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A practical guide for ex-ante impact evaluation in fisheries and aquaculture



RESEARCH
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A practical guide for ex-ante impact evaluation in fisheries and aquaculture

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Abstract

This guide provides a framework for ex-ante evaluation of fisheries and aquaculture projects in developing countries. Ex-ante impact evaluations check the potential of a project or program to deliver benefits from proposed interventions. Providing extensive annotated literature citations, this guide is designed for use by practitioners who may not be fisheries or aquaculture specialists. The guide uses concepts from results-based management, organized into five modules that structure the investigation and provide insights regarding alignment of the proposed intervention with stakeholder interests, feasibility of design, potential constraints to implementation, possible impact pathways and distributional effects of the intervention. Separately published case studies of investments in Bangladesh, Malawi and Ghana illustrate application of the guide.

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Chapter 1. Rationale for ex-ante impact evaluation of fisheries and aquaculture projects

Objective of this chapter

This chapter presents the aim of this manual, a definition of fisheries and aquaculture, and the resources needed for application of the guidelines.

The goal and objectives of this manual

The goal of the manual is to improve the likelihood of success of a proposed aquaculture or fisheries-related project. The objective is to provide a step-by-step guide for determining ex-ante whether a given investment is likely to achieve its intended outcome and impact. The results of the evaluation can be used to validate or improve the proposal. In this spirit, the analysis suggested in the guide can also be considered an evaluation of project planning.

Reports produced using these guidelines (i) utilize a mix of literature review, secondary data analysis and stakeholder interviews to check for project alignment with national or regional development priorities; (ii) assist in identifying potential indicators of outcome and impact; and (iii) identify and engage potential beneficiaries and stakeholders to assist in testing the implementation logic for potential outcomes. When desirable or required, the analysis can be coupled with quantitative estimates of potential benefit to project participants and adoption.

The manual assumes that the decision regarding which intervention type is proposed has already been made and the proposed objectives have been developed. This assumption implies that the terms of reference for the evaluation are guided by the project concept note or proposal.

The manual is meant to be used as part of the project planning process. The manual can be used for projects at different scales, from the community level upward.

These guidelines ...

- are not designed to compare different types of interventions. Guidelines for targeting or priority setting can be found at IFAD (2007), Briones et al. (2008) or various web sites such as <http://www.povertytools.org/project.html>.
- do not provide information on quantitative methods for benefit or adoption estimation. Several guides with information on quantitative methods are listed in the Annex.
- do not replace the planning needed for ex-post impact assessment.
- do not include instructions for environmental impact assessment.

The intended audience for this manual consists of users who are familiar with the region in question. Although it would be advantageous, the user need not be an expert in fisheries and aquaculture, as we provide information and links to orient the non-expert to the issues of concern in the fisheries and aquaculture sectors (Chapter 3). This manual can also be used by a fisheries expert who is not familiar with ex-ante impact assessment. We provide web links throughout the manual. Where feasible, we cite freely available reference materials.

Defining capture fisheries and aquaculture

Capture fisheries refer to the harvest of wild fish and other aquatic organisms in coastal and inland waters. In many cases, projects will be focused on small-scale fisheries.

Small-scale fisheries employ 95 percent of the men and women engaged in the fisheries sector globally, and more than 90 percent of these operate in developing countries. Over half of the catch in developing countries is from small-scale fisheries, and 90 to 95 percent of the small-scale landings are destined for domestic human consumption; the sector contributes greatly to local food supplies and food security. Small-scale fisheries tend to be highly diverse in nature, geographically dispersed and vulnerable to external forces, and they have experienced significant declines in productivity in recent decades (Allison and Ellis 2001).

However, this manual is not restricted to the assessment of impacts for small-scale fisheries. Often larger-scale industrial or commercial fisheries are important parts of people's livelihoods or impact on small-scale fisheries, and they should not be excluded from consideration.

Aquaculture is the farming of aquatic animals and plants. Globally, the aquaculture sector has seen dramatic growth of over 8 percent per annum in the past two decades. Fish production from the sector reached about 53 million tons in 2008. There are about ten million fish farmers around the world, most of them living in developing countries and using low-intensity production methods. Globally, 60 percent of aquaculture occurs in fresh water, followed by 32 percent and 8 percent in salt and brackish water, respectively. However, the brackish-water systems tend to concentrate on higher-value species and account for 13 percent of production value (FAO 2010).

Resources needed for implementing the guidelines

These guidelines are adapted from existing publications on ex-ante evaluation. The justification and main organizational structure of the guidelines are found originally in *A Practical Guide to Ex Ante Poverty Impact Assessment*, published by the Development Assistance Committee of OECD in 2007. We have adapted these guidelines, borrowing from several other published guides as well (ADB 2007; Sugiyarto 2007; World Bank 2003). The guidelines we present here are meant to be practical and achievable.

The institutions that sponsored these guides are concerned principally with poverty or food and nutrition security. The OECD guide in particular is focused solely on analysis of interventions with the goal of poverty reduction. Though the reader can see that bias in portions of the guide, we have purposely extended the guidelines to include food and nutrition security.

Implementation of the guidelines requires judgment on the part of the user. The guidelines are designed to be implemented within a limited time frame and a reasonable budget and the results presented in an easy-to-understand format. However, these constraints should not unduly compromise the quality of the information or the confidence of the partner stakeholders. The distinction between "quick and dirty" and "quick and clean" depends on a dialogue between the user and the stakeholders.

The OECD guide notes the level of resources required depends upon the following:

- the scale of intervention examined.
- the availability of time for research.
- the availability of data; i.e., the need for additional data collection.
- the degree of stakeholder and target group involvement; i.e., level of intended consultative processes.
- the local availability of experienced consultants.

Depending on the factors above, a typical application of these guidelines should take a team of one or two users less than a month with the corresponding budget for time and operations expenses. Several case studies utilizing this guide were completed by small teams in less than a month. A link to the studies is provided in the section below.

In the spirit of results-based management, the ex-ante evaluation should be implemented during the preparation of an intervention in collaboration with partners, beneficiaries and other stakeholders. The process should make the best use of existing knowledge and

data to examine a specific intervention in a specific context. The analysis could be iterative, providing feedback to the proposal design process and testing it with a renewed round of analysis and consultation.

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Chapter 2. Ex-ante impact evaluation Framework and overview

Objective of this chapter

This chapter provides information to anchor the concepts of ex-ante impact evaluation in a larger theoretical and methods framework and gives a summary of the guideline steps. The philosophical basis comes from results-based management. Results-based management principles link ex-ante evaluation with project monitoring and evaluation systems. The framework is presented as a sequence of five modules to guide implementation.

Evaluation in results-based management

This manual is written from an understanding of ex-ante impact evaluation as a management tool derived from the practice of results-based management. Results-based management (RBM) is an approach to management that focuses on achievement of outputs and outcomes rather than accounting for inputs and activities. Many development organizations utilize RBM principles to plan, implement and evaluate their programs (ADB 2006; CIDA n.d.; IFAD 2008; OECD and World Bank 2006).

Meier (2003) states the goal of RBM as "... a management strategy aimed at achieving important changes in the way organizations operate, with improving performance in terms of results ..." He notes the purpose is "... to improve efficiency and effectiveness through organizational learning, and secondly to fulfill accountability obligations through performance reporting." He adds that a key success factor in RBM is "... the involvement of stakeholders throughout the management lifecycle in defining realistic expected results, assessing risk, monitoring progress, reporting on performance and integrating lessons learned into management decisions." Since RBM is a comprehensive approach for projects or programs, it addresses aspects from the complete cycle of program management.

When considering ex-ante impact evaluation as an element of RBM, it appears as a type of planning evaluation. RBM implies a program implementation cycle that extensively utilizes monitoring and evaluation (M&E). In addition to their main purpose of guiding implementation of the ex-ante impact evaluation, these guidelines serve to guide the design of the monitoring system for the project. The guidelines process also identifies the relevant stakeholders and provides an analysis of risks.

A well-designed M&E system is critical to learning and adapting. The role of M&E in the project cycle is illustrated in Figure 2.1 below. Implementing the ex-ante impact assessment process provides basic information on the project strategy, contributes to the operational plan and supports the design of the M&E system.

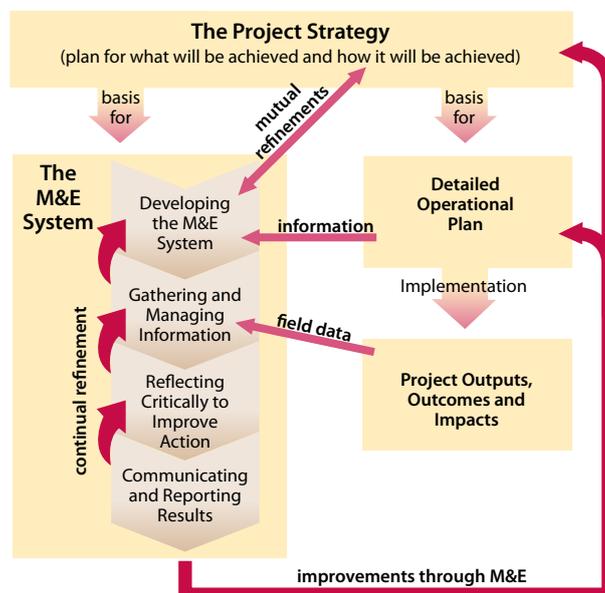


Figure 2.1. Monitoring and evaluation in the project cycle. Source: IFAD (2002).

In the RBM context, implementing the project cycle requires consultation through participation, transparency about the theory of change, and identification of the potential beneficiaries and any potential impediments. Monitoring and evaluation in this cycle establishes the means and tools for accountability and mechanisms for learning and adjustment. Given their sequence in the typical program or project cycle, several of these steps are included in ex-ante evaluation.

In every proposed development intervention, there is an implicit theory of how the intervention will achieve its results. RBM is built on the explicit recognition of this theory and typically portrays it as a results chain. As a planning tool, the results chain makes transparent the theory of change that motivates the design of the project. The results chain is the origin of a significant portion of the distinctive vocabulary of RBM. Seeking to standardize the vocabulary, OECD published a glossary of evaluation and RBM terms (OECD 2002). Figure 2.2 illustrates the results chain and defines several of the terms.

A well-designed intervention proposal should be accountable for its outputs. By design, the expertise of the implementing agency should combine with the resources available to it to assure the delivery of the project outputs. Outcomes result from the user or beneficiary using the output. An outcome typically involves a change in knowledge, attitude or skill of the user. As such, an outcome depends on external influences beyond the control of the project. As you move further down the results chain, the influence of external factors becomes more and more important.

Results Chain					
Implementation		Results			
Inputs <i>How should this be implemented?</i>	Activities <i>What should be implemented?</i>	Outputs <i>What should be produced?</i>	Outcomes <i>What do we expect from the investment?</i>		Impact <i>Why do we do this?</i>
Financial, human and material resources	Tasks and actions undertaken to transform inputs into outputs	Products and services produced	Short-term effects on beneficiaries	Medium-term effects on beneficiaries	Long-term improvement in society

Figure 2.2. A results chain. Source: adapted from ADB (2006).

Theory of change

Several of the activities in the modules below examine components of the proposed program of intervention. These components are selected because of their importance for the successful implementation of the project. They are all related to the theory of change, which in the context of development projects is a theory of how and why an initiative will work. It defines the relationship between actions and expected results. It also explains the assumptions of beliefs or best practices that the project implementers expect to be present or utilized during implementation.

Anderson (n.d.) defines the basic elements of a theory of change to include the following:

- a pathway that illustrates the relationships among a variety of outcomes that are each.
- thought of as preconditions of the long-term goal.
- indicators that are defined specifically enough to measure success.
- interventions that are used to bring about each of the preconditions on the pathway and at each step of the pathway.
- assumptions that explain why the whole theory makes sense.

There are various methods for defining, illustrating or otherwise expressing the theory of change. An outcome map is an illustration that “depicts the sequential relationships between initiatives, strategies and intended outcomes and goals” (Gienapp et al. 2009). An impact pathway analysis traces the multiple sequences of outcomes deriving from a project output

through to eventual impact. An outcome logic model seeks to accomplish a similar goal but places greater emphasis on the process of moving from outcome to outcome (Douthwaite et al. 2008).

In this same vein, an intervention logic model depicts how a set of activities associated with a given intervention (program, project, policy or practice) are related to the outcomes that result from implementing the intervention. Figure 2.3 below is one of numerous possible ways to illustrate the concept. The flow of analysis in the figure starts with the needs of the beneficiaries, and from there moves in two directions. The solution to the needs assists in defining the overall objectives, which as indicated by the dotted arrow will be the eventual impact of the project.

Many project proposals include logframes. Logframes are an excellent means of connecting inputs with activities and outputs with purpose and goals. However, the logframe does not provide information about how the outputs will achieve change. The “how” question is central to outcome logic models. Referring to the figure, logframes capture what is in the boxes, while outcome logic models focus on the arrows between the boxes.

Intervention logic models for specific investments answer the following questions: What outcomes are the program, practice or policy trying to achieve, and why? On what theories is the program based? What activities will be implemented to accomplish the outcomes? What are the immediate effects of these activities? What underlying factors does this outcome contribute to over time? What are the long-term effects and impacts?

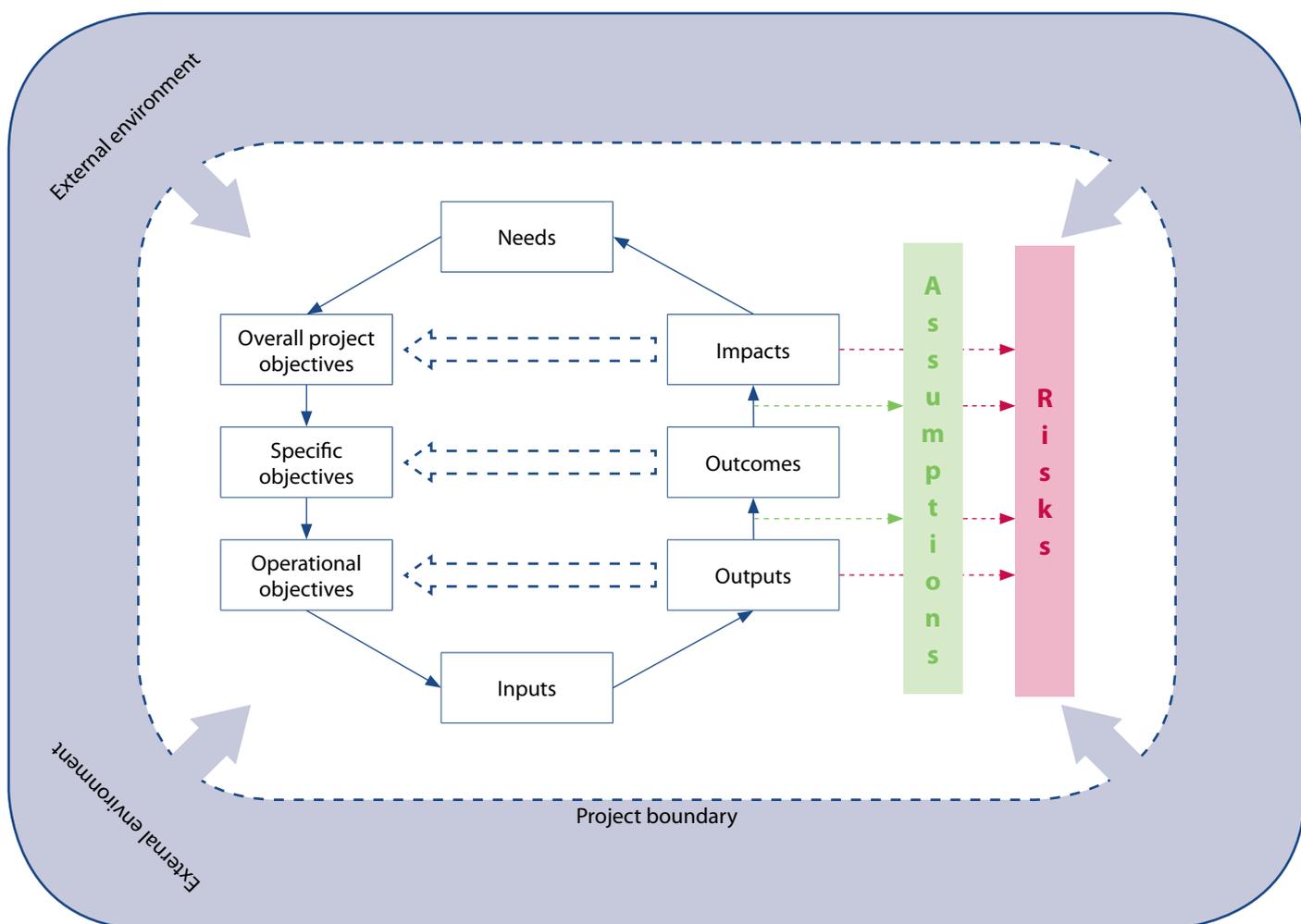


Figure 2.3. The intervention logic.

Source: adapted from Evans and Andrew (2011); UNDP (2009).

Overview of modules

The analytical framework supporting the guidelines is built on the logic of the impact pathway and the project management cycle. The guidelines are designed around self-contained modules that walk the user through a logical process of data gathering, contact with stakeholders, and analysis.

The guidelines utilize five modules to structure the implementation of the evaluation. These guidelines are designed for a reasonable level of effort and expenditure. However, what is actually required and what is delivered depends heavily on the existing information, availability of the stakeholders and the particular nature of the designed intervention.

Figure 2.3 also illustrates an analytical framework, approximating a results chain that moves from inputs, through outputs, to outcomes and impact. **Module 1** guides the user through a critical analysis of the intervention logic as found in the planning document or expressed by the proponents, whether in a concept note or a full proposal. **Module 2** checks that the objectives of the proposed intervention are connected to higher-level planning documents such as Poverty Reduction Strategy Papers (PRSPs). Alignment to high-level planning assures official support and can influence how objectives are written and the types of activities planned. For example, an emphasis on gender-equitable development in the PRSP may need to be captured in an objective and certainly in planned activities.

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Chapter 3. Step-by-step guidelines

Objective of this chapter

This chapter gives step-by-step instructions on how to design and conduct an ex-ante impact evaluation of a development intervention in the capture fisheries and aquaculture sectors. The implementation is guided by a sequence of modules with accompanying tables used to summarize the data. The intent is to provide a framework to systematically consult existing information and engage with relevant stakeholders to better inform analysis.

We first present an overview of the modules, followed by detailed instructions. We link this chapter to a toolbox of data collection methods and illustrate them with examples from capture fisheries and aquaculture projects.

In this chapter, the modules are presented in detail with discussion of their logic, types of data to be collected, methods for obtaining it and types of analysis. We illustrate these with examples from fisheries and aquaculture interventions.

For several of the modules, we offer matrices to register information. These are for the convenience of the analyst and are optional. The shaded columns included in several of the matrices are guidance hints towards useful information. Suggestions of methods and links to toolkits and possible data sources are listed in the Annex.

Information-gathering activities to answer the questions posed in the modules include collection and review of existing

published material, analysis of secondary and primary data, key informant interviews, and group discussions. The detailed descriptions of each module offer related examples of fisheries and aquaculture information and, where relevant, appropriate participatory methods for eliciting information from stakeholders.

We provide space to document and assess the quality of the information used in the matrices. In selected columns, we offer possible scoring methods or categories. The analyst is free to choose what appears most appropriate.

Module 1: Check the intervention logic

Module 1 provides the user a checklist to examine the concept note or proposal. This is the moment for the analyst to critically examine the concept note or proposal. It is the starting point for the assessment, and the analyst and authors are well served to check that their understandings of it are the same. The intent of this module is to assist the user to validate basic questions with the concept note authors and assist in establishing the boundaries of work to be done. In this module, the connections between ex-ante assessment and proposal evaluation are especially clear. The analyst should note that several of the questions asked in Module 1 will be examined in greater detail in the subsequent modules. Module 1 provides an overview and validation of assumptions between the analyst and the sponsor of the assessment.

There are many different styles of concept notes and proposals. Regardless of the style of presentation, the analyst should be able to identify basic elements of the work being proposed and the expected products promised. This may sound obvious, but a meta-review of fisheries and aquaculture projects implemented during the 1990s found that many of the proposals lacked clearly specified objectives and expected outcomes (MacFadyen 2008).

Below are a series of questions to assist the analyst to examine elements of the intervention logic. In an ideal case, many of these should be answered directly in the proposal document. If not, the analyst should query the proposal writer. The intent here is to get the analyst and proposal writer(s) to agree on basic elements of

the intervention. This agreement then assists the focus of information gathering in the application of the remaining modules. Module 1 is, in essence, a scoping tool to plan the remainder of the analysis.

Table 3.1. Module 1—Key questions to validate intervention logic.

	Questions	Sub-questions and clarification
1	What is being analyzed?	What does the project intend to do? What are the main hypotheses motivating the intervention?
2	How will the project make its impact on poverty?	What are the intended transmission channels of the intervention? In other words, what is the theory of change?
3	What dimension(s) of poverty or food security are being targeted?	Which poverty or food security measure(s) are being assessed? Are these monetary, nutrition insecurity, social exclusion and empowerment, assets and basic needs, or vulnerability measures?
4	Who are the target beneficiaries?	Whose poverty and food security needs are being addressed? What are the target groups and sub-groups? These may be considered through categories such as income, gender, ethnicity, age, geographic location, livelihood type or migrant status.
5	What are the boundaries of the project?	How are the project boundaries defined? These may be spatial and temporal boundaries or boundaries specific to target groups or markets.
6	When will the outputs, outcomes and impacts occur?	What are the suitable time horizons for expected outputs, outcomes and impacts?
7	What are the external influences?	What are the influences external to the project that may influence its outcomes? What are the external influences that could affect attribution of the project to its impacts?
8	What are the risks?	What are the key assumptions in the intervention logic? These “expected responses” and behavior by agents and institutions are key risks to the project and can be drawn up using “if/then” questions. What are the risks to the assumptions not being met (environmental, political, economic or social)? What are the risks of negative or unexpected outcomes, and how are these being mitigated? An environmental impact assessment is an example of an answer to this question. Are there safeguards in place to protect individuals and groups from negative impacts of project activities?
9	What indicators are planned to measure impacts?	With the assistance of the responses to question two above, indicators should be identified that can be used for monitoring and evaluation during the project and after it. Are the indicators SMART: specific, measurable, attainable, realistic and time framed?

INTERVENTION LOGIC EXAMPLES

Row 2: Theory of change

Identifying the theory of change implicit in the proposal is a fundamental step in the assessment. From this, the logic of expected outcomes and the associated indicators can be recognized.

ADB. 2006. *Special Evaluation Study on ADB Fisheries Policy*. Reference number SST: REG 2006-07. Operations Evaluations Department. 193 pp. <http://www.oecd.org/dataoecd/25/38/38043572.pdf>.

The conceptual framework of the evaluation on page 2 is a statement of theory of change of a policy program directed at fisheries. The figure also documents external influences considered important to project outcomes.

Harris, D.N. 2010. *Extending Low-Cost Fish Farming in Thailand: An ACIAR-World Vision Collaborative Program*. ACIAR Impact Assessment Series No. 66. Canberra: Australian Center for International Agricultural Research. 70 pp. http://aciar.gov.au/files/node/12156/ias_66_61982.pdf.

The benefit pathway framework is on page 40 for this aquaculture extension training project.

Martin, G. 2008. *ACIAR Fisheries Projects in Indonesia: Review and Impact Assessment*. ACIAR Impact Assessment Series No. 55. Canberra: Australian Center for International Agricultural Research. 71 pp. <http://aciarc.gov.au/files/node/9705/IAS55%20Part%201.pdf>.

This review of the set of fisheries and aquaculture projects, presenting impact pathways for both types of systems, are on pages 37 and 47. These are useful in illustrating multiple pathways for outputs that cover policy, capacity building, technology and market development.

Row 4: Target beneficiaries

IFAD. 2006. *Targeting Policy: Reaching the Rural Poor*. IFAD. 38 pp. http://www.ifad.org/pub/policy/target/targeting_e.pdf.

These guidelines provide information on IFAD target groups and provide principles that will guide IFAD in identifying and reaching a target group and the methods and means that it will use to this end.

Row 5: Boundaries

This is particularly important for wild fisheries, which are defined in different ways; for example, by season, gear type, target species, spatial designation or community rights.

Catley, A., J. Burns, D. Abebe and O. Suji. n.d. *Participatory Impact Assessment: A Guide for Practitioners*. Feinstein International Center. Medford: Tufts University. 63 pp. https://wikis.uit.tufts.edu/confluence/download/attachments/19924843/Part_Impact_10_2_1_08V2.pdf?version=1&modificationDate=1225200269000.

Through an eight-stage approach, this guide helps the practitioner assess impacts of livelihoods interventions in the humanitarian sector using participatory methods. Stage two (pp. 13–19), “defining the boundaries of the project in space and time,” describes and provides examples of participatory mapping and timelines as methods to complete this stage.

Row 7: External influences

The ADB (2006) citation in the theory of change section above provides a good inventory of the nature of policy and market external influences.

Joffe, O. and N. Sheriff. 2011. *Conditions for Collective Action: Understanding Factors Supporting and Constraining Community-Based Fish Culture in Bangladesh, Cambodia and Vietnam*. WorldFish Studies and Reviews 2011-21. Penang, Malaysia: WorldFish. 46 pp. http://www.worldfishcenter.org/resource_centre/WF_2816.pdf.

In this paper, the factors that support and constrain the development of community-based fish culture (CBFC) were examined. Factors such as agro-ecological conditions or local authorities had positive and negative influences during implementation and therefore on its potential outcomes.

Row 8: Risks

In the Harris (2010) citation in the theory of change section above, risks are incorporated into an impact pathway model of the assessment of World Vision programming in Thai fish-farming communities. Risks are specifically attributed to outcomes and intermediate and final impacts.

Bergquist, D.A. 2007. Sustainability and local people's participation in coastal aquaculture: regional differences and historical

experiences in Sri Lanka and the Philippines. *Environmental Assessment* 40: 782–807.

This article illustrates medium- and high-extraction systems for aquaculture and examines technical, physical, institutional and socioeconomic risk factors for sustainable systems.

Paz, R., A. Dorward and B. Douthwaite. 2006. *Methodological Guide for Evaluation of Pro-Poor Impact of Small-Scale Agricultural Projects*. Imperial College, London: Center for Development and Poverty Reduction. <http://boru.pbworks.com/f/modulosjan07.pdf>.

How complex is the proposed intervention? Complexity can and frequently does translate into risk that reduces the chances for successful implementation. The following checklist of questions, adapted from Paz et al. (2006) can be used to screen for intervention complexity.

- **Trialability:** How easy or difficult is it to try this intervention on a small scale?
- **Observability:** How easy or difficult is it to observe the results or benefits from adoption?
- **Similarity to existing practice, and who uses it:** How similar is the innovation to existing practice? Does it require important changes from current local practice?
- **Number of elements, their complexity and independence or interdependence:** Does the innovation have many elements that need to be adopted? Is it a complex technology package? Are the different elements interrelated and dependent on each other for yielding benefits?
- **Minimum scale of adoption:** Is there a minimum scale of adoption? For example, if the innovation is equipment, how many users can it service, what is the minimum amount of land or produce for it to be profitable?
- **Institutional demands:** Does the innovation have special demands; e.g., new markets, information, land rights, finance, services, organization, etc.?
- **Adoption risks:** What are the risks in adopting the innovation? Are there new production risks (for example, pests and diseases, weather, input supplies, etc.)?
- **Livelihood contribution:** In what way does it contribute to the livelihoods of adopters?
- **Innovation uptake process:** How is the development of the innovation process planned? What strategies, tools, methods, etc. will be used?
- **Market prospects and risks:** Is there a market for new or increased production, or for improved quality? Where? How will new products be marketed? What marketing costs will there be? How will new production affect prices? What prices can be expected? What price and demand risks are there?

Row 9: Indicators to measure impact

Anderson, J.L. and C.M. Anderson. 2010. *Fishery Performance Indicators with Test Cases: Alaska Salmon, New England Groundfish, and Guyana Fisheries*. Report prepared for the Alliance for Responsible Fisheries. http://allfish.org/whitepapers/12-%20Fishery_Performance.pdf.

Wealth-Based Fisheries Performance Indicators are identified for monitoring and evaluation determined by inputs and outputs. The choice of indicators emphasize biological and ecosystem components, as well as governance and economic factors. These were selected to monitor economic, ecological and community sustainability as they relate to wealth creation.

Olsen, S.B. 2003. Frameworks and indicators for assessing progress in integrated coastal management initiatives. *Ocean & Coastal Management* 46: 347–361. http://spicosa.databases.ucc-d.de/files/documents/00000194_Olsen_indicators.pdf.

In order to demonstrate the impact of integrated coastal management, the authors choose several indicators based on multiple orders of impact. The indicators measure institutional change, changes in human behavior, and ecosystem and societal qualities to determine how to enhance project design and implementation.

Lawrence, A., G. Haylor, C. Barahona and E. Meusch. 2000. Adapting participatory methods to meet different stakeholder needs: farmers' experiments in Bolivia and Laos. In *Learning From Change: Issues and Experiences in Participatory Monitoring and Evaluation*. London: ITDG Publishing. <http://www.dfid.gov.uk/r4d/Output/53443/Default.aspx>.

A comparative analysis of two case studies demonstrates the need for contextualized, adaptive indicators to monitor and evaluate projects. Indicators were modified in a participatory manner, improving communication between researchers and farmers, and revealing farmers' understanding of ecological and economic processes.

WorldFish . n.d. *Guidelines for Mainstreaming Gender Analysis in Fisheries and Aquaculture Research*. <http://www.worldfishcenter.org/our-research/research-focal-areas/gender-and-equity/tools>.

This online toolkit provides a strategy to mainstream gender analysis in fisheries and aquaculture research and development.

World Bank. 2001. *Gender in Monitoring and Evaluation in Rural Development: A Toolkit*. 112 pp. <http://go.worldbank.org/LQQIKD53A0>.

This toolkit was designed for project task teams, borrowers and partners to recognize and address gender concerns in rural development programming.

Module 2: The development and environmental setting and relevance to national strategies and plans

Module 2 checks the proposal for its compatibility with its development and environmental settings. The focus is on poverty, food and nutrition security, and environmental status. Information gathered for this module can also be helpful in establishing a baseline for later ex-post impact assessment.

Many projects associated with capture fisheries depend on sustainable management of environmental resources that support the fisheries. Aquaculture projects also utilize water resources, sometimes making use of common property resources for cage aquaculture and sometimes competing for scarce water resources. Such projects are subject to the usual natural resource management challenges.

The questions included in this module regarding natural resources are not a substitute for an environmental impact assessment. Given the extensive legislation and well-established policy among donors and lenders, there are many guides to environmental impact assessment. A list of selected guides and sites is provided in the Annex.

The analyst can combine visual or narrative information or may use the matrix below. The matrix consists of rows with questions covering the analysis of the policy and environmental setting. The second column is the space for a brief response to the question. Since the analysis relies heavily on secondary data, the third column records and asks the analyst for an opinion on the quality of the information source. The intent is to create an internal quality assurance mechanism for the analysis.

Table 3.2. Module 2—Development and environment setting.

	Question	Observation	Data source and quality	Types of information to use
1	What is the general poverty and food security situation in the country and in the target area of the project?			Use existing national or local data broken down by relevant categories that capture who are the poor people relevant to the project.
2	Are there special considerations of political, cultural, regional or gender relevance?			Poverty is multi-dimensional, with political, cultural and protective dimensions in addition to economic. Search for existing studies that document relevant poverty dimensions in the context of the project.
3	What are the existing national/regional poverty reduction or food security strategies or programs relevant to the project?			Document the alignment of the project with existing national policies or strategies. Identify existing or planned projects that may be complementary to the planned project.
4	What are the national/regional environmental strategies or programs for fisheries and aquaculture/ agriculture?			Identify implemented and planned policies to improve then environmental situation (country/region).
5	Is the environmental setting suitable for the intervention type? Are there threats to the resources available?			Check for environmental conditions required for aquaculture or fisheries intervention.
6	What are the rights and access to the resource?			Consider access rights (formal and informal), tenure rules and institutions, tenure conflict, and boundary issues.

NATIONAL SETTING EXAMPLES

Row 2: Dimensions of poverty

Reporting fisheries and aquaculture information in this line may be difficult due to data gaps. Fisheries data are particularly deficient in national statistics in many countries. Similarly, fish production data from aquaculture are also not captured in the livestock portion of many Living Standards Measurement Surveys (LSMS).

ADB. 2005. *An Evaluation of Small-Scale Freshwater Rural Aquaculture Development for Poverty Reduction*. <http://www.adb.org/Documents/Books/Freshwater-Poverty-Reduction/Fresh-Water.pdf>.

Within the boundaries of multiple case studies in Bangladesh, the Philippines and Thailand, the authors employ a multidimensional concept of poverty, incorporating an asset approach, key transforming processes and external factors influencing outcomes to evaluate aquaculture development programming.

Béné, C. and R.M. Friend. 2009. Water, poverty and inland fisheries: lessons from Africa and Asia. *Water International* 34(1): 47–61.

Béné and Friend expand their definition of poverty to include vulnerability and exclusions and discover the determinants of poverty in fishing communities to be multiple and diverse.

Ward et al. 2004. *A Framework for Linking Poverty to Policy in the Post-Harvest Fisheries Sector*. Output from the post-harvest fisheries research program project R8111. Exeter: IMM Ltd. 20 pp. http://www.researchintouse.com/nrk/RIUinfo/outputs/R8111_Framework.pdf.

This paper presents information on the nature of poverty and livelihoods of the poor in specific districts in Ghana that informs an intervention framework for post-harvest handling of fish products. The aim of the report is to guide design and targets of poverty reduction initiatives and to inform understanding of related issues on a macro level.

Row 3: Complementary projects

This question checks for high-level endorsement of the overall objectives of the project. Are fisheries and aquaculture mentioned in Poverty Reduction Strategy Plans (PRSPs) or other policy documents of the government or bi-lateral donors?

Thorpe et al. 2007. Fisheries and poverty reduction. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources* 85(2): 1–12.

This review of research into fisher poverty unpacks the shift in prioritization of the fisheries sector in national development plans and poverty reduction strategies and the subsequent challenges involved.

Thorpe, A., C. Reid, R. van Anrooy and C. Brugere. 2005. When fisheries influence national policy-making: an analysis of the national development strategies of major fish-producing nations in the developing world. *Marine Policy* 29: 211–222. <http://www.sciencedirect.com/science/article/pii/S0308597X04000314>.

This paper documents the lack of consideration of fisheries sectors in national policies in a sample of developing countries.

FAO. 2007. *Integrating Fisheries into the Development Discourse*. Bangkok: FAO Regional Office for Asia and the Pacific. <http://www.fao.org/docrep/010/ag118e/AG118E00.htm>.

This online publication addresses the issue of fisheries in national poverty planning. Chapter three specifically examines the presence of fisheries sectors in a sample of poverty reduction strategy papers (PSRPs).

Poverty reduction strategy papers: Through their comprehensive development framework and country development strategies, the World Bank and IMF have required countries to develop poverty reduction strategy papers. These are assembled at the site below. <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPRS/0,,contentMDK:20200608~menuPK:421515~pagePK:148956~piPK:216618~theSitePK:384201,00.html>.

PRSPs are a good source of information on high-level commitment of government sector priorities for poverty reduction. Mention of fisheries or aquaculture in these documents is an indicator that other ministry-level plans exist that prioritize these sectors for investments or other government programs.

Row 4: Environmental policies

This question queries whether there are sector-specific programs either in government or from development agencies. Highlight whether the project topics receive any priority in these policies or programs. Identify other programs or projects seeking similar outcomes.

Ministry of Fisheries and Livestock of Bangladesh. 1998. *National Fisheries Policy*. http://www.mofl.gov.bd/pdf/National_Fisheries_Policy.pdf.

This document outlines the objectives, legal status, range and fish procurement policies of capture and farmed fishing activity in Bangladesh, including related environmental issues.

Donda, S. and F. Njaya. 2007. *Fisheries Co-Management in Malawi: An Analysis of the Underlying Policy Process*. WorldFish. 41 pp. http://www.worldfishcenter.org/wfcmcs/file/bmz/Malawi_policy.pdf.

Fisheries co-management in Malawi is analyzed in this paper, incorporating information relevant to economic development and poverty in order to design appropriate measures for sustainable management of fisheries resources.

Row 5: Environmental context

This question checks for basic environmental constraints for the proposed activities. Is there competition for water, are soil conditions suitable for pond construction, and are mangroves sufficient to support additional multiple uses are examples of questions that can be considered here. In addition, are there seasonal, natural or human-induced threats or processes that have affected, currently affect or may affect the future of the resource?

Kam, S.P., H. Barth, D.E. Pems, S.K. Kriesemer, S.J. Teoh and M.L. Bose. 2008. *Recommendation Domains for Pond Aquaculture*. Studies and reviews No. 1848. Penang, Malaysia: WorldFish. 40 pp. http://www.worldfishcenter.org/resource_centre/WF_1047.pdf.

This paper assembles an integrated knowledge base of freshwater pond aquaculture systems and practices in China, Bangladesh, Malawi and Cameroon. Biophysical data is gathered and presented using GIS modeling tools to help determine the suitability of aquaculture in these countries.

Silvestre, G.T., L.R. Garces, I. Stobutzki, M. Ahmed, R.A.V. Santos, C.Z. Luna and W. Zhou. 2003. South and South-East Asian coastal fisheries: their status and directions for improved management: conference synopsis and recommendations. In *Assessment, Management and Future Directions for Coastal Fisheries in Asian Countries*, pp. 1–40. G. Silvestre, L. Garces, I. Stobutzki, M. Ahmed, R.A. Valmonte-Santos, C. Luna, L. Lachica-Aliño, P. Munro, V. Christensen and D. Pauly (eds), WorldFish Conference Proceedings 67(1): 120 pp. <http://aquaticcommons.org/1282/1/Chapter-01-FA.pdf>.

The Trawlbase project combines baseline data with socioeconomic and biological features of coastal fishing areas in eight countries in South and Southeast Asia. The

goal is to design appropriate management strategies for sustainable fisheries.

Sultana, P., P. Thompson and M. Ahmed. 2003. *Understanding Livelihoods Dependent on Inland Fisheries in Bangladesh and Southeast Asia*. Final technical report. WorldFish . 86 pp. <http://www.dfid.gov.uk/r4d/Output/122204/Default.aspx>.

This project assembles a comprehensive livelihoods, fisheries resource and institutional profile of fisheries in Bangladesh and Southeast Asia. Building toward a comparative assessment, the project includes a resource inventory with data on status, trends and threats relating resource bases to the livelihoods of poor fishers.

DFID. 2004. *Integrated Lake Management Project*. Report in preparation for the guidelines development workshop. 41 pp. <http://www.dfid.gov.uk/R4D/Output/122175/Default.aspx>.

This document provides guidelines for managers and advisors involved in co-management of fisheries in Uganda. It suggests data collection and sharing mechanisms to meet information requirements of local communities engaged in the co-management of the Lake George fishery, offering a method to identify environmental threats.

Row 6: Access rights

Especially for fisheries, access rights are frequently a constraining factor for project activities. The same can be assumed for water use rights in aquaculture systems where ponds must be filled from regulated water sources. Use of the resource often fills an essential food or non-food need of the communities. Check for any unexpected consequences of its further development or exploitation as a result of the project.

Sheriff, N. and S. Coulibaly. 2010. *Assessment of Potential Mare Stocking Impacts on Resource Access Rights and Livelihoods in Komio Village, Niger River Delta, Mali*. CBFC working paper 2. WorldFish and CPWF. 44 pp. http://www.worldfishcenter.org/resource_centre/CBFC/2_Russell_Mali%20Institutions.pdf.

This paper offers an assessment of aquatic resources rights and the impacts of a village irrigation scheme to inform planning of a development intervention involving the stocking of floodplains in Mali.

Allison, E.H., B. Ratner, B. Asgard, R. Willmann, R. Pomeroy and J. Kurien. 2012. Rights-based fisheries governance: from fishing rights to human rights. *Fish and Fisheries* 13(1): 14–29. <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-2979.2011.00405.x/pdf>.

This paper makes the case, conceptually, to move beyond a rights-based approach to fisheries governance toward a human rights-based approach in order to address the human rights violations experienced by fishing communities.

Kanagaratnam, U., A.M. Schwarz, D. Adhuri and M.M. Dey. 2006. Mangrove rehabilitation in the West Coast of Aceh—issues and perspectives. *NAGA, WorldFish Quarterly* 29(3&4): 10–18. <http://www.worldfishcenter.org/Naga/e-Naga/29-3-4/pdf/article2.pdf>.

The importance of mangroves for meeting basic needs in post-tsunami Aceh is outlined in this paper from a livelihoods perspective.

Module 3: Stakeholder and institutional analysis

An understanding of the stakeholders and institutions is the focus of Module 3. Identifying the relevant stakeholders can be a significant exercise and one in which participatory methods can be especially helpful. There are various methods to assist in stakeholder identification and assessment in the Annex.

From the OECD guidelines:

“**Stakeholders** consist of agencies, organizations, groups or individuals who have a direct or indirect interest in the development intervention or its evaluation. **Target groups** are the specific individuals or organizations for whose benefit the development intervention is undertaken. Target groups are thus a key stakeholder group for consideration.

Stakeholders may be affected positively or negatively by the intervention, or may be able to influence the intervention in a positive or negative way. A stakeholder analysis tests assumptions about the interests of these social actors and their possible responses to the intervention.”

The information collected for Module 1 includes a listing of the target beneficiaries identified in the project proposal documents. In this module, we broaden the analysis to include a range of stakeholders, as follows:

- Intermediaries: stakeholders who are part of or use the intervention, but are not the target beneficiaries.
- Stakeholders that may influence the intervention (local leaders, key individuals in NGOs, community-based organizations, various levels of government, executing or implementing staff likely to be involved in the project).
- Stakeholders who may be influenced by the intervention, the people (including private sector business) positively or negatively affected, or people benefiting from the pre-project situation.

The analyst should distinguish between groups that are cohesive and organized, such as cooperatives or unions, and those that are grouped by their common characteristic, such as the poorest, landless or migrants. These unorganized groups are less likely to have a voice in their settings; however, it is important that they are explicitly considered. Particular attention should be given to poor and vulnerable groups such as the following:

- women and children.
- migrants.
- marginalized groups (e.g., indigenous, ethnic minority or disadvantaged caste groups; youth or the elderly).
- groups split by social or livelihood characteristics,
- demographics, asset ownership, health conditions (e.g., HIV/AIDS, nutrition status).

The appropriate level of disaggregation is a judgment decision of the analyst: The greater the number of stakeholder groups or sub-groups, the greater the complexity and cost of information collection and analysis.

In these guidelines, we use the term “institution” to mean more than simply an organization. When we mean to focus on organizations, we refer to them as such. More broadly, institutions are the set of “formal and informal rules, enforcement characteristics of rules, and norms of behavior that structure repeated human interaction through constraints, incentives and enhancement” (North 1990). Institutions govern individual or collective behavior and the interactions within or between collectives and individuals. Formal rules include laws, regulations and contracts. Informal rules are more difficult to identify and modify, and involve ethics, trust, religious rules, and implicit codes of conduct that determine social order and culture and can subvert formal institutions. Stakeholders are embedded within institutions and vice versa, and compliance to institutions is ensured through sanctions and incentives.

Institutions can support or impede intervention success, which means they are a critical part of the assessment, particularly for fisheries or aquaculture projects that seek to change governance or rights systems to manage a resource.

Institutional change can be an outcome objective of a project. For example, implementing co-management in small-scale fisheries is aimed at changing the traditional incentives and rules that govern fisheries with the aim to improve sustainable harvests. The ex-ante impact evaluation should seek to ensure that interventions that modify these rules and norms are progressive, efficient and pro-poor, and take account of the needs of vulnerable groups.

After compiling the list of stakeholders, the next step is to identify their interests, role in the project, motivation to participate, capacity, and resources to contribute to or impede the success of the project. The analyst should seek sufficient information about the stakeholders to assess the risks of their involvement or non-involvement.

Network analysis is a convenient method for obtaining significant portions of the information requested in the modules below. There are a variety of network analysis techniques; a participatory technique that has proven practical and useful is NetMap (Schiffer and Hauck 2010). NetMap is a participatory exercise in which stakeholders or stakeholder groups are identified, their

importance in the network is evaluated, and their positive or negative attitude towards change is analyzed (<http://netmap.wordpress.com/>). Other techniques for obtaining the information requested in the modules include key informant (individual and/or focus group) interviews and document reviews.

GENDER

Gender roles are among the most recognizable cultural institutions and frequently place women, children and the aged at a disadvantage. Adequately addressing the role of gender has grown in importance in recent years, with many donor agencies including specific requirements for inclusion of gender awareness in their projects and programs. The IFAD framework for gender mainstreaming offers guidance to the analyst for checking the gender content of the proposal (<http://www.ifad.org/gender/framework/index.htm>).

Funding proposals may include a variety of terms to capture the intent of activities. The box below provides a brief glossary of frequently encountered terms.

Box 3.1. Selected gender-related terminology.

Gender refers to culturally based expectations of the roles and behaviors of women and men. (IFAD Gender Framework)

Gender equality refers to equal access to the “opportunities that allow people to pursue a life of their own choosing and to avoid extreme deprivations in outcomes.” (WB/FAO/IFAD Gender Sourcebook: 2)

Gender equity means fair treatment for both women and men, according to their respective needs. This may include equal treatment or treatment that is different but that is considered equivalent in terms of rights, benefits, obligations and opportunities. In the development context, a gender equity goal often requires built-in measures to compensate for the historical and social disadvantages of women. (IFAD Gender Framework)

Gender transformative projects account for gender differences and inequalities with a sound strategy for transforming the relationships between women and men, with an emphasis on equity. (BMGF 2012)

Gender aware projects result in designs that ensure that both women and men benefit and neither are harmed. (BMGF 2012)

Gender neutral projects do not account for differences between women and men and do not consider how women and men may be marginalized or may not benefit from project activities. (BMGF 2012)

Gender responsive projects account for gender differences and inequalities from the start with a sound strategy for transforming the relationships between women and men, with an emphasis on equity. (BMGF 2012)

Gender mainstreaming implies assessing the implications for women and men of any planned action, including legislation, and ensuring that their concerns and experiences are taken fully into account in the design, implementation, monitoring and evaluation of all development activities. The aim is to develop interventions that overcome barriers preventing women and men from having equal access to the resources and services they need to improve their livelihoods. (IFAD Gender Framework)

GENDER EXAMPLES

Arenas, M.C. and A. Lentisco. 2011. *Mainstreaming Gender into Project Cycle Management in the Fisheries Sector*. RAP Publication 2011/15. Bangkok: FAO Regional Office for Asia and the Pacific. 105 pp. http://www.rflp.org/mainstreaming_gender/Mainstreaming_gender_handbook.pdf.

This guide is one of the first to address gender issues in small-scale fisheries development projects. It examines the role of women in fisheries in Southeast Asia and suggests tools for gender analysis and gender mainstreaming in projects.

Weeratunge, N., K.A. Snyder and P.S. Choo. 2010. Gleaner, fisher, trader, processor: understanding gendered employment in fisheries and aquaculture. *Fish and Fisheries* 11: 405–420.

An earlier version of this article can be downloaded from: http://www.fao-ilo.org/fileadmin/user_upload/fao_ilo/pdf/Papers/Weeratunge-final.pdf.

This review article summarizes a large volume of literature to offer insights on gender-differentiated roles of women's work in fisheries and aquaculture. The authors employ a livelihoods strategy to move beyond simple accounting of gender division of labor to understand drivers that affect why these gender-differentiated roles exist.

World Bank/FAO/IFAD. 2009. *Gender in Agriculture Sourcebook*. Washington, D.C.: World Bank. 791 pp. <http://siteresources.worldbank.org/INTGENAGRLIVSOUBOOK/Resources/CompleteBook.pdf>.

At 791 pages, the Sourcebook is a comprehensive overview of the topic. Module 13 is focused on gender in fisheries and aquaculture while Module 16 examines issues of gender in monitoring and evaluation. Gender-sensitive indicators are discussed in Thematic Note 3.

WorldFish. 2010. *Gender and Fisheries: Do Women Support, Complement or Subsidize Men's Small-Scale Fishing Activities?* Issues Brief No. 2108. http://www.worldfishcenter.org/resource_centre/WF_2711.pdf.

This study notes that women's involvement in fisheries is often underestimated and cites evidence from a nine-country

study that their labor accounted for 46% of total work in small-scale capture fisheries. The study then examines how women's labor complements or subsidizes men's work and finds that while the household benefits, little accumulates to the women themselves. This is in contrast to cropping and livestock keeping.

Table 3.3. Module 3—Stakeholder analysis (complete one for each stakeholder).

		Observations	Rating*	Data source & quality	Required information
1	Stakeholder or stakeholder group				Identify the stakeholders and differentiate by type of stakeholder.
2	Stakeholder description				Describe the characteristics and main roles of the stakeholder.
3	Interests in the project				List the interests of the stakeholder in the project.
4	Effect of the project on their interest(s)				Determine if the project will have a positive or negative effect.
5	Capacity and motivation to participate				Does the stakeholder have the required resources and capabilities? Does the stakeholder have a pro-poor agenda?
6	Level of influence of stakeholder				Influence refers to the degree to which a stakeholder has power over the project, and can therefore facilitate or hinder project interventions.
7	Level of importance of stakeholder				Importance refers to the degree to which achievement of project goals depends upon the involvement of a given stakeholder.
8	Mitigating measures				What can be done to get opposing stakeholders to comply?

*Use this column to rate the stakeholder pro-poor agenda using strength/direction of impact (++, +, 0, -, --). The rating should be intervention specific and specified by the analyst. Users have also had good experience with a traffic light system. Rate the level of influence and importance from low to high; some descriptors might include low, moderate, significant and critical

STAKEHOLDER EXAMPLES

Row 1: Identifying stakeholders

Sevaly, S. 2001. Involving stakeholders in aquaculture policy-making, planning and management. In *Aquaculture in the Third Millennium*, pp. 83–93. R.P. Subasinghe, P. Bueno, M.J. Phillips, C. Hough, S.E. McGladdery and J.R. Arthur (eds), Technical Proceedings of the Conference on Aquaculture in the Third Millennium, Bangkok, Thailand, 20–25 February 2000. Bangkok: NACA and Rome: FAO. <http://www.fao.org/DOCREP/003/AB412E/ab412e32.htm>.

This chapter in an online manual provides a generic listing of direct and indirect stakeholders in the aquaculture sector. The roles of these stakeholders and how they may influence project outcomes is discussed.

Row 3: Stakeholder interests

Nagoli, J., E.M. Phiri, E. Kambewa and D. Jamu. 2009. *Adapting Integrated Agriculture Aquaculture for HIV and AIDS-Affected Households: The Case of Malawi*. WorldFish Center working paper 1957. Penang, Malaysia: WorldFish. http://aquaticcommons.org/2787/1/WF_2464.pdf.

Actively involving stakeholders directly contributed to the success of this integrated agriculture/aquaculture project in Malawi. This paper outlines participatory methods for developing a project to enhance food security and livelihoods for those affected by HIV/AIDS.

Christie, P. 2004. *Marine Protected Areas as Biological Successes and Social Failures in Southeast Asia*. American Fisheries Society Symposium. American Fisheries Society. 10 pp.

While some Marine Protected Areas (MPAs) may lead to biological successes in terms of conservation, they may simultaneously cause social harm. Reviewing four cases of MPAs in the Philippines, the authors reveal that social indicators must be taken into account in assessing the long-term impacts of this type of intervention.

Row 5: Stakeholder capacity and motivation

Béné et al. 2008. *Governance Reforms: A Review of Small-Scale Inland Fisheries Experiences in Lake Chad and Zambesi Basins*. WorldFish. <http://www.worldfishcenter.org/wfcms/file/bmz/Governance%20analysis%20globale.pdf>.

This paper draws on case studies from five countries experiencing a shift in governance of fisheries resources toward co-management or community-based fisheries management schemes. While the expectation is that this shift will cause fisheries governance to become more efficient, this is not necessarily the case in reality. The authors offer several recommendations to address the complexities of fisheries governance.

Row 6: Stakeholder influence

Sevaly (2001). See the citation in Row 1 discussion above. The chapter on stakeholder involvement also includes a table listing the main factors that affect the strength of stakeholder organizations and thus their ability to be effective partners in projects or programs.

Abukari, M., E. Schiffer and J. Hauck. 2009. *Influence Network Mapping: Mapping Power Asymmetry in Water Use Groups*. Innowat Tool Sheet. Rome: IFAD. 8 pp. http://www.ifad.org/english/water/innowat/tool/Tool_2web.pdf.

This paper describes the utilization of NetMap, a participatory social network tool to analyze and improve complex stakeholder arrangements. Including an application from

Northern Ghana, the tool illustrates power asymmetries in a community that act as a barrier to sustainable water management.

Table 3.4. Module 3—Institutional and organizational analysis.

		Information or data	Data source & quality	Required information
1	Formal institutions			Refer to social and environmental policies collected and analyzed in Module 2.
2	Informal institutions			Identifying informal institutions builds on the stakeholder identification matrix. Here the focus is on the <u>relationships</u> between stakeholders and relationships between stakeholders and formal institutions: current practices and norms, the flow of resources, decision-making authority, and the information in the current system. This helps to understand the rules and incentives that affect behavior. Also identify constraints to intervention implementation in procedures and relationships between stakeholders and the formal institutions and authorizing environment.
3	Formal and informal market institutions and organizations			This requires analysis of the market structure, including the number and type of economic agents. Look for legal, political or informal rules that create barriers to entry, collusion or opportunities. It can be important to identify who buys the fish, where and at what price. Price analysis can be particularly useful, so look for data or studies concerning this.
4	Level of influence of the organization			<i>Influence</i> refers to the degree to which an organization has power over the project, and can therefore facilitate or hinder project interventions.
5	Level of importance of the organization			<i>Importance</i> refers to the degree to which achievement of project goals depends upon the involvement of a given organization.
6	Mitigating measures			What can be done to change barriers created by institutions?

INSTITUTION EXAMPLES

Row 1: Formal institutions

Badjeck et al. 2009. Climate variability and the Peruvian scallop fishery: the role of formal institutions in resilience building. *Climate Change* 94: 211–232.

This study of climate variability in Peruvian scallop fisheries explores the relationships between formal institutional response and resilience, offering a conceptual model to inform future policy and intervention.

Row 2: Informal institutions

Werthmann, C. 2007. *Institutions in the Mekong Delta of Cambodia – Findings from a Situation Analysis*. Conference paper 15. CPWF. 8 pp. http://www.worldfishcenter.org/resource_centre/WF_927.pdf.

This situational analysis of water management in the Mekong region of Cambodia discusses formal and informal institutions governing fishing and water resources, and the interactions between stakeholders influenced by a historically complex land tenure system.

International Collective in Support of Fishworkers. 2009. *Customary Institutions in Indonesia: Do They Have a Role in Fisheries and Coastal Area Management?* Workshop Report. <http://aquaticcommons.org/3376/>.

Various traditional fishery resource management institutions are highlighted. The potential to utilize these in the formulation of management practice is discussed.

Row 3: Market structure

Khan et al. 2004. Feasibility of fisheries co-management in Africa. *NAGA, WorldFish Quarterly* 27(1&2): 60–64. <http://www.worldfishcenter.org/naga/naga27-1n2/pdf/article-12.pdf>.

This paper discusses the difficulties of achieving a successful shift toward co-management in African fisheries, in part due to complex local and traditional institutions. Successful co-management requires stakeholder participation, resources for proper management and state-level transparency.

Module 4: Analysis of transmission channels

In this module, we examine how changes can happen in-project. With its focus on outcomes, the theory of change approach constructs likely pathways by which the project can achieve its results. The pathways are often depicted in figures with boxes and arrows connecting them. Thinking of the boxes as achieved outcomes, the arrows are the “how” of the pathway. The analysis in this module focuses on this “how” question.

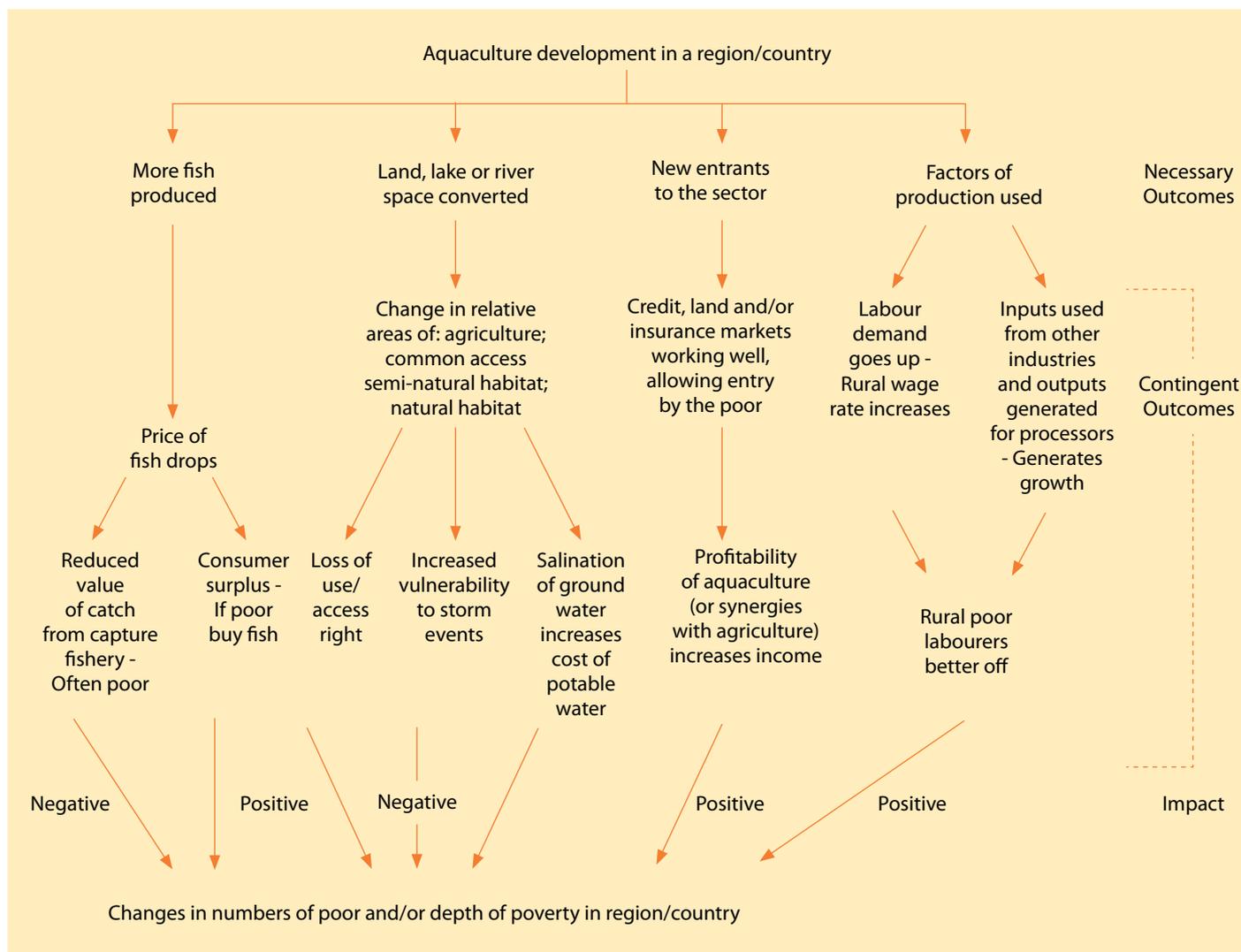
The analysis and description of outcome and impact pathways is an active area of project and program design, and a variety of participatory methods have been devised to identify them. These methods include, for example, outcome logic modeling, participatory impact pathway analysis, SWOT analysis and outcome mapping (see the Annex). Impact pathways are frequently presented graphically as in the example in Figure 3.1 below. We revisit the use of impact pathways in the following

module, where we examine the expected impact on the target beneficiaries.

Douthwaite et al. (2003) provide the following list of questions to assist the development of impact pathways and eventually to assist monitoring and evaluation of success:

1. What would success look like?
2. What are the factors that influence the achievement of each outcome?
3. Which of these can be influenced by the project?
4. Which factors are outside the direct influence of the project?
5. What is the program currently doing to address these factors in order to bring about this outcome?
6. What performance information should we collect?
7. How can we gather this information?

Figure 3.1. Aquaculture development impact pathways.



Source: Stevenson and Irz (2009).

For use in this guide, we draw on impact pathway analysis and, combining that with the OECD guidelines, utilize six transmission channels to define how a project may affect stakeholders:

employment, prices, taxes and transfers, access to goods and services, assets, and authority. These are illustrated in Table 3.5.

Table 3.5. Module 4—Transmission channels.

Transmission channels and details		Details of the change initiated by the intervention	Ratings		Risks
Prices		Production	Short-term rating* for stakeholders +/-		Medium-term rating* for stakeholders +/-
Employment/ paid labor	Consumption				
	Wages				
	Public formal				
Transfers	Private formal				
	Informal				
	Taxes				
Access	Public				
	Private				
	Public goods & services				
Assets value	Private goods & services				
	Physical				
Authority	Natural				
	Human				
	Social				
	Financial				
	Formal institutions				
	Informal institutions				

*“Short-term” and “medium-term” ratings: Short term and medium term needs to be defined by the assessor. The ratings indicate whether the transmission channel has a positive or negative effect on the stakeholder. If more than one stakeholder is affected, each cell will be split by stakeholder.

Prices: Production, consumption and wages

For a variety of reasons, poverty is most often measured in economic terms. As a consequence, many poverty-reduction projects seek to change the economic conditions within which the target beneficiaries operate. Many interventions seek to improve household incomes through increased productivity. How that increased production gets utilized and how it is received in the market is signaled through prices of product or of inputs used in production and in labor wages. The direct effects are often intuitive. The indirect effects are more difficult; for example, will increased production result in lower market prices?

Employment: Public formal, private formal and informal

Interventions that cause changes in the labor market, employment levels and diversity of opportunities will affect the welfare of low-income households. The employment transmission channel considers both formal and informal employment, including family labor. Many projects seek to improve the prospects for employment of groups of beneficiaries, and the trends would be obvious. Technology projects sometimes can have a perverse effect of creating more work for labor-constrained households that is simply accommodated by working longer, increasing drudgery.

Taxes and transfers

The taxes and transfers transmission channel covers targeted public and private transfers (public welfare and subsidies, private remittances). Taxation includes compulsory levies or insurance. Taxes can be on resources or income. Public welfare payments

include cash or in-kind payments for social protection or to mitigate negative aspects of an intervention.

Governments in many if not most developing countries employ a wide array of subsidies and taxes to guide economic behavior. Duty-exempt petrol for small-scale fishermen is an example of a subsidy. Poor management of the subsidy that permits large-scale fishermen to get access to that duty-exempt petrol would be an example of a program risk.

Transfers can also seek to monetize services that have no market. Providing payments for ecosystem services in mangrove conservation and restoration is an example.

WorldFish. 2009. Mangrove Revival Diversifies Livelihoods While Addressing Climate Change. WorldFish project brief 1945. http://www.worldfishcenter.org/resource_centre/WF_2465.pdf.

Access: Private goods and services, public goods and services

Access refers to the degree to which stakeholders have access to private and public goods and services. Interventions can affect access directly by enhancing the provision of goods and services, or indirectly by removing constraints to accessing goods and services for certain groups of people. Access can cover such items as farm-to-market roads, which lower the cost of sending produce to market or increase the availability of inputs. It can also cover institutional constraints, such as micro-lending programs serving women in rural areas where there are no banks. There are various

case studies on microcredit programs in fishing communities and aquaculture.

Tietze, U and L. Villareal. 2003. Microfinance in Fisheries and Aquaculture: Guidelines and Case Studies. FAO fisheries technical paper 440. 108 pp. <ftp://ftp.fao.org/docrep/fao/006/y5043e/y5043e00.pdf>.

Stakeholders with conflicts over access to land or fisheries resources are a frequent setting for programs. Improvement in security of access to natural resources for vulnerable households is often an access objective in fisheries projects.

Ratner, B.D., G. Halpern and M. Kosal. 2011. Catalyzing Collective Action to Address Natural Resource Conflict: Lessons from Cambodia's Tonle Sap Lake. CAPRI Working Paper No. 103. Washington, D.C.: International Food Policy Research Institute. <http://dx.doi.org/10.2499/CAPRIWP103>.

Authority

The authority transmission channel uses pathways that influence, create or change formal and informal institutions. This may include their organization, their relationships, and the power structures within and among them. Authority transmission channels use entitlements, obligations, incentives and sanctions in either formal or informal settings.

Gutierrez, N.L., R. Hilborn and O. Defeo. 2011. Leadership, social capital and incentives promote successful fisheries. *Nature* 470: 386–389.

Assets

The assets transmission channel refers to interventions that increase or decrease the value of assets of poor households in ways which may impact on their welfare. The sustainable livelihoods approach differentiates between five types of assets. These are considered separately in this module, as follows:

- physical (e.g., buildings, tools, equipment, livestock, access to infrastructure).
- natural (e.g., land, water, forest, natural resources).
- human (e.g., labor supply, education, skills, knowledge, health, nutritional status).
- social (e.g., networks, groups, relationships).
- financial (e.g., savings; access to credit, pension or similar guaranteed income flow).

The livelihoods approach is widely employed. There are various examples of the different dimensions of assets being addressed in projects. In fisheries projects, community-based management is dependent on strong community organization, which is a form of

social capital. Similarly, producer organizations are often a key to successful entry into a value chain for aquaculture.

Islam, G.M.N., T.S. Yew, N.M.R. Abdullah and K.K. Viswanathan. 2011. Social capital, community based management, and fishers' livelihood in Bangladesh. *Ocean and Coastal Management* 54: 173–180.

Module 5: Development outcomes and impact

This module examines the outcomes of the intervention project on the capabilities of the target stakeholders. As such, it moves the analysis further along the impact pathway. Reflecting the multidimensional nature of poverty, OECD defines five capabilities required by individuals or groups to move out of poverty (OECD 2001). Gender equity and environmental sustainability figure in each of these. Several of these capabilities are also referred to by the concept of empowerment.

OECD/DAC capability framework

- 1. Economic**
The ability to have and use assets to pursue sustainable livelihoods and to provide income to finance consumption and savings
- 2. Human**
To have the health, education, nutrition, training, social safety nets, clean water and shelter needed to engage effectively in society, to make a living and be part of wider society
- 3. Political**
To have human rights, a voice, and authority to influence public policy and political priorities, and to be adequately represented in the community at local and national levels
- 4. Socio-cultural**
To have the rights and abilities to be included and participate in social and cultural relationships, networks and activities
- 5. Protective-security**
To reduce vulnerability to threats to person and property and withstand economic shocks; protection from formal and informal forms of insurance

Source: OECD (2001).

The matrix in Table 3.6 provides a structure for the analyst to systematically consider the nature of the outcomes for each of the capabilities for the relevant stakeholder and target groups. For each capability that is affected by the intervention, the analyst should provide a brief pre-intervention description of the status of the stakeholder or target group, a plus/minus score of effect in the short and medium term, a description of the change, and an analysis of the risks and compensating actions that could mitigate them. Finally, as with the other tables, the last column asks for a statement of the quality of information used during the assessment.

Table 3.6. Module 5—Stakeholder outcomes analysis (complete one for each stakeholder).

Stakeholder or Target Group _____						
Capability	Pre-project description state of capability	Change to capability		Description of change to capability	Risks to change of capability; mitigating factors	Data source, quality and gaps
		Short term* + or -	Medium term* + or -			
Economic						
Human						
Political						
Socio-cultural						
Protective security						

*“Short-term” and “medium-term” ratings: Short term and medium term needs to be defined by the assessor and should be the same as for Module 4. The ratings indicate whether the capability has had a positive or negative effect on the target stakeholder.

IMPACT PATHWAYS EXAMPLES

Nutrition

Kawarazuka, N. 2010. *The Contribution of Fish Intake, Aquaculture, and Small-Scale Fisheries to Improving Food and Nutrition Security: A Literature Review*. Working paper No. 2106. Penang, Malaysia: WorldFish. 51 pp. http://www.worldfishcenter.org/resource_centre/WF_2590.pdf.

This paper provides illustrated impact pathways for food and nutrition security via aquaculture and fisheries projects that increase the supply of fish available to the producer household. Included are helpful summaries of the effects of fish-related interventions on household food security and improvement of individual nutritional status.

A later version of this paper was published as Kawarazuka, N. and C. Béné. 2010. Linking small-scale fisheries and aquaculture to household nutritional security: an overview. *Food Security* 2(4): 343–355.

Governance and technology

McDonald, B. 2011. *Managing Water and Land at the Interface Between Fresh and Saline Environments – An Impact Evaluation*. Colombo, Sri Lanka: CGIAR Challenge Program for Water and Food (CPWF). 56 pp. http://results.waterandfood.org/bitstream/handle/10568/5570/IA07_managingwater_sept_web.pdf?sequence=1.

This study documents the impact of a resource-use conflict case of shrimp and rice farmers and provides impact pathways hypothesized at the beginning of the project and the pathways by which impact was actually achieved.

Genetic resources and technology

Briónes, R.M., M.M. Dey, M. Ahmed, I. Stobutzki, M. Prein and B.O. Acosta. 2004. Impact pathway analysis for research planning: the case of aquatic resources research in the WorldFish. *NAGA, WorldFish Quarterly* 27(3&4): 51–55. http://www.worldfishcenter.org/Naga/na_2322.pdf.

This study describes generic impact pathways for aquatic genetic resources, aquaculture technology development and fisheries policy research.

Resource management

CGIAR. 2008. *Community-Based Fisheries Management in Bangladesh*. Science Council Brief No 30. 4 pp. [http://www.fao.org/docs/eims/upload/256848/Brief%2030\(Worldfish\)-pr\(3\)F_l-r.pdf](http://www.fao.org/docs/eims/upload/256848/Brief%2030(Worldfish)-pr(3)F_l-r.pdf).

This study documents the impact of a resource management project. Included is an illustration of a policy change impact pathway.

Capacity building, policy, technology, environment

Harris, D.N. 2010. *Extending Low-Cost Fish Farming in Thailand: An ACIAR–World Vision Collaborative Program*. ACIAR Impact Assessment Series Report No. 66. Canberra: Australian Center for International Agricultural Research. 70 pp. http://aciarc.gov.au/files/node/12156/ias_66_61982.pdf.

Fisher, H. 2010. *The Biology, Socioeconomics and Management of the Barramundi Fishery in Papua New Guinea's Western Province*. ACIAR Impact Assessment Series Report No. 67. Canberra: ACIAR. 51 pp. http://aciarc.gov.au/files/node_export/the_biology_socioeconomics_and_management_of_the_14741.pdf.

Martin, G. 2008. *ACIAR Fisheries Projects in Indonesia: Review and Impact Assessment*. ACIAR Impact Assessment Series Report No. 55. 76 pp. Part One available at: <http://aciarc.gov.au/files/node/9705/IAS55%20Part%201.pdf> and Part Two at: <http://aciarc.gov.au/files/node/9705/IAS55%20Part%202.pdf>.

The ACIAR impact assessment studies utilize a generic benefits pathway framework that is populated with specific information on the particular projects. The three studies listed above were integrated research for development projects that had selected components of technology development, capacity building, policy change and environment objectives.

De Young, C., A. Charles and A. Hjort. 2008. *Human Dimensions of the Ecosystem Approach to Fisheries: An Overview of Context, Concepts, Tools and Methods*. FAO Fisheries Technical Paper No. 489. Rome: FAO. <http://www.fao.org/docrep/010/i0163e/i0163e00.htm>.

The ecosystems approach to fisheries is used as a method to facilitate fisheries management. This document includes indicator frameworks that capture the social and economic elements influencing fisheries.

Process: Conducting the Ex-Ante Impact Evaluation

The ex-ante impact evaluation methods presented here make extensive use of existing methods. Like the OECD guidelines on which they are modeled, these guidelines add value to those methods by integrating them in a comprehensive analysis that is practical, feasible, and can be implemented quickly with a modest budget.

The application of these guidelines is meant to be flexible. The approach of the analyst should be opportunistic, taking advantage of existing data, previous analysis and the variety of possible information collection methods. The methods proposed are a mix of quantitative and qualitative. The qualitative methods are frequently participatory. Especially for those, the usefulness of the assessment is highly dependent on the quality of the consultative process. The matrices may tempt “box ticking” just to complete the exercise, but the analyst should resist that temptation.

WHEN SHOULD THE EX-ANTE IMPACT ASSESSMENT BE CONDUCTED?

The timing of the ex-ante impact assessment needs to be considered carefully by the project team. It is a balancing act between being close enough to the beginning of the project implementation so that the setting and the identified needs of and risks to the stakeholders are accurate, while still being implemented early enough in the planning to feed into the debate and actual decision making (see Box 3.2).

Box 3.2. A lesson learned about the timing of ex-ante impact assessment.

An ex-ante impact assessment was undertaken for an intervention to promote handicraft production and sales in the Siem Reap province of Cambodia (Gebert et al. 2007). The purpose of the intervention was regional economic development by promoting diversification of livelihoods and assisting poor households to integrate into markets.

The author concluded the study was conducted **too early** and **too quickly**, which led to too many knowledge gaps. As a result, a follow-up study was required to collect more data.

The timing-associated problems led to the following gaps and limitations of the Poverty Impact Assessment (PIA):

- Many of the basic parameters of the intervention were not yet defined; therefore, the results chain could not be properly described.
- Key in-country partners had not yet been identified, so there was limited analysis of government departments, ministry stakeholders, and other important stakeholders and beneficiaries.
- The geographical boundaries of the intervention were not, so there were no prioritized geographical areas.
- Lack of knowledge led to arbitrary and inappropriate identification and designation of target stakeholders. Spatial variation in livelihoods and living conditions was not accurately described, and gender differentiation was not considered. In the absence of this knowledge, the design of the project relied on many assumptions about the transmission channels and capability outcomes.

assessment of aquaculture interventions, combining the qualitative information gathering with quantitative approaches.

PLANNING THE ASSESSMENT

This section is included in the manual to stress the need to **plan** the ex-ante impact assessment. Given that it is designed to be low cost, good planning of data collection and analysis methods is important. Planning can result in less time required in the field and avoids the problems caused by realizing data are missing at the analysis stage.

It is possible to use this manual in two ways, for two different types of assessment. Both are minimum data approaches. It may be necessary to invest some time in learning these methods or undertaking training in general impact assessment.

- The first approach is to use only the Modules 1–5. Invest time in selecting the methods to be used to work through the modules. We have provided links to toolboxes available on the web, and also examples throughout of the types of methods used in fisheries and aquaculture research.
- The second approach is to conduct a mixed-methods

WRITE-UP AND PRESENTATION

The guidelines are structured around a set of modules. As presented in Chapter 2, the sequence of the modules generally follows the logic of a stylized implementation logic framework. One possible outline for a report could be as follows:

1. Summary and Recommendations.
2. Validating the Needs and Goals.
3. Stakeholder and Institutional/Organizational Analysis.
4. Results by Transmission Channels.
5. Results on Stakeholders' and Target Groups' Capabilities.

Examples of case studies using this guide are linked below. They are structured distinctly and demonstrate alternative approaches to results presentation.

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Annex: Links to methods guides and toolkits

There are hundreds of guides and toolkits available on the web that are relevant to the analysis needed for this guide. Below is a selective listing. Several publications provide descriptive inventories for conducting a variety of quantitative and qualitative analyses. One such publication is by Holland.

Holland, J. 2007. *Tools for Institutional, Political, and Social Analysis of Policy Reform: A Sourcebook for Development Practitioners*. Washington, D.C.: The World Bank. 267 pp. <http://go.worldbank.org/GZ9TK1W7R0>.

Results-Based Management

- Webpage from the Canadian International Development Agency (CIDA) giving instructions for how to use results-based management. Particularly useful for completing Module 1, it gives guidance for drafting a result statement, developing a logic model and collecting data, among other topics: <http://acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/eng/NAT-92213444-N2H>.
- An Asian Development Bank webpage presenting principles for project design and management based on the ADB design and monitoring framework: <http://www.adb.org/documents/guidelines/mfdr/introduction-to-results-management/pg007.asp>.

Intervention Logic

- Method and examples for outcomes logic models by the CGIAR Challenge Program on Water and Food: <http://monitoring.cpwf.info/m-e-tools-and-workbook/project-workbook/outcome-pathways-and-outcome-logic-model>.

Impact Pathway Mapping

- An overview of the Participatory Impact Pathways Analysis (PIPA) approach. PIPA allows managers and staff to formalize their project's impact pathways and to monitor progress: http://www.cgiar-ilac.org/files/publications/briefs/ILAC_Brief17_PIPA.pdf.

Outcome Mapping

- An introduction to outcome mapping: <http://www.adb.org/Documents/Information/Knowledge-Solutions/Outcome-Mapping.pdf>
<http://www.idrc.ca/uploads/user-S/11235064481Brief-FINAL.pdf>.
- A complete book on outcome mapping by the International Development Research Center. Downloadable from: <http://dspace.cigilibrary.org/jspui/bitstream/123456789/11446/1/Outcome%20Mapping%20Building%20Learning%20and%20Reflection%20into%20Development%20Programs.pdf?1>.
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Network Mapping

- A manual for understanding the relationships that exist among local people and institutions in order to better inform decisions. The manual gives instructions on "how to map social networks in order to provide a general picture of the social context which should help project planning by identifying key actors within a specific social setting": http://revista-redes.rediris.es/webredes/talleres/networkmapping_LC06.pdf.
- NetMap is an interview-based mapping tool that helps people understand, visualize, discuss and improve situations in which many different actors influence outcomes: <http://netmap.files.wordpress.com/2008/06/net-map-manual-long1.pdf>. Visit also the website <http://netmap.wordpress.com/>.

Focus Group Discussions

- A toolkit for conducting focus groups: <http://www.omni.org/docs/FocusGroupToolkit.pdf>.

Environmental Impact Assessment

- A toolkit for conducting an impact analysis in the environmental impact assessment process: <http://www.unep.ch/etb/publications/EIMan/SecETopic6.pdf>.
- Open educational resource website for environmental impact assessment: <http://eia.unu.edu/index.html>.
- An example of an environmental impact assessment done for a coastal community development and fisheries resources management project in the Republic of Indonesia: <http://www.adb.org/Documents/Environment/Ino/ino-coastal-fisheries.pdf>.
- An FAO fisheries and aquaculture technical paper on environmental impact assessment and monitoring in aquaculture, focusing on the relevant regulatory requirements, the practice, the effectiveness and suggestions for improvements: <http://www.fao.org/docrep/012/i0970e/i0970e00.htm>.

Participatory Methods for Stakeholder Identification and Analysis

- A guide providing an overview of 24 tools available for outcome evaluation to help in assessing impact: <http://www.actalliance.org/resources/policies-and-guidelines/impact-assessment/IA-Guide-eng-v1.pdf>.
- A stakeholder analysis tool developed by WWF to help practitioners ask themselves the right questions when undertaking the analysis: www.panda.org/standards/1_1_stakeholder_analysis.
- Guidance note on how to do a stakeholder analysis of aid projects and programs: http://www.sswm.info/sites/default/files/reference_attachments/ODA%201995%20Guidance%20Note%20on%20how%20to%20do%20a%20Stakeholder%20Analysis.pdf.
- Methods to obtain and analyze expert or stakeholder opinions for potential interventions in the field of natural resource management: <http://www.nri.org/publications/bpg/bpg02.pdf>.
http://www.worldfishcenter.org/resource_centre/WF_1000.pdf.



With communities, changing lives

This publication should be cited as: Crissman, C.C., Abernethy, K., Delaporte, A., Timmers, B. (2013) A Practical Guide for Ex-ante Impact Evaluation in Fisheries and Aquaculture. CGIAR Research Program on Aquatic Agricultural Systems. Penang, Malaysia. Guidelines: AAS-2013-04.

The CGIAR Research Program on Aquatic Agricultural Systems is a multi-year research initiative launched in July 2011. It is designed to pursue community-based approaches to agricultural research and development that target the poorest and most vulnerable rural households in aquatic agricultural systems. Led by WorldFish, a member of the CGIAR Consortium, the program is partnering with diverse organizations working at local, national and global levels to help achieve impacts at scale. For more information, visit aas.cgiar.org.

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