



MPA MANAGEMENT PRACTITIONERS AND STAKEHOLDERS DISCUSS NO-TAKE ZONES AND TURTLE MANAGEMENT IN ANAMBAS, INDONESIA © USAID CTSP/CI/KATHLEEN FLOWER

## The Ecosystem-based Management Diagnostic Tool for Coastal Areas and Fisheries Management

The Ecosystem-based Management (EBM) Diagnostic Tool assists government leaders, natural resource managers and stakeholders to quickly assess progress towards integrated, ecosystem-based management. This tool was designed to support progress towards the five goals of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security<sup>1</sup> (CTI-CFF or CTI). However, it is appropriate for use in any tropical or sub-tropical marine managed area. This tool is intended for use by area managers (for example, fisheries managers or MPA managers); local government leaders (such as those working at the level of municipalities, districts, regencies, or wards); stakeholder groups (such as fishing collectives or NGOs); or provincial-level leaders responsible for planning or the coordination of multiple government agencies.

### BACKGROUND

The Coral Triangle is among the most biologically and economically valuable marine ecosystems on the planet. To ensure the long-term sustainability of coastal and ocean resources within the Coral Triangle, careful and coordinated management is needed to address multiple issues and impacts. Overlapping authority and mandates, fragmented jurisdictions, insufficient coordination, and institutional conflict hamper ecosystem governance within the region. Most of the time, government agencies (such

as those tasked with coastal planning, fisheries, conservation, local governance, and economic development) act independently. The result is sectoral strategies and actions that are undertaken in relative isolation from one another. An integrated and coordinated approach to management is needed to address the multiple impacts to fisheries and coastal areas and to ensure their long-term sustainability for the benefit of people in the Coral Triangle who depend on them.

The EBM Diagnostic Tool is available within the CTI Integration Guide, “Toward Ecosystem-based Coastal Area and Fisheries Management in the Coral Triangle: Integrated Strategies and Guidance.” The guide is available online at <http://www.coraltriangleinitiative.org/library/guidelines-toward-ecosystem-based-coastal-area-and-fisheries-management-coral-triangle>.

### THE EBM DIAGNOSTIC TOOL

If you are a coastal planner or natural resource manager in the Coral Triangle, it is likely that you and your colleagues are currently focused on at least one of the strategies listed in Table I. However, to manage this area using an ecosystem approach, all seven of the strategies in Table I should be supported by at least one group or agency working within your management area.

<sup>1</sup>Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF). (2009). Regional plan of action. Jakarta, Indonesia: CTI-CFF. Available online at <http://www.coraltriangleinitiative.org/library/cti-regional-plan-action>

**Table I. Seven Integrated Strategies for Marine Area Management.** These strategies are described in detail in the CTI Integration Guide.

- A. Governance of management areas** Manage coastal and marine areas based on ecological boundaries, resource use patterns, and governance jurisdictions.
- B. Fisheries managed for sustainability** Manage multiple fisheries and their associated ecosystems for sustainable use and human benefit under an ecosystem approach to fisheries management (EAFM).
- C. Protected habitats and their connectivity** Protect representative and critical habitats (and their connectivity) through MPA networks and other means.
- D. Threatened species, critical species, and functional groups** Protect and restore species and functional groups that maintain ecosystem integrity.
- E. Community and economic development** Diversify and sustain coastal communities' livelihoods.
- F. Watershed management** Effectively manage watersheds and freshwater resources.
- G. Hazard risk reduction** Reduce risk to communities from climate change and coastal hazards.

successful at EBM, sites should be able to demonstrate substantial progress toward each of the strategies. The management of these activities also should be supported with enabling policies and cooperative agreements between agencies and stakeholder groups, as discussed in the section on intersectoral cooperation (discussed in Section 3 of the Integration Guide).

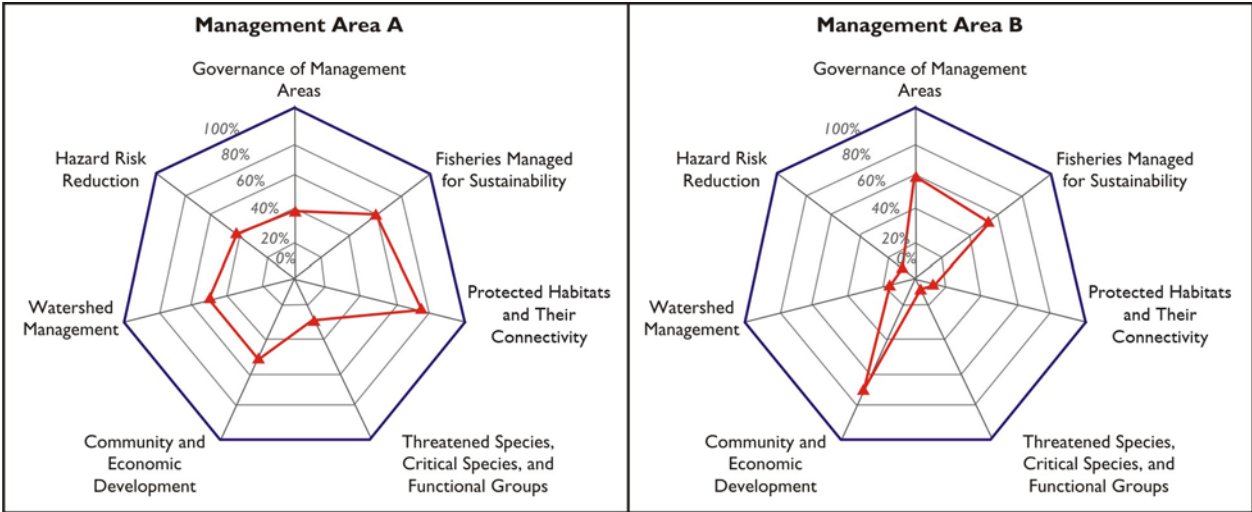
A radar diagram is a useful assessment and communications tool that illustrates the percentage of management activities being implemented for each of the seven management strategies listed in Table I. This type of diagram can be used to compare progress across coastal areas or to compare sites within a coastal or managed area. This assessment can help to identify gaps, strategies, and management activities to achieve more comprehensive, integrated coastal management. You can communicate your progress on integration by developing a new radar diagram annually, illustrating progress in each of the seven key strategic areas.

The goal for management integration in a coastal area is to strengthen existing management and add new strategies and management activities to improve the management of natural resources upon which you and your community depend. In preparing for integration, it is helpful to complete a quick assessment of the strategies currently being implemented in your coastal area. This assessment will help to identify gaps in the existing management approach and opportunities to enhance the integration of key management strategies.

**HOW TO USE THE DIAGNOSTIC TOOL**

Ideally, you should be able to identify activities being conducted in your coastal area that contribute to each of the seven strategies in Table I. In order to be considered

Figure I illustrates example radar diagrams for two hypothetical management areas. The level of achievement for each strategy and the number of strategies can be assessed along each spine of the diagram. Movement toward EBM can be measured according to the evenness of achievement across all the sectors. For example, Management Area A has achieved moderate progress in all seven strategies. Meanwhile, Management Area B has achieved considerable progress in only three of the strategies. Although both sites may be doing an effective job of integrating management in their target areas, Management Area A is making more progress toward EBM.



**Figure I.** Illustrative assessments of the percentage of management activities under each strategy (based on Table I) being planned or implemented in two hypothetical coastal areas (red line). As described in the text above, both areas are achieving integrated management within their target strategies; however, Management Area A is making more progress toward EBM by pursuing all seven strategies in an integrated way.

## ACTIVITY

You can work individually or with a team to complete a diagnostic for your site. Follow the instructions and complete Worksheets 1 and 2. A detailed description of each activity, including indicators of progress, are

presented in Appendix I of the Integration Guide. When you have finished, use Figure 1 and its description to interpret your results. Then discuss the questions in the activity and debrief with your team to plan any next steps based on your results and learning.

### WORKSHEET 1. Integrated Strategies and Management Activities for Moving Toward EBM in the Coral Triangle

Work individually or with your team to read through the following management activities associated with each of the seven strategies. Consider the status of each activity across your entire management area. For each activity, determine whether or not substantial progress has been made on that activity. "Substantial progress" indicates that either (1) there is a lead group or agency responsible, they have a budget and capacity to operate, and they have made clear and demonstrated progress toward the indicators of progress for achieving this activity (listed in Appendix 1); or (2) the activity is complete. In the fourth column, describe what has been accomplished to date and identify what other activities are needed to make substantial progress and/or complete the activity. Also, identify whether this activity fits within an existing management plan and who is responsible for carrying out this activity. If no progress has been made, identify any barriers that may be hindering progress. Then, in the fifth column, indicate whether this activity is a priority for your team. Actions that are high priority should be those that are both urgent and achievable, given resources and capacity in your area today or in the near future. Once you have gone through all the activities and made your notes, determine which completed or not-yet-completed ("gap") activities and/or strategies are a priority for your team, and indicate their priority in the fifth column.

Management area: \_\_\_\_\_

Contributors to this activity: \_\_\_\_\_

Date: \_\_\_\_\_

Integrated Strategies	Management Activities	Substantial progress? (Y/N)*	What's been done and what's left to do? Who is responsible? Is the activity part of an existing management plan?	Is this activity high priority? (Y/N)
A. Governance of management areas: Manage coastal and marine areas based on ecological boundaries, resource use patterns, and governance jurisdictions.				
	1. Participatory processes for decision-making (such as co-management) are used effectively to govern a management area.			
	2. Governance of the management area includes coordination and cooperation between government agencies.			
	3. Boundaries of the management area are identified and, if appropriate, legally established for management area governance.			
	4. Spatial management is applied across the management area to achieve EBM outcomes.			
	5. Compliance and enforcement systems support implementation of the EBM Framework and component plans.			
	6. An EBM Framework integrates the implementation of all seven strategies and all component plans.			
	7. Monitoring and evaluation support adaptive management and improve effectiveness of the EBM Framework.			

\*Your team may want to assess progress toward this activity on a finer scale—for example, "not started, initiated, well underway, near completion, completed." However, pilot tests of this tool demonstrated that the diagnostic illustration in Worksheet 2 did not do as well to emphasize relative strengths and weaknesses among strategies and between sites. Therefore, we recommend using "Y/N" for this preliminary assessment.

Integrated Strategies	Management Activities	Substantial progress? (Y/N)*	What's been done and what's left to do? Who is responsible? Is the activity part of an existing management plan?	Is this activity high priority? (Y/N)
B. Fisheries managed for sustainability: Manage multiple fisheries and their associated ecosystems for sustainable use and human benefit under an ecosystem approach to fisheries management (EAFM).				
	8. Ecosystem boundaries are established for EAFM.			
	9. Information co-produced by fishers, managers, agencies, and external agents (scientists and non-governmental organizations) supports EAFM.			
	10. Fisheries management measures ensure the conservation of target species as well as species and habitats belonging to the same ecosystem.			
	11. Improved human well-being and equity are addressed through EAFM.			
	12. Fishing overcapacity is reduced using integrated mechanisms.			
	13. Critical fisheries habitats are protected and rehabilitated.			
	14. The vulnerability of fish stocks and their associated ecosystems to threats including the impacts of climate and ocean change is assessed.			
	15. An EAFM plan guides sustainable fisheries management.			
C. Protected habitats and their connectivity: Protect representative and critical habitats (and their connectivity) through MPA networks and other means.				
	16. Multiple-use MPAs (larger is better) and MPA networks are established to protect habitats and their connectivity.			
	17. Activities that damage or destroy habitat are stopped throughout the management area.			
	18. Marine reserves are designated to include at least 20 percent of each habitat type.			
	19. Marine reserves are designated to include multiple examples of each habitat type.			
	20. Key reproduction areas (for example, spawning, feeding, and nursery areas) are protected in marine reserves.			
	21. Marine reserves are sized to balance ecological and human needs.			
	22. MPAs and MPA networks incorporate marine reserves that are separated by a minimum of 1 km and a maximum of 20 km.			
	23. Areas of each habitat type known or thought to be resistant to climate and ocean change impacts are protected.			
	24. MPAs, including marine reserves, are in place for the long term, preferably permanently.			

Integrated Strategies	Management Activities	Substantial progress? (Y/N)*	What's been done and what's left to do? Who is responsible? Is the activity part of an existing management plan?	Is this activity high priority? (Y/N)
D. Threatened species, critical species, and functional groups: Protect and restore species and functional groups that maintain ecosystem integrity.				
	25. The status and needs for protection of threatened species, critical species, and functional groups are assessed.			
	26. Laws and regulations are in place to adequately protect threatened species, critical species, and functional groups.			
	27. Fisheries laws are in place to reduce the bycatch of threatened species, critical species, and functional groups.			
	28. Laws that protect threatened species, critical species, and functional groups are enforced.			
	29. Critical areas for threatened species, critical species, and functional groups are protected.			
	30. The vulnerability of threatened species, critical species, and functional groups to climate and ocean change and other threats is assessed for all life-history stages.			
E. Community and economic development: Diversify and sustain coastal communities' livelihoods.				
	31. Improved basic public services are provided to households and communities by social and community development.			
	32. A sustainable livelihoods strategy is developed for households and coastal communities.			
	33. Coastal economies and markets are linked to larger subnational and national economies and economic development activities.			
	34. Environmentally friendly, enhanced, alternative, and supplemental livelihood opportunities are developed and available to households and coastal communities.			
	35. The vulnerability of community and economic development to threats, including climate and ocean change, is assessed.			
	36. Climate and ocean change adaptation measures are implemented to reduce vulnerability of community and economic development to threats including climate and ocean change.			
F. Watershed management: Effectively manage watersheds and freshwater resources.				
	37. Freshwater systems are healthy.			
	38. Estuarine and brackish systems are healthy.			
	39. Erosion and sedimentation are managed.			
	40. Land-based sources of pollution (air, water, soil, solid waste, and others) are managed.			

Integrated Strategies	Management Activities	Substantial progress? (Y/N)*	What's been done and what's left to do? Who is responsible? Is the activity part of an existing management plan?	Is this activity high priority? (Y/N)
	41. The vulnerability of estuaries and watersheds and freshwater resources to climate and ocean change and other threats is assessed.			
	42. Adaptation and mitigation measures are implemented to reduce the vulnerability of watersheds and freshwater resources to emerging threats, including climate and ocean change.			
	43. Management of watersheds and freshwater resources is undertaken cooperatively by relevant government agencies and participating stakeholders.			
G. Hazard risk reduction: Reduce risk to communities from climate impacts and coastal hazards.				
	44. The vulnerability of the social, economic, and ecological systems to climate threats and coastal hazards is assessed.			
	45. Development plans incorporate measures to reduce risk from climate impacts and coastal hazards.			
	46. Land-use zones and building standards are developed to reduce risk from climate impacts and coastal hazards.			
	47. Coastal habitats are protected and rehabilitated to buffer communities from climate impacts and coastal hazards.			
	48. Early warning systems are established or strengthened, and communities know how to respond.			
	49. Community-based disaster management plans and programs are in place and functional.			
	50. Adaptation actions are implemented and monitored for effectiveness to reduce risks from climate impacts and coastal hazards.			



© USAID CTSP/CONSERVATION INTERNATIONAL/KATHLEEN FLOWER

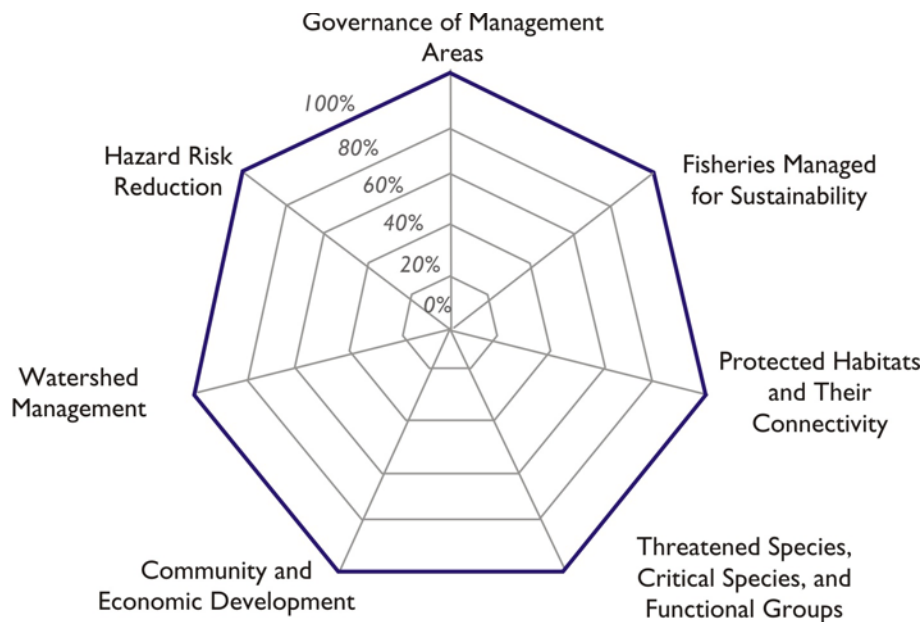
If new activities are identified and prioritized for ecosystem-based management, it is important to carefully consider how they will be incorporated into existing management plans. In these photos, participants at a training in the Philippines illustrate pathways for incorporating new activities into existing resource management plans.

## WORKSHEET 2. Assessing Progress Toward Integrated Strategies

In the table below, enter the number of activities substantially completed for each strategy. Use the formula in the third column to calculate the percentage of activities completed or substantially underway.

Strategies	Number of activities demonstrating substantial progress	Percentage underway
A. Governance of management area	n=	$n \div 7 \times 100 = \underline{\quad\quad}\%$
B. Fisheries managed for sustainability	n=	$n \div 8 \times 100 = \underline{\quad\quad}\%$
C. Protected habitats and their connectivity	n=	$n \div 9 \times 100 = \underline{\quad\quad}\%$
D. Threatened species, critical species, and functional groups	n=	$n \div 6 \times 100 = \underline{\quad\quad}\%$
E. Community and economic development	n=	$n \div 6 \times 100 = \underline{\quad\quad}\%$
F. Watershed management	n=	$n \div 7 \times 100 = \underline{\quad\quad}\%$
G. Hazard risk reduction	n=	$n \div 7 \times 100 = \underline{\quad\quad}\%$

Following the examples provided in Figure 1, plot the percentages from the third column of the second table of Worksheet 1 on the radar diagram below to communicate your progress toward integrated and comprehensive coastal management in your coastal area. The results of this assessment will help you to identify gaps in your current management approach and opportunities and expertise needed to address these gaps.



### Diagnostic Tool Debrief

After you have completed Worksheets 1 and 2, discuss the following questions with your team. Be sure to record your group's answers to these questions, as they will provide a good basis for developing your EBM Work Plan (described in Section 4 of the Integration Guide).

1. Is your management area successfully achieving EBM? Why or why not?
2. What activities and strategies have been substantially completed? Are these activities implemented through management plans? If so, who develops and implements these plans? What has contributed to these successes?
3. What high-priority strategies and activities are being implemented but are not yet substantially completed? Are these activities implemented through management plans? If so, who develops and implements these plans? What barriers or challenges have you observed?
4. What additional high-priority activities or tasks need to be initiated under each strategy? Who might be responsible to plan and implement these activities? Is there an existing management plan they could contribute to? How do you think you could incorporate these new activities or tasks?

into existing management plans and planning processes?

5. Are there high-priority strategies and activities that are not yet initiated that would require the participation of agencies or community groups not yet actively participating in managing your area? If so, how could you work to get them involved and committed to integrated management or EBM?
6. Are there high-priority strategies and activities that are not yet initiated that will require you to explore using new tools? (Review Appendix 3 to identify some tools that have been developed for use in the Coral Triangle.)

## INCORPORATING NEW ACTIVITIES INTO EXISTING MANAGEMENT PLANS

The results of the Diagnostic Tool should support your team's identification and prioritization of the seven integrated strategies and contributing activities; an assessment of the work toward them at your management area; identification of existing management plans that relate to these strategies; and identification of any gaps (high-priority activities or integrated strategies that you hope to initiate) can become the core of EBM.

The results of your EBM Diagnostic should also inform the selection of government agencies and stakeholders to be included in the collaborative governance arrangements. Then, once you have your collaborative governance arrangements in place, we recommend that you use the Diagnostic Tool again to help engage all the participating groups and individuals. Completing the Diagnostic Tool will assist them to understand their

relationship to, and the groups' progress toward, your overall objectives and goals for management integration and EBM. Of course, completing the Diagnostic Tool a second time with new strategic partners and key stakeholders for EBM may also result in a different assessment and a different prioritization of current and new activities. In almost all circumstances, this new assessment with the full stakeholder group should override the initial assessment conducted by the core team.

Ideally, high priority activities to pursue EBM will be adopted by strategic partners and incorporated into existing management plans. Those management plans will therefore need to be modified to accommodate the new activities. More information on this type of "mainstreaming" new activities is provided in Section 3. Where new, high-priority activities are not clearly aligned with any of the existing management plans, the core team and strategic partners may choose to undertake these jointly through your EBM Work Plan (described in Section 4). However, implementation through an EBM Work Plan should be seen as a short-term solution until these activities are able to be incorporated into other management plans.

The strategies and activities listed in Table I will guide implementation and adaptive management of EBM (Section 4 of the Integration Guide). The EBM Diagnostic Tool, along with the indicators of progress for each activity listed in Appendix I, can be used to develop the EBM Work Plan. These indicators can also be used as a basis for the development of a monitoring and evaluation plan to track progress toward EBM and adaptively manage as needed.



**USAID**  
FROM THE AMERICAN PEOPLE



### For more information

Flower, K.R., Atkinson, S.R., Brainard, R., Courtney, C., Parker, B.A., Parks, J., Pomeroy, R., & White, A. (2013). Toward ecosystem-based coastal area and fisheries management in the Coral Triangle: Integrated strategies and guidance. Jakarta, Indonesia: Coral Triangle Initiative Support Program for the U.S. Agency for International Development. [http://www.coraltriangleinitiative.org/resource\\_by\\_subject/138](http://www.coraltriangleinitiative.org/resource_by_subject/138)

### Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security

Interim Regional Secretariat

Ministry of Marine Affairs and Fisheries Republic of Indonesia

Mina Bahari II Building Floor, 17th Floor Jalan Medan Merdeka Timur, Jakarta 10110

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