SEM-Pasifika

Socioeconomic Monitoring Guidelines for Coastal Managers in Pacific Island Countries

Written by:

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Sailing canoe, Milne Bay, Papua New Guinea.
Credit: Supin Wongbusarakum

Children form Milne Bay, Papua New Guinea.
Credit: Mike Guilbeaux.

Copies of the SEM-Pasifika Guidelines as well as the GCRMN Socioeconomic Manual (2000) can be downloaded from the SocMon website: www.reefbase.org/socmon

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$\mathbf{I}$ntroduction

Background

SEM-Pasifika is a set of socioeconomic monitoring guidelines developed for sites in the Pacific. These guidelines were developed by the Community Conservation Network (CCN) with the input from the Pacific Socioeconomic Monitoring Steering Committee.

The initiative to develop these guidelines started in February 2005, following a workshop organized by SPREP and NOAA, which was held to review socioeconomic monitoring efforts already in place in the Pacific. In October 2006, a follow-up meeting was convened, comprising representatives from NOAA, LMMA, SPREP, CRISP, FSPI, GCRMN, and World Fish Center. At this meeting, it was agreed that a set of socioeconomic guidelines for the Pacific should be developed to provide a user-friendly document that synthesizes the existing methods, including Socioeconomic Monitoring Guidelines (SocMon), Locally Marine Managed Area Learning Framework (LMMA-LF, or shortened LF), and Socio-Economic Fisheries Surveys in the Pacific (SFSPI). In May 2007, a workshop was held in Fiji to make final decisions and plans for preparation of the guidelines. In October 2007, the first draft of SEM-Pasifika was launched at the 8th Pacific Islands Conference on Nature Conservation and Protected Areas in Papua New Guinea, followed by an intensive training-of-trainers workshop hosting participants from over 10 countries in the Pacific. The feedback from the workshop participants was used to revise the final guidelines.

These revised guidelines were then used in training for Pacific Island resource managers in the Republic of the Marshall Islands in May 2008. The worksheets included in these guidelines were developed as a part of this training, and final revisions to the guidelines were made following the workshop.

In addition to SocMon, LMMAA-LF, and SFSPI, relevant information from the GCRMN Socioeconomic Manual for Coral Reef Management[1] and How is your MPA doing?[2] is also referred to or integrated into these guidelines.

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[1]Bunce, L, P. Townsley, R. Pomeroy, and R. Pollnac. 2000. Socioeconomic Manual for Coral Reef Management. Townsville, Australia: Australian Institute of Marine Science.

[2]Pomeroy, R., J. Parks, and L. Watson. 2004. How Is Your MPA Doing? Gland, Switzerland and Cambridge, UK: IUCN.

Purposes and Target Groups

The main purpose of SEM-Pasifika is to improve site management of the coastal and marine areas in the Pacific region. It should guide interested communities in the region (including communities who have used existing methods and new communities without experiences in socio-economic assessment), management and project staff, researchers, and other practitioners, to understand important steps involved in a socioeconomic assessment and to be able to conduct the monitoring. The socioeconomic information collected will help the stakeholders at a site in management, monitoring, policy making, development and research. The information could also be entered into a global or regional database for comparison and eventually an improvement of coastal management at a multi-national level.

The main target groups of SEM-Pasifika are people who are able to use the guidelines to conduct socioeconomic monitoring and tailor them to the needs of communities. These may include community members who have some type of management authority or an ability and commitment to communicate results to the relevant management authority, coastal managers, project staff, non-governmental organizations (NGOs) staff and researchers. SEM-Pasifika was written assuming the assessment team members have at least a high school level education.

Coastal development along the Tumon Bay Marine Preserve.
Credit: John Jocson, Water and Environmental Research Institute, University of Guam

Structure of SEM-Pasifika Guidelines

These guidelines consist of three sections.

Section 1

Section 1 outlines the rationale and process of conducting a socioeconomic assessment

- What is socioeconomic assessment?
- Why should I do a socioeconomic assessment?
- A Process for doing socioeconomic assessment

1. Define goals and objectives	5. Collect data
2. Identify site and indicators	6. Analyze data
3. Consult with stakeholders	7. Communicate results
4. Prepare assessment	8. Use results for adaptive management

Section 2

Section 2 focuses on indicators grouped in 6 categories, including 1) site and infrastructure, 2), demographics, 3) coastal and marine activities, 4) threats, 5) management, and 6) stakeholders. For each category, a matrix is presented to show indicators that are related to different socioeconomic purposes.

Each indicator is described in the following way:

- What it is
- How to collect the data
- How to analyze the data
- How the information can be useful
- Additional data and data collecting methods

Section 3

Section 3 includes:

- Checklist for SEM-Pasifika socioeconomic assessment preparation
- Worksheets for planning your socioeconomic assessment
- SEM-Pasifika data analysis guide

These guidelines end with a list of references and suggested readings related to socioeconomic assessment and include a CD of electronic copies of:

• SEM-Pasifika, including checklists for socioeconomic assessment preparation, data collection and data analysis guide, and planning worksheets,
• Locally Managed Marine Area Learning Framework (LMMA-LF), including survey forms, site description guide form and site report form,
• Locally Managed Marine Area guide
• Socio-Economic Fisheries Surveys in the Pacific (SFSPI) in English and French, including survey questionnaire forms
• Socioeconomic Monitoring Guidelines Southeast Asia (SocMon Southeast Asia), including source guides and analysis sheets.

Statement on Intellectual Property and Community Information
Intellectual property refers to creations of the mind and includes distinctive and original ideas, traditional knowledge, cultural expressions, stories, information, and/or processes that have been created or discovered by an individual or a group. Community information refers to characteristics of a community that characterize its residents. Some of this information may be sensitive. Respect for and adequate handling of intellectual property and community information in relation to data collection and representation is an important aspect of socio-economic monitoring. In light of concerns about the use and sharing of intellectual property and community information, the following considerations are recommended within the SEM-Pasifika guidelines:

• **Informed, written consent for data collection:** Informed, written consent should be acquired prior to the collection of socio-economic data. Informed consent is agreement or approval based upon an appreciation and understanding of the proposed socio-economic monitoring activities. Sharing and vetting of monitoring plans and proposed use of data and results is an important aspect of acquiring informed consent. Depending on the situation, determining which source to obtain written consent from may require some consideration. Such sources may include a combination of government leaders, government agencies, traditional leaders, and/or a representation of community members or groups.

• **Informed, written consent for data sharing or publication:** The informed, written consent for data collection should be very specific about how the information will be used, with whom it will be shared. In cases where information may be sensitive, privacy of key informants and survey respondents should be protected.

• **Appropriate acknowledgement and credit:** When using or representing data collected from a particular site, it is good practice to identify and give appropriate credit to those who own and/or otherwise assisted with data collection efforts. This can include particular communities, community members, contributors, organizations, institutions and/or government agencies.

S ection 1

What is a socioeconomic assessment?

A *socioeconomic assessment* is a way to learn about the social, cultural, economic and political conditions of individuals, households, groups, communities and organizations. There is no fixed list of topics that are examined in a socioeconomic assessment, however the most commonly identified topics are: demographic characteristics; resource use patterns; stakeholder characteristics; stakeholder perceptions; resource governance; local knowledge; market attributes for extractive and non-extractive use; non-market and non-use values; and gender issues. Socioeconomic assessments vary in the extent they cover these topics, and this will depend on the purpose of the assessment and resources available to conduct it. Some socioeconomic assessments may be a full evaluation of all these topics; others may focus on stakeholder perceptions or resource use patterns.

The types of socioeconomic assessments differ, but they can be characterized by two main factors: whether they are *participatory* or *extractive* in nature; and whether they are *product-oriented* or *process-oriented*. These factors are at opposite ends of a broad range of assessment types. SEM-Pasifika supports participatory, process-oriented assessments as they provide more benefits to local communities such as capacity-building and stakeholder involvement. SEM-Pasifika guidelines encourage all stakeholders, including coastal and marine managers, community groups, resource users, outside researchers, and other interest groups, to be involved and all learn from the participatory process.

While a socioeconomic *assessment* is a one-time data collection effort, socioeconomic *monitoring* involves repeated data collection over time, usually at set intervals. Socioeconomic assessments conducted at the start of a project will help understand the site and establish baseline information. Monitoring that follows the initial assessment will measure changes over time and help identify whether management objectives are being met.

Why should I do a socioeconomic assessment?

Socioeconomic information can be used by coastal managers for a number of purposes as listed below. It is important for the coastal managers and socioeconomic monitoring team to determine the relevant purposes for their monitoring so that they can select the appropriate indicators for data collection.

A. 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. Consequently, managers can better prioritize and focus their management efforts and develop programs that address these issues. For example, an increase in immigration of people to the area can indicate potential threats from increased fishing effort and land use development, such as clearing of mangroves. Managers may anticipate increased impact on the resources or conflicts of resource use between the local people and the new migrants. Thus, managers should identify ways of limiting conflicts and negative impacts, while initiating alternative livelihood activities that are less damaging and not resource dependent.

B. 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. It can help generate a more complete understanding of the value of these resources in order to evaluate the benefits and costs of alternative development, management and conservation scenarios. For example, a decision to allow diving in an area may be based on the importance of supplementary income to the community from tourism activities.

C. 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 in various areas, managers can predict how many fishers will be displaced by a proposed no-fishing zone.

D. Assessing management effectiveness

Socioeconomic information can be used to measure how the management body is doing with the 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, then there should be improvements in people's perceptions of participation in coastal resource management decision-making in order for the management body to be considered effective. 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.

E. 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. 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.

F. 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 theory. 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.

G. Establishing baseline household and site profiles and relationships of people with resources

Socioeconomic information collected at the start of a coastal resource management program can help the manager understand the community and households, and their relationship with the resources. The basic information not only contributes to development of appropriate management programs and policies but also establishes 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.

A Process for doing socioeconomic assessment

Socioeconomic assessments begin with defining objectives of the assessment. They involve planning and preparation before the assessment team begins to collect field data. The assessment concludes with the team analyzing and presenting the data. However, there is no best step-by-step way to conduct a socioeconomic assessment, and the order of the steps will vary widely depending on local conditions, knowledge, experiences and the requirements of the people. Sometimes, the assessment steps may follow a clear order, but in other cases they may need to be repeated and the order changed to adapt to new learning and changing circumstances. An important part of every assessment is continually reviewing (and revising) objectives, indicators, methods, and assessment strategies as situations change or as new information becomes available. Different steps in an assessment can become complex, particularly when the emphasis is on building a process of learning involving many different people. In a long-term monitoring program, each socioeconomic assessment should be adapted and the process modified according to lessons and information gained from the previous assessment. The following paragraphs will take you through the important phases of planning and conducting a socioeconomic assessment (illustrated in Box 1). During each phase, there is a worksheet provided (in the appendix of these guidelines) to help guide you through the preparatory processes for the assessment.

BOX 1: Major phases in socioeconomic monitoring

1. Define objectives
2. Identify site and indicators
3. Consult with stakeholders
4. Prepare assessment
5. Collect data
6. Analyze data
7. Communicate results
8. Use results for adaptive management

Review assessment and adapt
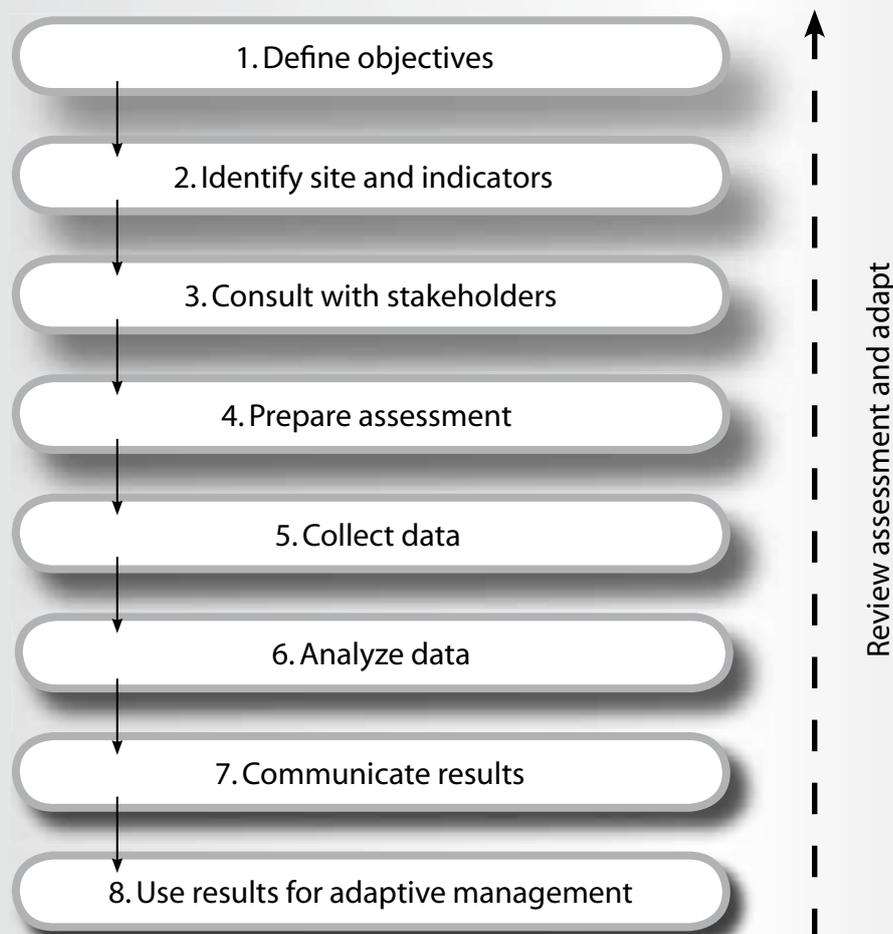
1. Define Assessment Objectives

Objectives are specific statements, detailing the desired accomplishments or outcomes of an assessment. The assessment team should draft assessment objectives based on the needs and interests of the stakeholders, and should consult with stakeholders to finalize them The objectives clarify the focus of the assessment and can be related to management, research, development, monitoring, and/or policy. In the site where there is a coastal and marine management program, there should be a clear link between management objectives and assessment objectives. Management objectives are geared towards your program as a whole while assessment objectives are what you would like to achieve through your socioeconomic assessment and should be designed to inform and improve your overall management objectives.

For example, if the management objective is to improve community awareness of the importance of MPA and conservation activities through effective education and outreach programs, objectives of the assessment may be 1) to determine the effectiveness of current educational programs; 2) to gain a better understanding of the community's awareness of the MPA; 3) to learn about community understanding of the importance of marine resources; and/or 4) to gain an understanding of key information sources.

Worksheet 1

Defining
Assessment
Objectives

2. Identify Site, Study Population, and Indicators

The assessment team needs to identify the site area where the assessment will cover. They should consider the location of the coastal and marine resources, as well as the stakeholder groups. Once the objectives and the area of the socioeconomic assessment are determined, the team should decide which socioeconomic indicators to assess (See information on indicators in Section 2. Use Worksheet 2 as a guideline to developing indicators that relate to your assessment objectives). The indicators selected will depend upon the objectives and needs of managers and other stakeholders, as well as the resources and time available. The indicators will determine the substance of the assessment and form the basis for deciding what questions will be asked in the field. Related data collecting methods are preliminary chosen.

Worksheet 2

Identifying Site
and
Indicators

BOX2 : What if my site is very large or in an urban area?

For socioeconomic assessments carried out in large areas and/or more urbanized areas, it is important to identify your target group. In urban areas with high population, it may not be feasible to include the entire community in your study. In these cases, choosing just one user group from the community may be most appropriate. In another example, in an area with a marine protected area (MPA), perhaps the assessment focuses only on commercial fishermen or only on recreational divers who use the MPA to determine how they are impacted by the MPA regulations. Similarly, areas with high visitor usage should determine whether the socioeconomic assessment will focus on visitors, local residents, or both.
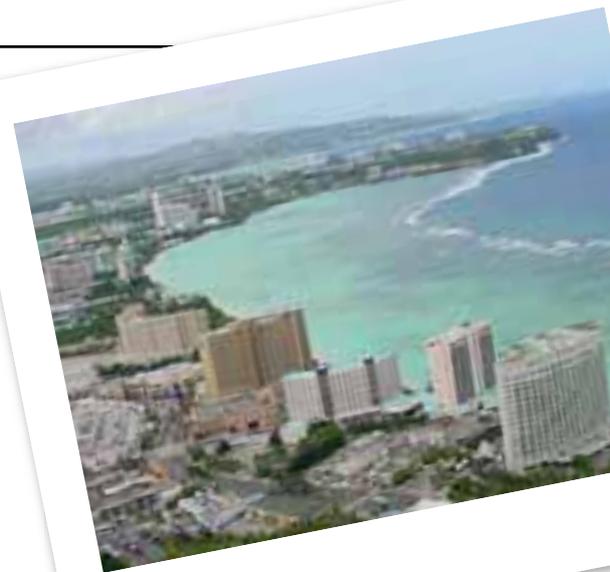
3. Consult with Stakeholders

Depending on the goals and objectives of the assessment, the assessment team identifies the stakeholder groups and determines which ones should be the focus of the assessment. These may include coastal managers, resource users, conservation project staff and funders. Stakeholders may be listed in three groups:

• Primary stakeholders – people who directly depend on the coastal and marine resources for a living (e.g. fishermen, local communities);
• Secondary stakeholders – people who do not use the resources directly, but make use of products or services from them (e.g. fish traders) or whose actions may affect them (e.g. travel agents and coastal developers);
• Relevant organizations – organizations with direct responsibility for managing activities affecting the resources or with an interest in the primary or secondary stakeholders, including government agencies, informal or traditional organizations, universities, and non-governmental organizations (NGOs). These might also be the end-users.

The assessment team may also determine the level of involvement of each group in the assessment. In addition to the objectives and determined priorities of the stakeholders; social, economic, political and logistics circumstances should also be taken into consideration. At the minimum, the stakeholders should be informed about the scope and objectives of the assessment. Whenever possible, their agreement to participate in and support the assessment should be solicited. For the selected stakeholder groups, early consultation is encouraged due to several advantages as follows:

• help ensure the concerns and priorities of as many stakeholders as possible are included in the planning of the assessment;
• provide background information useful for preparing the assessment, identifying indicators and communicating results;
• provide access to local knowledge, resources and assistance, which is particularly useful to managers with limited resources;
• help ensure the stakeholders' co-operation, understanding and sense of ownership of the assessment, and commitment to eventual findings and recommended actions; and
• increase public and political support for the assessment and management measures in general.

During the consultation, the following activities could take place:

• discuss purpose
• seek stakeholder input on assessment plans and logistics
• identify stakeholder priorities and concerns
• ask for suggestions on key informants
• discuss procedures and formalities for field data collection

Worksheet 3

Stakeholders

Section1 | Rationale and Process of Socioeconomic Assessment

4. Prepare Assessment

This phase ensures the team is prepared to conduct the assessment effectively and efficiently. The preparation involves several steps:

4.1 Determine schedule and budget of the assessment.

The resources required for each socioeconomic assessment vary depending on the size of the area, sample sizes, and the indicators included.

4.2 Assemble assessment team

An ideal socioeconomic assessment team combines coastal managers or project staff with local community members or stakeholder group representatives. A team leader is responsible for planning the assessment, monitoring data collection and analysis and presenting results. As a socioeconomic assessment addresses a broad range of issues across different social science disciplines and technical fields, it is useful for the team members to possess backgrounds and skills related to those fields, for example survey design or data analysis. In case of missing skills, outside specialists may be recruited or training may be needed. If there is a team of interviewers, provide briefing and training before the interview begins. Make sure everyone is trained with similar techniques, e.g. in probing or in coding, and will act as a team.

4.3 Conduct a reconnaissance visit.

This is a brief visit to the site area to allow the assessment team to finalize the selection of study area and sites for field data collection; collect preliminary information on the number and location of stakeholders; identify logistical requirements based on local conditions; make arrangements for field data collection; and refine the objectives and indicators as necessary.

4.4 Determine who to interview and sample sizes[3].

The assessment team should develop a sampling approach to determine who to interview for the surveys and the sample (an appropriate portion of the population selected for a study), 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 fishermen 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 choose a random or non-random sample of people. This decision will depend on how important it is for the results to be statistically representative of the community. If it is very important to have a statistically representative sample, then random sampling should be used. The more statistically significant something is, the less likely it happens by chance. However, collecting a statistically representative sample can be very expensive and time consuming, and the need for statistical representation will need to be weighed against the reality of staff, time, and funding constraints.

Worksheet 4
Preparatory Activities (Schedule, Budget and Team)

Worksheet 5 :
Preparatory Activities (Reconnaissance Visit)

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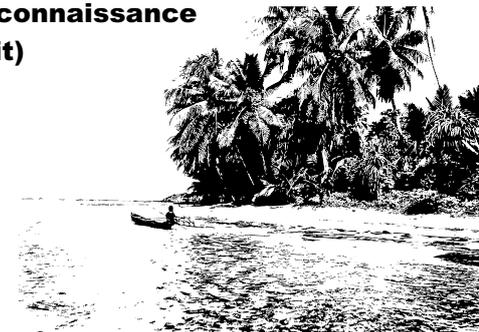
[3] For more information on sampling see, Bunce et al. 2000. Socioeconomic Manual for Coral Reef Management, Appendix B: Sampling Approaches (pages 229-234).

Random Sampling

In a random sampling, every possible sample has an equal and independent chance of being selected from the population. This approach is most appropriate for surveys, which are designed to gain quantitative data for statistical analysis. Observations can also be conducted using random sampling. The main disadvantages to this approach are that it is expensive, time-consuming and complicated. It also requires a well-defined stakeholder group or a complete sampling frame, which may not be available or feasible to construct for large populations. However, the advantage is the data are statistically representative of the whole group. The common random sampling techniques used in SEM-Pasifika are most likely going to be simple random sampling and stratified sampling.

Simple random sampling involves selecting a group of subjects (a sample) randomly and entirely by chance, such that each subject has the same probability of being chosen at any stage during the sampling process from a larger group (a population). This approach requires that the total population is well-defined, then listed and numbered so that the team can randomly select people. The appropriate sample size is determined according to the population size, desired confidence interval (also referred to as error level) and confidence level. Each individual in the sample population is selected by a random number table (or by a computer program) until the desired sample size is reached.

BOX3 : Confidence level

 - This is how confident you feel about your error level. Expressed as a percentage, it is the same as saying, if you were to conduct the survey multiple times, how often would you expect to get similar results. For example:
- At 95% confidence level, we would expect to get the same results 95 out of 100 times (i.e. We allow a 5% mistake due to chance.
- At 99% confidence level, we would expect to get the same results 99 out of 100 times (i.e. We allow a 1% mistake due to chance.

BOX4 : Confidence interval (Error)

- This is "plus or minus X%". What it means is that you feel confident that your results have an error of no more than X%.

Example: your survey found that 25% of your target population is engaged in fishing (with a 95% confidence level and a confidence interval of +/- 3%). This means that if you conducted the same survey 100 times, 95 out of 100 times you would get results that found between 22% - 28% (25 +/-3%) of your population engaged in fishing.

Stratified sampling involves dividing population into non-overlapping groups or strata defined on the basis of some known characteristic that is believed to be related to the variable of interest. e.g. geographical areas, age-groups, and sexes. A sample is taken from each stratum. When this sample is a simple random sample, it is referred to as stratified random sampling. This sampling technique is appropriate in a situation we may expect the measurement of indicators to vary among the different groups. We generally require that the proportion of each stratum in the sample should be the same as in the population. For example, there is a population of 500 fishers, of which 100 (20%) are invertebrate fishers and 400 (80%) finfishers. First, we need to find the proportion of the total population for each of the strata (20% invertebrate fishers and 80% finfishers). Then, determine a sample size using the table below (at 95% confidence at +/- 5% error, a sample size from 500 people in the population is 217 people). Finally, find sample size for each strata in keeping with its proportion to the total population (20% of 217 = 43 invertebrate fishers; 80% of 217 = 174 finfishers)

BOX5 : Sample Size representative of population at 95% and 99% confidence levels and 5% confidence interval[4]

Population	Sample at 95% confidence level	Sample at 99% confidence level
50	44	46
100	80	87
200	132	154
300	169	207
400	196	250
500	217	286
800	260	364
1000	278	400
2000	322	500
5000	357	588

[4] Sample size calculator are available on line: http://survey.pearsonncs.com/sample-calc.htm or http://www.surveysystem.com/sscalc.htm

In cases where the team does not need a statistically representative sample of the population (or when time or staff resources are too limited to obtain a statistically significant sample size), then smaller sample sizes may be used. Although not statistically representative of the entire population, the results may provide a useful understanding of the population in cases where resources may be limited to carry out a full survey. In these cases, the following sample sizes are suggested:

BOX6 : Sample size not statistically representative

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

Source: Bunce, L and Pomeroy R. 2003. Socioeconomic Monitoring Guidelines for Coastal Managers in Southeast Asia. P.10.

Non-random sampling
In non-random sampling, the research team selects specific people as informants to gain a better understanding of the different viewpoints, attitudes, perceptions and concerns of the whole group. For non-random sampling, it is important to first identify and understand the different types of stakeholder groups and demographic diversity of the site. Such an understanding can be gained through key informants or secondary data sources such as census. Non random sampling methods includes haphazard or convenience sampling, purposive or judgment sampling, and snowball sampling.

Haphazard or convenience sampling happens when any available participants can be included. This may be used for pre-testing questionnaires.

Purposive or judgment sampling is when the researcher determines what purpose she wants an informant to serve (subpopulation of interest) and locates an appropriate informant to include in the sample. This is the most commonly used method of selecting key informants for particular areas of interest.

Snowball sampling means locating one or more individuals and asking them at the end of the interview for their suggestion of the next person you can interview about the same subject area. This method is useful when your target population is limited and hard to identify from the outside (for example, fishermen who still use traditional methods).

Because the informants are selected and not taken randomly from a clearly defined group, the information is not representative of the whole group (i.e. the information is not statistically representative). This approach is most useful for focus group interviews, semi-structured interviews (such as in key informant interviews) and observations, which involve interviewing particular people or observing specific events. This produces qualitative information, which usually cannot be analyzed statistically. In a community with a diverse groups of population, the team should sample from the different groups to ensure the breadth of perspectives are assessed and interview people in approximately the same proportions from these groups. For example, if there are 30% Hindus, 40% Baptists and 30% Catholics in a community, then the proportion of the sample should reflect the proportion of the population.

4.5 Analyze audience.
Before undertaking the data collection, 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 as way as to effectively generate and communicate results. In determining the audience, it will be important to consider who will be affected by the results, both positively and negatively, and who can take action related to the results. Also, knowing your communications needs at the start of the monitoring will help you to budget and plan for the necessary activities, time and resources.

4.6 Develop an assessment workplan
Based on this information, the manager should set a timetable and allocate the funds and other resources needed. Basic considerations include when the assessment should take place and for how long (target dates), how much it will cost, and who will be responsible for what tasks, including field teams, training, data collecting, data analysis, result communication, and adaptive management.

village in Milne Bay, Papua New Guinea.
Credit: Mike Guilbeaux.

5. Collect data

In addition to the actual data collection itself, this phase includes final selecting of indicators, data collecting methods, designing and pretesting instruments to collect the data (e.g. a list of questions for key informant interview or household survey questionnaires). It also involves a briefing on the local culture and arranging logistics for the field data collecting team.

The assessment team should understand as much as possible about the local culture before starting the field data collection. They should be briefed by a local person or someone very familiar with the area on local customs, treatment of outsiders, and forms of respect to the opposite sex, elders and figures of authority. Many rural communities have particular customs, traditions and behaviors that need to be followed, especially by visitors. These customs may involve long, formal meetings or ceremonies with officials or traditional leaders. Similarly, there may be particular etiquette regarding hospitality, e.g. some people will be offended if the guest does not accept a traditional local drink.

After finalizing the structure and content of the field data collection, the assessment team should address the practical details of preparing for the field data collection. These logistic arrangements involve selecting a base of operations, accommodation and transport. Logistical arrangements can be complex and typically increase with the size of the assessment team and the number of field teams. For assessment teams larger than four people, it may be necessary to assign one person to be exclusively responsible for logistics. The assessment team needs to inform the stakeholder representatives and any other appropriate local authorities when the team will arrive. The team also needs to obtain the official and unofficial clearances or permission required to work in the area.

Data Collecting Methods

Suggested field data collection methods in these guidelines include secondary data, focus group discussion, key informant interview, household survey and observation. Each method is described below. During the data collecting process, random spot checks, to ensure consistency in data collection methods, should be conducted regularly. If discrepancies are too large, bring the group together and discuss the issues. Comparison between data from several data sources allows for a check on the accuracy of the data. Use the information on sampling (described in point 4) to determine the sampling method and sample size appropriate for your data collecting methods.

Worksheet 6

Indicators : Methods, Target Groups and Sample
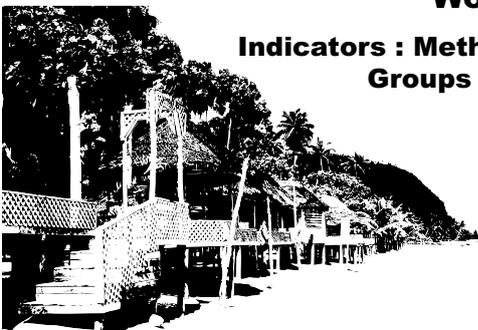
5.1 Secondary data (S).

Secondary data are those that have already been collected, analyzed and published in various forms. These may include:

• official and unofficial documents
• statistical reports
• reports of previous assessments and surveys
• research reports, including thesis, dissertation and academic papers
• documentation of previous or ongoing projects, including monitoring and evaluation reports
• maps
• aerial photographs and satellite images
• historical documents and accounts
• websites

The assessment of secondary data involves compiling, evaluating and reviewing the data related to the identified indicators. Starting with secondary data, the assessment team can refine the lists of objectives, stakeholder groups, study sites and parameters. It helps identify gaps in existing knowledge in preparation for field data collection. Reviewing what is already available and useful will provide supporting documentation for field data collection and reduce duplication of data collecting efforts, will speed up the collecting process and will help identify types of information needed to be gathered. It also provides a basis for cross-checking information collected during the field data collection.

5.2 Key Informant Interview/Survey (KI).

Key informants are individuals who, because of their experience and/or knowledge 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 and the president of the fishermen's association can provide insight into fishermen's activities. 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. 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. The semi-structured interview format is often used as it allows the interviewer to deeply explore certain aspects of the topics and allows the informants more freedom to express and present the information in their preferred context. This format makes use of open-ended phrasing in questions that require key informants to discuss the response and allows follow-up questions for clarification. It is important to pretest the interview questions with a small number of people before the actual interview takes place to make sure that all the questions are clear and effective in obtaining the information you are looking for. Generally, several key informants are interviewed 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 with no new activities coming up, then the team can stop interviewing about this variable.

BOX7 : Guidelines for Key Informant Interviews

• Prepare an agenda and a list of topics.
• Respect local cultural practices
• Arrange for a time and place for the interview where the key informant will feel at ease.
• Introduce yourself, and the background and purpose of the interview
• Present the general topics or themes to be covered.
• Start with simple questions that require description.
• Move on to more complex questions (saving controversial questions until the end).
• Prompt to make sure information is as complete as possible--use what/anything else?
• Use what, when, why, how, who?
• Make sure information is about the community as a whole, not individual perspectives
• Be good listeners, feedback and confirm information regularly, ask for clarification whenever needed
• Take notes and write up the interview as soon as possible when it is still fresh
• Share with informant how the results will be used
• Express thanks

BOX8 :Tips on designing questions for key informant interview guides

• For each interview, record name of interviewer; name, sex and role (or status) of interviewee; and date of the interview.
• Phrase questions so that they are open-ended, not closed:
~~Do you use gillnets?~~ How do you fish?
• Avoid leading questions:
~~What kind of problems are there between fishers and other users of the coral reef?~~ What kind of interactions are there between fishers and divers?
• Use unambiguous questions:
~~Do you go fishing very often?~~ How often do you go fishing?
• Use indirect questions for sensitive issues such as income or use of illegal fishing methods:
~~Do you use cyanide?~~ Do you know if illegal fishing methods are used in your community?
• Use the 6 questions words (what, who, when, where, how, why) as much as possible:
• Use questions that encourage informants to compare and contrast as a means of analysis: How do fishers' relations with the hotel industry compare with their relations with the dive operators?

5.3 Household Survey (HH).

The household survey involves 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. Once the survey questionnaires are developed, they should be pre-tested among small groups of people as a way to receive input for the drafting the final questionnaires which should be clear and useful for gathering requested information. Ideally, pre-test data should be analyzed before survey revisions, as data analysis of responses to the draft survey may reveal issues with the survey questions or answer choices that should be changed before the final version. Surveys are important for understanding households and individuals' perspectives. For example, if the team wants to understand what people think about coastal management practices or perceived condition of local resources, then it needs to ask a spectrum of people. 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 household survey 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. To obtain more depth on some of the variables, it may be useful to include some open-ended semi-structured questions (keeping in mind that these questions will be more difficult to analyze statistically).

BOX9 : Tips on Designing Household Questionnaires

•Include name of interviewer, name of household respondent, role (e.g. father, mother, grandfather, elder daughter) in the household and date of the interview.
•Use closed-ended questions only, including true/false answers, range of answers, multiple-choice answers
•Use unambiguous wording; clear and simple syntax
•Avoid leading questions
~~Not very many women fish in this area, do they?~~ How many women fish in the community?
•Arrange questions in a logical order, e.g. by subject , chronological
•Place those questions that will influence other questions last, e.g. put "where do you fish?" before "are there any areas where fishing is illegal?"
•Begin with simple, non-threatening questions that are easy to answer to build trust and confidence.
•Put sensitive questions last, e.g. how much money do you make in a week?
•Use local vocabulary, including local taxonomies and nomenclature
•Use clear and consistent scale (e.g., strongly disagree; disagree; neither agree nor disagree; agree; strongly agree)
•Be realistic about what informants know
• If working in two or more languages or dialects, translate and back-translate from one language to the other until all differences are resolved.
• Pre-test the questionnaire and revise it
• If working in two or more languages or dialects, translate and back-translate from one language to the other until all differences are resolved.
• Pre-test the questionnaire and revise it.

Adapted from source: Bunce et al. 2000. Socioeconomic Manual for Coral Reef Management. Townsville, Australia: Australian Institute of Marine Science. P. 112.

BOX10 : Guidelines for Conducting a Household Survey

• Introduce yourself and the objective of the survey
• Answer any questions of respondent
• Make sure each member of the survey team follows the questionnaire as written without asking questions simultaneously or adding new questions.
• Ensure all questions are answered
• Record responses on questionnaire
• Listen, if there are follow-up responses to questions make notes on side of questionnaire
• Upon completion, go outside and review questionnaire to check all responses
• Write important comments in a notebook and share them with team.

5.4 Focus Group Discussion (FG).

Focus group discussions are a type of semi-structured interview. However, focus group interviews involve a selected group of informants (usually 4 to 10) who share a common background or knowledge (e.g. use patterns, language, organization membership). Like semi-structured interviews, focus group discussions are based on a set of open-ended questions or discussion points, and generate qualitative information. This flexible method allows the facilitator to probe for answers, follow-up the original questions and pursue new lines of questions during the interview. Therefore, the interview and information evolve allowing the facilitator to cover a range of topics. The flexibility and openness of this method encourage two-way interaction, including exchanges of information between the facilitator and the informants. Focus groups discuss community or group level information rather than individual perspectives. Focus group interviews are often conducted in the middle or end of the field data collection, after the team has a strong understanding of the stakeholder groups, their priority concerns and internal dynamics. The team can use this knowledge to focus the interviews on particular topics and to ensure the appropriate participants are invited. The discussion provides opportunities for informants to interact with each other and reach consensus.

BOX11 : Guidelines for focus group discussions

• Have a skilled facilitator
• Use the same guidelines as for key informant interviews, plus:
• Make sure that everyone speaks
• Be supportive and non-judgmental (no right or wrong things to say)
• Have a note taker and show main points to the group to get their confirmation.
Try to minimize differences.

5.5 Observation (O).

Observations are qualitative descriptions of what the team member sees and are obtained by attentively watching and recording the surroundings. For example, a team member may notice bottles tied to the rear of an outrigger and ask "Why?", to be told that the bottles separate the lines while trolling, a type of fishing not previously mentioned. Observation is a useful method because the team learns first hand about complex activities involving motor skills (such as fishing and boat building) or local and traditional practices (such as customary rules and customs). 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 or for local community members to explain what they have always practiced and abide by without having to think about doing so. Observation may be *directed* or *continuous*. During directed observation the team member looks at a specific activity, such as a fish landing, or tries to answer a specific question, such as, 'How are co-operative meetings conducted?' During continuous observation, the investigator seeks a broader understanding of activities and observes all activities throughout the day and night. Directed and continuous observations are not mutually exclusive. 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 semi-structured interviews.

BOX12 : Guiding principles that should be followed throughout the field data collection[6]

• Respect the stakeholders and communities

• Develop an interactive, two-way communication between the team and the stakeholders

• Recognize the limitations of information due to short period of data collection

• Recognize possible biases, address and minimize them timely. These biases could be related to perceptions of individual informants and assessment team members, gender preference, ease of access to locations of a site, comfort with certain types of informants, language preference, and disciplinary/academic background

• Take detailed notes

• Cross-check data

• Create opportunities to reflect on learning

• Recognize when to stop by remembering that an assessment will be judged on the relevance of findings, not on the amount of information

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[6] For details, see Bunce et al. 2000 Socioeconomic Manual for Coral Reef Management, Chapter 3: Field Data Collection (pages 92-145).

6. Analyze data

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 learnings, interpret the results, validate the key learning and plan communication of results. As a result, much of the data analysis, particularly of qualitative data, can start during the field data collection.

Data analysis should begin in the field when the team members' learning is still fresh and to allow for necessary adjustment/correction, participation of stakeholder in the analysis, and facilitation of the final analysis and reporting. A workshop format of field analysis is recommended to facilitate interaction among team members. Its frequency depends on the size of the site, the team, and the scope of the assessment. The purpose of the filed analysis is to identify key learnings, such as information critical to the assessment goals and objectives, conclusion about an indicator, cross-cutting issue from several indicators, issues that have been prioritized or identified as important and need special attention, and needs for further research of a particular question or adaptation of an assessment step. These key learning will often serve as the basic structure of the report. The primary steps in the field analysis workshops include reviewing notes and questionnaires, preliminary analysis of information, and assessing status of data collection and revision of future data collection plan, if necessary.

When the data collection is completed, final analysis starts. During this phase, the assessment team analyses and validates the data to prepare a useful report and communications to the end-users.

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

6.1 Compile all the data by gathering all the information from different methods, including secondary sources, key informant interviews, household surveys, focus group discussion, observation, and others.

6.2 Prepare the data by developing coding systems and coding, transferring the collected data to the analysis sheets or writing a summary of findings. Some data may be analyzed using relatively simple calculations, such as sums, percentages or averages. The analysis of quantitative data needs to be carefully compared with qualitative data whenever possible. If there are serious discrepancies of data from different sources, the assessment team may need to collect additional, focused data, in which the contradictory information is brought back to further discuss with and validate by appropriate key informants. The team leader should make sure that both the raw and coded data are properly saved and stored for future use.

6.3 Interpret the data by reviewing the results from the analysis sheets and summary findings to identify and organize information related to the originally identified purposes of the socioeconomic monitoring. The team should select the data relevant to the purposes of the monitoring to determine which indicator is relevant to which purpose. These data then need to be reviewed, correlated and contrasted to identify emerging patterns and trends. These patterns and trends become key learning. Key learning refers to issues identified or lessons learnt by the team that are essential to the objectives of the assessment or are needed to understand the socioeconomic context of the stakeholders or coastal management effectiveness. The results are then compiled to identify data that support the key learning. For the analysis, there may be trends in changes in occupations and activities as people shift from fishing to other occupations and activities. 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 indicators.

6.4 Agree on key learnings. Key learnings are issues or lessons learned by the team that are essential to understand the socioeconomic context of the stakeholders. Key learnings can be:

• a set of information that is critical to assessment objectives
• conclusions about a particular variable
• a cross-cutting issue that draws on lessons learnt about several different variables
• an issue or group of issues that are priorities for a significant proportion of stakeholders
• a particular problem that most stakeholders agree is important
• an activity, problem or issue that the team has identified as having a significant impact on coastal resources or users
• a question that has not been answered and that may require further research
• an important conclusion by the team on local conditions, users, or other factors affecting socioeconomic aspects of coastal resource use

6.5 Validate the findings by discussing the key learning with stakeholders as part of communication discussed below.

6.6 Prepare the report by presenting key learning, with each point discussed, along with relevant data

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BOX13 : Tips for data analysis

• Involve all team members in the analysis
• Prioritize quality, not quantity
• Prioritize learning, rather than information
• Do not modify the results to the end-users' expectations

7. Communicate Results

An important aspect of the monitoring process is to communicate the results back to target audience(s). This includes discussing the findings, seeking feedback and validation, and seeking appropriate decisions and actions to utilize the results. Communications is a critical piece for adaptive management. For example, if the purpose of the socioeconomic monitoring is to understand the value and importance of coral reefs, then coral reef- related information is sought. These may include activities, perceptions of non-market and non-use values, knowledge and attitudes, dependence on the reefs as resources, and ways they are formally and traditionally managed. The results will better inform the managers and other stakeholders of the current situation of the reefs, allowing them to strategically plan and develop management activities accordingly.

At the beginning of the assessment, identify the primary audience(s) and develop a plan for communicating and reporting the results. Determine the most appropriate audiences to receive the assessment results by answering the following questions:

• Who are the potential audiences that may benefit from or be interested in the socioeconomic monitoring results?
• Which of these audiences are stakeholders in the coastal manage¬ment?
• What level of influence and interest do they have over the coastal management and how it is managed?
• What do you know about their preferred method of receiving information? For example, do they prefer to read or listen to a radio? Do they use the Internet regularly? Do they gather together periodically at meetings or conferences?
• What language does each audience speak? What is their average educa¬tional level? What style of communications do they prefer? Are they literate?
• What will the audience do with the results and information you present to them? What actions do you want them to take following the delivery of your results?

To share results with target audiences complete the following tasks:

Task one: Determine which format to use to provide monitoring results and to reach the target audience most effectively. There are several ways to disseminate information.

One-way communications:

• Written materials (reports, papers)
• Visual materials (posters, pictures)
• Oral presentations (in-person)
• Mass media: newspapers, magazines, radio, television, film
• Internet

Two-way communications:

• Group discussion (in-person)
• One-on-one discussion (in-person)
• Physical and electronic bulletin boards
• Remote communications: telephone, video phone, web camera
• Internet: e-mail and Internet chat rooms

Worksheet 7

Preparatory Activities (Audience Analysis)

A complete communications plan contains the following elements:

• An audience analysis matrix identifying the range of possible audiences, their characteristics, and a set of priority target audiences
• A strategy for how and where results will be delivered by identifying which presentation formats will be used with target audiences, and the approach and style of delivery to be taken.
• A set of key messages with illustrative examples and stories that explain the results and focus the attention of the audiences.
• A timeline of when messages and presentation formats are to be released and delivered to target audiences.

In some cases the ideal presentation format may require assistance from communications special¬ists such as editors, graphic artists, publication designers, journalists and news agencies, community leaders, professional facilitators, lobbyists, statisticians, and Internet and digital solution technicians.

Task two: Develop a strategy and a timeline to disseminate the results.
Develop a timeline of when to release or deliver these messages using the various presentation formats. This timeline will depend on the type of formats and style in which results are delivered. Consider how to make the presentation formats most meaningful and thought provoking to your target audiences and include this in your results delivery strategy.

The results delivery strategy should include which messages and what formats will be used to communicate with different target audiences. Use the audience analysis matrix to identify outreach opportunities.

For example:

• Is there a particular format that can be used to communicate results to multiple target audiences?
• Which communication formats should come before others? What is the timing of sharing results both internally and externally?
• Are there certain communication formats that should be presented simultaneously or within a restricted timeframe?
• Are there key influential individuals who might be particularly useful in disseminating information (for instance, community leaders, religious leaders, teachers)?

Task three: Communicate your findings to the stakeholders.
This process is referred to as messaging –what story do you want to share with the target audiences? Because the specific content of these messages will not be known until after the evaluation is complete, messaging requires two distinct activities and timeframes.

• At the start of the evaluation, identify the themes and concepts of the marine environment and how it is managed that target audiences are both known to listen to and will want to hear about when results are available. Select the priority messages to share with target audiences.
• After obtaining the results, identify the results that relate to the priority messages and how they address the themes and concepts

8. Using Results for Adaptive Management

Adaptive Management refers to the practice of using relevant, up-to-date information to revise and realign management actions to meet management goals in a structured process. Practitioners of adaptive management seek to use information that has been collected through monitoring or other sources to incrementally improve the attainment of management goals, such as in the maintenance of a particular resource. This occurs through a process of evaluating the outcomes of actions or events and adjusting future actions on the basis of what has been learned. In this respect, adaptive management is sometimes characterized as "learning by doing." Adaptive management as a basic practice of managing natural resources has occurred over thousands of years as societies have used observation and experience to form the foundation of traditional management practices. In modern settings where adaptive management is applied, information collected by western "scientific" approaches to knowledge is often used as a means of updating understanding and adapting management decisions accordingly.

Results from the analysis of socioeconomic monitoring data relative to marine areas can provide important decision-making information. For example, if average annual incomes of families are largely dependent on marine resources but are decreasing in an area where management practices were put into place to increase or stabilize annual incomes, these management actions can be evaluated to determine if they are still the most appropriate for the management goal in question. A key element to effective adaptive management is regular and conscientious feedback between monitoring results and decision-making. This iterative decision making process can be achieved in many ways. In some settings, the process is incorporated in regular management evaluations, such as in an annual review process where monitoring information is presented and compared with management goals and actions. On-going discussions of the relationship between the results of monitoring and actions can lead to the decision on whether to maintain current management actions, or to revise them in attempts to improve outcomes. During this process, it is helpful to maintain written records and/or diagrams that explain the perceived connection between the monitoring results or outcomes and management actions so that management decisions and the adaptive management process can be understood by others at a later date.

After reviewing all planning and assessment activities described above, and before you begin your assessment, be sure to develop a timeline and workplan:

Worksheets 8 and 9

BOX14 : What if the results are not useful?

There may be cases in which the results that you have obtained from the eval¬uation are not useful for management purposes. There are several courses of action that can be taken:

• Check the data collected and the methods used to ensure that they make sense. Were the correct methods used and used in the correct way for each indicator? Was the data entered correctly? Were the right people interviewed?
• Review the priority goals and objectives to make sure that they really were the ones that are important to your coastal management and revise them as needed.
• Review the indicators that were selected to ensure that they match the most important goals and objectives and revise them as needed.
• Return to the evaluation plan and revise it according to adjusted and/or new data collection needs. Make sure that the resources are available to collect this data.
• Resume data collection using a revised set of indicators and a revised evaluation plan.

Source: Pomeroy, R., J. Parks, and L. Watson. 2004. How Is Your MPA Doing? Gland, Switzerland and Cambridge, UK: IUCN. P.41.

Section 2

What is an indicator?

An indicator is a unit of information measured over time that documents changes in a specific condition. A good indicator meets the following criteria[7]:

• Measurable: Able to be recorded and analyzed in quantitative or qualitative terms
• Precise: Defined the same way by all people
• Consistent: Not changing over time so that it always measures the same things
• Sensitive: Changing proportionately in response to actual changes in the attribute or item being measured
• Simple: Simple indicators are generally preferred to complex ones

A range of indicators should be used to determine how and why changes happened. Within an indicator, there are often different variables that can be measured. A variable is a particular characteristic of a unit that a researcher is interested in measuring. In a socioeconomic monitoring, parameters are also used to refer to characteristics or features, especially ones that can be measured or quantified. The terms (indicators, variables, and parameters) are often used interchangeably.

Selecting indicators includes the following steps:

• Identify your socioeconomic monitoring purposes, some of these may be found in *Purposes of Socioeconomic Monitoring* in Section 1
• Match relevant indicators to the identified purposes. A *Matrix of Socioeconomic Monitoring Purposes and Indicators* has been prepared for each grouping of socioeconomic indicators (i.e., site and infrastructure, demographic, etc.).
• Review and prioritize the indicators identified by determining the feasibility of measuring the indicators. Assess area, resources (time, personnel and budget) and skill needs for measuring your indicators. If it is not feasible to measure all indicators, prioritize them and complete the list of selected indicators
• Identify how the selected indicators relate to one another. For example, demographic changes of the study site may influence coastal and marine resources activities and types and levels of their impact and associated threats. At the same time, it may affect the successes in coastal management.

[7]For more information, see Margolius, R.A. and Salafsky, N. 1998. Measures of Success: Designing, Managing, and Monitor¬ing Conservation and Development Projects. Washington, D.C.: Island Press,

Indicators in SEM-Pasifika

These guidelines provide 53 indicators for you to consider: 2 site and infrastructure, 13 demographic, 13 coastal and marine activities, 5 threats, 18 management and 2 stakeholder indicators. Most of them include variables to measured different aspects of the indicators. You should select only the indicators that are appropriate for your site, resources, needs and socioeconomic purposes- no one site will measure all 53 indicators at once! The indicators and variables listed in these guidelines are not exhaustive and the research team is encouraged to develop indicators that are not listed in these guidelines but are relevant to the site and program goals.

Selection of which indicators and variables to use in the initial assessment will depend on local conditions, the objectives of the socioeconomic monitoring, and the resources and skills available. An important question to ask in selecting indicators is: "What information do I need to obtain in order to achieve my assessment objective?". It can be difficult to select the best indicators, variables and data collecting methods in an initial assessment. The initial assessment process and results will help define the most appropriate indicators and variables to be measured, and methods to be used in long-term monitoring. New information or condition of the site may create new requirements, so the team should review the assessment and adjust the process as well as indicators to fit the new situations. When the monitoring is repeated regularly, indicators should be adjusted to continue to make sure that the most relevant pieces of information are collected in the most effective way to provide input into better management of the site.

Each of the indicators in SEM-Pasifika is described as follows:

• Name of the indicator and reference of the same indicator if found in the Learning Framework for the Locally-Managed Marine Area Network (LMMA-LF) and/or in Socioeconomic Fisheries Surveys in Pacific Islands (SFSPI): A Manual for the Collection of a Minimum Dataset. The factors in the LMMA-LF are represented by the LMMA fish symbol ( ) and the name of the LF factor. The factors in SFSPI are represented by the Secretariat for the Pacific Community (SPC) logo ( ) , the abbreviation for the questionnaire and the question number in that questionnaire. The questionnaire abbreviations for the SPSPI manual are:

- o   HH = Household demography and consumption survey questionnaire
- o   F = Finfisher survey questionnaire
- o   IF = Invertebrate fisher survey questionnaire
- o   K = Invertebrate fisher survey questionnaire

•What it is--description of the indicator
• How to collect the data--description of how to collect the data, e.g. suggested data collecting methods, sources of secondary data or types of key informants, and examples of questions. The following abbreviation is used for the following data collecting methods:

o FG = Focus Group Interview/Survey
o HH = Household Survey
o KI = Key Informant Interview/Survey
o O = Observation
o S = Secondary data

• How to analyze the data-- explanation of what to do with the data, including comparisons to make with other data to identify possible relationship and what list, tables or narrative text to prepare. In some indicators, additional analysis is provided.
• How the information can be useful to managers-- discussion of how the information can be useful relating back to the socioeconomic monitoring purposes
• Additional data and data collecting methods--In some cases, additional information that may be useful to collect and relevant data collecting methods are suggested.
• Additional Data and Data Collecting Method--In some cases, additional information that may be useful to collect and relevant data collection methods are suggested and/or references to additional indicators that are employed in the LMMA-LF or SFSPI.

Matrix of Socioeconomic Monitoring Purposes and Indicators

The purpose of the matrix is to readily illustrate the suggested data collecting methods and frequency of data collection (years) for each indicator, and to highlight which indicator is important to collect for each purpose of the socioeconomic assessment. An **X** in the box alongside each purpose of the socioeconomic assessment indicates that this indicator would be useful to collect to meet the stated purpose. It is important to note that the matrix is not exhaustive in terms of possible purposes or indicators, and that following the indexed matches of purposes and indicators is not mandatory. The final purposes of the socioeconomic monitoring of a site and appropriate indicators should depend on the local needs and situation, and the decisions of the monitoring team.

SELECTING SEM-PASIFIKA INDICATORS BASED ON GOALS AND OBJECTIVES OF SOCIOECONOMIC A...

All of the SEM-Pasifika indicators are listed down the left-hand side of the page. Across the top of the page are listed som... identified, use this table to help selecting the indicators for your assessment. The indicators and variables listed in these g... guidelines but are relevant to the site and program goals.

INDICATORS	Suggested data collecting methods	Suggested frequency of data collection (years)	Threats	Problems	Solutions & Opportunities	Importance/Value	Cultural Significance	Livelihood	Marketing and Production	Food Security	Attitudes and Perceptions	Coastal and Marine Activities	Governance	Assessing management effectiveness	Stakeholder Participation	Awareness program	Verifying and documenting assumptions of socioeconomic conditions in the area, community dynamics and stakeholder perceptions	Establishing baseline household and site profile, and relationship of people with resources
SITE AND INFRASTRUCTURE																		
SI1: Site	S,KI	5	×			×	×	×				×						×
SI2: Community infrastructure/ technology	S,KI,O	3	×	×	×			×	×			×		×			×	
DEMOGRAPHICS																		
D1. Population size, # of households and household size	S,KI,HH	5	×					×							×		×	×
D2. Number and profile of visitors	S,KI	5	×			×						×		×			×	×
D3. Migration	S,KI	5	×														×	×
D4. Age	S,KI,HH	5	×												×	×	×	×
D5. Marital status	S,KI,HH	5															×	×
D6. Sex+A3	S,KI,HH	5				×											×	×
D7. Education/Literacy	S,KI HH	5			×	×									×	×	×	×
D8. Ethnicity/clan	S,KI HH	5				×									×	×	×	×
D9. Religion	S,KI,HH	5				×							×		×	×	×	×
D10. Language	S,KI,HH	5													×	×	×	×
D11. Occupation	S,KI,HH	3	×		×	×	×	×	×	×		×		×	×	×	×	×
D12. Sources of household income	HH	3	×		×	×		×	×	×		×		×	×		×	×
D13. Material Style of life/ community economic status	O,HH,FG	3				×								×			×	×
COASTAL AND MARINE ACTIVITIES																		
C1. Coastal and marine activities	KI,O	2	×			×		×		×		×		×	×	×	×	×
C2. Coastal and marine goods and services	KI,O	2	×			×		×	×	×		×		×			×	
C3. Means of production of goods and services	KI,O	2	×			×		×	×	×		×		×	×	×	×	

...he goals and objectives for conducting a socioeconomic assessment. Once your goals and objectives have been
...guidelines are not exhaustive and the research team is encouraged to develop indicators that are not listed in these

Indicator	Method	No.
C4. Location of coastal and marine activities	S,KI,O	2
C5. Dependence on coastal and marine resources	KI,HH	2
C6. Types and levels of use by outsiders	KI	2
C7. Monetary value of goods and services	KI	2
C8. Market for coastal and marine goods and services	KI	2
C9. Gender roles and responsibilities	FG,KI	2
C10. Knowledge of coastal and marine resources	HH	2
C11. Attitudes toward coastal and marine resources	HH	2
C11. Non-market and non-use value	HH	2
C12. Alternative and supplementary livelihoods	HH	2
THREATS		
T1. Perceived community problems	HH	2
T2. Perceived resource conditions	HH	2
T3. Perceived threats to coastal and marine resources	HH	2
T4. Perceived coastal management problems	HH	2
T5. Resource conflicts	KI	2
MANAGEMENT		
M1: Management body	KI,S	3
M2: Management types and structure	KI	3
M3: Management budget	KI,S	3
M4: Management personnel	KI	3
M5. Management tools and measures	FG	3
M6. Management plan	KI,S	3
M7. Enabling legislation	KI,S	3
M8. Formal rules and regulations	S,KI	3
M9. Formal tenure and resource rights	S,KI	3
M10: Local enure, customs and traditions	KI,O,HH	3
M11. Awareness of rules and regulations	KI,HH	3
M12. Enforcement	HH	3
M13. Compliance	HH,KI	3
M14. Management successes and failures	KI,HH	3
M15. Management credibility	KI	3
M16. Management effectiveness	HH,KI,FG	3
M17. Management benefts	KI	3
M18. Compatibility of management with local values and beliefs	KI	3
STAKEHOLDERS		
ST1. Stakeholder groups	S,KI	2
ST2. Stakeholder participation	KI,O,HH	2

Site and Infrastructure

SI1:   Site

SI2:   Site infrastructure and Technology... **L4**

Demographics

D1:   Population size, Number of Households, and Household Size............ **H1** **HH1**

D2:   Number and Profile of Visitors......................... **H1**

D3:   Migration... **H2**

D4:   Age... **H1** **HH2**

D5:   Marital Status................. **H1**

D6:   Sex... **H1**

D7:   Education and Literacy... **L5**

D8:   Ethnicity/Clan................................ **H3**

D9:   Religion... **H3**

D10:   Language........... **H3**

D11:   Occupation..................................... **H3**

D12:   Sources of Household Income... **L1** **HH5**

D13:   Material Style of Life/Household Economic Status......... **L1** **HH4**

Coastal and Marine Resources

C1:   Coastal and Marine Activities.. **D1, -D2** **HH3**

C2:   Coastal and Marine Goods and Services......... **D1, -D2** **F8, -F9, -IF2, -IF6**

C3:   Harvesting Methods and means of services.. **D1** **F4, -F6, -F7, -IF4, -IF5**

C4:   Location of Coastal and Marine Activities......... **D1** **F1, -F2, -F3, -IF2, -IF3, IF4, -K1**

C5:   Dependence on Coastal and Marine Goods and Services................................... **L2** **HH3, HH4, HH6, -HH7, -HH8, -HH9, -HH10, -F10, -IF7**

C6:   Types and Levels of Use by Outsiders...... **K3**

C7:   Monetary Value of Goods and Services................... **L2, L3** **K8**

C8:   Market of Coastal and Marine Goods and Services... **L3** **F10, -F11, -F12, -IF8, -K8**

C9:   Gender Roles and Responsibilities in Coastal and Marine Activities

C10:   Knowledge of Coastal and Marine Resources

C11:   Attitude towards coastal and marine resources............................ **L6**

C12:   Non-Market and Non-Use Value.............................. **T3, -G6**

C13:   Alternative and Supplementary Livelihoods...................................... **L2**

Threats

T1:   Perceived Community Problems

T2:   Perceived Resource Condition

T3:   Perceived Threats to Coastal and Marine Resources......... **D1**

T4:   Perceived Coastal Management Problems

T5:   Resource Conflicts................... **G8**

Management and Governance

M1:   Management Body

M2   Management Types and Structures

M3:   Management Budget

M4:   Management Personnel

M5:   Management Tools and Measures

M6:   Management Plan

M7:   Enabling Legislation

M8:   Formal Rules and Regulations.. **G3**

M9:   Formal Tenure and Resource Rights.. **G2**

M10:   Local Tenure, Customs, and Traditions................................ **G3**

M11:   Awareness of Rules and Regulations............ **G3**

M12:   Enforcement......... **G4**

M13:   Compliance... **G4**

M14:   Management Successes and Failures

M15:   Management Credibility.. **G1**

M16:   Perceived Effectiveness of Management Tools........................ **S2**

M17:   Benefits of Management.. **S3**

M18:   Compatibility of Management with Local Values and Beliefs... **G6**

Stakeholders

ST1:   Stakeholder Groups... **P5**

ST2:   Stakeholder Participation in Management......................... **P1, G3**

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Site and Infrastructure (SI) Indicators

SI1: Site

What it is

The *site* refers to the physical location of the coastal and marine resources and the stakeholders where the study is being conducted. "Stakeholders" refers to people who make direct use of the coastal resources as well as people whose actions may affect the coastal resources. The stakeholders may be highly mobile and spread far wider than the managed area. There may be several communities in the defined study area that include all important stakeholders.

For an active management project, the site is the overall area where the project is physically located and includes the habitats and resources, as well as any adjacent communities whose members use or impact its resources. Such site may include a temporal dimension, which pertains to the timescale of the project or project activities.

How to collect the data (S, KI)

Obtain information on the study area from maps of the area and discussions with key informants, such as the village chief or town mayor. Ask them to identify the boundaries, location of important geographical features (natural and man-made), such as watersheds, mangrove forests, coral reefs, high-density residential developments, traditional tenure areas, etc.)

How to analyze the data

Synthesize the information from the key informants and maps onto a single map showing the boundaries of the study area, based on the coastal and marine resources and the location of the stakeholders. Political boundaries should be visible and sites of importance noted. The map will be used throughout the monitoring and presented along with the results.

How the information can be useful to managers

Clearly identifying the study area is important to identifying location of coastal and marine activities and potential threats to the resources. From the perspective of the socioeconomic monitoring program, it is critical to define the community area and the important features within the site in order to be able to make comparisons over time.

Additional data and data collecting methods

It may 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, village center).

SI2: Site Infrastructure and Technology

What it is

Site infrastructure and technology is a general measure of local development and wealth. A simple way to categorize various aspects of infrastructure and technology is: 1) level of community services (e.g. hospital, school, water supply to homes, sewage treatment, banking services); 2) communications infrastructure (e.g. newspapers, telephones, televisions, radios, internet); 3) transportation infrastructure (e.g. hard-top roads, shipping docks, ferry routes); and 4) overall level of modern technology (e.g. electricity, ice plants, motor tools, computers).

How to collect the data (S, KI, O)

Review secondary data from town records, particularly the community development office; interview key informants, such as the village chief, the mayor, or town engineer; and observe and inventory community infrastructure and technology.

Note all infrastructure and technology items reflecting community development within the site. It is important to include the range of infrastructure in the region, especially the most recent items. For example, if televisions are already prevalent in the region, but satellite receivers are beginning to appear, then it may be more appropriate to include satellite receivers in the list. Accurate description of local items is needed to make meaningful comparisons between communities and over time, such as pre- and post-marine protected area establishment.

How to analyze the data

Compile the information from secondary sources, observations, and key informant interviews into a list of infrastructure and technology that exists in the site. Compare these lists over time. A short narrative based on this list may be prepared describing the infrastructure and technology in the site and how they have changed over time.

How the information can be useful to managers

Community infrastructure and technology are useful for determining the level of community development and 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. 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.

Good infrastructure, such as paved road, could place higher demands on marine resources because it is easier to bring the product to market. Banking services, ice plants and roads can be useful for identifying the ability of fishermen to build their businesses. Information on sewage treatment provides insight as to whether raw sewage may be affecting coastal water quality while information on guesthouses/hotels/inns and restaurants is useful for determining the general level of tourism in the area. Finally, the information on the existence of telephones, internet access, radios, televisions, and newspapers is useful to developing education and outreach programs in the community. Awareness campaigns can be tailored to the most prevalent medium.

Additional data and data collecting methods

- L4 : to learn more about using a focus group to rank levels of communications and transportation infrastructure and technology.

Demographic (D) Indicators

D1: Population size, Number of Households, and Household Size

What it is

The *population* size is the total number of people residing in the site at a specific period of time.

The *number of households* is the number of occupied houses in the site, regardless of the number of families residing in the houses.

Household size is the average number of people in a house in the community.

How to collect the data (S, KI, HH)

Data on population and household numbers are usually obtained from secondary data sources including national, regional and local census statistics, which may be available from the census bureau, town council or community library. It is important to cross-check these data with key informants, such as the village chief or town mayor. When the community is small enough, a total census of households can also be conducted to count both households and number of people in each.

The critical questions to address are:

• How many people live in the site? _____
• How many households are in the site? _____
• How many people are there in each household? _____

How to analyze the data

Synthesize the data from the secondary sources, key informants, and households to determine the population size and number of households and their sizes. Calculate average household size by dividing the total population size by the number of households. Compare the results from previous years to calculate changes over time. Compare changes in population and households over time with changes in resource conditions and the levels of impacts to see if and how population changes are correlated to conditions and impacts.

How the information can be useful to managers

Population levels provide an overall understanding of the levels of site pressure on the natural resources. Higher populations generally cause greater pressure. 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 or decreases in population are influencing resource conditions. The understanding helps the managers to better respond with appropriate measures.

From the perspective of the socioeconomic monitoring program, site population and number and size of households are important to determining the sample of households to interview. It is, therefore, important to collect this information from the census information before starting the household interviews.

Additional data and data collecting methods

• : divide the number of people by the area of your site, if known, to obtain a measure of population density per area unit.

D2: Number and Profile of Visitors

What it is

The number of visitors is the total number of people who visit and stay at the site on a temporary basis. These may include people who come to the site for tourism, business or visiting their families and relatives. They may be both national and foreign. These visitors may substantially affect the condition or management of marine resources of the study site. Visitor profile refers to their characteristics.

How to collect the data (S, KI)

Data on visitors, particularly tourists, can be collected from several secondary sources, such as the national tourist board, local tourist bureau, department of immigration, census bureau, tourist businesses (e.g. hotels), and tourist attractions (e.g. marine reserves, national parks). Many countries will have tourist and travel statistics compiled and presented in a report. Key informants who are knowledgeable of tourists, such as hotel owners, travel agency managers or tourism authority staff, should be asked to identify patterns of their activities, demographic profiles, period of visits, and estimated numbers per year of the visitors who participant in each of these activities.

How to analyze the data

Some of the data may already been analyzed and available in annual tourist reports. The secondary source and key informant data may be synthesized into a list or a table to provide a profile of visitors in the site.

How the information can be useful to managers

Visitor profiles are important for the managers to understand threats and opportunities from their activities, such as level of pressure on the marine and coastal resources and supplementary/ alternative livelihood options. The information on their patterns of resource use helps managers to understand their impact on the resources, and respond with appropriate strategies to cope with the pressure of the visitors on the natural resources. The information on changes over time can be useful in determining if these pressures are increasing, decreasing or staying the same.

Additional data and data collecting methods

- **H1** : to learn more about using a focus group to rank the importance of visitor use to coastal management success.

D3: Migration

What it is

Migration is an indicator of people moving into or out of the study site over a specified period of time. Migration rate refers to the percentage change in population size as a result of migration. For example, if there were 1000 people in a village in 2006 and 500 moved into the site by 2007, then the migration rate in that year would be $500/1000 = 50\%$.

How to collect the data (S, KI)

Migration data are usually available from secondary sources, such as national, regional and/or local census statistics, which may be available from the census bureau, town council and/or community library. Interview key informants, such as the village chief or town mayor, to cross-check these data and find out reasons for migration and location of migration.

How to analyze the data

Synthesize the data from the secondary sources and key informants to determine the migration rate. 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 of impacts to see if migration rates are correlated to conditions and impacts.

How the information can be useful to managers

Migration rates are 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 limited understanding and appreciation of their new 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.

Additional data and data collecting methods

- : in a household survey, find out demographic information of the members who in- or out migrated in the past 5 years or the last time you collected data at the site. This information includes sex, age, marital status, primary occupation, years of formal education, ethnicity, religion and preferred language spoken.

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D4: Age H1 HH2

D5: Marital Status ,D6: Sex H1

D8: Ethnicity/clan
D9: Religion
D10: Language H3

D7: Education and Literacy L5

What it is

Age, marital status, sex, education and literacy, ethnicity/clan, religion and language are basic demographic variables. Age is measured by the percent of site members in different age categories. Marital status is measured by the percent of people who are single, married, divorced or widowed. Sex is measured by the percent of the population that is male and female. Education is measured by the average number of years of formal schooling completed by site members over 16 years old. Literacy is measured by the percentage of site members able to read and write. Ethnicity and religion are measured by the percent of site members that have the various ethnic and religious affiliations, respectively. Language is measured by the percent of community members that speak various languages as their primary language.

How to collect the data (S, KI, HH)

Use secondary sources, such as government census departments and town offices. If there are differences between results, it is important to cross-check these data with key informants, such as the village chief or town mayor. Data collection should focus around determining the percent of the people in the site that are in various categories of age, marital status, sex, education, literacy, ethnic affiliation and religious affiliation.

If feasible, a full census survey (interviews of all households, not just a sample) should be conducted to accurately understand the site demographics. Household members are asked to complete the following table. The data received can be used to study the individual households. Add up the data of each category from all the surveyed households and calculate the percentages to see a complete demographic profile of the whole community.

Household members*	Age	Marital Status	Sex	Education/ Literacy	Religion	Ethnicity/ Clan	Language

* identify all living in house by name or role (e.g. father, mother, or grandmother)

How to analyze the data

Synthesize the data from the secondary sources and key informants to determine the percentage of people in each of the categories. Compare the results from previous years to calculate changes over time. A short narrative may be prepared describing the demographic make-up of the site and how it has changed.

How the information can be useful to managers

All of these variables identify the diversity of people living in the community. They are important to developing stakeholder participation in management. Age is useful for predicting future pressures on the resources. A very young population indicates there will be more pressure on the resource in the coming years. Education, literacy and age can be predictors of receptivity to new ideas and important background for outreach programs. As education levels increase, awareness of human impacts on resources may rise and cooperation with the management may grow. As age increases, people may be less willing to train for a new career.

Marital status can be important in areas where women are highly dependent on men for harvesting for consumption or income generation. Depending on the culture, sex can also be a strong indicator of participation since in some cultures women are not actively engaged in politics and management.

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 site. Data on language can be used to develop and disseminate outreach and educational materials.

From the perspective of the socioeconomic monitoring program, the information on distribution of age, marital status, sex, education, ethnicity, religion and language structure will be useful for ensuring the breadth of people in the site are interviewed. For example, if there are 30% Hindu, 40% Catholics and 40% Protestants, 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 census data or key informants before starting the household interviews.

Additional data and data collecting methods

- **H3** : to learn more about using a <u>focus group</u> to collect information on demographic diversity and the importance of diversity to coastal management.

Survey team in Alofau village, American Samoa.
Credit: Arielle Levine

D11: Occupation

H3

What it is

Occupation refers to an activity that provides livelihood, such as income, food or other means of sustenance. Primary occupation is measured by the percentage of people who consider each occupation their primary occupation. Secondary occupation is measured by the percentage of people who consider each occupation their secondary occupation.

How to collect the data (S, KI, HH)

Data on occupation may be available through <u>secondary sources</u>, such as census statistics, fisheries records and community development plans. However, these data may not presented at the level of occupation of use to the manager. For example, "tourism" may be noted as an occupation; yet, the manager may want to know the percent of water sports operators and hotel workers separately. It is therefore, important, to interview <u>key informants</u>, such as the village chief, town mayor and representatives of various sectors (e.g. fisheries or hotel associations). Information on occupation can also be collected by asking all the members in the <u>household</u> to complete the following table:

Example: Primary and secondary occupations of household members

Household Members*	Primary Occupation	Secondary Occupation
Steve (father)	Fishing	
Mary (mother)	Tourist resort worker	
Jason (first son)	Fishing	Taxi boat service
Jeff (second son)	Tour guide	Fishing
John (third son)	Student	

* Identifying all living in house by name or role (e.g. father)

How to analyze the data

Synthesize the data from the secondary sources and key informants to 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 and secondary occupation. Note this information on a table as in the following example:

For the household data analysis, first identify all the occupations noted during the interviews, and list them in a table as shown 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 illustrated in the table.

Conduct the same calculations for the secondary occupations by first calculating the total number of people with each occupation as 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 respondents. Note that the total number of respondents for the secondary occupation is different from the total number of people who noted a primary occupation since some people may not have a secondary 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. 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.

Example: Number and percentage calculation of major occupations in community

Major occupations in community	Primary		Secondary		Total %of community members dependent on this occupation (primary and secondary)
	Number of household members listing as primary occupation	%household members listing as primary occupation	Number listed as secondary occupation	% household members that listed each occupation as secondary	
Fishing	65	(65/200) x 100% = 32.5	50	(50/200) x 100% = 25	(65+50)/200 x 100% = 57.5
Hotel development	50	(50/200) x 100% = 25	20	(20/200) x 100% = 10	(50+20)/200 x 100% = 35
Aquaculture	30	(30/200) x 100% = 15	60	(60/200) x 100% = 30	(30+60)/200 x 100% = 45
Misc. (coral mining, farming)*	5	(5/200) x 100% = 2.5	30	(30/200) x 100% = 15	(5+30)/200 x 100% = 17.5
No occupation	50	(50/200) x 100% = 25	0	(0/160) x 100% = 0	(50+0)/200 x 100% = 25
TOTAL	200	100%	160	80%	180

* record together all occupations that were noted for <5% of the household members

A short narrative may be prepared describing the major occupations, how important they are given the percent and number of people engaged in each of them. Compare the results from previous years to calculate changes over time. Compare these results with changes in resource conditions, types of uses and levels of impacts to see if there is a correlation.

• Cross check the data on primary occupation with other demographic indicators (such as age, education, sex, religions, ethnicities) to find out any relationship as in examples below.

Example:Occupation by Age and Education

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

How the information can be useful to managers

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 of impacts 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. If the number of fishermen is increasing, but resource conditions are good, the methods used 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. A higher percentage of people using the resources indicates greater resource dependency and therefore more important resources. 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.

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.

Additional data and data collecting methods

• **H3** : Focus group discussion may be used as an alternative data collecting method for occupations of people living in the community.

• The team may also want to ask about tertiary occupations, which can be useful for determining the percent of the community involved in the activity, but not dependent on it for their primary or secondary source of

fishing boat, Milne Bay, Papua New Guinea.
Credit: Mike Guilbeaux

D12: Sources of Household Income

What it is

Sources of household income refers to the main sources of income for a household. They could be regular or seasonal. This information is collected in addition to occupational structure to verify the importance of occupations (previous indicator) and identify any sources of income that are not associated with an occupation, such as remittance from abroad.

How to collect the data (HH)

Data on household incomes are obtained by asking each respondent during a <u>household survey</u>:
• 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.

How to analyze the data

Synthesize the data from all the household interviews. 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, as the table shown below. Compare these results with the data on occupation 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.

Example: Percentage of occupations as primary and secondary sources

Occupation	Percent noted as primary source	Percent noted as secondary source
Fishing	60%	30%
Tourism	20%	30%
Agriculture	10%	
Remittance	10%	10%

How the information can be useful to managers

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.

Additional data and data collecting methods

• : work with <u>household</u> respondents to estimate income. If it is difficult to get respondents to provide their exact income, you may wish to consider having them estimate a range of income.

• : to learn about using <u>household survey</u> to rank sources of income.

D13: Material Style of Life/Household Economic Status

What it is

Material style of life is an indicator of the relative economic status of a community and is often used as an indicator of wealth. It can involve assessing personal assets such as house construction materials (e.g., roof, walls), household furnishings and home appliances/electronics (e.g., radio, TV, refrigerator), or productive assets (e.g., boat, engine and gear).

How to collect the data (O, HH, FG)

Data on material style of life data are most easily collected by <u>observation</u> of respondents' houses and <u>household interview</u>. For each house the following information is recorded:

Household material and appliances
• Type of roof: tile _____ tin_____ wood___ thatch _____
• Type of outside structural walls: tile ___ concrete ___ wood___ thatch/bamboo ___
• Windows: glass___ wooden _____ open_____ none _____
• Floors: tile_____ wooden _____ cement _____ thatch/bamboo_____ dirt_____
• Toilets: flush_____ pail flush_____ outdoor_____
• Water: inside tap_____ well_____
• Electricity: from power plant_____ from home generator_____ no_____

Household furnishing
• (write-in item)_____
• (write-in item)_____

Home appliances
• (write-in item)_____
• (write-in item)_____

Productive assets
• (write-in item)_____
• (write-in item)_____

In some cases this simplified list may need to be modified to more accurately reflect gradients of wealth in a locally appropriate context to make meaningful comparisons between communities and over time.

How to analyze the data

Synthesize the data from all the household interviews and observation. Calculate the percent of houses that had each of the categories of house materials, furnishing, appliances and productive assets. Compare that with the ranking of overall community wealth of the focus group.

How the information can be useful to managers

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 indicators should shift should toward the higher level items (e.g. from thatch to wood 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.

Additional data and data collecting methods

- **L1** : household economic status can be identified by other variables such as cash income, spending patterns and savings. These can be asked in a household survey. Collect data on income and expenditure categories from most to least important, then, if possible, estimate monthly cash value of each over a defined period. Asking respondents about income, spending, and savings may be sensitive and difficult for respondents to estimate, so it will be important to weigh the need for this information against the effort put into obtaining it.

- **L1** : to learn more about using focus groups, observation, and secondary sources to collect information on the sources and distribution of material wealth

- **HH4** : to learn more about using household surveys to collect information on household ownership of boats.

village in Milne Bay, Papua New Guinea.
Credit: Mike Guilbeaux

Coastal and Marine Activities (C) Indicators

C1: Coastal and Marine Activities

What it is

Coastal and marine activities are the identification of the uses of coastal and marine resources in the site. These may be activities directly or indirectly using or affecting the coastal and marine resources. Examples include fishing, tourism, aquaculture, marine transportation, agriculture, sand mining, dredging, development, military bases, mangrove clearing and conservation.

How to collect the data (KI, O)

Data on coastal and marine activities are obtained by interviewing a range of local key informants, such as the mayor, businessmen, management staff, fishers, and tour guides to identify the coastal and marine activities in the area. Since some coastal and marine activities may be seasonal or take place at different hours, it is important to use observation at various times to ensure that the range of coastal and marine activities is identified.

How to analyze the data

Synthesize the data from the various key informants and observation into a list of major coastal and marine activities. A short narrative may be prepared describing the major coastal and marine activities in the study area.

How the information can be useful to managers

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 in the area. The information also helps to understand the dependence of the community on certain activities and the potential for conflict. For example, a major port in the area where there are large movements of ship and potential discharges of waste may potentially conflict with the tourism sector.

Additional data and data collecting methods

• Household coastal and marine activities can be additionally identified and ranked according to their importance by interviewing household members in the site.

•   **HH3** : to learn more about using a household survey to collect data on average number of finfishers, and invertebrate fishers per household.

C2: Coastal and Marine Goods and Services

What it is

Coastal and marine goods and services are produced from the coastal and marine activities (C1). These include extractive goods such as fish, mangrove wood, and coral products; and non-extractive services such as tourism or recreational activities.

How to collect the data (KI, O)

Interview a number of key informants to ensure that the range of coastal and marine goods and services are identified. The informants could include those who perform the activities (e.g. long-time fishers, president of the hotel association, tour leaders) as well as other people who are knowledgeable about the activities (e.g. government officials). For each coastal and marine activity, the key informant is asked to identify the coastal and marine goods and services produced.

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 observe, at different times, coastal activities and their physical evidence for further information and double-check with the information obtained from the key informants.

How to analyze the data

Synthesize the data from the various key informants and observations into one table by ranking according to the most important coastal and marine goods and services for each coastal and marine activity (previous indicator). A short narrative based on the above table may be prepared describing the coastal and marine goods and services produced in the site.

Example: Coastal and marine good and services

C1. Coastal and Marine Activities	C2. Coastal and Marine Goods and Services
1. Fishing	Grouper
	Octopus
	Bêche-de-mer
2. Tourism	Hotel development
	Diving
	Recreational fishing

How the information can be useful to managers

Information on coastal and marine goods and services is useful for some communities to understanding what particular types of resources are extracted or used in a non-extractive way so that the appropriate management measures can be developed. At the same time, the information helps others to determine the overall impacts of management on communities in the site. Management measures may cause a shift in the coastal and marine goods and services produced in the area, with positive and negative impacts on resource users. 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 the market orientation may expand.

![book icon] ***Additional data and data collecting methods***

• `SFSPI-F8,F9` : to learn about using a fisheries survey to collect information on average catch size, catch composition and the related fishing techniques.

• `LF-Village-based Marine Resource Catch Survey Form` : to collect harvesting and fishing data, including catch per unit effort.

• `SFSPI-IF6` : to learn more on invertebrate catch.

• `SFSPI-Key Informant Survey Questionnaire Form` : to learn about vernacular names and seasonality of the species of finfish and invertebrates.

Children form Milne Bay, Papua New Guinea.
Credit: Mike Guilbeaux

C3: Harvesting methods and Means of Services

D1

F4, -F6, -F7, -IF4, -IF5
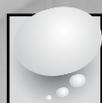
What it is

Harvesting methods and means of services identify the specific method, gear or development being employed for each coastal and marine good and service.

How to collect the data (KI, O)

Interview *key informants* who represent the various stakeholder groups (e.g. president of the fishermen's association, hotel managers). In addition, it is important to cross-check this information through observation – by walking around the community.

The key question to address is what harvesting methods and means of services are available for each good and service. For example, for fish goods (e.g. grouper, bêche-de-mer), the responses may include traps, nets, line, spearfishing, diving or gleaning. For hotel services under 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. The research team will need to develop categories of potential responses according to their site. For example, if there are only large hotels, then the team may decide to categorize responses for hotels according to whether or not they are all-inclusive.

How to analyze the data

Synthesize the data from the key informant interviews and observations to compile a list of harvesting methods and means of services in the site. Based on the table produced to record data on the previous indicators of coastal and marine activities and goods and services, include a new column to the right with the data of the respective harvesting methods and means of services (see table below).

Example: Harvesting methods of marine goods and means of services

C1. Coastal and Marine Activities	C2. Goods and Services	C3. Harvesting Methods and Means of Services
1. Fishing	Grouper	**Trap, Line, Cyanide**
	Octopus	**Trawl, Line**
	Bêche-de-mer	**Diving**
2. Tourism	Hotel development	**Guesthouses , Motels, Hotels**
	Recreational fishing	**25-person boats**

A narrative may be prepared describing the methods of production of each coastal and marine good and service in the community. Compare the results over time to determine shifts. Compare changes in harvesting methods and means of services with changes in resource conditions and the levels and types of impacts to see if they are correlated to conditions and impacts.

How the information can be useful to managers

Information on the harvesting methods and means of services is particularly useful for identifying threats to the coastal and marine resources, such as dynamite fishing, or mangrove clearing. By monitoring this information over time, the manager can also see how management has impacted these means of services or methods of harvesting. For example, if the coastal management program initiated a mangrove replanting campaign, yet mangrove clearing continues to be listed as means of production, then this indicates that the campaign is not effective in preventing continued mangrove clearing. This information also helps to determine the effectiveness of coastal management programs.

Understanding what means of production are taking place in the site 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

Additional data and data collecting methods

- **IF4, IF5** : to learn about collecting data on patterns of invertebrate harvesting.

Taro farm, North Shore, Oahu, Hawaii.
Credit: Courtney Carothers

Taro collected from North shore farm, Oahu, Hawaii.
Credit: Courtney Carothers

C4: Location of Coastal and Marine Activities

What it is

Location of coastal and marine activities refers to places where these activities take place.

How to collect the data (S, KI, O)

Collect information on the location of each activity according to the good or service and noted. First collect data from secondary sources, including village and town offices, which may have maps noting the location of various activities and sizes of the area (e.g. a zoning map that notes farming and development areas, a fisheries study that documents fishing areas). Next, conduct key informant interviews with representatives of the various activities (e.g. senior fishers). The coastal and marine activities can be identified by key informants on the study area map. For example, hotel areas can be identified in one color and diving areas in another color. Finally use observations to identify and verify the location and size of the area used. How specific the locations need to be will depend on your objectives; for example, if you are trying to determine the optimal location for an MPA, location information should be at a scale that can be put on a map (as opposed to "beach areas" or "reefs").

How to analyze the data

Synthesize the data from the secondary sources, key informants and observation to determine the locations of the production of goods and services, and record on a table and note them on the base map. The data can be placed on the map in a general or in a very specific manner. For example, in a general manner, fishing areas can be identified in one color and tourism areas in another color; in a specific map, areas of different types of fishing can be shown by different colors. 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 narrative may be prepared describing the activities, their location and how they have changed over time.

Example: Location of production of coastal and marine good and services

C1. Coastal and Marine Activities	C2. Goods and Services	C3. Ways that Goods and Services are Produced	C4. Location of Activities
1. Fishing	Grouper	Trap Line	**Reefs** **Bay**
	Bêche-de-mer	Diving	**Reefs**
2. Tourism	Hotel development	Guesthouses Motels (>50 rooms) Hotels (<50 rooms)	**Main village** **Road side of town** **Beach front property**
	Recreational fishing	25-person boats	**Open water**

How the information can be useful to managers

Information on location 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 types of uses provides an understanding of what activities are taking place but not how much.

By monitoring this information over time, the manager can also see what 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.

Additional data and data collecting methods

- **F3** : to learn more about using fisheries survey to collect information on when, how often and during which months of the year fishers go out to particular habitats.

- **F5** : to learn more about time of fishing during the day.

- **IF1, IF3, IF4** : to learn more about location of invertebrate harvesting.

Fish market in Pago Pago.
Credit: Arielle Levine

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C5: Dependence on Coastal and Marine Goods and Services

L2   HH3, HH4, HH6, -HH7, -HH8, -HH9, -HH10, -F10, -IF7

What it is

Dependence on coastal and marine goods and services is a measure of how dependent households in the site are on the local resources for their own food security and income needs.

How to collect the data (KI, HH)

The key informant is asked to identify the major coastal and marine activities conducted by households in the area (i.e., fisheries, tourism, aquaculture, etc.). Then, he is asked to give his best estimate of percent proportion of different types of dependency (e.g. own consumption or income generation) on each good and service produced by households in the area.

For detailed information, use a household survey to record major coastal and marine activities that each household are involved. For each activity, list the related goods and services and percent proportion of their dependency for their livelihood, both in terms of their own consumption and income generation

Example: Percentage proportion of dependency on coastal and marine resources

C1. Coastal and Marine Activities	C2. Good and Services	C5. Proportion of Dependency	
		% Own Consumption	**% Sale (Income Generation)**
Fisheries	Grouper	40%	60%
	Lobster	10%	90%
Tourism	Bungalow	0%	100%
	Diving	0%	100%
Aquaculture	Shrimp	0%	100%

How to analyze the data

Add up the data from all the key informants or surveyed households and calculate the average percentage for each resource to see the level of dependency on each.

How the information can be useful to managers

Information on how households are dependent on each coastal and marine good and service provides insight into the importance of different resources in terms of food security and income source. This information helps identify threats and opportunities related to a particular resource and can be useful for understanding how management measures may impact upon the food security and income. For example, if households primarily consume their catch, then a restriction on fishing can be expected to have a strong effect on food security. When the information of the dependence on coastal and marine resources is cross-examined with the information on resource condition, it can also be used to identify threats and possible negative impacts of particular resources on which the community heavily depends on. When it is cross-examined with the information on livelihood alternatives, it can help the managers to understand limitations and possibilities of a diversified economic structure of the site and help predicting security of food and income in the future.

Additional data and data collecting methods

- **L2** : to learn more about using a household survey to collect information on harvest frequency and quantity.

- **HH3, -HH4** : to learn more about using a household survey to collect information on dependence on marine resources through average number of fishers (by sex) and boats per household, see;

- **HH6, -HH7, -HH8, -HH9, -HH10** : to learn more about using a household survey to collect information on dependence on marine resources through consumption patterns and sources.

- **IF7** : to collect information on dependence on different invertebrates.

Vaitogi Turtle and Shark tourist site, American Samoa.
Credit: Stewart Allen

C6: Types and Levels of Use by Outsiders

K3

What it is

Outsiders refer to people who do not live in the study area, such as from a neighboring village or another country. *Types of use by outsiders* refer to the types of uses of the coastal and marine resources by outsiders, such as fishing, mining, tourism, etc. Levels of use by outsiders are measurements of the perceptions of the number of outsiders using the coastal resources relative to the number of local users from the site.

How to collect the data (KI)

Interview key informants (e.g. village chiefs, stakeholder representatives). Ask them about the types of use and 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 site, but high could mean a great deal of use by outsiders, such as most of the fishing in the site is conducted by outsiders; medium could mean moderate use by outsiders, such as a few international tourists, and low could mean minor outsider use, such as one hotel out of 20 in the site is owned by someone who lives overseas.

How to analyze the data

Synthesize the data from the key informants to determine the type and level of use by outsiders for each activity and enter into a table, as in the example below. Compare these levels over time. A short narrative may be prepared summarizing the extent of use by outsiders and how that has changed over time.

Example: Types and level of use by outsiders

C1. Coastal and Marine Activities	C2. Coastal and Marine Goods and Services	C6. Types of Use by Outsiders	C6. Level of Use by Outsiders
1. Fishing	Grouper	**Handline**	**Low**
	Lobster	**Trap**	**Low**
2. Tourism	Hotel development	**Hotels (<50 rooms)**	**High**
	Diving Handline	**SCUBA**	**Medium**

How the information can be useful to managers

Information on levels and types of use by outsiders is useful for understanding use of the resources and in making management decisions. By understanding the relative numbers of outsiders, 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), they may decide to work through customs and immigration offices. In other cases it may be a matter of expanding outreach programs to neighboring communities.

Outside use is also important to understand coastal management problems. For example, increasing numbers of outsiders using the same resources as the community members can often cause conflict and increase pressure on the local resources.

This information can also be useful for determining the value and importance of the resources. If people outside the site 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.

Additional data and data collecting methods

• K3 : for high perceived level of use, ask key informants to identify who are the outside users and their demographic profiles.

C7: Monetary Value of goods and services

What it is

The *monetary value of goods and services* is the money or currency value for each coastal and marine product and service in the market.

How to collect the data (KI)

Interview local key informants such as fishers, buyers, hotel managers, and dive operators. Ask them to identify coastal and marine resources they use for sale and to put a value (high, medium, low) on each product or service. For example, a value of high may be placed on bêche-de-mer if it has high demand and high monetary value in both the local and international markets. The value of goods and services (high, medium, low) will need to be specifically defined for each site.

How to analyze the data

Synthesize the data from key informants into one table and then prepare a short narrative.

Example: Level of monetary value of coastal and marine goods and services

C1. Coastal and Marine Activities	C2. Goods and Services	C7. Monetary Value
1. Fishing	Grouper	High
	Octopus	Medium
	Bêche-de-mer	High
2. Tourism	Hotel development	Low
	Recreational fishing	Medium

How the information can be useful to managers

The monetary value of goods and services does not reflect the economic value of the resources but illustrates their importance and helps determine the overall impacts of management on communities in the site, including livelihood, marketing, production and food security.

The monetary 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 site. In contrast, if the coral reefs have been bombed and have a low value for diving, the manager may have a more difficult time justifying the importance of the resource for diving.

The monetary 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.

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.

Additional data and data collecting methods

- **L2** : in a <u>household survey</u>, respondents may be asked to estimate sale value per unit of marine resources harvested for commercial use.

- **L3** **K8** : for each major product, ask <u>key informants</u> to describe the average price for the product in the market. Record any stories or anecdotes that illustrate their thoughts.

Purse seine net in Pago Pago harbor, American Samoa.
Credit: Arielle Levine

SEM-Pasifika training in Galahi island,
Milne Bay, Papua New Guinea.
Credit: Mike Guilbeaux.

C8: Market of Coastal and Marine Goods and Services

L3

F10, -F11, -F12, -IF8, -K8

What it is

Market of goods and services is the identification of the market in which each coastal and marine product produced from the site is primarily sold, such as local, regional, national and/or international markets.

How to collect the data (KI)

Ask key informants to first list major goods and services (from previous indicator C2) and then note the primary market in which it is sold (international, national, or local).

How to analyze the data

Synthesize the data from all the interviews/surveys into a table. List the goods and services and calculate the number and percentage of respondents who noted each good or service sold in international, national, regional or local markets. The percentages reflect the rank in order of importance of each market to each coastal and marine good and service. A short narrative may be prepared describing the different markets for each of the goods or services. A flowchart may be prepared showing the flow of each good or service from source to market.

Example: Percentages of different markets for good and services

C2. Coastal and marine goods & services	C8. Markets		
	% international	% national	% local
Grouper	0	70	30
Octopus	0	15	85
Bêche-de-mer	35	20	45
Hotel development	60	35	5
Diving	50	40	10
Recreational fishing	10	40	50

How the information can be useful to managers

Coastal and marine goods and services market orientation is useful for determining the overall impacts of management on communities in the site, particularly livelihood, marketing, production and food security. For example, since the livelihood and income of people in the study area is linked to markets, it is important to determine where goods and services produced in the area are sold. This indicator allows for an analysis of changes over time in the market channels for major coastal and marine goods and services. It shows existing marketing structure and the relationship of local producers and traders with various markets, such as linkages with international markets, which may affect harvesting practices. In another example, investments in community infrastructure, such as roads to major cities, can result in greater access to national, regional and international markets. When a high percentage of a community's fishery is sold to international markets, this may reduce the availability of the local source of protein.

Market orientation can also be useful as an indication of how much pressure may be put on the resource. For example, fishers may put high fishing effort on a high valued fish for international markets. It can also give an indication, over time, of shifts in markets for marine and coastal goods and services. 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, which may be marketed in regional or national markets.
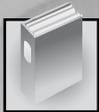
Additional data and data collecting methods

• To collect Information on selling and buying of marine finfish and invertebrates, and relationship between demand and supply, please refer to SFSPI manual, A *Survey Form for Middlemen, Agents, Shop*. This information is useful to managers as it provides detailed information on the marketing of fish at the site, including products, demands, prices, consumers, and processes. It enables an estimate of the impact of commercial fisheries activities. This can be used as baseline information to understand the fishing activity in the area and to assess positive and negative impacts of management measures.

- **F10** : to learn about using <u>fisheries survey</u> to collect information on fish sale within or outside the community.

- **F11** : to learn about selling points.

- **F12** : to learn about preservation methods of finfish.

- **IF8** : to learn about preservation methods of invertebrates.

- **L3** : to learn more about using key informants, focus groups, and household surveys to collect information on market accessibility, competition and demand for marine products, and perishability of marine products.

C9: Gender Roles and Responsibilities in Coastal and Marine Activities

What it is

Gender roles and responsibilities in coastal and marine activities is an indicator of the division of coastal and marine activities and responsibilities according to sex in the study site.

How to collect the data (FG, KI)

Information is typically collected through <u>focus group discussion</u> and/or <u>key informants</u> (gender focused). Coastal and marine activities (both extractive and non-extractive) that are done at the individual, household and community levels, for subsistence, cultural/traditional festivals and ceremonies and income generating activities are listed. For each activity mentioned, focus groups and key informants are asked who (sex, age group) participates in or makes decisions influencing the various activities. They are also asked to discuss important activities throughout a calendar year (one for men, and one for women) to determine how coastal and marine activities of each group vary between seasons. All gender-specific activities should be further discussed, particularly the reason why.

How to analyze the data

Summarize the information from the key informants and/or focus groups into a table. List activities along with sex and age group of participants and decision makers. A list of reasons as to why activities are gender-specific should be developed as shown in the example below.

C1. Marine and coastal Activities	C9. Gender roles and responsibilities		
	Sex and age group (*specify children, adult, or older people*)		Explanation (*why are activities carried out by ONLY males or females?*)
<u>Extractive</u>	**Women**	**Men**	
Fisheries			
hook and line		**adult**	**Traditional**
trap		**adult**	**physical reason (strength & diving)**
collection at low tide	**Children and older women**	**children and older men**	**easy to access and harvest**
<u>Non-extractive</u>	**Women**	**Men**	
Tourism			
hotel	**adult**		**housekeeping done by women**
taxi		**adult**	**physical and cultural reason**
Fish trading	**adult**		**cultural and economic**

How the information can be useful to managers

Understanding the division of activities and responsibilities according to sex groups will help managers better understand resource users, particularly their traditional and local roles and related social changes. The information helps managers to address the specific needs of men and women and how management strategies or proposed rules affect the sex groups differently. For example, restricting beach seining may affect not only fishers who are men but also women fish traders who specialize in selling undersize fish. Managers can also better target relevant groups to develop communications programs in order to influence attitudes or behavior. For example, if elder men are responsible for making decisions on where women go and collect shellfish, then managers have to approach both elder men and women.

Additional data and data collecting methods

• Field observation of and participation in coastal and marine activities can help provide deeper insight into the underlying reasons behind different gender roles and activities.

C10: Knowledge of coastal and marine resources

L6

What it is

Environmental knowledge refers to local understanding of the facts and issues related to local marine and coastal resources and the environment. The knowledge is not based on scientific research but comes from stakeholder observations, experiences, beliefs and perceptions of cause and effect. It is also the degree to which local stakeholders pass on to the next generation local knowledge and beliefs about the natural environment and the effects of human use.

How to collect the data (HH, KI)

Data on local knowledge are obtained by asking each respondent during a <u>household survey</u> a series of true/false statements related to local knowledge of the marine and coastal environment. These statements may come from local key informants who have knowledge, skills and expeterise in related areas. In-depth-local knowledge on specific topics should be collected through <u>key informant interviews</u>. Some examples of general knowledge statements that could be tailored to your site include:

Examples of coastal and marine resource knowledge statements	True	False
Coral is a living animal		
Seagrass beds provide habitat for baby fish		
Fishing with poison does not affect the coral reef		
Mangrove trees protect our community from storms and big waves		
Coral bleaching is a sign of healthy reefs		

Include a mix of true and false statements.

How to analyze the data

Categorize each statement according to if it is true or false. Synthesize the data from all the household interviews. For each question, calculate the percent of respondents who answered the question correctly (e.g., answered "true" for true statements and answered "false" for false statements) and note the percent in a table. The higher the percentage of correct answers, the higher the knowledge of coastal and marine resources.

How the information can be useful to managers

Management cooperation, compliance and success may be influenced by the level of knowledge among the stakeholders. The understanding can help the managers to design their intervention accordingly. High level of environmental knowledge can lead to collaboration of stakeholders which, in turn, allows for management success as people are more likely to understand how the natural ecosystem works and how to protect and manage the environment. On the contrary, low level of environmental knowledge may lead managers to develop educational materials and outreach activities to create environmental awareness or correct misconception.

Additional data and data collecting methods

• Through a <u>household survey</u>, respondents should be asked a series of questions about their knowledge of the marine environment and folk taxonomy. Key questions include: What are the main types of local resources? Where are the resources located? What is the extent of their mobility? What is the population size of the each resource? What kinds of interactions are there among resources?

• L6 : to learn more about interviewing <u>key informants</u> using the brief easy attitudes and numbers survey (BEANS) to collect information on general levels of environmental knowledge among

C11: Attitudes toward coastal and marine resources

L6

What it is

Environmental attitudes describe local stakeholders' attitudes towards the marine and coastal environment, their social customs or beliefs regarding resource management, and their perceptions as to whether they believe their actions either positively or negatively affect the environment. It is a measure of how people make choices and undertake actions related to the marine environment and management based on their attitudes, beliefs and perceptions.

How to collect the data (HH)

Data on attitudes are obtained by asking each respondent during a <u>household survey</u> to rank their level of agreement on a series of statements related to attitudes toward the marine and coastal environment. 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. The statements should be tailored to each of the locally relevant areas. See examples below.

The statements may be written such that agreement of the importance with some indicates a positive attitude, while that with others indicates the opposite. This is done to control for responses where the respondent simply "agree" to every statement. Statements are randomly arranged with respect to this type of polarity.

How to analyze the data

Synthesize the data from all the household interviews. For each question, calculate the percent of respondents for each level of agreement and note the percent in a table. To determine whether or not respondents have positive attitudes, consider to what extent they agreed with the statements. Statements a, c, d, & e are positively stated. If respondents agreed with these statements, they have positive attitudes towards protection of the coastal and marine resources. Statements b & f are negatively stated. If respondents agreed with these statements, they have negative attitudes.

Examples of attitude statements	Percent responses				
	1 = strongly disagree	2 = disagree	3 = neither	4 = agree	5 = strongly agree
a) It is an important part of our culture to have a healthy marine environment					
b) It doesn't matter what happens to our marine environment					
c) I enjoy going out on a boat and watching fish swim around the coral reef					
d) My family's health and well-being is linked to the health of our marine habitats					
e) It is important that all community members to look after the reefs					
f) I would not vote for a tambu area near my village					

The levels of agreement (i.e. strongly agree and agree) and levels of disagreement (i.e. strongly disagree and disagree) may be combined to simplify the interpretation. For example, if 23% of respondents rate statement e as 'strongly agree' and 28% 'agree', then these could be combined to say, "over 50% of respondents agreed that is important that all community members look after the reefs". This may be easier to understand than listing the percentages for each category.

Compare results over time to see if people's perceptions have changed.

Additional data and data collecting methods

- **L6** : to learn more about interviewing key informants using the brief easy attitudes and numbers survey (BEANS) to collect information on general environmental attitudes among stakeholders.

C12: Non-Market and Non-Use Value

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. marine habitat) and services (e.g. good diving or coastal protection) that are not traded in any market but are still considered valuable by a stakeholder group. 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 the data (HH)

The concepts of non-market and non-use values are largely abstract and theoretical. Ideally, an economist should conduct the assessment of these indicators since the economic methods used are complex. Recognizing that in most areas economists are not readily available, we suggest an approach of measuring people's perceptions based on a scale. Each respondent in a household survey is asked to indicate the degree to which they agree or disagree with a series of statements (agree strongly = 5, agree = 4, don't agree or disagree = 3, disagree = 2, or disagree strongly = 1)

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.

The statements may be written such that agreement of the importance with some indicates an accurate or positive belief, while that with others indicates the opposite. This was done to control for responses where the respondent rate everything as 'somewhat' important. Statements are randomly arranged with respect to this type of polarity.

How to analyze the data

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

Examples of Non-Market and Non-Use Value Statements	Percent responses				
	1 = strongly disagree	2 = disagree	3 = neither	4 = agree	5 = strongly agree
a) The reefs are important for protecting land from storm waves (non- market value).					
b) The mangroves are important for protecting the coast from erosion (non- market value).					
c) Coral is not important for maintaining healthy fish populations (non- market value).					
d) Unless mangroves are protected we will not have any fish to catch (non- market value).					
e) Coral reefs are only important if you fish or dive (existence non-use value).					
f) I want future generations to enjoy the mangroves and coral reefs (bequest non-use value).					
g) Fishing should be restricted in certain areas even if nobody ever fishes in those areas just to allow the fish and coral to grow (existence value).					
h) We should restrict development in some coastal areas so that future generations will be able to have natural environments (bequest value).					
i) Seagrass beds have no value to people (existence value).					

The levels of agreement or disagreement may be combined to simplify the interpretation. For example, if 15% of respondents rate statement a as most important and 25% more important, then these could be combined to say, "40% of respondents agreed that reefs are important for protecting land from storm waves". This may be easier to understand than listing the percentages for each category.

It may also be useful to prepare a brief narrative explaining 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

Often valuations focus exclusively on values related to the market, such as employment levels, incomes, and net profits. By also understanding the values of resources in non-monetary terms, 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.

Additional data and data collecting methods

• Open-ended questions can be posed in focus group discussion to gain a fuller understanding of the importance of the resources and their uses. Examples of these questions are: If coral reefs disappeared, how would it matter to you? If the fisheries disappeared, how would it matter to you? If the entire beach front were to be developed, how would it matter to you?

• [T3] : to learn more about using focus groups to list and rank the importance of benefits and services provided by the marine ecosystem.

• [G6] : to learn more about using key informants to rank the degree that local stakeholders value nature for non-material reasons.

C13: Alternative and Supplementary Livelihoods

What it is

Livelihoods are the means, activities and entitlements by which people make a living. *Alternative livelihoods* are activities household members could engage in to support their livelihood if they are no longer able to pursue their current livelihoods. *Supplementary livelihoods* consist of activities that might add to existing means of making a living. Some of the opportunities may help them reduce their dependence on coastal and marine resources. They are derived from people's capacity to access options and resources and use them to make a living. These may include aquaculture, farming, food processing, marketing, fishery supply, small business, tourism services, etc.

How to collect the data (HH)

Conduct a household survey in which respondents are asked to identify possible alternative and supplementary livelihoods for themselves and the household and (optionally) the reason why they selected each alternative livelihood. Record any stories or anecdotes that illustrate why people are or are not engaging in the livelihood activities.

How to analyze the data

Make a list of the identified supplementary and alternative livelihoods and order them from the most to the least mentioned.

How the information can be useful to managers

An integral part of coastal management is the provision of access to livelihood opportunities that help reduce pressure on coastal resources by utilizing previously untapped resources. An understanding of available alternative livelihood can assist managers is designing new management strategies.

Threat (T) Indicators

T1: Perceived Community Problems

What it is

Perceived community problems assess what people think are the problems facing the community.

How to collect the data (HH)

Ask each respondent in a <u>household</u> survey, what do you see as the two major problems facing the community?

1. _____
2. _____

Ask respondents to explain the identified problems.

How to analyze the data

Synthesize the data from all the household interviews. List the major problems facing the community. Calculate the percent of respondents who noted each problem as in the list below. Report any significant explanation of the problems

Example: Perceived community problems:

Major problems facing community	Percent noted this problem
Out migration of younger generation	40%
No electricity	25%
No formal education beyond primary level	25%
Remote location	20%

Compare the results over time to see how concerns change in the community. A short narrative may be prepared.

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.

Additional data and data collecting methods

• Ask each respondent in a <u>household survey</u>, "What do you see as solutions to these perceived community problems?"

1. _____
2. _____

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T2: Perceived Resource Condition

What it is

Perceived resource conditions measure what people think about the condition of the coastal resources in the site area.

How to collect the data (HH)

Data on perceptions of resource conditions are obtained by asking each respondent in a <u>household</u> survey to describe current conditions of coastal and marine resources in the site, using the 5-point scale of very good (5) to very bad (1). For example, ask:

How would you describe current conditions of each of the following resources: Mangroves _____ ; Coral reefs _____ ; Fresh water (rivers) _____ ; Upland forests _____ ;

How to analyze the data

Synthesize the data from all the household interviews. For each resource calculate the percent responses for each level of the scale and note in a table as shown below

Example: Percent respondents describing perceived resource conditions

Resources*	Percent respondents that described resource conditions as:				
	5=Very good	4=Good	3=Neither	2=Bad	1=Very bad
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%

* edit list of resources for local site

You may combine some of the categories 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 50% of respondents noted the mangroves were in bad or very bad condition." You may prepare short narrative 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

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

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 healthy, yet scientific research shows otherwise, then an awareness program may be needed to increase understanding of resource conditions. By monitoring this information over time, the manager can see what impact management has had on people's attitudes and perceptions.

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.

T3: Perceived Threats to Coastal and Marine Resources

D1 , -D2, -D3, -D4, -D5, D6

What it is

Perceived threats to coastal and marine resources and their impact levels are a measure of perceptions of the general type and level of impact of threats on coastal and marine resources. This is not a scientific assessment of types and levels of impacts, but rather a documentation of what people think.

How to collect the data (HH)

Data can be collected as part of the household interviews where people are asked what they think are the top five major threats to coastal and marine resources and the level of impact of each threat, using a scale of high/medium/low/none. Comparison between results allows for a check on the accuracy of the data. 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.

While the impact level will need to be adapted for each site, *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 primary types of impacts are then briefly noted. For example, if hotel development is causing pollution, then "pollution" would be noted.

How to analyze the data

Synthesize the data determining the types of threats and their general impact. For additional analysis, compare results with those from previous years to identify shifts in types and levels of impacts. Compare changes with resource conditions to determine if there is a correlation.

How the information can be useful to managers

This information is useful for identifying threats to the coastal resources. Community members, particularly direct users, often know the most 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.

By monitoring this information over time, the manager can also see how management impacts 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 in upland agricultural areas, yet this continues to be identified as a major 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.

Additional data and data collecting methods

• The types of impacts can be described in greater detail to identify direct and indirect impacts, such as sewage outflow is a direct impact on water quality and up-stream agriculture causes sedimentation during the rainy season.

•   D1, -D2, -D3, -D4, -D5, D6   : to learn more about using focus groups, key informants, household surveys, observation, or secondary sources to collect information on the specific direct threats of destructive impacts on species and ecosystems from marine harvesting for local use, destructive impacts on species and ecosystems from marine harvesting for commercial use, habitat loss/degradation, marine pollution, invasive species, or climate change respectively.

•   T4   : To learn how to evaluate reduction of threat using Threat Reduction Index, see.

Section2 | Indicators

T4: Perceived Coastal Management Problems

What it is

Perceived coastal management problems assess what people think are the problems facing coastal management.

How to collect the data (HH)

Ask each respondent in a <u>household</u> survey: what do you see as the two major problems in the way that coastal and marine resources are being looked after?

1._____;
2. _____

Ask respondents to explain the identified problems.

How to analyze the data

Synthesize the data from all the household interviews. List the major problems facing the community. Group the problems into categories as appropriate. Calculate the percent of respondents who noted each problem as in the list below. Report any significant explanation of the problems

Example: Perceived coastal management problems:

Major problems facing coastal management	Percent noted this problem
Low level of enforcement	50%
Water pollution in the bay area	45%
Conflict between fishermen	12%
Conflict between fishermen in village X and T	4%

Group the problems into categories as appropriate, particularly specific problems. For example, if 4% of respondents noted conflicts between the fishermen in village X and Y and 12% noted conflicts between fishermen in general, you may combine these for simplicity and say that 16% of the household respondents reported conflicts among fishermen. Compare results over time to see how concerns change in the community. You may prepare short narrative.

How the information can be useful to managers

This information is particularly useful for understanding what people think needs to be addressed by the coastal managers, which may help managers identify management priorities.

Additional data and data collecting methods

• Ask each respondent in a <u>household</u> survey, "What do you see as solutions to these perceived coastal management problems?"

1._____
2. _____

T5: Resource Conflicts

G8

What it is

Resource conflicts are a clash of interest between users of the marine resources within a site. This conflict can be internal (among local stakeholders) or external (with outside parties).

How to collect the data (KI)

LF-G8 First, identify whether a conflict exists. Ask <u>key informants</u> to describe marine resource conflicts, including issues and parties involved. In particular, determine whether the conflict is between internal stakeholders or with external resource users (or both). Ask the informants to rank the degree of marine resource conflict within and outside the community using the following scales. Record any stories or anecdotes that illustrate their thoughts.

Degree of marine resource conflict within the community
1 = very extensive, very frequent conflict
2 = extensive and frequent conflict
3 = moderate, moderately frequent conflict
4 = limited, occasional conflict
5 = no conflict

Use same scale as above for degree of marine resource conflict with outsiders

Ask key informants whether the conflicts have been resolved, who resolves the conflict (choose from the list below), how the conflicts get resolved and the mechanism(s) used. Identify the level of local involvement in the conflict resolution mechanism used.

Who resolves conflict?
1 = single individual with imposed authority
2 = king, chief, or other hereditary individual(s)
3 = limited participation, strong hereditary individual(s)
4 = partial participation, but some hereditary individual(s)
5 = complete, consensus-driven/democratic participation

List the institutions involved in conflict resolution and whether or not the government is involved (yes/no) in conflict resolution.

How to analyze the data

The conflict assessment will provide information on each conflict associated with the site area. Write this information in a brief narrative report. Prepare a matrix of conflict showing each conflict, issue, stakeholders involved, intensity, current status (ongoing/managed/resolved), and how managed/resolved.

How the information can be useful to managers

The information helps us to understand whether there are any conflicts of marine resource use, their degree, and who are involved in the conflict. Extensive conflicts of marine resource use challenge managers who should try to respond to conflicts in such as way that human well being and the natural environment can be protected.

Management (M) Indicators

M1: Management Body

What it is

A *management body* is an organized body of people who govern how coastal resource management in the area is undertaken and ensures that there is a 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, tourism, marine transportation, and residential development.

How to collect the data (S,KI)

Read the management plans for the various activities. Interview key informants who are knowledgeable about coastal resource management or coastal activities (e.g. government agency representatives, elected officials, NGO representatives). 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. Record whether or not a management body exists (yes/no) and the name of the management body.

How to analyze the data

Synthesize the data from the management plans and key informants. List all management bodies with decision making and management authority and responsibility.

Example: Management body of coastal activities in site X

Coastal Activities (list according to activities identified)	Management body(s) (Yes/No) & Name
Fisheries	Yes, Federation of Small Scale Fishers Provincial Fishery of X National Fishery and Wildlife
Tourism	Yes, Tourism Authority of X Provincial Government
Aquaculture	No

How the information can be useful to managers

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 authorities to consult. Also interesting can be overlaps or conflicts in the roles of management bodies.

Additional data and data collecting methods

• Ask key informants to explain the function and source of power of each management body in detailed.

M2: Management Types and Structures

What it is

Management types and structures for coastal resources include community-based, co-management, and centralized. *Community-based resource management* (CBRM) is where people themselves are given the opportunity and/or responsibility to manage their own resources; define their needs, goals, and aspirations; and to make decisions affecting their well-being. *Cooperative management* or co-management can be defined as a partnership arrangement in which the community of local resource users (fishers) and government share the responsibility and authority for the management of the coastal resources. *Centralized management* is government management of the coastal resources through a central administrative body such as a fisheries department or natural resources department. The management structure is the administrative structure responsible for management; who/what organizations/agencies have management responsibility; and how they are related to one another.

How to collect the data (KI)

Interview key informants. Ask them to describe the type of management at the site. Ask them to identify and describe the institutions and organizations they believe have decision-making and management authority and responsibility for the site. Once identified, the existence of each institution and organization should be confirmed by identifying a person responsible for its operation. The person should be interviewed to collect any documents explaining the function and powers of the institution and organization.

How to analyze the data

In a narrative, describe the type of management and develop an organization chart listing all institutions and organizations with decision-making and management authority and responsibility, and showing their relationship with one another.

How the information can be useful to managers

When stakeholders are aware of and have an understanding of the management type and structure being used, there is a greater chance for successful management of the resources. This information can also be used to develop education programs to better inform stakeholders about management. The management structure can also help pointing out whether any crucial components or links are missing and need to be developed.

Additional data and data collecting methods

- **P4** : for information on using key informants to collect the following information on management history:
    - the length of time of active management in site
    - who initiated the management methods and their rationales
    - degree of local origin of management ideas and methods
    - local experience with conservation/sustainable development projects
    - the level and types of expectations associated with the management

M3: Management Budget

What it is

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

How to collect the data (KI, S)

Key informants, such as the manager or director of each management body in the site, are asked for the overall budget and allocation for the management body, annual work plans and activities. When possible, financial reports may be reviewed and recorded.

How to analyze the data

Synthesize the data from the various key informants and secondary sources. A narrative may be prepared on the current budget and allocation of resource for coastal management. The report should address allocated funds as compared to needed funds for each activity.

How the information can be useful to managers

Understanding budget allocations is useful for determining if adequate funding is available to carry out the planned activities in the management plan and annual workplan. For example, an understanding of the budget allocations to undertake each program or activity is useful in order to understand the importance of the various activities and also for estimating the hiring and level of certain activities. Knowing the amount of budget also helps the management to be able to assess the need for additional or future funding.

Additional data and data collecting methods

For a site with coastal management, review project financial reports and report the total amount (in local currency and US$ at the time data are collected) and the amount divided by the number of people at the project site; report individual line item budget allocations for different management activities. Information may also be obtained on technical and equipment allocations for various management activities. Also estimate volunteer (community or non-community) effort at the project (in local currency and US$ at the time data are collected). Use observation or secondary sources to record the presence of plans for long-term management financing, number of new managed area-related enterprises, and amount of funding provided by and through support groups.

M4: Management Personnel

What it is

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

How to collect the data (KI, S)

Interviews are held with key informants who are manager or director of each management body in the site. The manager or director is requested to present the organizational 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, then identifying the staff members and the relationship among them.

How to analyze the data

Synthesize the data from the various key informants and secondary sources. A narrative may be prepared on the current staff allocations for coastal management.

How the information can be useful to managers

Understanding management personnel is useful for determining if adequate human resources are available to carry out the planned activities in the management plan and annual work plan. 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.

Additional data and data collecting methods

• For additional info, observe or use secondary data to find out the capacity and involvement of personnel.

• **P2** : to learn more about using key informants or management records to get information on the composition of the management team, personnel skills and capacity, interest of personnel in adaptive management, and quantity of cross site visits.

M5: Management Tools and Measures

What it is

Management tools and measures refer to the types of management interventions being used at the site. These may include full reserve, species-specific harvest refugia, gear restrictions and closed season. These tools and measures can be applied at different spatial scales and over different time frames. This is a measure of whether stakeholders are aware of the management tools and measures being used at the site and whether they understand the intent of the management tools and measures.

How to collect the data (FG)

In a focus group discussion (composed of resource users at the site), ask a series of questions to determine awareness and understanding. Ask the respondents to identify and describe the types of management tools and measures being used in the site, area in hectares under each tool, time each tool is applied, and species and effort restrictions in place. The respondents may be asked to identify the area covered on a map.

How to analyze the data

Start by summarizing responses of the focus group discussion, then developing a brief narrative description of the management tools and measures. Analyze the number of management tools and measures that respondents are able to identify. This should include a marked map of the management area for each tool.

How the information can be useful to managers

When stakeholders are aware of and have an understanding of the management tools and measure being used, there is a greater chance for successful management of the resources. Stakeholders may violate management tools and measures if they are not well understood or if they don't make sense to them. This information can also be used to develop education programs to better inform stakeholders about management.

Additional data and data collecting methods

Use observation or secondary sources to record number of new policies adopted at local or national levels to improve the management.

M6: 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 (KI, S)

Interview <u>key informants</u> 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 site depending on the coastal activities, including an integrated coastal zone management plan, a fisheries <u>management plan</u>, 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, its title and people in charge of executing the plan.

How to analyze the data

Synthesize the data from the various key informants and secondary sources and record into a table.

Example: Management plan for coastal activities

Coastal Activities	Management Plan (yes/no),Title	Responsible organization
Fisheries	Yes, Fishery Act 2006	Fishery Department
Tourism	No	-
Aquaculture	No	-

A short narrative may be prepared describing 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

Knowing whether or not management plans exist for various activities and who is in charge of their implementation is useful for determining the overall impacts of management on the site, 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 indicators (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.

M7: 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.

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, jurisdictional lines, and types of coastal resources and activities.

How to collect the data **(KI, S)**

Interview 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 what enabling legislation is in place.

Conduct interviews and document reviews to determine the existence (yes or no) of enabling legislation to support the management plan for each coastal activity. Record this in the last column of the table.

How to analyze the data

Synthesize the data from the various key informants and secondary into a table as follows:

Example: Enabling legislation of coastal activities

Coastal Activities	Enabling Legislation (Yes/No)
Fisheries	Yes
Tourism	No
Aquaculture	No

You may prepare a short narrative describing the enabling legislation for each coastal activity. 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

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 its 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 indicators (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.

M8: Formal Rules and Regulations

What it is

Formal rules and regulations are specific to a coastal activity and legally written into law and define specifically what acts are required, permitted and forbidden by an agency with legal responsibility for managing that coastal activity. The formal operational rules and regulations specify who can harvest which resources, when and where they can do so, and what methods they can employ. They directly affect day-to-day decisions made by resource users concerning when, where and how to use coastal resources.

How to collect the data (S, KI)

For each coastal activity, identify (yes or no) if there exists a formal rule(s) at the community level. Briefly describe the purpose of each rule or a set of rules and document who set the rules. 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 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.

How to analyze the data

Synthesize the data from the various key informants and secondary sources as follows:

Example: Formal rules for coastal activities

Coastal Activities	Formal Rules Exist	Who Sets the Rules	Purpose
Fisheries	Yes	Fishery Department	To regulate fishing tools and areas of fishing
Tourism	Yes	State Government	To regulate hotel development on the coast
Aquaculture	No		

A short narrative may be prepared describing the formal rules for each of the coastal activities. 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

Information on formal rules is useful in determining the overall impacts of management on communities, particularly on governance. This indicator 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 they don't make sense to them.

The analysis 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.

M9: Formal Tenure and Resource Rights

What it is

Formal tenure and resource rights is concerned with use rights with respect to coastal activities. Formal tenure is considered to be a de jure use right; that is, legally written into law by formal governing institutions, such as a national government. For example, rights over nearshore marine resources may include the right to fish in certain areas of water or the right to harvest specific species at specific time. A formal tenure arrangement is the right given to a fisher to access an area to fish. Degree of marine resource rights ranges from full ownership and control over marine resources to the right to access resources to no legal rights.

How to collect the data (S, KI)

Use secondary sources 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. Obtain additional information from key informant interviews with government officials in relevant agencies with responsibility for managing each coastal activity. For each coastal activity, identify (yes or no) if there exists formal tenure

How to analyze the data

Synthesize the data from the various key informants and secondary sources. Prepare a short narrative. Compare changes in rights over time with resources conditions.

How the information can be useful to managers

Formal tenure is useful for determining the overall impacts of management on communities, particularly on governance. 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.

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

Additional data and data collecting methods

• Ask key informants to describe who holds the formal rights to use different marine resources in different areas of the site.

• Ask each informant to rank the strength of the marine resource rights of local stakeholders on the following scale. Record any stories or anecdotes.

Marine resource rights of local stakeholders
1 = no rights
2 = limited rights
3 = some rights
4 = customarily recognized ownership rights to marine resources
5 = full, legally recognized ownership rights to marine resources

• Ask whether local stakeholders have access to marine resources (yes/no).

Section2 | Indicators

M10: Local Tenure, Customs and Traditions

What it is

Local customs and traditions related to coastal and marine resources are socio-cultural practices handed down through generations which reflect the ethnic, gender, clan, kin, or class make-up of the community. These customary and traditional practices influence harvesting, use, management, and attitudes towards coastal and marine resources.

A dualistic system of coastal resource management exists in many Pacific island coastal communities. An informal management system, devised and implemented by a community of resource users, often coexists with an official governmental management system. Traditional management, customary tenure and usage rights are often unwritten, informal practices through which people relate to their coastal and marine environment. Tenure and customary management often elucidate which activities are permitted or forbidden to resource users. Local resource rules are informal codes of conduct that define how resource rights are put into action. They may specify who can use which resources, when they can do it and what methods they can employ.

Traditional resource tenure systems and related usage rights apply to local and foreign individuals and groups. Those enforcing and implementing customary tenure are often informal governing institutions, such as village chiefs, community councils or other local leadership.

Customary tenure systems and associated resource usage rights may be complex or simple, easily observed or carefully guarded. Some Pacific island national governments recognize and defer to customary tenure in statutory matters. Examples include rights to use resources in certain areas of waters and the coast, rights to harvest specific species, or rights to prohibit particular groups of people from having access to a certain area or species, or at a particular time of the year.

How to collect the data **(KI, O, HH)**

Information on local tenure, customs and traditions related to coastal and marine resources can be obtained through a combination of key informant interviews and observation.

Observation of daily coastal and marine activities as well as traditional ceremonies can provide better understanding of how resource users carry out their activities and their relationship at different levels (physical, economic, political, social, cultural, spiritual) with different resources. Observation is essential because information obtained through interviews may only reflect ideal, not real, behavior. Resource users can be observed as they carry out marine and coastal activities to ascertain whether described tenure and usage rights are actually applied, as well as the degree of their compliance

Key informants are asked to briefly describe the traditional tenure system and associated resource usage rights governing each coastal activity. Key informants can be asked to explain the observed traditional customs and traditions or to describe the other customs and traditions that may have not been easily noticed, especially by outsiders, or decreasingly practiced. Key informants could include senior fishers, village chiefs, household leaders and community members of each sex.

Government key informants are asked to describe the national laws governing coastal and marine ownership and usage. Each informant is then asked if (how well and for how long) customary tenure is recognized by the central government. In similar way, she is asked whether the national rules and regulations are accepted by the local community.

For customary and official rules separately, ask the participants of a household survey to rank the perceived level of compliance of the local people according to the following scales:

1 = no compliance
2 = ow compliance
3 = moderate compliance
4 = high compliance
5 = complete compliance

Managers should be aware that obtaining a detailed understanding of informal governance requires a significant time investment. It may be beneficial to spend time living and working with community members, a process known as participant observation, to better understand these systems.

How to analyze the data

Compile information from key informant interviews and observation. A short narrative may be prepared describing local tenure, customs and traditions. It is helpful for managers to create a table with marine and coastal activities and evaluate each based on the influence of customary tenure and local usage rights. Tenure and local usage systems can then be compared with official government management systems. Use interview responses from different key informants to describe local practices and corroborate these through observation. Identify and report practices that may influence management.

Example: Customary and official rules and their recognition

Coastal Activities	Customary Rules and Regulations	Customary law recognized by government? Since when?	National Government Legislation, Rules and Regulations	Official Rules and Regulations Accepted by Local Communities?
Bêche-de-mer harvest	Ask chief's permission, compensation paid to landowner,	Yes, since 1986	Permit required by fisheries, quota, size limit	Yes
Day tour snorkelers	Ask permission, no women snorkeling in tabu area	No	Not available	
Aquaculture	Permission from chief and landowner, only women can collect coral fragments	Yes, unknown	Permit from fisheries, no breakage of attached coral, only allows 20% mortality of cultured coral	No

For the perceived degree of compliance, record the number of respondents for each scale and note in a table as below. An average ranking can be then calculated. The analysis table below should an example of 200 household respondents being asked to rank their perceived degree of compliance with coastal customary rules. In the survey 60 household respondents ranked 5, 100 ranked 4, 20 ranked 3 and 20 ranked 2.

Example: Percent respondents perceived each scale of compliance with coastal customary rules

Percent responses				
5 =Full Compliance	4= High Compliance	3= Moderate Compliance	2= Low Compliance	1= No Compliance
30%	50%	10%	10%	0%

An average ranking would be [(30x5)+(50x4)+(10x3)+(10x2)] /100 = 4 (high compliance)

How the information can be useful to managers

By understanding customs and traditions related to coastal and marine resources, managers will better grasp the cultural significance of and relationship local stakeholders have with natural resources. Management policies and tools that are locally compatible, both socially and culturally, will increase community collaboration and overall management effectiveness.

The information helps the managers to understand whether the traditional users rights and rules are accepted officially and whether the governmental regulations are accepted by the local communities and the degree of their perceived compliance. Traditional tenure systems, fundamental to Pacific island management planning and implementation, influence how stakeholders access and utilize marine and coastal resources. Customary tenure and locally-derived resource management rules may be more legitimate to Pacific islanders than those imposed by national governments. Without an understanding of the national laws, local communities may be inclined to disregard them. Expanded public knowledge of local rules and customs may help to reduce or prevent resource use conflicts with outsiders. By understanding the local management system, the manager will be able to develop a management program that respects and builds on local arrangements, while also including legislated measures. Such an amalgamation may be more acceptable to resource users and lead to higher levels of compliance.

Additional data and data collecting methods

- **G2,G3** : to learn more about using <u>key informant</u> interviews to collect information on strength of marine resource rights, complexity and fairness of local tenure rules, or recording oral

- **K6, -K7** : to learn more about using <u>key informant</u> interviews to collect information on respect of the community and outside fishers for customary and governmental rules and regulations.

Sailing canoe, Milne Bay, Papua New Guinea.
Credit: Mike Guilbeaux.

M11: Awareness of Rules and Regulations

G3

What it is

Awareness of rules and regulations measures people's knowledge of rules and regulations for coastal activities.

How to collect the data (KI, HH)

In order to determine awareness, the research team must be aware themselves of existing rules and regulations related to different coastal activities. First, present key informants, such as fishery officials and local coastal managers, a list of the coastal activities and ask them indicate those that have rules and regulations. Then, obtain data on awareness of rules and regulations among the households by asking each respondent of the household survey whether there are rules and regulations for the activities.

How to analyze the data

Synthesize the data from all the household interviews. Calculate the percent of respondents who noted there were rules and regulations for each activity and note as follows:

Activities	Rules exist?	Percent Noted
fishing	yes/no	
mangrove use	yes/no	
aquaculture	yes/no	
residential development	yes/no	
water sports	yes/no	

Compare the percentages from the household survey with whether or not rules and regulations exist. Those activities with rules and regulations should have high awareness compared to the other activities. . (Optional) Prepare a short narrative discussing the existing rules and regulations, using results from indicators M11 and M12 to relate compliance and enforcement.

How the information can be useful to managers

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.

Additional data and data collecting methods

In a household survey, ask the participants whether they agree with the coastal management rules using the following scale:

Level of agreement with the rules among local people

1 = strongly disagree	2 = disagree	3= neither agree nor disagree	4 = agree	5 = strongly agree

M12: Enforcement

What it is

Enforcement is measured by people's perceptions of how much the rules and regulations are enforced. Enforcement addresses management activities responding to violations of rules, such as patrolling, reporting, imposing fines, confiscating illegal gear, arresting and imprisonment. Enforcement can be done by representatives of government institutions (a policeman or fisheries patrolling officer) or local community institutions (a village chief).

How to collect the data **(HH)**

Data on enforcement are obtained by asking each respondent in a household survey:

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

How to analyze the data

Synthesize the data from all the household interviews. Calculate the percent of respondents for each scale of perceived enforcement and the average. Then note in a table as follows:

Example: Percent respondents perceived each scale of enforcement with coastal management rules and regulations:

Percent responses				
5= Full Enforcement	4= High Enforcement	3= Moderate Enforcement	2= Low Enforcement	1= No Enforcement
23%	42%	30%	5%	0%

An average would be $[(23x5)+(42x4)+(30x3)+(5x2)] /100 = 3.8$ (almost high enforcement)

Some of the categories may be combined to simplify the interpretation. For example, if 23% of respondents said there is full enforcement and 42% said there is some enforcement, 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 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 next and previous indicators.

How the information can be useful to managers

Information on enforcement is important for understanding coastal management problems. Lack of enforcement is not only detrimental to the resources, but to gaining stakeholder support. If it is widely perceived that regulations are not being enforced, then it will be difficult to gain trust, support, participation or compliance.

Additional data and data collecting methods

• Ask key informants to identify the enforcers. Who are they? Where does their jurisdiction come from (traditional, state, elected)? What is the process of enforcement they are involved in? What is the jurisdiction of the local enforcers within the site area:

1 = the enforcer has only internal jurisdiction (within the community); example: local fish wardens
2 = the enforcer has only external jurisdiction (with outsiders); example: police
3 = the enforcer has both internal and external jurisdiction

• Try to get a number of incidents of violations within the study site by talking to key informants who are local authorities. In some cases, violation records will be kept by the enforcers and can be consulted to determine the amount of violations over time. Then talk with other key informants to see if you can obtain an estimate of the percentage of actual incidents of rule violations that are reported to the authorities, compared to those that aren't.

• Ask key informants whether they believe the resource users recognize the authority of the enforcement agency using the following scale. Record any stories or anecdotes that illustrate their thoughts.

Credibility of enforcers
1 = have no authority (is not credible)
2 = have authority, but no means to act (has low credibility)
3 = have authority but does not act (has moderate credibility)
4 = have authority and are trying to use it (has high credibility)
5 = have authority and are successfully using it (has very high credibility)

• For each rule or set of rules, determine the perceived scale of penalty severity for conviction of breaking the rules by local stakeholders, using the following scale:
1 = no penalty (no or little incentive to obey rules)
2 = token penalty (small incentive to obey rules)
3 = average penalty (medium incentive to obey rules)
4 = stiff penalty (large incentive to obey rules)
5 = maximum allowed by law (very large incentive to obey rules)

• Key informants can be asked: What one thing can the management body do to improve enforcement? _____.
The respondents can also be asked to what extent are the rules and regulations enforced for each coastal and marine activity.

• [G4] : to learn more about using key informant interviews to collect information on level of local respect for the enforcers. enforcers, see LMMA LF-G4.

M13: Compliance

G4

What it is

Compliance measures to what extent resource users are perceived to be complying with rules and regulations. This complements the enforcement indicator, except compliance addresses people's behavior toward the regulations (i.e. are people adhering to the rules and regulations).

How to collect the data (HH, KI)

Data on compliance are obtained by asking each respondent in a household survey:

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? _____

Respondents can also be asked which activities or rules people are complying with.

In case of no or limited compliance, ask key informants about reasons for the reasons such as ignorance; lack of enforcement (lack of resources; low priority issue; lack of political will; corruption); conflict between customary and legislated rules, and physical nature of fishery (by-catch rates)

How to analyze the data

Synthesize the data from all the household interviews Calculate the percent of respondents for each scale of perceived compliance and the average. Then note in a table as shown below:

Example: Percent respondents perceived each scale of compliance with coastal management rules and regulations:

Percent responses				
5= Full Compliance	4= High Compliance	3= Moderate Compliance	2= Low Compliance	1= No Compliance
10%	20%	50%	20%	0%

An average would be [(10x5)+(20x4)+(50x3)+(20x2)] /100 = 3.2 (moderate compliance)

Compare results over time to determine if compliance is changing. (Optional) Prepare a short narrative discussing enforcement (M12), compliance and existing rules (M8).

How the information can be useful to managers

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

If compliance remains low over time, 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).

📖 ***Additional data and data collecting methods***

As alternative, ask about the overall level of compliance with rules at the project site using the scale below.
Attempt to validate these results with information from other sources, such as anecdotal accounts.

Compliance with rules

1 = no compliance (numerous violations reported or known)
2 = limited compliance
3 = moderate compliance
4 = good compliance
5 = excellent compliance (almost no violations reported or known)

Fisherman focus group in Arno, Republic of the Marshall Islands.
Credit: Caroline Vieux

<u>**M14: Management Successes and Failures**</u>

What it is

Successes and failures in coastal management assess what people think has and has not worked well for coastal management in the community.

How to collect the data (HH)

Data on successes and failures in coastal management are obtained by asking each respondent in a <u>household survey</u>:

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

 What two things do you think have not worked well for coastal management in the community?
1. _____ ;   2. _____

 Ask the respondent to explain each of their responses to the above questions.

How to analyze the data

Synthesize the data from all the household interviews. List the things that have and have not worked well as noted by respondents. Calculate the percent of respondents who noted each response. Group the responses into categories as appropriate. Note this information as in the example below:

Example: Successes and Failures in coastal management

Things that have worked well for coastal management in the community	Percent noted these successes
local monitoring of near shore resources	50%
coral reef awareness program with visitors	30%
pandanus mat making project	20%
regular beach clean-up by students	10%

Things that have not worked well for coastal management in the community	Percent noted these failures
lack of participation	60%
low enforcement of regulations	30%
management of tourism	10%

Prepare a brief description on the explanation of why these items are successes or failures. Compare the results over time to see how successes and failures have changed. A short narrative may be prepared describing how people view coastal management over time.

How the information can be useful to managers

Information on successes and failures 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.

M15: Management Credibility

What it is

Management credibility measures whether the management body is credible and legitimate to the stakeholders.

How to collect the data **(KI)**

LF-G1 Ask key informants to list and describe the management institutions. Then rank the level of credibility of each on the following scale. Record any stories or anecdotes that illustrate their thoughts.

Level of credibility
1   =   institution does not have authority (is not credible)
2   =   institution has authority, but not the means and/or history of acting on this authority (has low credibility)
3   =   institution has authority and the means to act on their authority, but not the demonstrated history of doing so (has moderate credibility)
4   =   institution has authority and the means and history of demonstrating their ability to act on their authority (has high credibility)

How to analyze the data

Prepare an overall score on the level of credibility as shown in a table below. A narrative is prepared based on the ranking provided by the key informants. The narrative is completed with a discussion of the comments provided by the respondents.

Example: Level of management credibility

	Key Informants						
	#1	**#2**	**#3**	**#4**	**#5**	**Total Score**	**Average Score**
Ranking	2	2	1	2	1	2+2+1+2+1 = 8	8/5 = 1.6
Overall average = quite low credibility							1.6

How the information can be useful to managers

The information will provide the manager with an assessment of stakeholders' views on the creditability of the coastal management arrangements. The more creditable the arrangements are to the stakeholders, the better chances there are for sustainability of the management program and compliance with management measures.

M16: Perceived Effectiveness of Management Tools

S2

What it is

Perceived impact of management tools measures stakeholders' perception of management tools and measures on improving the conditions of the marine environment at the site. There may be different conservation tools and measures used. Examples include legally protected areas or protected species, regulations and their enforcement, traditional rules, education and awareness raising campaigns, and alternative livelihood that reduces pressure on the marine resources.

How to collect the data **(FG)**

Use focus group to list and briefly describe conservation tools and measure used at the site, including areas of use (on a map) and the duration of use. For each conservation tool and measure, rank its perceived impact in terms of the perceived effectiveness or thoroughness in improving the conditions of the marine environment on the following scale.
Perceived impact of management tools

1 = severe negative impact
2 = negative impact
3 = no impact
4 = positive impact
5 = high positive impact

The focus group participants could also be asked to discuss reasons for the perceived effectiveness of the different tools, particularly those that have negative impact, no impact or highly positive impact.

How to analyze the data

Summarize the descriptive data on the conservation tools, their purposes and period of execution. Make sure that clear boundaries of the tools are shown on a map. Report an agreed ranking by the focus group participants of perceived impact of each tool.

How the information can be useful to managers

The effectiveness of conservation tools being used at the site can be measured by the perception of stakeholders as to the impact of the tools on improving the conditions of the marine environment. This is important for the manager as the more that stakeholders perceive that conservation tools are working, the more support there will be for the management program.

M17: Benefits of Management

What it is

Benefits of management refers to perceived benefits generated by coastal management. Examples of management-related benefits may include tangible material benefits, such as income and an increased or stable catch of certain target species. In addition, there may be non-material benefits such as improved overall standard of living of the people residing in and near the managed area, social, cultural, spiritual, and intellectual development. The material and non-material benefits are important indicators of the successes of marine management.

How to collect the data (HH, KI)

Conduct a <u>household survey</u> to find out whether the respondent's household receives material and non-material benefits from management by having people rank the following:

My household gets material benefits (e.g. cash) from management:

1 = strongly disagree	2 = disagree	3= neither agree nor disagree	4 = agree	5 = strongly agree

My household gets non-material benefits (e.g. good health, capacity development, social collaboration) from management:

1 = strongly disagree	2 = disagree	3= neither agree nor disagree	4 = agree	5 = strongly agree

Ask <u>key informants</u> who represent different groups within the local community to list and briefly describe the management project/tools and define types and levels of both material and non-material benefits experienced as a result of management. For example, have key informants list the resources, money and/or infrastructure (a school, a church, a health center, a boat or truck), or changes in diet that have resulted at least in part through funds raised from the harvest and sale of marine resources. Has the relationship among different stakeholders improved and allow for effective collaboration? Has the community increased their capacity in coastal management? Have the young generations learned to appreciate the value of the local marine resources? Has their sense of ownership and long-term protection of these resources increased?

How to analyze the data

From the household survey, calculate the percentage of people who answered each category as in the following example:

Example: Percent respondents describing their household received benefits from management

Types of Benefits	Percent noted in each level of agreement				
	1=Strong disagree	2=Disagree	3=Neither	4=Agree	5=Strongly Agree
Material	0%	2%	15%	55%	28%
Non-Material	0%	11%	44%	35%	10%

From the data provided by the key informants, synthesize and summarize two lists of benefits of management, one for the material benefits and the other for the non-material benefits. Report important lessons learned.

How the information can be useful to managers

The information reflects the impact and effectiveness of the management. Successful coastal and marine management can improve human well-being by providing both material and non-material benefits among the local stakeholders. Additionally, on a much larger scale, management can contribute to the conservation of biodiversity that benefits all people.

Additional data and data collecting methods

- **S3** : to learn about using household surveys to ask series of statement that address benefits received from management.

M18: Compatibility of Management Goals with Local Cultural Values and Beliefs

What it is

A cultural value and belief is social norm manifested as a result of history and culture. It is a shared understanding by members of a society of how the world works, including what is good, desirable, or just. In these socio-economic monitoring guidelines, we are most interested in assessing how local cultural values and beliefs may impact marine resources, their use and management. We are also interested in the compatibility between local cultural values and belief with the management goals. For example, in some locations, local people do not eat sharks because their culture believes that sharks are ancestral protectors and that if they injure or take sharks, their children will be born abnormal. In this case, this belief has led to the customary practice of shark protection.

How to collect the data **(KI)**

LF-G6 : interview key informants who represent different groups within the local community. Ask each key informant to describe cultural values and beliefs regarding the use and management of marine resources. Ask each key informant whether or not the local cultural values and beliefs are compatible with the resource management goals. Record any stories or anecdotes that illustrate their thoughts.

How to analyze the data

Summarize and synthesize descriptive data from the key informants on the cultural values and beliefs regarding marine and coastal resources and management. Provide a narrative of the description of local cultural values and beliefs and their compatibility with the resource management goals.

How the information can be useful to managers

Managers should be interested in how compatible management goals are with local cultural values and beliefs because it is important for community support of the coastal management program. The more that local cultural values and beliefs are integrated into the management program, the more that adverse affects of management can be minimized.

Additional data and data collecting methods

•   **G6** : use a <u>household survey</u> to rate the compatibility of management to the local cultural values and beliefs according to the following scale:

The management goal(s) is compatible with our local cultural values and beliefs:

1 = strongly disagree	2 = disagree	3= neither agree nor disagree	4 = agree	5 = strongly agree

Stakeholder (ST) Indicators

ST1: Stakeholder Groups

P5

What it is

Stakeholder groups are groups or organizations of direct resource users (e.g. fishermen's cooperative, diving club), those whose activities impact the resources (e.g. foresters association, hotel association), those who are affected by coastal resource use and management, and people who do not use or impact the resources, but have a stake in management (e.g. environmental organizations, governmental agencies).They can influence the direction of decision-making and management of coastal and marine resources. They may or may not actually live or are located within or adjacent to the site

How to collect the data (S, KI)

Obtain information on stakeholder groups from <u>secondary sources</u> and from interviews with <u>key informants</u>. Key informants may include officials from the coastal resource management agency offices, community leaders, senior fishers, representatives of religious organizations, and representatives of NGOs. Ask key informants to identify the three main stakeholders or stakeholder organizations for each major coastal activity (e.g. fishing, aquaculture, tourism). For the stakeholder organizations, information can be collected on whether the organizations are community-based, formally or informally authorized, and what they main functions are.

How to analyze the data

Synthesize data from key informants and secondary sources into a table as shown below. Descriptive data of the stakeholder organizations can be summarized into a brief narrative.

Example: Stakeholder groups

Coastal Activities	Stakeholder Group 1	Stakeholder Group 2	Stakeholder Group 3
Fishing	Local fishers	Commercial fisher association	Fishery officials
Aquaculture	Aquaculture business owners	Fish trader association	
Tourism	Local community	Tourism business owners	Tourism board

Compare the results over time to see how the stakeholder groups has changed over time.

How the information can be useful to managers

Active participation of coastal resource stakeholders in planning and management can improve success of coastal resource management. An understanding of stakeholder organizations can assist managers in improving participation and representation of stakeholders in management and decision-making. If local people are involved in coastal resource management and feel an ownership over it, they are more likely to support management activities. 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.

Additional data and data collecting methods

• Membership in stakeholder organizations may be asked about in <u>household surveys</u>. This refers to both formal membership and informal membership (e.g. active participation). The stakeholder organizations include direct users (e.g. fishermen'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). Data on membership in stakeholder organizations are obtained by asking each respondent in a household survey:

Is anyone from your household a member of a stakeholder organization? _____
Which organization(s)? _____

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 fishermen'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 disproportionately high membership. The occupations employing the most people would be expected to have the highest levels of membership. If this is not the case, groups with disproportionately high membership may be dealing with issues of great importance to the community or this group may be considered highly effective. 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. It may be useful to talk with key informants to explain the results.

• **P5** : to learn more about using <u>key informants</u>, <u>observation, or secondary sources</u> to evaluation project partnerships.

Elder fisherman with traditional basket weir,
Ofu island, American Samoa.
Credit: Arielle Levine

ST2: Stakeholder Participation in Management

P1, G3

What it is

Stakeholder participation is a measure of the amount of involvement of stakeholders in coastal management activities. Involvement can range from passive awareness to active participation in coastal management decision making, planning, implementation, and monitoring.

How to collect the data (KI, O, HH)

Interview key informants (e.g., community officials, leaders of stakeholder organizations, and coastal management staff). Ask key informants if stakeholders are involved in coastal management activities (yes or no) and in what way.

Stakeholder participation can also be obtained through observation of different coastal management activities. For example, you may ask to attend local meetings to observe whether community members attend the meetings, express their opinions, and if their opinions are considered by the management body.

Data on participation in decision-making can also obtained by asking each respondent in a household survey:

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? _____

How to analyze the data

Synthesize the data from the key informants and observations into a table as below:

Coastal Activity	Stakeholder Participation (Yes/No)	In What Way
Fishing		
Mangrove cutting		
Tourism		
Residential Development		

Concerning the data from all the household interviews, calculate the percent of respondents for each scale of perceived participation level, an average ranking, and note in a table.

Example: Percent respondents perceived each scale of participation

	Percent responses				
	5= Fully active Participation	4= High Participation	3= Moderate Participation	2= Low Participation	1= No Participation
Compliance	30%	50%	10%	10%	0%

An average ranking would be [(30x5)+(50x4)+(10x3)+(10x2)] /100 = 4 (high level of participation)

Compare these results over time to determine if participation is changing. Compare these results with data on people's perceived resource conditions (T2) and threats to coastal and marine resources (T3) and awareness of rules and regulations (M11) 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 narrative may be prepared discussing participation, how it has changed over time and how it is linked to people's perceptions.

How the information can be useful to managers

Coastal managers have come to realize that the active participation of stakeholders can improve success of coastal management activities. If stakeholders are more involved in coastal management and feel ownership over the process, they are more likely to support and help sustain coastal management activities. By monitoring participation over time, the manager can see how effective the program has been in engaging stakeholders in management..

Additional data and data collecting methods

- **P1, G3** : to learn more about using <u>key informants</u> or <u>household surveys</u> to rank the level of local stakeholder participation or stakeholder involvement in establishing resource use rules.

Elder interview on Tutuila, American Samoa.
credit: Fialoa Maiava

Section 3

Appendix A:Checklist for SEM-Pasifika socioeconomic assessment

Check box when each activity is finished. Record date of completion and important notes.
Activities will not necessarily be conducted in the order presented below, and some activities will overlap.

Activities	Completion Date/Notes
Define assessment objectives	
□ Define objectives of socioeconomic assessment (worksheet 1)	_____
Identify site and indicators	
□ Identify site and study population (worksheet 2)	_____
□ Choose preliminary indicators and data collecting methods	_____
Consult with stakeholders (worksheet 3)	
□ Identify stakeholders and determine their level of participation	_____
□ Consult with stakeholders	_____
Prepare assessment	
□ Determine schedule and budget (worksheet 4)	_____
□ Assemble monitoring team (worksheet 4)	_____
□ Conduct reconnaissance visit (worksheet 5)	_____
□ Refine assessment objectives, select final indicators	_____
and data collecting methods (refine worksheet 2)	_____
□ Determine who to interview and sample size (worksheet 6)	_____
□ Conduct audience assessment (worksheet 7)	_____
□ Conduct audience assessment (worksheet 7)	_____

Collect data

Completion Date/Notes

☐ Collect and assess secondary data _____

☐ Design data collecting instruments (interview questions, survey) _____

☐ Translate and backtranslate survey (if necessary) _____

☐ Pretest and revise interview questions and survey _____

☐ Ensure that assessment addresses objectives (revise) _____

☐ Establish database, data coding system and plan for analysis _____

☐ Train data collecting team on data collecting methods _____

☐ Arrange logistics for field data collection _____

☐ Collect data- key informants _____

☐ Collect data- household survey _____

☐ Collect data- focus group(s) _____

Analyze data

☐ Code and enter data _____

☐ Complete descriptive statistics and other analysis _____

Communicate results

☐ Discuss key learnings with entire team, _____

☐ Draft assessment report _____

☐ Draft management recommendations, if applicable _____

☐ Review and communicate results with the community _____

☐ Circulate assessment report to key stakeholders for review _____

☐ Finalize and submit assessment report _____

Use results for adaptive management

☐ Review results with key decision makers and managers _____

☐ Determine actions for management changes _____

☐ Determine needs for further information and future assessments _____

Appendix B: Worksheets for planning your socioeconomic assessment

Worksheet 1: Defining Goals and Objectives

Worksheet 2: Identifying Site and Indicators

Worksheet 3: Stakeholders

Worksheet 4: Preparatory Activities (Schedule, Budget and Team)

Worksheet 5: Preparatory Activities (Reconnaissance Visit)

Worksheet 6: Indicators ▶ Methods, Target Groups and Sample

Worksheet 7: Preparatory Activities (Audience Analysis)

Worksheet 8: Assessment Timeline

Worksheet 9: Assessment Workplan

Worksheet 1: Defining Assessment Objectives

Define assessment objectives

There should be a clear link between management objectives and assessment objectives. Management objectives are geared towards your program as a whole. Many of you have already been through the process of defining management objectives. Assessment objectives are what you would like t o achieve through your socioeconomic assessment and should be designed to inform and improve your overall management objectives.

Example 1:

Management Objectives	vs.	Assessment Objectives
What are the objectives of my MPA or marine management program?	←→	What are the objectives of my socioeconomic assessment?
Improve community awareness of importance of MPA and conservation activities through effective education and outreach programs		Determine the effectiveness of current educational program Gain a better understanding of the community's awareness of the MPA Learn about community understanding of importance of marine resources Gain an understanding of key information sources

Example 2:

Management Objectives	vs.	Assessment Objectives
What are the objectives of my MPA or marine management program?	←→	What are the objectives of my socioeconomic assessment?
Gain local community commitment and cooperation in establishing an MPA		Determine the level of community reliance on local marine resources Determine level of community support of (or resistance to) MPA establishment Determine the opinions and needs and concerns of different stakeholder groups regarding a potential MPA

Use the space below to list your assessment objectives, and how they are linked to your management objectives.

Management Objectives ⬄ Assessment Objectives

Assessment Objectives:

Your assessment objectives are specific statements detailing the desired outcomes of your assessment – what knowledge you hope to gain. These objectives are the purpose of doing the socioeconomic assessment and monitoring. They should be:

Relevant to the assessment goals

Based on interests and needs of the stakeholders (managers and users)

Impact oriented, time limited, specific, practical, measurable

Worksheet 2: Identifying Site and Indicators

Identify site
(Both the location of the coastal resources and the stakeholders should be considered).

Identify indicators
The indicators selected depend on:
1. Assessment objectives and needs of the managers
2. Resources and time available

Indicators determine the substance of the assessment and form the basis for deciding what questions will be asked. Each indicator should provide you with information that will assist you in achieving your assessment objectives.

Use the table below to list your assessment objectives (from **Worksheet #1**), the information you need in order to better attain each objective, and the indicators that could be used for assessment and monitoring of that information.

Assessment Objectives (refer to Worksheet 1)	Information needed to better attain the assessment objective	Potential Indicator (use SEM Pasifika indicator table for reference)
Assessment Objectives	**Information needed to better attain the assessment objective**	**Potential Indicator** (use SEM-Pasifika Manual for ideas)

*__Note__: Complete this table now; later you will use information obtained during your Reconnaissance Visit **(Worksheet #5)** to refine the above assessment objectives and indicators.*

Worksheet 3: Stakeholders

Identify stakeholders (list below)

Primary Stakeholders:
People who directly depend on the resources for a living (e.g. fishers and local communities)

Secondary Stakeholders:
People who make indirect use of products or services from the resource (e.g. fish traders) or whose actions may affect the resource (ie. travel agents, coastal developers)

Relevant Organizations:
Organizations with direct responsibility for managing activities affecting the resources or with an interest in the primary or secondary stakeholders (e.g. government agencies, NGOs, businesses)

Determine level of their participation
Indicate type and level of involvement for each stakeholder group. Make a list

Group to inform

Group to consult

Group to partner with

Group with ownership

Consult with the stakeholders

(Determine a plan for how this might be done for different stakeholder groups – list stakeholder and proposed process of consultation)

Stakeholder	Strategy for consultation process

Worksheet 4: Preparatory Activities (Schedule, Budget and Team)

Determine schedule and budget

When should it take place?

How long will it take?

How much will it cost (approximate budget)?

Assemble assessment team

An ideal team is composed of both:

1. Coastal Managers and/or Project Staff
2. Local Community Members and/or Stakeholder Group Representatives

(Keep in mind: openness and willingness to work, time available, gender balance, language and technical skills, organizational background)

1. Proposed team leader(s):

2. Proposed team members, affiliation, and skills:

3. Potential training needs?

Worksheet 5: Preparatory Activities (Reconnaissance Visit)

Conduct reconnaissance visit

What is the specific site for data collection?

What is the number and location of stakeholders?

When is the best time to reach each stakeholder group?

Are there any constraints to reaching certain stakeholders?

What types of logistical arrangements need to be made for the assessment?

Are there any special arrangements that need to be made for field data collection?

Are there any other new considerations that should taken into account for the assessment?

*Do not forget! Use the new information obtained to refine the assessment objectives and indicators listed on **Worksheet 2.***

Worksheet 6: Indicators ► Methods, Target Groups and Sample

Use the *Indicators* **you proposed on the Indicator Worksheet #2** (revised with information gathered on Worksheet #5) **to select your** *Methods* **for gathering information.**

At this point you do not need to generate specific interview or survey questions, but use SEM-Pasifika Manual for ideas and think *specifically* about what would be the best method(s) collect information about your indicators, as well as potential sources of information.

Indicators List from Indicator Worksheet	**Proposed Methods** **Secondary data (S)** – list potential sources **Key informant interview/survey (KI)** – who? how many? **Household survey (HH)** – list potential questions. **Focus group discussion (FG)** – list stakeholder groups. how many participant per group? **Observation (O)** – specify who, what, where, when
Indicators List from Indicator Worksheet	**Proposed Methods** **Secondary data (S)** – list potential sources **Key informant interview/survey (KI)** – who? how many? **Household survey (HH)** – list potential questions. **Focus group discussion (FG)** – list stakeholder groups. how many participant per group? **Observation (O)** – specify who, what, where, when

Household survey sampling design

If you choose to conduct a household survey, you will need to determine the total population that you need to sample. The decision whether to do random or non-random sampling will depend on answers to the following questions:

1. Is the total population of the site well-defined? Can it be listed and numbered so that the team can randomly select people?

2. How important is it for the results to be statistically representative?

3. Do we have staff, time and funding for random sampling?

If one of the answers to the above questions is "no," then your team will need to do **non-random sampling**. This method can provide useful information, but
1. It cannot be considered statistically significant, and
2. It is important to do your best to ensure your sample is as unbiased and representative of your stakeholder population as possible

If you choose to do **random sampling**, determine *sample size* according to:

1. population size (adult or total): _____

2. desired confidence interval: **+ or -** _____ %

3. desired confidence level: _____%

Use sample size table in Box 5, point 4.4 (Determine Who to Interview and Sample Sizes) of Section 1 in the SEM-Pasifika guidelines (or use an online sample size calculator) to determine your needed sample size:

Sample size = _____
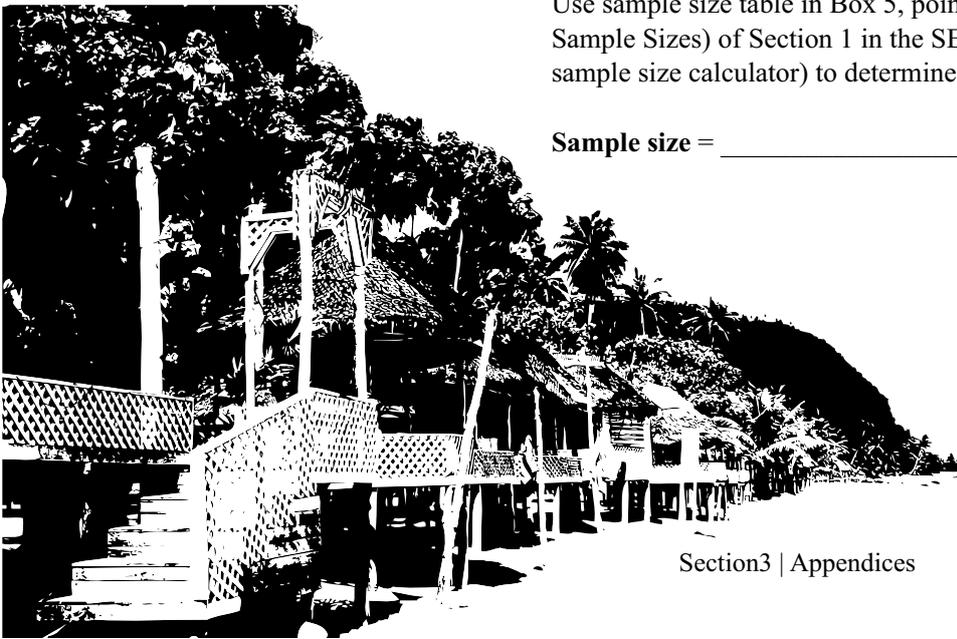
Worksheet 7: Preparatory Activities (Audience Analysis)

Audience Analysis
(Knowing your communications needs at the start of the monitoring helps you to budget and plan for the necessary activities, time and resources)

Identifying your audience for communicating results:

1. Who (individuals or organizations) will be affected by the outcomes of your assessment and monitoring (both positively and negatively)?

2. Who can take action related to the results?

Preliminary plan for communicating results:

One-way communications:

- Written materials (reports, papers)

- Visual materials (posters, pictures, signs, bulletin boards)

- Oral presentations (in person, meetings, workshops)

- Mass media: newspapers, magazines, radio, television, film

- Internet

Two-way communications:

- Group discussion (in person, community meetings, workshops)

- One-on-one discussion (in person with key individuals)

- Remote communications: telephone, video phone, web camera

- Internet: email, list-serves, chat rooms

Audience	- Primary means of receiving information - Limitations / challenges (language, literacy)	Potential communication mechanisms

(A more complete guide to audience analysis and creating a plan to communicate results can be found in the SEM-Pasifika Guidelines)

Worksheet 8: Assessment Timeline

Worksheets 1-7 should provide you with the preliminary information necessary to put together a draft timeline for the socioeconomic assessment you conduct at your home site.

The chart below provides an example* of preliminary steps to formulating the schedule for your work-plan. Review your preparatory activities to date, then create a draft timeline of your own on the next page. After you have created a schedule of planned activities, write up a detailed description of each activity (on a separate page) to clarify your work plan. Use the SEM-Pasifika manual as a resource, and ask others for their ideas and feedback.

Example of Work Timeline

Activity	April	May	June	July	Aug. - November
Finalize questionnaire	**XX (Emily, Dave)**				
Secondary data and key informant interviews	**XX Team 1: John Team 2: Rita**	**XX**			
Household survey		**XX All involved** Pre-test first week of May, administer last 2 weeks of May			
Encoding			**XX All involved**		
Data Analysis			**XX All involved,** work with TA at end of June at Fisheries Office		
Team reports				**XX Team 1: Emily, John Team 2: Dave, Rita**	
Communica-tions/ Final report					**XX Emily and Dave** (assistance from TA), Present at meeting in October
Adaptive Management					**XX Emily with** agency head and stakeholders

Project Lead: **Emily** (bold names below are team leads)
Team 1 (Focus on site A): John, **Emily**, Fred, Sara; **Team 2** (Focus on site B): Rita, **Dave**, Emily, Joseph

* Note: the chart above is an example ONLY – your timeline should reflect your own site and program needs

Activity	Month _____	Month _____	Month _____	Month _____	Month _____	Month _____

Worksheet 9: Assessment Workplan

Worksheets 1-8 should provide you with the preliminary information necessary to put together a draft workplan for the socioeconomic assessment you conduct at your home site.

The chart below provides some examples* of preliminary steps based on the assessment checklist (found in Appendix A) to include in your workplan. Review your preparatory activities to date, then create a draft workplan of your own on the next page. Use the SEM-Pasifika manual as a resource, and ask others for their ideas and feedback.

Draft Your Own Workplan

Activity	Person responsible	Local team support	Start date	End date	Budget
Define objectives of socioeconomic assessment					
Identify site and indicators					
Identify site and study population					
Choose preliminary indicators and data collecting methods					
Consult with stakeholders					
Identify stakeholders and determine their level of participation					
Consult with stakeholders					
Prepare assessment					
Determine schedule and budget					
Assemble monitoring team					
Conduct reconnaissance visit					
Refine assessment objectives, select final indicators and data collecting methods					
Determine who to interview and sample size					
Conduct audience assessment					
Develop detailed workplan for S-E assessment					
Collect data					
Collect and assess secondary data					
Design data collecting instruments (interview questions, survey)					
Translate and back-translate survey (if necessary)					
Pretest and revise interview questions and survey					
Ensure that assessment addresses objectives (revise)					
Establish database, data coding system and plan for analysis					
Train data collecting team on data collecting methods					
Arrange logistics for field data collection					
Collect data- key informants					
Collect data- household survey					
Collect data- focus group (s)					
Analyze data					
Code and enter data					
Complete descriptive statistics and other analysis					

Communicate results					
Discuss key learnings with entire team,					
Draft assessment report					
Draft management recommendations, if applicable					
Review and communicate results with the community					
Circulate assessment report to key stakeholders for review					
Finalize and submit assessment report					
Use results for adaptive management					
Review results with key decision makers and managers					
Determine actions for management changes					
Determine needs for further information and future assessments					

Draft Your Own Workplan

Activity	Person responsible	Local team support	Start date	End date	Budget

Appendix C: SEM-Pasifika data analysis guide

SITE AND INFRASTRUCTURE

SI1: Site
Note on a base map boundaries, resources and stakeholder of the site

SI2: Site Infrastructure and Technology
list infrastructure and technology that exists in the site

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

DEMOGRAPHICS

D1: Number of Population, Number of Households, and Household Size
• Total number of people in the site _____

• Total number of households in the site _____

• Average number of people in a household _____ (total number of people divided by total number of households)

D2: Number and Profile of Visitors
• Total numbers of visitors per year _____

• Numbers of visitors in:
  January____; February____; March____; April_____;
  May_____: June____; July_____: August____:
  September_____; October_____; November_____; December_____

• Home village/country of the 3 largest groups of visitors and proportion of the total visitors in percentage?
  Village/country_____, _____%
  Village/country_____, _____%
  Village/country_____, _____%

• 3 main activities during their visit and percent of visitors in these activities:
  1. (activity)_____, _____%
  2. (activity)_____, _____%
  3. (activity)_____, _____%

• Percent of tourist that are aged:
  under 18_____; 19-30_____; 31-50_____; over 50 _____

• Percent of tourist that are: male _____; female_____

D3: Migration
• 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)

• Reason of migration_____, location_____

D4: Age

Percent of age group: 0-18____; 19-30 ____; 31-50 _; over 50_____

D5: Marital Status

Percent of: single ____; married ____; divorced/widow____

D6: Sex

Percent of: female _____; male _____

D7: Education and Literacy

Average number of years of education of people over 16 year olds: _____

Percent of population that is literate: _____

D8: Ethnicity/clan

Percent of population by ethnic make-up:

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

___

D9: Religion

Percent of community:

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

D10: Language

Percent of population by language:

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

D11: Occupation

(see Section 2, D11 for an example of how to complete the table)

Major occupations in community	Primary		Secondary		Total %of community members dependent on this occupation (primary and secondary)
	Number of household members listing as primary occupation	%household members listing as primary occupation	Number listed as secondary occupation	% household members that listed each occupation as secondary	

D12: Sources of Household Income

Occupation	Percent noted as primary source	Percent noted as secondary source

D13: Material Style of Life/Household Economic Status
• Type of roof: tile _____ tin_____ wood___ thatch _____

• Type of outside structural walls: tile ___ concrete ___ wood___ thatch/bamboo ___

• Windows: glass___ wooden ____ open_____ none ____

• Floors: tile____ wooden ____ cement ____ thatch/bamboo____ dirt_____

• Toilets: flush_____; pail flush_____; pit_____; natural environment (beach, woods)_____

• Water: public tap system____; well_____; stream or river_____; rain catchment_____,

• Electricity: from power plant_____ from home generator_____ no_____

Household furnishing
• (write-in items)_____, _____

Home appliances
• (write-in items)_____,_____

Productive assets
• (write-in items)_____,_____

COASTAL AND MARINE ACTIVITIES

C1: Coastal and Marine Activities
C2: Coastal and Marine Goods and Services
C3: Harvesting Methods and Means of Services
C4: Location of Coastal and Marine Activities
C5: Dependence on Coastal and Marine Resources
C6: Types and Levels of Use by Outsiders
C7: Monetary Value of Goods and Services

(see examples of how to complete the 2 following tables in the indicator description C1 through C7 in Section 2):

C1: Coastal and marine activities	C2: Coastal and marine goods and services	C3: Harvesting methods and means of services	C4: Location of coastal and marine activities

C1: Coastal and marine activities (same as in table above)	C5: Dependence on coastal and marine resources		C6: Types and level of use by outsiders		C7: Monetary value of goods and services
	% proportion own consumption	% proportion income generation	Type	Level	

C8: Market of Marine Goods and Services
(see Section 2, C8 for an example of how to complete the table)

Coastal and marine goods & services	% international	% regional	% national	% local

C9: Gender Roles and Responsibilities in Coastal and Marine Activities
(see Section 2, C9 for an example of how to complete the table)

Marine and coastal Activities	Gender and age group who are engaged in the activities (specify children, adult, or older people)		Explanation (why are activities carried out by ONLY males of females?)
Extractive	Women	Men	
Non-extractive	Women	Men	

C10: Knowledge of Coastal and Marine Resources
(see Section 2, C10 for an example of how to complete the table)

Coastal and marine resource knowledge statements	% True	% False

C11. Attitude towards Coastal and Marine Resources

(see Section 2, C11 for an example of how to complete the table)

Attitude statements	Percent responses				
	1 = strongly disagree	2 = disagree	3 = neither	4 = agree	5 = strongly agree

C12. Non-Market and Non-Use Value

(see Section 2, C12 for an example of how to complete the table)

Non-Market and Non-Use Value Statements	Percent responses				
	1 = strongly disagree	2 = disagree	3 = neither	4 = agree	5 = strongly agree

C13. Alternative and Supplementary Livelihoods

list identified supplementary and alternative livelihoods and order them from the most to the least mentioned.

1. _____

2. _____

3. _____

4. _____

5. _____

THREATS

T1: Perceived Community Problems
(see Section 2, T1 for an example of how to complete the table)

Major problems facing community	Percent noted this problem

T2: Perceived Resource Condition
(see Section 2, T2 for an example of how to complete the table)

Local resources	Percent respondents that described resource conditions as:				
	5=Very good	4=Good	3=Neither	2=Bad	1=Very bad

T3: Perceived Threats to Coastal and Marine Resources and Their Impact Level

Perceived threats to coastal and marine resources	Impact level (high, medium. low)

Introduction

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<u>**T4: Perceived Coastal Management Problems**</u>
(see Section 2, T4 for an example of how to complete the table)

Major problems facing coastal management	Percent noted this problem

<u>**T5: Resource Conflicts**</u>
List types of conflict and parties involved (between internal stakeholders or with external resource users, or both), degree of intensity (using a 5-point scale, from 1= very extensive to 5 = no conflict), and current status. Note who and how the conflicts have been managed or resolved.

Types of conflict	Involved parties	Degree of conflict	Current status (ongoing/managed/resolved)

MANAGEMENT

<u>**M1: Management Body**</u>
Use the following table to list management bodies of coastal activities locally identified
(see Section 2, M1 for an example of how to complete the table)

Coastal Activities identified	Management body(s) exist (Yes/No) & Name

M2: Management Types and Structures
Describe the type of management and develop an organization chart listing all institutions and organizations and showing their relationship with one another.

M3: Management Budget
Record current budget and allocation of resource for coastal management. Compared them to needed funds for each activity.

M4: Management Personnel
Identify the staff members and the relationship among them. Attach organizational chart if available.

M5: Management Tools and Measures
Summarize types of management tools and measures being used in the site, area under each tool, time each tool is applied, and species and effort restrictions in place. Mark management area for each tool of a map if feasible.

M6: Management Plan
(see Section 2, M6 for an example of how to complete the table)

Coastal Activities	Management Plan (yes/no) & Title	Responsible organization

M7: Enabling Legislation
(see Section 2, M7 for an example of how to complete the table)

Coastal Activities	Enabling Legislation (Yes/No)

M8: Formal Rules and Regulations
Synthesize the data using the following table.

Coastal Activities	Formal Rules Exist (yes or no)	Who Sets the Rules	Purpose

M9: Formal Tenure and Resource Rights
Write a short narrative

M10:Local tenure, Customs and Traditions
Write a short narrative. Prepare a table showing customary and official rules and regulations for different marine and coastal activities. Note their recognition/acceptance.
(see Section 2, M10 for an example of how to complete the table)

Coastal Activities	Customary Rules and Regulations	Customary law recognized by government? Since when?	National Government Legislation, Rules and Regulations	Official Rules and Regulations Accepted by Local Communities?

For the perceived degree of compliance, calculate and record the percentage of respondents and the average, following example shown below in M13

Percent responses				
5= Full Compliance	4= High Compliance	3= Moderate Compliance	2= Low Compliance	1= No Compliance
%	%	%	%	%

An average ranking =

M11: Awareness of Rules and Regulations
Calculate the percent of respondents who noted there were rules and regulations for each activity and note in the following table. Then compare the results with official information

Activities	Rules exist (yes or no)	Percent noted

M12: Enforcement
M13: Compliance
Calculate the percent of respondents for each scale of perceived enforcement and perceived enforcement and compliance and their average.

Percent responses				
5= Full Enforcement	4= High Enforcement	3= Moderate Enforcement	2= Low Enforcement	1= No Enforcement
(A)%	(B)%	(C)%	(D)%	(F)%

An average ranking = $[(Ax5)+(Bx4)+(Cx3)+(Dx2)] +(Fx1)]/100$

M14: Management Successes and Failures

Synthesize data. List the things that have and have not worked well as noted by respondents. Calculate the percent of respondents who noted each response. Group the responses into categories as appropriate. (see Section 2, M14 for an example of how to complete the table)

Things that have worked well for coastal management	Percent noted these successes

Things that have <u>not</u> worked well for coastal management	Percent noted these successes

M15: Management Credibility

Calculate and record average ranking of Level of credibility using a 4-point scale (1 = institution does not have authority (is not credible to 4 = institution has authority and the means and history of demonstrating their ability to act on)

	Key Informants						
	#1	#2	#3	#4	#5	Total Score (sum of rankings of Key informant #1, #2, #3, #4 and #5)	Average Score (sum of ranking divided by total number of key informants)
Ranking							
Overall average (write the level in words)							

M16: Perceived Effectiveness of Management Tools

Summarize the descriptive data. Show clear boundaries of the tools on a map. Report an agreed ranking of each tool on a 5-point scale (1 = severe negative effectiveness to 5 = high positive effectiveness).

Management tools	Agreed ranking of effectiveness

M17: Benefits of Management

Calculate the percentage of people describing their household received material and non-material benefits from management.

Types of Benefits	Percent noted in each level of agreement				
	1=Strong disagree	2=Disagree	3=Neither	4=Agree	5=Strongly Agree
Material					
Non-Material					

M18: Compatibility of Management Goals with Local Cultural Value and Beliefs

Summarize and synthesize descriptive data from the key informants

STAKEHOLDERS

ST1: Stakeholder Groups

Synthesize data into a table. Descriptive data of the stakeholder organizations can be summarized into a brief narrative.

(see Section 2, ST1 for an example of how to complete the table)

Coastal Activities	Stakeholder Group 1	Stakeholder Group 2	Stakeholder Group 3

ST2: Stakeholder Participation

Synthesize the data into a table as below:

Coastal Activity	Stakeholder Participation (Yes/No)	In What Way

Calculate the percent of respondents for each scale of perceived participation level, an average ranking, and note in a table.

	Percent responses				
	5= Fully active Participation	4= High Participation	3= Moderate Participation	2= Low Participation	1= No Participation
Compliance	%	%	%	%	%

An average ranking =

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This manual includes CD containing electronic copies of the following materials:
1.SEM-Pasifika
2.Locally Marine Managed Area Learning Framework (LMMA-LF)
3.Socio-Economic Fisheries Surveys in the Pacific (SFSPI)
4.Socioeconomic Monitoring Guidelines Southeast Asia (SocMon South East Asia)
5.LMMA guide

SEM-Pasifika

Socioeconomic Monitoring Guidelines for Coastal Managers in Pacific Island Countries