

# Disaster theory

Before an effective community-based disaster management plan can be developed, it is important to understand what a disaster is and what the risks of disaster in a particular place are. Two models that have been developed to help build an understanding about disasters are used in this book. The 'Crunch' model explains what a disaster is and why it happens. The 'Release' model looks at how disasters can be avoided or minimised.

## 2.1 The Crunch model

The Crunch model<sup>1</sup> shows that a disaster happens only if a hazard meets a vulnerable situation.



A hazard is an event that could lead to danger, loss or injury. One example is an earthquake. An earthquake in one part of the world can lead to the loss of many lives and the destruction of buildings, roads and bridges. However, an earthquake of the same strength in another country may cause much less devastation. This may be because buildings are stronger, communities are better trained or few people live there. A hazard by itself is therefore not a disaster. Only when the hazard meets a vulnerable situation does a disaster happen.

People are vulnerable when they are unable to adequately anticipate, withstand and recover from hazards. Poverty contributes to vulnerability. That is why an earthquake may cause a disaster in a poor country, while an earthquake in a richer country may have little impact. At local level, a hazard can cause disaster for poor households, while richer households may not be affected to the same extent.

<sup>1</sup> The Crunch and Release models have been adapted from Blaikie P, Canon T, Davis I and Wisner B (1994) *At Risk: Natural Hazards, People's Vulnerability, and Disasters* London, Routledge

**REFLECTION**

- What natural and man-made hazards occur in our country?
- Do these result in disaster for some people or some areas of the country, but have little impact on others?
- How does the impact of natural and man-made hazards differ in our country from other countries in our region or across the world? Why?
- What natural and man-made hazards occur in our area?

The Crunch model is based on the idea that a number of factors influence vulnerability to disaster.

**Elements at risk**

People's lives rely on a number of different 'elements'. These elements include houses, water supplies, social groups and networks, crops, livestock, savings, jobs, and the natural environment. If these elements are vulnerable, the hazard is more likely to cause damage to them. They are called 'elements at risk'.

**REFLECTION**

- What personal elements of our lives are most likely to be affected by a particular hazard?
- What community elements are most likely to be affected by any particular hazard?

## Vulnerable conditions

Some elements are at risk because they are unable to withstand the impact of a hazard. This vulnerability might be:

- **ECONOMIC** such as fragile livelihoods; no credit and savings facilities
- **NATURAL** such as dependence on very few natural resources
- **CONSTRUCTED** such as structural design; location of houses on an unstable slope
- **INDIVIDUAL** such as lack of skills or knowledge; lacking opportunity due to gender; being old or very young; living with HIV or AIDS
- **SOCIAL** such as a disorganised or fragmented society; bad leadership.

For example, a flood hazard may damage or destroy mud and bamboo houses. Those types of houses are therefore elements at risk. To understand vulnerability we need to ask why they are at risk. We may conclude that it is because of the location and construction of the houses. They are reached by the flood water because the houses are built on low-lying ground. They are easily destroyed by the force of the flood water because they are built using weak materials.

Communities, households and individuals are not all affected in the same way by a hazard. One community may be vulnerable in a different way to another community, due to its location or wealth. Households may be affected differently due to their income or land ownership. Gender is an important issue. Women are often more vulnerable than men because they are given lower status in some societies. For example, women may receive less information about hazards than men, or they may be unable to read the information. See Section 5.3.

HIV is unusual because it is not only a hazard. It can also make households vulnerable to other hazards such as floods. For example, someone with HIV may often get sick. They may be less able to escape quickly from floods than other people.

## REFLECTION

- Think of a recent disaster. What elements were affected and what were the vulnerable conditions that put them at risk?

The diagram can then be expanded to show that a number of pressures increase vulnerability.



**Pressures**

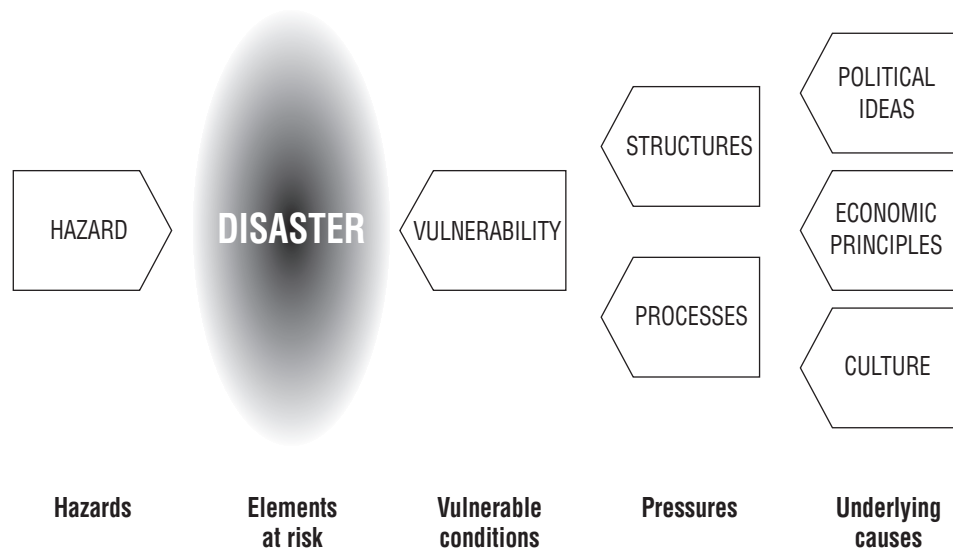
Vulnerable conditions exist because of pressures acting on individuals and communities. We might not be aware of these pressures and they are often difficult to challenge. ‘Pressures’ are structures and processes that create vulnerable conditions. We need to identify:

- **who** is responsible for creating vulnerable conditions. These can be organisations (such as local government departments, religious groups or commercial companies) or individuals (such as a local landowner). These are called the **structures**.
- **how** structures affect the vulnerable conditions, such as through policies and practices. These are called the **processes**.

**REFLECTION**

- What structures create vulnerable conditions in our local area?
- What processes create vulnerable conditions in our local area?

A number of underlying causes influence the pressures.



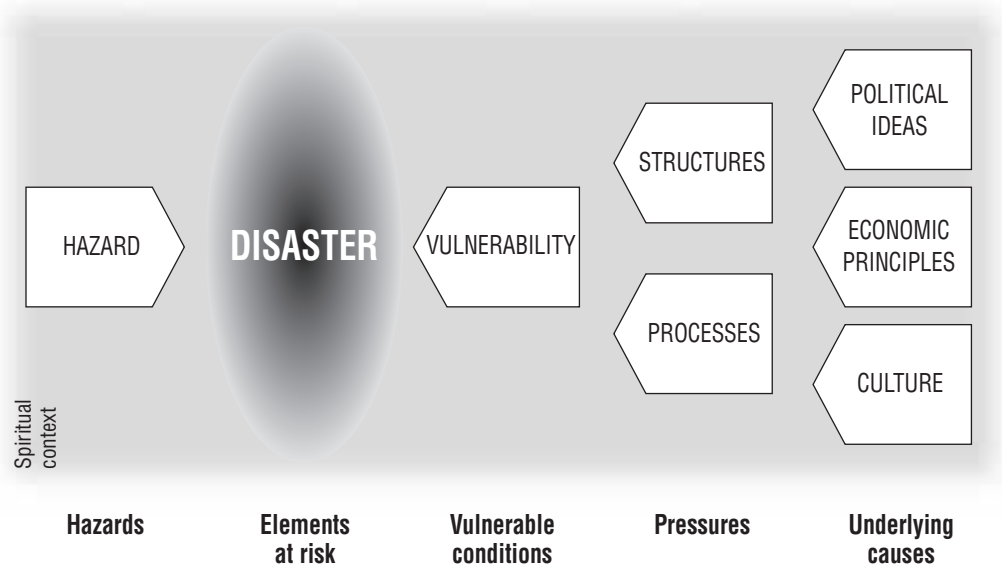
### Underlying causes

Pressures are caused and increased by a set of ‘underlying causes’ which encourage those in positions of power to behave in a certain way. These underlying causes may be political ideas, economic principles or due to cultural issues. People’s vulnerability at local level can often be linked back to poor governance, inequality, greed, injustice and prejudice, not only at a local and national level, but at the international level as well. These issues may seem far from the affected community but they can have a powerful influence. For example, political decisions about land reform can result in people losing land or work, making them more vulnerable to hazards.

### REFLECTION

- What underlying causes push those with power to act in the way they do in our area?

The whole framework exists within a spiritual context.



**Spiritual context**

The spiritual context depends on how we relate to God. It relates to people’s individual spirituality and to the presence of religious institutions at local or national level. It influences the way people act and therefore influences vulnerability to disaster. The church is part of this spiritual context. There are many ways in which the church can help to reduce vulnerability. However, in some places, church practices could be increasing vulnerability. For example, costly marriage or funeral ceremonies could increase economic vulnerability.

**REFLECTION**

- What is the spiritual context in which we live?
- How do spiritual beliefs affect people’s attitude to disaster?
- How do spiritual beliefs affect people’s attitude to other people in times of disaster?
- Are there any spiritual practices that increase vulnerability?
- In what ways could the church reduce vulnerability in our community?

EXAMPLE  
Disaster risk in  
Bihar, India

Rural people in Bihar, India, live on low-lying flood plains. Each year they face a flood **hazard**. The **elements at risk** are houses. The location of these houses is one of the **vulnerable conditions** they experience. One solution would be to move to higher land, away from the flood plain. However, the caste system, which determines social class, is a powerful **pressure**. The dominant, high-caste owners of the higher land prevent lower caste villagers from living on this land. Lower caste villagers cannot earn enough income with which to buy higher land of their own. The caste system therefore creates and sustains vulnerable conditions for the poorer villagers. The beliefs and culture of the society are the **underlying causes** of the caste system.



Photo: Caroline Irby, Tearfund

*A lower-caste villager working on the flood plain.*

This book shows how a tool called Participatory Assessment of Disaster Risk (PADR) can help communities identify measures to reduce the impact of hazards. It takes the components from the Crunch model (hazards, elements at risk, vulnerable conditions, pressures and underlying causes) and uses them as aspects of the Assessment process.

## 2.2 The Release model

To reduce the risk of disaster, the factors that cause risk should be addressed. This means working against all the components of the Crunch model. Action may be necessary at local, national and even international levels.

The diagram on page 18 shows the action that could be taken to reduce disaster risk in different parts of the Crunch model.

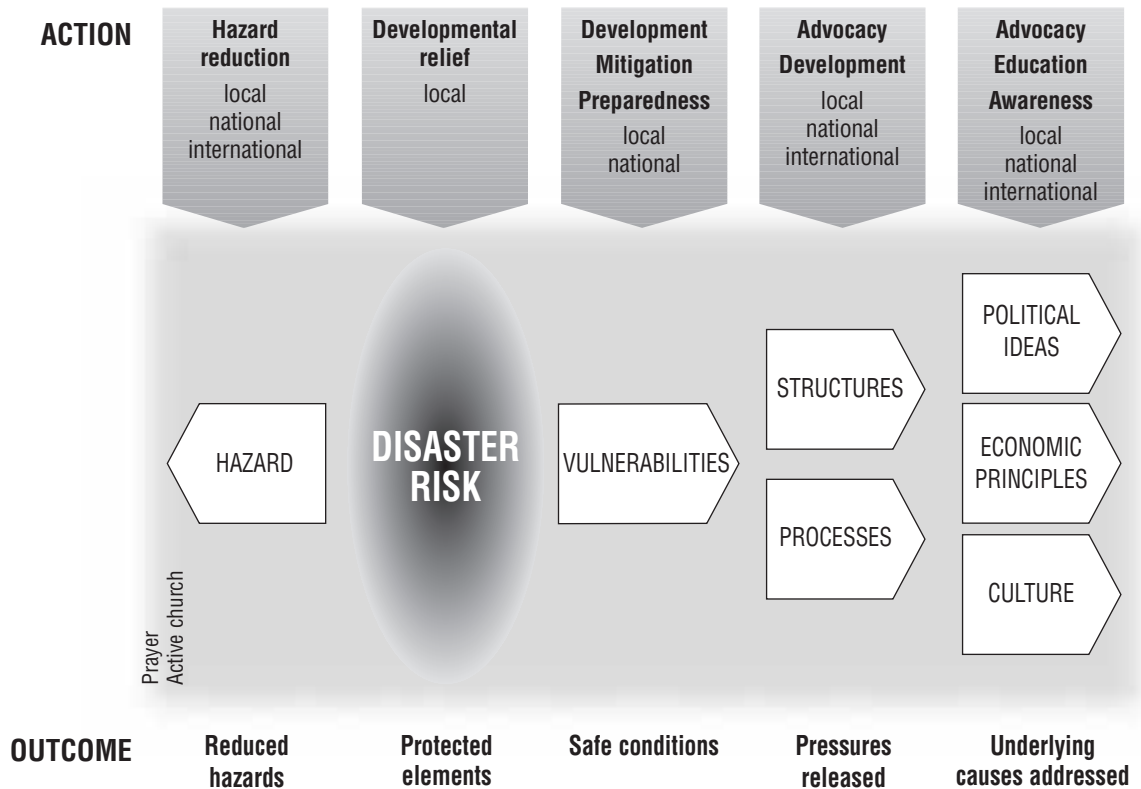
### Explanation of the diagram

#### Reduced hazards

Ways could be found to reduce the occurrence, frequency or strength of various hazards. For example, embankments could be built to reduce flooding. Trees could be planted to help stop landslides after heavy rain. Advocacy could be used to influence policies that limit climate change, which is increasing the frequency and severity of some natural hazards. Vulnerable groups should be encouraged to take part in decision-making to ensure that conditions do not worsen for the poorest and most vulnerable people.

#### Protected elements

Some elements of a community may be able to withstand the impact of a hazard. For example, a tube well could have a pump on a high platform so that it is not affected by flooding. Developmental approaches to relief will identify these elements and seek to support them and copy them.



**Safe conditions** All vulnerable people have strengths. These can be used to lessen the impact of a disaster. These strengths, which are often not fully understood by outsiders, are known as ‘capacities’. Elderly people are generally thought to be weak with a lack of mobility and are often seen as being vulnerable. However, by considering capacities, we may find that elderly people have a wealth of traditional knowledge and a good understanding of what solutions have worked well, or have failed, in the past. They may be vulnerable compared with others in the community, but they also have capacities which others may not have. If a disaster happens, not only should immediate needs be met but capacities should be recognised and strengthened. Before a disaster happens, disaster risk can be reduced by discovering and supporting capacities.

**Pressures released** Not all of the structures and processes will be working in a negative way that creates or increases vulnerability. Some, such as an NGO, the church, a good local leader, or a popular politician, may be working to strengthen the community and could be an important source of support in times of disaster. These people could help us to do effective advocacy work in order to release negative pressures.

**Underlying causes addressed** Some structures and processes may help to reduce the risk of disaster because their political and economic approaches and values are fair and just. To encourage these values among negative pressures, we can use advocacy. The church can have an important role to play.

All of these approaches should be based upon a detailed assessment of the disaster risk experienced at a local level. People become less vulnerable when they work together to identify and prioritise risks and devise a programme of activity to reduce those risks. The Participatory Assessment of Disaster Risk (PADR) tool can be used to enable people to identify the risks they face and plan to reduce those risks.

**Spiritual context** The spiritual context can greatly influence capacities and reduce disaster risk. Prayer and an active, caring church should play a vital role.