

# Disasters and emergencies

## Introduction

The number of reported natural disasters is increasing and there is an apparent ongoing need to provide international humanitarian aid to people affected by conflict and war.

Understanding the factors that influence the decision to intervene is important in the management of disaster relief and in the prevention of future crises.

Notes 13 and 14 examine these issues.



# Contents

Introduction .....	1
Types of disasters .....	4
Consequences of disasters .....	11
Definitions of disasters .....	15
Defining emergencies .....	16
Further information .....	20
About this note .....	21



These notes set out the definitions of disasters and emergencies, briefly looks at the changing causes and consequences of disasters and discusses some of the factors that influence people in deciding if they should respond to the need for help.

They cover a broad range of natural, technological, social and complex disasters, including failed states.

Whilst it cannot provide ready solutions for particular situations, it raises important issues to consider when aid interventions are being planned.

In many discussions about disasters and emergencies, a common assertion is that it is the disaster that gives rise to the *emergency*, but more often than not, these terms are used interchangeably.

The notes explore some of the factors that turn an event into a disaster and

motivate humanitarian agencies to provide an emergency response.

## **Types of disasters**

Disasters are often categorized by their cause, which can be divided into four main groups as follows:

1. Natural disasters
2. Technological disasters
3. Social disasters
4. Complex disasters and failed states

### **Natural disasters**

These result from environmental impacts. There are geophysical events such as volcanoes and earthquakes.

These events can be very concentrated, with their impact felt only in a localized area.

Other environmental events are hydro-metrological. These are experienced over a much wider area and include:

- windstorms (hurricanes, typhoons, cyclones);
- heavy rain or snow;
- drought; and
- excessive high or low temperatures.

Biological events are another type of natural disaster. These include:

- insect plagues; and
- disease epidemics.
- In turn these natural events may trigger:
  - floods;
  - tsunamis;
  - landslides or mudslides;
  - avalanches (snow slides);
  - excessive erosion;
  - wildfires; and
  - crop failure.



**Figure 1.** The consequences of an earthquake (above) and a tsunami (below)

---

## **Technological disasters**

Adverse physical events can also be caused by human activity, such as

- industrial and technological incidents involving explosions or chemical and radiation emissions;
- accidents during the transportation of hazardous materials;
- structural failures of bridges, buildings, power lines, dams or mines;
- vehicle and train accidents; and
- unexploded ordinance.

## **Social disasters**

Technological disasters are accidental failures of man-made facilities.

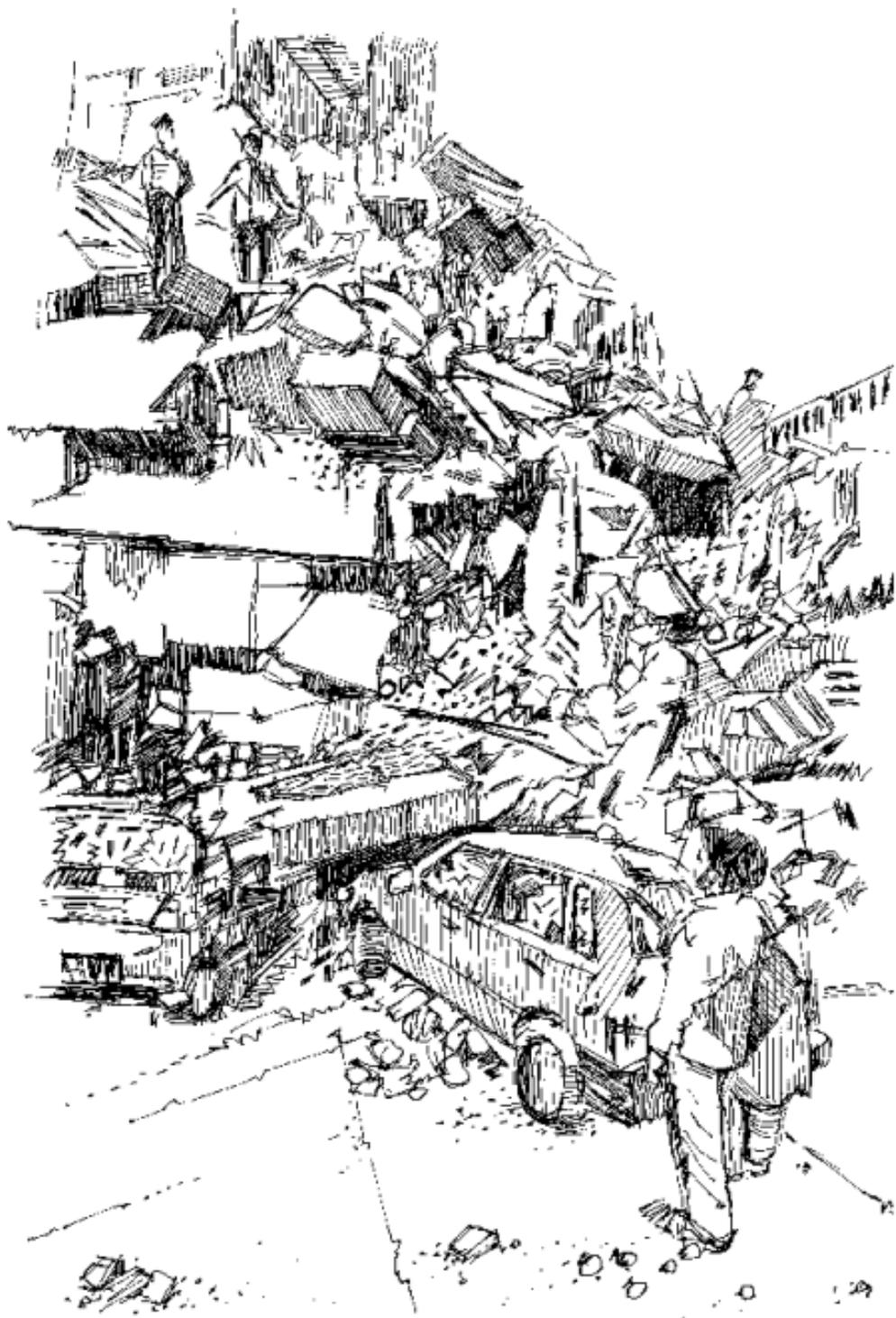
There are also failures of the social order, where community behaviour breaks-down, for example, in order of increasing magnitude:

- demonstrations;
- stampedes;
- riots;
- terrorism;
- conflict; and
- war.



**Figure 2.** War: a social disaster

---



**Figure 3.** Structural collapse of buildings

---

## **Complex disasters and failed states**

The final category of disaster recognizes the importance of good governance and the rule of law in a stable society. When this fails, perhaps due to war or a major natural disaster, a complex set of failures occurs, with economic, social, physical and environmental consequences, all within a state of insecurity.

## **Cause and effect**

Similar outcomes can result from a variety of different causes. A catastrophic flood might result from heavy rain breaking a dam due to an excessive amount of water in a reservoir, or the rain may create a mudslide that causes the dam to collapse.

An earthquake could damage the dam, or it may be the result of poor design, an accidental explosion, a terrorist attack or war. Poor management may mean that the dam is not properly operated

or maintained, leading to its eventual failure and a sudden flood.

Events may have different consequences and effects depending on their locations. An earthquake in a poor country, with poor building practices, sub-standard construction and minimal emergency services will have a greater adverse impact than the same strength of earthquake in a nation that is well prepared for such an event.

## **Consequences of disasters**

Rather than defining disasters by their *cause*, another method of categorization is to look at their *impact*, such as:

- the number of deaths;
- the number of displaced people;
- the cost of repairs; or
- the wider economic impact.

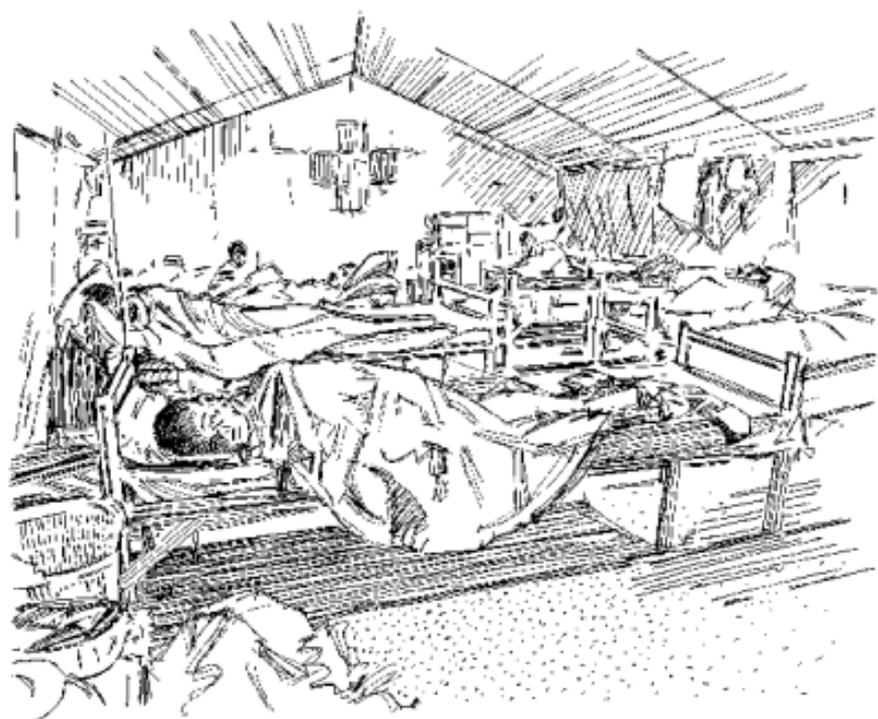
Comparing two disasters is not straightforward. For example, the extent of

injury, death and damage caused by a local, sudden disaster such as an earthquake will be easier to determine than that of a slow, gradual famine which may have no clear start or finish date and where casualties may be widespread geographically. A heat wave may kill elderly and young people who were weak anyway and so the direct cause of death may not be clear. A flood may directly cause a number of deaths by drowning, but it might also contaminate water supplies and destroy crops, leading indirectly to many deaths at a later date.

### **Economic consequences**

The cost of repair and rebuilding relates to the standard of infrastructure that existed before the disaster. A disaster in an industrialized nation may cause millions of dollars worth of damage, whilst the same disaster in a low-income nation may not, as the rebuilding costs may be less.

However, the proportional economic impact may be larger in the low-income nation. A minor event may have major adverse consequences for a poor community. A rich nation with many and varied resources may be more robust and more able to recover from what might otherwise have been a major disaster in a poorer country.



**Figure 4.** Mass casualties are a characteristic of disasters

---

Some of the characteristics of disasters include substantial destruction and / or mass casualties, but whatever the scale of the disaster, “small monetary losses can lead to major suffering and hardship or, conversely, large losses can be fairly sustainable...” depending on the chain of circumstances (Alexander, 2002).

### **Box 1. A definition of a disaster**

A disaster is:

“an exceptional event that exceeds the capacity of normal resources and organization to cope with it.

Physical extremes are involved and the outcome is at least potentially and often actually, dangerous, damaging or lethal.”

Alexander, D. (2002) *Principles of Emergency Planning and Management*.

## **Box 2. The UN definition**

The United Nations define a disaster as:

“a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources.”

United National International Strategy for Disaster Reduction (2004) *Living with risk: a global review of disaster reduction initiatives.*

## **Definitions of disasters**

Trying to define a disaster by its cause is limited, as one cause can have different effects depending on the local context.

Similarly, trying to use standard benchmarks based on the impacts of a disaster also has its faults, again due to

the local context. The impact is related to the individual, community or nation that experiences the event. Boxes 1 and 2 give two definitions of a disaster.

Disasters can be categorized by other factors such as spatial variation (widespread or concentrated) or temporal variation (rapid onset or slow onset).

## **Defining emergencies**

Box 3 and 4 give definitions of emergencies. Generally, the term suggests a sense of urgency and immediacy, often related to disasters that occur suddenly. A slow onset disaster such as a drought, a complex emergency that develops over time, or a refugee crisis that accelerates may not have the same sense of urgency as a sudden disaster like an earthquake, but the response required may be similar.

Box 5 gives a definition of a complex emergency, whilst Box 6 describes a

refugee emergency. Note, not all refugees require emergency support, so the emergency is defined by the need for a response rather than the presence of refugees.



**Figure 5.** The term ‘emergency’ suggests a sense of urgency. Is this right?

---

### **Box 3. An emergency**

Emergency – “the situation arising in the aftermath of a disaster.”

Davis and Lambert (2002) *Engineering in Emergencies*.

## **Box 4. A broader definition of an emergency**

Generally, an emergency may be considered to be the result of a man-made and/or natural disaster, whereby there is a serious, often sudden, threat to the health of the affected community which has great difficulty in coping without external assistance.

Harvey, Baghri and Reed (2002)  
*Emergency Sanitation: Assessment and Programme Design*



## **Box 5. Complex emergencies**

The Inter-Agency Standing Committee defined complex emergencies as:

“A humanitarian crisis in a country, region or society where there is total or considerable breakdown of authority resulting from internal or external conflict and which requires an international response that goes beyond the mandate or capacity of any single agency and/ or the ongoing United Nations country program.”

UN Office for the Coordination of Humanitarian Affairs (1999)  
*OCHA Orientation Handbook on Complex Emergencies*

## Box 6. A definition of a refugee emergency

“A situation in which the life or well-being of refugees will be threatened unless immediate and appropriate action is taken, and which demands an extraordinary response and exceptional measures.”

UNHCR (2000) *A Handy Guide to UNHCR Emergency Standards and Indicators*.

### Further information

The Sphere Project

<http://www.sphereproject.org/>

International Disaster Database

(EM-DAT) <http://www.emdat.be/>

**See also note 14: Disaster response**

## About this note

Author: Brian Reed  
Editors: Lee Boshier and Rod Shaw  
Illustrators: Rod Shaw  
QA: Andrew Cotton

Designed and produced by WEDC

© WEDC, Loughborough University, 2017

**Water, Engineering  
and Development Centre (WEDC)  
School of Civil and Building Engineering  
Loughborough University  
Leicestershire LE11 3TU UK**

**Phone:** + 44 (0) 1509 222885

**Email:** [wedc@lboro.ac.uk](mailto:wedc@lboro.ac.uk)

**Website:** [wedc.lboro.ac.uk](http://wedc.lboro.ac.uk)

**Twitter:** [wedcuk](https://twitter.com/wedcuk)

**YouTube:** [wedclboro](https://www.youtube.com/wedclboro)



**[BACK TO TOP](#)**

---