Chapter 4

What Are the Steps to Assess Coastal Community Resilience?

Resilient communities learn from experience and adapt to change. An assessment of CCR provides vital information and data needed to adapt plans and programs for enhanced resilience. The assessment process uses benchmarks to evaluate the capacity of a community to reduce risk, accelerate disaster recovery, and adapt to change from coastal hazards.

The CCR assessment described in this guide is intended as a rapid assessment, to be conducted as a collaborative and participatory undertaking by coastal communities, national and local government agencies, nongovernmental organizations, private sector groups, and other key stakeholders to identify strengths, weaknesses, and opportunities to enhance resilience at local and national levels. The assessment should be conducted by a multidisciplinary team that includes members experienced in community development, coastal management, and disaster management. The steps for conducting a CCR assessment including the following:

- Define the purpose, scope, and participants of the assessment
- Review CCR benchmarks
- Prepare for the assessment
- Collect information and data
- Compile and analyze results
- Validate and communicate results
- Provide recommendations to adapt plans and programs for enhanced resilience

The CCR assessment approach described in this guide is intended as a rapid assessment, to be conducted as a multisectoral collaborative and participatory undertaking to identify strengths, weaknesses, and opportunities to enhance resilience at local and national levels.

Define the Purpose, Scope, and Participants of the Assessment

A CCR assessment is first and foremost a valuable process for initiating a dialogue among community leaders, coastal managers, and disaster managers on ways to collaborate and enhance the capacity of a community to minimize risks from coastal hazards. A CCR assessment may be conducted as a self assessment or as an external assessment. The purpose of conducting a CCR assessment should be clearly defined for both the assessment team and stakeholders.

The assessment process can be used throughout a project development cycle to evaluate the project design and to monitor and evaluate project implementation to address resilience gaps and capacity-building needs. The assessment can be used to evaluate the capacity of an organization to assist communities with enhancing resilience, and in the process, to identify partners needed to assist in some areas where the organization is weak.

Practitioners working directly with coastal communities can use resilience benchmarks to assess ongoing activities such as livelihood development, emergency response, and siting and construction of housing and settlements. National and local government agencies may utilize CCR assessments to identify gaps in policies, plans, and programs to enhance resilience. CCR assessments can be used by international aid agencies, banks, and the private sector to identify ways to sustain investments by designing and funding programs and development activities to increase community resilience. The assessment team should be able to clearly communicate the purpose of the CCR assessment to the stakeholders involved. The purpose of the assessment can be defined by answering key question such as those provided in Table 4-1.

Table 4-1. Defining the Purpose of the CCR Assessment

Guiding Questions	Assessment Team Response
What institutions or organizations are proposing the assessment? Who is the lead institution?	*Example: National disaster committee working group*
What is the purpose of conducting this assessment and what are the desired outcomes?	*Example: To help the provincial government identify priority actions and funding requests for next year.*
Who are the key stakeholders (target audience) that may have an interest in using the findings of this assessment?	*Example: The National Disaster Commission and the Provincial Planning Department have a partnership to facilitate local hazard plans and grants to mitigate impacts from priority hazards.*
How does the target audience anticipate using the results of the assessment?	*Example: Prioritize funding for hazard mitigation and training for community committees.*
What is the level of commitment of the community to engage in the assessment and follow-up actions?	*Example: There is a new mayor who campaigned for change; the community is developing a 5-year strategic action plan.*

The scope of a CCR assessment also needs to be clearly defined to ensure results are meaningful at the community level and to facilitate action to enhance resilience. In defining the scope of the assessment, a number of factors should be considered, including:

- Coastal hazards and other hazard features
- Natural resources of the area
- Demographic and socioeconomic attributes
- Cultural attributes
- Political boundaries
- Stakeholders or target audience

The scale of the assessment should be limited to a manageable unit defined by human communities in relation to their general area of habitation and resource uses, and in consideration of local political jurisdictions. It should be noted that the assessment will range in scale from political jurisdictions, in the case of governance, to natural resource use areas for coastal resource management and land use, and to areas particularly vulnerable to potential hazards.

A potential major outcome of a CCR assessment is improved collaboration and information sharing between a broad base of stakeholders at national, subnational, and local levels. The involvement of a broad base of stakeholders will build commitment to implementing recommendations that emanate from the assessment. Stakeholders essential to the CCR assessment process are:

- Local and/or national government officials (planning, police, disaster, environment)
- Heads of community-based organizations
- Business leaders
- School administrators and teachers
- Representatives of NGOs working in the area but external to the community
- Representatives from externally funded programs working in the area

An analysis of key stakeholders and their interest in CCR should be conducted to ensure that the purpose of the assessment is aligned with the interests and motivation of key stakeholders.

Define the Scope of the Assessment

- Use maps to limit boundaries and for reference to important geographic, demographic, natural resource, and hazard features of a given area.
- Limit scale to manageable units, as defined by human communities in relation to their general area of habitation and resource uses, and in consideration of local political jurisdictions.
- Identify stakeholders both within and outside the physical boundaries of the assessment.
- Consider that the scope will vary for different elements of resilience, ranging from political jurisdictions (in the case of governance) to natural resource use areas (for coastal resource management and land use).

An analysis of key stakeholders and their interest in CCR should be conducted to ensure that the purpose of the assessment is aligned with the interests and motivation of key stakeholders.

Review CCR Benchmarks

The resilience elements and their benchmarks guide the CCR assessment. These benchmarks represent a generic list of desired conditions against which to evaluate the resilience status of a coastal community. Chapter 6 provides detailed descriptions of the elements and associated benchmarks of CCR. The benchmarks for each element may require some level of adaptation to address the local context in which they are used. In addition, it is useful to determine the need for a rating system to compare, either qualitatively or quantitatively, the resilience status of the community with the desired condition described by the benchmark.

Adapt benchmarks as needed to local context. The benchmarks for each element should be reviewed to determine the need to adapt them to the national, subnational, or local context in which they are being used. Benchmarks can be adapted to make them more easily understood given the context and location of the assessment. A process to determine the need to adapt a particular benchmark is provided in Figure 4-1. If it is difficult to identify the type or source of data needed to evaluate the condition described in the benchmark, the benchmark may need to be changed to more closely reflect the national, subnational, or local context. An example of how the benchmarks in this guide may be modified to be communicated clearly in Sri Lanka is provided in Table 4-2.

Table 4-2. Example of a Benchmark Adapted to a Local Context

Benchmark from this Guide	Adapted Benchmark
D1. Land use policies and building standards that incorporate measures to reduce risks from hazards and protect sensitive habitats are established, monitored, and enforced.	National organizations (Urban Development Authority, Coast Conservation Department, Reconstruction and Development Authority, and Ministry of Lands) and local mayors and councils consider both coastal hazards and natural resources when developing policies and standards and making land use decisions. These same or other organizations monitor these policies and standards to make sure they are being followed and, if not, have mechanisms to enforce them.

The resilience benchmarks can also be adapted into a series of questions that can be used as a survey instrument to gage the level of community awareness and capacity to enhance resilience. If used as a survey instrument, the sample size and profile and distribution of survey respondents will need to be considered.

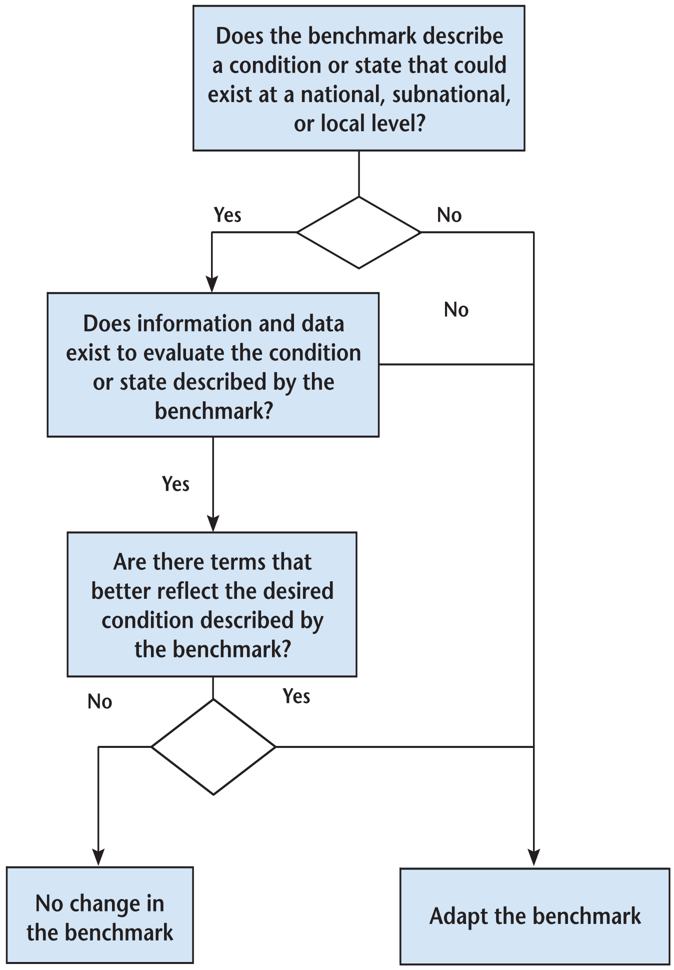
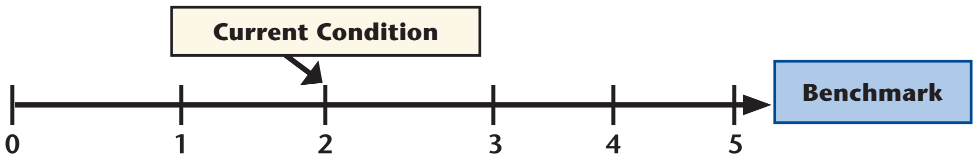


Figure 4-1. Process to Adapt Resilience Benchmarks to Address Local Context

Consider establishing a rating system for benchmark evaluation. A rating system can serve as a useful tool to compare the current condition described by the CCR assessment results with the desired condition described for each benchmark. The benchmarks for each resilience element describe desired conditions of CCR. The CCR assessment provides information and data to compare, either qualitatively or quantitatively, the resilience status of the community with the desired condition described by the benchmark (Figure 4-2). It is recommended that the rating system used be simple and easy to communicate to stakeholders.

Scoring (numerical rating) can be a useful approach to evaluate progress toward or achievement of each benchmark. Scores of 0 to 5 can be assigned to each benchmark based on an analysis of the assessment results. The scores for each reliance element are averaged to give an overall indication of resilience for a given area and to make



5 Excellent (81 to 100 percent fulfilled, sustainable)
4 Very Good (61 to 80 percent fulfilled)
3 Good (41 to 60 percent fulfilled)
2 Fair (21 to 40 percent fulfilled)
1 Poor (1 to 20 percent fulfilled)
0 Condition absent

Figure 4-2. Rating as a Tool to Evaluate Assessment Results

comparisons among areas (Table 4-3). Although scoring is not required to evaluate the level of resilience, it is a useful method because it sets a baseline for future comparison and provides a cross comparison among elements to aid in defining priorities for action.

Information and data collected for each benchmark can be disaggregated into strengths, weaknesses, and gaps for each resilience element. The relative number of strengths, weaknesses, and gaps for a given benchmark provides an indication of overall resilience status compared to the desired condition for a particular benchmark (Figure 4-3).

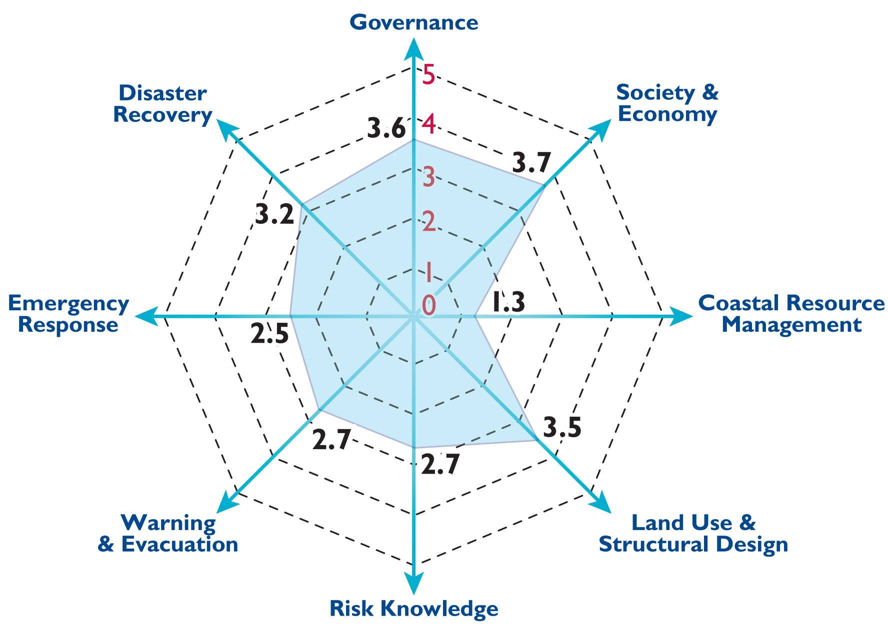


Figure 4-3. Graphic Representation of Rating

Table 4-3. Numerical Rating System for Each Benchmark

Governance Benchmarks	Rating
A1. Community development policies, plans, and programs are implemented and monitored in a participatory and transparent manner.	4
A2. Basic services (i.e. water, transportation, security, etc.) are accessible to all sectors of society.	2
A3. Participatory collaboration mechanisms among different sectors and various levels of government are established and used to manage for resilience.	3
A4. Technical and financial support mechanisms are transparent, accountable, and available to support planned community actions.	1
Average	2.5

5 Excellent (81 to 100 percent fulfilled, sustainable)
4 Very Good (61 to 80 percent fulfilled)
3 Good (41 to 60 percent fulfilled)
2 Fair (21 to 40 percent fulfilled)
1 Poor (1 to 20 percent fulfilled)
0 Condition absent

Another example of a rating system characterizes the resilience status and trends for each benchmark (Table 4-4). The assessment results may reveal that resilience status for a particular benchmark is poor as indicated by major weaknesses or gaps, but that a number of actions are under way that will likely improve the status over time. This evaluation method characterizes both the current and potential future conditions compared to the desired condition described by the benchmark.

Table 4-4. Status and Trends Rating System for Each Benchmarkk

Governance Benchmarks	Rating
A1. Community development policies, plans, and programs are implemented and monitored in a participatory and transparent manner.	■
A2. Basic services (i.e. water, transportation, security, etc.) are accessible to all sectors of society.	▼
A3. Participatory collaboration mechanisms among different sectors and various levels of government are established and used to manage for resilience.	▲
A4. Technical and financial support mechanisms are transparent, accountable, and available to support planned community actions.	■

■/▲/▼ = Good/Good and improving/Good but declining

■/▲/▼ = Fair/Fair but improving/Fair and declining

■/▲/▼= Poor/Poor but improving/Poor and declining

O = Absent

Regardless of the rating system used, a participatory process with the stakeholders as well as the CCR assessment team is recommended to evaluate status against the benchmarks. A comparison of ratings given by community leaders, NGOs, and government agencies interviewed separately as part of the CCR assessment can provide useful information about the perceptions of different sectors of society.

Any rating undertaken by the assessment team should be conducted as a group effort involving all members of the team. All information and data collected by the team from interviews, focus group discussions, participatory mapping, and secondary data sources needs to be considered and discussed as part of the rating process. The rationale for rating each benchmark should be summarized in order to capture the consensus reached by the assessment team. All such data should also be summarized in a report for future reference.

While numerical rating systems can serve as a useful tool for promoting dialogue and comparing the resilience status of a community, numerical ratings can be misinterpreted and misused (Table 4-5).

Table 4-5. Positive and Negative Features of Numerical Rating Systems

Positive Features	Negative Features
• Provides a qualitative rating that helps prioritize key issues that need to be addressed • Enhances assessment results by promoting discussion among the team in assigning a score • Useful in summarizing and communicating assessment results to stakeholders	• Numerical rating may tend to oversimplify status • Ratings can be subjective unless designed as a rigorous quantification tool • Scores may be misinterpreted or used improperly to guide funding

Prepare for the Assessment

Once the purpose and scope of the CCR assessment are clearly defined, a number of preparatory steps are necessary. Taking the time to properly prepare for the assessment will increase the likelihood that stakeholders will be interested in the results and act upon the information.

Identify sources of information. A broad cross section of individuals from national, subnational, and local government agencies, NGOs, community groups, and other stakeholder groups will be participants in the assessment. The CCR assessment requires information gathering and interviews at different levels of governance, from community to national levels. As a first step, it is useful to review the benchmarks for each element and identify sources of information at local, subnational, and national levels for each benchmark. Some factors to consider in identifying organizations and individuals to interview and obtain information for the assessment include:

- Broad cross section of stakeholders: Community leaders, private sector, NGOs, and national and local government agencies
- Multidisciplinary technical expertise: Coastal managers, regional planners, hazards specialists, disaster managers, livelihood (such as industry or agricultural) representatives, social and cultural leaders

Determine assessment method by benchmark. The assessment method describes the mode in which information on each benchmark will be collected. A combination of assessment methods are needed to evaluate each benchmark. These methods may include:

- Secondary data and information compilation and review
- Participatory mapping
- Interviews with key informants
- Focus group discussions

Before collecting any new information and data, relevant secondary data and information should be used to conduct a preliminary assessment of community resilience for each benchmark. Participatory mapping is a powerful assessment method that provides spatial data, solicits local and traditional knowledge, and engages stakeholders in the assessment process. Interviews and focus group discussions are essential methods needed to assess most of the resilience benchmarks.

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Organize and train the CCR assessment team. The eight elements of CCR represent a broad range of assessment topics. A multisectoral assessment team composed of community leaders, NGOs, private-sector representatives, and local and national government entities would represent the highest level of participation and achieve the greatest likelihood for implementing follow-on actions needed to enhance resilience.

Conducting the assessment will require skills appropriate to a wide variety of tasks: project management, conducting research, developing interview questions,

CCR Assessment: An opportunity to develop new partnerships

The national CCR workshop conducted in Sri Lanka in October 2006 resulted in new partnerships of the Disaster Management Agency (DMC), Coastal Management (CCD), and community development NGOs. They came together to perform many of the field assessments, which provided the assessment team members with a complement of expertise within each domain. An added benefit of this partnership was sharing information and experiences between the institutions.

conducting interviews and meetings, mapping, performing coastal hazards analysis, and writing clear reports. A multidisciplinary assessment team composed of individuals with specific technical expertise is essential for conducting a comprehensive CCR assessment. A more focused assessment team may be used if the purpose and scope of the assessment is limited to specific resilience elements.

The assessment team should be organized with clear roles and responsibilities for collecting information and data on the resilience status for specific benchmarks. An assessment team leader should have overall responsibility for all aspects of the assessment. The roles and responsibilities of the assessment team should be defined and understood.

The assessment team should have a common understanding of the CCR elements and benchmarks, the assessment methods to be used, and specialized skills depending on the roles and responsibilities of individual members of the team. Members of the assessment team may require specialized training on interviewing skills, focus group discussions, and participatory mapping. A training session guide for conducting a CCR assessment is provided in Appendix C.

Develop assessment work plan and schedule. A work plan is a simple tool to consolidate all the preparation steps for a CCR assessment. The work plan organizes information about the assessment to help give the team a complete understanding of the objectives, geographic scope, data collection and analysis, schedule, and roles and responsibilities for conducting the assessment. The assessment team should be involved in developing and reviewing the work plan and schedule for the assessment. Data collection should be well coordinated and scheduled in advance to ensure participants involved in the assessment are available.

Collect Information and Data

The CCR assessment requires information gathering and field data collection at the national, subnational, and community levels. This section of the guide outlines a few useful and common field data collection methods for conducting a CCR assessment. This is not intended to be a comprehensive list. Other data collection methods, such as surveys or facilitated workshops, may be more appropriate and are encouraged to be used based on the scope and purpose of the assessment.

The preparation activities discussed in the previous section provide the foundation for successful field data collection. The assessment team should have a clear understanding of the purpose and scope of the assessment and of the strategy for completing the assessment before going into the field.

The elements and benchmarks of resilience should be placed into a local context and adapted where necessary to facilitate understanding in the community. In addition, secondary information such as maps and reports should have been synthesized into summaries for each element and each benchmark. This crucial step provides the assessment team an opportunity to identify the critical information gaps, which in turn ensures that the gaps are addressed in the field through interview questions and group activities.

Data collection activities such as interviews, focus groups, and participatory mapping activities should be well documented. In addition to handwritten and typed notes, photographs and video can be effective media for conveying results of the assessment. Images from the community and of the people who participated in the assessment can help when communicating results of the assessment.

CCR assessment team members should also be flexible and take time while in the field to make additional observations regarding the elements and benchmarks. For example, they may want to informally ask some community members about information they obtained in the field, or inquire about perceived hazard risks and resources. These types of field observations may help to paint a more complete picture of the community.

Conducting Interviews

Interviews can be an effective way to collect information for assessing CCR. Interviews are primarily used during the assessment process for validating information gathered from secondary sources (maps, reports, etc.), deepening the understanding of existing information, and addressing information gaps.

It is important to have a clear understanding of how each interview should contribute to the assessment (validation, deepen understanding, or fill a gap) to ensure their effectiveness. This will make the task of developing interview and discussion questions much easier.

Interview Do’s and Don’ts

Avoid giving mixed messages and making promises you cannot keep.

Avoid misleading questions and/or sharing personal opinions. Rather, ask open-ended questions and be neutral in your questioning.

Do not make the interview rigid; think on your feet and be flexible.

BE SENSITIVE. Do not cause fear or upset people. Phrase questions appropriately and be conscious of everything you are communicating.

Ensure that the conditions and environment are comfortable for your interviewees. Dress appropriately and always sit at the same level as your subject.

Use the local language.

Preplanning is essential. Pilot-test the interviews to ensure final interview questions are appropriate and will address the objectives of the interview.

Prepare the interviewees for the interview. Give them a standard introduction that covers the purpose, objectives, and intentions of the assessment.

Structure questions in a way that makes effective use of time. Make the questionnaire short and succinct.

Validate information, especially with important information and in cases where you suspect the participants are not telling the complete truth. If in doubt, check with another member of the community.

Develop a standard introduction for the assessment before going to the field. This helps kick off interviews and group activities and allows participants to understand the purpose of the assessment and how the information they provide will be used. Providing a standard introduction also provides participants an opportunity to ask questions and helps them feel comfortable. Major points to cover in the introduction include:

- Who you are, your organization, and your partners
- The anticipated length of the interview, discussion, or mapping exercise
- Process and purpose of the assessment
- Intended use of information

After the introduction, always allow for questions before proceeding.

Suggested National and Subnational Interviews

- Upper-level staff from national government agencies with programs related to disaster management, coastal resource management, and community development.
- Upper-level staff from provincial or district-level government departments involved in disaster management, coastal resource management, and community development.
- Staff from large NGOs or not-for-profit organizations involved in disaster management, coastal resource management, and community development.

Suggested Community-Level Interviews

- Local officials involved in community-based activities related to disaster management, coastal resource management, and community development.
- Community volunteers involved in disaster management, coastal resource management, and community development.
- Trusted information sources such as teachers, coaches, religious leaders, and business owners.
- Cross section of community members of different ages, gender, ethnicity, and livelihood.

National and Subnational Level Interviews

National and subnational level interviews are critical for determining the conditions that exist within large governmental agencies and NGOs that support or possibly limit CCR. Interviews with agencies and organizations involved in disaster management, coastal resource management, and community development should provide a more complete picture of factors at the national, provincial, or district levels that contribute to or limit CCR.

Learning the initiatives and assistance programs of these agencies and organizations can also provide a strong indication of governmental and organizational priorities. This information is critical. Aligning community-level actions with national and subnational priorities can greatly increase the effectiveness of any identified actions for enhancing community resilience. For example, if national and/or subnational programs for mitigating flood impacts do not identify habitat restoration as an effective mitigation strategy, it is much less likely to be sustainable when compared to other strategies for which technical assistance is available through such programs.

Community-Level Interviews

Community-level interviews are critical for understanding individual perceptions, beliefs, and values related to resilience. Understanding how regular people feel about resilience elements in their community is important. This knowledge will ensure identified actions for resilience are in line with community values and make them likely to be accepted and sustained.

When conducting community-level interviews it is best to try and capture a representative cross section of the community. Interviewing both men and women of different ages, religions, races, and with different livelihoods will ensure the responses reflect the range of perceptions and values in the community. Use all tools at your disposal such as worksheets, maps, and figures to support the interview.

Focus Group Discussions

Focus group discussions are facilitated group discussions in which open-ended questions are asked in a way to trigger discussion amongst participants. Attention is given to reducing structure so that the information is gained from the participants rather than being determined by the questions asked.

Focus groups are well suited for preliminary data collection, especially when time is limited or when a more structured approach is being considered, such as a workshop or survey. Like community-level interviews, focus group discussions are critical for understanding a community's perceptions, beliefs, and values related to resilience.

A. STEIN

Focus group discussions can be used to collect information and data for the assessment

Additional Do's and Don'ts for Focus Group Discussions

Follow local customs and protocols.

Allow for all participants to properly introduce themselves.

Use language that can be understood by the entire group—avoid the use of technical terms.

Be diplomatic, familiar with the discussion topics, and adjust the situation when necessary.

Encourage all members of the group to participate. Asking questions in a way that encourages descriptions or personal accounts helps to create dialogue.

Avoid controversial and sensitive subjects. There must not be any problems among the participants after the discussion.

CRMP PHOTO (COMMUNITY DRAWING MAPS IN PARTICIPATORY ASSESSMENT)

Mapping is a powerful planning tool and can promote community involvement

Participatory Mapping

Participatory mapping is a facilitated process in which small groups work to identify, locate, and classify significant physical features in a community. This information is then transferred into a map or represented in some other visual way such as a diagram or picture. The goal of most participatory mapping exercises is to simply create concrete opportunities for discussion about social, economic, and/or environmental resources and for individuals to learn about their own and others' perceptions surrounding these resources. Participatory mapping is an effective way for discussing elements of resilience and contributes greatly to the CCR assessment process. The process described in this section is adapted from Walters et al., 1998.

Define the scope and purpose. The first step in getting started is to define the scope and purpose of the mapping exercise. This should be done with all partners involved in conducting the CCR assessment. This step will allow the group to decide on specific information that may be needed to assess a particular element of resilience, and whether to limit the exercise to one or more specific elements (Table 4-6).

Identify facilitators and note takers. The CCR assessment team should also identify a lead facilitator, cofacilitator, and note taker. These individuals should have rapport established with the community. It will be the role of these individuals to contact participants and schedule the mapping exercise.

Table 4-6. Community Features to Consider for Mapping by Resilience Element

A. **Governance:** Basic services (roads, bridges, ports and harbors, electrical supply, potable water, etc.), critical facilities (hospitals, schools, etc.), government offices

B. **Society and Economy:** Religious institutions (churches, mosques, temples, etc.), cultural resources (shrines, historical landmarks, etc.), commercial centers (markets, malls, supply centers), livelihood resources (fishing grounds, cold storage)

C. **Coastal Resource Management:** Protected areas, conservation areas, management zones, critical habitat (coral reefs, wetlands, etc.), resources of special concern (endangered species, spawning grounds, etc.), protective resources (sand dunes, mangroves, etc.)

D. **Land Use Management and Structural Design:** Current and planned land uses (agricultural, residential, industrial, conservation, etc.)

E. **Risk Knowledge:** Hazard areas (tsunami zones, flooding zones, landslide zones, erosion zones), at-risk populations, individuals with special needs

F. **Warning and Evacuation:** Warning towers, warning flags, warning centers, evacuation zones, evacuation routes, evacuation towers, evacuation shelters, safe areas

G. **Emergency Response:** Emergency centers, police stations, community center

H. **Disaster Recovery:** Emergency supplies, redevelopment areas, coastal setbacks

Identify key informants. Once the scope and purpose has been defined, identify key individuals who can provide information and perspectives that will contribute to the purpose of the exercise. In selecting individuals, consider whether there is a need to divide the participant group by gender, age, religion, ethnicity, or other categories. If time and resources permit, more than one exercise may be helpful. Stratifying participant groups may help to provide insight into differences in perceptions, access to resources, and social dynamics. In some cases, individuals are simply unlikely to share information openly if a member of another category is present.

Gather materials. Once individuals have agreed to participate in the mapping exercise, materials such as paper, pencils and/or markers, and masking tape can be acquired. If possible it is useful to have paper that is large enough for many participants to work on together. If paper and writing utensils are not readily available, maps can be drawn on the ground using sticks and features can be represented by rocks, leaves, and shells, the point being to provide a concrete representation of the community to help drive the discussion. Supplemental maps such as topographical maps are often helpful for navigating or identifying names of features such as rivers or streets, but should not be used to influence the participants during the exercise. A compass, Global Positioning System (GPS) unit, and camera can also be useful if available.

Create a checklist. Begin the mapping exercise by creating a checklist of features to be mapped. This checklist can be compiled by the CCR assessment team or members of the participant group. The selected features should reflect the purpose of the exercise and may include items such as those listed in Table 4-6. Avoid having too many (>10) features in the checklist as it often clutters the map and makes interpretation by others difficult.

Prepare a base map. The preparation of a base map is useful and provides the participant group with common understanding of the orientation and scale of the area to be mapped. This can be accomplished by having the participants first draw features such as coastlines, rivers, islands, mountains, and other recognizable landmarks. To get people comfortable with sharing information, it is often helpful to have participants provide the names of the landmarks or reference points in the base map.

The use of a Geographic Information System (GIS) can be quite helpful for creating simple base maps. However, caution should be used if using satellite imagery or aerial photographs in the base maps. Many individuals are not familiar with such views of their community, and they can be confusing and distracting. If a large-format printer or plotter is not available to print large maps, a projector can be used to display the map on a wall and then drawn by hand onto paper.

Begin mapping. Use the base map to begin identifying features from the checklist. Encourage all participants to contribute to the map. One or two individuals should not dominate the process. The use of colored pencils or pens to classify features, the use of labels, and the generation of a legend can make the map easier to interpret later.

Next steps. Once the mapping is complete, allow the information to be shared with others in the community to provide some validation to the information collected. The facilitators and note takers may want to work together to synthesize the mapping exercise into a report to contribute to the CCR assessment or other activities. A copy of this report may also be left behind with the community along with the original map. Depending on the intended use(s) of the map, it may be necessary to transpose the information onto another map.

For example, if the community is dealing with formal institutions and the exercise resulted in a rough sketch map, the information could be transferred into a more formal map. This can be done with the use of a GIS if a more precise map is desired; if the presentation just needs to be improved, simply photographing the map and using a computer graphics program may suffice. This process is often referred to as two-stage mapping and can be an effective way for distributing the maps among organizations.

Additional Do's and Don'ts for Participatory Mapping

Participatory mapping should be initiated after baseline information about the community has been collected, reviewed, and synthesized by all parties conducting the CCR assessment

Participatory mapping should be conducted after rapport with the community has been established

Knowledge of the social structure of the community should be clear to all facilitators

Compile and Analyze Data

The compilation and analysis stage of the CCR assessment process is intended to provide the assessment team with a number of outputs, including (1) an assessment and/or score for each benchmark, (2) community strengths and weaknesses for resilience, and (3) summary statements for each resilient element.

This section of the CCR Guide describes in more detail the steps to developing these outputs and introduces two worksheets that will help make the process easier. It is suggested that this stage of the assessment process include the entire assessment team. Active participation of the entire team will provide the group an opportunity to identify any contradictory information and ensure the collected information is well understood by all.

Before getting started with the analysis, be sure all the secondary information (maps, reports, etc.) and field data (from interviews and group activities) are organized by element and benchmark. Identify any missing information, one benchmark at a time, and determine how the assessment team will fill in the gaps.

After compiling and organizing information, use Worksheet 1 – Benchmark Summary (Appendix A) to discuss the information gathered through the assessment for each benchmark. Try to identify key findings for each benchmark and organize them into strengths and weaknesses. If using a rating system as part of the assessment, discuss and assign the appropriate score for each benchmark. An illustrative example of assessment results using Worksheet I is provided in Table 4-7.

Table 4-7. Illustrative Assessment Findings and Analysis (Using Worksheet 1 from Appendix A)

Benchmark	Findings/Key Points Related to Community Resilience	Strengths	Weaknesses	Data Gaps	Rating
D1. Land use policies and building standards that incorporate measures to reduce risks from hazards and protect sensitive habitats are established, monitored and enforced.	• Local land use policies and plans exist, however, are focused on urban areas and not rural communities • Land use plans were revised after the tsunami in coordination with national and provincial authorities and included maps of sensitive areas and tsunami inundation areas • Revised land use plans were not systematically used in recovery efforts to guide redevelopment in tsunami-affected communities • Nested system of plan development, national, provincial, local, is set up well on paper, but the implementation lacks human, technical and financial capacity.	S S S S	W W W	Need to review building standards	2
D2. Critical infrastructure are located outside high risk areas and constructed to address risks from priority hazards.	• All critical infrastructure, including hospitals, police stations, fire stations, are located within tsunami inundation zones • Several schools were relocated post-tsunami outside the tsunami zone	S	W		2
D3. Developers and communities incorporate risk reduction into the location and design of structures.	• Some developers are incorporating earthquake-resistant standards to commercial buildings post-tsuanmi • Some parts of the community have reverted to traditional housing design to address chronic flooding and potential tsunami	S S		Unclear what portion of the community is incorporating these measures	3
D4. Education, outreach, and training programs are established to improve compliance with land use policies and building standards.	• No education, outreach, or training programs available • Lack of awareness of land use policies and plans by the public and developers, construction companies		W W		0

Note: In the above example, the assessment team met to discuss key findings and disaggregate the data into strengths and weaknesses. A finding statement may indicate both strengths and weaknesses (e.g. a plan developed but not implemented). Data gaps were noted and additional primary and secondary data collection was conducted to fill these gaps. Using a rating system of 0 (absent) to 5 (75–100% fulfilled), the entire team discussed the results of the assessment and achieved a consensus of the score for each resilience element.

Once each benchmark has been analyzed, begin to summarize each element using Worksheet 2 – Element Summary (Appendix A). Use this worksheet to develop summary statements for each element and discuss any opportunities for increasing resilience the group identified through the course of the assessment. In addition, discuss and list the existing good practices in the community that are contributing to resilience. Be sure to pay special attention to any linkages between the elements and opportunities. Note these linkages so they can be addressed in the summary statements discussed in the following section. If using a rating or scoring system, assign an overall classification or average score for each element.

Depending on the purpose of the assessment, information and data can also be analyzed across the elements by category of benchmark (Table 4-8). For instance, it may be useful to look at the technical and financial resource capacity needed by the community in all resilience elements, to identify needs that can be more efficiently addressed by a common approach.

Table 4-8. Analysis of CCR Assessment Results by Element and Benchmark Category

	Benchmark by Core Capacities				
Resilience Element	Policy and Planning	Physical and Natural	Social	Technical and Financial	**Element Summary and Rating**
A. Governance					
B. Society and Economy					
C. Coastal Resource Management					
D. Land Use and Structural Design					
E. Risk Knowledge					
F. Warning and Evacuation					
G. Emergency Response					
H. Disaster Recovery					
Benchmark Category Summary and Rating					

Note: CCR assessment results can be summarized by resilience elements or by core capacities, depending on the purpose of the assessment. In some cases, it may be useful to summarize the results across all resilience elements for a particular core capacity. An evaluation of benchmarks on technical and financial capacity may highlight common needs.

Validate and Communicate Results

Validating and communicating results is a critical stage of the assessment process. During this stage, the conclusions, summaries, identified opportunities for increasing resilience, and identified best practices are reviewed by all stakeholders of the assessment. Once the information has been reviewed, updated, and agreed upon, the results of the assessment can be communicated.

The format for communicating the assessment results should have been determined early in the assessment process in the preparation stages. The format (written report, website, video, etc.) should be appropriate for the intended audiences; oftentimes multiple formats may be needed to reach different target audiences. In all cases, consider developing a short summary document in addition to more detailed reports of the assessment for outreach purposes.

The first step is to develop a draft of the assessment results. Begin with an outline and include sections on the purpose and objectives, background information, assessment process, results, and conclusions. Once a draft of has been developed, create a review panel to validate the assessment. The review panel should consist of people from within the assessment team and not on the assessment team but from one of the participating agencies or organizations. Once all review comments have been discussed and addressed, finalize the draft.

CCR Assessment Report: Key Sections

Background and Purpose

Stakeholders and Audience

CCR Assessment Process

Summary of Findings by Element

Opportunities to Enhance Resilience

Existing Good Practices

Links Between Issues

Conclusions and Next Steps