1)
mangroves	3%	10%	30%	34%	23%
coral reefs	5%	12%	34%	30%	23%
fresh water	2%	15%	62%	15%	6%
upland forests	40%	30%	20%	8%	2%
seagrass	12%	18%	30%	27%	2%
*edit list of resources to local site					

Additional analysis: Some of the categories may be combined to simplify the interpretation. For example, if 23% of respondents said the mangroves are in very bad condition and 34% said they are in bad condition, then these could be combined to say, "over fifty percent of respondents noted the mangroves were in bad or very bad condition." This is easier to understand than listing the percentages for each category. In addition, a short explanation may be prepared describing how people perceive the resource conditions. Monitor these results over time to identify changes in people's understanding of resource conditions. Compare these results with scientific studies of resource conditions to determine the accuracy of people's understanding of resource conditions.

How the information can be useful to managers and stakeholders

Information on perceptions of resource conditions is useful for identifying threats to the coastal resources. By understanding which resources are in poor condition, managers can better identify the major threats to the resources since most threats are linked to particular resources. For example, if mangroves, seagrass and coral reefs are noted to be in worse condition than upland forests and fresh water, then sea-based activities, such as fishing and boating, may be a greater threat than terrestrial activities.

This information is also critical for developing awareness programs and seeking stakeholder participation. If community members do not consider the resources to be at risk, then it will be difficult to engage them in coastal management. If community members consider the resources to be in good condition, yet scientific research shows they are deteriorating, then an awareness program may need to be initiated to increase understanding of resource conditions.

By monitoring this information over time, the manager can see the impact management has had on people's attitudes and perceptions. For example, if the coastal management program initiated an awareness campaign on the poor health of the coastal ecosystem, yet respondents continue to report good health, then this suggests that the program has not been effective.

People's perceptions of the resource conditions are also useful for developing biophysical research and monitoring programs. Community members, particularly people who directly use the resources, are often the most knowledgeable about resource conditions. This information can help guide a scientific agenda, particularly in areas where scientific data is lacking.

S20. Perceived Threats

What it is

Perceived threats measures what people think are the major threats to the coastal resources.

How to collect the data

Data on perceived threats are obtained by asking each respondent:

What are the top 5 major threats to the health of coastal resources?

. _____;. _____; . _____; . _____; . _____

How to analyze the data

On the basis of the data from all the surveys, list the major threats. Calculate the percent of respondents who noted each threat as illustrated in this list and note in the *Survey Analysis Sheet* as follows.

Identified threats	Percent noted this threat
Sewage waste	53%
over-fishing	30%
Anchor damage	26%

**Note that the responses do not add up to 100% because respondents may list up to five threats.*

Additional analysis: Combine threats where appropriate. For example, if some people said "anchor damage" and others said "boating practices," then the "anchor damage" responses could be included under "boating practices" since they are a subset. Monitor these results over time to determine how perceived threats change.

Compare these results with the data from the Interview/Secondary Source data on *levels and types of impact (K25).* The threats listed above should also be listed as "high" in the *levels and types of impact* results. If there are significant differences, then consult with the key informants to determine the cause. If the difference cannot be explained, then it may be necessary to interview all the households to accurately determine perceived threats. It may be useful to describe what people perceive to be the major threats from both sets of data.

Compare these results with scientific studies of threats to resource conditions to determine the accuracy of people's understanding of threats.

How the information can be useful to managers and other stakeholders

Information on perceived threats is useful for identifying threats to the coastal resources. Community members, particularly people who directly use the resources, are often the most knowledgeable about threats to the resources. This information can help guide a scientific agenda, particularly in areas where scientific data is lacking, by identifying priority activities on which to focus.

By monitoring this information over time, the manager can see the impact management has had on coastal activities. For example, if the management program prohibited fishing, yet people continue to perceive fishing as a threat, then this suggests that the program has not been effective. Further scientific study should help determine if this is accurate.

Finally, this information is critical for developing awareness programs and seeking stakeholder participation. If community members do not consider there to be impacts on the coastal resources, then it will be difficult to engage them in coastal management. If community members consider only one or two activities to be impacting the resources, yet scientific research shows there are several other impacts, then an awareness program may need to be initiated to increase understanding of the full breadth of activities impacting the resources.

S21. Awareness of Rules and Regulations

What it is

Awareness of rules and regulations measures people's knowledge that rules and regulations on coastal resources exist.

How to collect the data

Data on awareness of rules and regulations are obtained by asking each respondent:

Are there rules and regulations related to the following activities?: (develop list of activities to reflect *activities (K18*) (answer yes or no): fishing _____; mangrove use _____; aquaculture _____; hotel development _____; residential development _____; watersports _____; marine transportation _____

In order to determine awareness, the team must be aware itself of existing rules and regulations. This can be determined by asking the manager, or consulting the information collected in *formal rules and tenure (K32)* and *informal rules and tenure (K33)*. Circle the resources that have rules and regulations for comparison with responses.

How to analyze the data

Calculate the percent of respondents who noted there were rules and regulations for each activity and note this in the *Survey Analysis Sheet*.

Additional analysis: Compare the percentages with those which were circled. The circled activities (have rules and regulations) should have high awareness compared to the other activities. Activities that have high awareness, yet are not regulated indicate misunderstandings by the public. Activities that are circled and have low awareness indicate the public does not realize there are rules and regulations on these activities. A short narrative may be prepared discussing the existing rules and regulations, compliance and enforcement drawing from the results of the next two variables.

How the information can be useful to managers and to other stakeholders

This information is critical for developing awareness programs and seeking stakeholder participation. If community members are not even aware regulations and rules exist, it will difficult for them to abide by them. It will also be difficult to engage community members in coastal management. Understanding the community's level of understanding of rules and regulations is important for developing awareness programs. Education is the foundation for compliance. It is therefore important for managers to identify which rules and regulations are unfamiliar to the community so that the awareness program can target these rules and regulations. Monitoring the community's awareness of rules and regulations is therefore important for determining the impacts of coastal management on attitudes and perceptions.

S22. Compliance

What it is

Compliance measures to what extent people are perceived to be complying with regulations. Information about people's perception of the extent to which rules and regulations are complied with will be strongly tied to how much people know about rules and regulation in the first place.

How to collect the data

Data on compliance are obtained by asking each respondent:

On a scale of 1 to 5 (1=no compliance, 5=full compliance), to what extent do people comply with coastal management rules and regulations? _____

Additional Data: Respondents can be asked which activities or rules people are complying with or not complying with.

How to analyze the data

Calculate the percent of respondents for each scale of perceived compliance and note in the *Survey Analysis Sheet*.

Additional analysis: Some of the categories may be combined to simplify the interpretation. For example, if 23% of respondents said there is full compliance and 42% said there is some compliance, then these could be combined to say, "65% of respondents felt there is some to full compliance." This is easier to understand than listing the percentages for each category. Compare these results over time to determine if compliance is increasing, decreasing or staying the same. It may be useful to provide a short discussion on compliance, enforcement and the regulations and rules in existence from the previous and next variables. Compare changes in compliance with changes in *stakeholder participation and satisfaction (S17)* and see whether the two are correlated.

How the information can be useful to managers and other stakeholders

Information on compliance is useful for understanding stakeholder participation and identifying coastal management problems. Lack of compliance is not only detrimental to the resources, but to gaining stakeholder support. If it is widely perceived that people are not complying with regulations, then it will be difficult to gain anyone's trust, support, participation or compliance.

By monitoring this information over time, the manager can see the impact management has had on people's attitudes and perceptions. If compliance begins to increase, then this should be reflected in people's perceptions of compliance. If this is not the case, then the manager may need to communicate the changes in compliance more effectively to the public (e.g. report decline in number of violations in park newsletter).

S23. Enforcement

What it is

Enforcement is measured by people's perceptions of the extent to which rules and regulations are enforced. This is similar to compliance, except compliance addresses people's behavior (i.e. are people adhering to the rules). Enforcement addresses management activities, such as patrolling, imposing fines and confiscating illegal gear. Information about people's perception of the extent to which rules and regulations are enforced will be strongly tied to how much people know about rules and regulation in the first place.

How to collect the data

Data on enforcement are obtained by asking each respondent:

On a scale of 1 to 5 (1 = no enforcement, 5 = full enforcement), to what extent are the rules and regulations enforced? _____

Additional data collection: The respondents can be asked more specific questions concerning enforcement, such ask: "To what extent are the rules and regulations enforced for each coastal and marine activity?", "How often are violators caught breaking the rules?" and "What one thing can the management body do to improve enforcement?"

How to analyze the data

Calculate the percent of respondents for each scale of perceived enforcement and note them in the *Survey Analysis Sheet*.

Additional analysis: Some of the categories may be combined to simplify the interpretation as discussed for compliance. Compare these results over time to determine if enforcement is increasing, decreasing or staying the same. A short narrative may be prepared discussing enforcement, compliance and the regulations and rules in existence from the previous two variables. Compare changes in enforcement with changes in *stakeholder participation and satisfaction (S17)* and see whether the two are correlated.

How the information can be useful to managers and other stakeholders

Information on enforcement is important for understanding coastal management problems. Enforcement is one of the most visible aspects of management, and is therefore key to the communities' perception of management effectiveness. Lack of enforcement is not only detrimental to the resources, but to gaining stakeholder support. Similar to compliance, if it is widely perceived that regulations are not being enforced, then it will be difficult to gain anyone's trust, support, participation or compliance. Also, by monitoring this information over time, the manager can see the impact management has had on governance since enforcement is a key component. This will give stakeholders an opportunity to give feedback to managers on the perceived effectiveness of their management.

S24. Perceived coastal management problems and solutions

What it is

Perceived coastal management problems and perceived solutions assess what people think the problems are facing coastal management and how to solve them.

How to collect the data

Data on these variables are obtained by asking each respondent:

Aside from threats, what do you see as the two major problems facing coastal management in the community?

_____; _____

What do you see as solutions to these problems?

_____; _____

Additional data collection: Respondents can be asked to explain the identified problems and solutions.

How to analyze the data

On the basis of the data from all the surveys, list the major problems facing coastal management. Calculate the percent of respondents who noted each problem. Group the problems into categories as appropriate, particularly specific problems. For example, if 4% of respondents noted conflicts between the fishers in community X and Y, and 12% noted conflicts between fishers in general, then these may be combined for simplicity. Note this information in the *Survey Analysis Sheet*.

Additional analysis: Compare the results over time to see how perceived concerns for management changes in the community. A description of people's perceptions of problems and solutions and how these have changed over time may be provided.

How the information can be useful to managers and other stakeholders
Information on people's perceptions of coastal management problems and solutions is particularly useful for understanding what people think needs to be addressed by the coastal managers, which may help managers identify management priorities. From the perspective of a manager's relationship with the community, perceived problems and solutions may be more important than the scientifically identified threats and solutions, as these are the communities' main concern and management must therefore be seen to addressing these issues, or should inform communities of the real issues if there is a big difference.

S25. Perceived Community Problems

What it is
Perceived community problems assess what people think the problems facing the community are.

How to collect the data
Data on these variables are obtained by asking each respondent:

What are the 3 major problems facing the community?

_____; _____; . _____

Additional data collection: Respondents may also be asked what they see as solutions to community problems. It will be important for the team to clarify that problems may not be solved only on the basis of this monitoring, this is mainly to establish whether there is a shift in problems. However establishing what problems are will help managers expose them and seek, gradual solutions in partnership with the communities.

How to analyze the data
On the basis of the data from all the surveys, list the major problems facing the community. Calculate the percent of respondents who noted each problem. Group the problems into categories as appropriate, particularly specific problems. For example, if 4% of respondents noted civil unrest, and 12% noted safety in general, then these may be combined for simplicity. Note this information in the *Survey Analysis Sheet*.

Additional analysis: Compare the results over time to see how concerns change in the community. A short description of people's perceptions of problems and solutions and how these have changed over time may be provided.

How the information can be useful to managers
The information on community problems can help managers understand the larger issues facing the community (e.g. poor nutrition, lack of electricity) with which the management program may or may not be able to assist. Issues of insecurity for example (personal or land tenure) may affect the degree of commitment of communities to managing the coastal and marine resources.

Clarifying problems that communities face will enable communities to ensure that managers understand the context of marine and coastal resources users.

S26 & S27. Successes and Challenges in Coastal Management

What it is
Successes and challenges in coastal management assess what people think has and has not worked well for coastal management in the community.

How to collect the data
Data on successes and challenges in coastal management are obtained by asking each respondent:

What 2 things do you think have worked well for coastal management in the community?

_____;. _____

What 2 things do you think have not worked well for coastal management in the community?

_____; _____

Additional data collection: Ask the respondent to explain each of their responses to the above questions.

How to analyze the data

On the basis of the data from all surveys, list the things that have worked well as noted by respondents. Calculate the percent of respondents who noted each thing. Group the things into categories as appropriate. Go through the same process for challenges in coastal management. Note this information in the *Survey Analysis Sheet*.

Additional analysis: Compare the results over time to see how successes and challenges have changed. Compare with *perceived coastal management problems* (S24) to check the results. A short description on how people view coastal management over time may be provided.

How the information can be useful to managers and other stakeholders

Information on successes and challenges in coastal management provides insight into the opportunities and solutions facing coastal management. It is also useful for understanding people's attitudes and perceptions regarding coastal management, and may help explain their willingness to participate in management. If the coastal management program is perceived as having worked well, then people are more likely to want to work with the program. This information can also be insightful for determining the effectiveness of the program, or highlighting misconceptions about management that the manager can then address by explaining to the community in greater detail.

This gives an opportunity to the stakeholders to give feedback to managers on the management programs, on its successes and failures.

S28. Non-market and Non-use Values

What it is

Non-market and non-use values of the coastal resources are measures of how people think about the value of coastal resources that are not traded in the market (non-market) and the value of the resources to the portion of society that does not use the resources (non-use). Non-market value is the value of resources (e.g. fish) and services (e.g. diving) that are not traded in any market. These include direct uses, such as divers who have traveled to dive by private means; and indirect uses, such as biological support functions in the form of nutrients, fish habitat and coastline protection from storm surge. Non-use values are not associated with any use and include option value (the value of knowing that the resource is available should one decide to use it at some future time), bequest value (the value of knowing that the resource will be available to future generations), and existence value (the value of knowing that the resource exists in a certain condition).

How to collect it

The concepts of non-market and non-use values are largely abstract and theoretical. Ideally, an economist should conduct the assessment of these variables since the economic methods used are complex. Recognizing that in most areas economists are not readily available, *SocMon* suggests an approach of measuring people's perceptions based on scale.

This approach uses a series of questions that focus on people's perceptions of indirect non-market values (i.e. biological support functions) and the non-use values related to bequest and existence values of the resources. These could include statements about beauty, about looking after the sea for their children's children, about "enjoying time on the water", and about other non-extractive goods and services that a healthy coastal environment can provide.

Following are suggested statements, which need to be tailored to the resources and activities at each site. Each respondent is asked to indicate the degree to which they agree or disagree with a series of statements. Respondents are asked if they: agree strongly (5), agree (4), don't agree or disagree (3), disagree (2), or disagree strongly (1) with each statement.

_____ a) The reefs are important for protecting land from storm waves. (indirect non-market value)

_____ b) In the long-run, fishing would be better if we cleared the coral. (indirect non-market value)

_____ c) Unless mangroves are protected we will not have any fish to catch. (indirect non-market value)

_____ d) Coral reefs are only important if you fish or dive. (existence non-use value)

_____ e) I want future generations to enjoy the mangroves and coral reefs. (bequest non-use value)

_____ f) Fishing should be restricted in certain areas even if no one ever fishes in those areas just to allow the fish and coral to grow. (existence value)

_____ g) We should restrict development in some coastal areas so that future generations will be able to have natural environments. (bequest value)

_____ h) Seagrass beds have no value to people. (existence value)

Note that the statements are written such that agreement with some indicates an accurate or positive belief, while agreement with others indicates the opposite. This was done to control for responses where the respondent either agrees or disagrees with everything. Statements are randomly arranged with respect to this type of polarity.

Additional data collection: Certain marine-related activities or items may have important cultural value to the community. Respondents can be asked to list the various activities or items in the community (e.g. fishing, temple, reef) and to then rank them in order of cultural importance to the community. This is particularly useful for identifying activities and items that may not be important in terms of providing livelihood but are still considered an important part of community life. For example, in areas where fishing is being replaced by tourism, communities may still feel that fishing is part of the community even though it is no longer the primary source of income or livelihood.

Open-ended questions, such as: "If coral reefs disappeared, how would it matter to you?", "If the fisheries disappeared, how would it matter to you?", and "If the entire beach front were to be developed, how would it matter to you?", can be asked to gain a fuller understanding of the importance of the resources and their uses.

How to analyze the data

For each question, calculate the percent of respondents for each level of agreement and note the percent in the *Survey Analysis Sheet*. To determine whether respondents attribute a non-market or non-use value to the resources, consider to what extent they agreed with the statements. Statements a, c, e, f and g are positively stated. If respondents agreed with these statements, they value the resources. Statements b, d and h are negatively stated. If respondents agreed with these statements, they do not value the resources.

Additional analysis: The levels of agreement (e.g. agree strongly and agree) may be combined to simplify the interpretation. For example, if 23% of respondents *strongly agreed* with statement a and 34% of respondents *agreed* with statement a, then these could be combined to say, "over fifty percent of respondents agreed that reefs are important for protecting land from storm waves." This is easier to understand than listing the percentages for each category.

It may also be useful to explain to what extent people value the resources. Compare results over time to see if people's perceptions have changed.

How the information can be useful to managers and other stakeholders

Information on non-use and non-market values is useful for understanding how people value the coastal resources. Often valuations focus exclusively on values related to the market, such as employment levels, incomes and net profits. By also understanding perceptions of non-use and non-market values, the manager gains a more complete picture of the total value of the resources. This is useful for demonstrating the importance of the resources and their protection to policy-makers and the general public, gauging public support for management, and demonstrating that marine resources are more than products to be bought and sold.

These perceptions are also useful for developing awareness programs because managers can see how much people think of resources as providing goods and services beyond what can be bought and sold. Monitoring this information over time can therefore be used to see how management programs impact people's attitudes and perceptions.

Better understanding how different stakeholders value the resources may also help stakeholders understand each other better and improve their working relationship. It will also be an opportunity for the stakeholders to convey the importance of some of the resources (i.e. beyond their market value) to the managers and help them improve their protection.

WEALTH

Wealth is difficult to measure and income which is one of the indicators of wealth is one of the most difficult and data intensive measures to obtain. It requires lengthy studies that often do not produce adequate results. For these reasons, a number of indirect indicators of wealth have been developed such as food security indexes, expenditure patterns and 'material style of life'. It is

suggested in SocMon WIO to use 'Material style of life' as an indicator of household wealth, as it is the least complex not only to collect data on but also to analyse. For other indicators which may require the expertise of a social scientist or of an economist, literature and expertise is available at the regional level.

S29. Material Style of Life

What it is

Material style of life is an indicator of the relative social status of a community and is often used as an indicator of wealth. It can involve assessing house construction materials (e.g. roof, walls), household furnishings (e.g. rugs, seating), home electronics (e.g. satellite, TV, radio), and productive assets (e.g. boats, fishing gear).

How to collect the data

Data on material style of life are most easily collected by observation and interview. First it is important to interview key informants on what are wealth and poverty criteria. Which house construction materials, house furnishings, electronics and productive assets reflect wealth/poverty. Then at the household level the respondent is asked:

Do you own your own house? yes_____; no_____

Size of the house: number of rooms____

Then the following information is observed or asked:

type of roof: tile ____; tin____; wood___; thatch _____; grass____

type of outside structural walls: tiled ____; brick/concrete ____; stone; ___; mud; _____ thatch ____ grass____

windows: glass___; frame_____; open_____; none ____

floors: tile____; wooden ____; cement ____; mud_____

Access to water: piped___; private well/borehole _____; public well____; river ___

Power: mains_____; solar power ____; battery _____; none _____

This is a simplified list of house construction material. In some cases this list may need to be modified to more accurately reflect gradients of wealth within the study area. For example, in one area "mud" may be considered the poorest type of walls, in which case the list may need to be restructured to:

Walls: concrete finished____; concrete unfinished____; stone finished ____; stone and mud ____; mud ____

In other cases where house construction materials are meaningful as wealth or poverty criteria but most houses are made of similar materials, the condition of the materials may be a better way to differentiate different level of wealth. Then for each category of roofing material for example (tin, thatch) there would be a gradient of bad/good condition.

Accurate scale construction is needed to make meaningful comparisons between communities and over time.

To understand productive assets, the respondent is asked:

Do you own your boat? ____

How many boats do you own? _____

What is the boat made of (fiberglass or wood)? _____

How is the boat propelled (paddled, sailed or motorized)? _____

In some cases, housing may not be considered an important measure of social status by the community. In these cases, the team may want to focus on household and productive assets such as livestock, transport, land. In some cases, the type of boats used may be a good indication of wealth.

Additional data collection: To learn more about the relative social status and wealth in the community, respondents may be asked about their ownership of other household assets. This list can include such items as television, radio, refrigerator, furniture, and other assets. They might also be asked about fishing gear ownership. Wealth ranking could also be used asking informants to rank stakeholder groups.

Of course the **assets or materials to be considered will depend on each site**, and the most appropriate ones will be identified by the team. The criteria can sometimes be reflected in other areas. For example, a criteria identified in Madagascar is the length of time to complete schooling… Thus adding a question on the time to complete schooling makes sense.

How to analyze the data

Calculate the percent of houses that had each of the categories of house materials and note in the *Survey Analysis Sheet*.

How the information can be useful to managers and other stakeholders

Information on material style of life over time is useful to understand the economic status and relative wealth of communities and is especially useful in areas where it is difficult to obtain accurate income data. This is important to monitor to determine the impacts of management on livelihood over time. If the coastal management program is having a positive impact, then the percentages on the resulting material style of life variables should shift toward the higher level items (e.g. from thatch to tin roofing). It is particularly useful in determining extent of equity of monetary benefits through the community. If the management program has an equitable impact, then the team should observe a shift throughout the community and across all stakeholder groups, not just among a few individuals.

Improving knowledge on material style of life information and thus wealth will help stakeholders evaluate better their situation and the changes in time, and may be an indication of the effectiveness of management.

APPENDIX B: SECONDARY SOURCE/ KEY INFORMANT AND FOCUS GROUP INTERVIEW GUIDE

The socioeconomic monitoring team is expected to select and/or modify the interview questions based on their sites' needs.

When respondents do not have an answer to a question, note the response as "don't know".

K1. Study Area: What are the boundaries of the study area? Note on base map.

K2. Stakeholders:

Complete the following table:

Coastal Activity*	Stakeholder Group 1	Stakeholder Group 2	Stakeholder Group 3
*develop list according to activities identified in *activities (K18*) and activities observed			

K3. Gender roles and responsibilities

Activities	Gender and Age*		Why some activities only carried out by one gender?				
Household	**Women**	**Men**					
Subsistence/income							

*Age category: Children, Adult, Elder.

Participation in decision making: household and marine and coastal activities

Household	Women only	Men only	Usually Women	Usually Men	Both
Income use					
Time use					
Saving/investment					
Education					
Health					
Marine and coastal activities -extractive					
Location					
Methods					
Timing					
Restriction					
Marine and coastal activities - non extractive					
Location					
Methods					
Timing					
Restriction					

DEMOGRAPHICS (Community level)

K4. Population:

How many people live in the study area? _____

K5. Number of Households:

How many households are in the study area? _____

K6. Migration Rate:

What was the net increase or decrease in people moving into and out of the study area in the last year? ____

(note + or - to reflect moving in or out)

K7. Occupation:

Complete the following table:

Major occupations in community	Percent of working population conducting this occupation as primary occupation	Number of people conducting this occupation as primary occupation	Percent of working population conducting this occupation as secondary occupation	Percent of working population conducting this occupation as tertiary occupation
1.				
2.				
3.				
4.				
5.				

K8. Age: What percent of the people in the study area are currently in the following age categories?:

0-18____; 19-30_____; 31-50_____; over 50_____

K9. Gender: What percentage of the population is male or female?: male _____; female ___

K10. Education: What is the average number of years of education of people over 16 years old in the study area? _____

***K11. Literacy*:** What percentage of the population is literate (can read and write)? _____

K12. Ethnicity: What is the ethnic make-up of the study area (percent of each major ethnic group in the study area)?:

(write-in) _____; (write-in) ____; (write-in) _____

K13. Religion: What is the religious make-up of the study area (percent of each major religious group in the study area)?:

(write-in) _____; (write-in) ____; (write-in) _____

K14. Language: What are the major languages spoken in the study area (percent of each major language in the study area)?:

(write-in) _____; (write-in) _____; (write-in) _____

HEALTH

K15. Infant mortality rate, deaths from diseases:

What is the death rate of infants (18-24 months of age) per year in the study area?

(number of deaths of infant/total number of infant of that age*1000)?_____

What percentage of death per year in the study area is caused by (list most common diseases including water borne diseases)?

Malaria: _____; Cholera/Dysentry: _____; Typhoid: _____ .

COMMUNITY INFRASTRUCTURE, BUSINESS DEVELOPMENT AND OWNERSHIP

K16. Community Infrastructure & Business Development:

Circle which services or businesses exist in the study area:

schools, resident doctors, resident nurses, hospitals, functioning dispensaries, electricity, telephone, internet access, radios, televisions, newspapers, sewage treatment plant, ice plant, tarmac road access, water supply to homes, banking services, religious buildings (mosques, churches, temples)

food markets, restaurants, food stalls, gas stations, banks, specialty shops, gift shops, dive shops, tour operations, fishing guides, guesthouses/ hotels/ inns/ resorts, yacht charters

For each of the businesses, identify the owners' place of residence and origin. For each of the categories rank according to the importance in numbers.

Business	Origin and place of residence of owners	Rank*

*The least numerous category is ranked 1.

K17. Sources and availability of credit

Complete the following table

Credit Source	Formal or Informal	Interest Rate	Condition for access	Amount of credit distributed per year

COASTAL AND MARINE ACTIVITIES

K18 - 26. Activities, Goods and Services, Methods, Value of Goods and Services, Target Markets of Goods and Services, Use Patterns, Levels and Types of Impact, Level of Use by Outsiders, Household Use:

Complete the following tables (see *Appendix A, K18- 26* for examples of how to complete the tables):

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods (primary)	Value of Goods and Services	Goods and Services Target Markets (primary)	Level of use by Outsiders	Level of Impact	Types of Impact (primary)	Household Use (primary)

Coastal and Marine Activities	Coastal and Marine Goods and Services	USE PATTERNS		
		Location	Timing	Season

K27. Tourist Profile:

How many visitors are there total per year? _____

How many tourists visit from the following countries?:

(home country)_____; (write-in country)_____; (write-in country)_____;

(write-in country)_____; (write-in country)_____

How many tourists visit in the following months?:

January_____; February_____; March_____; April_____; May_____; June_____; July_____; August_____; September_____;

October_____; November_____; December_____

How many tourists arrive by the following means of transportation?: air_____; cruise ship_____; other_____

What percent of the tourists are in the following age categories: 0-18 _____; 19-30_____; 31-50;_____; over 50_____

What percent of the tourists are male or female? male _____ female_____

What percent of the tourists are interested in the following activities?:

nature _____; beaches _____; diving/snorkeling _____; fishing _____;

culture _____; other _____; other _____

GOVERNANCE

K28 - 32. Management Body, Management Plan, Enabling Legislation, Management Resources, Formal Tenure and Rules:

Complete the following tables (see *Appendix A, K28-32* for examples of how to complete the table):

Coastal Activity*	Management Body(s) (Yes/No) & Name	Management Plan (Yes/No)	Enabling Legislation (Yes/No)	Number of Staff	Budget	Formal Tenure and Rules (Yes/No)	Relevant Rules and Regulations (Yes/No)
*develop list according to activities identified in *activities (K18)*							

K33: Informal Tenure and Rules, Customs and Traditions:

Complete the following table:

Coastal Activity*	Customs and Traditions	Informal Tenure Arrangements	Informal Rules	Level of Compliance (High, Medium, Low)
*develop list according to activities identified in *activities (K18)*				

K34. Community Incentives

See Appendix A: (*K34)* for examples on how to fill the table below:

Stakeholder Group	Benefit from Provides to	Type of incentive

K35: Stakeholder Participation and satisfaction:

See Appendix A *(K35)* for examples on how to fill the table below:

Stakeholder Group*	Decision making and management activities**	Stakeholder participation (1 to 5)***	Level of satisfaction with Participation (High, Medium, Low)
*develop list according to stakeholder groups identified in Stakeholders (K2) **Develop list of management activities according to management plan if it exists (K29) ***1=no participation, 5=fully active participation)			

K36: Community and Stakeholder Organizations:

Complete the following table:

Community Organization	Formal or Informal	Main Functions	Influence (on coastal management; community issues; both; none)

K37. Power and Influence

List which organizations or individuals are involved in making decisions about your activities (i.e. where, when, how, and who can carry out this activity)?_____

Who (activity, age, gender) else (not necessarily part of an official process) **has** to be consulted for the activity to be carried out, expanded or changed?_____

Where do you get information from about marine and coastal resources (e.g. NGO, social group, news paper)?_____

When respondents do not have an answer to a question, note the response as "don't know".

The socioeconomic monitoring team is expected to select and/or modify the interview questions based on their sites' needs.

DEMOGRAPHICS (Household level)

S1-9. Occupation, Age, Gender, Ethnicity, Education, Religion, Language, Household size, Household structure

Household Members*	Age	Gender	Education level completed (only ask if >16 yr)	Religion**	Ethnicity	Language (+ foreign languages) (mother tongue and others)	Primary Occupation	Secondary Occupation
~~HH~~								

*identify all living in house by name or role (e.g. grandmother)
**Note the household head (e.g. mother) and whether she is a widow (if a woman)
** Information on religious affiliations may be too sensitive to ask at the household level. It may be more appropriate to get it at the community level by key informant or secondary sources.
HH: indicate who is the household head (e.g. mother) and if a woman whether she is a widow (w).

S10. Household Sources of Income:

What is your household's most important source of income? _____

What is your household's second most important source of income? _____

S11. Residency:

Household member*	Permanent / Seasonal	Permanent Number years	Seasonal number of years	Seasonal Origin	Seasonal Which Months	Primary Occupation	Secondary Occupation

** identify respondents by name or role (e.g. father)*

COASTAL AND MARINE ACTIVITIES (Household Level)

S12 - 16: Activities, Goods and Services, Methods, Use, Target Markets for Goods and Services, Household Uses:

(see Appendix A, S12-16 for examples of how to complete the table)

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods	Target Markets	Household Uses
1.				
2.				
3.				

GOVERNANCE

S17. Participation in Decision-making and Implementation:*

On a scale of 1 to 5 (1=no participation, 5=fully active participation), to what extent do you participate in coastal management:

decision-making? _____

monitoring?_____

awareness raising? _____

enforcement/Surveillance?_____

Satisfaction with the level of participation: On a scale of 1 to 3 (1=Low, 2= Medium and 3= High) to what extent are you satisfied with your level of a participation in coastal management:

decision-making? _____

monitoring?_____

awareness raising? _____

enforcement/surveillance?_____

* Develop a list of implementation activities according to the management plan *(K29)* if it exists of with the coastal management staff.

S18. Membership in Stakeholder Organizations:

Is someone from your household a member of a stakeholder organization? _____

Which organization (s)? _____; _____;_____

ATTITUDES AND PERCEPTIONS

S19. Perceptions of Resource Conditions:

How would you describe current conditions of each of the following resources using the scale of very good (5), good (4), not good or bad (3), bad (2) to very bad (1) (edit list of resources to reflect site resources)?:

mangroves _____; coral reefs _____; fresh water _____; upland forests _____; seagrasses _____

S20 Perceived Threats:

What are the top 5 major threats to the health of coastal resources?

. _____;. _____; . _____; . _____; . _____

S21. Awareness of Rules and Regulations:

Are there rules and regulations related to the following activities?: (develop list of activities according to *activities (K18)*)

(answer yes or no) : fishing _____; mangrove use; _____; aquaculture _____; hotel development; _____;

residential development _____; watersports _____; marine transportation _____

S22. Compliance:

On a scale of 1 to 5 (1=no compliance, 5=full compliance), to what extent do people comply with coastal management rules and regulations? _____

S23. Enforcement:

On a scale of 1 to 5 (1=no enforcement, 5=full enforcement), to what extent are the rules and regulations enforced? _____

S24. Perceived Coastal Management Problems and solutions:

Aside from threats, what do you see as the two major problems facing coastal management in the community?

_____; _____

What do you see as solutions to these problems?

_____; _____

S25. Perceived Community Problems:

What are the three major problems facing the community?

_____; _____ ; . _____

S26. Successes in Coastal Management:

What 2 things do you think have worked well for coastal management in the community?

_____; _____

S27. Challenges in Coastal Management:

What 2 things do you think have not worked well for coastal management in the community?

_____; _____

S28. Non-market and Non-use Values:

Indicate degree of agreement with the following statements using the scale:
agree strongly (5); agree (4); neither agree nor disagree (3); disagree (2); disagree strongly (1).

_____ a) The reefs are important for protecting land from storm waves. (indirect non-market value)

_____ b) In the long-run fishing would be better if we cleared the coral. (indirect non-market value)

_____ c) Unless mangroves are protected we will not have any fish to catch. (indirect non-market value)

_____ d) Coral reefs are only important if you fish or dive. (existence non-use value)

_____ e) I want future generations to enjoy the mangroves and coral reefs. (bequest non-use value)

_____ f) Fishing should be restricted in certain areas even if no one ever fishes in those areas just to allow the fish and coral to grow. (existence value)

_____ g) We should restrict development in some coastal areas so that future generations will be able to have natural environments. (bequest value)

_____ h) Seagrass beds have no value to people. (existence value)

S29. Material Style of Life:

Do you own your own house? yes_____; no_____

Size of the house: number of rooms____

For household materials:

type of roof: tile ____; tin____; wood___; thatch _____; grass____

type of outside structural walls: tiled ____; brick/concrete ____; stone; ___; mud; _____ thatch ____ grass____

windows: glass___; frame_____; open_____; none ____

floors: tile____; wooden ____; cement ____; mud_____

size of the house: number of rooms____

Access to water: piped___; private well/borehole _____; public well____; river ___

Power: mains_____; solar power ____; battery _____; none _____

For productive assets:

Do you own your boat? _____

How many boats do you own? _____

What is the boat made of (fiberglass or wood)? _____

How is the boat propelled (paddled, sailed or motorized)? _____

NOTE: **this interview guide has to be adapted to the context, accurate scale construction is needed. Other type of information such as education may be appropriate to reflect the household wealth. (See Appendix A: *S29*)**

APPENDIX D: KEY INFORMANT INTERVIEW/SECONDARY SOURCE ANALYSIS SHEET

Throughout the analysis it is important to reflect upon observations in the study area and to consider if these verify and/or contradict data from the interviews.

When doing the calculations for a question, do not include "don't know" responses in the calculations. In other words, the calculation should only be based on the actual responses to the question.

THE AREA

K1. Study Area:

Base map with resource, stakeholder and political boundaries of the study area.

STAKEHOLDERS

K2. Stakeholders:

(see *Appendix A, K2* for an example of how to complete the table)

Coastal Activity*	Stakeholder Group 1	Stakeholder Group 2	Stakeholder Group 3
*develop list according to activities identified in *activities (K18)*			

K3. Gender Roles and Responsibilities

Activities	Gender and Age*		Why some activities only carried out by one gender?					
Household	**Women**	**Men**	**Legal**	**Cultural**	**Physical**	**Education**	**Religious**	**Economic**
Water collection	All							
Fuelwood	All							
Caring for children	Child							
Cooking		Adult						
Subsistence/income								
Employment hotel		Adult						
Fishing guides		Adult						
Fish trading	Elder	Adult						
Shell fish collection	All							

*Age category: Children, Adult, Elder.

Participation in decision making: household and marine and coastal activities

Household	Women only	Men only	Usually Women	Usually Men	Both
Income use					
Time use					
Saving/investment					
Education					
Health					
Marine and coastal activities -extractive					
Location					
Methods					
Timing					
Restriction					
Marine and coastal activities - non extractive					
Location					
Methods					
Timing					
Restriction					

DEMOGRAPHICS (Community Level)

K4. Population:

Total population in study area: _____

K5. Number of Households:

Total number of households in study area: _____

K6. Migration Rate:

Net increase or decrease of people moving into or out of the study area over the last year: _____
(note + or to reflect moving in or out)

K7. Occupation:

(see *Appendix A, K7* for an example of how to complete the table)

Major occupations in community	Percent of working population conducting this occupation as primary occupation	Number of people conducting this occupation as primary occupation	Percent of working population conducting this occupation as secondary occupation	Percent of working population conducting this occupation as tertiary occupation
1.				
2.				
3.				
4.				
5.				

K8. Age:

(see *Appendix A, K8* for an example of how to complete the table):
Percent of community age: 0-18_____; 19-30 _____; 31-50 _____; over 51_____

K9. Gender:

Percent of community: female _____; male _____

K10. Education:

Average number of years of education of >16 year olds: _____

K11. Literacy:

Percent of population that is literate: _____

K12: Ethnicity:

Percent of population by ethnic make-up:
(write-in ethnicity) _____; (write-in ethnicity) _____; (write-in ethnicity) _____; (write-in ethnicity) _____

K13. Religion:

Percent of community by religion: (write-in religion) ____; (write-in religion) ____;

K14. Language:

Percent of population by spoken language: (write-in language) _____; (write-in language) _____

HEALTH

K15. Infant mortality rate and deaths from diseases

Death rate of infants (18-24 months old): _____

Percent deaths caused by disease:

*(write-in disease)*_____*; (write-in disease)* _____*; (write-in disease)*_____*; (write-in disease)* _____

K16. Community Infrastructure, Business Development and Ownership:

Community infrastructure that exists in the study area:

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

Business development that exists in the study area and ownership

See Appendix A *(K16)* on how to complete the table

Business	Origin and place of residence of owners	Rank in order of frequency*

*The least numerous category is ranked 1.

K17. Sources and availability of credit

Complete the following table

Sources of credit	Number	Percent	Interest rate (Average)	Total Amount of credit distributed per year
Formal				
Informal				
Total				

Access conditions for formal credit

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

Access conditions for informal credit

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

K18 - 26. Activities, Goods and Services, Methods, Value of Goods and Services, Target Markets of Goods and Services, Use Patterns, Levels and Types of Impact, Level of Use by Outsiders, Household Use:

See *Appendix A, K18-26* for examples of how to complete the tables

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods (primary)	Value of Goods and Services	Goods and Services Target Markets (primary)	Level of use by Outsiders	Level of Impact	Types of Impact (primary)	Household Use (primary)

Coastal and Marine Activities	Coastal and Marine Goods and Services	USE PATTERNS		
		Location	Timing	Season

K27. Tourist Profile:

Total number of visitors per year:_____

Number of tourists that visit from:

(home country)_____; (write-in country)_____; (write-in country)_____; (write-in country)_____; (write-in country)_____;

Number of tourists that visit in:

January_____; February_____; March_____; April_____; May_____; June_____;

July_____; August_____; September_____; October_____; November_____; December_____

Number of tourists that arrive by: air_____; cruise ship_____; other_____

Percent of tourists that are age: 0-18 _____; 19-30_____; 31-50;_____; over 50_____

Percent of tourists that are: male _____; female_____

Percent of tourists interested in:

nature _____; beaches _____; diving/snorkeling _____; fishing _____; culture _____; other _____; other _____

GOVERNANCE

K28 - 32. Management Body, Management Plan, Enabling Legislation, Management Resources, Formal Tenure and Rules:

(see *Appendix A, K25-29* for examples of how to complete the table)

Coastal Activity*	Management Body(s) (Yes/No) & Name	Management Plan (Yes/No)	Enabling Legislation (Yes/No)	Number of Staff	Budget	Formal Tenure and Rules (Yes/No)	Relevant Rules and Regulations (Yes/No)
*develop list according to activities identified in *activities (K18)*							

K33: Informal Tenure and Rules, Customs and Traditions:

Coastal Activity*	Customs and Traditions	Informal Tenure Arrangements	Informal Rules	Level of Compliance (High, Medium, Low)
*develop list according to activities identified in *activities (K18)*				

K34. Community Incentives

See Appendix A: (*K34)* for examples on how to fill the table below:

Stakeholder Group	Benefit from Provides to	Type of incentive

K35: Stakeholder Participation and satisfaction:

Stakeholder Group*	Decision making and management activities**	Stakeholder participation (1 to 5)***	Satisfaction with Level of Involvement (High, Medium, Low)

*develop list according to stakeholder groups identified in *Stakeholders (K2)*
**Develop list of management activities according to management plan if it exists *(K29)*
***1=no participation, 5=fully active participation

K36: Community and Stakeholder Organizations:

Community Organization	Formal or Informal	Main Functions	Influence (on coastal management; community issues; both; none)

Summary

Community Organization	Number	Percent	Main Functions	Influence (on coastal management; community issues; both; none)
Formal				
Informal				
Total				

K37. Power and influence

Coastal Activity*	Organizations/individuals which make decision	Who else	Source of information on coastal and marine resources
1.			
2.			
3.			
4.			
*develop list according to activities identified in *activities (K18)*			

Most powerful groups, individuals and source of information

Rank	Decision making Groups/individuals	Other individuals (not always part of the process)	Source of information
1.			
2.			
3.			
4.			

Throughout the analysis it is important to reflect upon observations in the study area and to consider if these verify or contradict data from the interviews.

When doing the calculations for a question, do not include "don't know" responses in the calculations. In other words, the calculation should only be based on the actual responses to the question.

DEMOGRAPHICS (Household Level)

S1-9. Occupation, Age, Gender, Ethnicity, Education, Religion, Language, Household size, Household structure

Occupation

(see *Appendix A, S1-S9* for examples of how to complete the table)

Occupation (edit list of occupations according to responses)	PRIMARY		SECONDARY		Total percent of community members dependent on this occupation (primary and secondary)
	Number of household members listed as primary occupation	Percent household members that listed as primary occupation	Number listed as secondary occupation	Percent household members that listed each occupation as secondary	
	A	(A/I) x 100%	Q	(Q/I) x 100%	(A+Q)/I x 100%
	B	(B/I) x 100%	R	(R/I) x 100%	(B+R)/I x 100%
	C	(C/I) x 100%	S	(S/I) x 100%	(C+S)/I x 100%
	D	(D/I) x 100%	T	(T/I) x 100%	(D+T)/I x 100%
	E	(E/I) x 100%	U	(U/I) x 100%	(E+U)/I x 100%
	F	(F/I) x 100%	V	(V/I) x 100%	(F+V)/I x 100%
Misc. (record together all occupations that were noted <5% of the household members)*	G	(G/I) x 100%	W	(W/I) x 100%	(G+W)/I x 100%
No occupation (e.g. students, retired, unemployed)	H	(H/I) x 100%	X	(X/I) x 100%	(H+Y)/I x 100%
TOTAL	I	100%	Y*	**	***

*not necessarily = I because not all respondents have secondary occupations
**not necessarily = 100% because not all respondents have secondary occupations
***greater than 100% because primary and secondary occupations combined

Occupation by Age and Education

(see *Appendix A, S1-S9* for an example of how to complete the table)

PERCENT RESPONSES							
Primary Occupation	**Age 0-15**	**Age 16-25**	**Age 26-45**	**Age Over 45**	**<6 Years Schooling**	**6-9 Years Schooling**	**<9 Years Schooling**

Occupation by Gender and Religion

PERCENT RESPONSES							
Primary Occupation	**Female**	**Male**	**Religion Fill-in: _____**	**Religion Fill-in: _____**	**Religion Fill-in: _____**	**Religion Fill-in: _____**	**Religion Fill-in: _____**

Occupation by Ethnic group

PERCENT RESPONSES				
Primary Occupation	**Ethnic Group Fill-in _____**	**Ethnic Group Fill-in _____**	**Ethnic Group Fill-in _____**	**Ethnic Group Fill-in _____**

S8&S9. Household Size and Household Structure

Household Size and Structure by Occupation

Primary Occupation	Average household size	Average number of women per household _____	Average number of men per household	Percent of women headed households	Percent of widow headed households
Total/Overall					

S10. Household Sources of Income:

Occupation	Percent noted as primary source	Percent noted as secondary source

S11. Residency

PERCENT RESPONSES						
Primary Occupation	ALL POPULATION			PERMANENT		
	Permanent	Seasonal	Total	Years 1-5	Years >5	Total

PERCENT RESPONSES								
Primary Occupation	SEASONALS							
	Years 1-5	Years >5	Total	Origin National Zone1	Origin National Zone2	Origin National Zone 3	Origin Foreign	Total

S12-14. Activities, Goods and Services and Methods

(see *Appendix A, S12-14* for examples of how to complete the table)

Coastal and Marine Activities	Coastal and Marine Goods and Services	Methods
1.		
2.		
3.		
4.		

S15. Target markets:

(see *Appendix A, S15* for an example of how to complete the table)

Coastal and Marine Goods and Services	% Noted International Market	% Noted National Market	% Noted Regional Market	% Noted Local Market

S16. Household Uses:

Coastal and Marine Goods and Services	% Household Consumption	% Sold	% Leisure

GOVERNANCE

S17. Stakeholder Participation and Satisfaction

Percent of respondents perceived scale of participation in each of the management activities and decision making

Management activities and decision making	PERCENT RESPONSES				
	5 (full participation)	4	3	2	1 (no Participation)
* activities that might be sourced in the *management plan* (K29)					

Percent of respondents who said to be (high, medium or low) satisfied for the level of participation in each activity (including decision making)

PERCENT RESPONSES				
Management Activity	**Level of Participation**	**High Satisfaction**	**Medium Satisfaction**	**Low Satisfaction**
1.	Full Participation			
	No Participation			
2.	Full Participation			
	No Participation			
3.	Full Participation			
	No Participation			

S18. Membership in Stakeholder Organizations:

(see *Appendix A, S18* for an example of how to complete the table)

Percent noted membership in at least one organization: _____

Noted organizations for membership	**% respondents noted organization**
_____	_____
_____	_____
_____	_____

ATTITUDES AND PERCEPTIONS

S19. Perceptions of Resource Conditions:

(see *Appendix A, S19* for an example of how to complete the table)

RESOURCES*	PERCENT RESPONSES THAT DESCRIBED RESOURCE CONDITIONS AS:				
	Very good (5)	**Good (4)**	**Neither good nor bad (3)**	**Bad (2)**	**Very bad (1)**
mangroves					
coral reefs					
fresh water					
upland forests					
seagrass					
**edit list of resources to local site*					

S20. Perceived Threats:

(see *Appendix A, S20* for an example)

Identified threats	**Percent noted this threat**
_____	_____
_____	_____
_____	_____

S21. Awareness of Rules and Regulations:

Percent of respondents who were awareness of rules and regulations related to (develop list of activities according to *activities [K18]*):

fishing _____

mangrove use _____

aquaculture _____

hotel development _____

residential development _____

watersports _____

marine transportation _____

S22-23. Compliance and Enforcement

Percent of respondents perceived each scale of compliance and enforcement with coastal management rules and regulations:

	PERCENT RESPONSES				
	5 (full compliance / enforcement	**4**	**3**	**2**	**1 (no compliance / enforcement)**
Compliance					
Enforcement					

S24. Perceived Coastal Management Problems and Solutions:

Major problems facing coastal management in the community	Percent noted this problem

Solutions to problems	Percent noted this solution

S25. Perceived Community Problems:

Major problems facing community	Percent noted this problem

S26. Successes in Coastal Management:

Things that have worked well for coastal management in the community	Percent noted these things

S27. Challenges in Coastal Management:

Things that have NOT worked well for coastal management in the community	Percent noted these things

S28. Non-market and Non-use Values:

Value Statements	PERCENT RESPONSES				
	1=disagree strongly	2 =disagree	3 = neither	4 = agree	5 = agree strongly
The reefs are important for protecting land from storm waves.					
In the long-run fishing would be better if we cleared the coral.					
Unless mangroves are protected we will not have any fish to catch.					
Coral reefs are only important if you fish or dive.					
I want future generations to enjoy the mangroves and coral reefs.					
Fishing should be restricted in certain areas even if no one ever fishes in those areas just to allow the fish and coral to grow.					
We should restrict development in some coastal areas so that future generations will be able to have natural environments.					
Seagrass beds have no value to people.					

S29. Material Style of Life:

For household materials:

Percent of respondents that own houses: ____

Percent of houses that are owned by occupants:____

Percent of houses that have

tile roof____; tin____; wood___; thatch _____. grass____

have outside structural walls that are tiled ____; brick/concrete ____; stone___; mud ____; thatch____; grass_____

windows glass___; frame ____; open_____; none ____

floors : tile____; wooden ____; cement __; mud_____

Access to water: piped___; private well/borehole _____; public well____; river ___

Power: mains_____; solar power ____; battery _____; none _____

Average number of rooms:_____

For productive assets:

Percent of respondents that own 0 boats_____; 1 boat_____; 2 boats_____; more than 2 boats_____

Percent of boats made of: fiberglass _____; wood _____

Percent of boats that are propelled by: motorized _____; non-motorized _____

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