

# Field Handbook For Assessing Fish Conservation Zones in Lao PDR



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CRITICAL ECOSYSTEM  
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## Foreword

We are very proud to present this successful effort to develop a guidebook and accompanying handbook for assessing Fish Conservation Zones (FCZs) in Lao PDR. The contents of the guidebook and handbook have been developed and summarized with our scrutiny, and reflect comments from various departments, divisions, technical teams, and international experts from the central level to the local sector.

The key challenge and an important goal of the guidebook is to help local people or organizations know and understand about the importance of aquatic conservation or fish conservation zones, which are related to the country's natural resources and natural riches, such as fish abundance, species richness, and biodiversity. These resources support local food security and household consumption, and also provide income that supports national society, economy, and food security. This is relevant to population growth, domestic and foreign investment, tourism, and achieving the goal of poverty reduction in Lao PDR from now until 2020 and 2025.

The FCZ assessment guidebook is a tool for technical staff, village fisheries committees, and resource development planners from different levels in the country to use and adapt based on real situations, geographic conditions, and local needs to learn about the effectiveness of aquatic conservation and management plans, and to improve their work in the future.

We would like to acknowledge and thank the Department of Livestock and Fisheries and Provincial Agriculture and Forestry offices, technical staff, relevant sectors and international experts for their input, comments, feedback, and contributions to complete the final version of the guidebook and handbook. We also thank FISHBIO Lao Sole Company and FISHBIO's U.S headquarters and team for finding and supporting the grant to develop these technical guidelines for Freshwater FCZ Assessments in Lao PDR.

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**Director General**  
**Department of Livestock and Fisheries**  
**Ministry of Agriculture and Forestry**



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## Acknowledgements

The FCZ guidebook and its accompanying field handbook were inspired by “How is Your MPA Doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness” (Pomeroy et al. 2004) published by IUCN. The authors would like to acknowledge participation in the pilot testing of the FCZ guidebook as well as feedback for revision and refinement provided by the Fisheries Division of the Department of Livestock and Fisheries, particularly Mr. Bounthanom Chamsinh; the World Wide Fund for Nature, including Mr. Francois Guegan, Mr. Soutchai Khamphouxay, and their team; and the Japanese International Volunteer Center, including Mr. Sisavanh Inthakhonh, Mr. Somesone Dodsaney, and their team. The guidebook has also been improved by the valuable comments of several external reviewers, including Dr. Ian Baird, Dr. Victor Cowling, Dr. Vittoria Elliott, Dr. Joanne Millar, Dr. Robert Pomeroy, Mr. Terry Warren, and Dr. Tara Whitty. Participants at a stakeholder workshop held in Vientiane Capital, Lao PDR, in November 2016 were instrumental in developing the list of indicators in the guidebook. We would like to thank The Asia Foundation in Lao PDR for permission to include their aquatic macroinvertebrate bio-monitoring and habitat assessment protocols in the guidebook, and would also like to thank Dr. Vittoria Elliott and Mr. Scott Johnson of SciCap in Cambodia for their permission and assistance in including their fish catch monitoring protocols.

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### **What is the goal of this handbook?**

This field handbook for assessing Fish Conservation Zones (FCZs) was developed to help an organization or community answer the question, “Is this FCZ successful?” It is designed to be a more simplified complement to the full guidebook “Guidelines for Assessing Fish Conservation Zones in Lao PDR,” and should be used together with the full guidebook. This handbook contains a list of indicators related to common FCZ goals and desired benefits, and provides very general guidance on methods for choosing indicators and conducting an FCZ assessment.

### **Who is this handbook for?**

This field handbook was developed primarily for non-profit organizations or private groups (i.e., “facilitating organizations”) for when they are working in the field with communities to support FCZs. Government officials may also find this handbook useful. While community groups may be able to measure many of the indicators included in this handbook, it was developed with the assumption that they would receive training and support from a facilitating organization or technical expert who would be using the full guidebook “Guidelines for Assessing Fish Conservation Zones in Lao PDR.”



## Introduction

There are many tools that communities can use to sustainably manage local fish populations. These might include:

- Protecting certain species of fish from harvest
- Restricting certain fishing gear types
- Restricting fishing during certain seasons or times of the year
- Restricting fishing in a certain location (a Fish Conservation Zone)

This handbook focusses on FCZs. The 2009 Lao Fisheries Law gives communities the authority to establish and manage FCZs with government support through co-management. FCZs may be established for many different reasons, and these reasons determine the goals of the FCZ. Once an FCZ is established, it should be regularly assessed to see if the FCZ is performing successfully to achieve its goals.

### What is an FCZ assessment?

An FCZ assessment is the process of collecting and interpreting information about an FCZ's performance. It is like a health checkup for the FCZ. An assessment can include different kinds of surveys (such as fish catch monitoring or interview surveys) to help answer the question "Is this FCZ successful?"



## Why assess FCZs?


Assessments can support fisheries co-management by identifying FCZ strengths to build on and weaknesses to improve. Just like a health checkup, it is important to assess an FCZ on a regular basis to understand if its goals are being met. Assessments are part of regular fisheries management activities to ensure that management actions are making the fishery more sustainable.


Fisheries co-management can be thought of as a cycle that repeats (Figure 1). Some phases may be combined during the same community meeting. The steps in purple (Phases 1 and 2) are performed during the establishment phase when the FCZ is being created. The steps in orange (Phases 3 and 7) are performed by the fisheries management committees that are responsible for management activities. The steps in blue (Phases 4, 5, and 6) are performed as part of an FCZ effectiveness assessment, and these are the steps covered in this book. The management cycle diagram in Figure 1 focusses on FCZs, but these management steps could also be followed for any other fisheries management tool used by a fisheries management committee (for example, the word “FCZ” could be replaced with “fishing gear restrictions” in the diagram).


The information collected during an FCZ assessment can help a fisheries management committee decide if an FCZ’s objectives or management strategies should be adjusted or changed to improve any weaknesses or address constraints (Phase 7). This important step is what makes the process a management “cycle” that can repeat.

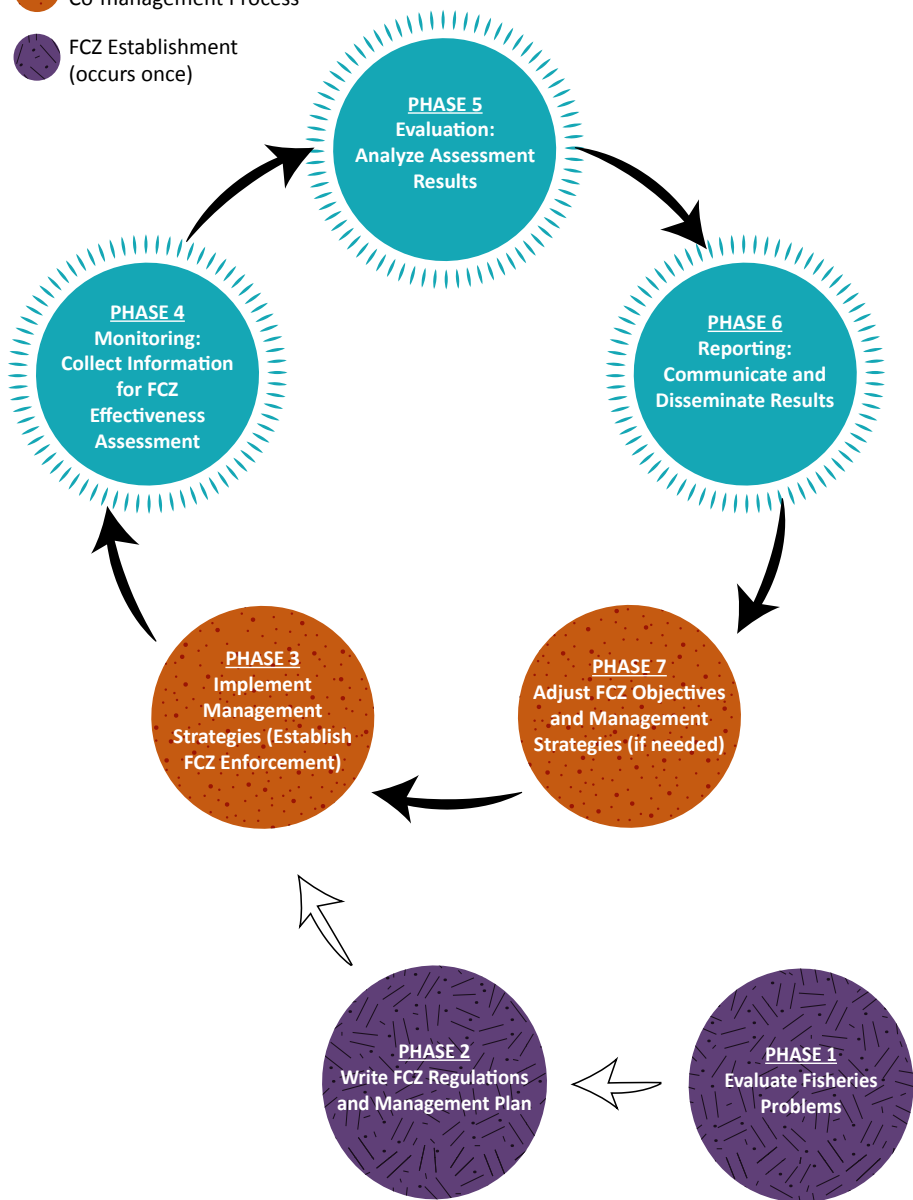
**Figure 1: Fisheries Management Cycle**

→ Cycle Repeats

 **FCZ Effectiveness Assessment (covered in this book)**

 **Fisheries Co-management Process**



















 **FCZ Establishment (occurs once)**



# How to conduct an FCZ effectiveness assessment:

Please follow these seven steps that are included in this handbook to plan, perform, and communicate an FCZ assessment. These steps occur within the FCZ effectiveness assessment phase of the fisheries management cycle (blue circles in Figure 1) and should ideally be followed in order (although some steps may be performed together).

**Table 1:** *Steps of an FCZ Assessment*

PHASE 4   Monitoring: Conduct FCZ Effectiveness Assessment	Who Might Be Involved
Step 1: Identify FCZ goals and desired benefits	 
Step 2: Select indicators to assess these goals and desired benefits	  
Step 3: Plan the assessment and select methods to measure each relevant indicator	  
Step 4: Collect data for the assessment	  
PHASE 5   Evaluation: Analyze Assessment Results	Who Might Be Involved
Step 5: Analyze and evaluate assessment results	  
PHASE 6   Reporting: Communicate and Disseminate Findings	Who Might Be Involved
Step 6: Communicate assessment findings	 
Step 7: Provide recommendations for how to adapt management strategies if needed	 



Community



Civil Society Organizations



Technical Experts (if needed)

# Step 1: Identify FCZ goals and desired benefits



FCZ goals describe the purpose of the FCZ and what the FCZ is trying to achieve. Ideally, these should be written in the FCZ management plan to ensure that everyone involved in the co-management had agreed to the same set of goals regarding why the FCZ was established. If goals are not included in the management plan, the community should first identify goals for the FCZ before moving forward with an assessment.

Even if the FCZ goals have not been officially stated, it is likely that people in the community have ideas about what benefits they hope the FCZ will achieve. You can start the assess-

ment process by asking the question “What benefits do we hope the FCZ will provide?” and write the answers in the Indicator Selection Worksheet (Table 2, Column 1). Write one benefit per row.

These desired benefits and outcomes can relate to the governance and management of the FCZ (enforcement and compliance), to socioeconomic benefits for people (food security, livelihoods, cultural traditions), or to the ecology of the aquatic environment (how different animals and plants interact).

Some examples of desired benefits and outcomes:

- Governance: Improve enforcement activities against illegal fishing.
- Socioeconomic: Improve the food security of the community by providing more fish to catch.
- Ecological: Increase the abundance of all fish species for future generations to catch.

## Activities

- Hold a community meeting to identify FCZ goals and desired benefits

## Outputs

- List of desired FCZ benefits, written in the Indicator Selection Worksheet (Table 2, Column 1)

**Table 2:** *FCZ Indicator Selection Worksheet*

Column 1	Column 2	Column 3
1. What benefits do you hope the FCZ will provide?	2. What are the relevant indicators for these desired benefits listed in Table 3?	3. Which of these indicators will you actually measure in your assessment?

## Step 2: Select indicators to assess these goals and desired benefits

An indicator is used to measure whether an FCZ is achieving its goals and desired benefits. Please use Table 3 to find the desired benefits and outcomes that are most relevant to your FCZ. Next to each desired benefit in Table 3 is a list of indicators that can be measured to assess that benefit. There are often many ways to assess an FCZ benefit, so there may be more than one indicator for each benefit.


For each of your desired FCZ benefits listed in Column 1 of the Indicator Selection Worksheet (Table 2), find the closest match in the first column of Table 3. Then write all of the indicators listed for that desired benefit in the same row of Column 2 of the Indicator Selection Worksheet. There may also be other indicators not listed in Table 3 that are a better fit for your desired FCZ benefits and outcomes. If you can think of any additional indicators, add these to Column 2. Brief examples of each indicator can be found in Table 4, and detailed explanations can be found in the full guidebook “Guidelines for Assessing Fish Conservation Zones in

Lao PDR.” Now that you have a list of potential indicators related to your desired FCZ benefits and outcomes, it is time to decide which ones you will actually include in your assessment. You do not have to measure all the indicators for the desired benefits and outcomes you identify. The choice of which indicators to measure will depend on several considerations, including how much time and budget you have for the assessment, and how much capacity you have to conduct the appropriate methods.

Some indicators may be more difficult or expensive to measure than others. More information about how to measure each indicator is listed in the full guidebook “Guidelines for Assessing Fish Conservation Zones in Lao PDR.” You may need to consult with a technical expert to decide which indicators to measure, and which methods to use. When you decide on the final list of indicators that you will measure for each desired benefit, write them in Column 3 of the Indicator Selection Worksheet (Table 2).


Activities	Outputs
<ul style="list-style-type: none"><li>• Hold a community meeting to identify FCZ indicators and discuss FCZ assessment</li></ul>	<ul style="list-style-type: none"><li>• List of all potential FCZ indicators written in the Indicator Selection Worksheet (Table 2, Column 2)</li><li>• Final list of FCZ indicators to include in the assessment written in the Indicator Selection Worksheet (Table 2, Column 3)</li></ul>

**Table 3:** List of desired FCZ benefits, related indicators, and example questions that can be answered by measuring each indicator.

Desired Governance Benefits and Outcomes		Indicators	Questions to Consider
Effective Management Approach	<div><input type="checkbox"/> Make effective management decisions about the FCZ</div> <div></div>	<div><input type="checkbox"/> Existence of an active management committee (G1)</div>	<ul style="list-style-type: none"><li>• Which people are responsible for making decisions about FCZ management?</li><li>• Is this group actively engaging in FCZ management?</li></ul>
	<div><input type="checkbox"/> Have clear guidelines for FCZ regulations, penalties, and management actions</div>	<div><input type="checkbox"/> Existence and adoption of a management plan (G2)</div>	<ul style="list-style-type: none"><li>• Have the goals of the FCZ been agreed upon and legally approved?</li><li>• Does the plan provide clear guidelines for FCZ management?</li><li>• Are the regulations and penalties clearly described in the plan?</li></ul>
	<div><input type="checkbox"/> The community clearly understands the rules of the FCZ</div>	<div><input type="checkbox"/> Local understanding of FCZ rules and regulations (G3)</div>	<ul style="list-style-type: none"><li>• Do community members understand which activities are allowed and not allowed in the FCZ?</li><li>• Do community members understand why the FCZ exists?</li><li>• Do community members understand the penalties for breaking the rules?</li></ul>
	<div><input type="checkbox"/> There is enough funding and resources to support management and enforcement</div>	<div><input type="checkbox"/> Availability and use of FCZ administrative resources (G4)</div>	<ul style="list-style-type: none"><li>• What funding, equipment, and personnel are available to support FCZ management? How are they used?</li><li>• Are more resources needed?</li></ul>

	Desired Governance Benefits and Outcomes	Indicators	Questions to Consider
Community Participation and Satisfaction	<input type="checkbox"/> Community members participate in FCZ management decisions	<input type="checkbox"/> Level of community participation and satisfaction in management (G5)	<ul style="list-style-type: none"> <li>• Do community members play a role in making decisions about the FCZ?</li> <li>• Are community members satisfied with decisions that are made about the FCZ?</li> </ul>
	<input type="checkbox"/> Community members accept and support the FCZ regulations and management	<input type="checkbox"/> Local understanding of FCZ rules and regulations (G3)	<ul style="list-style-type: none"> <li>• Do community members understand the FCZ regulations and think they are acceptable?</li> </ul>
		<input type="checkbox"/> Level of community participation and satisfaction in management (G5)	<ul style="list-style-type: none"> <li>• Are community members satisfied with decisions that are made about the FCZ?</li> </ul>
Effective Enforcement and Compliance	<input type="checkbox"/> Community members actively participate in and support FCZ enforcement	<input type="checkbox"/> Level of community participation and satisfaction in management (G5)	<ul style="list-style-type: none"> <li>• Do community members play an active role in monitoring and enforcing the FCZ?</li> <li>• Are community members satisfied with the enforcement of the FCZ?</li> </ul>
	<input type="checkbox"/> Good compliance with FCZ regulations	<input type="checkbox"/> Level of compliance with FCZ regulations (G7)	<ul style="list-style-type: none"> <li>• Do many people break the rules of the FCZ? How often does this happen?</li> </ul>

Desired Governance Benefits and Outcomes	Indicators	Questions to Consider
Effective Enforcement and Compliance	<input type="checkbox"/> Effective patrolling and monitoring of FCZs	<input type="checkbox"/> Availability and use of FCZ administrative resources (G4) <ul style="list-style-type: none"> <li>• Who is responsible for enforcing the FCZ? Do they have enough resources to function effectively?</li> </ul>
	<input type="checkbox"/> Clear enforcement procedures and level of patrolling effort (G6)	<ul style="list-style-type: none"> <li>• Does the enforcement team follow clear guidelines? Do they patrol regularly?</li> </ul>
	<input type="checkbox"/> Level of compliance with FCZ regulations (G7)	<ul style="list-style-type: none"> <li>• Are patrolling activities helping to reduce violations in the FCZ?</li> </ul>
	<input type="checkbox"/> Effective enforcement when FCZ regulations are violated	<input type="checkbox"/> Clear enforcement procedures and level of patrolling effort (G6) <ul style="list-style-type: none"> <li>• When someone breaks the rules of the FCZ, are they apprehended? Do they receive a fine?</li> </ul>
	<input type="checkbox"/> Level of compliance with FCZ regulations (G7)	<ul style="list-style-type: none"> <li>• Are enforcement actions helping to reduce violations in the FCZ?</li> </ul>


Desired Socioeconomic Benefits and Outcomes		Indicators	Questions to Consider
Improve Food Security and Livelihoods	<input type="checkbox"/> The community can catch more fish  	<input type="checkbox"/> Local fishing patterns and practices (S1)	<ul style="list-style-type: none"> <li>How much effort are people spending to catch fish?</li> </ul>
		<input type="checkbox"/> Perceptions of local fish catch (S2)	<ul style="list-style-type: none"> <li>Are people catching more fish now than in the past?</li> </ul>
		<input type="checkbox"/> Perception of benefits derived from the FCZ (S4)	<ul style="list-style-type: none"> <li>Do people think the FCZ is providing them more fish to catch?</li> </ul>
	<input type="checkbox"/> The community has more fish to eat	<input type="checkbox"/> Patterns of household fish consumption (S3)	<ul style="list-style-type: none"> <li>Are people eating more locally caught wild fish now than in the past?</li> </ul>
		<input type="checkbox"/> Perception of benefits derived from the FCZ (S4)	<ul style="list-style-type: none"> <li>Do people think the FCZ is providing them more fish to eat?</li> </ul>
	<input type="checkbox"/> The FCZ supports community livelihoods	<input type="checkbox"/> Household income/effort distribution by source (S5)	<ul style="list-style-type: none"> <li>How many households are engaged in activities affected by the FCZ? How important are these activities to their income?</li> </ul>
		<input type="checkbox"/> Local fishing patterns and practices (S1)	<ul style="list-style-type: none"> <li>Are the fishing livelihood activities in the community affected by the FCZ?</li> </ul>
		<input type="checkbox"/> Perception of benefits derived from the FCZ (S4)	<ul style="list-style-type: none"> <li>Do people think the FCZ has helped provide them with more income?</li> </ul>

Desired Socioeconomic Benefits and Outcomes	Indicators	Questions to Consider
Respect Cultural Values and Practices	<input type="checkbox"/> The FCZ does not negatively affect traditional practices, relationships, or social systems	<input type="checkbox"/> Local fishing patterns and practices (S1) <ul style="list-style-type: none"> <li>Do people still engage in culturally important fishing practices and activities in or around the FCZ?</li> </ul>
	<input type="checkbox"/> Local values and beliefs about aquatic resources (S6)	<ul style="list-style-type: none"> <li>What traditional values and beliefs does the community have about the area and environment where the FCZ is located? Are FCZ management activities compatible with these values and beliefs?</li> </ul>
	<input type="checkbox"/> Maintain/increase respect for and observance of traditional beliefs and practices	<input type="checkbox"/> Local fishing patterns and practices (S1) <ul style="list-style-type: none"> <li>Does FCZ management support the practice of culturally important fishing activities in or around the FCZ?</li> </ul>
	<input type="checkbox"/> Local values and beliefs about aquatic resources (S6)	<ul style="list-style-type: none"> <li>Does FCZ management provide an opportunity to increase awareness and respect for traditional values and beliefs about the aquatic environment?</li> </ul>



	Desired Socioeconomic Benefits and Outcomes	Indicators	Questions to Consider
Increase Understanding and Support for Conservation	<input type="checkbox"/> Increase environmental awareness and knowledge	<input type="checkbox"/> Level of environmental awareness and understanding of conservation (S7)	<ul style="list-style-type: none"><li>• Do community members understand the purpose of conservation in the FCZ?</li></ul>
		<input type="checkbox"/> Perceptions of local fish catch (S2)	<ul style="list-style-type: none"><li>• Do community members understand the relationship between overfishing and fish population declines? Do community members understand how the FCZ can help address fish declines?</li></ul>
	<input type="checkbox"/> Promote ecotourism	<input type="checkbox"/> Household income/effort distribution by source (S5)	<ul style="list-style-type: none"><li>• Which activities around the FCZ are related to ecotourism? How many households are engaged in activities related to ecotourism? How important is ecotourism to their income?</li></ul>



	Desired Ecological Benefits and Outcomes	Indicators	Questions to Consider
Protect Individual Species	<input type="checkbox"/> Increase the abundance of a particular key species  	<input type="checkbox"/> Presence/absence of key species (E1a)	<ul style="list-style-type: none"> <li>• Is the key species found inside the FCZ?</li> </ul>
		<input type="checkbox"/> Abundance of key species (E1b)	<ul style="list-style-type: none"> <li>• Is the population of the key species increasing over time?</li> </ul>
		<input type="checkbox"/> Population structure of key species (E2)	<ul style="list-style-type: none"> <li>• How many of the key species are able to reproduce? Is there evidence of young fish joining the population?</li> </ul>
		<input type="checkbox"/> Total catch per unit of fishing effort (E5)	<ul style="list-style-type: none"> <li>• Are members of the community catching the key species? Are their catches increasing or decreasing over time?</li> </ul>
Protect Biodiversity or "All Fishes" Generally	<input type="checkbox"/> Increase total abundance of all fishes (or other aquatic animals)	<input type="checkbox"/> Total abundance by group (such as "fishes") (E3)	<ul style="list-style-type: none"> <li>• Is the abundance of all fishes (or other aquatic animals) increasing over time?</li> </ul>
		<input type="checkbox"/> Total catch per unit of fishing effort (E5)	<ul style="list-style-type: none"> <li>• Are catches of fish (or other aquatic animals) in the community increasing or decreasing over time?</li> </ul>
	<input type="checkbox"/> Protect or increase the biodiversity of aquatic species	<input type="checkbox"/> Composition and structure of the aquatic community (E4)	<ul style="list-style-type: none"> <li>• How many species of fish or other aquatic animals are there in the FCZ? How many are there of each species? How has the composition of the species changed over time? Are there species that are more common and species that are rarer?</li> </ul>

Desired Ecological Benefits and Outcomes	Indicators	Questions to Consider
<p>Protect or increase the biodiversity of aquatic species (<i>continued</i>)</p>	<input type="checkbox"/> Total catch per unit of fishing effort (E5)	<ul style="list-style-type: none"> <li>• What is the diversity of local fishing catches in the community? Is it changing over time? Are there species that are no longer captured or species that are new in the fishery?</li> </ul>
<div>Protect the Aquatic Environment</div>	<input type="checkbox"/> Protect important habitats inside the FCZ (e.g., spawning habitat, deep pool refuges)	<input type="checkbox"/> Habitat distribution and quality (E7) <ul style="list-style-type: none"> <li>• Where are important habitats that are targeted for protection (such as spawning areas) located inside the FCZ? Is the size of the habitat targeted for protection increasing or decreasing?</li> </ul>
	<input type="checkbox"/> Water quality (E6)	<ul style="list-style-type: none"> <li>• Is there good water quality inside the FCZ for aquatic species to survive?</li> </ul>
	<input type="checkbox"/> Composition and structure of the aquatic community (E4)	<ul style="list-style-type: none"> <li>• Which species are found in which habitats inside the FCZ?</li> </ul>
	<input type="checkbox"/> Population structure of key species (E2)	<ul style="list-style-type: none"> <li>• If the FCZ protects spawning habitat, then are there key species using the habitat that appear ready to reproduce?</li> </ul>

**Table 4:** FCZ indicators with example questions that can be answered by measuring each indicator.

Governance Indicators	Questions to Consider
G1) Existence of an active management committee	Is there a group of people responsible for making decisions about FCZ management?
G2) Existence and adoption of a management plan	Is there a document that describes the purpose, goals, and objectives of the FCZ, and describes the FCZ rules, regulations and responsibilities?
G3) Local understanding of FCZ rules and regulations	Does the community know the FCZ exists and why? Do they understand what is allowed and not allowed in the FCZ?
G4) Availability and use of FCZ administrative resources	Is there enough funding, materials, equipment, and people to manage the FCZ? How are they used?
G5) Level of community participation and satisfaction in management	Do community members participate in FCZ management decisions and activities? Do they agree with and support FCZ management decisions and activities?
G6) Clear enforcement procedures and level of patrolling effort	Does the enforcement team have clear guidelines to follow to enforce the rules of the FCZ? How much effort is spent patrolling and enforcing the FCZ?
G7) Level of compliance with FCZ regulations	How many people are breaking the rules of the FCZ? Who is breaking the rules? How often does this happen?



## Socioeconomic Indicators

## Questions to Consider



S1) Local fishing patterns and practices

How, when, and where are community members harvesting fish, plants, or other aquatic animals? Are the patterns changing over time?

S2) Perceptions of local fish catch

What do local fishers think about their current fish catches and how these catches have changed over time?

S3) Patterns of household fish consumption

How much locally caught wild fish are people eating in the community? Is this changing over time?

S4) Perception of benefits derived from the FCZ

Do community members feel the FCZ has had a positive or negative impact on their lives? How?

S5) Household income/effort distribution by source

What are the primary livelihood activities of local households? How many are related to the FCZ? Is this changing over time?

S6) Local values and beliefs about aquatic resources

How do customs, traditions, or understanding about the aquatic environment affect how people use aquatic resources?

S7) Level of environmental awareness and understanding of conservation

Does the community understand how human activities affect the environment, and what kind of practices are sustainable or not sustainable?

## Ecological Indicators

## Questions to Consider



E1a) Presence/absence of key species

Is a species of interest found inside the FCZ?  
Is this changing over time?

E1b) Abundance of key species

How many of a species of interest are found inside the FCZ by number (ex: 5 climbing perch/m<sup>3</sup>) or weight (ex: 10 kg of climbing perch/m<sup>3</sup>)? Is this changing over time?

E2) Population structure of key species

What are the sizes or ages of fish in the population of a particular species? How many “large” fish are present? Is this changing over time?

E3) Total abundance by group (such as “fishes”)

How many total fish or invertebrates are in the FCZ by number (ex: 10 fish/m<sup>3</sup>) or weight (ex: 15 kg of fish/m<sup>3</sup>) for all species combined? Is this changing over time?

E4) Composition and structure of the aquatic community

What is the diversity of aquatic animals and/or plants in the FCZ? How many species are there, and how many of each species? Is the composition of the animals and/or plants changing over time?

E5) Total catch per unit of fishing effort

How much fish is caught per time spent fishing? (Ex: 3 fish/net per hour; 7 kg of fish/trap per hour) Is the catch increasing or decreasing over time?

E6) Water quality

What is the condition of the water in terms of temperature, oxygen, salinity, acidity, or clarity? Is water quality changing over time?

E7) Habitat distribution and quality

How many types of habitats are in the FCZ (such as rocks, sand bars, deep pools, or wetlands) and where are they located? Is the amount of habitat of interest in the FCZ changing over time?



### Step 3: Plan the assessment and select methods to measure each relevant indicator

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Conducting an FCZ assessment requires many kinds of resources, including time, people, and funding. It is important to make sure you have enough of each of these resources before beginning your assessment.

One of the first steps in the planning process is to identify the assessment team, or the group of people who will work together to conduct the assessment. The team may include members of the community (such as fishers or members of the fisheries management committee), government officials, staff from facilitating organizations, and technical experts.

Some questions to answer when creating the assessment team are:

1. Who will be responsible for collecting information?
2. Who will interpret the results?
3. Who will the results be shared with?

Once you have selected the assessment team, they will need to meet to make a plan for conducting the assessment. Assessments involve the collection, analysis, and interpretation of data. The team should have a plan in place for performing all of these steps before they begin the assessment. The responsibility of collecting the data can be divided

among the team members depending on their capacity, and not all team members need to be involved in this step. For example, some team members can be responsible for collecting socioeconomic indicator data, while others are responsible for collecting ecological indicator data.

During the planning stage, the team will also need to determine the methods they will use, the timing of the assessment (schedule), and the equipment or other resources they will need. Sometimes the same method can be used to measure multiple indicators. Methods to assess some indicators may be possible to complete in a single day (such as interview surveys), while others may take several days and may need to be repeated throughout the year (such as fish sampling).

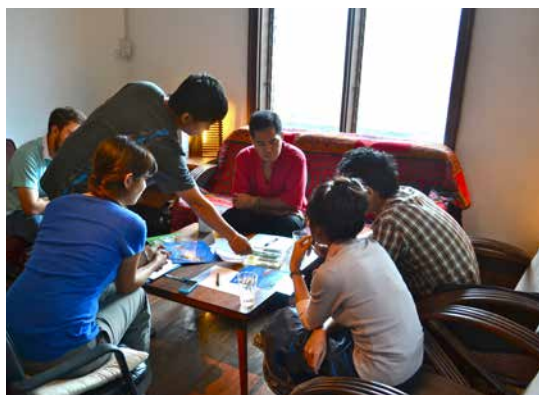
Some questions to answer when planning the assessment are:

1. What kinds of information need to be collected for the indicators you have chosen?
2. What methods will you use to collect this information?
3. How much information needs to be collected, and when?
4. Is it important to collect information in multiple seasons?

5. What kind of equipment is needed to collect information for each indicator?
6. Does someone on the assessment team have the skills to collect information for each indicator? If not, can the team receive training to collect the information?
7. Are additional resources (people, funding, equipment) needed to conduct the assessment? If yes, is there a plan in place for obtaining these resources?
8. Where will assessment results and information be safely stored so others can find them to compare to future assessments?

If the assessment team is unable to answer these questions on their

own, they may need to seek assistance with the planning stage from a technical expert who has experience conducting FCZ assessments. It is best to put the plan in writing so that the team can agree on the plan, and you can refer to this document in the future if you conduct another assessment. More details about planning assessments can be found in the full guidebook “Guidelines for Assessing Fish Conservation Zones in Lao PDR.”



### Activities

- Hold a community meeting to identify FCZ assessment team members
- Hold assessment team meeting(s) to prepare the FCZ assessment plan
- Write down the plan and share it with all the team members

### Outputs

- List of FCZ assessment team members and roles
- Written copy of FCZ assessment plan that includes
  - List of the desired FCZ outcomes and indicators selected
  - List of methods selected
  - Assessment schedule
  - List of equipment or other resources
  - List of who is responsible to implement each task

## Step 4: Collect data for the assessment



Once you have written a plan for the FCZ assessment, you can begin collecting data. You may need to work with a technical expert to help carry out the process of collecting, analyzing, and interpreting the information. Conducting the assessment may involve activities like interviewing community members, performing a fish catch survey, or observing the FCZ enforcement team. When designing your data sheets and survey forms for the assessment, it can be helpful to write the relevant indicator code next to each type of data you collect or each question you ask. This way, you make sure that all of the information you collect is directly related to the purpose of your FCZ assessment.

During the assessment process, the team members responsible for collecting the different types of data should communicate with the rest of the team, and share updates on how the plan is proceeding. If there is a problem and the team needs to

change their methods or approach, the team should meet again to discuss any changes to the plan. For example, if the team planned to conduct fish surveys with gill nets but the river water level is too high and dangerous for sampling, then the team can meet and discuss whether to change to a different sampling method, or to delay the activity.

Information should be carefully recorded in writing from each assessment activity, and the final results should be summarized so that they can be examined and interpreted in Step 5.

Once the assessment step is complete, it may be helpful for the assessment team to have a discussion of the strengths, weaknesses, and constraints of the assessment process, and lessons learned from the experience of conducting the assessment.

During this discussion, the group can ask:

- Were there any methods that were planned but were too difficult to carry out?
- Was there anything that you wish you had planned for that you did not?
- What would you do differently next time?

Have a team member record this information and include it with the written plan to help inform future assessments.

<u>Assessment Strengths</u>	<u>Assessment Weaknesses/ Constraints</u>
<ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li></ul>	<ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li></ul>
<u>Assessment Lessons Learned</u> <ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li></ul>	

Activities	Outputs
<ul style="list-style-type: none"><li>• Collect data during the FCZ assessment</li><li>• Communicate among the team members about the progress of the assessment</li><li>• Meet to discuss strengths, weaknesses, and lessons learned from the assessment</li></ul>	<ul style="list-style-type: none"><li>• Data sheets from each stage of the FCZ assessment</li><li>• Written list of lessons learned from the assessment process – this should be saved with the assessment plan and assessment output documents</li></ul>

## Step 5: Analyze and evaluate assessment results

Once you have collected all the information for the assessment, it is time to analyze it. You can make tables, charts, graphs or diagrams to show the results of the assessment. You may need assistance from a technical expert to analyze the assessment results. More information about analyzing the data from assessments can be found in the full guidebook “Guidelines for Assessing Fish Conservation Zones in Lao PDR.”

After you have analyzed the final results of the assessment, it is time to evaluate the performance of the FCZ. There is no single definition of what makes an FCZ “successful.” The assessment team needs to look at the results of the assessment and decide

whether they think the FCZ matches the community’s vision of a successful FCZ for each indicator measured. It may be that the FCZ is successful in achieving some goals or desired benefits, and not successful in achieving others. Use the results of the assessment to create a list of FCZ strengths and weaknesses or constraints.

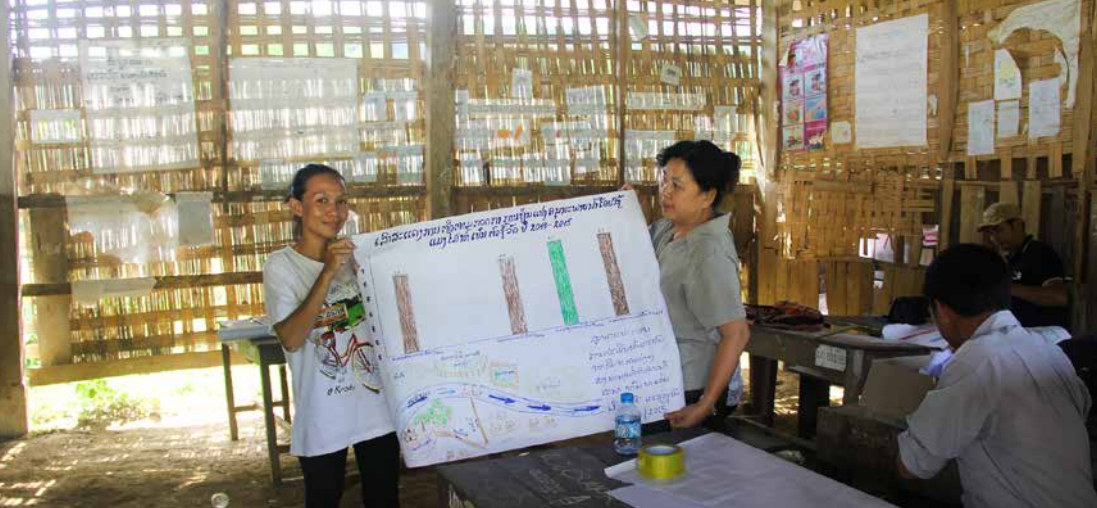
The assessment team should use this process to decide on the key message or story they want to share about the FCZ and their findings during Step 6. More information about interpreting the results from assessments can be found in the full guidebook “Guidelines for Assessing Fish Conservation Zones in Lao PDR.”

### FCZ Strengths

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### FCZ Weaknesses/Constraints

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## Activities

- Summarize and analyze the data collected
- Hold an assessment team meeting(s) to interpret the results of the assessment

## Outputs

- Tables, charts, graphs, or diagrams that summarize the results of data collection compiled into one (or more) output documents
- List of strengths and weaknesses or constraints of the FCZ
- Written description of key messages that the team would like to share

## Step 6: Communicate assessment findings

The assessment team should share the findings of their work broadly with the fisheries management committee and the community so that all community members can understand how the FCZ is performing. This can be done through a community meeting in smaller communities. In larger communities, it may also be necessary to share the findings through fliers, social media, or other methods to ensure that many community members have heard the information.

During community meetings, the team can explain:

- Why they conducted the assessment
- What information they collected
- How they collected the information
- What the results mean

Community members can offer input to the fisheries management committee on next steps that can be taken for FCZ management based on the assessment results.

Assessment findings can also be shared with relevant government staff like District Agriculture and Forestry Office (DAFO) and Provincial Agriculture and Forestry Office (PAFO) officials, and can be communicated to project donors. If the assessment identifies strengths in FCZ management, these aspects can be supported or expanded. If the assessment identifies weaknesses in FCZ management, these aspects can be changed, or more funding and support can be requested to improve them.





### Activities

- Hold community meeting(s) to share results of the assessment
- Use fliers, social media, video or other tools to share results of the assessment

### Outputs

- Summary of assessment findings in a presentation, flier, or report

## Step 7: Provide recommendations for how to adapt management strategies if needed

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If the community is satisfied with the performance of the FCZ based on the assessment, no changes may be needed to adapt FCZ management. However, if the assessment identifies areas that need improvement, the assessment team can make recommendations to the village fisheries management committee, which can decide on changes that are needed to improve FCZ management.

The assessment team can provide a list of actions to build on FCZ strengths and actions to improve FCZ weaknesses. For example, if the assessment finds that many people are not complying with the FCZ regulations, the assessment team could recommend that more signs are needed, that more patrolling is needed, or that more outreach is needed to educate community members. Village leadership can choose to assign responsibility or

seek resources to carry out these changes.

In the fisheries management phase of the fisheries management cycle (see orange circles in Figure 1), if the fisheries management committee decides that changes to the FCZ regulations are required (such as changing the FCZ boundaries, rules, or penalties), then the fisheries management committee should work with DAFO officials to make changes to the FCZ regulations. Management actions should also be adjusted to match any changes in the regulations.

Another FCZ assessment should be performed in the future (every three years or five years) to determine if any changes to FCZ management are successful and to continue the fisheries management cycle.

## Activities

- Assessment team meeting with fisheries management committee to present the final results of the FCZ assessment and to discuss potential changes to FCZ management

## Outputs

- List of suggested actions to build on FCZ strengths and improve FCZ weaknesses



### Actions to Build on FCZ Strengths

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### Actions to Improve FCZ Weaknesses

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## Conclusions

This handbook provides an overview of the steps that can be taken to assess the effectiveness of an FCZ, and summarizes information that can be found in more detail in the full guidebook “Guidelines for Assessing Fish Conservation Zones in Lao PDR.” This handbook offers suggestions and recommendations to guide an assessment team, but there is no one correct way to conduct an FCZ assessment. Each FCZ assessment will be different depending on the interests and resources of a particular community, as well as the setting and conditions of a particular FCZ. After an assessment is completed, it is important for the FCZ management committee to take steps to address any weaknesses of the FCZ or explore solutions to address any challenges identified by the assessment. This will help strengthen the management of the FCZ.

It is important to note that measuring a single indicator once will not provide much valuable information about an FCZ because you do not know whether the indicator is increasing, decreasing or staying the same. The value of FCZ assessments comes from measuring several different indicators over time to provide an overall picture about how an FCZ is performing. Managing an FCZ is an ongoing process, and so is assessing an FCZ. FCZ assessments are most informative when they can be conducted regularly, not just once. How often an FCZ should be assessed will depend on the resources available, but it may be helpful to establish a goal of assessing an FCZ once every three or five years. If lessons learned are passed along to the next assessment team, this can make the process easier each time. It is important to keep the results of an FCZ assessment in a safe place so that future assessments can use these results to see how indicators may be changing over time. The benefits of a successful FCZ can take time to appear, sometimes many years, which is why it is important to conduct assessments over the long term.

Establishing and sustaining FCZs requires a commitment from communities, government officials, and supporting organizations to invest the time, effort, and resources needed to ensure an FCZ can succeed. While it is not an easy task to conduct an FCZ assessment, these reviews are a valuable and necessary part of ensuring FCZ success. By identifying opportunities to improve FCZ management, assessments can help improve the conservation outcomes of FCZs, ensuring that communities can continue to benefit from the rich fisheries and aquatic resources of Lao PDR for generations to come.



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