

# **How Resilient is Your Coastal Community?**

## ***A Guide for Evaluating Community Resilience to Tsunamis and Other Coastal Hazards***



**U.S. Contribution to the  
Indian Ocean  
Tsunami Warning  
System**

## Background

The Indian Ocean Tsunami of December 2004 raised awareness around the globe of the potential devastating impacts of tsunamis. Extreme hazard events, such as tsunamis, as well as many other coastal hazards pose increasing threats to coastal communities throughout the world. Resilient coastal communities reduce risk, accelerate recovery, and adapt to changes resulting from these hazards.

The US Indian Ocean Tsunami Warning System Program (IOTWS) together with partner agencies and organizations has developed a guide to coastal community resilience. This guide is intended for use by a broad cross section of government and nongovernmental organization practitioners involved in planning and implementing community development, coastal management and disaster management programs.

- Practitioners working directly with coastal communities can incorporate elements of resilience in a wide range of activities including livelihood development, siting and construction of housing and settlements, health and sanitation, and food security.
- National and local government agencies that integrate resilience processes and elements in planning and development provide the enabling conditions for communities to implement good practices.
- International aid agencies and banks can sustain their investments by designing and funding programs that focus on building coastal community resilience.

Collaboration and partnerships among these different stakeholder groups are essential in sustaining the long-term and consistent efforts to build coastal community resilience.

## Agencies and Organizations that Have Contributed to the Development of this Guide to Date

Asian Disaster Preparedness Center

Asian Institute of Technology

IUCN The World Conservation Union

KOGAMI, Indonesia

National Oceanic and Atmospheric Administration

International Federation of Red Cross

IRG-Tetra Tech, US IOTWS Program

Regional Development Ministry of Planning and National  
Development, Maldives

State Relief Commission, Government of Tamil Nadu, India

UN-International Strategy for Disaster Reduction

United Nations Development Programme

United States Agency for International Development

University of Rhode Island, Coastal Resources Center

Wetlands International

World Fish Center

World Wildlife Fund International

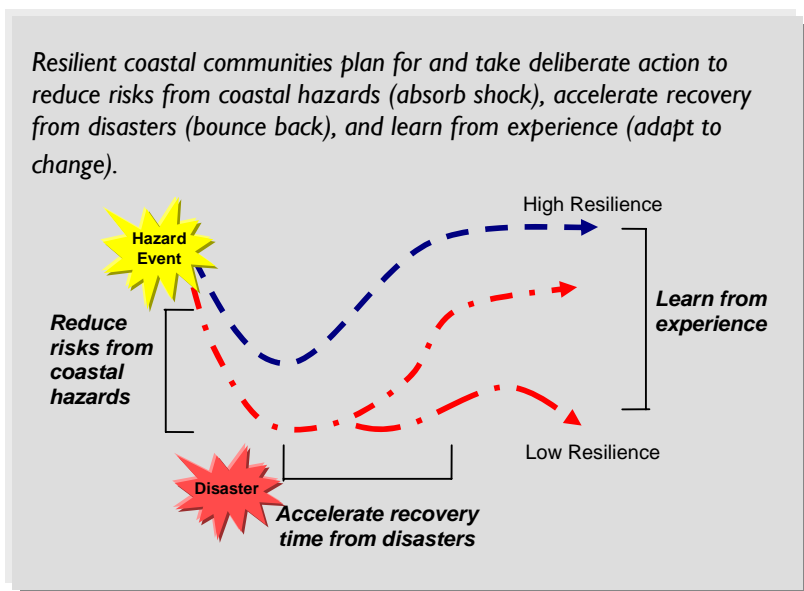
Yayasan IDEP Foundation, Indonesia

[add those in Sri Lanka]

## What is coastal community resilience?

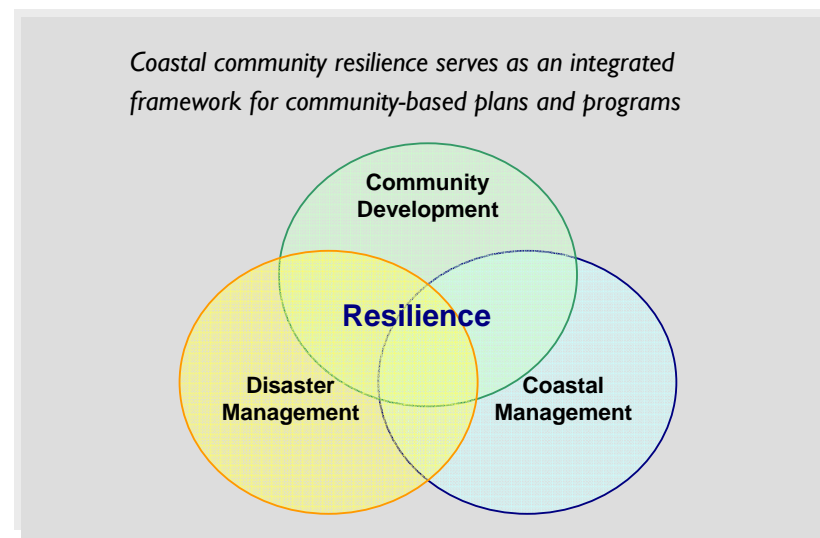
Coastal communities around the world are being subjected to unprecedented changes resulting from population growth in coastal areas, human-induced vulnerability, and global climate change. These changes are placing communities at increasing risk from coastal hazards such as tsunamis, severe storms, and shoreline erosion. Coastal community resilience is the capacity to absorb the impacts of coastal hazards, bounce-back from disaster events, and adapt to changing conditions.

Resilience of social-ecological systems is often described as a combination of three characteristics: the magnitude of shock that the system can absorb and remain within a given state; the degree to which the system is capable of self-organization, and the degree to which the system can build capacity for learning and adaptation (Folke et al. 2002). Common themes of resilient systems include: redundancy, diversity, efficiency, autonomy, strength, interdependence, adaptability, and collaboration (Godschalk 2003). Coastal communities are also “systems” in themselves comprised of sub-



systems that support the essential elements of resilience. The major sub-systems of coastal communities are social-economic and cultural, environmental, and governance.

Building coastal community resilience in these sub-systems requires integrating and maintaining an optimal balance of three community based frameworks typically viewed as independent and separate sectors: community development, coastal management, and disaster management.



Community development provides the enabling governance and socioeconomic and cultural conditions for resilience. Coastal management establishes the environmental and natural resource conditions for resilience. Disaster management focuses on preparedness, response, recovery and mitigation to reduce human and structural losses from disaster events. Coastal community resilience serves as a unifying platform for community-based plans and programs.

## Why are communities increasingly vulnerable to coastal hazards?

The Indian Ocean Tsunami of December 2004 raised awareness around the world of the potential devastating impacts of tsunamis. Coastal communities are increasingly at risk; however, from many other coastal hazards as well. These chronic and episodic hazards include human-caused actions and natural events that threaten the health and stability of coastal ecosystems and communities.

### Characteristics of Coastal Hazards

#### Episodic events – *tsunamis, severe storms, earthquakes, oil spills*

- Severe events with limited predictability that may result in disaster
- Need for long term post-disaster recovery efforts

#### Chronic conditions – *shoreline erosion, sedimentation, sea level rise, coastal resource degradation*

- Ongoing resource or environmental degradation processes that can be monitored
- Long-term restoration efforts needed to reduce risks

Human activities are degrading the quality of the coastal environment and integrity of coastal ecosystems on a daily basis. Coastal habitats such as reefs, mangroves, wetlands and tidelands provide nursery and feeding areas for many marine species and serve as buffer areas for storm protection and to control erosion. Coastal habitats are being destroyed; however, by a wide range of human uses including shoreline development, land reclamation, mining, and aquaculture. Runoff, wastewater discharges, and oil spills pollute coastal waters endangering marine life. Overfishing and use of destructive fishing practices is causing the decline of fishery resources and changes in marine ecosystem structure and function. The degradation the coastal environment from chronic human-induced actions threatens food security, livelihoods, and the overall economic development and well being of coastal communities.

Global climate change is predicted to cause an increase in sea level and the frequency and power of storms and storm surge. This will cause increased

shoreline erosion, flood and storm damage, inundation of land, saltwater intrusion into the freshwater lens aquifer, increased levels of land-based pollutants to coastal waters including sediments, nutrients and contaminants, and more frequent, longer, and more powerful El Niño and La Niña events. In addition, ocean acidification and increased sea surface temperature (Lewin and Pershing 2005) as a result of global climate change are expected to significantly alter the function and structure of marine ecosystems.

Degraded environmental conditions and increased frequency and severity of coastal hazards represent only part of the risk equation. Risk is a function of the hazard as well as the exposed population and their capacity to manage risk (UN ISDR 2004) and respond to disasters. An estimated 23 percent of the world's population (1.2 billion people) lives within 100 km of a shoreline and 100 m of sea level. By the year 2030, an estimated 50 percent of the world's population will live in the coastal zone. Most of the coastal population lives in relatively densely-populated rural areas and small to medium cities, and a few large tropical cities, where basic services and disaster warning and response mechanisms are limited.

**Risk = Hazard** (*frequency and severity*) x **Vulnerability** (*exposure and capacity*)

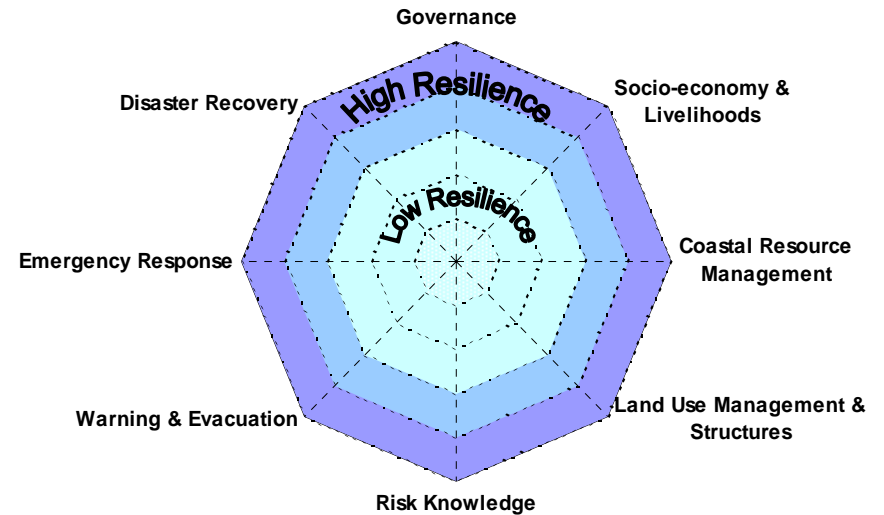
Economic development pressures along the coast, population density and distribution, and human-induced vulnerabilities, coupled with increasing frequency and duration of storms, sea level rise, and other chronic coastal hazards increase risk and set the stage for more frequent and severe disasters and reduced time and capacity to recover. The time period between disaster event and recovery is becoming shorter while some coastal communities find themselves in a state of perpetual response to and recovery from one disaster event after another. The assessment of risk is an important element of coastal community resilience. Communities must identify their exposure to hazard impacts to proactively address emergency planning, response, and recovery and implement hazard mitigation measures.

## What are the elements of coastal community resilience?

Eight generic elements of coastal community resilience are considered fundamental to reduce risk from coastal hazards, accelerate recovery, and adapt to change. Building coastal community resilience in each of these elements to maintain an optimal balance is essential and considered an ongoing process. The elements of coastal community resilience and desired outcomes are:

- A. Governance:** Leadership, systems, and institutions provide enabling conditions for participatory coastal community resilience.
- B. Socio-economy and Livelihoods:** Local economies are driven by sustainable and diverse livelihoods and healthy and peaceful socio-cultural conditions.
- C. Coastal Resources Management:** Active management of coastal resources sustains environmental services and livelihoods and reduces risks from coastal hazards.
- D. Land Use Management and Structures:** Effective land use and structural design reduce risks from coastal hazards.
- E. Risk Knowledge:** Community is knowledgeable about episodic and chronic coastal hazards and measures to reduce risks.
- F. Warning and Evacuation:** Community is capable of receiving notifications and alerts of coastal hazards, warning at-risk populations, and acting on alert.
- G. Emergency Response:** Emergency response institutions and systems are established and maintained to respond quickly to coastal disasters and address emergency needs at the community level.
- H. Disaster Recovery:** Plans, systems, and institutions are in place to accelerate disaster recovery, actively engage communities in the recovery process, and minimize negative environmental, social, and economic impacts from disaster recovery.

## Elements of Coastal Community Resilience



## How can resilience be incorporated into community plans and programs?

Linkages between community development, coastal management, and disaster management activities are needed to build coastal community resilience to both chronic and episodic coastal hazards. These linkages need to be explicit and driven by community members themselves working in concert with national and local government and nongovernmental organizations. Community-based planning and assessment of coastal hazards and risks is a fundamental first step in building coastal community resilience. Plans must be regularly reviewed and updated based on new information and experiences and lesson learned from implementation and monitoring.



### Illustrative Activities to Build Community Resilience

#### Planning

- Conduct participatory assessments of coastal hazards, coastal resources, critical infrastructure, population exposure, and governance capacity
- Identify risks and risk reduction strategies
- Develop land use, coastal management, contingency, and recovery plans that incorporate assessment of risks and community goals

#### Implementation

- Improve basic services in health, education, water, and sanitation
- Develop livelihood diversification programs
- Protect and restore coastal resources and habitats
- Enforce land use restrictions and building codes
- Conduct regular education and outreach activities
- Develop emergency warning system
- Identify evacuation routes
- Conduct evacuation drills and training
- Conduct emergency response drills and training

#### Measuring Progress & Learning from Experience

- Monitor & evaluate coastal hazards and resource conditions on a regular basis
- Review and revise plans and programs
- Review and revise recovery plan based on post-disaster assessments

## What are the benchmarks to assess coastal community resilience?

Establishing benchmarks are important for understanding the existing levels of resilience in the community. Benchmarks for each element provide a basis for assessing coastal community resilience and identifying gaps and capacity building needs. An assessment scorecard is being developed to evaluate progress toward or achievement of each benchmark. Scores of 0 to 4 will be assigned to each benchmark, with 4 representing “Very Good”. The scores assigned to each reliance element are averaged to give an overall indication of resilience.

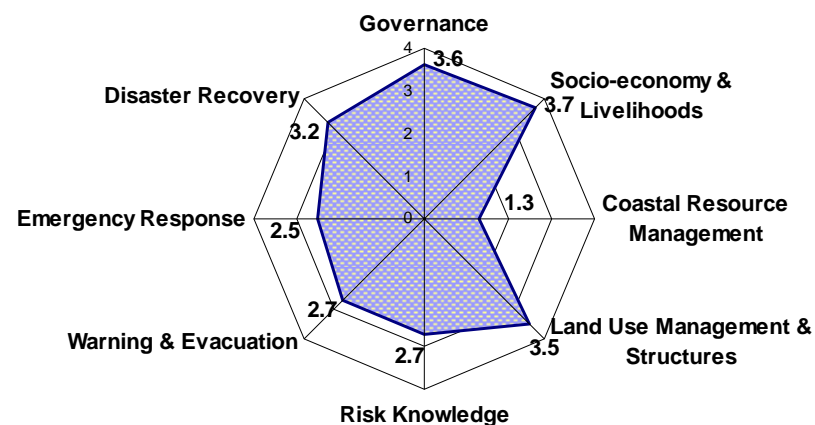
### Benchmark Score

- 4 Very Good (76-100% fulfilled, sustainable)
- 3 Good (51-75% fulfilled)
- 2 Fair (26-50% fulfilled, in progress)
- 1 Poor (1-25% fulfilled, major gaps)
- 0 Absent (0% fulfilled, not addressed)
- N/A Not applicable to this community

### Example of Scoring Resilience Benchmarks

<b>A1</b> Community development plans and policies incorporate short-term and long-term goals and actions for achieving coastal community resilience.	
<b>A1.1</b> Coastal hazards and associated risks are routinely assessed, evaluated, and understood by a broad cross section of the coastal community.	4
<b>A1.2</b> Common vision for coastal community resilience has been developed and incorporated as specific actions in community plans and programs.	3
<b>A1.3</b> Participatory decision-making systems are in place to guide community development consistent with resilience vision and goals.	2
<b>Average</b>	3

## Illustrative Scoring of Resilience Elements



## A. Governance Objectives

Leadership, systems, and institutions provide enabling conditions for participatory coastal community resilience.

- ✓ Community development plans and programs implemented
- ✓ Basic human services provided by government
- ✓ Multisectoral collaboration mechanisms operating
- ✓ Financial, technical, and human resources are sufficient

### Resilience Benchmarks

- A1** Community development plans and policies incorporate short-term and long-term goals and actions for achieving coastal community resilience.
- A1.1** Coastal hazards and associated risks are routinely assessed and evaluated by a cross section of the coastal community.
  - A1.2** Common vision for coastal community resilience has been developed.
  - A1.3** Vision for coastal community resilience is incorporated as specific actions in community plans and programs.
  - A1.4** Participatory decision-making systems guide community development consistent with resilience vision and goals.
- A2** Basic services are accessible to society provided by capable and transparent institutions as an enabling condition for building coastal community resilience.
- A2.1** Institutional capacity for basic service delivery is assessed with strengths and weaknesses identified.
  - A2.2** Risk reduction measures are incorporated into basic service delivery mechanisms.
  - A2.3** Critical facilities and infrastructure are operational for potential hazard events.

**A2.4** Contingency plans exist to respond to hazard events.

- A3** Multisectoral collaboration mechanisms are functional and effectively used to manage for resilience.
- A3.1** Multisectoral coordination body is established and functional for reviewing plans and programs for resilience.
  - A3.2** Institutional coordination body effectively links staff and program actions for socioeconomic development, coastal resource, environmental and disaster management.
  - A3.3** Multi-hazard management plan prepared.
  - A3.4** Plan defines roles and responsibilities to mitigate risks from coastal hazards.
  - A3.4** Provincial, state or national programs encourage activities that enhance resilience.
- A4** Financial, technical and human resources provide regular support to achieve community resilience.
- A4.1** Annual allocations of funds support activities that reduce risks to future damage from natural hazards.
  - A4.2** Policies exist to guide decisions that recognize and are adapted to changing conditions.
  - A4.3** Community leaders have resources and tools available to build and sustain resilience in the day-to-day activities.



## B. Socio-economy and Livelihood Objectives

Local economies are supported by sustainable and diverse livelihoods, and healthy and peaceful socio-cultural conditions

- ✓ Diverse and sustainable livelihoods are thriving
- ✓ Technical and financial resources are sufficient
- ✓ Social protection and cultural support networks exist

### Resilience Benchmarks

- B1** Economic development plans and programs promote sustainable and diverse livelihoods based on knowledge of risks from coastal hazards.
- B1.1** Enterprise development plans promote environment-friendly livelihoods.
  - B1.2** Enterprise plans incorporate strategies to address risks from natural hazards.
  - B1.3** Local economies and livelihoods have internal and external market linkages.
  - B1.4** Pre-disaster plans for economic recovery are developed by local and regional business associations or other entities.
- B2** Technical and financial resources are available to promote economic diversification, to reduce vulnerability to coastal hazards, and promote post-disaster recovery.
- B2.1** Technical and financial resources support livelihood diversification.

- B2.2** Small business development or micro-financial enterprise related programs (e.g. assistance, extension, and training) are available.
- B2.3** Best practices for enterprise development adopt principles of environmental and social sustainability.
- B2.4** Small business loan program established to recapitalize for disaster recovery.

- B3** Social and cultural networks established and support efforts to build coastal community resilience.
- B3.1** Social networks and/or organized civic groups are established with capacity to assist communities during or after disaster.
  - B3.2** Social and economic empowerment mechanisms exist to support gender and minority equality, and underprivileged sectors.
  - B3.3** Local-based conflict resolution mechanisms function to support peace and order in the community.

## C. Coastal Resource Management Objectives

Active management of coastal resources sustains environmental services and livelihoods and reduces risks from coastal hazards

- ✓ Coastal management institutions and systems are functional
- ✓ Protection of sensitive coastal habitats is being achieved
- ✓ Coastal restoration policies and plans being implemented

### Resilience Benchmarks

- C1** Plans, institutions, and systems established and effectively managing coastal and other natural resources for food security, sustainable development, conservation, natural resource/habitat restoration, and public safety.
- C1.1** Coastal resources and priority hazards are routinely assessed.
  - C1.2** Assessment data used to characterize risks to community and to develop coastal resource management plans.
  - C1.3** Coastal resource management strategies and plan (e.g. livelihood, habitats, biodiversity, and hazard mitigation) are developed and being actively implemented.
  - C1.4** Community-based forum exists and guides decision-making and conflict resolution for coastal resource management.
  - C1.5** Local and national government endorse policies for coastal resources management.
- C2** Sensitive coastal habitats, ecosystems and natural features are protected and maintained to reduce risk from coastal hazards.

- C2.1** Sensitive coastal habitats are identified and mapped to plan sustainable use policies.
- C2.2** Regulations established for resource extraction based on conservation priorities and risks from hazards.
- C2.3** Local long-term monitoring program for coastal resource baseline assessment and monitoring pre- and post-disaster conditions is established and functional.
- C2.4** Opportunities to reduce risks from coastal hazards through restoration are identified.

- C3** Restoration policies and systems guide post-disaster management of natural resources and minimize risks from coastal and natural hazards.
- C3.1** Coastal management policies are established for the emergency response and recovery periods.
  - C3.2** Post-disaster recovery pressures on coastal resources identified and projects are active to mitigate these increased demands.
  - C3.3** A process/procedure exists for reviewing reconstruction plans based on coastal resource issues.
  - C3.4** Post-disaster redevelopment incentives and support mechanisms adopted to reduce future resource extraction levels.
  - C3.5** Restoration policies and plans implemented with political support.

## D. Objectives for Land Use Management and Structural Design

Effective land use and structural design reduce risks from coastal hazards.

- ✓ Land use plans are prepared and implemented
- ✓ Structural design minimizes risk
- ✓ Monitoring and enforcement of policies and codes occurs

### Resilience Benchmarks

- D1** Land use plans are developed and reviewed based on an assessment of risks from coastal hazards and the need to protect sensitive coastal habitats.
- D1.1** Land use plans are prepared and updated
  - D1.2** Risks to existing and future development have been evaluated and factored into land use plans.
  - D1.3** Community goals and priorities for land use are defined and considered in land use plans.
  - D1.4** Existing physical structures in coastal areas have been evaluated and their risk of failure known.
- D2** Siting, design, and construction of public and private structures considers risks from coastal hazards and protects sensitive coastal habitats.
- D2.1** Information from land use plans and risk assessments are used to site structures.
  - D2.2** Structure designers factor in risk and land use information for designing and constructing safe infrastructure.
  - D2.3** Building standards and codes used to site, design and build infrastructure in hazard areas have been adopted.

**D2.4** Coastal engineering structures are designed to reduce vulnerability to coastal hazards and minimize impacts to sensitive coastal habitats.

- D3** Effective monitoring and enforcement of land use policies and building standards and codes
- D3.1** Building safety and hazard risk reduction standards and codes are supported by law.
  - D3.2** Building standards and codes are used and enforced.
  - D3.3** Policies limit investment in vulnerable land areas.
  - D3.4** Institutional capacity exists to implement land use plans and enforce policies and codes.
  - D3.5** Public information on physical and structural development activities is available and updated for common use.
- D4** Redevelopment policies and systems guide post-disaster reconstruction away from sensitive and vulnerable areas
- D4.1** Land use recovery actions developed with procedures for implementation.
  - D4.2** Reconstruction plans exist and incorporate best practices and environment friendly options for reconstruction.
  - D4.3** Policies protect disadvantaged and low-income community members during post-disaster and continuing development.

## E. Risk Knowledge Objectives

Community is knowledgeable of episodic and chronic coastal hazards and measures to reduce risk

- ✓ Participatory risk assessment and traditional knowledge used in local planning activities
- ✓ Risk communication practiced to raise awareness
- ✓ Risk monitoring and information management ongoing

### Resilience Benchmarks

- E1** Coastal hazards are assessed together with trends in coastal resource and environmental conditions at a scale appropriate to the community.
- E1.1** Historical, existing, and potential future coastal hazards are assessed and trends monitored.
  - E1.2** Baseline coastal resource and environmental conditions are assessed and trends monitored.
  - E1.3** Participatory assessment methods that engage the coastal community utilized.
  - E1.4** Assessment of coastal hazards and environmental conditions incorporate local and traditional knowledge and science-based approaches.
- E2** Vulnerability is assessed and analyzed in the context of society and culture, economies and livelihoods, natural resource management, infrastructure, and other appropriate community aspects.
- E2.1** Vulnerability of economic and livelihood assets is assessed.
  - E2.2** Social and cultural vulnerability is assessed.
  - E2.3** Vulnerability of natural resources is assessed.

- E2.4** Vulnerability of critical facilities is assessed.
- E2.5** Vulnerability assessments publicized and available

- E3** Risk is analyzed and communicated through the community together with coastal and disaster management practitioners.
- E3.1** Risks based on hazards and vulnerability are assessed with active community involvement.
  - E3.2** Risks are prioritized to guide planning and mitigation actions consistent with sustainable community development goals.
  - E3.3** Risk is periodically assessed to address changes in physical, social, environmental, and climate conditions.
- E4** Information and analyses are integrated within strategies of institutions, systems, plans, and actions across all community and government sectors
- E4.1** Risk information is made accessible.
  - E4.2** Risk information is shared and used among institutions to better inform policy and action.
  - E4.3** Risk knowledge is integrated throughout formal and non-formal education programs.

## F. Warning and Evacuation Objectives

Community is capable of receiving notifications and alerts of coastal hazards, warning at-risk populations, and acting on alert.

- ✓ Warning dissemination systems exist and are operational
- ✓ Evacuation plans exist and are tested through drills
- ✓ Education and outreach is ongoing

### Resilience Benchmarks

- F1** Emergency warnings and evacuation orders are received by a designated central community receiver from sub-national, national and/or regional providers of emergency information.
- F1.1** Emergency warning system and evacuation protocols and procedures are established.
  - F1.2** Emergency warning system and evacuation protocols and procedures are practiced and reviewed.
  - F1.3** Community network for communications and assistance are established with redundant systems.
  - F1.4** Formalized responsibilities for issuing evacuation orders at the community level are assigned with backup systems.
- F2** Systems and infrastructure to disseminate emergency warnings and other information to the community within allowable message times function along with the ability to cancel a warning or watch.
- F2.1** Communication system links people with appropriate mechanisms and technology to reach the “last mile.”
  - F2.2** Sustainable funding for operation and maintenance of early warning systems is available.

- F3** Community evacuation routes are identified and systems established to evacuate populations at risk.
- F3.1** Evacuation plan developed with engagement of all sectors of the community.
  - F3.2** Evacuation plan with readiness actions are known in the community.
  - F3.3** Regular testing of the emergency warning and evacuation systems occurs.
  - F3.4** Updating and improving the warning and response procedure occurs.
- F4** Community is aware of procedures, prepared to act, and able to respond to advisories, warnings, and evacuation orders.
- F4.1** Outreach programs established and helping communities prepare for and to be resilient to coastal hazards.
  - F4.2** School programs incorporate various aspects of disaster management including preparedness, warning, evacuation, and emergency response.
  - F4.3** Community trained volunteers or organizations for emergency warning and evacuation are promoted and coordinated in all sectors.
  - F4.4** Popular culture and news media participate in the process of community awareness raising.

## G. Emergency Response Objectives

Emergency response institutions and systems are established and maintained to respond quickly to coastal disasters and address emergency needs at the community level.

- ✓ Incident command systems are established
- ✓ Emergency facilities and systems are operational
- ✓ Training and drills are conducted periodically

### Resilience Benchmarks

- G1** Incident command system is established and functional for immediate mobilization of community response.
- G1.1** Disaster specific emergency operations plans are developed with procedures and responsibilities defined.
  - G1.2** Damage assessment teams or other relevant committees formed and prepared for action.
  - G1.3** Capacity to mobilize Emergency Operations Centers (EOC) exists with damage assessment team identifying needs and reporting status of emergency to EOC.
  - G1.4** Pre-established protocols and linkages are established for coordinated response and relief.
  - G1.5** Material and supplies for short term disaster management and response are stored in locations outside of high risk areas.
- G2** Emergency facilities and systems for healthcare, psycho-social care and basic emergency relief are established for the community.
- G2.1** Emergency healthcare and life support systems for the community are functional.

- G2.2** Essential emergency relief and food supply systems are accessible.
  - G2.3** Psycho-social support is incorporated into healthcare and life support systems.
- G3** Training, education, information exchange, and drills are ongoing to exercise, test and institutionalize the community disaster management system.
- G3.1** Regular participatory community training and drills are conducted for “end to end” emergency response preparedness and disaster management.
  - G3.2** Public outreach programs on emergency response reach volunteers, citizens, and businesses.
  - G3.3** Risk communication on emergency response and recovery issues are included in the education programs in schools.

## H. Disaster Recovery Objectives

Plans, systems, and institutions are in place to accelerate disaster recovery, actively engage communities in the recovery process, and minimize negative environmental, social, cultural and economic impacts.

- ✓ Community-driven recovery planned in advance
- ✓ Multisectoral coordination mechanisms functional
- ✓ Immediate and long term recovery plans formed
- ✓ Monitoring and evaluation of recovery progress performed

### Resilience Benchmarks

- H1** Effective community-driven process is anticipated and established for disaster recovery.
- H1.1** Damage and needs assessment procedures tested with specific requirements for community involvement.
  - H1.2** Decision-making process decided that ensures active involvement of community in guiding recovery process.
  - H1.3** Multisectoral coordination mechanisms for recovery assistance exist between the community and government, donor, and international agencies.
  - H1.4** Communication mechanisms function to obtain and share information on recovery efforts and to disseminate information to the public during the recovery process.
- H2** Disaster recovery plan developed for long term community prosperity and the protection of natural resources and habitats.
- H2.1** Damage scenarios are developed based on assessment of risks related to coastal hazards and vulnerabilities and

baseline environmental, social, cultural, and economic conditions.

- H2.2** Immediate recovery plan in place to address priority actions needed to clear debris, provide safety to citizens and return critical facilities back to service.
  - H2.3** Long-term recovery plan developed to address potential coastal hazards and damage scenarios and includes environmental, economic, cultural, and social benefits.
- H3** Disaster recovery process is monitored and evaluated at periodic intervals with plan
- H3.1** Processes set to monitor and report on the progress of recovery efforts and to revise recovery plan based on needs assessments, community inputs, and monitoring.
  - H3.2** Post-disaster review and analysis of recovery process are conducted to revise plans and protocols for future.
  - H3.3** Disaster response plan is updated to increase adaptive response with multiple coastal hazards.

## What steps can be taken to initiate coastal community resilience activities in ongoing or new programs?

Several steps can be undertaken to initiate coastal community resilience into ongoing or new programs.

- Step 1:** Determine the capacity of your organization to provide assistance in each resilience element. Review the essential elements of resilience and benchmarks. Identify strengths and weaknesses in providing assistance to communities to achieve the benchmarks. Identify partnerships needed to address gaps in technical, logistical, and financial assistance. Identify appropriate and existing tools and resources to build the capacity of your organization in each resilience element.
- Step 2:** Identify coastal communities interested in or committed to achieving the principal goals of resilience: reduce risks, shorten recovery time, and adapt to change. Site selection should also consider clusters of adjacent communities with recent history of coastal hazard-related events.
- Step 3:** Conduct resilience capacity assessment in selected communities using scorecard. Identify gaps and weaknesses through multi-stakeholder involvement and develop an action plan to address gaps and weaknesses.

### *What is the capacity of your organization to provide technical assistance and training in each resilience element?*

Resilience Element	Low	Medium	High
Governance	X		
Socio-economy & Livelihoods	X		
Coastal Resource Management	X		
Land Use Management & Structures		X	
Risk Knowledge			X
Warning & Evacuation			X
Emergency Response			X
Disaster Recovery			X

Low – not addressed or addressed indirectly through collaboration with other organizations

Medium - secondary focus of community-based activities

High – primary focus of community-based activities



## Using the coastal community resilience scorecard and benchmarks for assessments and planning

The users of this guidebook will most often be the facilitators in the process of assisting communities and local governments to build coastal community resilience. The eight elements of resilience and their corresponding objectives and benchmarks serve as guides in the process of assisting to broaden and make complete the community development, coastal resource management and disaster management processes and outcomes. The eight elements of resilience integrate these three approaches and processes into a consolidated framework for planning and action. To take this to the community level to facilitate an effective planning process, some guidelines are suggested.

- I. Scope out the community and geographical area to be assessed and set boundaries for the planning area of concern.
  - a. Use maps to limit boundaries and as reference to important geographic, demographic, natural resource and hazard features of a given area.
  - b. 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.
  - c. Consider that scale will vary for different elements of resilience from political jurisdictions, in the case of governance, to natural resource use areas for coastal resource management and land use.
2. Determine the organizations and persons that will be contacted to assist in conducting the CCR assessment. Those essential in the CCR assessment process are:
  - a. Local and/or national government officials (planning, police, disaster, environment etc.);
  - b. Heads of community-based organizations;
  - c. Business leaders;
  - d. School administrators and teachers;
  - e. Representatives of non-government organizations working in the area but external to the community;
  - f. Representatives of donor projects working in the area.
3. Conduct interviews with selected persons and organizations individually or in group sessions.
  - a. Pre-arrange interview sessions as possible. For groups, using the facilities of local government and organizations as a venue is preferable. Individual interviews might be more spontaneous.
  - b. Conduct interviews with copies of scorecards and maps as appropriate to make the sessions more productive.
  - c. Facilitate discussions with groups to obtain more information and to draw on the collective knowledge.
  - d. Ask the group to generate questions that are relevant to answer regarding the management area as a lead into the discussion on resilience objectives and benchmarks.
4. Make general observations in an assessment area outside of the formal interview process.
  - a. Tour the area and make observations on governance, socioeconomic status of people, coastal features and resources, land use planning, potential risks and hazards and other pertinent features.
  - b. Engage local participants as much as possible in the process of observation and analysis of information obtained.
5. Analyze all information in the context of needs for planning in the assessment area.
  - a. Determine the primary recipients of the information obtained.
  - b. Determine what form will be most useful for feedback to decision makers and officials who will carry the process forward.

- c. Determine what institutional mechanisms are available to continue the planning process for the assessment area.
- d. Link with organizations, projects, local government or other entities that can take ownership of the assessment results and the identified actions.

## CCR Scorecard Worksheet

Governance Benchmarks	Score (NA, 0 – 4)	Average	Socioeconomic Benchmarks	Score (NA, 0 – 4)	Average	CRM Benchmarks	Score (NA, 0 – 4)	Average	Land Use/ Structural Benchmarks	Score (NA, 0 – 4)	Average
A1.1			B1.1			C1.1			D1.1		
A1.2			B1.2			C1.2			D1.2		
A1.3			B1.3			C1.3			D1.3		
A1.4			B1.4			C1.4			D1.4		
						C1.5					
Average (A1)			Average (B1)			Average (C1)			Average (D1)		
A2.1			B2.1			C2.1			D2.1		
A2.2			B2.2			C2.2			D2.2		
A2.3			B2.3			C2.3			D2.3		
A2.4			B2.4			C2.4			D2.4		
Average (A2)			Average (B2)			Average (C2)			Average (D2)		
A3.1			B3.1			C3.1			D3.1		
A3.2			B3.2			C3.2			D3.2		
A3.3			B3.3			C3.3			D3.3		
A3.4						C3.4			D3.4		
						C3.5			D3.5		
Average (A3)			Average (B3)			Average (C3)			Average (D3)		
A4.1									D4.1		
A4.2									D4.2		
A4.3									D4.3		
Average (A4)			Average (B4)			Average (C4)			Average (D4)		
Average (A)			Average (B)			Average (C)			Average (D)		

Risk Knowledge Benchmarks	Score (NA, 0 – 4)	Average	Warning & Evacuation Benchmarks	Score (NA, 0 – 4)	Average	Emergency Response Benchmarks	Score (NA, 0 – 4)	Average	Disaster Response Benchmarks	Score (NA, 0 – 4)	Average
E1.1			F1.1			G1.1			H1.1		
E1.2			F1.2			G1.2			H1.2		
E1.3			F1.3			G1.3			H1.3		
E1.4			F1.4			G1.4			H1.4		
						G1.5					
Average (E1)			Average (F1)			Average (G1)			Average (H1)		
E2.1			F2.1			G2.1			H2.1		
E2.2			F2.2			G2.2			H2.2		
E2.3						G2.3			H2.3		
E2.4											
E2.5											
Average (A2)			Average (F2)			Average (G2)			Average (H2)		
E3.1			F3.1			G3.1			H3.1		
E3.2			F3.2			G3.2			H3.2		
E3.3			F3.3			G3.3			H3.3		
			F3.4								
Average (E3)			Average (F3)			Average (G3)			Average (H3)		
E4.1			F4.1								
E4.2			F4.2								
E4.3			F 4.3								
			F4.4								
Average (E4)			Average (F4)			Average (G)			Average (H)		
Average (E)			Average (F)			Average (G)			Average (H)		

## Illustrative Assessment Questions

### A. Governance

#### A1

- ? Has the community been engaged in identifying measures to reduce risks to coastal hazards, accelerate recovery for disasters, and learn from experience?
- ? Are there community goals for livelihoods, natural resources and hazard resilience?
- ? If yes, what process was used to establish these goals?
- ? Do local decisions on development, infrastructure investment, social programs and other activities consider potential risks from natural hazards?
- ? Do community goals incorporate current and long term vision of socio-economic issues, environment? Do they consider options to increase the community resilience to future natural hazard risks?
- ? Do regional or national programs encourage communities to implement projects that benefit multi objectives of hazards and economy, resource management or social programs? Do programs support current priorities or long term sustainability/resilience?

#### A2

- ? Do critical facilities and services have backup (redundant) systems in place to provide basic services, such as health, water, sanitation, communication, education, to the community?
- ? Does the community perform simulation exercises to help insure that staff and infrastructure associated with basic services are adequate for hazard events?
- ? Are adequate services available for all sectors?
- ? Have services improved in the past 5 years? What is needed to improve services? Do you feel secure that these services will be functional during a hazard event?
- ? Is there consideration for risks in design and operation?
- ? Does the budget process incorporate maintenance and upgrade of facilities and infrastructure for basic service delivery and mitigation of future damage?
- ? Are contingency plans in place to address disruptions in basic service delivery based on various hazard scenarios?

#### A3

- ? Is there a multisectoral coordination mechanisms for planning and implementing sector-based programs in line with community vision and development goals?
- ? Do socioeconomic development programs incorporate hazard issues? Do coastal resource management programs incorporate hazards issues? Do hazard management programs consider community and natural resource elements and goals?
- ? Are programs in place that link sectors and institutions? What are some examples?

#### A4

- ? Does community budget process incorporate priorities for management, upgrade, or mitigation critical facilities and infrastructure? If these funds are not sufficient, have local government identified other options to supplement these funds?
- ? Do community projects include those that mitigate future damage from natural hazards?
- ? Are there specific policies in place to address episodic or chronic hazards?
- ? What resources, tools and technical assistance are available to build community resilience? How do these resources enhance the community? Are these resources available in a proactive mode and/or recovery mode?

## B. Socio-economy and Livelihoods

### B1

- ? Are there any government or non-government agencies that prepare local economic development plans? Do these agencies consider livelihood diversity, hazards, and risks?
- ? What types of livelihoods dominate the local economy? Which of these are dependent on local natural resources and which of these have the greatest environmental impact? Which are likely to be affected by a coastal hazard?
- ? What evidence exists that livelihoods are geared toward economic diversity and ecological sustainability?
- ? Are there requirements to assess social and environmental risks of livelihood options? Does this include risk assessment of business locations?
- ? Are good enterprise practices developed with business associations, civil society and government?
- ? If there are disaster plans, do they include considerations of the private sector?
- ? Are public/private partnerships involved with community disaster preparedness?
- ? Has disaster planning included consultation with local and regional business associations?
- ? Aside from loss of employment, do disaster/recovery plans consider the loss of services and products and impact to the tax base (i.e. loss to the community as well as the enterprise)?

### B2

- ? Are businesses owners/employees aware and informed of coastal hazards (including long-term effects to businesses from erosion, sea level rise)?
- ? Are there pro-poor programs that assist livelihood development of vulnerable groups and promote gender empowerment?
- ? Is there access to start-up grants, technical assistance and loans for new and alternative enterprise?
- ? Are tools and technical assistance available to help existing businesses adapt to reduce their risk?
- ? Can business density be reduced in hazard-prone areas through programs that allow for the transfer of development rights?
- ? Are there incentives for preparedness through partnerships with insurance/financial institutions?
- ? Do tax codes subsidize investment in high-risk coastal business development? Do tax incentives exist that might encourage less vulnerable enterprises to emerge?
- ? Do economic development plans include incentives for business to move out of at risk areas
- ? Are there insurance services for production losses in the event of a disaster?

### B3

- ? Are mechanisms used to increase community participation in enterprise development planning?
- ? Is there a list of community organizations, especially those concerned with community empowerment and business groups?
- ? Is a significant portion of the community economically and/or socially marginalized?
  - o Does the socio-economic status of the population increase their vulnerability?
  - o What proportion is dependent upon social services for basic needs?
  - o Do migrant workers make up a significant proportion of the workforce?
- ? Do coastal businesses possess the skills for self-recovery?

## C. Coastal Resource Management

### C1

- ? Have coastal resources been assessed for risks and vulnerabilities to hazards?
- ? How easily accessible is this resource assessment for planning and public review? How long did it take the last person to obtain the data?
- ? Has a plan or agreement been made on how to balance the need for resource extraction with conservation and vulnerability to hazards?
- ? How are coastal resources decisions made and implemented?
- ? What role does the public play in the decision-making process?

### C2

- ? Have mitigation actions been identified to protect sensitive habitats based on the hazard assessment to reduce long-term vulnerability (such as buffer areas, invasive species)?
- ? Have upland resources and human activities been assessed to determine if these watershed resources need to be protected to increase coastal resilience to hazards?
- ? Have good practices for maintaining sensitive habitat, such as slopes, dunes, and beaches been disseminated?
- ? What limits exist for harvesting of local coastal resources like mangroves, coral (if allowed)? What types of restrictions exist for types of gear used to harvest resources?
- ? Are monitoring data analyzed to understand the variability of coastal resources and their resilience to human uses/impacts?
- ? What efforts have been made to restore resources to reduce vulnerabilities?

### C3

- ? Do policies exist that address the management issues that arise after a hazard event (i.e. moratoriums on building permits and fishing licenses)?
- ? What alternative resource materials have been identified for redevelopment and communicated to the public?
- ? How has the community considered redeveloping coastal areas so as to increase natural habitat and reduce hazard vulnerabilities through environmental protection?
- ? Have coastal managers discussed rebuilding options with community planners, so as to educate them on natural resource issues that need to be considered in decision making?
- ? What sort of incentives and support mechanisms can be provided to encourage changes to livelihoods that reduce the pressures on coastal resources and thus increase the communities' resilience to hazards?

## D. Land Use Management & Structures

### D1

- ? Have risks to development from coastal hazards been identified and incorporated into land use plans?
- ? Have sensitive coastal habitats been identified and protected in land use plans?
- ? Has the risk of existing structural failures been determined?
- ? Are land use plans updated regularly to address changes and adapt to new hazard conditions?
- ? Have coastal dependent land uses been identified and incorporated in land use plans?

### D2

- ? Are land use plans (with hazard areas mapped) used to decide where and how structures are built?
- ? Has infrastructure that is located in hazard areas been designed to current and likely future environmental conditions (such as sea level rise, increased storm water runoff)?
- ? Have critical facilities been located outside of the hazard area or built to be resistant to the known hazard impacts?
- ? Does capacity exist to maintain and repair infrastructure over the long-term before and after hazard events?
- ? How have knowledgeable people on coastal resources and hazard management been involved in building siting and design?
- ? Are there regulatory building standards that identify how to safely build infrastructure in hazard areas?
- ? Are builders and architects in the area knowledgeable and apply the building codes and good practices?
- ? Are hazard resistant building practices taught at the secondary and technical schools?
- ? Is there a communications outreach program in place to educate the public in hazard resilient building practices and designs?
- ? Are sensitive coastal habitats protected from coastal engineering structures?

### D3

- ? Are policies and institutional arrangements for land use planning and implementation in place, communicated, and understood by developers, builders, and the general public?D3.5
- ? Do building guidelines exist to mitigate for future damages?
- ? Are there incentives or penalties in place to encourage compliance with land use policies and building standards and codes?
- ? Do policies exist to limit public or private investment in vulnerable areas?
- ? Does an information campaign operate to inform the public?
- ? Is there private public collaboration to promote good building practices?

### D4

- ? Is critical infrastructure sited optimally to serve all community members?
- ? Do post-disaster scenarios for reconstruction consider various alternative options?
- ? Have land use recovery plans been developed prior to potential disasters?
- ? Do reconstruction plans exist that would help reduce future damage and consider “green” reconstruction options?



## **E. Risk Knowledge**

### **E1**

- ? Has your community identified coastal hazards based on historical events, existing hazards, and potential future coastal hazards based on trends?
- ? Has your community conducted an assessment of coastal resource and environmental conditions which includes both baseline conditions and trends?
- ? Were both the coastal hazards assessment and the coastal resource and environmental assessment conducted in a manner to incorporate both traditional knowledge and science-based information through local community participation?

### **E2**

- ? Has your community assessed the vulnerability of economic and livelihoods assets to the potential impacts of coastal hazards?
- ? Has your community assessed the vulnerability of certain demographic sectors within the community to coastal hazards?
- ? Has your community assessed the susceptibility of natural resources being negatively impacted directly or from secondary impacts from coastal hazards?
- ? Has your community assessed the vulnerability of its institutional domain and critical facilities to coastal hazards?

### **E3**

- ? Does your community have a comprehensive risk assessment based on coastal hazards and vulnerabilities?
- ? Does your community utilize risk assessment information to prioritize and guide future planning and mitigation actions?
- ? Does your community periodically reassess its risk to coastal hazards to address physical, social, environmental and climatic changes?

### **E4**

- ? Does your community have a process to ensure that risk information is easily accessible to the entire community?
- ? Is there a process in your community to ensure that risk information is shared and used among institutions to better inform policy and action?
- ? Has your community developed formal and non-formal mechanisms to educate the community about coastal hazards risk?

## **F. Warning and Evacuation**

### **F1**

- ? Are there designated community network for receiving emergency warnings from sub-national, national, or regional warning centers?
- ? Who is responsible for the activation of the emergency warning system?
- ? What type of backup mechanisms are in place to ensure that the warning is issued?
- ? Is there a procedure to cancel a warning when the threat has passed?

### **F2**

- ? Is the warning system equipped with the appropriate technology to reach the “last mile?”
- ? Are there sustainable financing mechanisms or dedicated support to maintain and operate the emergency warning system?

### **F3**

- ? Have evacuation routes been identified?
- ? Is an evacuation plan in place?
- ? Is the community aware of evacuation procedures?
- ? Are there regular evacuation drills?

### **F4**

- ? What types of outreach programs are in for communicating evacuation plans? Do they reach all sectors of society?
- ? Have warning and evacuation information been incorporated into school curriculum?
- ? Are there volunteer networks to assist in warning dissemination and evacuation?

## G. Emergency Response

### G1

- ? Has your community developed emergency plans that include clearly defined procedures, roles, and responsibilities?
- ? Has the Emergency Operations Centers (EOC) are in place in your community?
- ? Have these EOCs pre-established damage assessment teams capable of identifying needs and reporting status of emergency conditions to EOC?
- ? Has your community set pre-established protocols and linkages for coordinated response and relief?
- ? Has your community developed systems for short term disaster management and response materials and supplies?
- ? Does your community regularly maintain a sufficient storage for these response materials and supplies accessible during emergency situation?
- ? Are these response materials and supplies placed in community level depots or other appropriate locations outside of high risk areas?

### G2

- ? Does your community have adequate emergency healthcare and life support systems in place?
- ? Does your community maintain a sufficient stock of supply and equipments for emergency healthcare and life support systems?
- ? Has your community established a system for essential emergency relief and food supply?
- ? Does your community maintain a sufficient stock of supply and equipments for emergency healthcare and life support systems?
- ? Has your community established and incorporated psycho-social support into the healthcare and life support systems?

### G3

- ? Has there been a regular conduction/practice of community level training and drills covering “end to end” emergency response preparedness and disaster management?
- ? Are the education and outreach programs on emergency response regularly reaching schools, volunteers, citizens, and businesses in your community?
- ? Has risk communication on emergency response and recovery issues are included in the education programs in primary schools and community learning centers?
- ? Has there been a spontaneous level of sharing and dissemination of emergency response related knowledge and information in the community?
- ? Have existing social institutions, community groups, volunteers been involved in your community for risk communication on a regular basis?

## **H. Disaster Recovery**

### **H1**

- ? How will baseline assessments for coastal resources, critical facilities, community and the economy conducted in the risk assessment be used in the damage assessment process? Are these data updated regularly?
- ? What policies or mechanisms are in place to ensure community involvement in disaster recovery planning and implementation?
- ? Have stakeholder coordination mechanisms been established with organizations and agencies responsible for recovery efforts?
- ? Do policies exist for halting permits or streamlining development after a natural hazard to allow for a coordinated recovery process?
- ? How will local and outside governments, donors, stakeholder groups coordinate their recovery efforts and supplies?
- ? What systems are in place that could be used to communicate progress of recovery efforts to the public? Have these systems been used in past disaster recovery efforts?

### **H2**

- ? Have immediate and long-term disaster recovery plans been developed to address a range of potential hazard scenarios?
- ? As part of a coastal hazard analysis, what will be done with the debris? Is there contaminated materials and waste in the area that will need special disposal?
- ? How does the immediate recovery plan address this potential range of coastal hazards?
- ? Are there agreements in place in advance for clearing and disposing of debris and returning critical facilities back to service?
- ? Is there a process to validate and revise the recovery plan based on a post-disaster damage assessment?
- ? Is information and data needed to plan disaster recovery accessible to relevant agencies and organizations and safely protected from hazards?

## Selected tools and references on CCR

### A. Governance

Legal and Jurisdictional Framework for Coastal Management  
Coastal Resources Management Project, USAID

[www.oneocean.org](http://www.oneocean.org)

Philippines

A Primer for Parliamentarians  
National Disaster Management Division, India

[www.ndmindia.nic.in](http://www.ndmindia.nic.in)

India

Law Enforcement  
Coastal Resources Management Project, USAID

[www.oneocean.org/](http://www.oneocean.org/)

Philippines

Risk Management Guidelines  
Standards Australia

<http://www.riskmanagement.com.au/Products/TheHandbook/tabid/157/Default.aspx>

[x](#)

Australia

### B. Socio-economy and Livelihoods

Sustainable Livelihoods Approach: Progress and Possibilities for Change

[www.dfid.gov.uk](http://www.dfid.gov.uk)

Surviving Disasters and Supporting Recovery: A Guidebook for Microfinance  
Institutions

[www.worldbank.org/hazards](http://www.worldbank.org/hazards)

Transferring Risk through Micro-Insurance: Micro-Credit and Livelihood Relief  
All India Disaster Mitigation Institute (AIDMI)

[www.southasiadisasters.net](http://www.southasiadisasters.net)

India

A Handbook on forming Self Help Groups (SHGs) India Reserve Bank of India (RBI)  
and NABARD

[www.nabard.org/roles/mcid/formingshgs.pdf](http://www.nabard.org/roles/mcid/formingshgs.pdf)

India

### C. Coastal Resource Management

Creating and Managing Marine Protected Areas in the Philippines  
Coastal Resources Management Project, USAID

[www.oneocean.org](http://www.oneocean.org)

Philippines

How is your MPA doing? A Guidebook of Natural and Social Indicators for  
Evaluating Marine Protected Area Management Effectiveness

IUCN-NOAA-WWF

[www.effectivempa.noaa.gov/guidebook/guidebook.html](http://www.effectivempa.noaa.gov/guidebook/guidebook.html)

Global/Asia

Integrated Coastal Management Process Sustainability Reference Book  
Coastal Resources Management Project, USAID

[www.oneocean.org](http://www.oneocean.org)

Philippines

Managing Municipal Fisheries  
Coastal Resources Management Project, USAID

[www.oneocean.org](http://www.oneocean.org)

Philippines

Buying Time: A User's Manual for Building Resistance and Resilience to Climate Change in Natural Systems

World Wildlife Forum

[www.panda.org/climate/pa\\_manual](http://www.panda.org/climate/pa_manual)

Global

Monitoring and Evaluating City/Municipal Plans and Programs for Coastal Resource Management

Coastal Resources Management Project, USAID

[www.oneocean.org](http://www.oneocean.org)

Philippines

#### **D. Land Use Management & Structures**

Designing for Tsunamis

National Tsunami Hazard Mitigation Program

[www.pmel.noaa.gov/tsunami-hazard/](http://www.pmel.noaa.gov/tsunami-hazard/)

Global

Land Use Tools and Techniques: A Handbook for Local Communities

Southeast Michigan Council of Governments

[www.semco.org](http://www.semco.org)

United States

Technical Manual for Coastal Land Use Planning

The North Carolina Division of Coastal Management (DCM)

<http://dcm2.enr.state.nc.us/Planning/techmanual.pdf>

United States

The Shoreline Stabilization Handbook

Northwest Regional Planning Commission

[nrpcvt@nrpcvt.com](mailto:nrpcvt@nrpcvt.com)

United States

The Shore Primer: a Cottager's Guide to a Healthy Waterfront

Cottage Life

[www.cottagelife.com](http://www.cottagelife.com)

Canada

Shoreline Vegetative Buffers

The District of Muskoka Planning and Economic Development Department

[www.muskoka.on.ca/planningeconomic/Buffers.pdf](http://www.muskoka.on.ca/planningeconomic/Buffers.pdf)

Canada

Housing and Township Development

Presidential Secretariat, Sri Lanka

[www.recoverlanka.net/data/HousingPolicy.pdf](http://www.recoverlanka.net/data/HousingPolicy.pdf)

Sri Lanka

Housing reconstruction after conflict and disaster

Humanitarian Practice Network (HPN)

[www.odihpn.org](http://www.odihpn.org)

Global

Rehabilitation and Reconstruction

Disaster Management Training Programme (DMTP), UNDP

[www.undmtp.org/modules\\_e.htm](http://www.undmtp.org/modules_e.htm)

Global

An Introduction to Better Site Design

[www.cwp.org/45-Intro\\_to\\_Better\\_Site\\_Design.pdf](http://www.cwp.org/45-Intro_to_Better_Site_Design.pdf)

United States

Handbook on Design and Construction of Housing for Flood-Prone Rural Areas of Bangladesh  
ADPC-CARE  
[www.adpc.net](http://www.adpc.net)  
Bangladesh

## E. Risk Knowledge

Reducing risk of disaster in our communities  
Tearfund  
[www.tearfund.org/tilz](http://www.tearfund.org/tilz)  
Eritrea, Ethiopia, India, Malawi, Sierra Leone and Sudan

Participatory Vulnerability Analysis: A step-by-step guide for field staff  
Actionaid  
[www.actionaid.org](http://www.actionaid.org)  
Global

Guidelines for emergency assessment  
International Federation of Red Cross and Red Crescent (IFRC)  
[www.ifrc.org/](http://www.ifrc.org/)  
Global

Household Livelihood Security Assessments: A Toolkit for Practitioners  
CARE-TANGO-USAID  
[www.kcenter.com/phls/HLSA%20Toolkit\\_Final.PDF](http://www.kcenter.com/phls/HLSA%20Toolkit_Final.PDF)  
Global

Social Vulnerability, Sustainable Livelihoods and Disasters  
DFID

Draft Working Document - 7/16/2007

[www.benfieldhrc.org/disaster\\_studies](http://www.benfieldhrc.org/disaster_studies)  
Global

Participatory Capacities and Vulnerabilities Assessment: Finding the Links between Disasters and Development  
OXFAM  
[www.oxfam.org/en/](http://www.oxfam.org/en/)  
Asia/Global

Disaster Assessment  
Disaster Management Training Programme (DMTP), UNDP  
[www.undmtp.org/modules\\_e.htm](http://www.undmtp.org/modules_e.htm)  
Global

Community Vulnerability Assessment Tool (CVAT)  
NOAA  
[www.csc.noaa.gov/products/nchaz/startup.htm](http://www.csc.noaa.gov/products/nchaz/startup.htm)  
United States, Pacific

Assessing Resilience and Vulnerability in the Context of Emergencies: Guidelines  
Australia/Victorian Government  
[www.dhs.vic.gov.au/emergency](http://www.dhs.vic.gov.au/emergency)  
Australia

Post-Disaster Damage Assessment and Need Analysis  
ADPC  
[www.adpc.net](http://www.adpc.net)  
Asia/Global

The Programme Manager's Planning, Monitoring and Evaluation Toolkit  
UNFPA  
[www.unfpa.org/monitoring/toolkit.htm](http://www.unfpa.org/monitoring/toolkit.htm)

Global

## **F. Warning and Evacuation**

Developing Early Warning Checklist: A Key Checklist  
Third International Conference on Early Warning (EWC III)

[www.ewc3.org/](http://www.ewc3.org/)

Global

Disaster Preparedness  
Disaster Management Training Programme (DMTP), UNDP

[www.undmtp.org/modules\\_e.htm](http://www.undmtp.org/modules_e.htm)

Global

Disaster Preparedness Handbook: An emergency planning and response guide  
Washington Military Department

[www.emd.wa.gov](http://www.emd.wa.gov)

United States

## **G. Emergency Response**

Handbook for Emergencies  
United Nations High Commissioner for Refugees (UNHCR)

[www.unhcr.org](http://www.unhcr.org)

Global

The Oxfam Handbook of Development and Relief  
OXFAM

[www.oxfam.org](http://www.oxfam.org)

Global

First Aid: A Handbook for Community Based Disaster Preparedness

Draft Working Document - 7/16/2007

Gujarat State Disaster Management Authority and UNDP

[www.undp.org.in/](http://www.undp.org.in/)

India

Contingency Planning Guidelines: A practical guide for field staff  
UNHCR

[www.unhcr.org](http://www.unhcr.org)

Global

Emergency Field Handbook: A Guide for UNICEF Staff  
The United Nations Children's Fund (UNICEF)

[www.unicef.org](http://www.unicef.org)

Global

Field Operations Guide for Disaster Assessment and Response (FOG)  
Emergency Response or Emergency Operation Plan

OFDA, USAID

[www.usaid.gov](http://www.usaid.gov)

Global

Participation by Crisis-Affected Populations in Humanitarian Action: A Handbook  
for Practitioners

Active Learning Network for Accountability and Performance in Humanitarian  
Action (ALNAP)

[www.alnap.org](http://www.alnap.org)

Global/Asia

Community Contingency Plan for Floods & Cyclones, ORISSA  
OSDMA and UN

[www.undp.org.in/VRSE/docsNmnl/MANUAL~I.PDF](http://www.undp.org.in/VRSE/docsNmnl/MANUAL~I.PDF)

India



Inter-Agency Contingency Planning Guidelines for Humanitarian Assistance  
United Nations  
[www.un.org](http://www.un.org)  
Global

Disaster Emergency Needs Assessment  
International Federation of Red Cross and Red Crescent (IFRC)  
[www.ifrc.org](http://www.ifrc.org)  
Global

## H. Disaster Recovery

Guidelines for planning in the re-building process – Resource pack  
Practical Action (ITDG)  
[www.practicalaction.org](http://www.practicalaction.org)  
Global/Asia

CBDRM Field Practitioners' Handbook  
Southeast Asia  
Asian Disaster Preparedness Center  
[www.adpc.net](http://www.adpc.net)

Recovery from Emergencies Management Checklists  
Australia/Victorian Government  
[www.dhs.vic.gov.au/emergency](http://www.dhs.vic.gov.au/emergency)  
Australia

Improving Coordination  
International Federation of Red Cross and Red Crescent (IFRC)  
[www.ifrc.org/](http://www.ifrc.org/)  
Global

Partnership: An Operations Management Handbook for UNHCR's Partners  
United Nations High Commissioner for Refugees (UNHCR)  
[www.unhcr.org](http://www.unhcr.org)  
Global

Recovery from Emergencies Management Guidelines  
Australia/Victorian Government  
[www.dhs.vic.gov.au/emergency](http://www.dhs.vic.gov.au/emergency)  
Australia

Manual on Field Practice in Internal Displacement  
United Nations  
[www.un.org](http://www.un.org)  
Global

### **General on disaster mitigation and preparedness:**

CBDRM Field Practitioners' Handbook  
Southeast Asia  
Asian Disaster Preparedness Center  
[www.adpc.net](http://www.adpc.net)

Preparedness Planning  
International Federation of Red Cross and Red Crescent (IFRC)  
[www.ifrc.org](http://www.ifrc.org)  
Global

Preparing for disaster – A community-based approach  
Danish Red Cross  
[icdpp@redcross.org.ph](mailto:icdpp@redcross.org.ph)  
Philippines

Disaster Mitigation

Disaster Management Training Programme (DMTP), UNDP

[www.undmtp.org/modules\\_e.htm](http://www.undmtp.org/modules_e.htm)

Global/Asia

A Primer for Integrated Flood Risk Management in Asia

Asian Disaster Preparedness Center

[www.adpc.net](http://www.adpc.net)

Asia/Global

Reducing Disaster Risk: A Challenge for Development

Bureau for Crisis Prevention and Recovery, UNDP

[www.undp.org/bcpr](http://www.undp.org/bcpr)

Global

Disaster Reduction: A Practitioner's Guide

OFDA, USAID

[www.usaid.gov](http://www.usaid.gov)

Global

Principles of Disaster Mitigation in Health Facilities

World Health Organization

[www.who.org](http://www.who.org)

Global

Disaster Recovery and Mitigation Handbook

Governor's Office of Emergency Services, California

[www.oes.ca.gov](http://www.oes.ca.gov)

United States