

# Fisheries and aquaculture emergency response guidance

---



# Fisheries and aquaculture emergency response guidance

**Benjamin Cattermoul**

FAO Consultant

IMM Ltd

Exeter, United Kingdom

**David Brown**

Fisheries and Aquaculture Officer

Policy, Economics and Institutions Branch

FAO Fisheries and Aquaculture Department

Rome, Italy

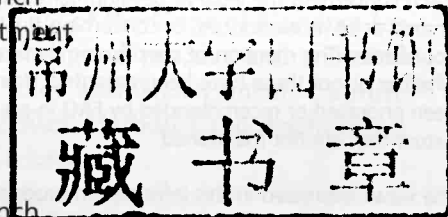
**Florence Poulain**

Fisheries and Aquaculture Officer

Policy, Economics and Institutions Branch

FAO Fisheries and Aquaculture Department

Rome, Italy



The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO.

ISBN 978-92-5-107912-6 (print)  
E-ISBN 978-92-5-107913-3 (PDF)

© FAO, 2014

FAO encourages the use, reproduction and dissemination of material in this information product. Except where otherwise indicated, material may be copied, downloaded and printed for private study, research and teaching purposes, or for use in non-commercial products or services, provided that appropriate acknowledgement of FAO as the source and copyright holder is given and that FAO's endorsement of users' views, products or services is not implied in any way. ••

All requests for translation and adaptation rights, and for resale and other commercial use rights should be made via [www.fao.org/contact-us/licence-request](http://www.fao.org/contact-us/licence-request) or addressed to [copyright@fao.org](mailto:copyright@fao.org).

FAO information products are available on the FAO website ([www.fao.org/publications](http://www.fao.org/publications)) and can be purchased through [publications-sales@fao.org](mailto:publications-sales@fao.org).

# Preface

People who depend on fisheries and aquaculture for their livelihoods face both an increasing number and intensity of natural disasters. Most small-scale fishers and fish workers live in developing countries, and often face a range of diverse problems that increase their vulnerability to hazards including food insecurity, poverty, pollution, environmental degradation, overexploitation of resources, high levels of accidents at sea and conflicts with industrial fishing operations. The specific characteristics of fishing and fish farming operations (such as location and exposure) also increase vulnerability to hazards.

Assistance to countries and partners in responding to disasters is becoming a greater part of the work of international agencies, including FAO. To date there have been no systematic guidelines available to support those responding to an emergency involving the fisheries and aquaculture sector. This document aims to fill that gap and to improve the effectiveness of such interventions. These guidelines were developed following a meeting of experts in 2013 (FAO, 2013a). They draw on best practice and lessons learned during response to disasters that have affected fisheries and aquaculture sector. The sections (which are laid out to support the main elements of the Code of Conduct for Responsible Fisheries (CCRF)) include general good practice and technical areas such as; Fisheries and Aquaculture Policy and Management; Capture Fisheries Gear, Vessels and Engines; Landing Sites, Harbours and Anchorages; Aquaculture and Post-harvest, Trade and Markets.

Cattermoul, B.; Brown, D. & Poulain, F. (eds). 2014.  
*Fisheries and aquaculture emergency response guidance*. Rome, FAO. 167 pp.

# Acknowledgements

Thanks are due to all those who provided inputs and the technical staff at FAO's headquarters and decentralized offices for their efforts and contribution to these guidelines. Special thanks are due to the authors of the technical papers presented during the 2012 meeting including Phillip Townsley, Shakuntala Thilsted, Daniel Davy, Jean Gallene, Robert Lee, Jo Sciortino, Pete Bueno, Graeme Macfadyen, David James and Fiona Nimo. Thanks also go to Magda Morales, Tina Farmer and Marianne Guyonnet for their contribution to the final production of this publication. The preparation of this document was possible thanks to funds provided by the Netherlands and Sweden through the FAO Multipartner Mechanism (FMM/GLO/003/MUL).



**Resilient Livelihoods: Disaster Risk Reduction for Food and Nutrition Security** - The four pillars of the FAO's Disaster Risk Reduction framework are aligned to support countries in implementing action plans under the Hyogo Framework for Action. FAO's strategic objective within this framework is to increase the resilience of livelihoods, including those of fishers and fish farmers, to threats and crises.

# Contents

v	Preface	
vi	Acknowledgements	
	<b>CHAPTER 1</b>	
<b>1</b>	<b>Introduction</b>	
1	What is the Fisheries and Aquaculture Emergency Response Guidance?	
1	The origins of the Guidance	
1	Who should use the Guidance?	
2	What does the Guidance cover?	
3	How to use the Guidance	
	<b>CHAPTER 2</b>	
<b>5</b>	<b>Fisheries, aquaculture and emergencies</b>	
5	Fisheries and aquaculture	
5	Hazards, disasters and emergencies	
6	Vulnerability of fisheries and aquaculture to disasters	
8	Cross-cutting issues affecting vulnerability and exclusion	
9	The importance of rebuilding fisheries and aquaculture	
	<b>CHAPTER 3</b>	
<b>13</b>	<b>Emergency response in fisheries and aquaculture</b>	
13	Emergency response objectives – building back better	
13	A holistic approach to disaster assessment and recovery	
	<b>CHAPTER 4</b>	
<b>17</b>	<b>Common best practice</b>	
17	Introduction	
18	Common best practice 1: Preparedness	
21	Common best practice 2: Supporting responsible fisheries and aquaculture	
22	Common best practice 3: Flexibility and responsiveness	
25	Common best practice 4: Inclusiveness	
27	Common best practice 5: Gender mainstreaming	
	<b>CHAPTER 5</b>	
<b>31</b>	<b>Best practice in emergency response in fisheries and aquaculture</b>	
32	How to use this chapter	

33	<b>Fisheries and aquaculture policy and management (FAPM)</b>
33	Introduction
34	Fisheries and aquaculture policy and management in the emergency context
37	Linkages with the other sections
37	Fisheries aquaculture policy and management (FAPM) best practice
37	<i>FAPM 1: Assessment</i>
39	<i>FAPM 2: Response support</i>
40	<i>FAPM 3: Monitoring, control and surveillance</i>
42	<i>FAPM 4: Improving governance</i>
43	<i>FAPM 5: Improving economic performance</i>
48	<b>Fishing operations (FO)</b>
48	The need for an integrated approach
49	Fishing operations – fishing gear (FOFG)
49	Introduction
50	Fishing gear in the emergency context
52	Fishing operations – fishing gear (FOFG) best practice
52	<i>FOFG 1: Assessment and planning</i>
54	<i>FOFG 2: Delivery and usability</i>
57	<i>FOFG 3: Supporting the environment</i>
58	<i>FOFG 4: Ghost fishing</i>
66	Fishing operations – fishing vessels (FOFV)
66	Introduction to fishing vessels
68	Fishing vessels and the emergency context
72	Fishing operations – fishing vessels (FOFV) best practice
72	<i>FOFV 1: Assessment and planning</i>
76	<i>FOFV 2: Strengthening governance</i>
77	<i>FOFV 3: Sustainable sourcing</i>
78	<i>FOFV 4: Support structures</i>
80	<i>FOFV 5: Management support</i>
81	<i>FOFV 6: Safety at sea</i>
94	Fishing operations – infrastructure (FOFI)
94	Introduction to infrastructure
96	Infrastructure and the emergency context
98	Fisheries operations – fishing infrastructure (FOFI) best practice
98	<i>FOFI 1: Assessment and planning</i>
101	<i>FOFI 2: Strengthening governance</i>
102	<i>FOFI 3: Technical and economic viability</i>
103	<i>FOFI 4: Construction procurement and implementation</i>



<b>109</b>	<b>Aquaculture (AQ)</b>
109	Introduction to aquaculture
110	Aquaculture in the emergency context
115	Linkages with fishing operations in emergency response
115	Aquaculture (AQ) – best practice in emergency response
115	<i>AQ 1: Assessment and planning</i>
118	<i>AQ 2: Delivery</i>
118	<i>AQ 2a: Seed</i>
120	<i>AQ 2b: Feed</i>
122	<i>AQ 2c: Production structures</i>
123	<i>AQ 2d: Technical support services</i>
124	<i>AQ 3: Taking opportunities to support development</i>
<b>129</b>	<b>Post-harvest practices and trade (PH)</b>
129	Introduction
131	Post-harvest practices and trade in the emergency context
134	Linkages with fisheries and aquaculture
135	Post-harvest practices and trade (PH) – best practice in emergency response
135	<i>PH 1: Assessment and planning</i>
136	<i>PH 2: Strengthening governance</i>
137	<i>PH 3: Technical and economic feasibility</i>
139	<i>PH 4: Markets and trade</i>
140	<i>PH 5: Monitoring</i>
141	<i>PH 6: Public health and safety</i>
<b>146</b>	<b>Environment (ENV)</b>
147	Environmental management issues and requirements in the emergency context
152	Linkages with other sections
152	Environmental (ENV) best practice
152	<i>ENV 1: Stock assessment</i>
153	<i>ENV 2: Responsible disposal</i>
154	<i>ENV 3: Habitat protection</i>
155	<i>ENV 4: Safeguarding endangered threatened and protected species</i>
155	<i>ENV 5: Environmental impact assessments</i>
156	<i>ENV 6: Invasive species</i>
<b>161</b>	<b>References</b>

# Introduction

## WHAT IS THE FISHERIES AND AQUACULTURE EMERGENCY RESPONSE GUIDANCE?

The Fisheries and Aquaculture Emergency Response Guidance aims to help to save the lives and livelihoods of people in the fisheries and aquaculture sector who have been affected by disasters and humanitarian emergencies. It aims to do this by improving the quality of the design, implementation and assessment of interventions in fisheries and aquaculture in the wake of disasters. It draws on best practice and experience in responding to disasters that have affected fisheries and aquaculture and in supporting people working in the sector to rebuild their livelihoods.

## THE ORIGINS OF THE GUIDANCE

People who depend on fisheries and aquaculture for their livelihoods face both increasing natural hazards (influenced by the impacts of climate change) as well as hazards caused by human activity. Effective responses to emergencies that affect the fisheries and aquaculture sector require an understanding of the specific features of the activities of this key food production sector and of the people who work in and depend on them – in fishing, in fish handling, processing and marketing, in fish farming and in the wide range of services that support these activities. To date, there is no widely available guidance to assist donors, programme managers and technical experts in the design of fisheries and aquaculture interventions in emergencies. The Guidance has been developed to fill this gap.

## WHO SHOULD USE THE GUIDANCE?

The Guidance is intended to support all who are involved in fisheries- and aquaculture-based interventions in emergencies. In particular, the Guidance will support:

- **Planners** – It provides a framework for FAO, partners and donors to develop and assess proposals for disaster response rapidly and it will raise the profile and accessibility of fisheries and aquaculture in the international disaster risk management (DRM) community.
- **Implementers** – While the Guidance does not cover the “how to” element, it is designed to provide a framework (or a **first stop shop**) to make technical support, tools and more detailed guidance accessible to those involved in the implementation of disaster response interventions.

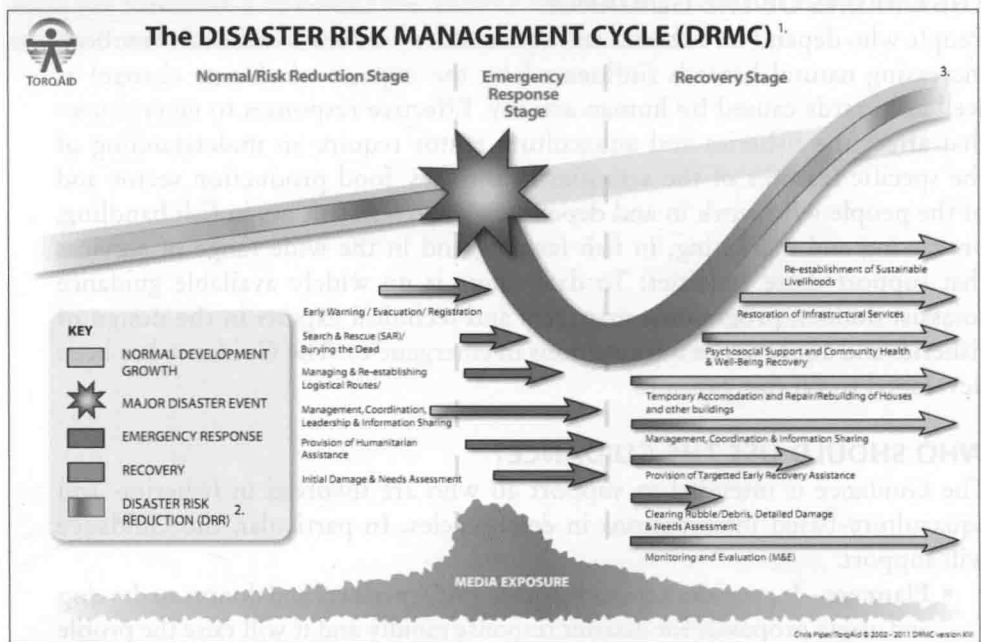
- **Monitoring and evaluation officers** – It will provide a basis for improving monitoring and evaluation of response and recovery efforts in fisheries and aquaculture.

## WHAT DOES THE GUIDANCE COVER?

The Guidance is designed to provide those planning, implementing, monitoring and evaluating relief and recovery interventions in the fisheries and aquaculture sector with the key technical information they require in order to be able to carry out their tasks more effectively. For those with limited experience or knowledge of fisheries and aquaculture, it highlights those factors that need to be understood and taken into account when dealing with relief and recovery. For technical specialists with extensive knowledge of the sector, it provides a checklist and summary of best practice based on experience that they need to bear in mind when undertaking their work.

The process of DRM, to which the Guidance contributes, deals with three key phases of emergencies, which are illustrated in Figure 1.

FIGURE 1 The Disaster Risk Management Cycle



<sup>1</sup> This mainly applies to a relatively quick-onset disaster (such as Cyclone, Flood, Earthquake, Tsunami, Bushfire etc), rather than a slow-onset one such as Famine (due to Drought/War)  
<sup>2</sup> For details of this see the Disaster Risk Reduction (DRR) diagram <sup>3</sup> Ideally in the recovery stage the community is able to 'Build Back Better'

Source: [www.toroaid.com/index.php?option=com\\_content&view=article&id=47&Itemid=58](http://www.toroaid.com/index.php?option=com_content&view=article&id=47&Itemid=58)

The first phase in this cycle, that of risk reduction, is **not** dealt with in detail by this Guidance as it is covered extensively in other sets of publications.

---

The **second** phase of the DRM cycle, that of immediate response to disasters and humanitarian emergencies, inevitably tends to focus primarily on satisfying needs that are **not specific** to the fisheries and aquaculture sector: the saving of life in the wake of a disaster; the treatment of injury and trauma; and ensuring that people have access to the basic needs of food, water, sanitation and shelter.

In the **third** phase of the cycle, the recovery phase, the specific needs of the fisheries and aquaculture sector needs to be considered in more detail, and this is where the use of this guidance is likely to prove most fruitful – in undertaking an initial assessment of the specific needs of the sector for recovery and reconstruction; in understanding underlying issues in the sectors that can be addressed during the recovery and reconstruction process; and in identifying those areas where the performance of fisheries and aquaculture, and the livelihoods of those involved in the sector, can be improved. At this stage, improving the resilience and adaptive capacity of the fisheries and aquaculture sector in the face of future hazards is also critical and feeds into the first stage of the DRM cycle by reducing future risk.

When a disaster turns into an emergency, the moral imperative is first to satisfy immediate humanitarian needs. These include medical assistance, food, clean water, shelter and assistance with coming to terms with a dramatically changed life. Once this stage is completed, the focus can switch to planning and delivering support for fisheries and aquaculture.

## **HOW TO USE THE GUIDANCE**

The Guidance is primarily intended as a planning and decision-making tool to support the development of appropriate emergency responses. However, the statements of best practice that it contains may also be useful as benchmarks for reviewing and evaluating emergency responses, either in real time or post-operation.

**Chapter 2 – Fisheries, aquaculture and emergencies.** This chapter gives an overview of key issues to consider when planning fisheries- and aquaculture-based interventions, particularly in relation to: hazards, emergencies and disasters; livelihoods; fisheries and aquaculture management and development; and food and nutrition security. It also outlines the stages of rapid, slow and complex emergencies and covers those issues that cut across the challenges of emergency response.

**Chapter 3 – Emergency response in fisheries and aquaculture.** This chapter discusses the vulnerability of the fisheries and aquaculture sector to different types of hazards and provides information about different types of framework that can be used to approach disaster response in relation to fisheries and aquaculture.

**Chapter 4 – Common best practice.** This chapter highlights those elements of best practice in disaster response that are common to **all** fisheries and

aquaculture interventions. It provides information and guidance on the ways of working that should be common to all types of emergency interventions. The chapter consists of **statements of best practice**, **key indicators** and **guidance notes** for each of the statements. These are arranged as follows:

- A brief introduction of the **context** for that type of intervention and relevant policy considerations.

#### **Statement of best practice**

- These are **qualitative** in nature and **specify the desired standards to be attained during the response process**. They should be applicable in any disaster situations and are, therefore, formulated in general terms.

#### **Key indicators**

- **The key indicators are attached to each statement** and serve as “signals” that **show whether it has been attained**. They provide a way of communicating the processes and results of key actions. The key indicators relate to the statement of best practice, not to the actions.

#### **Guidance notes**

- **The guidance notes outline particular issues that should be considered** in conjunction with the statements of best practice. These include specific points to consider when applying the minimum standards, key actions and key indicators in different situations. They do **not** provide guidance on exactly how to implement a specific activity. They provide guidance on tackling practical difficulties, benchmarks or advice on priority issues. They may also include critical issues relating to the standards, actions or indicators, and they describe dilemmas, controversies or gaps in current knowledge.

If the required levels of best practice cannot be met, the resulting adverse implications for the affected population should be appraised and appropriate mitigating actions taken.

**Chapter 5 – Best Practice in Emergency Response in Fisheries and Aquaculture.** This chapter covers those elements of best practice that are **specific** to the interventions in the fisheries and aquaculture sector. The technical interventions covered by the Guidance are grouped according to:

- fisheries and aquaculture policy;
- fisheries management and fishing operations;
- aquaculture development;
- post-harvest practices and trade.

Under each of these sections, the format for statements of best practice, indicators and guidance is the same as that used in the preceding chapter.

All of the chapters are interconnected. Frequently, the statements of best practice described in one sector need to be addressed in conjunction with statements of best practice described in others.

# Fisheries, aquaculture and emergencies

## FISHERIES AND AQUACULTURE

Capture fisheries and aquaculture contribute to economies at national and local level, to export earnings, and to food supplies and employment. It is estimated that in 2010 they supplied around 148 million tonnes of fish, with 128 million tonnes being used for human consumption. The total value of the sectors was estimated at US\$217.5 billion in 2010. Fish and fish products also contribute to more than 16 percent of the world population's average intake of animal protein and 6.5 percent of all protein consumed. This provides around 3 billion people with almost 20 percent of their intake of animal protein. In some countries fish makes up a far greater percentage of animal protein. Fish products are one of the most highly traded food and feed commodities, globally. Number of fishers and fish farmers employed and those depending on the industry has been growing faster than that in agriculture during the past three decades (and mainly in developing countries). Fish has a highly desirable nutrient profile as it is a good source of quality animal protein, essential fatty acids, vitamins and minerals (FAO, 2012a).

## HAZARDS, DISASTERS AND EMERGENCIES

Natural or human-induced phenomena or events that have the **potential** to cause a disaster or a humanitarian emergency are referred to as **hazards**. Hazards do **not** constitute disasters in themselves – a hazard only becomes a disaster when people are affected or costs are incurred.

A hazard becomes a **disaster** when it causes:

- disruption of the basic fabric and normal functioning of a society (or a community);
- casualties and/or damage or loss of property, infrastructure, essential services or people's means of livelihood;
- impacts on a scale that is beyond the normal capacity of the affected communities to cope with unaided (FAO, 1997a).

The FAO categorizes disasters into three main groups as follows:

- **Natural disasters:** hydrometeorological hazards (e.g. floods, waves and surges, storms, droughts), geological hazards (e.g. earthquakes, volcanic eruptions) and biological hazards (e.g. epidemics, insect infestations).

- **Technological disasters:** directly related to human activity and as a result of failure of a technology or of management e.g. oil or chemical pollution from tankers, pipelines and drilling accidents, nuclear disasters.
- **Complex emergencies:** humanitarian crises resulting from military conflict and for which external assistance is needed.

The term “**emergency**” means “a sudden and usually unforeseen event that calls for immediate measures to minimize its adverse consequences” (FAO, 1997a). In relation to disasters, the term is often used to refer to a formally recognized state that is declared by the appropriate authorities when particular thresholds are recognized as having been reached. These thresholds generally refer to the ability of people in an affected area to meet their basic survival needs, the seriousness of “immediate threats to human life and well-being” and the capacity of authorities and mechanisms at different levels to respond effectively to these levels of threat or crisis (FAO, 1997a). The declaration of local, national or international emergencies implies the setting in action of a series of recognized response mechanisms at different levels to deal with these emergencies.

## VULNERABILITY OF FISHERIES AND AQUACULTURE TO DISASTERS

Fishing and fish farming communities are often characterized by high levels of exposure to natural hazards (Box 1).

### BOX 1

#### Exposure to hazards

In relation to disasters and emergencies, exposure refers to the nature and extent to which people, the communities they live in, their assets and the different activities they depend on for their livelihoods, are exposed to the physical effects of a particular hazard.

Sources: IPCC (2001).

The majority of natural hazards that lead to disaster situations are of hydrometeorological origin and, with fishers and fish farmers often living and working close to waterbodies or the sea shore, this inevitably means that they have a relatively high-level of exposure to these natural disasters (Alcantara-Ayala, 2002; Badjeck *et al.*, 2010) (Box 2). With global warming, it

is widely predicted that both the severity and the frequency of hazards such as tropical storms, extreme weather and storm surges, as well as drought and flooding, are likely to increase in the coming decades and, thus, the exposure of those involved in fisheries and fish farming to these hazards will also increase (IPCC, 2001).

Aquatic systems can also become vectors for pathogens, pollution and predators that can have destructive impacts on the livelihoods of fishers and fish farmers. Fish farmers may be particularly vulnerable to these types of impact where disease enters the aquatic system from other fish farms and is spread through the water supply necessary for fish farming downstream (Brown *et al.*, 2010; Campbell, 2010). Pollution, which may either be directly

produced by industries or the result of other human activities (such as logging or land clearance), in upstream areas or watersheds can also have serious and catastrophic impacts downstream on fisheries and fisheries-related livelihoods (Campbell *et al.*, 2006).

Once fishers or fish farmers encounter a hazard, the impacts that a hazard may have on them depends on a wide range of more complex factors that determine the sensitivity of fishers and fish farmers to disasters (Box 3). Understanding these factors, especially in the aftermath of a disaster, can be particularly challenging but it is important if disaster relief efforts are to be appropriate.

Important factors affecting sensitivity to disasters can include:

- The relative poverty of people involved in fishing and fish farming. While by no means all fishers and fish farmers are “poor”, a large proportion of fishing and fish farming activity worldwide is carried out by small-scale operators in developing or less-developed countries. Among these small-scale operators, many live are either already poor or are vulnerable to falling into poverty.
- The frequent constraints faced by small-scale fishers and fish farmers that may increase their sensitivity to disasters and their capacity to cope with the impacts of disasters. These include: their limited reserves or savings to help them deal with periods of crisis or fluctuations in production; their lack of access to supporting institutions and agencies; their inability to influence policy and decision-making in their favour; poor infrastructure, housing and services; and their high levels of dependence on a single activity.
- The highly mobile nature of fisheries work, particularly capture fisheries, and the frequent migratory nature of fishing. This means that identifying the location of fishers when a disaster strikes, or where they are to be found the wake of a disaster, can be particularly difficult, leaving fishers at risk of not being properly taken into consideration as part of relief efforts.

#### BOX 2

##### Exposure to disasters in coastal areas

In recent decades, several of the most dramatic natural hazards to have occurred have been geological in origin (caused by earthquakes such as the massive quakes off the west coast of Sumatra in Indonesia in December 2004 and the Japanese quake in March 2011) but their impacts have been linked to hydrology – the catastrophic tsunami generated by those earthquakes. In both of these cases, fishing communities in coastal areas were among the groups most affected.

#### BOX 3

##### Sensitivity to hazards

“Sensitivity” to hazards refers to the extent to which any particular population is liable to suffer impacts as a result of encountering a hazard. Sensitivity constitutes the reasons why exposure to a hazard turns into a disaster, with its accompanying impacts on human life and livelihoods.

Sources: IPCC (2001).



#### BOX 4

### Adaptive capacity in the face of disasters

“A combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster.” Capacity may include physical, institutional, social or economic means, personal or collective attributes, or capabilities. “The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.” This definition of “coping capacity” includes

Sources: UNISDR (2009).

- The dependence of fishing activities on markets and market linkages. Where such linkages survive a disaster intact, they can represent an important asset helping the process of rehabilitation and reactivation of people’s livelihoods, but where they are disrupted by the effects of a disaster, the lack of access to functioning markets can inhibit the process of livelihood recovery.

The vulnerability of fishing and fish farming communities to disasters is also determined by their capacity to **adapt to, or cope with**, the effects of a disaster once

it has struck (Box 4). This will be influenced by many of the same factors that determine people’s sensitivity to disasters, but the degree to which people are supported in the relief and recovery process by effective institutions and agencies is liable to be a particularly important aspect determining their coping and adaptive strategies.

The relatively rapid cycles involved in capture fisheries activities means that, with appropriate rehabilitation of equipment and infrastructure, recovery times can be relatively rapid, depending on the scope and severity of the disaster and access to markets for produce. Recovery in fish farming activities can require more time as culture cycles are longer and more similar to agriculture cycles.

The scale and level of sophistication of fishing and fish farming activities also affects their capacity to adapt to a disaster and recover in its wake. Smaller-scale fisheries may be technically easier to adapt to new, post-disaster circumstances and require less outside input, while larger-scale operations may require higher levels of technical expertise.

## CROSS-CUTTING ISSUES AFFECTING VULNERABILITY AND EXCLUSION

Vulnerability among those involved in fisheries or in aquaculture can also depend on a range of cross-cutting features that need to be taken into account when considering relief and rehabilitation in the wake of a disaster. Many of these factors influencing people’s vulnerability in the face of disasters can represent factors that may increase their risk of exclusion (Box 5) during relief and recovery efforts in the wake of a disaster. All of these factors are relevant to all population groups affected by disasters (not just those in the fisheries and aquaculture sector), but they may all be manifested in communities