ROOTS
9

Reducing risk of disaster in our communities

SECOND EDITION

ROOTS

tearfund

ROOTS 9

Reducing risk of disaster in our community

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Bob Hansford

Contents

Preface

ROOTS 9 was first published early in 2006, and introduced a community-based methodology known as Participatory Assessment of Disaster Risk. It appeared approximately one year after the launch of the Hyogo Framework for Action (UNISDR, January 2005) and was intended to make a small contribution towards the outworking of that framework at community level.

This revised edition, with substantial reworking of the original material, is considered necessary for a number of reasons.

First, the methodology has been tried in approximately 20 countries in Africa, Asia and the Caribbean. The approach has been largely successful, but lessons have been learned, both in the way the methodology has been taught and in the process of implementation at community level. This revised edition aims to build on this learning and offers a more effective tool, with practical guidance, templates and question sets.

Second, the progression of climate change is having a significant impact on disaster types, frequency and intensity around the world, affecting particularly those people least able to cope with increased frequency and intensity of extreme climatic events. While recognised in the earlier edition, the speed and projected impacts of climate change were underestimated. As the science has developed, so has the need for a risk assessment methodology which takes account of projected future risks as well as the known hazards of the past.

Third, the range of tools available in the fields of disaster risk reduction, climate change adaptation and environmental sustainability has increased considerably in recent years, with contributions from Tearfund and other sources. These tools are acknowledged and cross-referenced where applicable. There is still a clear need for PADR, but sometimes it will be best used in combination with a specific tool for climate change adaptation or environmental sustainability to achieve greatest impact.

Finally, the concept of community resilience has gained much support. This is a more positive way of defining the particular characteristics which give a community the ability to prepare for, cope with and recover from shocks of whatever origin.

Several cross-cutting issues are integrated into this publication, including:

GENDER Recognising the different impacts of hazards on men and women and the capacities that both women and men are able to contribute to risk reduction

CHILD SENSITIVITY Recognising that children are among the most vulnerable

HIV Recognising that HIV increases the vulnerability of those living with it and undermines coping mechanisms

CONFLICT Recognising that conflict affects a community's ability to withstand and recover from natural disaster

It is the author's hope that this publication will advance the cause of disaster risk reduction and contribute to the building of safer, more resilient communities.

Introduction

Disasters – the reality

Over the last ten years, approximately 240 million people each year were affected by so-called natural disasters. These disasters cause immeasurable damage to life, property and livelihoods, sometimes in the space of a few minutes, but more often over weeks or months. The slow but relentless impact of climate change is affecting us now and will be felt as a disaster for many years to come. Those living in the poorest countries and communities undoubtedly suffer the most, and are least able to cope and recover from the losses. In most cases, women suffer more than men and make greater sacrifices for the survival of their families.

There is evidence that the number, severity and economic impact of some types of disaster – particularly floods and storms – is increasing.[1] Climate change is advancing more rapidly than most scientific projections ten years ago indicated, and extreme weather events will contribute increasingly to climate-related disasters. Areas previously less affected by natural hazards may find that floods or droughts become part of daily life.

Disasters often reverse development progress. Many predict that the Millennium Development Goals for 2015 will not be met, because disasters are eroding the advances made in several sectors.[2] It is also true that bad development, eg housing construction in known flood plain areas, can contribute to new disasters.

Justification for risk reduction

Disaster management in the past often consisted of a set of reactive measures to save lives and assist victims in their recovery. In the last two decades, politicians and aid practitioners have accepted that many disasters can in fact be avoided, or at least made less destructive, if the risks faced by vulnerable communities are reduced.

'*We cannot stop natural hazards, but we can and must make people and their livelihoods less vulnerable to them*.'
Bill Clinton, former US President

The Hyogo Framework for Action (2005–2015), launched in January 2005, set out five areas of action required to reduce disaster risk (Section 2.5).

While some progress has been made, political will to implement the framework is often lacking. However, at community level there is increasing evidence that disaster impact can be significantly reduced if the five pillars of the framework are taken seriously.[3] There is also economic evidence that relatively small amounts of money spent on risk-reducing measures may save much larger sums later on, in terms of spending on humanitarian aid and reconstruction after a disaster.[4]

1 EM-DAT (2009) *Natural disaster trends*

2 UNDP (2004) *Reducing disaster risk: a challenge to development*

3 UNISDR (2007) *Building Disaster Resilient Communities*

4 Cabot Venton C, Siedenburg J (2010) *Investing in communities*

Purpose and use of the PADR methodology

Much of this book is devoted to explaining the conceptual basis and practical outworking of a tool known as **Participatory Assessment of Disaster Risk** (PADR).

The purpose of the tool is to enable a community to assess the factors that contribute to the size and scale of any potential disaster and to develop a locally owned plan to address those factors and reduce the risk of disaster. It is essentially a community-empowering process, helping people to understand cause-effect relationships and to realise their own capacities to reduce risks. It also enables them to identify and challenge the social, political and economic structures which contribute to their vulnerability. Such activities may be set within existing development projects.

Intended users of PADR

PADR will particularly interest those engaged in humanitarian or development work in locations which experience frequent weather-related hazards, such as floods, cyclones or drought. It will also be valuable to those working in regions affected by long-term food insecurity, as a way of exploring the deeper causes, which are more complex than simply lack of rain. It can also be used by relief workers in the weeks following a disaster, to identify risks and avoid rebuilding the vulnerabilities which contributed to the disaster.

This publication is aimed at middle-level managers and field supervisors. Most PADR users will be NGOs, or the relief and development departments of church denominations. With the latter, the methodology could easily be used with members of individual churches, who would subsequently develop and implement a risk reduction plan for themselves and their wider community. Other faith-based groups could also use the process.

Development workers may find PADR helpful when designing interventions in disaster-prone areas. The methodology could help managers to design projects in such as way as to minimise the impact of hazards. PADR is one of a number of tools available to development and humanitarian workers. Those concerned with disaster risk assessment were collected by the ProVention Consortium, and can be found on the website www.preventionweb.net

Risk reduction, climate change and environmental degradation

Most disasters are climate-related. It follows, therefore, that more extreme weather-related events as a result of climate change will mean more disasters, and a greater need for effective **disaster risk reduction** (DRR).

Section 2.7 considers the relationship between DRR and **climate change adaptation** (CCA) in more detail. DRR addresses rapid-onset and slow-onset disasters (although more frequently it focuses on sudden shocks), while CCA focuses on gradual, progressive change. Environmental degradation is also happening. Adaptation to changes caused by environmental degradation, termed **environmental degradation adaptation** (EDA), is also required. It is not always helpful or necessary to make distinctions between shocks caused by climate change, environmental degradation or some form of natural hazard. For future survival, communities will have to adapt to all three. PADR will also help practitioners in CCA and those working on environmental issues to explore the changing risk factors at community level.

Christian perspectives on disasters

Tearfund is a faith-based agency committed to working in and through groups of local Christians, where such groups exist. In most cases, these groups are churches within larger communities which share the same disaster risks. Unlike external agencies, the church is part of the affected community when a hazard strikes, and has a role in immediately helping that community to cope with and recover from the disaster. Its long-term presence also creates opportunities for it to engage in measures to prepare for disaster or reduce hazard impact. Through its partners, Tearfund seeks to build the capacity of local churches, to make them more effective in disaster-prone areas.

Recognising that many readers will approach this topic from a Christian perspective, this section considers what the Bible says about disasters and specifically how Christians can respond to them. The text is not intended as a full study on the theology of disasters, as scholars hold differing (and sometimes complex) views. It is offered simply as an introduction to the topic and to stimulate further thinking.

1.1   Understanding disasters

The Bible records many disasters of various types. Sometimes it gives us an explanation of why they happened, and sometimes it does not. In this section, we look at a few examples of Bible passages which include disaster.

Disaster as a consequence of broken relationships

Many disasters mentioned in the Bible do not appear to have happened for a specific reason. They occurred as a result of the geology, weather patterns and natural forces at work in the created world, although these may have changed since the earlier days of the Old Testament.

In Genesis 1, we read that God created a good world, but as a result of human disobedience it did not remain in a perfect state. In Genesis 3 we see that people of that era turned their backs on God and chose to live their own way. The relationships between people and God, between different people and between people and creation were all broken.

Disasters are often made worse by human behaviour. People have become more vulnerable as a result of their own actions and those of other people: inequality, injustice, selfishness and greed all increase the human suffering which results from natural events.

Christians can be affected by disasters as much as anyone else. Christians get sick and die, they may be robbed and raped, they experience accidents and they or their loved ones may be killed by natural hazards. Christians have the hope of the kingdom of heaven, where there will be no more death or suffering, but until that time they live in the world and therefore suffer

the consequences of human disobedience along with the rest of creation. This does not mean a passive acceptance of suffering as unavoidable: Christians can and should speak out for a more responsible attitude to creation, and for changes to the injustices and inequities which contribute to disaster.

Disasters for specific reasons

The Bible gives some examples of disasters that happen for a specific reason, where the timing, location and intensity of natural events appear to be divinely controlled. For example, the flood in Genesis 6-8 is described as a direct and universal judgment on human beings because of their persistent and deliberate disregard of God's moral codes. After the flood, God promised not to bring such a universal disaster on the whole of creation again. This does not mean the end of natural disasters, but it does indicate that they will be more limited in their impact.

Deuteronomy 28:15-68 is one example of God warning his people of disastrous consequences if they continue in disobedience. Drought, disease, dust storms and military defeat will come upon the Israelites if they continue to turn away from their God. In the book of Jonah we read that God did not destroy the city of Nineveh, because after hearing Jonah's prophecy the people showed remorse and abandoned evil practices.

The Bible tells us that disasters will continue until the time when Jesus comes to this earth again, a mission which will bring full restoration of relationships between people, God and the environment. In Matthew 24:4-8 (see also Mark 13:5-8, Luke 21:8-11) Jesus says that famines, earthquakes and war will characterise the time between his first and second coming.

1.2   Human influences on disasters

Although we often use the term 'natural' to describe disasters, there are many human factors that contribute to them. For example, a flood may be seen as a natural occurrence, but its severity may be increased by deforestation in upstream areas. The world was created as a place where humans could live in balance with the earth, but the irresponsible exploitation of its natural resources can disturb this balance and upset delicate natural systems.

As indicated above, injustice in our societies means that poor people suffer much more than rich people from the same hazard. For example, in countries with a strong class system, the richer landowning classes may prevent poor people from gaining access to high land during floods. Rich people are also better able to protect themselves from hazards and have more coping mechanisms to enable them to recover quickly. In contrast, poorer people have fewer resources and less resilience.

The story of Ruth in the Old Testament is an example of how a rich man, Boaz, provides for the poorer people in the community by not being too greedy or selfish with his land. He allows the landless people, including Ruth, to glean the leftover barley from the fields after his workers have gathered the harvest (Ruth 2:2-18). This was common practice in that time, to ensure that those without land still had a harvest to gather, so that they could have food to eat (see Leviticus 19:9-10).

1.3   Christians as God's stewards of creation

In the book of Genesis, we learn that God gives humans the job of ruling over creation (Genesis 1:28-30) and later puts Adam in the Garden of Eden 'to work it and take care of it' (Genesis 2:15). We are responsible for the creation that God has given us, so we must not waste it or exploit it to destruction. In the Old Testament, God gives instructions to his people to ensure that they look after the land. For example, every seven years the land was not to be planted (Leviticus 25:3-5), which would have protected its productivity in the long term. Sadly, human greed and selfishness means we are often more concerned about increasing our own wealth than with caring for creation.

Loving our neighbour also involves caring for creation, as the impact of irresponsible exploitation of the earth's natural resources often has serious consequences for our poorest neighbours. For example, the pollution produced mainly by industrialised countries is causing changes to the earth's climate – changes which have a more severe impact on countries with a higher level of poverty. As the seasons become more unpredictable and rains more unreliable, it will become more difficult for farmers to grow crops. Christians have a duty to examine their own lifestyle and to minimise the negative consequences it may have for others.

1.4   A Christian response to disasters

When disaster happens, it can be difficult to see things from God's perspective. We may not be able to identify why the disaster has happened, but we should always be ready to respond with love and compassion. For example, we should:

■ trust that God is still a God of love and compassion, that he experiences sorrow for disaster victims and that he has power to bring good out of bad situations. Our attitude to disaster may influence our survival (see Bible study 1).

■ find ways to help those affected by the disaster, using the gifts and skills God has given us (see Bible studies 2, 3 and 6).

■ explore opportunities to reduce unnecessary suffering in the future. Often there is little we can do to stop hazards, but we can increase people's preparedness and capacity to cope with them (see Bible study 5). This may involve challenging unequal or broken relationships and upholding biblical values of compassion, equity and justice (see Bible study 4).

■ look at ourselves and assess our own relationship with God and the environment. We should look carefully at how we as individuals, our churches or our nations may have contributed in some way to this disaster, for example, by causing environmental damage (see Section 1.3), and seek to avoid similar mistakes in the future.

The church is well placed both to respond with compassion and practical help in times of disaster and to take action to reduce people's vulnerability to hazards. This is because the church exists at grassroots level and its members have a wide variety of skills and resources. Christian relief agencies should work closely with the local church, because the local church can sustain the work when the relief agency moves on.[5]

5   Crooks B, Mouradian J (2011) *Disasters and the local church*; Bulmer A, Hansford R (2009) *The local church and its engagement with disasters*

BIBLE STUDY 1

Joy in the face of disasters

We may have no control over many types of so-called 'natural' hazards, but we can control our response to those events. Habakkuk 1 and 2 describe a conversation between the prophet and God about the future of the nation of Judah.

■ **Read Habakkuk 3:1-2**

• *What do we learn about God's character?*

• *How should this inform the way we pray in difficult situations?*

■ **Read Habakkuk 3:16-18**

• *What is Habakkuk's reaction to the approaching disaster?*

– *Why is Habakkuk fearful?*

– *Yet why does he 'wait patiently'?*

– *What does it mean to 'rejoice in the Lord'? What is the relationship between this and God's power as displayed in verses 3-15?*

• *How do we relate to Habakkuk's positive view in difficult times?*

• *What can we learn from this passage?*

• *Do we find it easy to 'rejoice in the Lord' and rely on him during difficult times? How can we encourage each other to do so?*

BIBLE STUDY 2

Serving our communities

■ Christians are called by God to serve and bless those around them. Look at the following Bible passages:

Mark 6:35-44   **Acts 2:42-47**
Luke 10:25-38   **James 2:14-17**
John 13:1-17   **1 John 3:16-18**

• *What are Christians called to do in their communities?*

• *Why are they called to do these things?*

• *What activities might this involve in relation to disasters?*

• *What is the correct way for people to treat God's creation? – for clues, see* **Genesis 2:15, Exodus 23:10-11** *and* **Psalm 24:1**.

■ Look at **Mark 12:28-31; 1 John 4:10-21** and **Matthew 5:43-45**

• *How does the Christian motivation to help those in need differ from the motivation of secular humanitarian agencies?*

BIBLE STUDY 3

The church in Antioch takes action

■ **Read Acts 11:27-30**. A famine was predicted by prophecy, and the church in Antioch decided to provide help for the Christians in Judea.

• *How did the church respond to the famine?*

• *What can we learn from the Antioch church's example of the famine relief it provided?*

• *Is there anything we can do now to prepare for any future disasters here or elsewhere?*

BIBLE STUDY 4

God of justice and mercy

■ **Read Micah 6:1-8**. The writer speculates on how God is to be pleased and considers the value of burnt offerings and sacrifices. The reply is simple and clear – that God's basic requirement is none of these things. Instead of sacrifice, God requires his people to act with justice, mercy and humility. Verse 8 says:

*He has shown all you people what is good.
And what does the Lord require of you?
To act justly and to love mercy and to walk
humbly with your God.*

This verse motivates us to show compassion after a disaster has happened and to make efforts to stop disasters happening by pursuing justice.

Disasters are often made worse by greed, inequality and exploitation. Christians can start advocacy projects which challenge these unjust relationships and make people less vulnerable to hazards.

Questions

- *What issues of injustice contribute to people's suffering in times of disaster in your area?*

- *What advocacy initiatives could be developed to help bring greater justice?*

- *God calls us to show compassion for those who are suffering. We should be merciful towards people regardless of their ethnicity, religion, sex, age or ability, remembering that all people are equally valuable to God.*

BIBLE STUDY 5

Noah – lessons in preparedness

■ **Genesis 6:5-8:22**. The story of an extensive flood is found in the Bible and in other religious and cultural traditions. According to Genesis, 40 days of rain flooded the land to a depth of seven metres. The flood lasted for 150 days. The human population and land animals were all destroyed, except for those with Noah in his boat.

■ **Read Genesis 6:5-7**. The Bible describes the flood as God's punishment of bad human behaviour.

- *Do people today sometimes hold this view of disasters?*

- *Taking account of other Bible teaching, is there any justification for this view?*

■ **Read Genesis 6:11-17**. Noah was warned by God that a flood was going to happen. God also gave Noah precise instructions about building a large, waterproof boat, described as an ark.

- *What warnings do we get that disaster is coming?*

- *What traditional knowledge or signs do people use to predict disaster?*

■ **Read Genesis 6:18-22 and 7:1-4**. God gave other instructions to Noah about the birds and animals and food for them.

- *How did this prepare for the period after the floods had gone down?*

- *What are the things we most need to keep safe during times of disaster?*

■ **Read Genesis 8:3-5 and 8:13-19**. When the flood water went down, the ark rested on a hill and Noah and his family were able to make a fresh start, living on higher land.

- *What opportunities do disasters bring for a fresh start and reduced risks?*

BIBLE STUDY 6

Joseph – the right person in the right place

In ancient Egypt, God gave the king a dream about the future. Joseph, a Hebrew prisoner at that time, was called to explain the meaning of the dream. He explained that there would be seven years of good harvest followed by seven years of crop failure. The king was impressed by the wisdom God had given Joseph and appointed him as 'Prime Minister' to save Egypt from starvation.

■ **Read Genesis 41:25-32**. God warned the Egyptians about the approaching famine through dreams.

• *What warnings do we receive about approaching drought?*

■ **Read Genesis 41:33-36 and 46-49**. Joseph developed a strategy to help the country survive during the seven years of bad harvest.

• *What were the main features of his famine preparedness plan?*

• *How can people today prepare for times of drought?*

■ **Read Genesis 39:2-6 and 21-23**. Joseph had displayed good character earlier in life, when in charge of Potiphar's household and when unjustly held in prison.

• *What particular qualities, found in Joseph, made him an ideal person to lead the country's famine prevention programme?*

• *What makes a good leader today in times of disaster?*

■ **Read Genesis 50:19-21**. Joseph's wider family came to Egypt for food when the famine affected their homeland.

• *How did God use Joseph to fulfil his bigger plans?*

REFLECTION

Disasters often raise questions about God and the meaning of life. People ask questions such as 'Why has this happened?', 'Is God punishing us?', 'Is there a loving God?' and 'How can God deliver us from this suffering?'

God often uses such events in people's lives to change hearts, minds and lives. They are also opportunities for Christians to show God's love by providing spiritual, social, psychological and physical support (John 9:1-5 and 35-38).

■ Should disasters change the way we carry out our work? Why?

■ How can we avoid taking advantage of people's vulnerability?

■ Should we hide the fact that we are Christians when we are distributing aid?

AID FOR ALL

The Red Cross Code of Conduct[6] says that aid should be provided for everyone according to need, irrespective of their ethnic identity, political or religious views.

■ How can Christian agencies and churches comply with this code, given a natural tendency to prioritise aid to fellow believers? (Matthew 5:43-48, Romans 12:20, Galatians 6:10.)

■ Is this consistent with a Christian approach?

Sharing scarce resources with others across religious, social or ethnic barriers can do much to improve relationships between different groups. Acts of kindness are rarely forgotten.

6 Full title: The Code of Conduct for The International Red Cross and Red Crescent Movement and NGOs in Disaster Relief

Understanding risk reduction – the theory

Before an effective community-based disaster risk management plan can be developed, we need to understand the terminology and conceptual models which lie behind this approach. Many terms are used in this book, each with its own meaning in DRR. The practical ways of reducing risk can only be developed if the causes of those risks have been understood. This section will introduce the following:

- Terms and definitions
- The Disaster Cycle
- The Disaster Crunch Model
- The Release Model
- The Hyogo Framework
- Disasters and development
- Disaster risk, climate change and environmental degradation

2.1   Terms and definitions

A full set of terms and definitions appears later in this publication (see Glossary). However, as a starting point, 11 definitions are given below to aid understanding of how these terms are used in a DRR context.

CAPACITIES	Strengths or resources (present in individuals, households and communities) which increase ability to prepare for, cope with and recover from a hazardous event.
CLIMATE CHANGE ADAPTATION (CCA)	CCA is in practice very similar to DRR, and consists of actions taken to increase resilience to weather-related hazards (made worse by climate change).
DISASTER	The result of a hazard's impact on a vulnerable community, causing damage to life, assets or livelihoods in a way which exceeds the community's capacity to cope.
DISASTER RISK REDUCTION	Measures taken to reduce losses from a disaster, ie reducing exposure to hazards, reducing vulnerability and increasing capacity.
EMERGENCY RESPONSE	A set of activities implemented soon after a disaster, designed to save lives, reduce suffering and promote speedy recovery, building on the remaining capacities of the community.
HAZARD	An extreme event or occurrence which has the potential to cause injury to life and damage to property and the environment.
MITIGATION	Measures taken in advance of a disaster, aimed at reducing the adverse impact of the hazard on people, property and the environment.

PREPAREDNESS   Activities which increase people's ability to predict, prepare for, respond to and recover from the effects of a hazard.

REHABILITATION   Rebuilding of housing, livelihoods and social structures damaged by a disaster, ideally to a standard which will resist the impact of a similar hazard in future.

RISK   The probability of something negative happening in the future which will cause suffering, harm and loss.

VULNERABILITY   A condition or set of conditions which reduces people's ability to prepare for, withstand or respond to a particular hazard.

A more complete set of definitions and terms can be found in the UN International Strategy for Disaster Reduction (UNISDR) document *Terminology on disaster risk reduction* (2009).

2.2   The Disaster Cycle

The Disaster Cycle is a widely used model to show the sequence of activities which often follow a natural or man-made disaster. It recognises that disasters tend to recur in the same place, with a 'return period' of perhaps a few weeks, or maybe 50 to 100 years, depending on the nature of the hazard. With the advance of climate change, certain types of weather-related disaster are likely to occur more frequently and more intensely than in the past.

In its simplest form, the cycle can be expressed as follows:
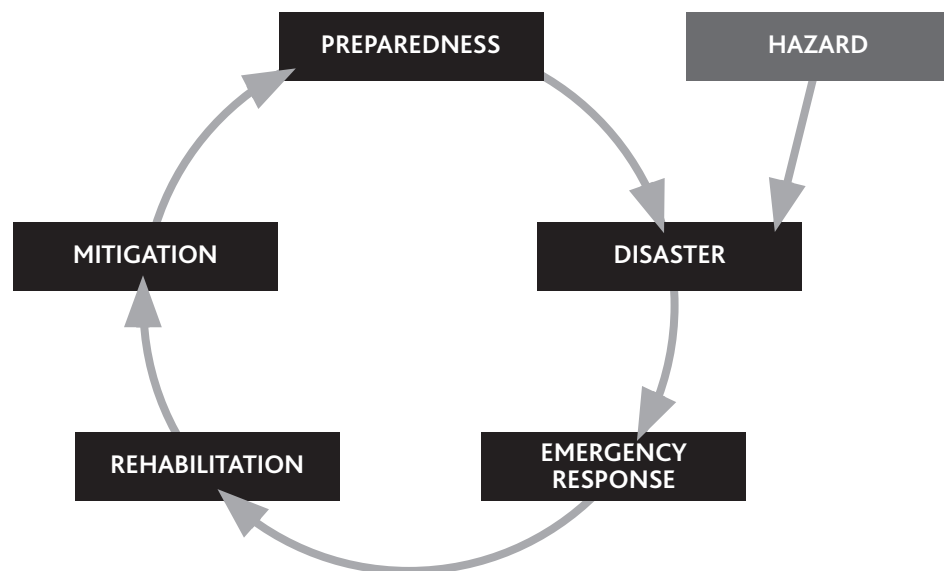
EMERGENCY RESPONSE PHASE This contains activities designed to save and preserve the lives of survivors, eg search and rescue, medical care, temporary shelter, emergency food rations. Needs are particularly acute during the first 48 hours after a rapid-onset disaster; during this time, many survivors may die if not given the assistance they require.

REHABILITATION This phase is sometimes divided into early and later recovery, and includes the restoration of housing, livelihoods, social systems and infrastructure. Activities such as

restoring water supply, rebuilding schools or re-establishing medical services easily merge into development, as replacements are generally better than the ones destroyed.

MITIGATION AND PREPAREDNESS are forward-looking, pre-disaster activities. They assume a future recurrence of the hazard and seek to reduce the scale of suffering next time. Mitigation activities might include planting alternative crops, building stronger houses or improving water supply. Preparedness might include contingency planning, warning systems or stockpiling some emergency goods. (For more examples, see Appendix B, page 92.)

RISK REDUCTION AND THE DISASTER CYCLE The main disadvantage of the Disaster Cycle is that it suggests a linear, chronological sequence of activities, with mitigation and preparedness always following rehabilitation. In practice, future risk reduction should be integrated into all parts of the cycle, beginning with the emergency response. If risk reduction is delayed until later (ie mitigation and preparedness), then opportunities for reducing future risk may be lost and the vulnerabilities which existed before the disaster may already have been rebuilt. Good DRR will break the cycle by empowering the community to cope with future hazards.

Examples of risk reduction in emergency response and rehabilitation include the following: (*activities marked with an asterisk* can also be described as CCA measures.*)

■ **Relief distributions** Men and women in the community identify needs and solutions; use of surviving capacities and social structures.

■ **Cash-for-work (CFW) or food-for-work (FFW) projects** These activities can be used not just to clear up debris but also to rebuild embankments,* dig flood diversion or irrigation channels* or construct small cross-dams;* community participation in selection and supervision of CFW/FFW activities is essential. Cash distributions are being used more frequently in extreme situations, with the proviso that care is taken to explain to beneficiaries that the cash is a 'one-off' intervention. However, this may still encourage dependency and a creative opportunity to reduce further risk may be missed.

■ **Reconstructing houses** Careful selection of safe sites after risk assessments; adopting hazard-resistant designs,* materials* and orientation* of houses.

■ **Restoring livelihoods** Consideration of new, less disaster-prone livelihoods,* and how to make them 'disaster-proof'; introduction of new crops* and/or livestock types.*

■ **Ensuring water supply** Careful attention to location* and design* of hand-pumps, ensuring they are above flood levels; ensuring water points and pipes can resist flash flood or earthquake damage where relevant.

■ **Provision of drought- or flood-resistant seeds* for planting** These may be particular varieties of an existing crop, or an alternative crop which can cope better with conditions of water shortage or water excess.

The PADR methodology can be incorporated into the recovery process, usually at the end of the emergency response phase, so that the rehabilitation activities can be based on the PADR findings and included in action plans.

PADR can also be used as part of pre-disaster planning in areas where no disaster has occurred for a while (eg earthquake zones). This is sometimes difficult, as the community's memory of a disaster will be weaker if 50 years or more have passed since the last big earthquake.

2.3 The Disaster Crunch Model

Disasters are not random or isolated events. They are usually the result of a natural or man-made hazard impacting a vulnerable population. This diagram shows how hazard and vulnerability combine to squeeze or 'crunch' a population, causing a disaster.

A **hazard** (defined on page 15) may be a natural phenomenon, such as an earthquake, a drought or a cyclone, or it may be the result of human activity, such as conflict or an industrial accident. Human activity often influences the intensity of natural hazards. For example, cutting trees may locally exacerbate the duration and impact of a drought. Climate change is also increasing the frequency and severity of extreme weather-related hazards, which now affect wider areas.

A **vulnerability** (defined on page 16) is usually a long-term weakness in some aspect of community life, for example, housing, agriculture or water supply. When a hazard impacts a vulnerable community, there is likely to be a disaster. The size of the disaster will be determined by the strength of the hazard and the degree of vulnerability.

Consider the example of an earthquake. If a strong earth tremor occurs in a location where houses are of weak, traditional design, then damage and loss of life will be great. The weak houses create vulnerability, which means a strong hazard (the earthquake) will cause disaster.

In contrast, if the same earthquake occurs in a place with earthquake-resistant housing, the vulnerability level is much lower and disaster may be avoided.

There is evidence that climate change is increasing the vulnerability of poor people, as well as increasing the intensity of some hazards. For example, rural farmers who lose their land to rising sea level may migrate to highly vulnerable urban slums. In drought areas, failure of traditional food crops and consequent food shortages are becoming increasingly common.

REFLECTION

- **What hazards, of natural and human origin, occur in your country?**
- **Do these hazards result in disaster for some people or some areas but have little impact on others?**
- **Who are the most vulnerable – according to age, gender, ethnicity, education or livelihood – in your communities?**

Elements at risk

Human life has many different parts or 'elements', eg buildings, family networks, livelihoods and available natural resources. If these elements are in danger of being harmed by a hazard, they are known as 'elements at risk'. These fall into five categories:

■ Individual (male/female)

■ Social (including spiritual)

■ Natural

■ Physical (including constructed)

■ Economic

They are considered in more detail in Section 6.

Capacities

A community may have weaknesses, referred to as vulnerabilities, but it will also have strengths called capacities. These are found at community, family and individual level. Capacities create an ability to prepare for, respond to and recover from the impact of a hazard, reducing the damage and losses.

We can add capacity to the Disaster Crunch Model, as an arrow in the opposite direction, because capacities help to reduce pressure on the affected population:
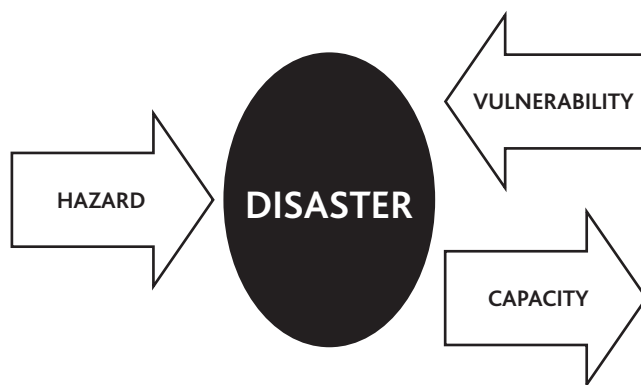
Like vulnerabilities, capacities can vary greatly from country to country, from place to place (within a country) and from family to family. People with few capacities, such as the very poor, the landless or those from minority ethnic or religious groups, and all too frequently women and children, are likely to suffer more.

Capacities can also be found in the five different categories identified under 'Elements at risk'.

Impacts, vulnerabilities and capacities linked with common hazards

HAZARD TYPE	IMPACT	VULNERABILITY	CAPACITY
Flood	Women/children die	Poor swimmers	Ability to swim
	Houses destroyed	Weakly built houses	Better building designs
	Crop losses	Fields in low-lying areas; no embankments	Flood-resistant crops or dry-season crop options
	Animals drowned	No safe higher land	Safe refuge areas
Drought	Health problems	Lack of clean water	Year-round hand-pump
	Crop losses	No irrigation system	Drought-resistant varieties
	Animals die	No grazing land available	Fodder storage
Cyclone	Human deaths	Lack of warning or preparation	Local contingency plan
	Houses destroyed	Weak house construction	Strong house design
	Crop losses	No barrier to tidal surge	Good embankment
Earthquake	Human deaths	Lack of knowledge	Good awareness about earthquakes
	Houses destroyed	Weak house construction	Seismic resistance in house design
	Livelihoods stopped	Dependence on one livelihood	Several livelihoods

Dynamic pressures – structures and processes

Wider factors affect the vulnerabilities and capacities of a community. These factors include powerful people and social structures, and the processes through which they influence the community.
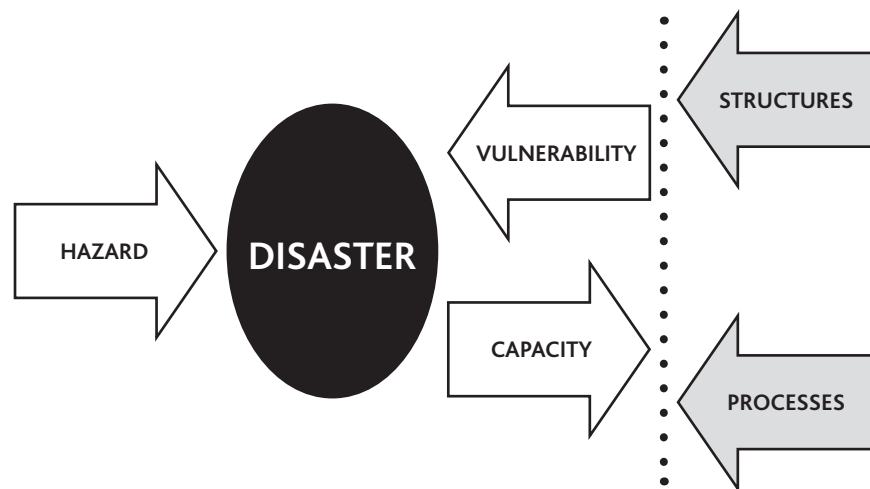
Structures can include:

- traditional leadership bodies (eg village elders)
- religious groups (eg church or mosque committee)
- government departments (eg for health or agriculture)
- businesses (eg a sugar plantation or mining company)
- powerful individuals (eg a wealthy landowner)

Each of these structures has policies or implements activities which affect the people in the community, making them more or less vulnerable to hazards. Processes can be positive or negative. Here are some examples of **positive** and **negative** processes associated with the commonly found traditional leadership system of village elders and for a commercial flower farm:

STRUCTURE	NEGATIVE PROCESS – INCREASING VULNERABILITY	POSITIVE PROCESS – REDUCING VULNERABILITY
Village elders	The decisions of a male–dominated group may favour the men, and possibly overlook the priorities/needs of women. Elders may show bias, or may live outside the village and not provide leadership in a crisis.	Elders might include representatives from all sections of the community. They may recognise the needs and capacities of women, settle disputes impartially, promote cooperation and provide clear leadership in times of disaster.
Flower farm	Heavy demand for water may reduce availability of water for poor farmers nearby.	It may provide jobs and wages. It brings foreign currency into the country.

REFLECTION

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

Underlying causes

The structures and processes considered above often have deeper roots, known as 'underlying causes'. These causes are frequently deeply embedded in culture, custom or belief, or they operate from power bases many miles away from the community concerned. They fall into four main categories:
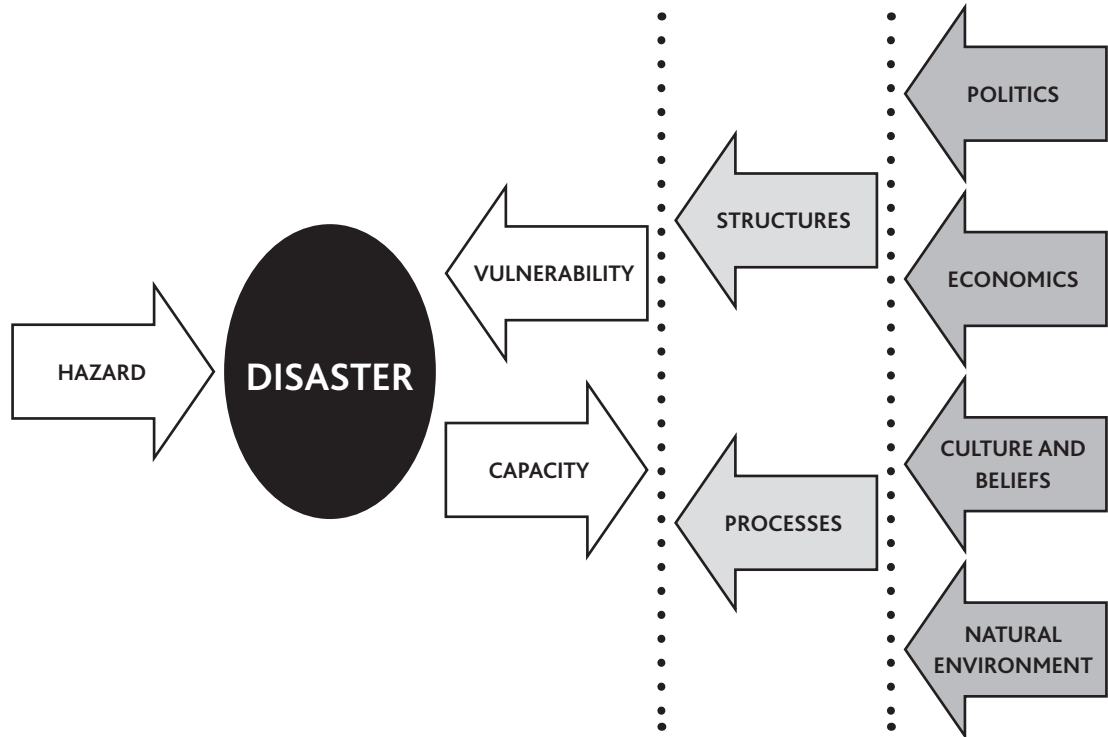
POLITICS The national government may provide resources to a particular district or withhold them, often for political reasons (eg the voting preferences of that district's population!). A government's motivation for action is often a desire to retain power at the next election.

ECONOMICS National government has to make decisions on spending priorities, for example health and agricultural services may be underfunded if more spending is directed towards defence or debt repayment. Also, the prices of internationally traded commodities such as coffee, sugar or cotton will influence the price farmers receive for their cash crops.

CULTURE AND BELIEFS A culture which attributes disaster to the bad behaviour of spirits may not be willing to embrace measures to reduce disaster risk. Culture also influences farming practices: those who traditionally adopt slash-and-burn agriculture will increase their vulnerability to both drought and flood, as the loss of trees affects local climate and increases runoff of rainwater. A male-dominated culture may place a low value on women, which will increase their vulnerability. For example, when evacuation is urgently required, women may be unable to leave their house without a male relative to escort them.

NATURAL ENVIRONMENT There are aspects of climate, soil type and geography which affect vulnerability. For example, steep hillsides will influence what type of farming practices are used, and increase the likelihood of landslides. Human activity is constantly degrading the natural environment, making it more fragile and less able to resist extreme weather.

2.4   The Release Model

In order to reduce disaster risk, the directions of the arrows in the Disaster Crunch Model need to be reversed, signifying the release of the pressure that previously caused a disaster. The resulting picture might look like this:
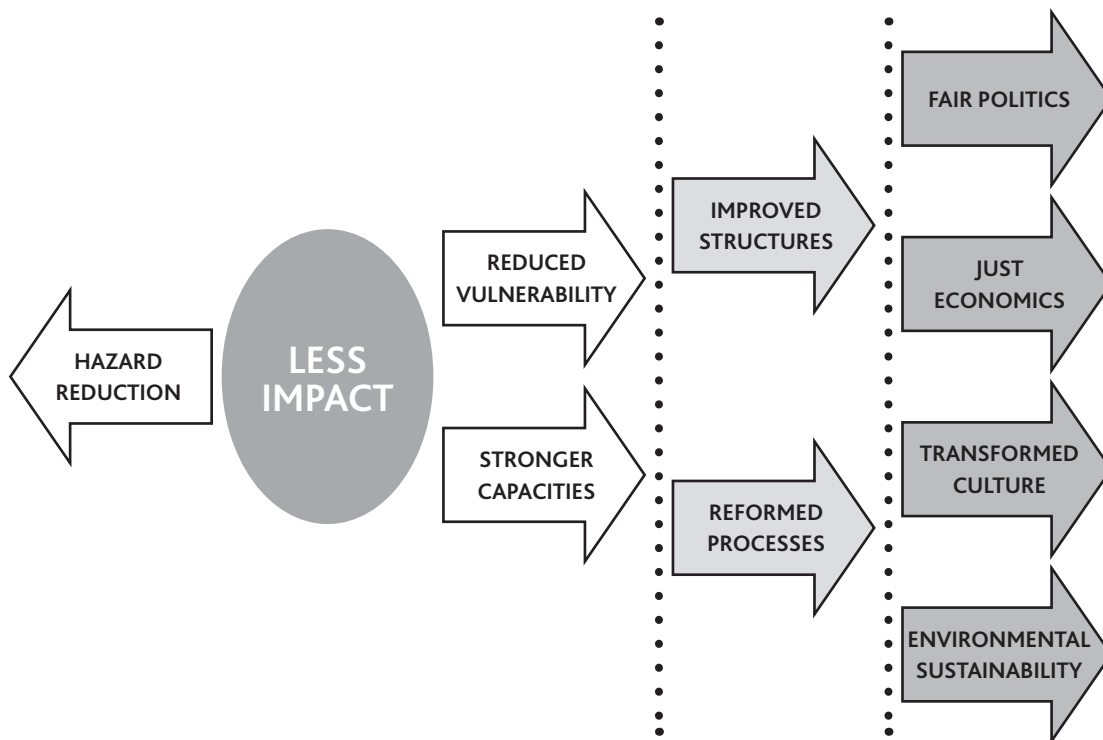
Changing the direction of the arrows is not always easy and requires activities at local, national and international levels. Some examples are given below.

HAZARD REDUCTION There are ways of reducing the occurrence, frequency or strength of some hazards. For example, construction of embankments or channel dredging can reduce flooding. Trees can be planted to offset drought, or to stabilise soils which are liable to being eroded. Advocacy can be used to influence politicians to do more to counter climate change and its effect on weather-related hazards.

REDUCED HAZARD IMPACT Some of the 'elements at risk' can perhaps be strengthened to reduce disaster risk. For example, tube-well pipes can be raised to keep hand-pumps free of flood water, extra open-well rings can be added and sealed, houses can be strengthened or built on stilts. (More detailed lists of suitable interventions are in Appendix B on page 92.)

REDUCED VULNERABILITY A risk assessment process will identify specific vulnerabilities, and measures can be taken to reduce them. For example, inadequate warning systems can be improved, poor farming practices can be changed or alternative livelihoods can be introduced. The most vulnerable groups of people should be targeted first.

STRONGER CAPACITIES Communities will always have some capacities which they use in times of disaster – for example, local knowledge of naturally occurring wild foods (for times of food crisis), or banana trees (for boats). If the existing capacities can be strengthened, the impact of hazards is reduced. New capacities can also be developed, for example, selecting and training volunteers, developing new skills or simply providing more boats.

IMPROVED STRUCTURES AND REFORMED PROCESSES Dynamic pressures can act in a positive or negative way (see Section 7.1). The PADR process should determine the negative ones – and action plans can then attempt to change them. For example, pressure from a farming community may increase the output of a government agricultural extension worker, or modify the harmful activity of a commercial flower farm (see Section 8.7).

UNDERLYING CAUSES Underlying causes are perhaps the hardest to change because they are often so deeply rooted. Advocacy with local or national government officials may bring increased government resources to an area. Teaching from the local pastor or other religious leader may help to change harmful superstitious beliefs. Advocacy at international level may reduce the debt burden or make some contribution towards preventing further climate change.

2.5   The Hyogo Framework for Action

The Hyogo Framework was a key document emerging from the UNISDR conference on reducing disaster risk, held in Japan in January 2005. It was accepted by 168 governments and has five key components:

The Hyogo
Framework for
Action 2005–2015

- Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.
- Identify, assess and monitor disaster risks – and enhance early warning systems.
- Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
- Reduce the underlying risk factors.
- Strengthen disaster preparedness for effective response at all levels.

The purpose of the framework is to describe the fivefold nature of the actions required to reduce the suffering associated with disasters. Action is required at all levels – from international cooperation on issues such as warning systems down to contingency planning at community and family level which enables people to respond to those warnings.

Progress on implementing the framework has been slow (as of 2011), but it has become a useful tool in planning DRR projects and a valuable asset for advocates, urging governments to give higher priority to risk-reducing activity.

2.6   Disasters and development

For much of the world's population, hazards are part of everyday life. Each time a person lights a fire to cook, there is the risk of injury to children or of the house catching fire. Where communities live on flood plains or volcanic slopes to benefit from fertile soils, there are risks associated with flooding or volcanic eruption. Risks become a part of life.

When designing new development projects, we must take note of these risks. For example, planning an agricultural programme on a flood plain without considering the impacts of flooding invites failure. Similarly, building houses and schools in a known earthquake zone without earthquake resistance is foolish. Development has to be appropriate, taking full account of the context, including the likely hazards.

Disasters sometimes reveal inappropriate development, because it becomes clear that a known hazard was not taken into account. Lessons can be learned. Why were people vulnerable? What

can be done to reduce that vulnerability? These questions often point to issues of wealth, power and the underlying values of the society – the issues considered in this publication as underlying causes of disaster.

Food crises are often the result of long-term failures in development, producing chronic food insecurity and extended slow-onset disaster. Good development and effective DRR are both needed if such crises are to be avoided in the future.

Any community that has successfully lived in a location for some time has already found ways of surviving the most common hazards. People often cope well with frequent hazards, but are less likely to plan well for hazards that happen less frequently. A developmental approach to disasters should seek to make maximum use of local knowledge, and to build on capacities developed over many generations.

2.7   Disaster risk, climate change and environmental degradation

Scientists agree that climate change is causing an increase in the frequency and severity of floods, droughts and storms, together with an increase in events associated with rising temperatures and sea levels. Climate change also describes slow but insidious change in living conditions (eg in temperatures, sea level and weather patterns). Such changes are potentially more harmful than the sudden-onset disasters, as they undermine traditional livelihoods, exacerbate food insecurity and create water shortages.

Climate change is better understood now than it was a few years ago, and projections are available for many countries (see www.climateonestop.net). Based on current experience and future projections, National Adaptation Programmes of Action have been drawn up by less developed countries, and many other countries have developed National Communications on Climate Change. Local adaptation projects are under way in some places, but many more will be needed. Climate change is already significantly affecting water supplies, health, land usage and most aspects of life. Livelihoods based on agriculture are particularly affected.

The UN advises that nine out of ten disasters are climate-related. It follows, therefore, that more extreme climatic events will lead to more disasters. DRR measures seek to reduce the level of vulnerability and to minimise the disruptive effects of hazards by building more resilient communities. As the magnitude of climate extremes increases, the need for effective and flexible DRR will become more acute.

CCA and DRR have much in common. Activities once termed DRR are now being called CCA. The floating vegetable gardens and rice seedbeds of Bangladesh are just one example. Piles of water hyacinth plants, enclosed by bamboo frames, are allowed to decompose and compress. Seeds are planted in these fertile beds, which float upwards in the frames if the area floods. It is a coping mechanism for an age-old problem, but even more necessary as those floods become more frequent and more severe.

Alongside climate change and increasing disaster risks, environmental degradation is also happening. Minerals are being exploited, trees are being felled at alarming speeds, animal and

plant species are being destroyed, air is being polluted and groundwater is being abstracted at unsustainable rates. This degradation of the environment is usually caused by human activity, but can be made worse by climate change. For example, tree cutting may increase soil erosion, exacerbated by increased rainfall, or more rain falling within a short time interval.

Adaptation to these changes is also taking place, and is termed **ecosystems based adaptation** (EBA) or **environmental degradation adaptation** (EDA). An example might be the creation of water diversion channels along the contour lines of slopes cleared of trees.

The Tearfund resource *Environmental assessment* has diagrams of three interlocking circles (pages 57–59), showing the interrelated impacts of natural hazards, climate change and environmental degradation. Suggested adaptation measures are shown and many of them are of relevance to all three phenomena.

Most people in vulnerable communities will not distinguish between DRR, CCA and EDA. They are all strategies for coping with environmental hazards that create risks for people, property, livelihoods, biodiversity and natural resources. It is not always helpful or necessary to make distinctions between shocks caused by climate change, environmental degradation or other hazards. It is much more important to understand the threat and its causes and to plan an appropriate response – to the hazards of today but also those that can be predicted in the future. The best approach is to build up characteristics which will help communities to cope with extreme events in the future, whatever their source (see Section 8.6).

Additional Tearfund publications

■ *CEDRA (Climate change and Environmental Degradation Risk and Adaptation assessment)* 2009

■ Roots 13 – *Environmental sustainability* 2009

■ *Environmental assessment* 2009

CEDRA looks specifically at climate change and how projected changes in a particular area may affect all types of projects being implemented in that locality. It also describes how to assess different adaptation options and to choose between them. The *Environmental assessment* tool looks at the potential impacts a single project may have on the environment and how to reduce those impacts.

Another useful publication on CCA and DRR is:
Linking climate change adaptation with disaster risk reduction (Tearfund and IDS, 2008)

On community resilience:
Characteristics of a disaster-resilient community, by John Twigg (2nd Edition, 2010)

REFLECTION

■ **How is climate change affecting the types of disaster and the frequency and intensity of disasters in your country?**

■ **What evidence do you see that environmental degradation is taking place in your country?**

■ **Is any action being taken to reduce degradation?**

Overview of PADR process

PADR is a methodology for use at community level. It involves active engagement, with the community, in a process to explore the risks they face and the factors contributing to those risks. This process of exploration is important, as the community begins to understand both its vulnerabilities and the capacities it possesses to prepare for and respond to disaster.

The end product of PADR is a risk reduction plan developed with the community and owned by the community. Implementation of that plan may need the support of an NGO, or the resources of local or national government, but the foundations should lie in the capacities found within the community itself, and within its families.

PADR is not a training course for the community, although NGO staff may have to be trained to use the methodology. PADR is not a needs assessment exercise, because 'needs' are those things required to preserve life and health in the present moment. PADR deals with the deeper factors which cause vulnerability and make people and assets more at risk from hazards. It also emphasises the capacities found within communities which increase their resilience to hazards.

3.1   Description of the methodology

PADR is based on the components of the Crunch Model described in Section 2.3. The Crunch Model describes how a hazard and vulnerabilities come together to create a disaster. Vulnerabilities are increased or reduced by the dynamic pressures (social structures and processes) at work in the community (Section 7.1). These pressures are influenced by underlying causes – a combination of political, economic, cultural, religious and environmental factors.

The Crunch Model also shows how the impact of a hazard is reduced by the capacities which a community possesses. Capacities enable individuals and families to prepare for, withstand and recover from the hazard impact.

The PADR methodology must therefore discover:

- the types of hazard facing a community – and information about those hazards
- the impact of these hazards on different aspects of community life
- the vulnerability factors which allow that impact to happen, and who in the community is most vulnerable
- the capacities which help the community (and families and individuals) to resist hazards
- the dynamic pressures which may either increase or reduce vulnerabilities and have an effect on local capacities
- the underlying causes, found in politics, economics, culture, beliefs and the environment, which influence the dynamic pressures.

When these factors have been explored and understood, appropriate activities can be developed with the community to reduce hazard impact, minimise the losses, reduce vulnerability and build up local capacities.

The PADR process is carried out by interaction with focus groups and by interviews with key individuals. Questionnaires are used, linked with participatory tools (Section 4.2).

3.2 Categories of analysis

PADR uses five categories of analysis. Together, these include all the different assets present in the community. An asset is a strength or an attribute used in everyday life that can improve well-being. The presence of an asset gives the family or community a capacity with which to cope with a hazard. The absence of an asset, or a restriction of access to it, may create a vulnerability to that hazard.

The methodology ensures that all aspects of life are included, and helps to avoid domination by the facilitator or by the special interests of powerful community members. For example, a facilitator with experience in social work may focus on social aspects of disaster impact, but he/she may ignore economic activities or natural resources. Similarly, an engineer in the community may want to concentrate discussion on roads, bridges or flood defences, but not pay adequate attention to indigenous skills or the social impacts of disasters.

The five categories described here are based on the five types of capital (or assets) described in the Sustainable Livelihoods Framework.[7] It is best to avoid lengthy arguments about where a particular asset belongs within these categories. It is possible for an asset to be placed within more than one category. Take for example the local school, which could fit into three places:

- The school has a building – a physical asset.
- The school provides a place where children, parents and teachers come together – it serves a social function.
- The school is a place of learning, where new skills and knowledge are gained – it can therefore also build up human capacity.

The most important thing is to ensure that no aspect of life is forgotten, because hazards affect all these areas in different ways.

INDIVIDUAL (MALE / FEMALE) ASSETS

Individual assets include people's skills, knowledge, literacy, experience, training, ability to work and physical health. It is essential to recognise gender throughout the analysis, as vulnerabilities and capacities for men and women will be different.

SOCIAL ASSETS

Social assets consist of relationships and networks that exist within the community and with people outside. They include the extended family, particularly those members living outside the area affected by the disaster, and the various groups, clubs and cooperatives which exist in the community. Membership of networks can expand an individual's access to wider sources of information (eg through a farmer's cooperative) and make more resources available. Cooperating with others increases everyone's ability to cope with the shocks of disaster.

7 DFID *Sustainable Livelihoods Guidance Sheets*

Physical asset: Bridges, like this one in the Brahmaputra valley, Assam, India, provide an important means of escape from rising flood waters.

NATURAL ASSETS Natural assets are the natural resources available to the community, such as forests, rivers, grazing areas, wild fruits and minerals. Sometimes these assets appear to be available, but in practice, access to them is denied – because of conflict, land tenure, social divisions or cultural practice. Natural resources provide the raw materials for many livelihoods.

PADR also investigates trends in the quality and availability of natural assets, particularly changes which can be attributed to environmental degradation (eg erosion, tree cutting) or to climate change (eg less rain and lowering of the water table).

PHYSICAL ASSETS Physical assets include all structures which are man-made. The category includes basic infrastructure such as houses, roads, bridges, schools, hospitals, electricity cables, cross-dams and wells. Livelihood tools and agricultural equipment are also included, along with transport and communication.

As with the natural assets category, access to physical assets may be a critical issue: a cyclone shelter in theory is a powerful asset, but in practice, it may fill up quickly or allow access only to particular social groups.

ECONOMIC ASSETS Economic assets relate to household income, livelihoods and possessions that can be turned into money. For example, animals and jewellery are economic assets which can be traded or sold when the household needs cash in times of disaster. Salaries from jobs or casual earnings fit into this category, plus any remittances coming from overseas. Savings and the availability of credit are also important.

Questions of access and control are also present in this category. It is often the men who control the money – but in many cases they do not use it well. Those without the control, especially women, become more vulnerable as a result.

3.3   Scope of PADR

PADR is designed primarily to assess the risks associated with natural hazards, such as floods, droughts, earthquakes or wildfires. It works best in places where a hazard is well known and recurrent, like the river floods of Bangladesh or the droughts of northern Kenya.

It is also a good tool to use in areas where climate change is increasing the risk of weather-related disasters. PADR looks at the nature and impact of hazards in the past, and looks for trends (in frequency and intensity) which help predict hazards of the future. Community action plans can then take into account this changing disaster scenario.

PADR can also be used in areas where the main hazards are 'man-made', for example, slum communities facing fires or evictions, or villages living in the shadow of chemical factories or oil installations.

However, PADR has some limitations in situations where conflict is the predominant hazard and physical security the main concern of the population. It has sometimes been used in conflict areas (eg Sri Lanka), but 'hazard' has to be defined in terms of 'falling bombs' or 'landmines', and modifications made in some other aspects of the tool. There are other tools available for use in situations of open conflict (see Section 9.3).

PADR can be used successfully in areas where communities experience low-level, localised conflict on a less frequent basis. In such cases, the conflict may represent an additional vulnerability factor which denies people access to water, firewood or 'famine foods'. Such communities have a reduced capacity to cope with a natural hazard.

PADR can be a useful tool for uncovering vulnerabilities in areas where there is a high HIV infection rate. People living with HIV, and their families, are much more vulnerable to natural hazards. People living with HIV may be less mobile or less able to work in agriculture. The economic pressures on the family may be very great, as resources are spent on drugs and medical care. As a result, the family may have few capacities and be unable to withstand the additional stress of a flood, drought or another hazard.

3.4   Steps of PADR

PADR is a multi-step process, beginning with preparation of the team and community, and ending with the development and implementation of risk reduction plans. The five steps are:

Step 1   Preparation

Step 2   Hazard assessment

Step 3   Vulnerability and capacity assessment

Step 4   Dynamic pressures and underlying causes

Step 5   Risk reduction planning

STEP 1 PREPARATION

This includes the training and equipping of the facilitation team, and the work done in the community to prepare for the assessment.

The team need to know how to use the methodology and how to facilitate community focus groups for discussion. They also need some knowledge of participatory tools often used in community development and an understanding of possible actions which a community can take to reduce risks associated with the hazards of that area.

In the community, various logistical arrangements have to be made, involving liaison between staff and community leaders, such as the identification of community members to participate in the process. More details are in Section 4.

STEP 2 HAZARD ASSESSMENT

This step is mostly done in the community and includes the identification of main hazards and the intensity of those hazards. The assessment of trends is also important, as the frequency and severity of some disaster types is increasing. Secondary sources such as weather records or scientific data can provide valuable additional information.

Hazard assessment also determines the geographical area affected by the hazard, the season when the hazard is most likely to appear and any warning signs which precede its appearance. More details are found in Section 5.

A community map prepared during a PADR workshop in Afghanistan. Similar maps were developed in the community to assist with Steps 2, 3 and 5 of PADR (see page 35).

STEP 3   VULNERABILITY AND CAPACITY ASSESSMENT (VCA)

Vulnerabilities and capacities are assessed together through interaction with community focus groups, and by semi-structured interviews with key informants. Appropriate question sets should be prepared beforehand, to probe the five areas of community life – human, social, natural, physical and economic. The impact of the hazard on these five areas is also assessed.

As well as questions, participatory tools are practised beforehand and deployed in the focus groups to increase interest and participation. Visualising the community in different ways can greatly increase the community's understanding of both vulnerabilities and capacities. These tools can also help in developing appropriate actions for emergencies – for example, maps will show the safe areas and facilities available. VCA is covered in Section 6.

STEP 4   DYNAMIC PRESSURES AND UNDERLYING CAUSES

The specific dynamic pressures and underlying causes operating in a community can be quite difficult to determine: people who live within a culture do not always see the beliefs, values and processes going on within it. Social structures, and government policies and programmes, are perhaps easier to uncover.

Most of the information in this step comes from the key informants, often by probing or clarifying comments made in the focus groups. Pastors, school teachers and government officials are very useful sources of data. For more detail, see Section 7.

STEP 5   RISK REDUCTION PLANNING

The final result of the PADR process is a community-owned risk reduction plan based on the risks uncovered in Steps 2–4. Specific actions are identified, within a time-frame, which could reduce hazards, bring down vulnerabilities or increase capacities.

There are essentially three types of activities in the plan:

- those which the community can do using its own resources
- those which need the intervention of an NGO for knowledge or resources
- those which involve exerting pressure upon power holders to bring about change (ie advocacy).

The risk reduction plan requires leadership and the assignment of tasks to specific people in the community. It must also be monitored, reviewed and updated regularly. For further detail, see Section 8.

SECTION

4

Step 1 Preparation

Thorough preparation ensures that a community-level assessment of disaster risk (PADR) is as good as it can be. Preparation must be done with the assessment team and the target community.

4.1 Preparing the team

Ensure that all team members fully understand what they are doing and the purpose of the meetings with the community. Make sure that the team has sufficient time together to plan all aspects of the assessment before going to meet the community. Members should develop and practise group facilitation skills, with the aim of maximising community participation in the process.

Facilitation skills

The aim of the PADR process is to increase people's understanding of their hazards, vulnerabilities and capacities, and to enable them to develop appropriate solutions to improve their situation. Facilitators should avoid the temptation to extract information from local people and make decisions for them. They should focus instead on empowering the community to produce their own risk reduction plan. People can have very different perceptions of risk, depending on their sex, wealth, age, education, livelihood and position in society. Facilitators should have an open mind and accept these different views from the community, ensuring that all the views are heard, regardless of the facilitator's own opinion. Reaching a common, agreed view across a group can be difficult, but it is a key part of the process.

Local ownership of the process and the product should be encouraged. Follow these key principles, which will also help ensure the process runs smoothly:

- The purpose of PADR should be clearly explained, and the consent of the community obtained at the start.

- Try to reduce expectations that generous inputs from the NGO will appear as a result of PADR; the process is more about community self-help and less about material gifts, although these will sometimes be needed.

- The process should be carried out with respect, listening to group members and appreciating each contribution made.

- The process of assessment is as important as the product or outcome. Invest time in encouraging maximum participation from all sections of the community.

- Energisers or ice-breakers at the start of focus group meetings can help people to feel comfortable with the facilitators and with others from their community.

- Questions should be open-ended in order to encourage discussion. However, make sure that discussions do not stray from their purpose.

- Literacy should not be assumed. Participatory tools enable people who are not literate to participate in information gathering and analysis; hand-drawn pictures or locally taken photos can also be very helpful.

- Sensitive issues should be dealt with carefully and appropriately. Show sympathy and compassion if people are describing painful experiences from the past.

- Find out beforehand if there have been recent disputes in the community, especially over natural resources. Check the wording of the questions to ensure they will not revive a past conflict. It may be better not to discuss a disputed issue in the group, but to ask key informants instead.

Here are some more tips on good facilitation:

Top tips on group facilitation

DO	DON'T
allow time for introductions and explanations	teach
show respect for all views/opinions	rush through process at speed
watch, listen, learn and show interest	lecture
be sensitive to feelings and culture	criticise contributions
be prepared, but flexible	interrupt speakers
be creative	dominate discussions
show humour	look bored
be willing to allow community members to take the lead	ignore cultural norms
finish well, with thanks to everyone and agreement on the next step of process	laugh at people's ideas
	use mobile phones

Participation

PADR is based on a participatory approach, to ensure that all voices from the community are heard. The more vocal members of the community or the leaders often tend to dominate the group work. The team must ensure that every individual in the various groups is given opportunity to express their valuable opinion, which is eventually incorporated into the community disaster risk management plan. There are a few simple ways of achieving this – for example, if a few members dominate, thank them for their contribution but specifically ask quieter members for their contribution too. If all speak at once, introduce a stick (or other suitable object) into the discussion. This object is given to the speaker – who hands it on to the next speaker; only the person holding the stick may speak. The presence of a community leader may discourage other members of the group from expressing their opinions. One way to avoid this problem is to arrange a separate interview with the leader(s) in a different place.

4.2 Participatory tools

Several participatory tools are available for use in community discussions about disaster risk. The tools give an opportunity for more people to get involved and often lead to helpful conversations about solutions as well as about the problems. It is a good idea to use tools such as mapping, ranking and seasonal calendars with separate male and female groups, as their perception of risks and priorities may be different.

How to use participatory tools

The two following pages explain each tool in more detail, and include more tools which may also be useful

TOOL	WHICH PADR STEPS?	PURPOSE
Community mapping	Step 2: Hazard assessment Step 3: Vulnerability and capacity assessment Step 5: Risk management plans	To show buildings, structures and natural resources To show areas and resources affected by the hazard To show the capacities – things which are unaffected by the hazard To identify safe areas and define safe evacuation routes for contingency plans
Ranking	Step 2: Hazard assessment Step 3: Vulnerability and capacity assessment Step 5: Risk management plans	To determine which hazard or which impact of the hazard is of most significance to community To show which natural resources are most important To help people agree on which vulnerability is a priority and should be addressed first in planning
Timeline	Step 2: Hazard assessment	To show the history of local disaster events To identify any changes or trends in hazard type, frequency or intensity, giving clues for the future
Seasonal calendar	Step 2: Hazard assessment Step 3: Vulnerability and capacity assessment Step 5: Risk management plans	To show the specific times of year when hazards and livelihood activities occur, and which activities are most at risk To show the safer seasons of the year, which should be used to the full for agriculture and other livelihoods
Venn diagram	Step 3: Vulnerability and capacity assessment Step 5: Risk management plans	To give a visual representation of the various social groups, demonstrating their relative importance and relationships between them To identify under-used groups which have capacities To identify groups which may need to be influenced to bring about change to a structure or a process affecting the community (a dynamic pressure)
Transect walk	Step 3: Vulnerability and capacity assessment	To gather additional information about the capacities and vulnerabilities in the community

TIMELINE

This is used to gather information about disasters which have occurred in the past and to predict the possible disasters of the future, using visible trends. The height of the dotted line above the baseline shows how severe the hazard was.

SEVERITY OF HAZARD — HIGH / LOW

Earthquake
Houses damaged
One in 20 people killed

Severe drought
Wells dried up
Loss of livestock
Crop failure
People migrate to camps

Locust infestation
Crops destroyed

Drought

Drought

Flash flood

2005   2006   2007   2008   2009   2010   2011

YEAR
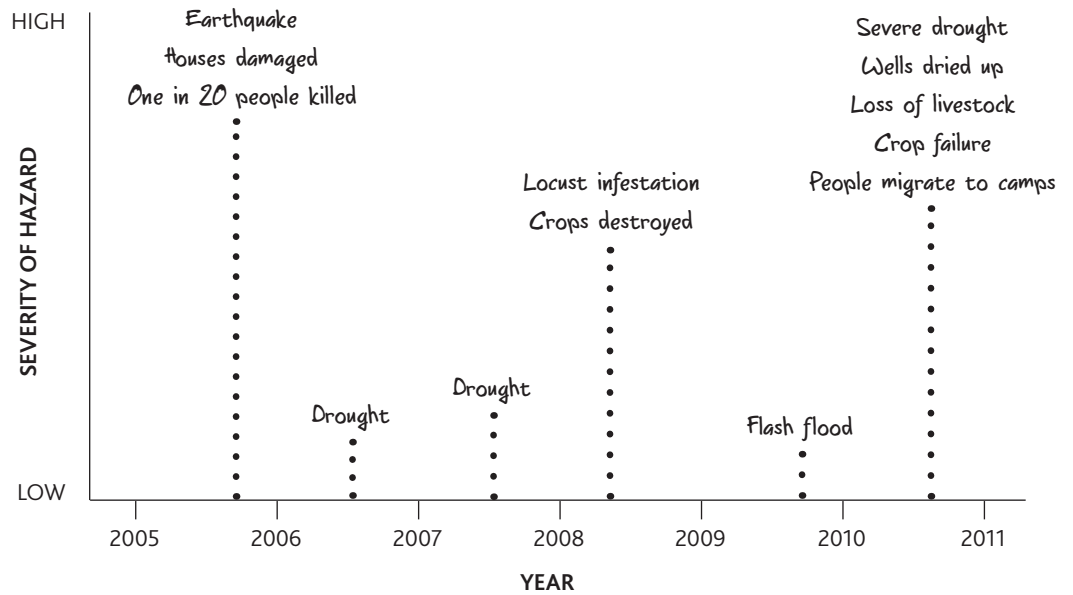
TRANSECT WALK

This is a planned walk through the area to observe different land uses, buildings, economic activities and natural resources. Ask questions and make notes. Seek permission before taking photographs.

FOLK SONGS, STORIES, POETRY

Ask the community if they have any traditional songs, stories, poems or sayings about disasters. These can reveal indigenous knowledge, beliefs and practices.

RANKING

Ranking is a tool used to choose which hazard, impact or intended activity is of highest priority to a group of people. Ranking allows every member of a group to express their own opinion. Each person's vote is equally important.

Ranking can be done by writing or drawing the choices onto separate pieces of paper or by drawing on the ground. Each individual is given six stones (or seeds or bottle caps) and has to allocate them according to their priority. They should put three stones on their first choice, two on their second and one on their third choice. In the picture below, group members have voted to determine which hazard has the biggest impact on them.

A variation of this method is to write or draw the choices onto four paper bags. Voting proceeds as before, placing stones inside the bag of choice. This is useful when you want the voting to be secret. Another method is to write or draw the choices onto cards, lay the cards out and ask the group to prioritise the cards by moving them around, putting the highest priority at the top.

FLOOD | EARTHQUAKE
FIRE | TSUNAMI
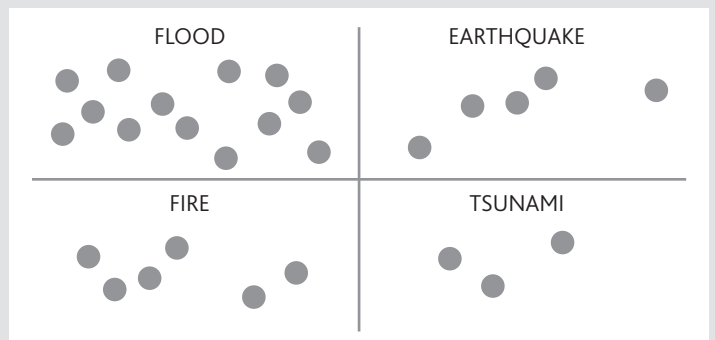
VENN DIAGRAM

This shows the social groups and organisations in the community, the relative size and influence of the groups and the relationships between them.

Chief

Traditional healers

Elders

School

Football team

Church

Development committee

Women's group

Clinic

Farmers' cooperative

Government Agriculture Department

Forestry department

Police post

DRAMA

Community members might be able to act out what happens during a disaster using drama or mime. Useful sketches for emphasising participation are available in other Tearfund resources and on tilz (for example 'Crossing the river' and 'Lighting the fire' from the PILLARS Guide *Mobilising the community*).

Map drawn by women in Banda Aceh.

Paul Venton / Tearfund

MAPPING

This involves drawing the main features and landmarks of the community as a map. The map should include houses, community facilities, roads, bridges and natural resources. Mark the area which is affected by hazards and the location of key resources in an emergency. Maps can be drawn on the ground with sticks, stones, leaves etc, or with chalk on a blackboard, or with marker pens on large sheets of paper.

SEASONAL CALENDAR

This shows when hazards occur and when livelihood activities and other significant events take place. It shows the activities which are most at risk and the 'safe' seasons. Use the local calendar months if possible.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hazard	Flood							▒	▒				
	Landslide								▒	▒			
	Malaria							▒	▒	▒			
Activities	Ploughing				▒	▒							
	Planting rice					▒	▒						
	Weeding					▒	▒	▒					
	Rice harvest									▒	▒		
	Vegetables	▒	▒	▒	▒								
	Migration	▒	▒	▒	▒								
	Handicrafts											▒	▒

4.3   Preparing for the focus group discussions and interviews

Focus group discussions are the most significant part of the PADR exercise, allowing the team to enter into a detailed discussion about local hazards, vulnerabilities and capacities. The process relies on a combination of questionnaires and participatory tools – see above. Focus groups should be arranged in advance, and made up of 12–15 people. At least two groups are needed (one male, one female), but in a larger, diverse community, other groups can be set up to allow minorities or marginalised groups to have a greater voice.

Possibilities include:

- elderly people
- young people and children
- livelihood groups
- existing committees or social groups such as women's savings and credit groups or male farmers' clubs
- minority ethnic or religious groups

These different groups will each have different perspectives on the community and different understandings of their hazards, vulnerabilities and capacities. Mixed groups are not a good idea, as those regarded as more senior or more powerful will dominate the discussions.

The facilitator and his/her team should prepare and fully understand the questions they will ask in the group. It might also be necessary to have a translator, and to think about appropriate ways of asking questions in a local language. The facilitator should carry these prepared questions, but should also be flexible to listen and respond to what the community are saying. The questions need to be adapted to each context to ensure that they are relevant to the local situation and the predominant disaster type. Examples of questions that could be used in the focus group discussions are in Appendix A (page 87).

The participatory tools also need to be well planned. Before going into the community, the team should decide which tools they are going to use and when they will use them. Essential items such as paper, marker pens and small stones should be gathered and carried by the team.

It is recommended that each focus group discussion should take at least one hour, but not more than two hours, otherwise people start to lose interest. Each group should meet at least three times to cover all the topics that need to be discussed as part of the PADR process. Some thought should be given to refreshments, which can be shared with the focus group members, for example, popular local snacks, sweets or cartons of drink. Similar food/drink should be taken by team members.

As well as the focus group discussions, PADR involves interviews with those in leadership or with influence in the community. They are called key informants and include:

A men's focus group in Assam, India, draws a map of the community on the ground using sticks, stones and seeds.

- government officials

- community leaders

- school teachers / head teachers

- medical personnel

- women's group leaders

- religious leaders

- UN workers

- other NGO staff

Part of the preparation is to identify suitable people in the community and arrange meetings at convenient times and places.

Remember that the key informants will also have their own perspectives and experience, and may have personal interests to pursue. The information received from these individuals should always be compared with what the focus groups say, so that the facilitation team understands as fully as possible the issues within the community.

Ideally, the key informants should not belong to focus groups, as they may direct and dominate the group. If there are enough team members, it may be possible to carry out an interview while others run the focus group. Examples of suitable questions for key informants are given in Section 7.3.

4.4 Team roles and responsibilities

Allocate different roles to the team members so everyone is clear what they should be doing. Consider inviting a local staff member or community representative (eg a teacher) to be a member of the team. Suggested roles are:

LEAD FACILITATOR Responsible for directing the discussions by asking the questions and moving the conversation on to new topics when necessary. The facilitator should be very clear on the whole process, maintaining direction and momentum. He or she should have experience of facilitating groups.

ASSISTANT FACILITATOR (OR TRANSLATOR IF REQUIRED) Helps the lead facilitator where necessary, eg rewording questions if they are unclear, or helping to organise the participatory tools.

NOTE-TAKER (OR RECORDER) Responsible for writing down the answers to the questions and keeping copies of any maps, seasonal calendars, Venn diagrams or ranking exercises.

LOGISTICS COORDINATOR Responsible for making the practical arrangements with the community, including times and places, equipment, chairs or mats, and drinks. He/she should also be responsible for timekeeping in the meetings.

4.5 Other sources of information

Other sources of information about the area may be available. For example, local government statistics, meteorological data, local CBOs' or NGOs' records, reports and evaluations could all be useful. Scientific data might be available from local universities or from websites. It will take some time to find relevant information from these sources but it is very worthwhile, helping to build an accurate picture of the community and the risks they face. It is good to involve local government officials in the process from the beginning. They should be able to provide official data, on population and on previous disasters, for example, and they will be key informants about government policies and programmes.

4.6 Preparing the community

A plan to carry out PADR must be developed in consultation with the community, particularly its leaders. Their understanding and ownership of the process is very important for a successful assessment and implementation of a risk management plan. It is also important to gain as much support from the government as possible, and of course any relevant permission that is required.

Expectations

The purpose of PADR must be clearly explained, so that the community develops realistic expectations of the PADR process. Some communities have a relief-dependent attitude, particularly in post-disaster situations when much food aid has been distributed. The facilitators need to emphasise that PADR is about identifying community capacities as well as

vulnerabilities. Ownership of the process and the various maps, tools and action plans should remain with the community. The process is not the same as a needs assessment exercise leading to NGOs providing materials or resources for the community.

Timing and location of focus groups

A suitable time for each focus group must be arranged, avoiding clashes with farm work or meal preparation. Make every effort to find a convenient time that fits with the daily schedule of group members. Ensure that a suitable day is agreed, avoiding days of markets, festivals or marriages.

It is good to find a place to meet where people feel comfortable, that is relatively quiet and where there is enough space. Meetings should preferably be outside in the shade, but with a degree of privacy also. Expect women's groups to have young children present, so make it easy for mothers to attend to the needs of babies.

Checklist

Have you completed all the steps in the following checklist before going out to the community?

Necessary arrangements made in the community for focus group meetings and key informants (time, place, people invited etc)	✓
Transport and refreshments arranged	✓
Team trained and competent in group facilitation and participatory tools	✓
Team roles allocated and members clear about the purpose of meetings	✓
Team have question sheets prepared and know how to ask the questions in the local language or dialect	✓
Arrangements for translation have been made if required	✓
Materials assembled for participatory tools (flip chart, markers, stones etc)	✓
Information collected from secondary sources	✓

4.7   PADR and gender

It is important that the issue of gender is sensitively and comprehensively addressed throughout the risk assessment process. This is necessary not only to ensure that women's vulnerabilities and capacities are adequately determined, but also to ensure that any resulting risk reduction activities contribute equally to increased safety for men, women and children.

During the 2004 Indian Ocean tsunami and the 1991 Bangladesh cyclone, more women than men died, simply because swimming is not encouraged among girls in some cultures. A good risk assessment process would identify this type of issue. For the preparation phase, the following list may help to make the process fully 'gender inclusive':

■ Choose times and locations for meetings when women are able to attend, avoiding busy periods, for example when women are normally cooking or fetching water.

■ Arrange separate male and female focus groups, which meet in locations where there is some privacy from other groups.

■ Arrange a female facilitator for a women's group, as she will be better able to understand and empathise with members of the group, and will be culturally acceptable. If you do not have a female staff member who can take on this role, consider training women from the community to facilitate groups.

■ Ensure that the note-taker records the PADR results in a way that captures the risks, vulnerabilities and capacities for men and women separately.

■ Ensure that women's traditional knowledge and perception is included in the analysis.

■ When collecting data on the impact of previous disasters, try to obtain figures which separate out the numbers of male and female casualties and losses.

■ In selecting key informants, seek to interview women as well as men, for example, leaders of women's groups or female teachers.

■ Consider conducting a gender analysis at some stage in the process, in order to identify inequalities between the sexes at community level (see *Good Practice Guide* below for more information on conducting gender analysis). This will help in the vulnerability and capacity assessment.

For further information on this topic, these publications are recommended

UNISDR 2009: *Making disaster risk reduction gender sensitive: policy and practical guidelines*.

UNISDR 2008: *Gender perspectives: integrating disaster risk reduction into climate change adaptation*.

Tearfund Good Practice Guide: Gender Sensitivity, especially the framework on page 16.
tilz.tearfund.org/Topics/Disasters/Disaster+management+good+practice

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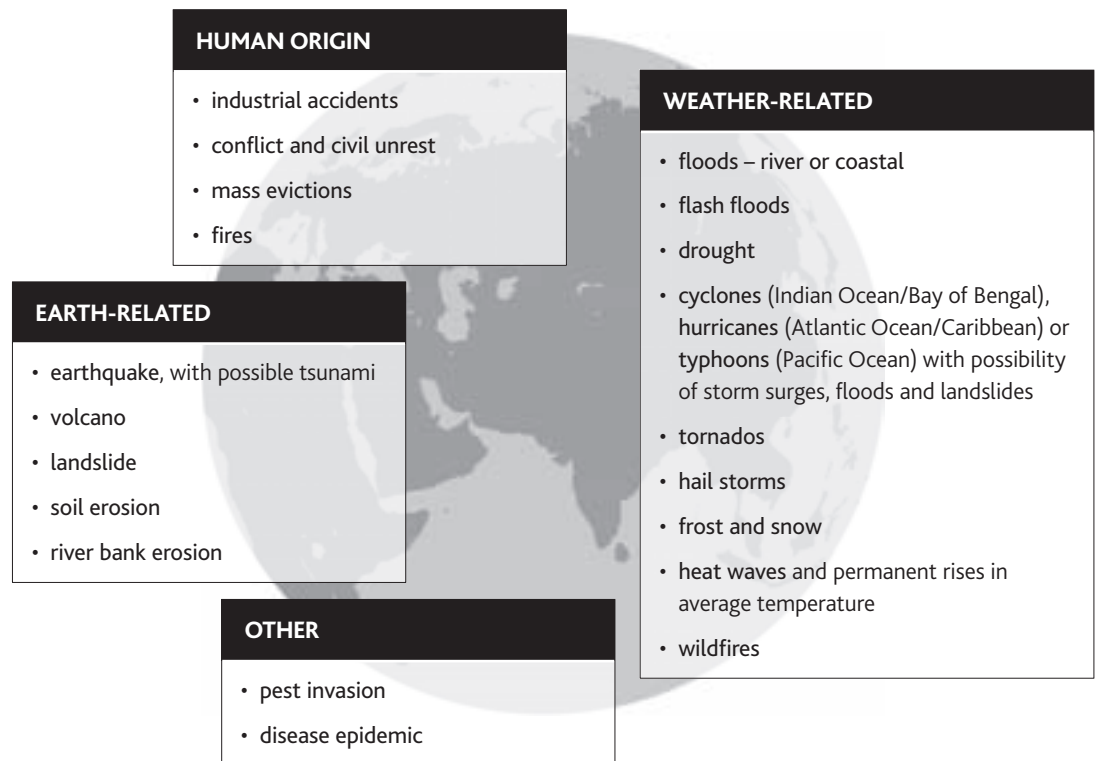*A focus group of young people in Cambodia.*

Peter Grant / Tearfund

SECTION

5

Step 2: Hazard assessment

The second step of PADR is to investigate the hazards that people face in their local areas. A hazard is an extreme event or occurrence which has the potential to cause injury to life and damage to property and the environment. We need to look at hazards in detail to ensure that we fully understand the main hazard and others which could affect the community – both now and in the future. The climate is changing significantly in many countries, so the pattern of weather-related hazards is changing as well.

5.1   Types of hazard

Common hazards that occur around the world are:

HUMAN ORIGIN

- industrial accidents
- conflict and civil unrest
- mass evictions
- fires

WEATHER-RELATED

- floods – river or coastal
- flash floods
- drought
- cyclones (Indian Ocean/Bay of Bengal), hurricanes (Atlantic Ocean/Caribbean) or typhoons (Pacific Ocean) with possibility of storm surges, floods and landslides
- tornados
- hail storms
- frost and snow
- heat waves and permanent rises in average temperature
- wildfires

EARTH-RELATED

- earthquake, with possible tsunami
- volcano
- landslide
- soil erosion
- river bank erosion

OTHER

- pest invasion
- disease epidemic

It is not usually possible to consider the hazard purely as a natural event: a good analysis must take into account the significant human actions as well. Hazards described as 'natural' occurrences are often linked to human activity and are made more severe by the impact of that activity. For example, environmental damage such as deforestation can lead to increased likelihood of landslides and floods.

Hazards can be divided into rapid-onset and slow-onset events. Examples of rapid-onset hazards are earthquakes or a flood where a river bursts its banks with little warning. Slow-onset hazards develop over a period of time and therefore it is easier to prepare for them. Examples include drought, which develops as a result of the rains failing over a period of weeks or months, and slow increases in sea level or in soil salinity.

5.2 Assessing hazards

Focus groups are commonly used to facilitate community discussion about local hazards. There may, of course, be more than one hazard, but it is best to limit the discussion to a maximum of three – the ones which the community selects as causing the greatest damage or loss.

The questions below should be used to determine the nature and behaviour of each of the three main hazards. Answers should be written in the three columns. When discussing 'severity', the community may see it in terms of impact (eg 80 per cent of the cows died). However, encourage people to give information about the hazard itself, such as depth of flood water or number of weeks without rain.

A timeline of the last 20–30 years is a good tool to use to examine the hazard history, but avoid spending too much time discussing the precise details. The time taken for this step should not be more than 30–45 minutes. The group may wish to answer Question 2 at the end, after collecting the other answers.

Hazard
assessment
table[8]

Question	Hazard 1	Hazard 2	Hazard 3
1 **TYPE** What hazards/disasters commonly affect your community?			
2 **SIGNIFICANCE** Which would you consider to be the most serious hazard, in terms of impact upon the community? (Do a ranking exercise.)			
3 **HISTORY** What was the last significant disaster event to affect this community, and when was it?			
4 **FREQUENCY** How often does this hazard occur (eg every year, one year in three etc)?			
5 **SEVERITY** How do you measure the severity of the hazard (eg depth of water, wind speed, lack of rain, damage)? What would you observe in a good year and a bad year?			
6 **DURATION** How long does the hazard persist (hours, days, weeks)?			
7 **LOCATION / AREA** Which parts of the community are worst affected? (Could show on map.)			
8 **SIGNS** Any early warnings, traditional or from government? How quickly (or slowly) does the hazard appear?			
9 **TRENDS** What changes are happening to the frequency, duration or severity of the hazard? Any new hazards?			

8 Not to scale – more space in each of the columns will be needed.

Communities can only describe hazards which have occurred in the past. However, under trends (Question 9), it is important to note any newly appearing hazards, as these may be a

consequence of climate change. It is possible that these new appearances will become the most significant problem in the years ahead. Team members may be able to draw on scientific sources, for example, government statistics, university research and scientific data/reports from the internet (see next page). Action plans must take account of this.

Example from Ethiopia

Hazard types	Drought, occasional pest attack.
Most significant	Drought.
History	Most serious drought was mid-1980s, lesser droughts since then.
Frequency	Every five years (approximately).
Severity	Comparisons are made with impact of the 1980s drought. Impacts include death and displacement of people, loss of livestock and crops. Livelihoods are badly affected.
Duration	One to three years.
Location	Whole of local area affected.
Warning signs and speed of onset	Indications over a period of months that rain will be less (eg from tree flowering patterns, insect activity, wind).
Trends	Farmers say droughts are more frequent than before and rain more erratic and unpredictable.

Add information from secondary sources (Section 4.5) into your hazard assessment. This is the time to share your research with the community and find out whether it reflects people's experience. Information can sometimes also be gathered from other organisations or individuals who have been working in the area for some time. They might be able to share valuable insights from their experience of working on disaster-related projects. The team can then bring together the scientific data from their research (if available), observations from the community and information from others to give an accurate overall picture. Triangulation – checking information from one source against other sources – is an important principle.

There are also low-cost ways of gathering weather data in the community in order to build up hazard-related information for the community's own records. Examples of this would include temperature and rainfall recording by a local school.

Some recognised scientific methods of measuring hazards are given below.

HAZARD TYPE	QUANTIFIED BY
Flood	water depth (max); water flow; days of water presence; rainfall
Drought	days/weeks with no rain; rainfall data
Cyclone	wind speed (max); rainfall data; speed/direction of movement
Earthquake	Richter scale

5.3 Climate change

Climate change is having an increasingly significant impact on weather-related hazards, particularly floods, cyclones and droughts. Slow changes in weather patterns may accelerate and cause bigger problems on a day-to-day basis than the more extreme flood, cyclone or drought events.

In some cases, local people will be well aware of changing weather patterns, rising sea levels etc. In other cases, hazards previously unknown to the community may start to appear regularly. Hazard assessment methodology (above) is based largely on hazards known in the past and may not pick up these future hazards.

For the hazard assessment process, it is therefore necessary for the team leader to check other sources of scientific data, as well as the information the team is able to gather locally. Such information should be included under the 'Trends' section of the hazard assessment template. The significance of climate change should be explained to the community at the same time as other feedback is given about the vulnerability and capacity assessment (see Section 8.1, Stage 1 – Verifying data). In this way, future activities can be designed to cope with these changed conditions or emerging hazards.

There are a number of ways of finding more specific information about climate change in different countries. Country Profiles have been compiled for many countries, describing the expected changes to climate and climate-related disaster risks.

SOURCE	DESCRIPTION	WEBSITE
Tearfund Country Climate Profiles	Profiles compiled for countries where Tearfund partners are working.	tilz.tearfund.org/Topics/Environmental +Sustainability
Adaptation Learning Mechanism	Country Profiles, projected changes in temperature, rainfall and climate-related disaster risks and impacts.	www.adaptationlearning.net
UNDP Climate Change Country Profiles	Fifty-two Country Profiles.	country-profiles.geog.ox.ac.uk Click on reports next to the relevant country.
World Bank Climate Change Data Portal	Gives scientific projections of climate change; also detail of likely impact on particular project types and adaptations.	sdwebx.worldbank.org/climateportal
Climate 1-Stop	This tool was launched at Copenhagen in December 2009. It is intended in time to provide a single location for all country profiles, case studies and climate change adaptation tools.	www.climateonestop.net
National government sources of information are listed on page 17 of *CEDRA*.		

Step 3: Vulnerability and capacity assessment

A disaster occurs when a hazard strikes a vulnerable community. Damage is done to various aspects of life, livelihoods, property and the environment. These are called 'elements at risk'.

In PADR, we need to document the impact of the hazard on these elements at risk, but also to ask the deeper question: Why was it possible for this hazard – the wind, earth tremor or flood water (etc) – to cause so much damage? The answer to this question will provide us with information about the vulnerabilities of the community.

In addition to vulnerabilities, a disaster-affected community will always possess capacities, at community, family or individual levels. This chapter is therefore also concerned with capacity assessment – determining the strengths and coping mechanisms of the community – in addition to assessing the vulnerabilities.

6.1 Impact and vulnerability

The relationship between impact and vulnerability can be illustrated by the following examples, the first for flash flooding, the second for drought.

Example 1

Hazard – flash flooding

ELEMENT AT RISK	IMPACT ON ELEMENT AT RISK	POSSIBLE VULNERABILITIES WHICH ALLOW THIS IMPACT
Houses	Damage to houses	Houses close to river Weak house design or weak foundations No protective wall, embankment or trees
Water supply	Contamination of wells	Wells close to river Wells not capped or protected from contamination
Livelihoods	Destruction of crops	Farm fields located on low land, close to river Growing season of crop coincides with flood No protective wall, embankment or trees
Natural resources	Destruction of natural resources	Climate or environmental change has brought more severe weather that will now damage previously resilient assets

Example 2

**Hazard –
drought**

ELEMENT AT RISK	IMPACT ON ELEMENTS AT RISK	POSSIBLE VULNERABILITIES WHICH ALLOW THIS IMPACT
Health	Health problems	Lack of health knowledge Lack of pure drinking water sources
Livelihoods	Reduced or zero yield from field crops	Crops not resistant to drought Lack of irrigation systems Agricultural extension services not adequate
Livelihoods	Death of livestock	Some animals do not cope well with drought Some animals not in good health Herds are too large Veterinary services are absent
Natural resources	Reduced number of wild plants / wild animals	Even the wild plants / wild animals are not resistant to the extreme droughts now seen

Damage (impact) is usually easy to describe, because there is a visible effect of the hazard upon the community. Vulnerability may be harder to see, because it is often linked to something which is absent or not accessible to some members of the community.

Variations in vulnerability

Vulnerability can vary considerably from country to country. For example, the Caribbean island of Cuba is well prepared for hurricanes: vulnerability is low and few lives are lost. The neighbouring country of Haiti is much less well prepared, and consequently vulnerability is high. Hurricanes of equal strength in Haiti cause much damage and loss of life.

Even within one village, some families may be highly vulnerable to disaster – through poverty, location or type of housing, sickness in the family etc – while other families may be much less vulnerable. Some social, ethnic or religious groups may be more vulnerable than others, because they live in areas more affected by the hazard.

Within a family or household, vulnerability can vary. Women are often much more vulnerable than men. Children, the elderly and chronically sick people (including those with HIV) can also be highly vulnerable, because they are less able to escape or cope with bad conditions.

6.2 Capacities

As well as vulnerabilities, a community will possess capacities or strengths which help to reduce the impact of the hazard. Capacities may consist of knowledge or skills, including traditional ways of coping with hazards. They may also include alternative crops or livelihoods, or extended family support mechanisms.

Many capacities are hazard-specific, while others are useful against any hazard. For example, banana trees may be a capacity in a flood area, because their trunks can be tied together to

make a platform or a simple boat. However, banana trees will be of little use as a capacity against earthquake! Other elements, such as savings, a radio or jewellery to sell, will be a useful capacity to aid recovery from any disaster event.

It is also possible for one asset or activity to be both a vulnerability and a capacity, depending on which way it is viewed. For example, in times of drought, male or female migration in search of work is a common coping strategy, or economic capacity. Unfortunately, the separation of the family can also have negative consequences. Single-headed households result in increased pressure on children to undertake more labour or to miss school in order to help with household tasks.

As a further example, many cultures would consider a large herd of cows to be a sign of wealth, an economic capacity. Unfortunately, in times of drought and scarce pasture, the presence of too many animals, their lack of drought resistance and people's dependency on a single livelihood can all contribute to making the population more vulnerable to the drought.

6.3 Assessing vulnerability and capacity

The first step of vulnerability and capacity assessment is to record the actual impact of the hazard on elements in the five categories (see pages 28-9). Different hazards will affect these categories in different ways. For example, a flood may have a very large impact on houses (physical) and livelihoods (economic), but perhaps a much smaller impact on the forest and fish (natural resources). On the other hand, a drought may have a big effect on the natural resources, but a very minor impact on physical infrastructure.

In the question sets (see Appendix A), the first question in each category is always to do with the impact of the hazard. A participatory tool (eg a map, seasonal calendar or timeline) will help to define the impact more clearly and to identify vulnerabilities and capacities. Remember that in the individual category, impact on men and women may not be the same.

When the impact on particular elements is high, the vulnerabilities which allow this impact must be identified. This is done by asking a number of 'why' questions.

If the impact on particular elements is low, these elements are likely to become the capacities which enable a family or community to withstand and recover from the hazard.

Individual (male/female) vulnerabilities and capacities

This step of the analysis must identify the most vulnerable individuals in the community. This often includes the women and children, and may also include people who are elderly, sick or physically or mentally less able. These groups' vulnerability can be due to the particular customs and cultures in place – for example, women may be less literate, may be restricted in their movements outside the home, or may be expected to feed their husbands and children first, ahead of themselves. Women are often excluded from decision-making and planning processes, yet carry out much of the work. When collecting information in this category, it is important that the data is disaggregated, ie male and female data is recorded separately.

People suffering from long-term illnesses such as those related to HIV may be particularly vulnerable (eg if unable to move quickly), but will also create vulnerability for their families (eg time and money consumed in care activities instead of farming).

Vulnerability may also be due to lack of knowledge about hazards and how to survive them. Those who are least literate or least able to understand a national language may be restricted in their access to written materials (posters, newspapers etc) or to information broadcast by radio.

People often draw on their individual assets to make the best use of assets in other categories. For example, people may have traditional knowledge of resistant crops or edible wild plants which helps them to make better use of the available natural resources. Another important skill is the ability to interpret the signs of nature which often precede a disaster event – such as buffalo running uphill before a tsunami arrives.

The following table shows some common individual vulnerabilities and capacities. When collecting information in this category, remember to record male and female data separately.

INDIVIDUAL
vulnerabilities
and capacities

VULNERABILITY	CAPACITY
Low literacy rates	High literacy rates
Little knowledge of hazards and how to cope with them; loss of historic experience	Good knowledge of hazards and how to cope with them, perhaps from ancestors
Lack of educational or skills training opportunities	Good opportunities for education and learning new (employment) skills
High prevalence of HIV or illnesses such as malaria	Good health status of the population
Women restricted in mobility or dress by the culture	Women empowered, their knowledge and resourcefulness respected
Lack of able-bodied men or women to farm or do other livelihood activities	Presence of able-bodied men and women, especially youth

Social vulnerabilities and capacities

Social vulnerability appears in a community if the ties and networks between individuals and between families are weak. If family members are dispersed – by the hazard itself or by migration – the support which members give to each other is removed. The hazard will have a more serious impact. Similarly, bad relationships in a community will hinder the ability of members to help each other in a crisis, and arguments or minor crime will increase.

In contrast, a community where the family ties are strong and relationships are good will have a much greater capacity to cope. Good leadership is another key factor – a well-led community is much better able to withstand and recover from disaster, and clear direction in a time of crisis will increase chances of survival.

The presence or absence of other social groupings in a village will also affect its resilience to hazards. For example, a women's self-help group is a place where knowledge can be shared, and where members can support each other in a crisis; there might even be a savings or loans fund to aid recovery (which becomes an economic capacity). The absence of such groups, or of male equivalents (eg farmers' clubs) will make the community more vulnerable to hazards.

Social dynamics and gender roles within a family may deny women any significant voice in the use or disposal of assets or in deciding the best time to evacuate in time of disaster. This lack of voice and failure to pass on information can greatly increase the vulnerability of women.

The following table shows some common social vulnerabilities and capacities.

SOCIAL
vulnerabilities
and capacities

VULNERABILITY	CAPACITY
Family relationships are weak, possibly because of men or women migrating for work	Family relationships are strong, including links with members outside the disaster zone
Relationships between different ethnic, religious, class or livelihood groups in the village are poor; no habit of helping each other	Relationships in the community between different sub-groups are good, with much mutual help and support
No one in the community gives clear and decisive leadership during times of crisis; disputes not settled quickly and/or fairly	Community has good and respected leadership, able to give wise advice and settle minor disputes
Community has few or no other social groups – ie an absence of cooperatives, clubs or self-help groups	Community possesses well-established groups for men and for women, whose members assist one another in a crisis
Religious groups absent or ineffective	Religious groups strong and active in helping their members and others
Government services do not reach members of the community	Government services well developed and responsive in an emergency
Social stereotyping, usually against women; others do not value their gifts, skills, abilities and experience	Capacities of both men and women recognised and used – gifts, skills, abilities and experience

Natural vulnerabilities and capacities

The natural category includes those resources of the community which are found as part of the environment around them, such as water, fish, trees or soil. These resources are often the basis of livelihoods or housing, and are usually essential for survival. During or after a disaster, those natural resources which remain unaffected will provide important coping capacities for the survivors (eg reeds and grasses for temporary roofs , bamboo poles for construction).

The table on the next page gives some examples of natural vulnerabilities and capacities.
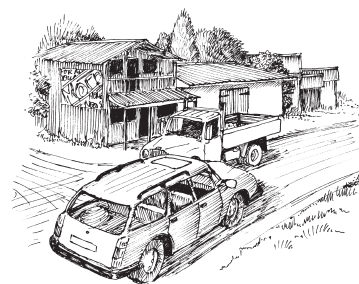
VULNERABILITY	CAPACITY
Absence of trees, due to human activity or climatic factors	Presence of trees or bamboo for building, shelter or fuel
Surface water not consistently available throughout the year	Adequate surface water available for the whole year
Fish stocks reduced through over-fishing, siltation or pollution	Fish available to catch and sell from unrestricted waters
Soil impoverished, for example, through mono-cropping and/or erosion	Soils fertile and productive
Limited amounts of grazing land available	Adequate grazing land available for animal herds
No emergency flotation devices available	Emergency flotation aids available – eg coconuts, banana trees
No grasses or reeds	Plentiful grasses and reeds for emergency roofing
Emergency 'famine foods' in bush absent or inaccessible	'Famine foods' available in the bush – roots, berries etc

This table is not a complete list: each location will have its own combination of natural resources. Climate change and environmental degradation are having negative effects on the quality and availability of natural resources.

Conflict usually increases vulnerability by destroying or denying access to precious natural resources. For example, a community restricted to a very small area by violence or insecurity may have no access to firewood, grazing land, surface water points or the wild fruits, roots and leaves gathered during droughts when normal food is not available. When members of the community (usually women) attempt to access these restricted resources, they become more vulnerable to rape and violence.

Physical vulnerabilities and capacities

Physical assets are those which are constructed by people. They include roads and bridges, houses and public buildings, electric power supply and telephones, hand-pumps or water storage tanks. Tools and equipment are also considered to be physical assets.

Physical vulnerability is caused by the absence of these things, weaknesses in their design or problems with their location. A brick building may appear to be a solid asset or capacity, but if it is badly built or situated in a vulnerable place, it could increase the risk to those taking shelter inside – especially during floods or earthquakes.

The following table shows some examples of physical vulnerabilities and capacities.

PHYSICAL
vulnerabilities
and capacities

VULNERABILITY	CAPACITY
Community has no strong public buildings	Community has one or more strongly built school, church or other community structure
Community has no purpose-built cyclone shelter	Community does have a purpose-built, regularly maintained cyclone shelter, with access to clean water and sanitation facilities
House design and structure not strong enough to resist common hazards	Many houses include cyclone- or earthquake-resistant design features
Roads and bridges not usable by motor vehicles for some months of the year	Road surface and bridges allow vehicles to pass for whole year, including disaster season
No landline telephone communication, and/or poor signal for mobile phones	Landline telephone and/or mobile phone communication good in all weather conditions
No protected wells or water hand-pumps	Hand-pumps elevated on platforms above potential flood water level; springs and wells have protective caps
Broken or non-existent irrigation system	Functioning irrigation system in place
Shortage of tools needed to maintain livelihoods or lack of protection for these items	Livelihood tools and equipment adequate and well protected from hazards

Physical vulnerabilities and capacities tend to be hazard-specific. For example, in areas affected by cyclones, secure attachment of roofing to buildings confers capacity, but if roofing is not attached securely it may create vulnerability. However, details concerning roofing would be of no importance for communities facing drought. Physical capacities for drought-affected areas would include such things as cross-dams, water storage tanks or irrigation channels.

In conflict situations, one party may attempt to destroy or disable the capacities of the other, eg by attacking water infrastructure, bridges or communications.

Economic vulnerabilities and capacities

'Economic' is defined here as anything to do with livelihoods, finances or the buying/selling abilities of an at-risk community. Vulnerabilities in the economic category are usually not hazard-specific: a poor family may experience economic distress whatever the hazard type.
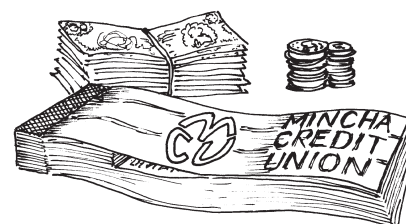
Financial capacities are sometimes termed 'safety nets'. Examples include some form of savings scheme, or government grants or subsidies to compensate for loss or damage. Other capacities might include possession of saleable assets, such as a bicycle, radio, male animals or jewellery, or perhaps alternative forms of livelihoods, such as fetching and selling water or firewood. Wealthy relatives, and the remittances they send from the city or from overseas, are a powerful capacity in many situations and can assist a speedy recovery.

When one or more of these economic capacities is absent, individuals and communities are more vulnerable to disaster. Families may have no savings, no assets to sell, no access to credit,

few livelihood alternatives and no rich relatives. Government support may be very small, or perhaps inaccessible for the poorest families.

Examples of economic vulnerabilities and capacities are shown in this table.

ECONOMIC
vulnerabilities
and capacities

VULNERABILITY	CAPACITY
No easily saleable assets (eg bicycle, male animals, jewellery) or savings	Family does possess saleable assets or savings
Local credit from moneylenders only available at very high interest rates	Group savings and credit schemes; low-interest loans available
Very few job or work opportunities available	Opportunities for casual or skilled labourers to find work
No compensation, grants or subsidies available from government sources during crises	Government has financial safety net schemes for poorest at times of disaster
Community members have no richer relatives or remittances	Families have relatives in employment or overseas
Markets closed during floods	Markets open all year round
Lack of means to buy food, medicine and shelter material	Alternative livelihood options to create income, eg market gardens or handicrafts
Dependency on a single cash crop	Farmers grow several different crops with different planting and harvesting times

Conflict tends to increase economic vulnerability, by disrupting normal patterns of trade or denying people access to alternative livelihoods. Markets often close, or fewer people attend them, so opportunities to buy and sell are reduced.

6.4 Community methodology – use of questions, tools and grids

The assessment of vulnerabilities and capacities is done with community focus groups, using participatory tools and question sets. Additional questions are addressed to key informants.

Focus group process

The group facilitator begins by welcoming the group, thanking them for coming, introducing his/her team and explaining the purpose of the meeting. Members of the group are invited to introduce themselves. All are encouraged to participate in the discussions. A little humour will help to lighten the atmosphere and establish a good relationship with the group.

The process starts by using the hazard assessment template (see Section 5.2) and one of the suggested participatory tools. This enables group members to share their experiences of

hazards/disasters in the past. The designated note-taker keeps records of the answers and makes a paper copy of any tool used, so that the original can be retained in the community.

Discussion then moves on to vulnerabilities and capacities, working through the five categories: individual (male/female), social, natural, physical and economic.

A typical recording grid is shown below. There should be a separate sheet for each of the five categories of asset and the answers to questions should be filled in directly onto the sheet. A full list of questions for each category can be found in Appendix A (p87-91).

Blank recording grid

Impact, vulnerability and capacity assessment	
Category	
Participatory tools used	

Impact question	Answer
Main impact of hazard upon this category of asset	

Question	Vulnerability	Capacity
Q1		
Q2		
Q3		
Q4		
Q5		

Explanation of terms in the recording grid

CATEGORY The relevant category is written in the box – individual, social, physical etc.

PARTICIPATORY TOOL The facilitator chooses an appropriate participatory tool (usually in advance of the meeting), and the focus group use the tool in preparation for answering the questions. The following tools are suggested for the five categories. However, some of the tools can be used for more than one category, so the facilitator should choose which tools to use.

- **Individual**   Seasonal calendar (showing activities, migration, festivals etc)
- **Social**   Venn diagram (showing social groups and influences)
- **Natural**   Community map (showing rivers, ponds, forest, grazing etc)
- **Physical**   Community map (showing buildings, bridges, roads, dams etc)
- **Economic**   Seasonal calendar (showing livelihoods and hazard seasons)

MAIN IMPACT OF HAZARD UPON THIS CATEGORY OF ASSET This box is used to record the damage caused to this category of asset. Remember to include information gathered using the participatory tool or from secondary sources.

QUESTIONS (Q1, Q2, Q3, Q4 ETC) Questions to discover the vulnerabilities and capacities in each type of asset should be asked in the local language and answers filled directly onto the sheet.

The participatory tool should be used in answering the questions; for example, on the map, identify buildings or natural resources which are more or less affected by the hazard.

If the answer to a question indicates a weakness (or vulnerability) in the community, the note-taker should write this in the 'vulnerability' column. If the answer reveals a strength or capacity, the note-taker should use the 'capacity' column.

As an example, the following table gives the questions commonly used for the physical category and some possible answers.

Example of a
recording grid
with answers

Impact, vulnerability and capacity assessment	
Category	Physical
Participatory tool	Community map to be drawn

Impact question	Answer
Main impact of hazard upon this category of asset	Flood causes destruction and damage to houses, roads, bridges, power lines; disruption of communications

Question	Vulnerability	Capacity
Q1 Which buildings are most affected by the hazard, and why?	Those houses located on low land near the river. Affected because of location and construction materials (houses made of mud and bamboo only)	
Q2 Which buildings are least affected by the hazard and why?		School and a few houses on high ground, made of brick which can withstand flood water
Q3 What communication systems are still available during times of crisis? For example, mobile phones or radios	No telephone landline available; road and bridge usually broken	A few mobile phones are held by village people; about 50 households own battery radios
Q4 What means of transport are available and still useable during times of disaster? For example, boats, bicycles or other vehicles	No motor vehicle transport on the roads	Fishing boats, possibly rickshaws; one farmer has a tractor
Q5 How do people preserve their tools and household possessions during floods?	Most people have no particular methods; large losses of household items	A few people hang things high up inside roof or place them on high shelves to keep them dry
Q6 How are open wells and hand-pumps affected by the hazard? Why?	Open wells are regularly contaminated by flood water because they are on low-lying land and have no protective covers	One hand-pump always gives good water because it is located on higher land

Additional questions for other types of asset are in Appendix A. Questions might need a little explanation or adaptation, according to the level of understanding in the group and the particular hazards of the area. Always ask the questions in a commonly spoken language.

Some questions are worded to get a 'vulnerability only' answer, while others will be 'capacity only' questions. In such cases, one of the answer boxes is shaded to indicate that an answer for this box is very unlikely. Sometimes the tool (in this case the map) will provide answers to questions without the facilitator needing to ask them, or the questions may be asked while you are referring to the map.

6.5   Summarising the information collected

The final stage, usually completed back in the office, is to summarise the data on one or more flip chart sheets – either writing directly on the sheet or using moveable sticky notes or cards. The format is below. Answers in the 'impact' box on the question sheet go into the second column; vulnerabilities and capacities are drawn from the answers to the other questions and are added to columns 3 and 4. Note that in the individual category, the results should be separated into male and female lines. Differences may be apparent in the other categories also: these can be captured by writing results from male focus groups onto sticky notes of one colour and results from female groups on another colour, or by using marker pens of different colours.

Column 1	Column 2	Column 3	Column 4	Column 5
Category	**Impact of hazard**	**Vulnerabilities**	**Capacities**	**Suggested risk-reducing activities**
Individual (male)				
Individual (female)				
Social				
Natural				
Physical				
Economic				

The final column is available to allow the team space to consider some activities which might reduce the vulnerability or increase the capacity of the community. These ideas can be fed into the discussion during risk management planning – see Section 8.

Sometimes the interviews with key informants (see Section 7.3) also yield data on vulnerabilities and capacities. This data can be added to this table in the appropriate box.

Vulnerability
and capacity
assessment

ROOTS 9   REDUCING RISK OF DISASTER IN OUR COMMUNITIES

The following table illustrates the possible outcome of a completed vulnerability and capacity assessment for a flood situation. Some suggested risk-reducing activities are in Column 5, which will help to reduce impact and address the vulnerabilities while making use of the capacities. Note that a capacity may come from any of the five categories.

Category	Impact of hazard	Vulnerabilities	Capacities	Suggested risk-reducing activities
Individual (male)	Small loss of life; increased health problems	No warning system; lack of health knowledge	Able-bodied youth; carpenters	Train youth as volunteers to raise alarm and assist evacuation
Individual (female)	High loss of life; increased health problems	No warning system; lack of health knowledge; low literacy rates; less ability to swim	Resourceful in times of crisis	Health education; swimming lessons for girls in school; train female volunteers
Social	Families split up; disruption of education	No evacuation plan; location of school; shortage of social groups (eg self-help groups); poor government services	Health workers in community; government agricultural department; farmers' cooperative	Community evacuation plan; women's groups; strengthen cooperative; advocacy to improve and use government agricultural services
Natural	Destruction of smaller trees; deposition of sand on land	No protective embankment; erosion from upstream as result of tree felling	Bamboo and a few trees; forestry department nursery; available high land	Use bamboo to strengthen river bank; tree planting along bank and on slopes; advocacy to reduce tree cutting
Physical	Damage to houses, roads and bridges	Houses close to river; design of houses not strong	Some stronger houses; church building on higher land	Build stronger embankment; teach carpenters better house design; use church as evacuation centre in floods
Economic	Damage to crops; death of livestock	Fields near river; no embankment; growing season is during flood season; crop varieties not resistant; no warnings or evacuation plan for animals	Winter vegetable seed available; a few small livestock and chickens kept	Increase cultivation of winter vegetables; seek flood-resistant crops; evacuation plan to save cattle; expand alternative livelihoods (eg egg production)

SECTION
7

Step 4: Dynamic pressures and underlying causes

Dynamic pressures and underlying causes have a major influence on vulnerability and capacity, either from within the community itself or from some external source. Influences can be positive or negative, and may be deeply rooted within culture, religious beliefs, politics or international trade.

7.1 Dynamic pressures

Dynamic pressures consist of social structures and processes that can influence how vulnerable members of the community are to hazards.

The structures are the people, institutions or organisations that affect the community's vulnerabilities or capacities, and the processes are the way in which they exert their influence. For example, a local government department would be a structure, while its decisions, policies or projects would be the processes. When examining the causes of vulnerability, we need to ask the questions 'Who or what influences the community?' (ie the structures) and 'How do they influence the community?' (ie the processes).

Structures and processes may act at three different levels:

- local
- national
- international

Risk-reducing activities, which are described in Section 8 and Appendix B, will operate within this context of structures and processes – and the processes may easily undermine or destroy the benefits of that activity. For example, a health project may have low impact if a local traditional healer is spreading a very different message in the community. A disaster management committee may include female members, but if culture prevents them from contributing to debate, the views and priorities of women will not be taken into account. It is therefore important to understand the nature of the structures and how the processes operate.

It should be noted that processes can be either positive or negative. For example, a government department (structure) which is under-resourced and unable to deliver a service (process) may make people more vulnerable to disaster. The same department, if well resourced and with trained staff, may do much to reduce vulnerability and build capacity.

Some examples of structures and processes and their relevance to poor communities appear in the table on the following page.

Structures, processes
and relevance to
poor communities

LEVEL	STRUCTURE (Who or what?)	PROCESS (How?)	RELEVANCE
Local	Village elders	Maintain traditions, give judgment in disputes, maintain culture and beliefs	Tradition may preserve the dominance of men and make women more vulnerable; decisions may favour the wealthy or particular livelihood groups
Local	Church	Promotes religious teachings and practices	Will influence people's attitudes to each other and may insist on observance of costly festivals
Local	Government departments	Deliver services to the community	Quality of services will affect health, education and agriculture
Local	Businesses	Employ people; may exploit or damage the environment	Salaries, working conditions, availability of natural resources
National	Military	Employs people; controls land; protects or exploits civilians	Affects safety and economic well-being
National	Justice system, including police	Makes and enforces laws	Fairness of system, law enforcement; corruption
National	Government department for environment	May permit environmental destruction, or not engage with climate change issues, within country or internationally	Poor people lose natural resources; lack of climate change adaptation will affect life and livelihoods
National	Government department of trade	May encourage cash crops or biofuels	Food availability reduced, or prices increased
International	International companies; markets for coffee, tea, cotton, metals	Set prices paid to farmers for their crops	Cash crop income may rise or fall, according to prices
International	Credit and banking system	Banks provide development grants and loans, set terms and conditions	Terms/conditions may control government policy (eg on subsidies) or spending priorities

7.2 Underlying causes

These operate at a deeper level than structures and processes, and fall into four main categories:

■ political

■ economic

■ culture, beliefs and values

■ natural environment

In some cases, the influence of the underlying causes can be tracked through a dynamic pressure. For example, a government budget decision to allocate funds to defence instead of agriculture will affect the ability of a structure (the local agriculture office) to deliver a process (programmes to help farmers). Farmer vulnerability is therefore increased. However, in other cases the underlying cause may appear to directly influence the vulnerability or capacity of the community, perhaps through a particular cultural belief or practice.

The following table gives some examples of underlying causes and how they influence vulnerability or capacity.

Underlying causes
and their influence

CATEGORY	EXAMPLE OF UNDERLYING CAUSE	EFFECT ON VULNERABILITY
Political	The governing party is guided by political factors; it decides which areas will be given relief and development funds. Systems may be corrupt and abused.	Some areas of the country may be underfunded, eg because they support an opposition party. Resources may not arrive at local level.
Economic	Big banks and governments make decisions on international loan and interest repayments. Also the government decides spending priorities and obeys international trade systems.	Affects the amount of money government has available to provide services, and the allocations of funds between departments. Also affects price paid for cash crops.
Culture, beliefs and values	People may believe that illness and unfavourable weather are caused by evil spirits that demand rituals and sacrifices. Some individuals may be valued less highly than others.	People may be unreceptive to health or agricultural advice; assets are depleted by sacrifices. Vulnerability of women and children may increase.
Natural environment	An area may have difficult geography – slopes, altitude, soil quantity/quality – or an extremely harsh climate (rain, drought or temperature).	Has an influence on the agricultural potential of an area; conditions may further deteriorate through climate change and environmental degradation.

7.3 Assessing dynamic pressures and underlying causes

This is done by conducting interviews with key informants, often on a one-to-one basis or in a small group (as introduced in Section 4.3). Questions are designed to probe the particular dynamic pressures and underlying causes affecting a community. The following table gives examples of the people who could be approached, and some of the questions which could be asked. Additional questions will be needed according to the context.

Key informants

PERSON	SAMPLE QUESTIONS	INFORMATION GAINED
Doctor or health worker	What are the most common disease problems? Which ones increase during disasters, and why? What do people believe causes illness, and where do they go first for help when someone gets sick?	Health issues which may make some people more vulnerable to particular hazards. Popular beliefs about causes of illness, and people who have influence over health.
Government official	What policies/plans does the government have to prepare for or respond to disaster? What is the priority for the government: pre-disaster work or post-disaster work?	People may be more/less vulnerable because of presence or absence of government disaster management plans/funds. May suggest the need for advocacy towards more DRR (pre-disaster) work.
Pastor or other religious leader	How do people's religious beliefs influence behaviour? How do members of the religious community support each other in disaster?	Very fatalistic approach may cause people to be less receptive to DRR. May reveal a vulnerability to address or a capacity to develop.
Village leader	What extra pressures or duties come upon leaders in times of crisis? Who are the most vulnerable in times of disaster? What special assistance is provided? Who or what is most in need of protection from hazards?	May give clues about quality of leadership in times of crisis. May indicate an awareness or lack of awareness of the needs of women and other vulnerable groups. Indicates who/what is valued most.
School teacher	What priority do people give to education for their children (boys/girls)? How does the school educate about disasters? Is the school used in times of crisis?	Helps understand cultural value given to education and relative value given to boys/girls. May reveal a need for advocacy for curriculum change. Capacity of school as a temporary shelter in crisis.

Summarising results

Information collected from the interviews and from focus groups can be summarised in a four-column table.

Summary of
information
collected

STRUCTURE	POSITIVE PROCESS	NEGATIVE PROCESS	UNDERLYING CAUSE
Village elders	Settle minor disputes and maintain harmony in community	Dominated by men and mainly look after male interests, neglecting those of women	A culture of male dominance and control
Village school	Provides education	Curriculum does not include anything on disasters and how to cope with them	Government sets the curriculum and the budget for education
Farmers' cooperative	Enables farmers to buy seed and fertiliser at cheaper prices	Farmers may be tied to one particular cash crop (eg cotton, tobacco)	Price received by farmer is controlled internationally
Local office of government agricultural department	Officer provides training and lower-priced agricultural equipment and resources	Officer not providing training as no transport to rural areas; equipment and resources not available	Government does not prioritise agriculture in national budget; funding bias in areas that support the ruling party

The information collected from key informants can be cross-checked with the information from focus groups. For example, a focus group discussion may reveal that there is a lack of services from a particular government department. An interview with the appropriate government official will provide an opportunity to find out why this is the case. The problem may be found in one of several areas, including:

- lack of government resources to provide the service

- lack of practical skills in project implementation among project staff

- lack of awareness among community members of the service available or how to access it.

At the action planning stage, this dynamic pressure will have to be addressed. Activities might include:

- campaigning for increased allocation or release of government resources

- including government staff in training programmes

- raising awareness of service entitlement in the community.

The interviews may reveal that government has very few policies and plans in disaster management. In this case, lobbying at central government level may be the most appropriate action (see Section 8.7).

Advocacy opportunities may open up naturally as the action plan is developed (Section 8) but for long-term, sustainable gains, it is useful to develop an advocacy strategy, updated every six months. This is more likely to bring progress on advocacy issues of significance to the community. Ideally, the strategy should be drawn up with the community and owned by them.

7.4 Challenging structures and processes

In many cases, the vulnerability of poor people is clearly related to specific unjust policies or cultural practices. It may be possible to reduce vulnerability, but only by challenging the specific policy or practice which is at the root of the problem. The following short case studies give examples of processes that have been challenged and changed, the first in India, the second in Malawi.

Social structures in Bihar, north India

In a group of highly flood-prone villages, the PADR process highlighted the strength of the caste system and the greater vulnerability of those born into a lower social group. The caste structure ensured that the rich, high-caste people owned the safe high land and the poorer, low-caste people occupied the high-risk, low land. In time of flood, the rules of the culture were still enforced and lower castes were denied access to the property of the high-caste landlords. The only land available was the raised main roads and the river embankments. Structure, process and underlying cultural divisions were major contributors to vulnerability.

In this particular case, an Indian NGO (Delhi-based Discipleship Centre) developed an action plan with the community and helped the lower-caste groups in a process of negotiation with the higher-caste landlords. They were able to gain permission for the construction of a raised pathway across the low land towards the comparative safety of the embankment. In return, the landowners were able to bring handcarts closer to their mango plantations, and so gain an easier market for their produce. Relationships between castes have subsequently improved.

Caroline Irby / Tearfund

Children practising a flood evacuation across a raised escape route.

Business structures and processes in Malawi

The Limbe Leaf Company constructed a dam on the community's land to enable tobacco production, but it then prevented anyone else from using the water. Under drought conditions, a large water supply was present, but no one, apart from those connected with the farm, was able to access that water. Approximately 160 people in four target communities were trained in a rights-based approach to development. They received advocacy training which helped them to mobilise themselves to lobby the company, seeking the right of access to the water. After much lobbying, the community gained permission from both the company and the local authority to use the dam water and part of the disputed land for crop irrigation.

Step 5: Risk management plans

Step 5 is the final and most important step of the PADR process. The earlier steps assessed the hazards facing a community, the potential impact of those hazards, and the vulnerabilities and the capacities present in the community. Step 4 looked specifically at the pressures and underlying causes which contribute to the vulnerabilities. Step 5 focuses on finding ways of reducing or managing the risks. The final result is termed a community-level risk management plan.

Step 5 must be given sufficient time and effort, with the full engagement of those who have been involved in the earlier phases of the process. Women as well as men should be fully involved in developing the risk management plan, to ensure that the needs of both sexes, and the needs of children, are taken into account. Focus groups may still need to work separately, but activities from the two plans must, at some point, be brought together. The facilitator should also ensure that minority or marginalised social or religious groups contribute to the process, and that the needs of the less able are taken into account. The rich and powerful should not be allowed to manipulate the process: for example, the land-owning contractor who advocates for engineering solutions so that he and his family may profit.

Risk management planning involves developing a set of activities, based on priorities established by the community members, which will reduce vulnerability. Where possible, these activities should make use of capacities already found in the community – the capacities associated with the men and those associated with the women. The facilitator should encourage this type of self-help approach. Some activities may involve mobilising extra resources from outside the community, from NGOs or from government. Budgets should include some allocation to provide these resources, if the community cannot manage by itself.

The success of risk reduction initiatives usually depends on the sense of ownership which the community feel about their risk reduction plan. If there is a strong sense of ownership, the plan is more likely to succeed; the reverse is also true.

Ownership is increased if the community keeps the original plan and the facilitation team makes a copy. Success also depends on specific people taking responsibility for the implementation of specific activities. This is often done by setting up a disaster management committee, or by adding a 'disaster' function to an existing committee. Committee members then take responsibility for specific actions, ensuring that they are carried out by an agreed finish date.

8.1   Community-level risk management planning

Risk management planning can be done at various levels, beginning with the family, then the wider community, then through tiers of government up to national level. The process suggested here is for community-level planning, building on the information gained in Steps 1 to 4.

There are five stages in producing a community-level risk management plan:

1 **VERIFYING DATA** – Check that the community agrees that the vulnerabilities identified from focus group discussions are associated with specific impacts, and that the listed capacities are indeed present in the community.

2 **PRIORITISING IMPACTS** – Allow the community to select the most important impacts from the list (or pictures) presented.

3 **IDENTIFYING RISK-REDUCING ACTIVITIES** – Collect suggestions for possible risk-reducing measures, including ideas from the facilitator, if the community have few ideas of their own.

4 **EVALUATING SUGGESTED ACTIVITIES** – Discuss these ideas, and decide which activities are the most likely to succeed.

5 **IMPLEMENTING ACTIVITIES** – Develop a risk management plan to implement the selected activities.

STAGE 1   VERIFYING DATA

At the end of Section 6 we concluded that impacts, vulnerabilities and capacities should be brought together into a large table, under the five categories of individual, social, natural, physical and economic (Section 6.5). A second table (Section 7.3) should summarise the dynamic pressures and underlying causes.

However, linking an impact with specific vulnerabilities represents the opinions of the facilitation team, and needs to be verified by the community before we move on to finding solutions. The exact method of feeding back to the community has to be decided by the team, remembering that many in the community will not be literate. Where it is culturally appropriate, male and female focus groups can be brought together. Otherwise, it is a good idea to feed back to the same focus groups as before.

One suggested method is to construct a large flip chart sheet by joining two regular sheets together. Divide it into four blank columns. Give headings to the first three columns: **impact**,

Women participating in a DRR discussion group in Malawi.

Arun Kumar Naik / EFICOR

vulnerabilities and **capacities** (similar to Section 6.5) but do not divide horizontally into the five categories. Specific impacts (taken from the completed flip chart in 6.5) are then added to the left column, and the community asked to agree or disagree that these impacts are seen during disasters. The impacts can be written or drawn on pieces of card before the meeting.

An example for flooding

A

Impact	Vulnerabilities	Capacities
People are drowned		
Houses are damaged		
Crops are destroyed		
etc		

The next step with the community is to add vulnerabilities (taken from the chart in Section 6.5) to the second column (again using cards). The vulnerabilities should be placed alongside the relevant impacts , which are already on the chart. This is shown below.

An example for flooding

B

Impact	Vulnerabilities	Capacities
People are drowned	No warning system	
	Few people can swim	
	No boats or flotation devices	
Houses are damaged	Houses near the river	
	Houses of mud and bamboo	
	No flood embankment	
Crops are destroyed	Crop in the field at the same time as the flood	
	Crops not flood-resistant	
	No flood embankment	

As cards are put in place, the group are asked to agree or disagree with the connection between the vulnerability and the impact. Additional points might be added at this stage.

Finally, capacities in the community (again taken from the chart in Section 6.5) are added to the third column, if possible linking capacities with the vulnerabilities already identified. Members of the group are again asked to confirm or deny that these capacities are present.

Our example will then look like table C.

An example
for flooding
C

Impact	Vulnerabilities	Capacities
People are drowned	No warning system	Mosque has loudspeaker
	Few people can swim	Able-bodied young men and women available as volunteers
	No boats or flotation devices	Some men work on fishing boats Village has many banana and coconut trees
Houses are damaged	Houses near the river	School on safe high land
	Houses of mud and bamboo	Small number of brick houses
	No flood embankment	Plentiful supply of bamboo poles
Crops are destroyed	Crop in the field at the same time as the flood	Government agriculturalist based in nearby town
	Crops not flood-resistant	Vegetable seeds in market
	No flood embankment	Farmers' cooperative

As the chart is built up, group members will probably begin to see that their capacities could be used to address some of the vulnerabilities and reduce hazard impact.

STAGE 2   PRIORITISING IMPACTS

The flip chart should show at least five or six impacts in the left-hand column, some of them severe, some of them relatively small. The group should decide which are the most serious impacts, using one of the ranking exercises described in Section 4.2. In the example above, the community members may decide that crop damage is the most serious of the issues. Discussions on risk reduction should then focus on the vulnerabilities associated with crop damage and how these could be reduced.

This exercise can only prioritise known impacts. The advance of climate change may produce impacts which are only just being felt. Climate change data that has been found (see Section 5.3) and verified (see Stage 1 above) should indicate whether current impacts may become more severe. If possible, try to take account of this worsening situation in the planning too.

STAGE 3   IDENTIFYING RISK-REDUCING ACTIVITIES

Taking each vulnerability in turn, ask the community for ideas as to how that vulnerability could be addressed. If ideas are slow coming, the facilitator should highlight some available capacities which might be relevant. He/she may be able to suggest some activities which could be used to reduce risk in these situations, for example, ideas noted in column 5 during office-based discussions of the table in Section 6.5. In the case of the flood example considered in table C above, he/she may ask questions such as these:

■ Has anyone ever tried growing a crop which is flood-tolerant?

■ Was it successful? If yes:

■ Is seed of this crop still available anywhere? If yes:

■ Would it be possible to grow this crop more extensively? and so on…

The simplest way of facilitating this is to use the last column on the right side of the chart (as in Section 6.5) and write the suggestions from the group into this column. Remember to suggest ideas if the community is slow to respond.

Table D uses the flood example again, focusing on the impact 'Crops are destroyed':

An example
for flooding

D

Impact	Vulnerabilities	Capacities	Suggested risk-reducing activities
Crops are destroyed	Crop in the field at the same time as the flood	Government agriculturalist based in nearby town	Ask agriculturalist for advice and training on flood-tolerant crops
	Crops not flood-resistant	Vegetable seeds in market	Encourage vegetable gardening in the dry season
	No flood embankment	Farmers' cooperative	Use cooperative to buy seed at better prices

The group may wish to repeat the process for other hazard impacts. A list of suggested risk-reducing activities for different hazard types appears in Appendix B (page 92).

STAGE 4   EVALUATING SUGGESTED ACTIVITIES

Having collected a number of ideas, the facilitator should lead a discussion of each activity, to test whether or not that activity is possible and appropriate. He/she should ask about possible problems or negative effects of that activity, which could lead to rejection of some ideas. Questions could include:

■ Would anyone be negatively affected by this activity?

■ Will the activity benefit the poorest and most vulnerable people, including women?

■ Would the activity have any negative impact on children?

■ Would there be any damaging effect on the environment?

■ How would the activity be affected by climate change?

If an activity could have negative side-effects, find ways to minimise those effects. Tearfund's ROOTS 13 – *Environmental sustainability* has a section on environmental impact assessment (Section 5.2) and the *Environmental assessment* tool has a more detailed methodology for assessing the impact of activities upon the environment. If you cannot find a way to reduce or remove negative impacts, then the activity should be rejected.

STAGE 5   IMPLEMENTING ACTIVITIES

The final stage is to decide how the selected activities will be carried out. If you have continued in separate focus groups, this is the time to bring together the men's and women's suggestions and evaluations. It may be possible to do this in a mixed group. If not, facilitators should

ensure suggestions from the women's group are incorporated in the final plan and women are represented as well as they can be in the cultural context. It is best to use more flip chart paper, with six columns, according to the template below.

Risk management
plan template

Selected activity	Method of implementation			Person responsible	To be done by (date)
	Community action	NGO support	Request to government		

Selected activities should be written in the first column on the left. In the **Community action** column, write some things the community can do using its own existing capacities – knowledge, people, natural resources etc. The facilitator should encourage maximum use of these capacities. In the **NGO support** column, write activities or materials which may be needed from outside: the facilitating NGO may be able to provide these, or possibly bring in the services of another NGO. An entry in the **Request to government** column indicates an advocacy activity to bring in the larger resources, services or expertise of local or higher-level government.

The final stage is to fill up the two columns to the right side of the chart, to indicate who in the community is responsible for doing that activity or has oversight to ensure others do it. Vague wording such as 'community' or 'farmers' should not be used. Sometimes an existing leader or committee can take responsibility for these activities, or alternatively a new disaster management committee can be formed, with members chosen by the community (see Section 8.3). It is a good idea to set completion dates, particularly if an activity needs to be done before the start of a particular season.

Further ideas for developing the plan appear below.

A few practical tips

- Ensure that the development of the risk management plan is done at a time and place which enables full participation of women. If the culture demands separate working groups for men and women, ensure that the ideas from both groups are given equal value in implementation.

- For community training, consider engaging organisations particularly focused on women to communicate effectively with women. Ensure that any suggested activity, for example, an early warning system, is inclusive of both men and women.

- Remember that the community may have low levels of literacy. In such cases, it is helpful to work with pictures rather than words. Sometimes it may be possible to take photos around the locality, or to download relevant pictures from the internet. Make sure the pictures are large enough and that the group understands what each picture represents.

- Impacts can usually be drawn quite easily, eg a picture of a damaged house or a dead cow. Vulnerabilities and capacities can be more difficult. For example, it is harder to picture the lack of a reliable water supply. You can draw a red line across a picture to symbolise that something is absent or inaccessible or has a negative effect – but take time to explain this.

- Using cards to represent impacts, vulnerabilities and capacities makes the process of associating particular vulnerabilities with particular impacts more visual and dynamic – members of the community can move the cards around.

- It is important to choose the right location for this process. A hot, closed room will send people to sleep very quickly, whereas using benches outside in the shade of a big tree may be much more effective in ensuring their full participation.

A completed community risk management plan (based on a drought- and flood-affected area in Malawi)

Selected activity	Method of implementation[9]			Person responsible[10]	To be done by (date)
	Community action	NGO support	Request to government		
Grow drought-resistant crops	Tillage of fields, planting, weeding	Locate seed for drought-resistant crops, organise a seed fair for sale	For training from agricultural extension workers	Village chief, with support from NGO field worker	Fields ready by [date], seed in farmers' hands by [date]
Adopt conservation farming methods	Tillage of fields, planting, weeding, all using new methods	Arrange exposure visit to see successful conservation farming	For training from agricultural extension workers	Village chief, with support from NGO field worker	Fields ready by [date], visit completed by [date]
Food for work scheme during hunger gap	Select risk-reducing work projects; give one day free labour for five days paid work	Arrange the food purchase, supervise work and payment for workers	For technical advice on infrastructure (eg canal for irrigation)	Village chief, NGO field supervisor	Food purchase by [date], work completed by [date]
Improved government health service	Give land and bricks for clinic	Provide introduction with health officer	For clinic building and trained staff	NGO field supervisor	By end of the year
Plant 1,000 tree seedlings	Each family to prepare five pits, provide land for community tree plantation	Provides 1,000 seedlings	Forest department for advice and sale of good quality seedlings	Village chief, NGO field supervisor	Pits ready by [date], seedlings bought and delivered by [date]
Form savings and credit groups for women	Provides meeting place for groups, sets member criteria	Brings in a specialist NGO doing micro-finance	For official registration of the groups	Initially NGO staff, later group leaders	Groups formed by [date], savings reach loan threshold by [date]
Volunteer team for flood warnings and evacuation	Sets criteria for volunteers, free service from volunteers	Training for Disaster Committee and for volunteers, megaphones	For improved warnings from government	Village Disaster Committee, NGO Field Supervisor	Committee formed by [date], volunteers selected and trained by [date]

9 Community action is the responsibility of the village chief or village disaster committee; NGO support requires leadership from the NGO's staff.

10 We have not specified a 'person responsible' as typically the community begins advocacy work with the support of the NGO.

A common major vulnerability is that people lack knowledge of the correct actions to take in an emergency, or do not have a contingency plan already in place. The risk management plan should ensure that these two areas are adequately covered – there should be a contingency plan (see below) and an education/awareness strategy.

Wherever possible, the community-level risk management plan should be linked to government disaster contingency plans and disaster-related services. For example, if the government has a good set of plans in relation to drought and food security, then the community plan for coping with drought should acknowledge and link up with these plans. (See also Section 8.7 on advocacy).

Updates and revisions to risk management plans

A risk management plan is not a static, permanent document. It needs to be reviewed and updated at regular intervals – at least once a year. Some key questions to ask include:

■ Have all the activities in the plan been implemented?

■ Do any of the listed activities need to be rescheduled?

■ Are any new activities needed?

The review process should include representatives of the different sub-groups within the community who helped to formulate the plan originally. Any changes or additions should again be assigned to specific people and placed within a time-frame.

8.2   Risk management and the Hyogo Framework for Action (HFA)

The Hyogo Framework was first described in Section 2.5. It is an internationally recognised UN document, drawn up in 2005 to give guidance on the breadth of activities needed to reduce the impact of disasters. It is relevant to local communities, NGOs and all levels of government. There is a relationship between this Framework and the community risk management plans described in the section above.

There are five categories within the Framework:

1 Prioritise risk reduction activities.

2 Assess and monitor risks.

3 Educate and train the community.

4 Reduce vulnerability and the causes of vulnerability.

5 Increase levels of preparedness.

A good community plan will address all five of these areas. If one or more areas are neglected, the plan will be less effective. For example, preparedness will have little value if it is not supported by a widespread programme of community awareness, education and training. Facilitators should be aware of the HFA and should introduce questions and ideas to the community if it looks like the five areas of activity will not be covered.

The following diagram shows how the HFA relates to the community-level risk management plan you have just developed.
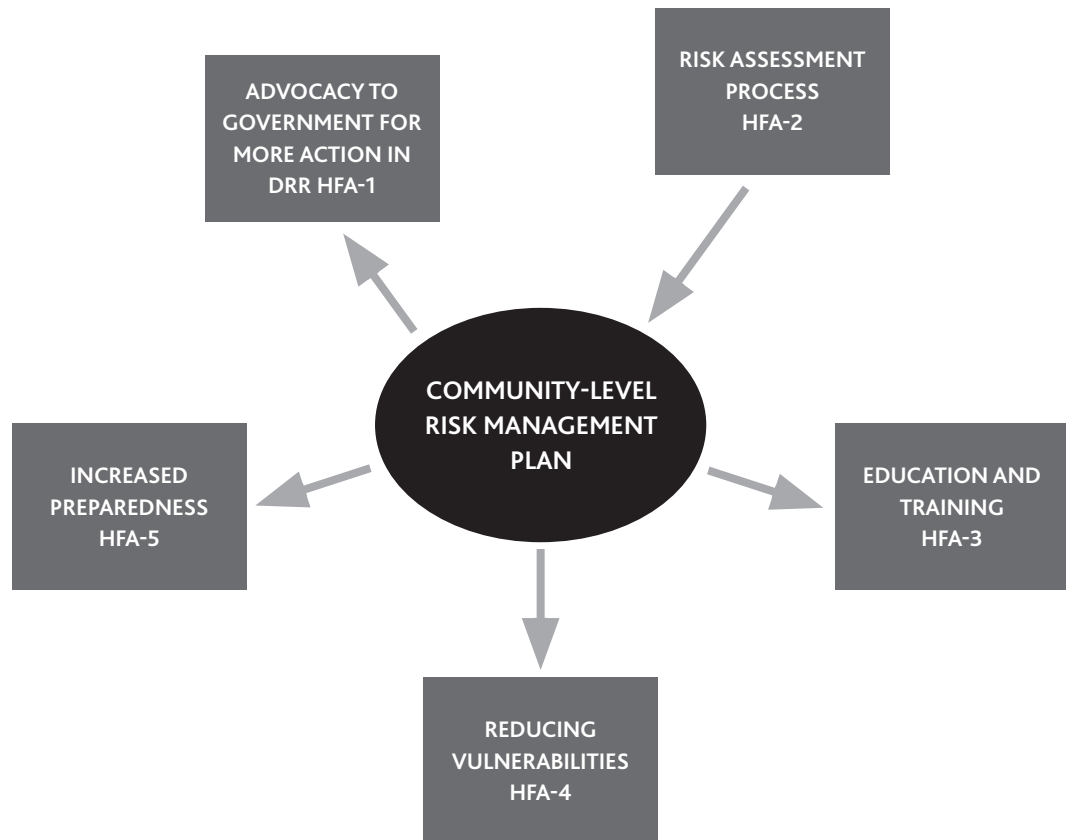
ADVOCACY ACTIVITIES (HFA-1) are designed to influence power holders, so that their decisions or actions will give priority to risk-reducing activities. Examples include persuading the government to dredge a river, repair an embankment, replace a bridge or improve its emergency food stocks.

RISK ASSESSMENT (HFA-2) includes the PADR process carried out with the community, producing a description of the hazards, the damage caused and the vulnerabilities and capacities present within the community .

EDUCATION AND TRAINING (HFA-3) must be given to ensure that everyone in the community knows about the warning system and the community contingency plan. Education through the schools should use creative methods such as songs, slogans, puppets, drama, posters and art competitions. Traditional knowledge (eg drought warning signs) should be spread more widely.

REDUCING VULNERABILITIES (HFA-4) could include activities such as stronger house design, alternative livelihoods, growing drought- or flood-resistant crops, or making water supplies safe from flooding. It is important to take account of climate change: the actions must remain effective, even under changed climate conditions.

INCREASED PREPAREDNESS (HFA-5) usually means contingency planning at community level and at family level, so that the right actions are taken before, during and after the impact of a hazard. This is covered in more detail in the next section.

8.3   Contingency planning at community level

A contingency plan is essentially a set of measures put in place before a hazard comes, which will increase the community's ability to cope with and recover from the impact of that hazard. It is one component of the wider risk management plan, addressing the 'preparedness' element of the Hyogo Framework. At least some parts of the contingency plan should be developed within the overall risk management plan, although full details may need to be finalised later when a leadership structure for implementing the plans is in place.

The essential parts of a community contingency plan are as follows:

LEADERSHIP   Leadership should be provided by an existing committee or council, or a newly established body to direct the community's response to disaster. This is often called a disaster management committee, made up of people chosen by the community. Its relationship with other leadership structures needs to be clearly defined to avoid tensions or conflict.

VOLUNTEER TEAMS   With some hazard types, it is helpful to have a group of men and women who are trained to help others in times of crisis. For example, the volunteers may disseminate warning messages, assist elderly, sick and disabled people to reach safety, provide crews for boats or administer first aid to those injured. Specialised sub-teams may be formed to cover these different functions. Careful consideration should be given to local culture and the role of men and women in that culture.

WARNING SYSTEM   For every hazard type, the warning system will be different. For cyclones and hurricanes, hand-held megaphones or signal flags are widely used. For floods, volunteers may be deployed to monitor water levels and then use bells or other loud noises to alert the community. With drought, conditions deteriorate slowly, but many drought-prone areas have a government or meteorological department warning system. Also, farmers often have their own traditional ways of forecasting drought, for example, by interpreting insect behaviour, wind directions or tree flowering patterns.

For earthquakes, scientific sources might be available, but more typically the community has to interpret the signs of nature, eg the unusual behaviour of cattle, dogs or birds. With hazards such as flash floods, the warning system has to be fast and effective, because the community may have only minutes to respond. Church bells, mosque loudspeakers, mobile phones and gunshots are commonly used to raise the alarm.

EVACUATION CENTRE   Hazards such as floods, cyclones or earthquakes may force people to leave their homes. Sometimes displaced people seek shelter with relatives living in a safer area. More often, there is a need to select and equip a building or camp area for temporary safe residence. Some countries have purpose-built cyclone or flood shelters; for many others, a school or a church on higher land, or government buildings, can be used as a temporary safe shelter. The building may require some strengthening for this purpose. For example, the roof may need to be attached to the walls more securely to withstand high winds.

The evacuation centre should have adequate facilities, including a safe drinking water supply and separate toilets for men and women. The role of the volunteer team may include managing the centre and making sure that the needs of the most vulnerable people are met. Cultural practices regarding mixing or separation of men and women should be respected. Sometimes small

amounts of dry food are provided. Areas for keeping livestock also need to be set aside.

Where there is no suitable building, open high land is often used. Advance preparation is required, both to remove unwanted vegetation and to bring in temporary shelter materials such as plastic sheets and bamboo poles. Land use has also to be carefully planned, and arrangements made for water and latrines.

Caroline Irby / Tearfund

A volunteer task force organises an evacuation drill.

EVACUATION PLAN

Every person in the community should know the location of the evacuation centre and the safest route to reach it. They should also know the evacuation signal, and have some essential items ready – food, water, blankets etc (see also Section 8.4, Contingency planning at family level). In societies where women cannot move freely without a male relative, widows or women with absent husbands may be at higher risk and need special plans for evacuation.

DRILLS AND REHEARSALS

People learn best by doing things themselves! It is a good idea to create a pretend disaster situation and to organise a practice evacuation in safe conditions. Everyone will then know what to do when there is a real disaster and the risks are much higher.

CARE FOR THE MOST VULNERABLE

The contingency plan should ensure that elderly and less able people and those with long-term illness are given priority during an evacuation. Volunteers should know where they live, eg in some societies it is acceptable to place coloured flags on their houses. In slow-onset disasters, the needs of the most vulnerable people may be less obvious, but the community should still ensure their care.

COMMUNICATION SYSTEM

There should be some system of communicating with government officials, to inform them of the particular needs of the affected community. If networks are still operating, mobile phones are ideal for this, but the correct numbers must be collected before the disaster and batteries charged. There should be a back-up system if mobile phones cease to work or cannot be recharged.

LINKAGES WITH GOVERNMENT PLANS

In some situations, local government may have plans and resources to help the population cope with disaster, eg evacuation boats, radios and food stocks. The community leaders or disaster management committee should establish good relationships with relevant government officials before any disaster. They will then be able to receive warnings and access resources in times of emergency.

EDUCATION AND AWARENESS

A contingency plan will only succeed if there is a clear strategy to ensure that all members of the community are aware of it and know exactly what action to take in an emergency. This applies particularly to children in schools, to elderly or less able people, and to those engaging in more remotely based livelihoods (eg herding cattle or fishing).

In cyclone-prone areas, disaster management committees can design and run cyclone warning systems for vulnerable communities.

8.4 Contingency planning at family level

In high-risk areas it is advisable for every family to have its own plan of what to do in an emergency, with every member fully aware of their own role. Some key elements in this plan are as follows:

■ Ensure the safety of every family member, with the strong and able-bodied taking care of the very young, the elderly, the sick or the less able.

■ Ensure that important assets – animals, livelihood tools, seeds, money, jewellery, important documents, cooking utensils etc – are kept safe. Some families prepare a 'quick-run' bag – a waterproof bag containing all the key documents and other essential items, kept in a safe and convenient location so that they can quickly pick it up and carry it with them in an emergency evacuation.

■ Prepare in advance the key items to carry if evacuation becomes necessary – water container, dry food, blankets, the above assets etc.

■ Ensure there is a way of communicating with the wider community, both to receive and to give information, eg knowledge and visibility of warning flags.

■ Arrange a family meeting place in case family members become separated during an emergency or evacuation. Make sure that children are aware of this and know how to get there, and have contact details of other family members.

■ Ensure that all family members know the nearest safe place for evacuation and the safest route to get there.

8.5 Risk management plans for slow-onset disasters

Risk management plans for slowly developing emergencies are a little different to those needed for rapidly appearing hazards. By definition, there is more time to develop and implement the plan, although people may be slow to begin in the hope that rain will come. Some key points to include in a slow-onset plan are as follows:

■ Establish clear thresholds as the drought develops, which will trigger particular activities – for example, sale of livestock.

■ Consider how essential needs for food and water will be met during the drought. Ideas might include grain banks, or installing large plastic tanks which can be filled by tanker delivery.

■ Consider how livestock will be preserved, either by moving them to places with pasture, or by sale, or by stockpiling food and water; treat animals with medicines to remove parasitic worms, because healthy animals are more likely to survive a drought.

■ Plant a mixture of crops, including drought-resistant types, using water conservation methods.

More ideas can be found in Appendix B (page 92).

8.6 Resilient communities

The ultimate goal of a risk management plan is to produce communities which are resilient to shocks – ie they are able to effectively respond to and quickly recover from the impact of a hazard. The second edition of John Twigg's paper, *Characteristics of a disaster-resilient community*, lists numerous attributes of a resilient community, arranged in the categories of the Hyogo Framework. It also lists the characteristics of an 'enabling environment', ie the government policies and services which will strengthen and support the community's characteristics.

It is difficult to develop one set of characteristics which will give resilience against all types of hazard. For example, the structural strength of houses will be a key characteristic in flood, cyclone or earthquake zones, but will be largely irrelevant in drought-prone areas. Tearfund has developed two shorter sets of 20 key characteristics, one for rapid-onset disasters, the other for drought, which develops more slowly. Both sets of characteristics are given in John Twigg's paper (turn to References on page 94 for where to find this online).

8.7 Influencing policy makers and power holders through advocacy

There are many ways in which the policies and actions of power holders can affect the vulnerability of poor and powerless people. These were considered in Section 7, under the heading of dynamic pressures and underlying causes. The PADR process will uncover particular issues, for example:

- Local government may not develop proper contingency plans, or may not take account of the needs of the most vulnerable people.

- Business interests may take actions which create vulnerability, as when a flower farm or drinks factory sinks a deep bore well and depletes underground water reserves.

- Wealthy landowners may deny poor people access to their land, even in times of emergency.

- Government services such as health and agriculture may not be provided, or laws may not be enforced (for example, on forestry, fishing, or building regulations).

- National government may fail to invest in disaster preparedness or risk reduction, or it may fail to allocate resources to areas in greatest need.

- National government may not be engaging internationally with climate change and the need to cut emissions.

In each of these cases, the most appropriate risk-reducing activity will involve advocacy to bring about change in policy or action. Even the PADR process itself, by engaging with government officials and key informants, may begin to highlight the key issues and to suggest possible solutions.

There are many forms of advocacy, most of which involve negotiating and developing positive relationships with power holders. Some examples include:

- taking part in rallies to commemorate special days/events (eg International Disaster Reduction Day, usually in October)

- inviting government officials to inaugurate new infrastructure or to attend or open/close training events

- modelling positive behaviour as an example to others, for example, when including women in community decision-making

- embarking upon higher-level campaigns to influence government or business policy in a particular direction.

Tearfund has publications available to help you develop advocacy activities, available on www.tearfund.org/tilz

These include:

- *Why advocate for Disaster Risk Reduction?* and *Turning practice into policy*. These can both be found at: tilz.tearfund.org/Topics/Disasters/Disaster+risk+reduction/DRR+advocacy+guides

- ROOTS 1 – *Understanding advocacy* and ROOTS 2 – *Practical action in advocacy* tilz.tearfund.org/Publications/ROOTS/Advocacy+toolkit

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How to organise an advocacy campaign

The risk management plan on page 70 (Section 8.1) identified requests which could be made to government. The following table should help you in your planning.

Topics and questions
to consider in
preparing for
advocacy

TOPIC	KEY QUESTION	EXPLANATION
Issue/ problem	What is the problem?	This has been identified during the earlier steps of the PADR process.
Effects	What are the effects of the problem?	This has been analysed in terms of individual (male/female), social, natural, physical and economic effects.
Causes	What are the causes of the problem?	The PADR process has also identified dynamic pressures and underlying causes, including political and economic factors which increase the vulnerability of poor people.
Potential solutions	What needs to be done?	Ideas may have been discussed already during action planning. These need to be evaluated by additional questions, such as: • What are the advantages and disadvantages of these ideas? • Are they realistic? • What will be the indicators of success?
Power holders	Who has the power to do something to bring about the required change?	Power holders are likely to be government officials but may also include businesses, religious leaders or traditional rulers in the community. The PADR process should help to improve relationships between local people and the power holders. As a result, they may be very willing to discuss ideas, and changes may be achieved quite easily.
Potential allies	Who is trying to address the issue at the moment?	Advocacy work is often more effective if done jointly with other groups. However, there are important questions to ask, such as: • Is it appropriate to work with them? • Is their activity effective? • Are there influential people who are not yet addressing the issue, but could be persuaded to help? • Does the church have a role to play?
Risks and assumptions	What are the risks in getting involved in this advocacy work?	Advocacy may not be easy if we are challenging unjust practices or corruption, and the possible negative effects on the NGO or community need to be assessed. There are several key questions: • How can these risks be reduced? • What are the consequences if the issue is not addressed? • Do the facilitation team and local people have the skills and abilities to address this problem?
Methods	What methods can be used?	Various advocacy methods are available (see Tearfund's ROOTS *Advocacy Toolkit*, Section A2 Understanding Advocacy). We need to decide which methods to use, by asking: • Can these methods be carried out confidently? • Have they proved successful in the past? • Are there alternatives? • Do the necessary skills and resources exist?

A rally to celebrate National Day for Disaster Preparedness in Bangladesh.

Advocacy can be done in many different ways and at many different levels. An example from India has already been given on page 64. The case study below demonstrates a bottom-up approach to advocacy that proved successful. Sometimes an NGO or community group may feel unable to act alone, because of a lack of resources, capacity or skills. In such cases, a stronger voice can be developed by forming networks with others who share the same interest.

CASE STUDY
Changing disaster management laws in Indonesia

Indonesia's Disaster Management Law was initiated by civil society. Following the tsunami in South Asia in 2004, an NGO met the leader of Indonesia's legislative body to discuss the priority given to disaster management in national planning. The NGO then organised a public discussion, 'The urgency for a disaster management law in Indonesia', where participants agreed on the need for a new law.

The NGO was then asked to coordinate the drafting of a white paper for a Bill on Disaster Management. This was written with participation of the Department of Home Affairs and other NGOs and sectoral experts. The paper was submitted to the President of Indonesia in 2005. In 2007, the Indonesian Disaster Management Bill was passed. Civil society had been involved throughout the discussions and drafting of the Bill.

SECTION
9

PADR in specific contexts

Sections 4–8 have considered the standard use of PADR as a tool to assess risks in the community and to develop plans of action to reduce those risks. Section 9 considers a few more specialised situations where PADR can be used, sometimes in combination with other tools.

9.1   PADR and church mobilisation (*Umoja*)[11]

Tearfund and its partners have given high priority to mobilising and equipping churches to reach out to their surrounding community and to address some of the pressing problems. A process known as Church and Community Mobilisation (CCM) has been developed. This methodology has been used widely in Africa and Asia, in such diverse contexts as Tanzania, Liberia, Sudan, Cambodia and Nepal. Resource material under the name *Umoja* has been produced, specifically to help NGOs and associations of churches that want to envision and equip local churches to mobilise whole communities for action. See tilz.tearfund.org/Churches/Umoja for further information.

The methodology is essentially a call to integral mission, a challenge for the church to engage with the spiritual and physical needs of people round about, a challenge also to care about justice and about God's wider creation. There are five stages in the CCM process:

1 **ENGAGING WITH THE LOCAL CHURCH** Helping churches to develop a vision for service and a belief that change is possible, even with their own limited resources.

2 **ENVISIONING THE LOCAL COMMUNITY** The church brings the wider community together to discuss their situation, their problems and resources, and how things could change.

3 **DREAMING DREAMS AND PLANNING ACTION** Once the participants have agreed a shared vision, they develop an action plan for change, using their own resources, which should deliver the vision.

4 **TAKING ACTION** Implementation of the plan, calling in specialist advice as needed, to ensure positive change takes place.

5 **EVALUATION** Looking back to review how the church and community have worked together to run projects and bring change.

Umoja and PADR can be integrated together when natural hazards are high on the priority list of community concerns. For example, a church may successfully complete the mobilisation process (*Umoja* stage 1) and succeed in envisioning the local community (*Umoja* stage 2).

If drought and related food insecurity emerge as priority issues, the PADR process can be drawn upon to further assess the hazards (PADR step 2), vulnerabilities and capacities (PADR step 3) associated with the drought/food problem. Further information could then be gathered by interviewing community leaders and government officials in order to understand more clearly the dynamic pressures and underlying causes (PADR step 4) contributing to the food problem.

11   The word umoja means 'togetherness' in Swahili. In some countries a different name is used for the same CCM process. For example, in Brazil it is called *Comunidades Transformadas (Transformed Communities)*.

Finally, the two processes can be combined (*Umoja* stage 3 and 4, and PADR step 5). An action plan is developed on the basis of suggestions from members of the community. This should rely on the resources of the community, with the possibility of technical assistance from the NGO and service provision by the government. Specific people in the community should take responsibility for specific tasks, and a drought action committee (or similar) may be needed. The responsibility of leading the process should be shared among a number of people and not fall solely upon the shoulders of the pastor, as he or she has many other responsibilities.

The PADR process can also be used by churches separately from *Umoja*, using a facilitator and the various groups existing within the church. Hazards, vulnerabilities and capacities can be identified and action plans developed – particularly ways in which the church can help its members to prepare for and recover from disaster. Ideally, the process should then spread beyond the church and bring the wider community into the plan. A paper entitled *The local church and its engagement with disaster*, which was published by Tearfund in July 2009, is based on 12 case studies from around the world. *Disasters and the local church*, published in 2011, provides detailed guidance for church leaders in disaster-prone areas.

9.2 PADR in urban contexts

Threats and hazards

When PADR was piloted in an urban environment, the team found that the term 'threat' was more readily understood than 'hazard'. The facilitation team therefore adopted slightly different terminology. People living in that urban slum regarded their greatest threats as:

- Forced eviction from the slum (by bulldozer) due to illegal settlement.

- Riots and other forms of violence, such as domestic violence.

- Theft by neighbouring slum dwellers or people from outside.

People often felt threatened by the action of other people, rather than by natural hazards. Step 2 therefore became 'Threat assessment' rather than 'Hazard assessment'. Different opinions were expressed during the threat assessment concerning the importance of each threat. Prioritisation had to be done carefully in order to gain ownership by everyone.

As well as threats, there were still some specific hazards for an urban environment.

For example:

- Fire, due to the houses being built very close together.

- Flood, due to the location of the settlement on marshy land or to inadequate drains, or because the presence of roads and other artificial surfaces gives less opportunity for rainwater to drain away.

- Earthquake, potentially a greater risk in towns and cities, as there are more multi-storey buildings, often built to low building specifications.

Local people identified the following threats: malaria, fire, flood, crime and demolition. Malaria was selected as the most important.

During the vulnerability assessment, the following vulnerabilities were identified:

• Element at risk: human lives.

• Vulnerable conditions: stagnant water in which mosquitoes can breed.

• Pressure: local authority does not remove rubbish, which then blocks drains.

• Underlying cause: the local authority will not take action because the settlement is illegal and likely to be demolished.

Action planning included involving local people in clearing the drains themselves, providing education about making and using mosquito nets, and advocacy with local authorities to legalise the settlement or provide suitable alternatives.

Social structures

There is often less cooperation and unity among urban people than in rural areas. People become separated from traditional networks and other social structures such as village councils, farmers' cooperatives and informal social gatherings of women.

Urban slums often consist of people from many different places. Even when people have lived in an urban area for many years, they may still have fewer connections with their neighbours than they had in rural areas. One key way to reduce urban vulnerability to disaster is therefore to encourage stronger social groupings and to develop a culture of mutual help and support.

Capacities and vulnerabilities

While people in urban areas may have fewer social capacities, they do have other resources which often do not exist in rural areas. For example, they may be nearer to emergency services or closer to high-quality medical facilities. There is the possibility of good schools and other government and NGO services.

However, there is a difference between 'availability' and 'access'. The facilities might be present, but people in the urban slums may remain vulnerable if they have no access to them. Slum dwellers may live near a health centre, but may be excluded if they cannot afford the fees. Emergency services may exist, but a fire truck may not be able to penetrate an urban slum if the streets are too narrow. Development of social capacities, such as a local fire committee and volunteer team, may be a more effective solution for reducing fire risk than reliance on a fire truck.

One of the impacts of climate change is the enforced migration of more people to high-risk locations around the cities. For example, rising sea levels and river bank erosion mean that many poor people can no longer live in their homes or continue with their farming as homesteads and land are lost to the sea. While migrants have high hopes when they move to the cities, their vulnerability can be greater in the slums and their capacities less than in their former rural homes.

9.3   PADR and conflict

PADR is mainly designed for natural hazards, particularly for those which recur persistently year after year. When the most significant hazard facing a community is conflict-related, PADR may not be the best approach to use, especially if dealing with people displaced from their home environment. Other tools related to conflict analysis and peace-building may be more appropriate, for example, conflict mapping, time lines and conflict trees, and a conflict analysis methodology has been developed for DFID.[12] Tearfund has also published ROOTS 4 – *Peace-building within our communities*, available from www.tearfund.org/tilz.

If people are still in their own homes in a conflict zone, PADR can be used, but it is important to remember some key principles, especially when working with focus groups. These include:

- Sensitivity – especially if people begin to recall painful memories.

- Neutrality – so that PADR is not seen to be helping one side or the other. Seek to gather information from the different parties involved.

- Confidentiality – not revealing any information that may give an advantage to the opposing side or put individuals in danger.

When assessing hazards, vulnerabilities and capacities, the process should be as specific as possible, rather than dealing with conflict as a whole. For example, the hazard should not be listed as 'war', but as 'attacks on the village at night', 'aerial bombing' or 'landmines'. Vulnerabilities might include conflict-specific issues such as lack of mobility, lack of safe shelters, or absence of warning systems. Capacities might include peacekeeping forces, refugee or IDP camps, emergency supplies, or a bomb shelter.

Focus groups

Facilitators should be aware that community members or powerful people may be suspicious of focus groups. It is important that everyone linked to the community is aware of the PADR process and its purpose, so that they do not feel threatened. It may be wise to choose a suitable time and place for focus groups to meet in private, in case they want to discuss sensitive issues. Try to ensure that such discussions are used to strengthen peace and not used by fringe elements as an opportunity to increase tensions. Skilled facilitation is needed.

Key informants

Ensure that key informants are drawn from people on all sides of the conflict, so that differing views can be heard and understood. Be aware that sometimes national government or international groups seek to use or to increase local tensions in order to achieve their own objectives.

Capacity assessment

Some local capacities may have been negatively affected by the insecurity. For example, traditional grazing lands may no longer be available, or areas where firewood used to be gathered may have become too dangerous. Be aware also that in conflict situations, one side

12 DFID (2002)
Conducting conflict assessments: guidance notes

may deliberately target the capacities (especially natural resources and infrastructure) of the other.

In the discussions, encourage people to identify these lost capacities as well as the ones which they are currently able to use. Any suggestion of 'winning back' capacities by violent means should be gently rebuffed, as it is likely only to inflame the conflict. However, action planning can look for ways of regaining capacities by peaceful means or ways of developing alternatives to those which have been lost.

Action planning

If there is no established group to take the action plan forward, it may be necessary to focus planning on the household level rather than the community as a whole. Household contingency plans to avoid or escape from attack should be considered if this level of violence is still expected. This can include assembling an emergency 'quick-run' bag, or agreeing regrouping points in the bush for scattered/divided family groups. Community-based warning systems might also be possible.

9.4 PADR in post-disaster situations

The main use of PADR is in a pre-disaster context, anticipating the expected appearance or reappearance of a hazard. It works best in situations where the hazard is a regular, perhaps annual, visitor to the community. However, the process can also be used after a disaster in order to improve the quality and sustainability of relief, rehabilitation and reconstruction work.

Traditionally, disaster relief agencies carry out damage and needs assessments after a disaster. The aim is to save lives, repair damage and restore some 'normality' to the situation. However, there are problems with this narrow approach:

■ It focuses on short-term needs, rather than seeing the long-term failures in development which contributed to the disaster.

■ Local capacities can be damaged if people are treated as helpless victims.

■ Relief dependency can be created if people rely too much on outside help.

■ If the underlying causes of the disaster are not understood, relief work can sometimes rebuild the same risks that enabled the disaster, or it may create new risks.

PADR can be used to uncover the vulnerability factors which contributed to the disaster. The process is best introduced towards the end of the emergency relief phase, or at the start of early recovery. It should be carried out before any reconstruction of houses, infrastructure or livelihoods. If time does not permit a full PADR, the following condensed form can be used. Questions in section B will need to be developed for the specific local context, based upon answers in section A. For example, if the individual impact is that 30 people died, then the section B question becomes 'Why did those deaths occur?' (The answer might be lack of warnings, lack of swimming skill, weak buildings etc.)

Simplified/ condensed PADR in post-disaster situations

The following questions can be discussed in focus groups (at least one female group as well as a male group).

HAZARD ASSESSMENT

1 What are the main types of hazard affecting this community, in addition to the one they have just experienced?

2 When have disasters occurred in the past?

3 What areas of the community were affected? To what extent?

4 What warning signs or signals indicated that a hazard was approaching?

5 Is the frequency or intensity of the hazards increasing or decreasing?

VULNERABILITY ASSESSMENT

1 In the recent disaster, what was the impact of the hazard on the different areas of community life?

• Individual – impact on life and health?

• Social – impact on family life, social events, leadership?

• Physical – impact on houses, roads, bridges?

• Natural – impact on natural resources (water, forest, grass, animals)?

• Economic – impact on livelihoods or financial situation?

2 Why did the disaster have this impact on the community?

• Any lack of knowledge, skills or health services?

• Any social divisions, or groups not functioning, or lack of leadership?

• Any weakness in house construction, or poor location of buildings?

• Any shortage of, or restricted access to, natural resources?

• Any shortage of income, savings or credit facilities?

3 What were the critical missing items – the things which would have greatly helped people to cope better with the hazard (eg boats, tools, warnings etc)?

CAPACITY ASSESSMENT

1 How did the community cope with this recent major disaster? (In the five categories)

• Individual – what skills or knowledge were particularly useful in the community?

• Social – what social groupings and leadership structures were very helpful?

• Physical – what buildings, roads and bridges were useful during the crisis?

• Natural – what natural resources were drawn upon? Were any new ones used?

• Economic – what financial coping mechanisms were used (eg alternative livelihoods, sale of assets, usage of savings)?

2 Think about the ways people used to cope with disaster in the past. Were any of those coping mechanisms not available in the recent disaster? Why are they no longer used?

3 Have there been any schemes or projects in the past to reduce disaster risk? Have these been successful or have they failed? Why?

ACTION PLANNING

In the focus groups, discuss the questions:

1 Based on the above analysis, what actions could the community take which would help its members to cope better if the same or a similar hazard appeared in future? For example:

• Develop a warning system.

• Build stronger social groups and volunteer teams.

• Improve design of buildings.

• Increase availability of natural resources.

• Improve or protect water supply.

• Change agricultural practices.

• Initiate savings groups.

2 Which actions could be taken without outside help – and which actions need outside help? (Assign tasks to individuals, if possible with a time-frame.) What action or input from government is required?

A

Vulnerability and capacity assessment: questions and recording grid for focus group discussions

Vulnerabilities and capacities in INDIVIDUAL (male/female) category

TOOL There is no tool to use here, but the seasonal calendar in Section 4 (page 37) may help you to answer Question 3.

Impact question	Answer
What impact does the main hazard have on human life and health in the community? For example, death, injury, hunger, reduced ability to work.	

Question	Vulnerability	Capacity
1 Which people in the community are most affected by the hazard? Why are they most affected?		
2 Which people in the community are least affected by the hazard? Why are they least affected?		
3 Which health problems reduce people's ability to cope with a disaster? In which months are these health problems most serious?		
4 Have you (or children) received any information or training about how to cope with disasters? Where did this information come from?		
5 What skills and knowledge help people to cope better with disasters? For example, ability to swim; knowledge of wild foods; boat-handling skills.		

Vulnerabilities and capacities in SOCIAL category

TOOL With the group, draw a **Venn diagram** with circles to represent different social groups; the sizes of circles indicates their importance in the community.

Impact question	Answer
How does the main hazard affect social life? For example, more/fewer ceremonies; school attendance drops; migration; more crime or disputes etc.	

Question	Vulnerability	Capacity
1 The Venn diagram shows that many groups exist in the community. Which of these groups is of most help in times of disaster? Please give details.		
2 Which family links or relatives are most helpful to you during times of disaster? (Local and more distant.)		
3 Are there people in the community who benefit from disasters? If yes, please give details of why and how.		
4 Who provides leadership and good guidance in times of crisis? For example, traditional leader; government officials; religious leader; others.		
5 What government services still function during disasters, and how do they help the community?		

Vulnerabilities and capacities in NATURAL category

TOOL List or draw the natural resources available to the community. Which ones are the most important? Do a ranking exercise. Natural resources should also be added to the map drawn for the physical category (see page 90).

Impact question	Answer
How does the main hazard affect natural resources? For example, impact on drinking water, grazing land, forest, fish, soil etc.	

Question	Vulnerability	Capacity
1 Which natural resources (eg water, grass, trees, fish) are most affected by the hazard? Why are they most affected in this way?		
2 Which natural resources (eg water, grass, trees, fish) are less affected by the hazard? Why are these resources not damaged or lost?		
3 Is there restricted access to any natural resource (eg water or wood) during a disaster? Which resources, and why is access restricted?		
4 Is there competition or argument over any natural resource during times of crisis? Please give details.		
5 Which natural resources (eg wild food or banana trees) become especially important during disasters? Why is this?		

Vulnerabilities and capacities in PHYSICAL category

TOOL Help group members to draw a **map** of their village, marking the buildings, roads, bridges, markets etc which are important. This can be drawn on the ground, on paper or on a blackboard. Make a copy on a flip chart for the team. Show the areas affected by the main hazard. Add natural resources – rivers, ponds, forests etc – to the map.

Impact question	Answer
How does the main hazard affect constructed features (eg houses, roads, bridges, school, wells etc)? What impact is seen on tools or other physical belongings?	

Question	Vulnerability	Capacity
1 Which buildings or structures are most affected by the hazard? Why does this damage occur?		
2 Which buildings are least affected by the hazard? Why are these buildings less affected?		
3 What communication systems are available during times of crisis? For example, mobile phones or radios.		
4 What means of transport are available and still useable during times of emergency? For example, boats, bicycles, other vehicles.		
5 How do people preserve their tools and household possessions during the crisis caused by the hazard?		
6 How are open wells and hand-pumps affected by the hazard? Why?		

Vulnerabilities and capacities in ECONOMIC category

TOOL Draw a **seasonal calendar** with the community, showing the different agricultural and other livelihood activities, and the months when different hazards are most likely to appear. Also show migration seasons, animal movements etc.

Impact question	Answer
How does the main hazard affect economic activities, such as farming, fishing, factories or operation of local markets?	

Question	Vulnerability	Capacity
1 Which livelihoods (or income-generating activities) are most affected by the hazard? Why is this?		
2 Which livelihoods (or income-generating activities) are not affected or less affected by the hazard? What new ways of generating income are used in times of crisis?		
3 Which crops are most affected by the hazard? Why does this happen?		
4 Which crops are less affected by the hazard? Why are they not so much affected?		
5 How do people get money to buy food or other items after a disaster? For example, from savings, borrowing, remittances or selling assets.		
6 How is paid labour affected by the hazard? For example, work in factories, on big farms, on plantations. Why?		

Suggested risk-reducing activities for different hazard types

NOTE These are specific recommendations for specific common hazards. Some actions, eg disaster management committees, savings groups and volunteer teams, are useful for all hazard types.

FLOOD

PREPAREDNESS	MITIGATION	ADVOCACY
• Flood warning system	• Protecting water sources	• For improved government warning system
• Trained volunteers	• Improved house designs	
• Safe refuge centre (with water, toilets, lights etc)	• Storm drains, flood diversion channels and dykes	• For repair and maintenance of river embankments
• Boat(s) and trained crews	• Houses on stilts (legs) or raised plinth	• For bank erosion protection (eg gabion)
• Emergency evacuation drills	• Alternative crops, or changed cropping patterns	• For dredging of river beds
• Teaching children to swim	• Flood-resistant varieties of crops	• For more flood shelters
• Safe escape pathways	• Floating vegetable gardens	• For construction of escape routes across private land
• Safe storage of valuable assets, including documents, seeds	• Tree plantation, especially on slopes and embankments	
• Savings schemes		
• Jerrycans and purification tablets for clean water		

DROUGHT

PREPAREDNESS	MITIGATION	ADVOCACY
• Water storage ponds, tanks	• Conservation farming methods	• For improved government drought warning schemes
• Rainwater harvesting from roofs	• Half-moon pits, cross-dams, contour bunding, sub-surface dams etc	• For better safety-net mechanisms for poor people
• Rainwater harvesting using plastic sheets	• Small-scale irrigation schemes; foot- or animal-powered pumps	• For more tanker deliveries of water
• Improved food storage (to reduce losses from pests)	• Drought-resistant crop types or crop varieties	• For more efficient watershed management
• Grain banks (family and community level)	• Livelihood diversification	• Against bore well water abstraction, drying up shallow wells
• Livestock health improvement	• Alternative cropping patterns	
• Livestock herd reduction	• Planting trees and fodder grass	
• Fodder stocks for animals		

LANDSLIDES

PREPAREDNESS	MITIGATION	ADVOCACY
• Emergency tools stored outside building	• Plantation of trees to stabilise slopes	• For legislation to prevent building on unstable slopes
• Teams of volunteers, trained and equipped with tools for search and rescue	• Storm drains to carry away rainwater from slopes	• For legislation on tree-cutting on sloped land
• Vigilance during/after heavy rain for soil cracks, tree/post movement, changes in water colour or flow of streams	• Low walls along the contour of the slope	
• Warning system and rapid evacuation plans	• Gutters to catch rainwater from roofs and channel to a tank or drain	
	• Avoid cutting into slopes for construction	

WINDSTORMS

PREPAREDNESS	MITIGATION	ADVOCACY
• Warning system – different levels, then evacuation signal • Community evacuation plan • Safe refuge centres (with water, toilets and light) • Wooden boards nailed over house windows • Guy-ropes onto house structure; if available, large net over the roof with weights • Safe storage of valuable items, eg in plastic bags or buried underground • Store food and water for 2–3 days • Trained volunteer teams • Emergency kit for 'quick-run' bag	• Improved house construction, especially roof structure • Tree plantation to form shelter belts • Sheltered location and best orientation for houses • Alternative crops which grow outside windstorm season • Storm drains to take water away from houses • Digging and regular cleaning of storm drains	• For improved government warning system • For more storm refuge centres • For laws to control building in unsafe areas • For laws governing design of new buildings • For public buildings to be designated as shelters

EARTHQUAKES

PREPAREDNESS	MITIGATION	ADVOCACY
• Emergency kit always at hand – torch, water, whistle • Emergency tools stored outside building • Tall furniture tied to wall • Avoid placing heavy items on high shelves • Practise what actions to take if earthquake starts • Store gas cylinders outside if possible, with wrench to turn off gas supply • Equip open spaces with water supply and emergency latrines • Teams of volunteers, trained and equipped for search and rescue	• Build new houses to earthquake-resistant designs; use lightweight roof materials • Reinforce existing buildings to give extra strength • Avoid building on hillsides or in landslide-prone areas • Ensure public buildings (schools, churches, hospitals) are earthquake-resistant	• For creation and enforcement of building regulations • For inclusion of earthquake safety in school curriculum • For public awareness and education campaigns • For improved government search and rescue capability

FIRE

PREPAREDNESS	MITIGATION	ADVOCACY
• Alarm system – loud, audible • Fire buckets, hose, water points • Pre-arranged assembly points for displaced and dispersed families • Communication system • Trained volunteer fire-fighters	• Building houses a safe distance from each other • Cooking outside main house • Avoiding use of highly flammable materials, if possible, in house construction • Fire safety campaigns, especially with children and in schools • For two-storey buildings, means of escape via upstairs windows	• For government fire-fighting services in urban areas • For improved access roads, especially into slum areas • For improved fire regulations, and fire drills for schools

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Other useful websites

www.abuhrc.org/Pages/index.aspx
Aon Benfield UCL Hazard Research Centre (ABUHRC) is 'Europe's leading multidisciplinary
academic hazard research centre', based at University College London. Much DRR content.

www.adpc.net
Asia Disaster Preparedness Centre: DRR training, resources, events.

community.eldis.org/DRR
Disaster risk reduction resources from the DFID InterAgency DRR Group (Christian Aid, Tearfund,
ActionAid, Practical Action and Plan).

www.eldis.org/go/topics/dossiers/climate-change-adaptation
Climate change adaptation.

www.ifrc.org/what/disasters/index.asp
The IFRC site has sections on reducing risk and preparing for disaster, as well as other material
on response.

www.preventionweb.net
A good portal for a lot of DRR material – news, resources, training. Links to UNISDR.

www.riskreductionafrica.org
Risk Reduction Africa: a site dedicated to DRR and building resilient communities in Africa.

www.tearfund.org/tilz
Tearfund's own tilz site has a section on DRR under Topics, more materials under Policy and
Research, plus relevant information in the *Footsteps* back catalogue, ROOTS publications and
PILLARS Guides. Field workers will find the PILLARS Guide *Preparing for Disaster* particularly useful.

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www.unisdr.org/eng/hfa/hf-summary.htm
Hyogo Framework for Action summary (also available in French and Spanish on the UNISDR site).

www.youtube.com/watch?v=GI66F0mgeIE
Local voices, global choices: film on DRR with case studies and good practice from a number of
countries (three modules).

Glossary

This glossary explains the meaning of certain words according to the way they are used in this book.

adaptation Taking action to cope with climate change and environmental degradation.

building regulations A set of rules, regulations and standards to control the design, construction, materials and occupancy of buildings in order to ensure human safety and reduce risk of collapse.

contingency planning A process that analyses specific potential events or hazards that might threaten a community and establishes arrangements in advance to enable timely, effective and appropriate responses to such events.

disaster risk The potential disaster losses, in lives, health, livelihoods, assets and services, which could occur to a particular community over some specified future time period.

disaster risk reduction The practice of reducing disaster risks through systematic analysis and management of the causal factors of disasters, including reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness.

disaster risk reduction plan A document prepared by an authority, organisation or community that sets out goals and specific objectives for reducing disaster risks, together with a set of actions to achieve these objectives.

early warning system The systems needed to generate and distribute timely and clear hazard warning information, to enable individuals, communities and organisations to prepare and to act appropriately in sufficient time to reduce harm or loss.

emergency services A set of specialised agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations.

environmental degradation The reduction of environmental capacity to meet social and ecological needs. Examples include: land misuse, soil erosion and loss, desertification, wild-land fires, loss of biodiversity, deforestation and mangrove destruction; also land, water and air pollution.

environmental impact assessment Process by which the environmental consequences of a proposed project are evaluated, undertaken as an integral part of planning and decision-making processes with a view to limiting or reducing the adverse impacts of the project.

geological (earth-related) hazard Geological process or phenomenon that may cause loss of life, damage to health or property, loss of livelihoods and services, social and economic disruption, or environmental damage.

hydro-meteorological (weather-related) hazard	Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or damage to property, livelihoods, services or environment.
mitigation: structural measures	Any physical construction to reduce hazard impact, or application of engineering techniques to achieve hazard-resistance (eg dams, embankments, wave barriers, earthquake-resistant buildings, evacuation shelters).
mitigation: non-structural measures	Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, awareness raising, training and education.
national platform for disaster risk reduction	A national mechanism for coordination and policy guidance on disaster risk reduction that is multi-sectoral and interdisciplinary, with public, private and civil society participation.
prevention	The outright avoidance of adverse impacts of hazards, by means of measures such as dams, embankments or seismic engineering.
public awareness	The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards.
recovery	The restoration and improvement of facilities, livelihoods and living conditions of disaster-affected communities, designed to reduce disaster risk and apply 'build back better' principles.
resilience	The ability of a community or society exposed to hazards to resist, absorb, adjust to and recover from the effects of a hazard in a timely and efficient manner.
risk assessment	A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing vulnerabilities that together could harm exposed people, property, services, livelihoods and the environment.
technological (man-made) hazard	A hazard of technological or industrial origin, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury or damage to property, livelihoods, services or the environment.

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