DISASTERS AND THE LOCAL CHURCH

Guidelines for church leaders in disaster-prone areas

tearfund

Disasters and the local church:
Guidelines for church leaders
in disaster-prone areas

Written and illustrated by Bill Crooks and Jackie Mouradian of Mosaic Creative Ltd (www.mosaiccreative.co.uk)

Edited by Bob Hansford

Front cover photo by Richard Hanson / Tearfund
Back cover photo by Murray Burt / Tearfund

Design: Wingfinger Graphics

The editor would like to thank Tearfund partners in four countries – the Philippines (PCMN Inc.), Kenya (ACK), India (NEICORD) and Malawi (Eagles) for field-testing this resource. Thanks are also due to members of a small Steering Committee who have provided helpful advice at various points in the production process and to Tearfund colleagues who have commented on the technical and theological correctness of sections of the text. Finally, gratitude is extended to Tulo Raistrick (Tearfund Programme Development Advisor, Church and Development) for his advice and encouragement along the way.

Tearfund contact: Bob Hansford, Disaster Risk Management Advisor
bob.hansford@tearfund.org

Tearfund is a Christian relief and development agency
building a global network of local churches to help eradicate poverty.

Tearfund publications available at: www.tearfund.org/tilz

DISASTERS AND THE LOCAL CHURCH

Guidelines for church leaders
in disaster-prone areas

Preface

Disasters are a regular fact of life for many parts of our world. Christians are not immune to such disasters, and the areas affected often include networks of local churches. For example, the South Asian tsunami of December 2004 affected the Catholic churches of Tamil Nadu (India) and the Pentecostal churches of the Andaman Islands. When Cyclone Nargis hit Myanmar in 2008, many Baptist churches lay in its path. Annual flooding along the Brahmaputra river (Assam) affects scores of local congregations. In January 2010, the churches of Haiti's capital Port-au-Prince, including its cathedral, were badly damaged by a powerful earthquake.

These disasters have left a trail of death, sorrow and destruction, but there have also been amazing stories of churches taking the opportunity to demonstrate the love of Christ in very practical ways.

During Hurricane Mitch in 1998, large areas of several Central American countries suffered severe damage and loss of life. In Honduras, a small community near the river Choluteca was cut off by the rising flood waters for nearly two weeks. The local church decided to feed and look after the entire community. They mobilised a group of women to prepare and cook food, and motivated the youth of the church to deliver it to elderly people and the house-bound. The church leader organised groups of men to repair houses and to collect firewood and food. This was stored in the church. After 14 days, a team from an NGO arrived by boat with supplies: they were amazed to see how well the community and church had organised themselves.

When the team met the pastor, he said, 'We were here before the disaster, we were here during the disaster and we are here after the disaster. Agencies like yours will come and go, but the church will always be here.'

In 2008, Andrew Bulmer, former head of Tearfund's Asia Team, produced 12 case studies of situations worldwide in which local churches had engaged effectively with various types of disaster, both natural and man-made. He followed this in 2009 with a publication called *The Local Church and its Engagement with Disasters*, in which he highlighted seven strengths or 'niche areas' which the local church can deploy in the face of disaster. If recognised, developed and used, these strengths could do much to reduce the suffering and distress normally associated with disaster events.

The purpose of this manual is partly to increase understanding of disasters, but more importantly, to give guidance on the practical things a church and its community can do to prepare for a disaster, respond effectively to it and reduce the risk of it happening again.

Contents

How to use this resource

This book is written to give guidance to church leaders and church members in areas where disasters are a common occurrence. Some areas may see themselves as relatively free of extreme weather, but this may change in future with the advance of climate change. Disaster management is not usually taught in seminaries or Bible colleges, yet members of churches will instinctively look to their spiritual leaders, as well as to local government, for help and direction. This book will provide the knowledge and skills which a leader may need in order to respond to these requests.

Churches usually have significant resources which can be used in times of disaster – their buildings, their compound and the resources of their members. They also have a committed group of people who are motivated by compassion and can be mobilised to respond to a crisis. The church often has strong sub-groups which can be used to raise awareness of disaster risks, and can bring communities together to make plans and reduce those risks.

This resource has eight chapters, four of them relevant to all disaster types and the other four dealing with specific types of hazard. The earlier chapters explain the particular strengths of the local church in facing disaster, and give some guidance on how to set up disaster committees and volunteer teams. There are also tables and templates for planning small projects, carrying out needs assessments and analysing the risks facing the community. These can be photocopied for use. Some practical guidance is given on how to meet the needs of displaced people – particularly the more vulnerable groups – for food, water, sanitation and shelter. The church's role in providing emotional and spiritual help is also explored.

The four specialised chapters give more information on preparing for and responding to particular types of disaster – floods, storms and landslides, droughts and earthquakes. There are also suggestions on actions to take to reduce long-term risks.

The church leader or pastor is a busy person with many responsibilities, and it is not intended that he or she alone uses this book. It would be far better for a leadership team to study relevant chapters together, perhaps copying and reading them beforehand. Each chapter provides Bible studies, case studies and discussion questions, as well as practical 'how-to' material.

Another approach would be to form a disaster committee and ask it to study relevant chapters and develop plans to prepare for expected hazards. The committee would need the support of the leader or pastor, but he/she may choose not to be a member. The book also contains material on working with others – with government, NGOs or other churches. Their representatives could be invited to these committee meetings.

1 The local church and disasters

1

Introduction

Many churches exist in disaster-prone environments. Some of those disasters occur suddenly, for example earthquakes and landslides, while others – for example prolonged drought – develop more slowly over weeks or months. Many disasters are weather-related, for example cyclones and floods, and there is evidence that these disaster types are becoming more frequent and more severe as climate change affects more parts of the world.

Sudden disasters require an immediate response, and the church is well positioned to provide this. It has its buildings, its land and its people – three most valuable resources. The church is also well equipped to help disaster survivors to cope with the emotional distress of losing family, friends and possessions. It can provide spiritual comfort, emotional support and hope for the future, irrespective of race, religion, gender or nationality.

Emergency response is not the only way of addressing disasters. Much can be done to prepare for natural hazards and to reduce their impact. This chapter explains the ***disaster cycle*** – the sequence of activities which usually follows one disaster (emergency response and rehabilitation) and leads on to mitigation and preparedness for the next. Biblical examples are given for each of these categories.

The chapter also introduces the seven ways in which the local church has strength in relation to disasters. These are described more fully in the Tearfund publication *The local church and its engagement with disasters*. There is also a concise checklist of what to do in a disaster situation and an exercise to illustrate the resources which the church does have available to respond to an emergency.

Finally, there is a Bible study on the theme of 'Why does God allow suffering?'. Another important Bible study, on the Good Samaritan, appears on page 130.

What is a disaster?

Hazards and disasters are closely related but they are not the same.

HAZARD The term *hazard* describes an extreme natural or 'man-made' event. Natural events include earthquakes, floods, droughts, landslides, cyclones and fires. Man-made hazards include such things as conflict, inter-community violence and industrial accidents. This book focuses on natural hazards, though some material (for example, on helping displaced people) will be useful for man-made events too.

DISASTER A *disaster* occurs when a hazard affects people who are in a vulnerable situation and who are unable to cope with its impact. One family or one village may be more vulnerable than others.

Vulnerable people

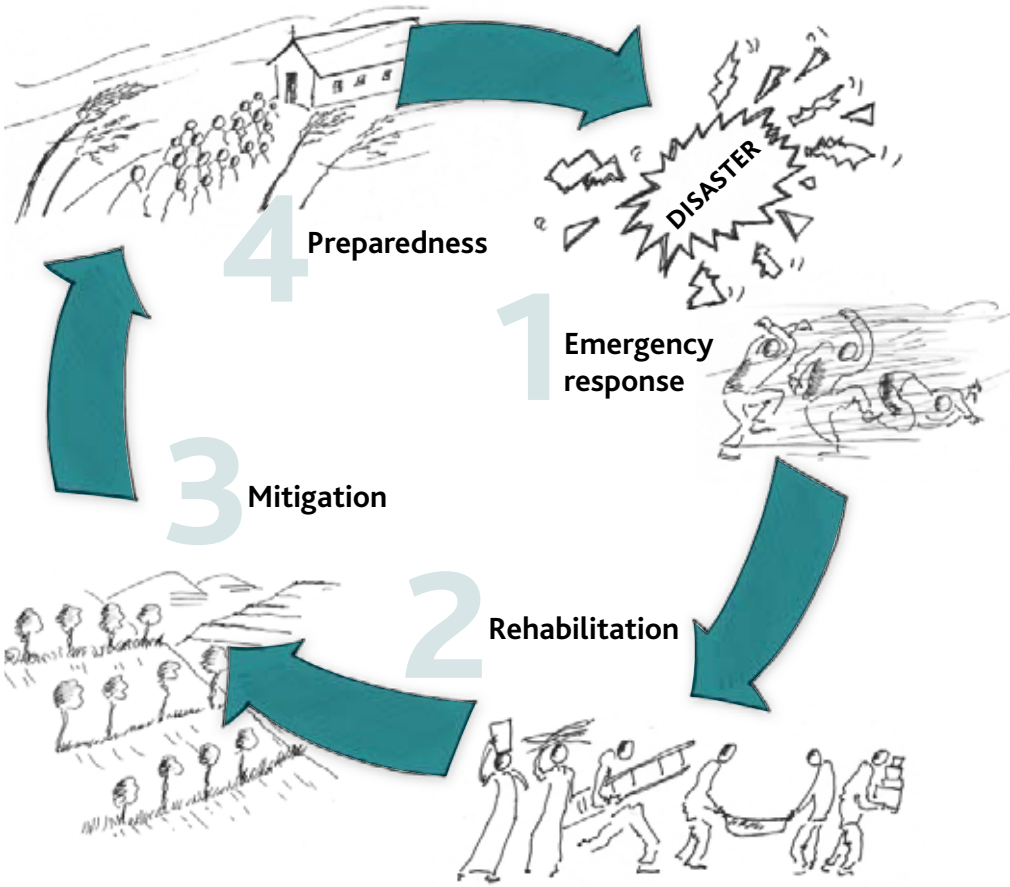
The term *vulnerable* is used to describe people who are likely to suffer serious loss, damage, injury or death as a result of a hazard. For example, economic pressures may force people to live in dangerous locations such as flood plains or low-lying coastal areas. They are then vulnerable to flooding or storms. Other people may be vulnerable because of the type of house they live in, or perhaps because of a disability which reduces their mobility. Some vulnerability factors (for example, poor leadership, no access to savings or credit) apply to all hazards; others are hazard-specific (for example, a lack of boats creates vulnerability to flooding).

The poorest people in society are generally most at risk from the impact of disasters. However, children, people with disabilities, minority groups, elderly people and pregnant or nursing mothers are also vulnerable in difficult situations.

1

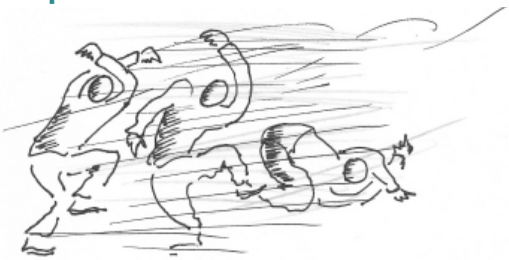
How do we respond to disasters?

How we respond to disasters can be seen as a series of stages which are linked together, as the simple diagram of the disaster cycle below shows.



In some areas of the world this disaster cycle is repeated, because of the vulnerable places in which people live or because of their local weather patterns. An example is Bangladesh. Many people live in poor-quality houses on low land which is flooded when river levels rise. Heavy monsoon rain makes the rivers rise every year. The result is frequent flood disasters.

1 Emergency response



- The aim of emergency response is to meet the immediate and basic needs of the people who have survived the disaster – such as food, water, clothing, shelter, medical care and emotional security.
- In fast-impact disasters, such as floods, earthquakes and cyclones, this process will focus on saving lives and reducing further suffering in the period immediately after the disaster.
- In slow-impact disasters, such as drought and famine, the emergency response period may last for a continuous period of months, or even years.
- If a disaster does happen, most victims are saved and helped by others long before outside help arrives. This is where the church can play an important role, as it has the capacity to respond locally.
- Outside help in an emergency may have a negative impact if it continues for a long time. It can make people dependent on aid and reduce their ability to cope with hazards. The church should provide for the short term only, to avoid creating dependency.

BIBLE STUDY

Emergency response Acts 11:19–30

Background

There was a severe famine throughout the Mediterranean region, particularly affecting Judea. A famine was predicted by prophetic message, and the church in Antioch decided to send assistance to the church in Judea. They decided to use the existing church structure as the mechanism for collecting money, transferring it and distributing it to those in need.

1

Key points

- God speaks through individuals to give wisdom and foresight; this can help to create awareness of the risks of disaster. In this instance, God spoke through the prophet Agabus.
- Awareness and compassion lead to action. When the Christians in Antioch heard of the disaster that was coming, they all contributed their skills, time and resources. They used the existing network of Christians and churches, and sent their gifts through Paul and Barnabas.

Questions

1 *In Antioch, a prophet warned about the coming disaster. How do we find out if a flood or drought is coming soon? What disasters happen in our area?*

2 *What did the church decide to do in response to this news?*

3 *The church in Antioch sent help 'for the believers' in Judea (verse 29). Is it right to give assistance only to Christians? In the present day, the Red Cross Code is widely followed in aid programmes. It says that help should be given to all people in need, without discrimination. (For a church version of the code, see page 99.) Can you see any difficulties in following this code? How can the difficulties be overcome?*

4 *Are there any indications at the moment that a disaster could happen soon – such as drought, flooding, earthquakes or civil conflict?*

5 *Has your church responded to disasters in the past? How could you improve on what you did last time?*

6 *Can you think of any ways your church could help people affected by disaster in other parts of your country?*

2 Rehabilitation

Rehabilitation includes the actions taken to rebuild a community once the emergency response stage has passed. It may last for weeks or months after a disaster. Rehabilitation can include repairing houses, restoring basic services (such as water and sanitation) and helping people to start earning a living again in a way that makes them less vulnerable to future disasters. For example, farmers may want to try out flood-resistant or drought-resistant crops, or perhaps to restock with animals that can survive drought conditions.

This phase provides an opportunity to introduce new guidelines and procedures – for example, for making new buildings in an earthquake zone safer. This can help to reduce the risk of a similar disaster in the future.

Rehabilitation also provides an opportunity to increase community cooperation by forming self-help groups or cooperatives. This may open up opportunities for new livelihoods, so that people can earn a living in ways that are less affected by hazards.

BIBLE STUDY

Rehabilitation Nehemiah 1–4

Background

God called Nehemiah to lead the reconstruction of Jerusalem after the disaster of invasion and conquest, which had taken place about 70 years earlier. Much of the city, including the protective walls, had been destroyed. Nehemiah, a Jewish captive in Babylon, had risen to an important position in the king's palace. He asked the king (the government authority at that time) for permission to return to his city and for extra resources to rebuild it (Nehemiah 2:8). The king generously gave Nehemiah letters to the local governors and an armed escort for his protection (2:9).

1

Key points

- Nehemiah provides us with good lessons on planning, organisation, motivating the community, dealing with opposition, and the importance of prayer in the whole rehabilitation process. He showed that rehabilitation is more than physical rebuilding. There are spiritual battles also and a need to rebuild and reform unjust social structures, which often increase the suffering of the poor.

Questions

1 *Nehemiah made a night-time inspection of the damage to the walls of Jerusalem (Nehemiah 2:11-16). Why do you think he did this?*

2 *How does Nehemiah motivate and organise the people for the task of rebuilding? (Nehemiah 2:17-18; 3:1-32). What does this teach us about sharing or delegating specific tasks?*

3 *What forms of opposition did Nehemiah encounter? How did Nehemiah deal with this opposition? (Nehemiah 2:19-20; 4:1-5, 7-9, 13-14; 6:1-13).*

4 *According to Nehemiah 6:15, the work was completed in just 52 days, an amazing achievement. What do you think was the 'secret' of Nehemiah's success?*

3 Disaster mitigation

Many natural hazards cannot be prevented. However, it is possible to take practical action beforehand to reduce the potential impact of hazards on a community so that the risk of a disaster is reduced. This is known as mitigation. Pastors cannot be expected to be skilled in all the areas listed below. However, they can help to identify people in the church and community who have these skills and who can be encouraged to share them for the good of the community.

Examples of mitigation measures include:

- building flood protection dykes
- improving drainage to take storm water away more quickly
- building stronger houses to resist flood or earthquake
- planting trees on steep slopes to reduce rainwater run-off
- planting trees in coastal areas to reduce wind and tidal wave impact
- growing crops which are more resistant to drought
- peace-building and reconciliation, to reduce future conflict

Mitigation and rehabilitation are closely connected. For example, any rebuilding of homes or livelihoods should include mitigation measures to make them more resilient to hazards.

BIBLE STUDY

Mitigation Luke 6:46–49 and Matthew 7:24–27

Background

Both Luke and Matthew include this parable at the end of a longer session of Jesus' teachings. In Luke, he has just taught about loving our enemies (Luke 6:27-36), not criticising others (6:37-42) and assessing a tree by the quality of its fruit (6:43-45). In Matthew's account the topics are similar but include God's desire to give good gifts to his children (Matthew 7:7-12) and the contrast between entering through the narrow gate and the wide gate (7:13-14).

1

The passage itself is not intended as guidance for house-builders! Rather, it is an instruction from Jesus to base our lives on him and on the 'rock' of his teachings, not on the changing fashions and beliefs of the world around us (the 'sands'). Nevertheless, Jesus always based his parables on familiar examples from everyday life. People presumably knew that house foundations matter – that only a house built on a solid foundation had any hope of survival when storms and floods struck.

Key points

- It is important that we not only hear the words of Jesus but also act upon them. This will give us a firm foundation for life, even when pressures and difficulties arise.
- To hear Jesus' words but not take action is foolishness, leading to ruin as soon as pressures or opposition appear.

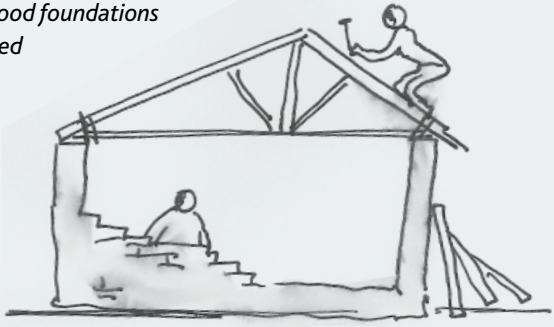
Questions

1 *To whom was Jesus addressing this teaching? To what extent are the two passages a commentary on the earlier words of Jesus in Luke 6 and Matthew 7?*

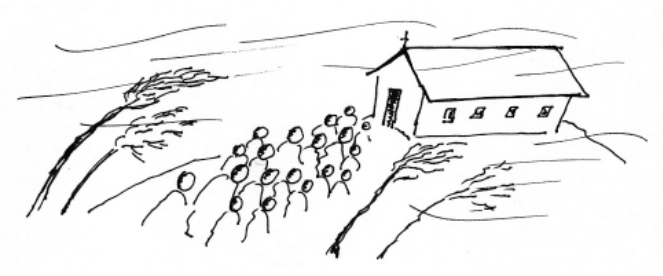
2 *In his parables, Jesus uses activities from everyday life, often from farming (eg the sower, the true vine) or from keeping sheep (eg the good shepherd, the lost sheep). Why do you think Jesus chooses house-building in the passages above (Luke 6:46-49 and Matthew 7:24-27)? What do the passages tell us about building practices at that time?*

3 *What are the ways in which we hear and receive the words of Jesus? How can we make sure that the spiritual house (our lives) does not collapse under pressure? What are we doing ourselves to apply the teachings of Jesus?*

4 *For this book, choosing good foundations for a house would be called disaster mitigation! What other suggestions could you make to ensure that a physical house does not fall down in a time of flood, windstorm or earthquake?*



4 Disaster preparedness



Preparing for natural disasters

Preparedness is a set of activities preparing for the impact of a hazard – activities that will help the community members to cope and to recover. When you are doing preparedness work, you have to assume that a hazard will hit the community soon!

Local people, churches and community-based organisations do have their own resources that can be used in times of crisis, but these resources must be available and accessible in an emergency – preparedness is about making sure they are.

The resources of a church usually include a building for prayer and worship. Sometimes these buildings can be used to provide temporary shelter for displaced people, especially if the church is the only strong building available and is built on high land. If the church is considered a holy place, perhaps one part or one end of it can be separated from the rest and not used by the displaced people. If buildings are to be used in this way, they should be safely built and well maintained.

Churches can also play a key role in preparing their congregations and local communities for a disaster situation. For example, they can give training, provide volunteers and pass on warnings.

Some other practical examples of such preparation include:

- early warning systems (for example, ringing bells or flying flags on the church building)
- First Aid training for church members
- plans for moving people and livestock to 'safe areas'
- keeping small stocks of emergency materials (such as plastic sheets and dry food)
- identifying the vulnerable who will need help
- training volunteers in search and rescue methods

1

BIBLE STUDY

Preparedness Genesis 41:25–39

Background

God warned the Egyptian king through a dream that drought and famine were coming to his land. Joseph was called from his prison cell to interpret the dream (about cows and heads of corn!) and suggested some actions to cope with the disaster. The king appointed Joseph to carry out these actions.

Joseph set up administrators and buildings to store grain during the seven good years. Farmers had to hand over one-fifth (20 per cent) of each year's harvest to the government so that it could be stored and then used during the seven years of famine (Genesis 41:33-36).

Key points

- This story is about a hazard that was predicted, so that action could be taken before it happened. It emphasises the importance of early warning systems, whether they are divine or man-made! In today's world, early warning of drought, storms and floods can help reduce the impact of the hazard.
- Management responsibility was given to Joseph – he was trusted. In emergency situations there needs to be trust in the leadership.
- God used this project to save Jacob's family and the future of Israel. Disaster planning can be used by God to do good and achieve his purposes in the world.

Questions

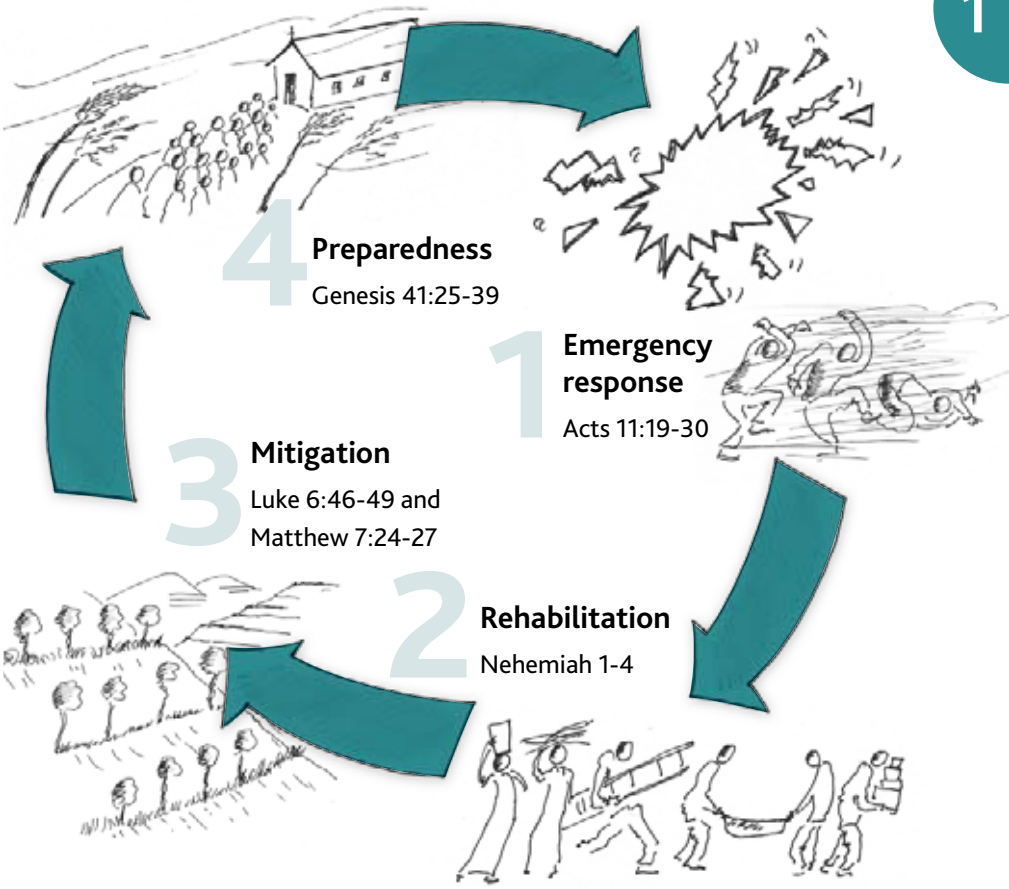
1 *How did the dream change the way the people of Egypt responded to their situation?*

2 *Joseph was given the role of coordinating Egypt's response. What qualities did he have that made him suitable for this job?*

3 *What specific measures did Joseph put in place to help the nation (and its neighbours) survive the drought?*

4 *Can you identify any natural leaders in your church and community who could help in an emergency situation and who would be trusted?*

Biblical reflections on the disaster management cycle



Christian groups responding to a disaster often focus their help only upon emergency response; rehabilitation, mitigation and preparedness are neglected. When the hazard re-appears, another disaster will follow. If more attention is given to mitigation and preparedness, then the harmful consequences of the hazard can be very much reduced.

We could use a medical proverb: 'Prevention is better than cure.' This means that it is better to prevent someone catching a disease than to have to give treatment later. Similarly, preventing a disaster is a better approach than simply responding every time to the suffering.

1

Different types of disaster

Type of disaster	Description	Examples
Slow-onset disasters	Situations in which the ability of people to continue their livelihood slowly declines to a point where they may not be able to survive. Such situations are usually due to climatic extremes, but made worse by ecological, social, economic or political conditions. Climate change and environmental degradation also cause slow but progressive changes which can undermine livelihoods and living conditions.	• drought • displacement • water-logging • long-term conflict
Rapid-onset disasters	Sudden calamities caused by natural phenomena. They strike with little or no warning and have an immediate harmful effect on human populations, activities and economic systems.	• windstorms (hurricanes, cyclones, typhoons, tornados) • earthquakes • volcanic eruptions • floods • tsunamis • flash floods • glacial lake bursts
Human-made disasters	Disaster or emergency situations of which the principal, direct causes are identifiably human actions, deliberate or otherwise. This mainly involves situations in which civilian populations suffer casualties, losses of property, basic services and means of livelihood.	• war • civil strife • displacement • fire
Technological disasters	Situations in which large numbers of people, property, infrastructure or economic activity are directly and adversely affected by major industrial accidents.	• severe pollution • nuclear accidents • air crashes • major fires • explosions

The role of a church leader in disaster management

Church leaders can play an important role in helping congregations and communities prepare for and respond to a disaster. However, there are many different tasks to be done and these cannot all be achieved by one pastor. It is important that the pastor delegates tasks and identifies people with the appropriate skills to carry them out. Listed below are some of the things which pastors themselves can do, alongside their regular pastoral responsibilities.

Insights

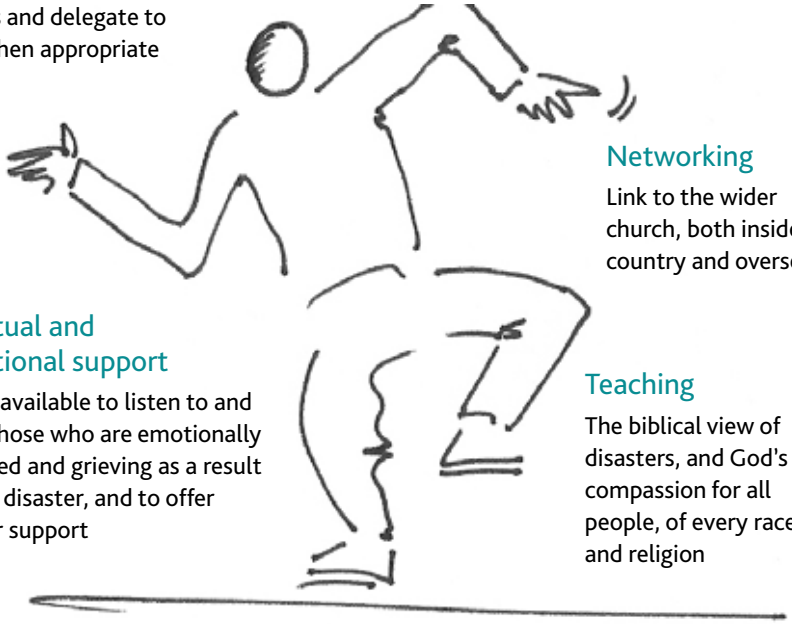
Being aware of the risk of disasters in your area and being able to share this with your congregation and community

Managing volunteers

Being able to recruit, organise and encourage volunteers

Leadership

Ability to think quickly in a crisis, to prioritise, make decisions and delegate to others when appropriate



Networking

Link to the wider church, both inside the country and overseas

Spiritual and emotional support

Being available to listen to and help those who are emotionally stressed and grieving as a result of the disaster, and to offer prayer support

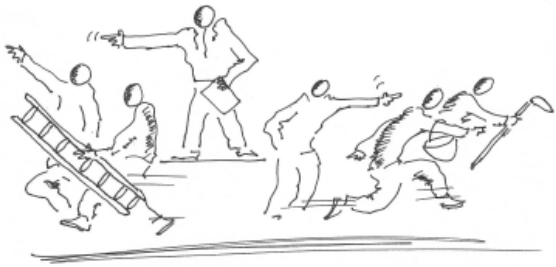
Teaching

The biblical view of disasters, and God's compassion for all people, of every race and religion

1

The strengths of the church in facing disasters

This section looks at **seven distinctive strengths** of the church, which it can use in disaster situations.



1 Responding immediately to disasters

The local church is already present when a disaster suddenly strikes, so it can help the community immediately. Needs are urgent, and the church may feel compelled to respond.

In places where disasters often happen, the church and its leadership may develop simple disaster preparedness plans with the local community. For example, this might include identifying evacuation routes, making church and community buildings available for emergency shelter, and setting up emergency food stores.

Some disasters begin more slowly: for example, when there is a drought, people suffer continuously over many months. The church can help by sharing its resources among members. When a drought is forecast, the church may be able to take a lead in the community to set up a grain bank to store food (see Chapter 7, page 192). As a longer-term measure, if the church has some land it may be able to demonstrate new gardening methods or new crops and encourage farmers to adopt them.

The Catholic churches in Tamil Nadu, India, responded immediately to the devastation after the 2004 South Asian tsunami, rescuing people, tending the injured, comforting relatives of victims and burying the dead.

- *In what ways do you think your church could respond immediately if a disaster occurred?*
- *What plans could your church develop now, so it could respond quickly if and when a disaster did occur?*

2 Providing resources

The local church has assets and resources which it can use in disaster situations. People are a key resource and can be mobilised into a willing body of volunteers, motivated by love and compassion and trained in skills appropriate to the situation. Buildings are also valuable assets which can shelter displaced people or can be used to stock emergency response materials. Church bells may be available to form part of an early warning system. The church's land may provide a temporary camping area for displaced people.

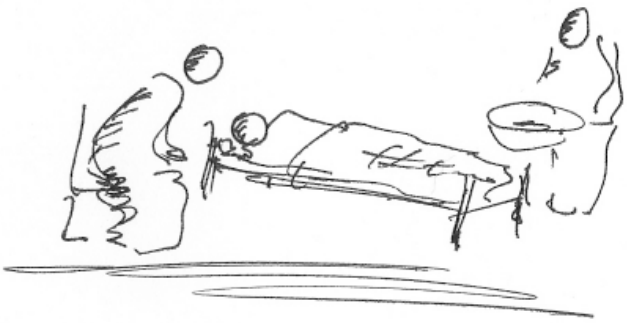
As congregations meet regularly, all together or in various smaller groups, it is possible to communicate messages to a significant number of people. These messages can be about mitigation or preparation before disaster comes. Instructions can be given in times of emergency. The local pastor can supplement the information with a spiritual message, making it more likely to be well received and used.

The Pentecostal Church in Makamba, Burundi, made 20 hectares of church land available for growing a type of lentil (pulse) so that a nutritious pre-mixed porridge could be sold in the local market, with the aim of helping malnourished children.

- *What assets or resources does your church have that could be useful in a disaster situation? (Think about land, buildings, bells etc.)*
- *What useful information could your church communicate, both before and during a possible disaster situation?*
- *What skills do you have in your congregation? (For example, medical knowledge, construction experience, counselling ability.)*

1

3 Providing compassion and care



One of the church's greatest strengths is the importance it gives to relationships. This makes it very able to provide relational support. It acknowledges people's inner hurts and griefs, and responds with hospitality and pastoral care. The church recognises that people have spiritual and emotional needs and should be treated with dignity; sadly, aid organisations do not always do this.

The church can provide funerals and burials and pass on the message of God's love and hope for the future. Prayer is also a key contribution, both for those who have suffered in the disaster and for aid workers who are experiencing high levels of stress and emotional pressure.

After the Indian Ocean tsunami in 2004, many people lost their homes and were given temporary accommodation in camps. The Pentecostal Mission in Port Blair, the Andaman Islands, listened to, prayed for and cared for people living in a camp, and also served food to more than 500 people a day.

- *In what ways could your church support those who were bereaved or emotionally upset by a disaster?*
- *How can the church show love and hospitality in times of crisis?*

4 Influencing and shaping values

People are often more vulnerable to hazards because of cultural values and beliefs. For example, societies which give little value to women may not take enough action to care for them in times of crisis. The local church can address this type of issue – everyone has value in God's sight and should be treated equally, whatever their

background or beliefs. It has experience of wrestling with values, behaviour and differing world views, and seeks to bring transformation in these areas.

Biblical teaching is a central part of that process. In many communities, people expect the church to provide a moral lead. In other communities, where the church is a minority, it can have a prophetic role, politely challenging widely-held views when it is safe to do so.

Some communities and cultures have a fatalistic mindset which can significantly hinder both disaster preparedness and disaster response. The local church can challenge this mindset, because it has a vision for the future. The church is built on hope and the expectation of seeing God bring change, so it should not share the fatalism which may be common in the wider community.

The churches in Puno, Peru, emphasised the participation of women in their preparedness and mitigation projects. This was in a society where women were not expected to take such a lead.

- *What values and attitudes in your community make some people more vulnerable to disaster? Is there fatalism or superstition?*
- *How can your church challenge and change these values and attitudes?*
- *What are the key teachings which the church should give after a disaster?*

5 Acting as a community peacemaker

In many communities the church naturally sees its role as reconciliation and peacemaking. It can help to prevent future violence by assisting people to find solutions to long-standing arguments and promoting forgiveness for wrong actions in the past. It can help to resolve conflict by setting up small groups who can look at the causes of the disputes and begin to address them. The church is often present on both sides in an ethnic conflict and therefore is in a strong position to help restore peace.

1

In natural disasters the same principles apply, with the church able to challenge selfishness and competition over scarce resources. Justice, impartiality and forgiveness are important principles in such contexts, and the church can uphold them.

Local churches in Marsabit, Kenya, established peacemaking forums to prevent future outbreaks of violence between two pastoral communities over grazing rights and scarce water sources.

- *What sources of conflict are there in your community, and what can the church do to help resolve these disputes?*
- *How can the church ensure that everyone in the community who needs help is given it?*

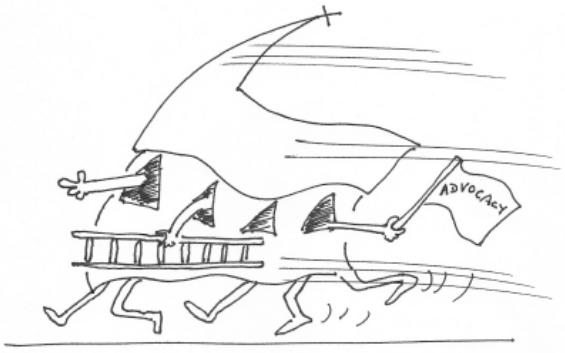
6 Facilitating community action

The local church, through its relationships in the community, its credibility and its leadership, can help to bring people together and organise them for action – both before and after a crisis. This applies not only to sudden disasters, but also to the creeping, slow-moving disasters of drought and famine. Within the church there are usually youth groups, women's groups and others who can be mobilised quite quickly for action.

The Anglican church in Ruaha, Tanzania, organised its community to carry out community-managed targeting and distribution of emergency response materials so that the poorest people received assistance.

- *How could your church bring together the whole community to decide on action to prepare for, or respond to, disasters?*
- *Who are the key people in your community that you would want to involve in planning and running such a community meeting?*

7 Advocating on behalf of poor and marginalised people



In a disaster situation, the church can be an advocate on behalf of poor and marginalised people – for example, by ensuring that these people receive relief goods. The church can check that help is indeed reaching the most vulnerable people in the community. In many communities, church leaders are respected and have some influence. The church's wider networks are an additional strength, because they enable it to carry out advocacy at a number of levels – for example, by passing on information to national church offices.

Churches in Bulawayo, Zimbabwe, successfully lobbied the UN envoy who came to learn more about the situation after people lost their homes in the government's demolition of the city's slums.

- *Are there issues of injustice in your local community that need to be challenged, and how can your church best do this?*
- *Who are the poor and marginalised people in your community who might be overlooked by emergency response programmes?*

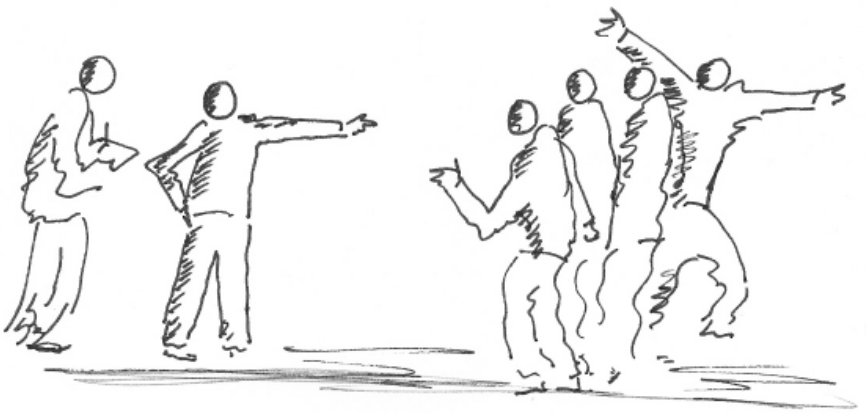
1

A checklist for responding to disasters

Focus	Tasks
Coordination	Call an emergency meeting of church and community leaders to agree the following: • Who will coordinate an emergency needs assessment? • Who will carry out the assessment? • Who will coordinate the available resources?
Resource identification	Make a list of all the resources available in the church and the community under the following headings: • Available volunteers and associated skills • Available food, utensils and fuel for cooking • Available shelter materials • Available water and sanitation options • Available First Aid and healthcare • Available storage facilities for the above
Needs assessment	Assess the needs among affected people – of all backgrounds and beliefs (see Chapter 3, page 80). Once the assessment has been done, agree the following: • Priorities in First Aid and health • Priorities in food • Priorities in shelter • Priorities in water and sanitation Make a plan for each of the above areas; use the resources identified in the previous step; decide on any extra resources required (for example, people or money); minimise security risks.
Setting up volunteer teams to carry out tasks	Consider specialised teams for the following areas: • First Aid and healthcare • Food storage and distribution • Construction or repair of shelter • Water and sanitation • Counselling and emotional support Assign volunteers to handle the priority needs identified by the needs assessment (above). Ensure all volunteers are instructed and supported in carrying out their specific tasks.

Focus	Tasks
Ongoing recovery	In longer-term responses, consider the following aspects: • A system of shifts so volunteers can rest • Regular contact with government officials and other organisations linked to the response • Regular reviews with church and community leadership to assess progress of the response

In a disaster situation, people naturally look to the pastor for leadership. However, the pastor has many responsibilities, and it is possible that a church member may have the skills and confidence to coordinate the disaster response. In such a case, the pastor can support and advise the coordinator, and look after other aspects of the response – teaching, prayer and counselling – for which he/she is better trained. The pastor will also be aware of the gifts of church members, so can assist in identifying individuals who can help.



1

Community development and disaster management

Ongoing community development projects can help communities become resilient to slow-onset and fast-onset disasters.

Community development builds resilience

- communities working together
- improving livelihoods and education
- strengthening incomes and assets
- disaster mitigation activities
- risk assessments and disaster preparedness plans

Community responds and recovers from the disaster

- community-based relief and recovery
- learning from disaster
- ongoing strengthening of livelihoods
- risk assessments and disaster preparedness plans

In contrast, the benefits of development can be lost if disaster risk and climate change are not taken into account. For example, new wells on low land may be flooded, or new crops may be damaged by drought.

Tearfund has produced a resource called *Umoja* (the Swahili word for *togetherness*) which helps the local church work with its community to set up a project that will bring lasting change. This resource seeks to strengthen the church's vision to work with the community through a range of practical activities and steps, and it can be used together with this manual.

Umoja, a key resource for church and community mobilisation, is available from Tearfund. Email: umoja@tearfund.org

Activity: Using our own resources

This is a good activity for getting a group to think about what they can do with their own resources. It can generate a lot of fun and laughter as well as provide some useful learning. When you use this exercise it is important to be sensitive to local culture and tradition. This is just one of many activities contained in *Umoja*.

Full stretch

Ask the group to form two lines, with an equal number of people in each line.

Explain that they are going to use anything they have on them to make the longest possible line (shoe laces, belts, ties, etc).

Each person must be in contact with another person, either by a part of the body or by holding a belt, tie etc.

The team that wins is the one that forms the longest line.

- *What were people prepared to do to make the line as long as possible?*
- *What were the barriers to people sharing what they had?*
- *What does this exercise teach us about using our own resources?*
- *What skills and resources does your church have to respond to disasters?*

Learning points to discuss with the group

- It can surprise us when we see what we can achieve using only what we have: resources are present but may not always be recognised.
- Sometimes challenging situations produce natural leaders.
- Once people have a clear vision of what is needed they become motivated and energised.
- Challenging situations can produce creativity. For example, people may decide to lie on the ground to make the line longer, or find creative uses for clothes and accessories.
- For some people this exercise may be uncomfortable. Sometimes giving up our resources for the common good can be challenging and uncomfortable too.

1

BIBLE STUDY

Why does God allow suffering? Luke 13:1–5

Background

This passage refers to two events involving suffering that had happened recently and would have been talked about a lot by people around Jesus. This passage is our only source of information on these events.

1 *What two events are mentioned here?*

The first incident appears to have been that Pilate, the Roman Governor of Jerusalem, carried out a deeply sacrilegious act by having Jewish worshippers killed while they were offering sacrifices in the Temple.

The second incident records the collapse of a tower in Siloam, which was part of the Jerusalem wall, killing 18 people.

One set of deaths is a result of political brutality; the other the result of a random accident.

2 *Have any events occurred in your country recently that would be similar?*

The question about suffering (v2)

3 *In this passage, we only hear Jesus' part of the conversation. What do you think may have been the question that prompted Jesus to answer in the way he does?*

In ancient times it was often assumed that disasters and calamities only happened to people who were extremely sinful. Look at John 9:1–2 and Job 4:7 for examples of people making this assumption.

4 *Is this a question you have heard people asking today? Is it a question you have asked?*

Jesus' response

5 *How does Jesus answer this question? Does Jesus believe that the level of our sinfulness affects how or when we die?*

Note that Jesus rarely answers questions with a simple 'yes' or 'no', but here he does.

6 *Can you think of godly people, whether in the Bible or in modern times, who have suffered? Was their suffering a result of their personal sin?*

For example, in the New Testament alone, John the Baptist, Stephen and of course Jesus himself all died cruel and inhumane deaths, and in the early church there were many other martyrs.

7 *What do you think Jesus means, then, when he says that 'unless you repent, you too will all perish' (verses 3, 5)?*

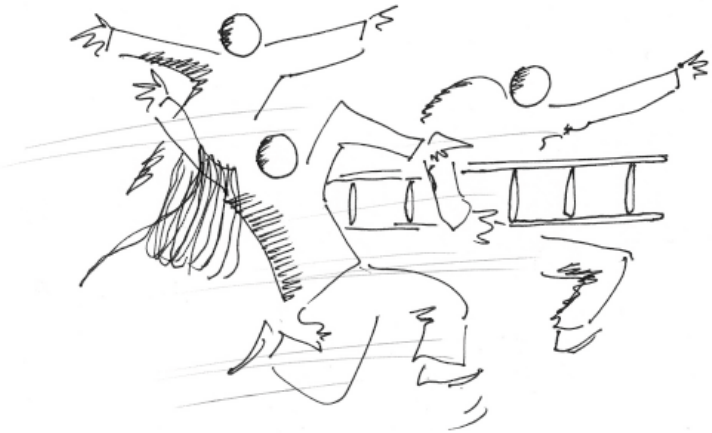
Jesus appears to be saying that there are consequences to actions. If the people of Israel continued to live in disobedience to God, Jerusalem would end up being destroyed and all its citizens, innocent or not, would die at the hands of Roman soldiers and in the collapse of the city's walls. This is more or less what happened 40 years later, in AD 70.

Application

8 *How can our actions lead to the suffering of others?*

9 *How should we respond to those who are suffering as a result of natural or man-made disasters?*

10 *If people say that disasters are God's punishment on those who do wrong, how would you respond?*



1

Review of this chapter

- *What have we learnt about the causes of disaster, and what do we understand about the key terms: risk, vulnerability and hazard?*
- *What examples are there in the Bible of how people have responded in a crisis, and what can we learn from them?*
- *What are the seven strengths of the local church which are useful in times of disaster?*
- *What specific skills and resources do we have in our church and community which can be used to prepare for and respond to a disaster? How can you make sure that the skills of both women and men are fully recognised and used?*
- *What should be the priorities of the church leader or pastor when disaster strikes? What responsibilities can be delegated to other church members?*

2 Organising ourselves

Some of the material in this section is drawn from Tearfund's *Umoja Facilitator's Guide*.

Introduction

This chapter looks at the issues a church would normally need to consider in order to successfully prepare for, respond to and reduce the impact of any kind of disaster. In other chapters we will look at specific hazards in more detail.

2

Some of the material may be more relevant to a large church with many people and resources. If you are a small church, please select those things which are possible for you, given your more limited capacity. Do not feel guilty because you cannot do all the things described here! A smaller church may need to look especially at the section below on working with others: this can be a way of finding the additional people, skills and other resources needed to do the work.

Sometimes, church leaders try to do everything themselves: this is not the biblical pattern! In the Old Testament, we see that Moses had to learn to delegate tasks to others (Exodus 18:5-26). In the New Testament, the leaders of the early church had to choose responsible people to look after the practical work of feeding needy church members (Acts 6:1-7). By doing this, the leaders were able to concentrate on preaching and on teaching the growing church. The first section in this chapter follows this principle, and describes how to set up a disaster management committee – people with the gifts and skills to look after this part of church and community life.

One of the strengths of a church is its ability to mobilise volunteers from among church members. This is an important aspect of any disaster response. This chapter gives ideas on how to recruit, select and train volunteers. Volunteers are most effective if they are well supported and encouraged by church leaders.

A disaster may create the need to begin a small project – for example, to rebuild a school or repair a river embankment. This chapter gives some ideas on how to plan, implement and monitor such a project, if the church has the capacity to do this.

In the case of a larger-scale disaster, it may be advisable for a church to work with Christians of other denominations, with other faith groups, with potential donors and with local authorities. Sometimes, working together can mean active cooperation, sharing resources and learning from each other. At other times, it may only need low-level cooperation – simply to know where others are working and what they are doing. This helps to ensure that we don't compete with each other or duplicate each other's work, and that no needy groups go without assistance.

Disasters nearly always cause stress and often create casualties. This chapter also contains material on ways of minimising stress and some basic First Aid tips for helping people who are injured. Please select the topics which are of greatest relevance to your context.

The disaster management committee

In times of crisis, members of a church may look to their leader for help and guidance. However, leaders (or pastors) are not trained in disaster response and cannot do everything by themselves. This book recommends the setting up of a disaster management committee, which can prepare for disasters and respond to them. This committee should have both male and female members. The pastor will usually find people in the church with a variety of skills and gifts which are relevant for disaster situations. (See also the Bible study on page 67.)

Functions

The main functions of the disaster management committee are to:

- coordinate needs assessment after a sudden disaster
- ensure that basic needs for water, food, shelter, toilets and medical care are met for everyone in the community, especially the most vulnerable groups
- coordinate risk assessment (before a disaster)
- coordinate and support teams of volunteers
- act as a central decision-making body
- establish and maintain co-ordination between different groups responding to the disaster
- review progress of a response and seek additional resources when needed
- develop disaster preparedness plans and an action plan for mitigation.

Jobs and responsibilities

Some members of the disaster management committee should be given specific jobs and responsibilities:

Coordinator

- to oversee activities preparing for and mitigating the impact of disasters
- to coordinate an effective response in the event of a disaster
- to chair meetings and/or keep notes of meetings (although someone else could do these jobs).

NOTE: It is better if the coordinator is not the pastor, but the coordinator should communicate regularly with the pastor.

Treasurer

- to oversee the use of the church's funds and also funds donated by other agencies to help with a disaster response
- to ensure there is good stewardship of the church's resources and money that funding partners have given
- to produce simple reports which can be used to demonstrate how the funds are being used and to update the coordinator.

Logistics person

- to oversee provision of food, clothes, water and shelter for those affected by a disaster
- to hire local transport for moving provisions. (This responsibility may require two or three people.)

Communications person

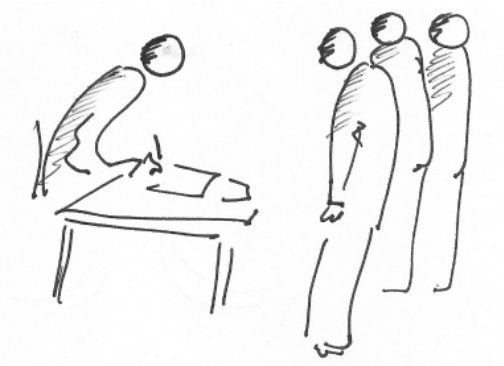
- to coordinate communications with external agencies and other churches
- to communicate with local authorities and government officials.

Using volunteers

Recruiting volunteers

Your disaster response work will need volunteers who are willing and reliable. Here are some key principles that will help you recruit volunteers:

- Make a list of the essential characteristics your volunteers must have – for example, they should be people who are well known, reliable, fit and healthy, hardworking and trustworthy.
- Make sure that the roles of your volunteers are clearly defined and written down. This basic job description should include the name of the person who will supervise the volunteer. This will help to motivate the volunteer, ensure he or she gets proper support, and prevent confusion about their role.
- If possible, when you are preparing for a disaster, make a list of names of volunteers and match them to the specific roles that you have described.
- When you are recruiting volunteers, remember that their ability to get on well with others and work in a team is as important as their skills and experience.
- If you need a large number of volunteers, look for those who can undertake specific tasks and choose some who can become supervisors or team leaders.
- When talking with volunteers, take time to make sure they have clearly understood their roles and have had an opportunity to express any fears or concerns, which can then be addressed.
- In some specific cultural situations you may need female volunteers to work with women who have been affected by the disaster.



Volunteer roles

There are a number of different roles for volunteers in preparing for and responding to a disaster – these are listed below. You may need to adapt some of these tasks according to the particular disaster you are facing.

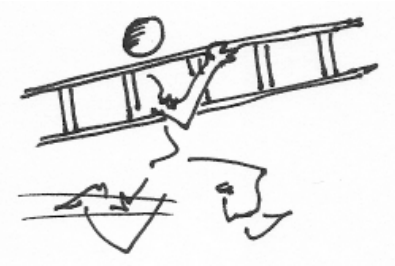
Team leader

Each of the teams below will require a leader to guide and encourage team members. The team leader will receive instructions from a designated member of the disaster management committee. He/she should have some experience relevant to the team's function and be a good leader.

Awareness-raising and warning team

This team is committed to raising awareness in the community about the risks of disaster and about what the community can do before and after the event. The team should also run a local warning system which is appropriate to the type of disaster. These volunteers may also be responsible for warning specific vulnerable groups, especially those who are elderly or have a disability or long-term illness.

Rescue teams



Team members are responsible for rescuing people who have been trapped or injured by a disaster. They should have physical strength for moving debris and materials, carrying bodies, using rescue equipment (for example, ropes, ladders, digging tools), or using boats or canoes. They should also have some training in First Aid, as they will be the first people to have direct contact with injured casualties. (See pages 63–66.)

Logistics team

These volunteers are responsible for collecting essential items for people who have been made homeless. This includes such items as food, materials for shelter, water supply and basic medicine. They should also arrange any transport needed.

Food distribution team

After a disaster, food stocks may be lost and markets may not open. Food has to be brought from outside the area. You will need volunteers to handle this food and to organise distribution of daily food rations. They should also be able to record basic information, such as family details, and to manage food stocks. This team may also have to cook food and distribute it to people who are ill or who cannot come to a feeding centre.

Shelter and toilets team

These volunteers are responsible for helping people to construct temporary shelter. They will also find out how many toilets are needed and help to build them.

They should monitor the shelters to make sure they are effective in bad weather and make changes accordingly. They should ensure there is a system for people to wash their hands after using the toilet, to prevent further risk of disease. This team may also be involved in digging graves and in burials.

Counselling and prayer team

These volunteers provide emotional and spiritual support through listening, praying and counselling. In some situations it may be appropriate to lead a small service to help those who are suffering from bereavement.

Motivating and supporting volunteers

Perhaps the most profound way of motivating volunteers is to help them see that their actions are an expression of their Christian faith – they are doing what Christ would do. Also, the way in which we support, value and encourage volunteers will determine their motivation and commitment to the task.

Here are a few other ways to show people they are valued:

- Encourage them at the start of the day.
- Take the opportunity to thank them for the things they do, however small.
- Ask for their opinions.
- Show interest in them as people.
- Celebrate with them when a major task has been completed.
- Check they are OK emotionally.
- Ensure that they take proper time to rest between shifts.

Volunteers involved in long-term preparedness projects should receive refresher training and be given opportunities to practise their skills. This can be done by creating simulation exercises, where volunteers have to carry out specific tasks. Refresher courses in First Aid skills are essential.

Volunteers' expenses for food and transport should be paid in full. Sometimes it may be appropriate to reward a volunteer's service with a payment of money, particularly if they have stopped doing their usual income-generating work in order to volunteer.

Training volunteers

All volunteers need some orientation: you will need to explain what is expected of them and to introduce them to their fellow team members and team leaders. A good orientation for new volunteers should include the following:

- an explanation of the overall purpose of their team and how it contributes to the church and community project for disaster preparedness and response
- a description of the main tasks the volunteers will be required to do
- the name of the person they should go to if they need help with their task
- the names of the people they will be working alongside, and how their roles fit together
- awareness of the symptoms of stress and how to manage them
- guidance on how to treat disaster sufferers with dignity and respect
- clear instruction on acceptable and unacceptable behaviour, particularly in relating to children. (Child abuse is quite common after major disasters – volunteers must protect children, not ill-treat them.)
- specialist training for sub-groups who will do more specialised tasks (see list below).

Specialised training needs

It is important to equip volunteers with the skills they need. Sometimes church members could lead some training topics – for example, if you have a doctor or a nurse in your church they could help with First Aid training. Other training needs might include:

- risk mapping (see Chapter 3)
- use of early warning systems for slow-onset and fast-onset disasters
- simple project planning skills (see page 54)
- coordination and management skills for emergencies
- emergency feeding and food security
- rescue and First Aid skills
- water and sanitation good practice
- counselling for bereaved people
- peace-building and reconciliation.

2

Managing meetings

Meetings to plan and coordinate activities are necessary. Invite people who have particular skills, knowledge or influence in the community. Open discussion helps to avoid misunderstanding or duplication of effort.

Because disaster situations change rapidly, regular meetings are needed to review progress and reassess needs. Sometimes you might need to have several meetings in one day. If government or NGOs call a meeting for coordination purposes, try to send a representative to attend.

It is important to run meetings efficiently. The following tips are given to help make your meetings effective.

Before the meeting

- Make sure everyone knows why they are meeting.
- Make sure everyone knows the day, time and place of the meeting.
- There should be a simple and clear agenda.
- Sufficient notice should be given to those who need to prepare papers or a speech.
- Provide food and drink if appropriate, and plan breaks.

During the meeting

- Start and finish on time.
- Make sure visitors and new members are welcomed and introduced.
- Make sure everyone has a chance to contribute, to speak and to listen.
- Make sure the agenda is followed.
- Before making a decision, ensure that all the key points are summarised and everyone has understood.

- Make sure a record is kept of the decisions made. Actions should be assigned to specific people, with completion dates.

After the meeting

- If possible, people who come to the meeting should receive a record of decisions made and actions planned.
- Everyone should be made aware of when the next meeting will be held.
- If appropriate, make sure everyone has a list of contact details which can be used if there is a need to call an emergency meeting.

A simple guide for making decisions

One of the challenges of running a disaster management committee is making good decisions. There should be good preparation beforehand and people should be given plenty of information on which to base their decisions. The following questions are designed to help the coordinator facilitate good decision making.

- *What are we trying to decide? Be sure this is clear to everyone.*
- *What are the different possibilities? Consider as many as possible. Write them on a board or flip chart.*
- *How may each possibility work? Consider the positives and negatives.*
- *What suggestion, or combination of suggestions, do we choose?*
- *What do we need to do to carry out the decision?*
- *Who will do what, when, where and how?*

Working with others

When working in disaster response we find many suffering people with very many needs. This presents a great challenge, and resources are often scarce. A way of solving this problem is to work in cooperation with other groups. This sounds easy and straightforward but, in reality, it needs lots of wisdom, maturity and patience.

2

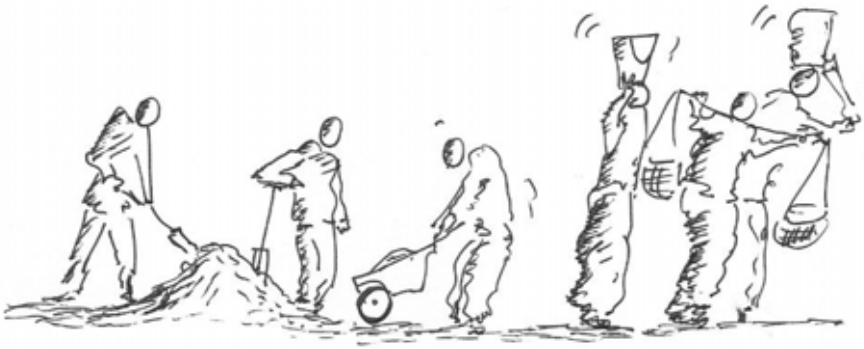
Some common reasons for Christian groups to work with other groups are:

- The task is large and you do not have all the required resources to meet the need.
- You do not have enough disaster experience.
- You do not have enough skilled staff and managers.
- There is pressure from the government to join them and other groups.
- You receive a request to help others with your experience and resources.

If there is a good reason for cooperating with one or more other groups, consider the following points before joining them:

- Would there be any negative impact on your other activities if you worked with this particular group in disaster management?
- Do you know enough about the other people involved?
- Do they have any hidden objectives or different values which could hinder your approach?
- Will other organisations have any difficulty working with you as a church?

Work with another group should focus on implementing a specific project. There should be clearly stated basic principles of cooperation – a written agreement sometimes called a Memorandum of Understanding, or MoU. Each party should



consider their own limitations and strengths, and respect the limitations and strengths of others. The following principles are suggested:

- Be willing to sign a Memorandum of Understanding to define responsibilities.
- Be willing to share each other's information about needs and resources in formal and non-formal ways.
- Develop a mechanism or process for handling any areas of disagreement.
- Be willing to persevere in working together through difficult periods.
- Respect each other's organisational goals and objectives.

Learning to work with other groups

Cooperation with other groups brings benefits, but there will also be challenges. The benefits usually include shared resources, and access to the skills and experience of others. Cooperation also helps to remove duplication or competition in a relief project, and ensures that some needy group is not missed out. There may be long-term benefits too, as different groups in the community understand each other better and learn to live and work together more closely.

However, other groups may work very differently from churches, and there may be some prejudice towards the church, or lack of trust in its capacity to respond appropriately to the disaster. Sometimes the church may be suspicious of other groups and their motives. The church must be clear about what it can and cannot do. It should recognise that it has both strengths and weaknesses. The roles of the different parties should be agreed together. For example, a church may be willing to offer the use of its compound, to make lists of needy people and to recruit a team of volunteers. Another group may be able to buy food and arrange the logistics for delivering it to that compound.

Learning to work with the government

Benefits

Here are some of the potential benefits of working with the government:

- Government departments often have an overview of the wider disaster area which can be important when planning a local response.
- Government authorities often have expertise and equipment for rescue and rehabilitation.
- Government authorities may later be able to implement long-term mitigation projects, such as building embankments, improving water supply or establishing irrigation systems.
- Cooperation may open up opportunities to lobby local authorities on a particular issue which is creating vulnerability, such as lack of land for building safe houses, excessive water use for irrigation, or deforestation by private contractors.

Challenges

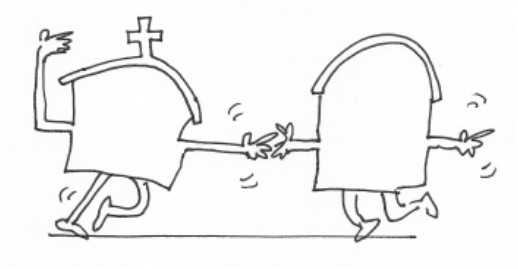
There can also be challenges in working with the government. These can include the following:

- The government often has a limited understanding of Christian organisations.
- It may believe that you can get any amount of resources from overseas.
- It may fear that you will try to convert people whenever you have the opportunity.
- It may not want to recognise your skills in management, because this could reveal its own inefficiency.

Learning to work with secular groups

Like the church, secular groups may have some very committed and well-motivated workers. There are both benefits and challenges in working with secular groups, including the following:

Benefits



- Secular groups often have particular specialist skills. For example, Oxfam specialises in sanitation and water supply, and the Red Cross and Red Crescent specialise in tracing separated families.
- They bring experience of responding to previous disasters, and the insights they have gained.
- Church capacity to respond to a disaster can be built up, both for the immediate situation and future events.
- Secular groups often have better relations with the local government than the churches; they may be able to obtain resources from government.

Challenges

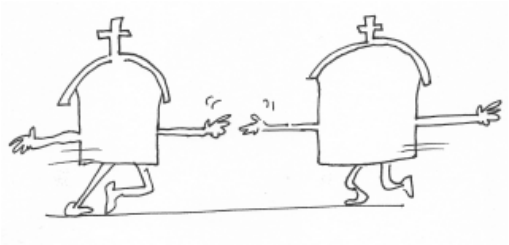
- Secular groups may not be very enthusiastic about working with churches, because they have no experience of co-operating with faith-based groups.
- The culture of secular groups may be quite different from the culture and behaviour of church members. This may apply, for example, to the use of language and views on issues such as alcohol and smoking.

Learning to work with other churches

In many situations there are other churches doing disaster-related activities. While there may be differences in theology or style of worship, the churches still have much in common which can provide a basis for working together.

Benefits

The benefits of working with other churches include the following:



- Other churches may have additional resources, in terms of skills, potential volunteers and buildings which can be used in a crisis situation.
- Through a relief project, good relationships can be built

between churches, which reflects the unity of the wider body of believers and provides a basis for cooperation in other areas.

- Working with a diverse range of churches brings additional insights and also added strength to your efforts if you are lobbying local authorities on key issues.

Challenges

Here are some of the challenges in working with other churches:

- On the surface, churches do things differently and may not think they have much in common with other churches.
- Where traditional rivalry exists, it can be a challenge to decide which church should take the leading role in coordinating and running the response.

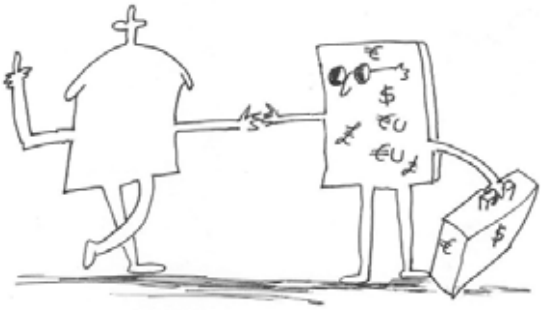
Learning to work with funding partners

Usually, a local church has limited resources to help people after a disaster. Partnership with a donor or an NGO can help to bring in those resources.

Benefits

Working with funding partners can have a number of benefits:

- A funding partner may provide cash grants or physical inputs, such as food, plastic sheets for shelter or utensils for cooking. Additional funds may come later to help rebuild houses or to restore livelihoods.
- The church can ensure that the help reaches the people who are most in need, and can help the outside group to connect with the 'grass-roots' community.
- Donors may have money or food to support 'food for work' projects. These projects provide short-term paid work, but can be used to address a long-term problem – for example, digging an irrigation ditch, repairing a dyke or making low, water-retaining embankments ('bunds') around fields.
- Church members may be able to gain new skills and possibly employment.



Challenges

Working with funding partners can also present a number of challenges:

- An external donor or NGO will require a record of how the money has been spent. This may be challenging for some churches if they do not have a skilled accountant and are not used to this sort of paperwork: they may need some assistance.
- Some funding partners may not understand how churches work and their priorities. Churches have strong beliefs and values, which might be different from those of the donor.
- It takes time to build relationships, to establish trust and develop documents; in an emergency, time can be limited.

Some tips for working with funding partners

- Don't rush into a funding relationship with a donor or NGO; take some time to discuss values and priorities, as well as the pressing needs of the community.
- Try to develop a simple Memorandum of Understanding document, which sets out the responsibilities of both parties and the decision-making processes.
- Agree on a work plan and a time-frame for getting things done. Funding partners may want to move quickly, whereas the church usually moves at a slower pace.
- Make sure you fully understand the reporting requirements of your donor, and the level of financial accounts they will require; ask them to help you with bookkeeping.
- Be willing to say 'no' if problems come up in the above areas and prove too difficult to solve.

Conclusion

One local church may not have the capacity to respond effectively to all aspects of a disaster. If so, it will either have to be satisfied with a limited response or increase its capacity by seeking an acceptable partner. In choosing a partner, a Christian group should consider its own strengths and weaknesses, and examine carefully the values, motives and priorities of a potential partner, especially if that partner is coming from the secular world.

'Do nothing out of selfish ambition or vain conceit, but in humility consider others better than yourselves. Each of you should look not only to your own interests, but also to the interests of others.' (Philippians 2:3-4)

2

Securing additional help

There are some situations in which the church may not feel it has all the expertise to prepare for and respond to a disaster. At such times the church may need to seek external technical advice. The specific areas of advice might include the following:

- making a full assessment of needs and future risks
- setting up an early warning system
- preparing emergency response plans
- methods for constructing temporary houses, toilets or water supply
- planning some mitigation projects
- monitoring progress and evaluating success.

Sources of help

There are several potential sources of help:

- members of the church who have the specific skills you need
- neighbouring churches and faith groups which have people with relevant skills
- local NGOs which specialise in areas such as water and sanitation, agriculture and health
- relief and development departments of churches, NGOs and government
- local publications on disasters and preparedness
- Tearfund publications such as *Footsteps*, *Pillars* guides and *Roots*.

Footsteps, Pillars and *Roots* are available from Tearfund: enquiries@tearfund.org
Tearfund, 100 Church Road, Teddington, TW11 8QE, UK
If you have internet access, also look at http://tilz.tearfund.org

Basic planning and monitoring skills

Church leaders know the importance of preparation and planning. Services for worship, special one-day programmes or children's Bible classes all require careful thought and attention to detail.

The same applies when we are planning a response to a disaster or preparing to face an approaching hazard. In the Bible studies, we have looked at Joseph and Nehemiah:

both of them planned carefully. Joseph prevented a disaster, while Nehemiah helped his people through a period of reconstruction.

This section gives some guidance on how to plan well and how to monitor the progress of a project. It is relevant for disaster preparedness, for disaster response and for longer projects aimed at reducing disaster impact.

The following exercise is a simple tool that will help a disaster management committee to plan its work. It includes some ways of addressing the problems which could arise and hinder the progress of the project.

The minibus exercise

If possible, ask someone to draw a minibus similar to the picture below and display it somewhere where everyone can see it. Then discuss the questions that surround it. The answers to the questions then become your project plan.

1 What are we going to do?

This is about deciding what is the main objective of the project. In a flood situation, an objective might be:

'To feed 200 displaced people with two cooked meals per day for ten days.'

2 How are we going to do it?

This is about identifying the tasks that people involved in the project will have to do to make sure it fulfils its objective. For example, in the feeding project, tasks could include constructing a temporary kitchen, borrowing cooking pots, collecting firewood (or other fuel) and buying rice, lentils (pulses) and vegetables.

3 What resources do we have?

Consider all the different resources that you already have and that you can use for this project. This could include people's labour, time, experience or skills, as well as natural resources, relationships with other organisations, money and prayer. In the example above – a flood – a church member may be skilled in building, another may hire out large pots for wedding feasts, another may have bamboo poles on his land and another may have a boat to reach the local market (if it is still open).

4 Who do we need on board?

Think about the various people who should be involved in designing and operating the project. This should include the beneficiaries, as well as church leaders, volunteers and a representative of the local authorities. The skilled people listed above will need to be 'on board' for the project, plus others – for example, some to collect fuel, others to cook and serve the food.

5 What could hold us back?

The purpose of discussing this question is to identify the things that could possibly prevent your activities from happening. This might be opposition from other members of the community, lack of funding, or lack of skills and experience. In the example above, there may be a shortage of dry fuel, or the market may not be open because of the flood.

6 What could get in our way?

This is about all the things that could disrupt the project after it has started. These could be local conflicts, bad weather, sickness among workers in the project, or uncooperative local officials.

7 How much will it cost?

When you have identified all the different activities, you will need to work out how much these activities might cost, and prepare a simple budget. It may not be easy to

find money for the project. Church members may be able to contribute something, but other sources may be needed (see 'Working with others' on page 48).

Use the following table to convert the information from the minibus exercise into a plan which can be used by the local church.

Name of project: Feeding people displaced by flood **The situation: A** flood has destroyed the food stocks, houses and fuel of approximately 200 people. The flood water remains one metre deep.	
1 What are we are going to do?	Provide 2 cooked meals per day for 200 people for 10 days
2 How are we going to do it?	1. Make a temporary kitchen. 2. Borrow large cooking pots. 3. Arrange fuel for cooking. 4. Purchase or collect gifts of food. 5. Prepare lists of needy people to include in project. 6. Collect clean water. 7. Prepare and cook the food. 8. Serve food twice a day.
3 What resources do we have available?	Building skills, bamboo poles, cooking pots, cooking skills, firewood, donations from church members, bore-well
4 Who do we need on board?	[Name 1] builder to make temporary kitchen [Name 2] villager with bamboo poles [Name 3] business person who hires out cooking pots [Names 4,5,6] members of Mothers' Union to cook [Name 7] church elder to coordinate the team [Names 8,9] fishermen with boat to visit market [Name 10] schoolteacher to prepare list of beneficiaries [Name 11] church treasurer to handle the funds
5 What could hold us back?	• Market could be closed. (Identify an alternative food source.) • Dry fuel may not be available. (Seek dry food alternatives.)
6 What could get in our way?	• People not included in the project might complain, so establish a system for handling complaints. • Possibility of bad weather.

7 How much will it cost?	Following items needed: • plastic sheet ..... • bamboo or timber ..... • tying rope ..... • rice ..... • salt ..... • lentils ..... • vegetables ..... • fire wood ..... **Total funds needed:** ..... Gifts from church members: ..... Gift from a city church with no flooding: ..... Expected grant from a local NGO: ..... **Money still needed:** .....

When you have completed this plan, you may find it helpful to spread the tasks over a number of days using the table described below.

Task planning table

This table is useful for helping a small team to plan the different tasks that the project requires. If you do this on large sheets of paper, it can be used in planning meetings and to review how things are going.

Day →	1	2	3	4	5	6	7	8	9	10
Team meeting		✓		✓		✓		✓	✓	
Task 1	start		end							
Task 2	start		end							
Task 3			start		end					
Task 4					start		end			
Task 5							start		end	
Task 6							start		end	
Task 7								start		end

Worked example

Here is an example of how the table might look when the tasks for the situation described above (a flood) have been planned:

Day ➜	1	2	3	4	5	6	7	8	9	10
Team meeting	✓	✓		✓		✓		✓		✓
Check no one is missing after flood	start	end								
Arrange temporary kitchen with bamboo and plastic	start		end							
Borrow large cooking pots	✓									end
Buy or collect fuel for cooking	start	✓	✓	✓	✓	✓	✓	✓	end	
Go to market to buy food	✓			✓			✓			
Collect clean water	start	✓	✓	✓	✓	✓	✓	✓	✓	end
Cook and serve two meals per day		start	✓	✓	✓	✓	✓	✓	✓	end
Evaluate success of project – decide if it should be extended										✓

Monitoring and evaluation

An important part of running a project is being able to measure progress (how are things going?) and also to assess the impact of the project on people's lives (what have we achieved?). Measuring progress is called *monitoring*, and assessing impact is usually called *evaluation*.

MONITORING involves collecting information regularly from people who are running the project and from beneficiaries. It should assess whether or not numerical targets are being met, and it should also find out if the work is of good quality.

EVALUATION is usually done at the end of the project by getting feedback from the community, but the community should also have the opportunity to give feedback while the project is in progress. In this way, any complaints can be quickly dealt with, and problems can be solved.

Monitoring a feeding programme

If you wanted to monitor the programme described above (feeding 200 people for ten days), the following questions would be useful:

- Is each individual (out of the 200 affected by the flood) getting two meals of nutritious food every day?
- Is the food prepared hygienically and cooked well?
- Is the food culturally appropriate and of acceptable quality?
- Is anybody being missed out in the distribution?
- Are the volunteers being well supported and used effectively?
- How is our spending going compared with our budget?

The project can also be evaluated at the end, to celebrate success and to find out anything which could be done differently next time. The project might need to be extended if flooding persists and funds are available. However, you should avoid creating dependency: food-for-work options should be considered.

Health and safety

Managing stress

People involved with disaster situations have to cope with high levels of stress, because the scale of suffering and damage can be overwhelming. There is sometimes little opportunity for rest, and there may not be enough people and resources to meet the needs. In addition, volunteers can be affected by seeing dead, injured and emotionally upset people. Church leaders themselves may also experience stress, not only because of the suffering around them, but also because of the increased demands and pressure of work on them. It is essential to understand what stress is, and how we can manage it well.

Sometimes, the person who has helped disaster victims may him/herself require professional help, in order to recover from the stress. Common symptoms include painful memories of the event, nightmares, over-activity, inability to sleep, tiredness, anger and guilt. Friends and loved ones are needed to give ongoing support.

A strategy for dealing with stress

In a disaster situation, it may not be possible to remove the causes of the stress, so it is important to develop coping patterns to help deal with it. For example:

- Make the best use of your energy, and pay proper attention to your health; try to maintain a balanced diet and allow enough time for sleep.
- Balance work with recreation and take regular exercise; set aside a daily time for reflection and a day per week for rest.
- Review your values – make sure you are not putting yourself under unnecessary pressure by confusing your priorities.

- Express your feelings – discuss things with close friends, share burdens and find prayer partners. Do not be afraid to cry or to laugh – these can help to relieve stress.
- Check your management skills – do not set yourself unrealistic deadlines; order your priorities, delegate effectively and approach tasks methodically.
- When you feel under stress, be open to receiving support and encouragement from others; be willing to receive help from friends, family, fellow church members and colleagues. Seek professional help if you experience the symptoms listed above.
- Keep open channels of communication; deal quickly with any misunderstandings or potential conflicts among team members. Relationship problems tend to increase stress.
- Seek extra resources from God, who has promised to equip us for every situation. Prayer is the most powerful resource we have available to us. Guilt is a common feeling when under stress; bring this to God and ask him to remove it.

'Come to me, all you who are weary and burdened, and I will give you rest. Take my yoke upon you and learn from me, for I am gentle and humble in heart, and you will find rest for your souls.' (Matthew 11:28-29)

Dealing with casualties

One of the tasks of volunteers is to assist people who have been injured in a disaster. High winds make trees fall and roof sheets fly off. Earthquakes cause crush injuries. In floods, people drown or are injured by moving debris. Volunteers should be able to save lives and prevent further injury, especially if no doctors or nurses are available to treat the casualties.

The ability to give medical help in a way which saves life and reduces suffering is called First Aid. If possible, find someone in the community with medical knowledge who can teach First Aid skills. There may be a doctor, a nurse or health worker among

your church members or in the wider community. Encourage members of women's, men's and youth groups to attend this training. Training should include opportunities to practise the ABC of First Aid (see below) before any disaster happens.

First Aid

Before helping an injured person, take care of your own safety:

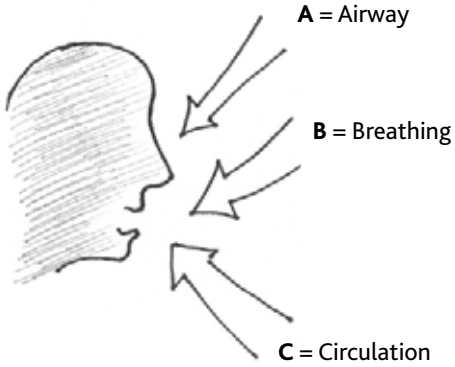
- Check for danger to yourself and to the injured person; remove that danger if possible.
- Protect yourself from contact with the blood of an injured person, especially if you have a wound yourself. Diseases like HIV and hepatitis are passed on from blood to blood. Try to equip volunteers and trained First Aid people with plastic gloves.

For the **conscious** casualty, deal with breathing problems, bleeding or broken bones as described below.

For the **unconscious** casualty who is breathing normally, place him/her in the *recovery position* (shown below) after treating any serious wounds and broken bones (see below).

The unconscious casualty who is not breathing normally should be your highest priority. Follow the ABC of First Aid as follows:

The ABC of First Aid



AIRWAY The airway is the pipe at the back of the throat leading down to the lungs. If this becomes narrow or blocked, an unconscious patient cannot breathe and will die. Always check that there is nothing in the mouth or throat blocking the airway; if possible, remove anything which is causing the obstruction. If the patient is lying on his/her back, the tongue can easily drop back and block the airway. To open the airway, lift the chin by placing two fingers under the chin, and then with the other hand on the forehead, tilt the head back.

BREATHING Take 10–15 seconds to check if the patient is breathing normally or has other signs of life. If there is no breathing or heartbeat, then begin to give ***chest compressions*** and ***rescue breaths***. ***Chest compressions*** involve pushing vertically down on the centre of the chest, an action which squeezes the blood out of the heart and into the body tissues. When pressure is released the heart sucks other blood in again. Chest compressions can be given at up to 100 per minute.

Rescue breaths means blowing into the patient's mouth to put air into his/her lungs. Pinch the patient's nostrils together, take a deep breath and blow into the mouth, firmly sealing your lips around the mouth so that air is not lost. Do this twice and then check for breathing. Usually, chest compressions have to be combined with rescue breaths. Give 30 chest compressions and then two breaths. Continue with this treatment until breathing and heartbeat are restored.

If breathing and heartbeat restart, put the patient in the recovery position until he/she regains consciousness.

The recovery position

- The chin is lifted forward to keep the airway clear and open, and the head is lower than the body so that fluids will drain out of the mouth and are less likely to be inhaled.
- One hand supports and protects the head.
- One arm and leg are bent to make the position stable and stop the body rolling forward.
- The chest is not flat on the ground, so breathing is easier.

CIRCULATION is the flow of blood around the body, pumped by the heart. If the heart has stopped, the chest compressions above may get it going again. Large or deep wounds cause blood loss and this too will threaten life. Give immediate attention to heavy bleeding as described below.

Dealing with injuries – especially bleeding, and broken bones

HEAVY BLEEDING Push clean pads of gauze or clean cloth onto the wound and hold them firmly in place – by hand or using a bandage.

If the injury is to an arm or leg and there is no broken bone, raise the arm or leg slightly. This will also help to reduce bleeding.

BROKEN BONES Simple splints may help prevent further damage to broken limbs. Tie the damaged limb gently to a smooth piece of wood, using padding if necessary. Never try to push bones back into place. Broken legs can be tied together, or you can place a smooth piece of wood between the legs as a simple splint. Use simple slings for arms. If a bone is sticking out of a wound, cover lightly with a clean dressing to reduce the danger of infection. People with neck or back injuries should be secured onto doors before they are moved to safety.

If no medical help is available immediately, keep serious injuries covered with clean dressings and prepare a place where casualties can rest until medical help arrives.

BURNS Treat burns by soaking them in clean, cool water (or any other clean fluid). Cover them with a clean cloth. Never try to pull off loose pieces of skin or clothing.

Potassium permanganate solution may help prevent infection of wounds and is easily kept in emergency stores. The mixture is made by dissolving a (400mg) tablet in 4 litres of water. If the mixture is too strong, it can be dangerous. The correct strength is 0.01% or 1 in 10,000. Cover exposed wounds with clean cloths to keep off flies and dirt.

Basic First Aid kit

Absorbent compress dressings 12.5cm x 22.5cm	To cover and protect large open wounds
Adhesive dressings ('plasters') – assorted sizes	To cover and protect small open wounds
Adhesive tape (cloth) 2.5cm	To secure bandages or splints
Antibiotic ointment or permanganate (400mg tablets or 0.01% solution)	To clean wounds and prevent infection
Gloves (large) disposable, non-latex	To prevent body fluid contact
Scissors	To cut tape, cloth or bandages
Roller bandages: 5cm, 7.5cm and 10cm	To secure wound dressing in place
Sterile gauze pads or dressings: 5cm x 5cm, 7.5cm x 10cm and 10cm x 12cm	To cover wounds and control external bleeding
Triangular bandage(s)	To make a sling, control bleeding, retain a dressing or hold a splint in place
First Aid instruction booklet	For reference purposes

Discussion

- *Are there people in the community with skills in dealing with minor injuries? Could they share those skills with others? In some cultures, you may even find people who have acquired the specialised skill of setting broken bones.*
- *Sterile dressings for serious burns and wounds should always be included in emergency stores. Discuss how you would make bandages and slings from*

clothing, if there are not enough available in the clinic or store. Consider how you would produce clean dressings for burns and wounds in a disaster.

- *Have you used potassium permanganate? Are there supplies available in the local clinic and in the emergency store? Just a very small amount is needed to make a large amount of liquid that will help prevent infection. Learn how to measure and use this useful chemical.*
- *What would you do if you arrived at a disaster scene where three people were unconscious and ten people were injured and screaming for help? Who would you help first?*

BIBLE STUDY

Delegation of leadership Acts 6:1–7

Background

In the early church there were vulnerable people from different ethnic groups who needed to be looked after with compassion and fairness. Complaints arose because one group felt that they were not receiving their fair share of the food. The church selected individuals to take responsibility for meeting the needs of these vulnerable people. Selection was based on their character and integrity.

You may find it helpful to act out the events of the story so that people are able to visualise what is going on.

Key points

- A pastor's main responsibility is to teach, preach and care pastorally for his/her church members. There are probably other people in the church who have the gifts and skills needed for leadership in work related to disasters.
- Such people should be selected on the basis of their spiritual qualities as well as their education and skills.
- People chosen for such responsibility need the support and the prayers of others in the church.

Questions

1 *What is happening in this story?*

2 *What is the problem that has arisen? Do you think such a problem could arise in your community? In the event of a disaster, which groups of people might be overlooked, and what can be done about it?*

3 *What do the 12 apostles decide to do? Do you think this is a good decision? Why, or why not?*

4 *Who chooses the seven people responsible for looking after the widows? What advice do the apostles give about the type of person who should be chosen?*

5 *What does this story tell us about how to organise your church and community to prepare for and respond to a disaster? What responsibilities could be delegated to selected members of the church?*

6 *Who should select suitable people to carry out these delegated tasks? What important qualities should be found in these people?*

Review of this chapter

- *What are some of the things volunteers can do to raise awareness of disaster risk in the community and to respond when an emergency happens?*
- *What are the best ways of motivating volunteers and supporting them during an emergency?*
- *Why is it important to have women well represented on the disaster management committee and in the volunteer teams?*
- *List some of the essential questions that help a church and community to plan a simple project.*
- *What are some of the resources that most churches possess for use in an emergency?*
- *List some of the benefits and challenges of working with different groups outside the church.*
- *Describe the key functions of the disaster management committee and the roles of its members.*
- *What are some of the signs of stress, and what can be done to minimise it?*

3 Risks, needs and capacity assessments

Introduction

3

This section looks at three types of assessment which are done at different points in the disaster cycle. They are necessary in preparing for and responding to a disaster.

RISK ASSESSMENT (PRE-DISASTER) This determines the hazards in the local area and identifies who and what are most vulnerable to those hazards.

NEEDS ASSESSMENT (AFTER DISASTER) This identifies the needs of the people affected by the disaster, who will require different levels of assistance according to their need.

CAPACITY ASSESSMENT (BEFORE AND AFTER DISASTER) This finds out the skills and resources in a church (and its surrounding community). These resources help it to prepare for and respond to a disaster.

Risk assessment (pre-disaster)

Risk mapping in rural areas

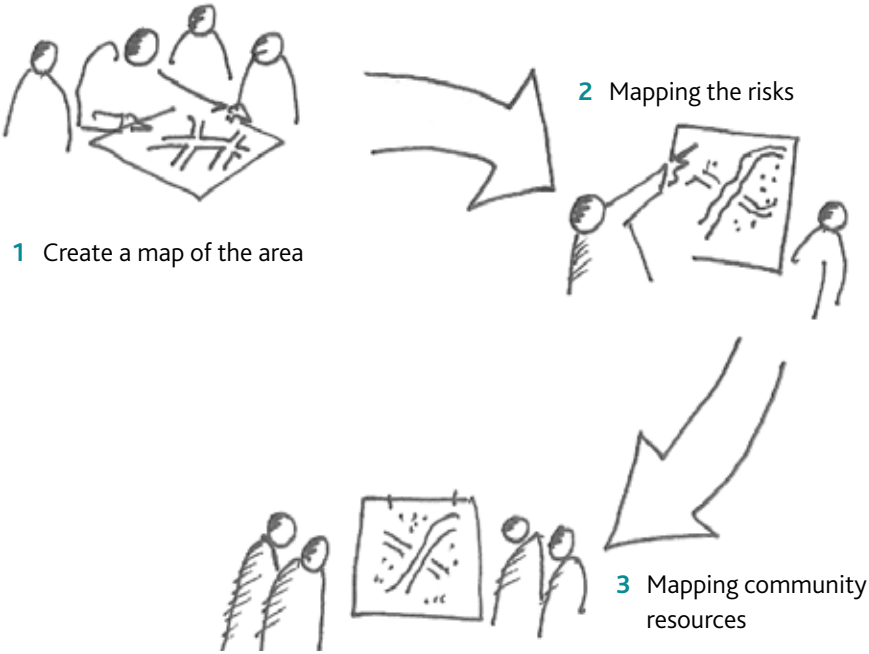
Local people already know more than any outsider about their community and the people living there. However, even with this knowledge, there is always more to discover. The mapping process described below will help in this discovery and will identify both the risks and the resources present in the community.

Benefits

Mapping the risks in a community or area can bring a number of benefits:

- It will help identify the geographical features (such as rivers or unstable hillsides) which could become hazards after heavy rain or wind.
- It will identify the buildings, bridges, markets etc which are most at risk from hazards.
- It will highlight the risks to people, their living places and their livelihoods.
- It will provide authorities and local organisations with information for decision making and planning.
- It can show the areas affected by any previous disasters.
- It can help the community identify the resources it has to face disaster, such as areas of high land, forest and alternative water sources.

The map can be used initially to show hazards and risks, then to show resources.



STAGE 1 Create a map of the area

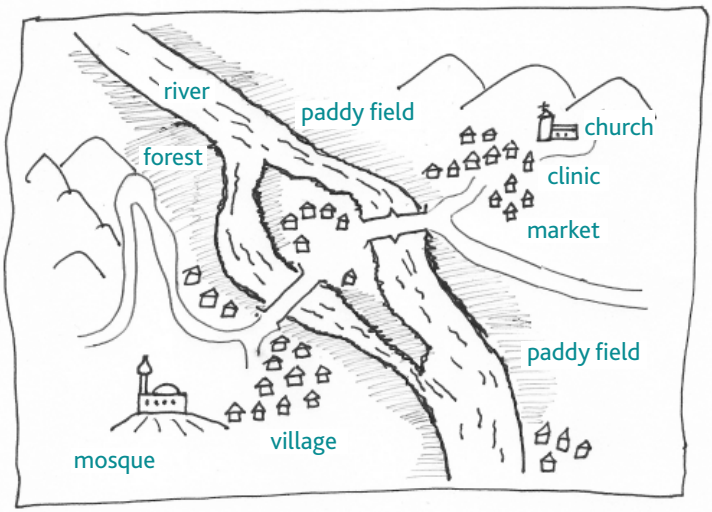
Organise a meeting and invite members of the church, other community members, local authorities and organisations to attend. Explain the purpose of producing a risk map.

Ask the group to choose someone to draw a large map of their local area, using big sheets of paper and pens. Alternatively, the map could be drawn on clear ground with sticks, leaves, ash and stones, or using chalk on a board or the wall of a building. Make sure this type of map is copied safely onto paper for future reference. The map should show:

- natural resources – rivers, forests, grazing land, water sources
- physical features – buildings, roads, bridges, churches, mosques, schools, clinics, markets etc
- any government offices or the headquarters of community groups
- the homes of key people, such as health workers and leaders.

The group should be split into smaller groups according to gender and age. Each group can draw their own map. The different results can be very revealing. Allow each group an opportunity to explain their map, and encourage discussion. Use all the information to make a final detailed map.

Stage 1: Community map in a rural location



STAGE 2 Map the risks

Once the basic map is finished, people can consider the different hazards and the risks they generate in specific areas. Begin by making a list of the disaster types which are known to occur in your area, for example, storms, earthquakes, fires, landslides, floods or conflict.

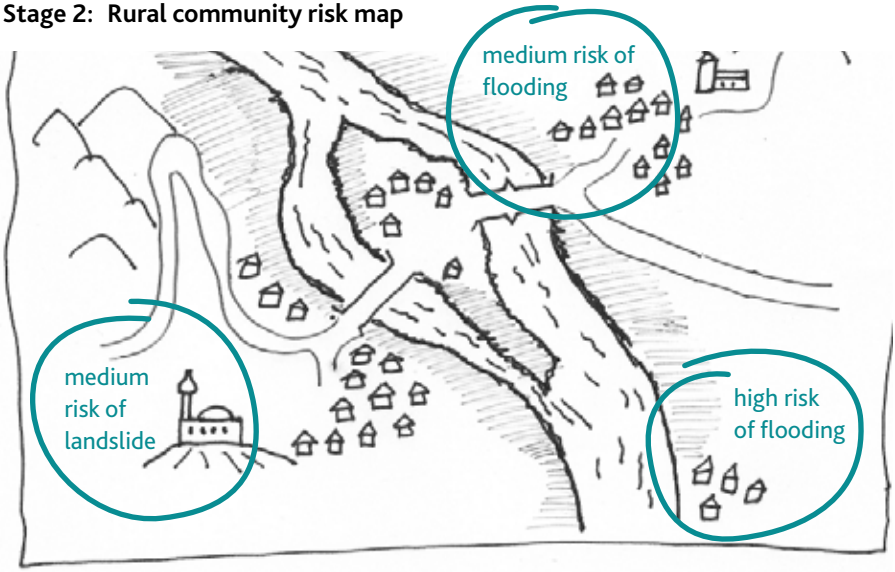
For the types of disaster which could happen in your community, ask the following six questions:

- Which areas would be most at risk?
- Which buildings or structures would be most at risk?
- Which people in particular areas would be most at risk?
- What impact would there be on livelihoods, crops and animals?
- What impact would there be on water and food supplies?
- What impact would there be on communications (roads, bridges, telephones)?

After discussing all these questions, shade in buildings, areas, or homes on the map, using colours to indicate levels of risk. For example, you could use red for high-risk, yellow for medium-risk and green for low-risk areas.

This is an important activity. It raises the community's awareness of potential risks, and can also be used to generate ideas about ways in which those risks could be reduced.

Stage 2: Rural community risk map



STAGE 3 Map community resources

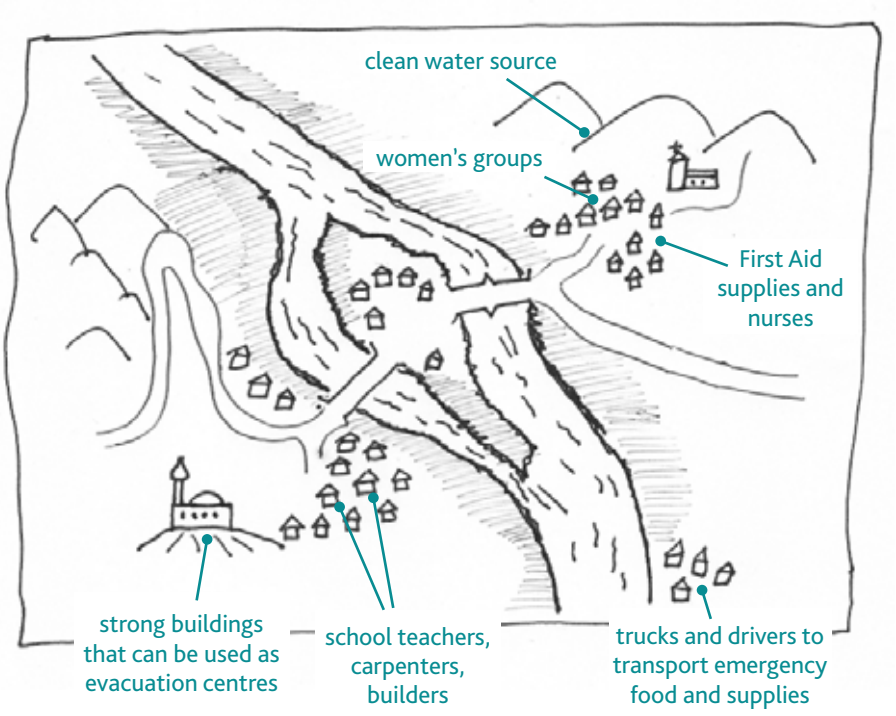
This step involves identifying the things which will help the community to prepare for, cope with and recover from a disaster.

Look at the map and identify large buildings, such as a church, school, mosque, office building or grain store that could be used as a community shelter should disaster strike. Churches and mosques may be considered holy places, but they are often the only strong building available as a temporary place of safety. Discuss this among the church leaders and decide whether or not to allow the church building to be used for temporary shelter in a time of disaster.

Consider also the skills available in the community. Skilled people might include nurses, builders, drivers and electricians. Community groups and local organisations are also important for organising a response. Show on the map where they meet.

In addition, highlight on the map the high land and the natural resources (water sources, forest etc) which will aid survival. Consider additional resources, such as vehicles that could be hired to collect provisions or move people to safe areas.

Stage 3: Rural community resource map



From risk assessment to risk reduction

When the map is completed, it is a good idea for church and community leaders, as well as local authority and organisational representatives, to visit the areas noted as high or medium risk and see what changes could be made to reduce the risks associated with different types of disaster.

Consider ways of strengthening or improving any strong buildings. Are there basic facilities, such as water supply and toilets? Could emergency supplies – for example, candles, matches, torches, chlorine tablets, plastic sheeting, cooking pots, firewood and medical supplies – be stored in a corner of the building or in cupboards or boxes? Could community records be kept here?

A community response plan should also be worked out, allocating responsibilities – such as communications, managing water supplies or evacuating vulnerable people – to appropriate people. This plan should be updated every year.

The maps should be kept safe for future reference.

See Chapter 2, pages 37–68 for more details on how to plan a disaster response and how to select and manage volunteers.

The church prepares for annual floods in north-east India

Tearfund partner NEICORD worked with three local church associations and communities along the Brahmaputra River to help vulnerable communities cope more effectively with annual flooding. They used small, scattered and isolated church communities to influence this process.

The key steps were to:

- create a risk map of the worst-affected areas
- identify local churches which could respond and strengthen local methods of coping with annual flooding
- recruit a core team of volunteers from the different churches to raise awareness and develop preparedness plans
- distribute flood relief through the network of local churches, committees and volunteers
- introduce mitigation measures, including raised handpumps and wells which would not get contaminated by floodwater
- organise food-for-work schemes to improve embankments, clear drainage channels and plant teak and coconut trees.

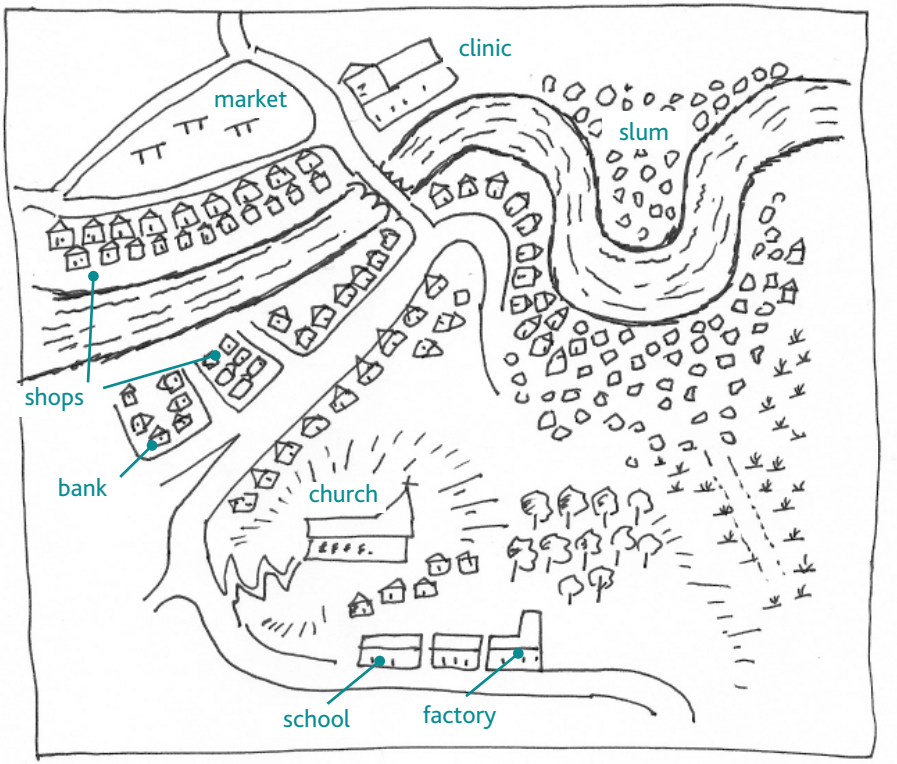
Risk mapping in urban areas

STAGE 1 Create a map of the area

The process of mapping a community in an urban location is similar to the one described for rural locations. The map should show key places in the community and infrastructure, which is likely to be more developed than in the countryside. These can include houses, shops, schools and market places. It's also important to distinguish between the different types of housing, such as slums which are temporary and vulnerable as opposed to more permanent and planned housing areas.

Here is an example of a community risk map made in an urban area:

Stage 1: Community map in an urban location



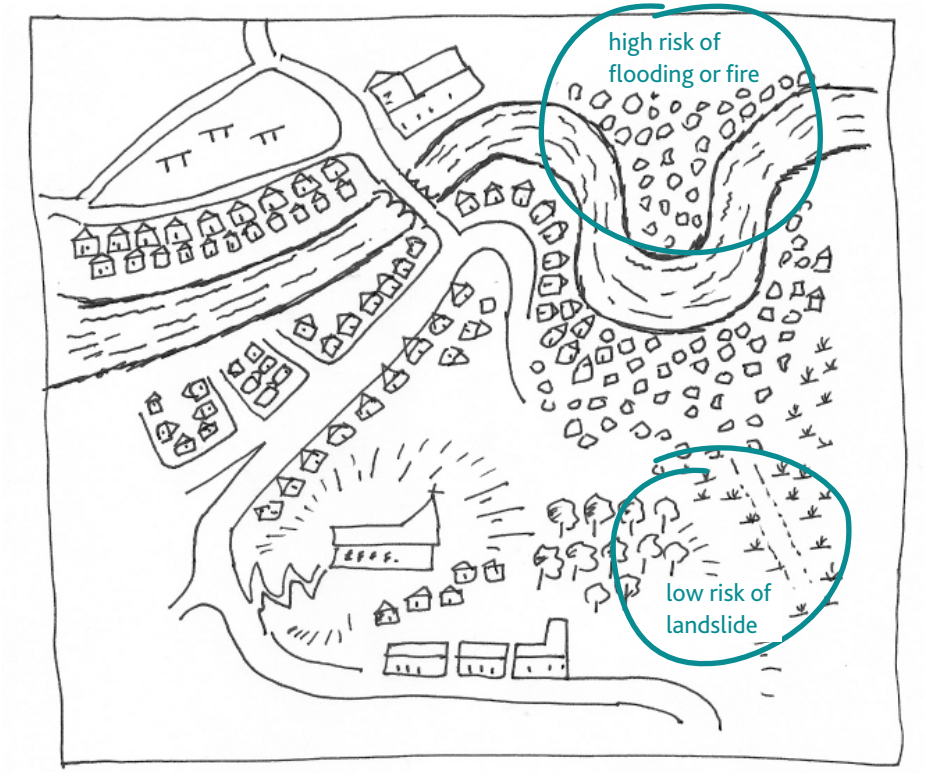
STAGE 2 Map the risks

The next stage is to mark on the map the hazards which members of the community have identified, and the areas which are at risk of damage. Slum communities are often located on land near rivers, which can easily flood. Houses are built close together, often with access through narrow alleys: this creates huge risks from fire, which spreads rapidly. Sometimes houses are built up steep hillsides which are vulnerable to landslides.

This mapping process may provide an opportunity to invite local government officials, who may contribute from their own experience. It may also help them to understand more clearly the risks that urban populations face.

Areas may be designated as high, medium or low risk, as for the rural map.

Stage 2: Urban community risk map

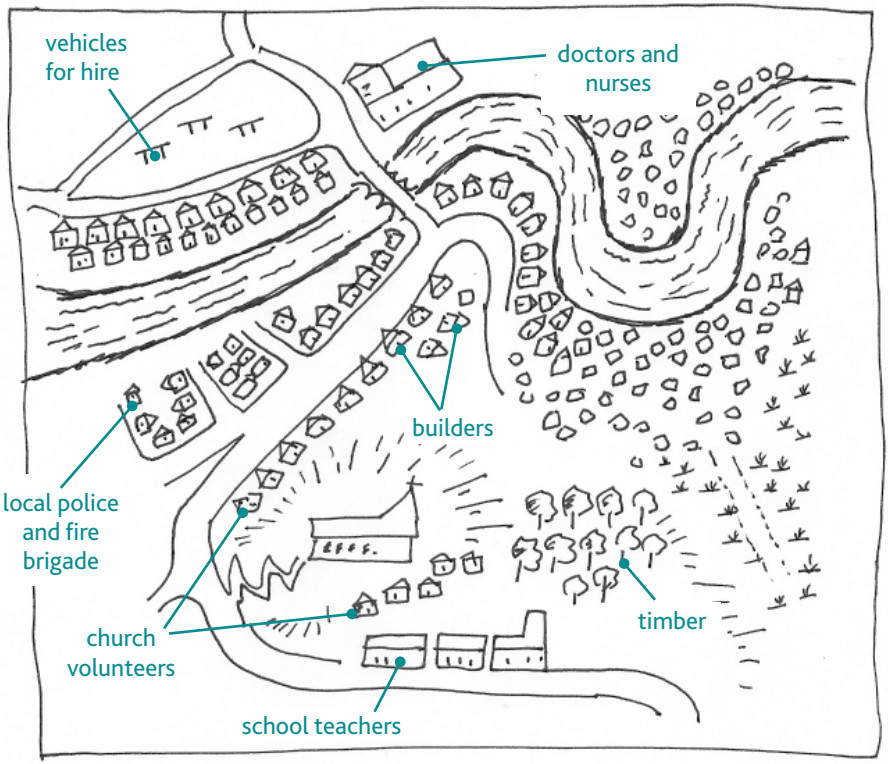


STAGE 3 Map community resources

Mark on the map all the resources in the community that are available to help it prepare for and respond to a local disaster. These should include not only human resources and skills but also physical and financial resources. They should include formal support, such as medical facilities and police, as well as informal support, such as local traders who have vehicles and warehouses. Some towns may not have all the facilities and services shown, but they are more common than in rural places.

See also the tables on pages 86–88 for the list of community resources that might be available to help in preparing for and responding to a disaster.

Stage 3: Urban community resource map



Needs assessment

Following a disaster, your church may be the first group to respond. You will need a small team of people who can do a simple assessment of needs, skills and resources. This will help you to know the type of help needed and the quantity of goods or materials required. Any request for help to an outside source will need this information.

To make sure the needs assessment is done fairly and as accurately as possible, apply the following principles:

- Consult the people affected and involve them in the assessment.
- Ensure the most vulnerable and marginalised groups are included.
- Cross-check information where possible.
- Avoid favouritism or bias towards any specific groups.
- Expect the unexpected! Needs may not be the ones you expect to find.

1 Plan the assessment

2 Meet groups affected by the disaster

3 Get additional information from local officials

There are five key steps in making an assessment

5 Plan a response

4 Cross-check information that has been gathered

Gathering information

STEP 1 Plan the assessment

- Read the checklists in this section and adapt them if necessary.
- Agree on the ways of collecting information (interviews, group discussion, observations, discussion with other agencies).
- Assemble a small team. There should be a mix of male and female, and someone who can write down all the findings.

STEP 2 Meet groups affected by the disaster

- Try to meet as many groups affected by the disaster as possible, including the most vulnerable (women, children, elderly people, etc) and marginalised groups (eg ethnic minorities).
- Try to find out their needs with regard to food, shelter, water, sanitation and emotional support. Use the checklist below; make sure data for men and women is recorded separately.

STEP 3 Get additional information from local officials

- If appropriate, visit local officials and find out about government relief stocks and plans for distribution (food, water, shelter materials).
- These officials should also have health data and information on medical facilities.
- Officials may also know which NGOs are working in which villages, and what resources they have available.

Basic needs assessment checklist to use following a disaster

This checklist is used in Step 2 during the interviews and discussions with affected groups. It will help you to find out their priority needs after a disaster. You may also need to design and use a household survey form.

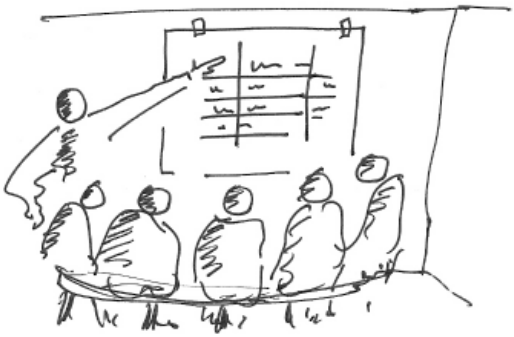
1. What is the total estimated number of people affected by this disaster?	Families
	Children under five
	Boys 6-14 years
	Girls 6-14 years
	Male adults
	Female adults
2. Approximately how many people have died?	Children under five
	Boys 6-14 years
	Girls 6-14 years
	Male adults
	Female adults
3. How many people are injured?	Children under five
	Boys 6-14 years
	Girls 6-14 years
	Male adults
	Female adults
4. Who are the most vulnerable people affected by this disaster (eg elderly, disabled, long-term sick, pregnant mothers, etc), and approximately how many people fall into each category?	a)
	b)
	c)
	d)
	e)
	f)
5. What are the common injuries caused by the disaster?	
6. What other health problems and illnesses are there as a result of the disaster?	
7. Damage to homes: How many have been…	a) partly damaged by the disaster?
	b) totally destroyed by the disaster?

8. Availability of food:	How many families have no remaining stocks of food? Is there food in the local market at affordable prices?
9. How many families have lost cooking utensils?	
10. How many families cannot get fuel for cooking food?	
11. What are people doing for sanitation (ie are any toilets available after the disaster)?	
12. How many families cannot get sufficient clean water?	
13. How far away is the nearest source of clean water?	
14. How many families do not have containers for collecting and storing water?	
15. Is there any risk of another disaster in the near future (eg aftershock or further flooding)?	
16. Are there any groups who are cut off from assistance?	
17. What assistance is coming from government or any NGO source or other churches?	
18. Concerning livelihoods: a) What were the main livelihoods of the affected people (eg farmers, fishermen, etc) before the disaster?	
b) What was the impact of the disaster on these livelihoods?	
19. What health facilities are available to the affected people?	
20. How has the disaster affected the education system?	

Step 4. Cross-check information

- Organise a meeting of your assessors to share all the findings and cross-check for inconsistencies.
- If there are inconsistencies, seek additional information from new or existing sources before finalising the needs assessment.

Step 5. Plan a response



- As a group, prioritise the main needs.
- Identify the resources available to meet these needs (from church, government, NGOs).
- Decide who will be responsible for different parts of the response.
- Decide where and when the response will start, and the order of different activities.

More information about planning a response can be found in Chapter 2: 'Organising ourselves', pages 37–68.

Prioritising the needs

Next, make a list of the main needs you have discovered, and the ways by which people are trying to meet those needs. You could use a table like this:

Need identified	Priority ranking	Local resources available or in use	External resources still needed
No food in households; very high prices in market.	1	Few bananas available; some wild roots and fruit; a few people have vegetables.	Rice and lentils.
Lack of utensils to cook or eat food.	2	A few shared cooking pots; banana leaves as plates.	Sets of cooking pots, plates, cups.
Handpump contaminated; clean water is 5km away.	3	People using flood water for bathing; some families catch rainwater using plastic.	Local handpump needs to be cleaned and repaired.

Once the main needs have been listed, have a discussion with the community or a small group of community leaders to work out which needs are the highest priority. Remember to listen to the women as well as the men, because they may have different priorities. The final step is to make a plan to meet those priority needs (see Chapter 2, pages 54–59).

Capacity assessment

The following checklists will help you to identify the resources you have in your church and community to prepare for and respond to a disaster. These checklists look at the skills and experience you might need, as well as the physical resources that could be used, such as buildings, vehicles and equipment.

Ideally, the checklists would be considered in church and community meetings before a disaster. However, if this is not done, the lists can be used in addition to the needs assessment process after the disaster event.

See also the resource mapping on pages 74 and 79 of this chapter.

Resources assessment (for the church and community)

Resources useful during or after disaster	Location and ownership
Buildings Church main meeting place: – seating capacity – sleeping capacity – storage capacity (food, non-food items) – toilets available – water available – any other church buildings	
Transport – handcarts – donkey or ox-cart – bicycle or rickshaw – canoes, ferries or fishing boats – motorbikes – pick-up trucks and cars	
Health centres – basic medical facilities – minor surgery facilities – number of beds for in-patients	
Schools – primary school (how many people could live and sleep temporarily?) – secondary school/college (how many could live and sleep temporarily?) – capacity to store food and other supplies – kitchen facilities to prepare food – access to water supply – access to toilets	

Resources useful during or after disaster	Location and ownership
Other strong buildings – cyclone shelters – grain stores – community halls – office buildings – others	
Communication – access to domestic radio – access to television – mobile phones and signal coverage – social methods of communication, eg village meetings, church meetings, other faith groups – church bells – other local methods	
Water supply – access to clean water points – capacity to store water safely – capacity to distribute water – capacity to filter or sterilise water	
Clothing – additional clothing for children and for more vulnerable adults – capacity to provide warm clothing and blankets in cold locations – capacity to provide waterproof protection	
Transport and communication – accessible roads to affected area – access to grass airstrips – access to tarmac airstrips – access to river jetties or landing points – access to river crossing points, either bridges, ferries or shallow water	

Skills assessment (for the church and community)

Useful skills during or after a disaster	Names of church and community members
Medical – First Aid – doctors/nurses – midwives	
Rescue – use of ropes/ladders – lifting, carrying people – boatmen/fishermen	
Construction – carpentry (building with wood) – masonry (building with bricks or blocks) – water supply (plumbing, tube-well mechanic, water tank construction) – roofing (using tin sheets, tiles or thatch) – sanitation (building toilets)	
Logistics – ability to manage and store supplies – ability to manage distribution of food – ability to manage non-food items (NFIs, such as utensils, blankets, soap and sanitary items, water cans) – supply of fuel for cooking – ability to drive or to borrow vehicles	
Cooking – preparation of basic food, as preferred by community – special food for infants , elderly or sick people	
Counselling and emotional support – counselling skills – bereavement and trauma counselling – prayer team	
Education – school teachers, Sunday school teachers – adult education, literacy workers	

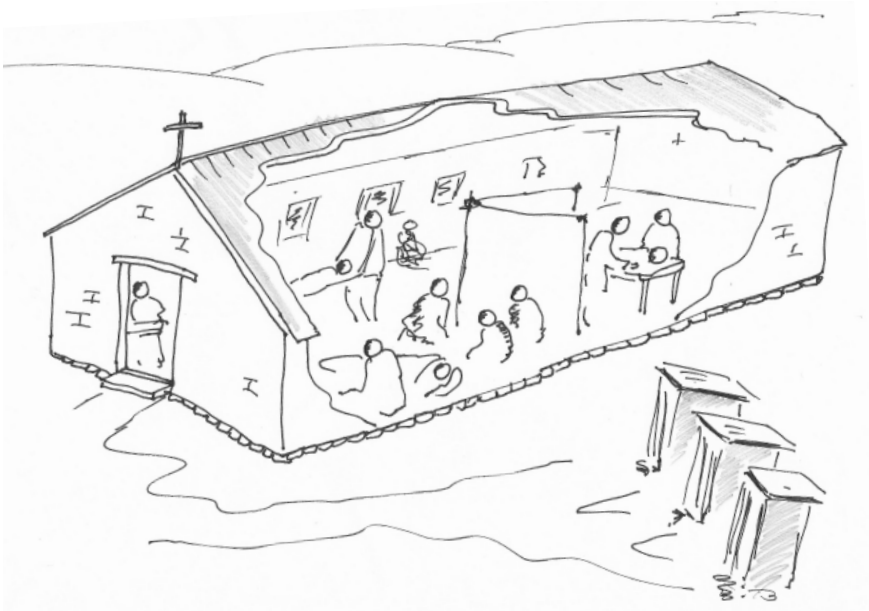
Use of church and community buildings in emergencies

Buildings are an important resource available to many churches.

Before using your church building as a place of refuge or storage, make sure the building is safe and able to withstand winds, floods or earthquake. Also, make sure the leaders of the church agree to the use of church buildings in this way. There may be some disruption of other church activities. Some churches do not want to use their building for emergency purposes, but in times of disaster there may be very few alternatives.

The section below highlights a number of ways church buildings can be used and adapted in response to an emergency. We suggest several uses for buildings, and some key points to consider for each possible use.

Emergency treatment and health centre



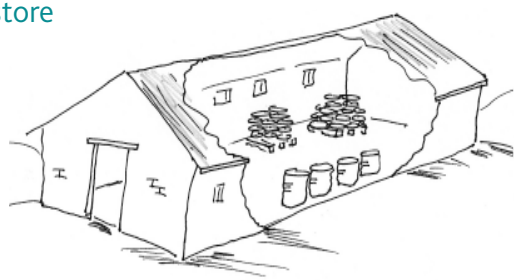
- access to clean water
- facilities to sterilise (boil) and clean instruments
- access to an adequate number of toilets
- separate areas for treating sick people and for maternity cases.

Temporary emergency shelter

- an agreed number of people who can be safely accommodated
- separate accommodation for males and females
- basic bedding (eg mats and blankets)
- additional toilets
- access to clean water
- facilities to prepare and cook food
- designated area outside for livestock.

Emergency food and supplies store

- dry storage area
- food bags stored off the ground (on pallets or blocks)
- food bags protected from pests
- a stock control system to record bags coming in and going out
- security arrangements, day and night.



Planning and preparation

Some suggestions for planning a response are given in Chapter 2, pages 54–59, with suggested charts and templates. It is important to allocate tasks to specific people and to establish a clear time-frame.

The role of the pastor is not necessarily to lead all these activities but to identify the right people to take on the various tasks.

In areas where disasters are common, the community should put together the lists of skills and resources on the previous pages before the disaster, so that it is ready to respond at short notice.

BIBLE STUDY

Assessing the city Nehemiah 2–4

Background

The Babylonian army had besieged and destroyed the city of Jerusalem, including the walls, and the population of Jerusalem was displaced, largely to Babylon. Nehemiah was a Jewish captive in Babylon, working as a trusted servant of King Artaxerxes. In Chapter 1 he feels very sad when news reaches him about the condition of Jerusalem. Its walls and gates are still in ruins. He prays fervently and begins to plan his return to the city to rebuild it.

Key points

- Nehemiah gets permission and assistance from the king, who is not a believer in God. This highlights the importance of working with secular authorities and the potential to access additional resources (2:4-9).
- Nehemiah makes an assessment of damage to the walls, so the project is based on a clear understanding of the problem. Good assessment data is needed before a church and the community embark on a disaster response project (2:11-16).
- Nehemiah illustrates well an orderly approach to reconstruction, as each step is clearly laid out with plans and reviewed regularly (2:11-18). From the start, he experienced opposition, and people mocked and ridiculed him for what he was trying to do (2:19-20). He developed ways of countering and resisting this, depending on God.

Questions

1 *How does Nehemiah get permission to go back to Jerusalem? How much importance does he give to prayer? (2:1-6)*

2 *How does he obtain the resources he needs to start his building project? What are the advantages and disadvantages of working with the government authorities? (2:7-9)*

3 *What does he do when he arrives at the city? Why does he wait three days before inspecting the walls? Why does he go at night with just a small group of people? (2:11-16)*

4 *The building work is carefully planned. What are some of the points in Nehemiah's plan? (3:1-32, 4:16-18) How much time and effort do we give to praying and planning before we start a project?*

5 *Does everyone support what Nehemiah is doing? (4:3, 7-9) Why do some people oppose his building work? What sort of opposition might we expect as a church?*

3

Review of this chapter

- *Why is it important to do a risk assessment?*
- *How can the church and community be involved in doing a risk assessment?*
- *How can a risk map be used to prepare for and respond to disasters?*
- *What are the main ways of gathering information for a needs assessment following a disaster?*
- *What are some of the skills, possessed by church members, that could be useful after a disaster?*
- *How will you make sure that the particular needs and skills of women will be included in the assessment?*
- *What are the main ways the church building can be used in preparing for and responding to a disaster?*

Next steps

Here are some practical things you could do if living in a disaster area:

- *Do the Bible study as a church. What are the key issues you learn from this?*
- *Do a risk map. What are the issues this raises?*
- *Do a capacity assessment. What steps need to be taken now to increase the church and community's capacity to respond?*

3

4 Displaced people

Introduction

Displaced people are those who have left their normal living area because their lives or their livelihoods were in danger. They have moved to a new area to avoid further losses of life and property, and because of the risk of further disaster.

Natural disasters are one main cause of displacement. Hazards such as tsunamis, earthquakes, volcanic eruptions, floods, windstorms and droughts may destroy or damage homes and livelihoods to such an extent that it is no longer safe or practical for people to remain at home.

Civil conflict may mean that the home area is no longer a safe place for people to work for their living, even though crops and livestock may flourish. If there is a threat to human life, then people move to avoid possible violence.

The local church is often the only community organisation and structure that can respond immediately to the arrival of displaced people. The purpose of this chapter is to equip the church to respond quickly and effectively to the basic needs of displaced

people over the first few days, so that the immediate threats to life and health are reduced.

Here are some of the problems that displaced persons typically face – problems you might discover when they arrive.

Problems facing displaced people

- They may be in a poor state of nutrition or health.
- They may have been unable to bring essential household goods or food.
- They may have no assets because of robbery or forced sale to raise money.
- They may lack identification papers and/or travel documents.
- They may lack access to land and employment.
- They may have limited access to markets in their new area.
- They may not be able to access the health, education or other social services available to local residents.
- They may be traumatised and in need of social support and/or counselling.
- Children may be separated from their families.
- Women and children in particular may be vulnerable to sexual exploitation or violence.
- Local communities may be hostile to the arrival of the displaced people and may be unwilling to share resources, particularly if those resources are scarce.
- Local governments may perceive displaced persons as a threat to peace and stability in the area and may seek to contain them in camps or other confined spaces.

Church response to displaced people

The church has significant resources to offer in response to the needs of displaced people.

Premises and equipment such as church buildings, a hall or a school can provide quick and accessible short-term shelter for traumatised people. The compound in which they are located offers added protection. Equipment and utensils (sometimes kept to feed large numbers at weddings or other celebrations) can now be used to feed the displaced families.

Volunteers provided by the church know where to find large quantities of food and other items at competitive prices. They can cook local food that people will eat, and they can organise distributions within the camp.

Church leaders are usually able to mobilise and motivate people into responding quickly. The response is driven also by the instinctive desire of believers to help those in need – an outworking of 'Love your neighbour'.

Sometimes a committee is chosen to manage the work, consisting of wise, respected church members. This should include both men and women, and people with skills/knowledge relevant to the needs of the displaced (see Chapter 2, pages 39–41). Recruiting and managing volunteers is covered in Chapter 2, pages 41–45.

Local knowledge and language can help to guide people in making key decisions at critical moments in a complex and unusual social environment.

The church is able to offer emotional support and prayer for those who are bereaved and emotionally upset. It can help to heal painful memories and restore hope for the future. For believers, it can also offer fellowship and opportunities to share in the worship and prayer life of the church, demonstrating the wider unity of believers.

Code of conduct for churches

Some years ago, a code of conduct was drawn up by the International Red Cross and Red Crescent Movement. Most major organisations involved in disaster relief support this code. The code was first developed to help NGOs provide fair and effective assistance for people in need.

The code has been adapted below to make it more appropriate to churches working with displaced people. All members of a church involved in a relief initiative should understand and follow this code.

Principal commitments

Churches following this adapted version of the code of conduct would be invited to observe the following commitments:

1 In a disaster situation, saving lives and reducing suffering (physical, emotional, spiritual) should be a priority concern for the local church.

2 Church assistance and support should be given to people of any race, belief, gender, religion or nationality, without bias or prejudice. Priorities should be worked out on the basis of need alone. (See Bible study on page 130.)

3 Church assistance and aid distribution should not be used to promote a particular political or religious standpoint. (In other words, it should not be used in any way to win conversions.)

4 Churches should not allow themselves to be manipulated to fulfil the agenda of a particular political group.

5 Churches should respect culture and custom even if it is very different from their own.

6 Churches should attempt to build local capacity to respond to future disasters more effectively.

7 Churches should seek to involve beneficiaries in planning and implementing any relief project.

8 Churches should seek to give assistance and support in a way that avoids making the beneficiaries even more vulnerable to disaster than they were before.

9 Churches should hold themselves accountable firstly to God, but also to those they are helping and to those from whom they have received resources.

10 Churches developing information and publicity materials should recognise that disaster victims are dignified human beings and not merely hopeless objects.

Case study

Tsunami response in the Andaman Islands

Following the tsunami of 2004, the Pentecostal Mission in the Andaman Islands worked together with some external relief agencies to deliver relief aid to 500 internally displaced people and provide 350 shelters.

Under the direction of the assistant pastor, the church provided cooking utensils and other equipment to feed a camp of 500 people at Midpoint School.

The women of the church organised themselves into shifts to provide three meals a day. There were up to 50 volunteers, both men and women and of all ages, helping to run the camp kitchen. This continued until other help arrived.

Responding to displaced people

In a disaster situation, a church may face a sudden influx of displaced people. These could come from within its own community (eg if they are displaced by a flood, or if their houses are damaged by an earthquake) or they could be from a more distant place (eg people who have moved because of drought or conflict). The points listed below show the main ways in which a church should plan its response, although it may not be possible for the church to cover all of them. Some needs should be urgently met in the first 48 hours.

Try to follow these steps, prayerfully seeking God's guidance along the way:

1. Assess the situation carefully.
2. Register the displaced people.
3. Develop a plan to provide for physical needs, eg food, water, sanitation and shelter.
4. Develop a plan to provide for spiritual and emotional needs, eg prayer and counselling.

In the following pages we look at each of these areas in more detail.

Assessing the situation

When displaced people first arrive, carry out an initial assessment of their needs. A suggested format for needs assessment is given in Chapter 3, pages 82–83. The same chapter gives lists of possible resources which a church may have to respond to those needs (pages 86–88). Additional resources may also be required – see material on 'Working with others' (Chapter 2, pages 48–53).

The needs assessment and the church capacity assessment will provide answers to the following questions:

- Who are the people who are most in need of assistance? Are there sick or elderly people or pregnant mothers who urgently need help?
- How many people are at risk and/or in need of assistance?
- What type of assistance do different groups need, and for how long?
- What resources do we have (people, buildings, materials) which could be used?
- What can we do for ourselves, and what additional help do we need from others?

For more ideas on planning a response, see Chapter 2, pages 54–59.

As well as assessing the needs of the displaced persons, you may need to do the same for the host community, ie the resident population of the area, who themselves may be very poor. New arrivals will put pressure on natural resources (eg water, trees, pasture). There may also be competition for livelihood resources. Efforts to help the displaced people may need to include some provision for hosts also.

Registering the displaced people

The situation that you face may simply be that local people have been displaced from their homes and are living in a church or a school.

Keep a register of all arrivals - age, sex, origin, family status, health needs, profession etc

Sometimes, however, larger numbers may come from outside. It can become difficult to determine the exact numbers, particularly if they settle among local residents rather than in camps. Whatever the numbers, it is important to have a simple system of recording their names, where they are from, their sex and age. This will help in planning the amount of food they require and also in organising shelter and meeting other needs.

Registration may also help you to decide who are the most needy people, and those who are genuinely in need of help. It is advisable to involve local community leaders in this process, in order to reduce possible arguments and conflict.

Efforts to count the displaced are prone to error for the following reasons:

- The situation may be changing, and there may be new arrivals all the time.
- People may not be present when the registration process is going on. This may be a particular problem if the displaced people have a nomadic lifestyle.
- Some displaced people may try to misrepresent their household size, thinking that they will receive more food or other goods if they have more people in their family.
- Some people may try to be double-counted for the same reason.

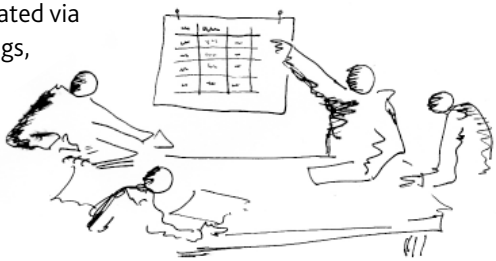
In larger refugee contexts, UNHCR and the local government will probably try to carry out a registration exercise. This may be used as a general working number for planning purposes.

Clear communication and transparency are essential in order to ensure a smooth and fair process (see below).

Communication

Community members, leaders and government officials should understand the registration process and know why it is being done. Take time to explain things clearly to leaders and officials, and try to involve them as much as possible. If you do, they will have more confidence in the process and will be more likely to support it.

Get to those who can't walk or are sick and record details, especially the medical/ health details.

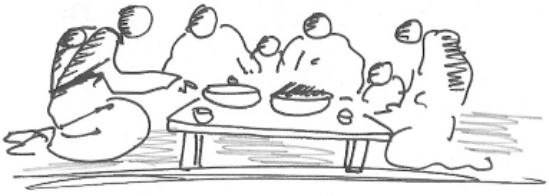


The process should also be communicated via a public meeting. Take time for greetings, courtesies and explanations. Make sure that these public meetings are held at times convenient for everyone, particularly women. It may be necessary in some cultures to have separate meetings for men and for women. Reassure people that the only purpose of the registration is for planning assistance for the community. Some cultures do not accept the practice of counting people. However, if the purpose is clearly explained and understood, resistance should be minimal.

The public meeting may also provide an opportunity to select a small committee to oversee the registration process and the subsequent distribution of materials. This committee should include representatives of the church, the community leaders and the displaced people.

In addition to the public meeting, you could place notices in public places (eg markets, schools and churches) and give copies to community leaders and government officials. The process must be seen to be fair and transparent (see below).

The registration process



A household is defined as those who eat together. Women should be registered as head of household. In polygamous societies register each wife as a household in her own right, and include the husband as a dependant within one of the households.

Make sure that the registration format will provide all the information needed for provision of relief goods. For example, register all children and record their names and ages. Household rations will be determined by household size, so try to cross-check information if possible.

If you have more than one registration point, begin registration at all points at the same time and complete it as quickly as possible. This will help to prevent double registration as people move from place to place.

Providing for physical needs

The needs assessment has helped to identify the priority concerns of the displaced people. The registration process has given information on exact numbers and has established which families or individuals are most in need of assistance. We shall now look at the four main areas of physical need: food, water, sanitation and shelter. Medical help may also be needed: this was briefly covered under 'First Aid' in Chapter 2, pages 63–66. Other medical help may be possible if your church members include doctors, nurses or health workers, but it is a specialised area beyond the scope of this publication.

Food

In general, it is far better for displaced people to receive food through what is often called a 'food for work' programme. This involves organising those displaced people who are able-bodied to provide labour for a community project. Food rations are given at the end of the day, according to the work done. Work projects can include planting trees, building terraces, digging irrigation channels or repairing an embankment. This has a number of benefits:

- It gives displaced people more dignity than a free handout.
- The community benefits from the tangible project completed.
- It can also be used to equip displaced people with new skills and knowledge which they can use in the future.
- Carefully chosen projects may help to reduce vulnerability to future disasters (eg building flood embankments or drainage ditches).

However, there are situations where free food distribution is necessary, particularly where displaced people arrive suddenly and in large numbers, or if they are in poor health. The need for food (and water) may be very urgent. General food distribution may also be appropriate in situations where, because of war, the displaced people are cut off from their normal sources of food. Also, if rates of malnutrition are very high, some form of therapeutic or supplementary feeding may be required, especially for children.

A book produced by the Sphere Project, *Humanitarian Charter and Minimum Standards in Disaster Response* (2004; new edition 2010), contains useful guidance on feeding programmes. This is considered again in Chapter 7, page 182.

A general rule would be to allow 500g of grain (eg sorghum, maize, millet) per person per day plus 100g of lentils (or similar) and a little cooking oil.

Practical details

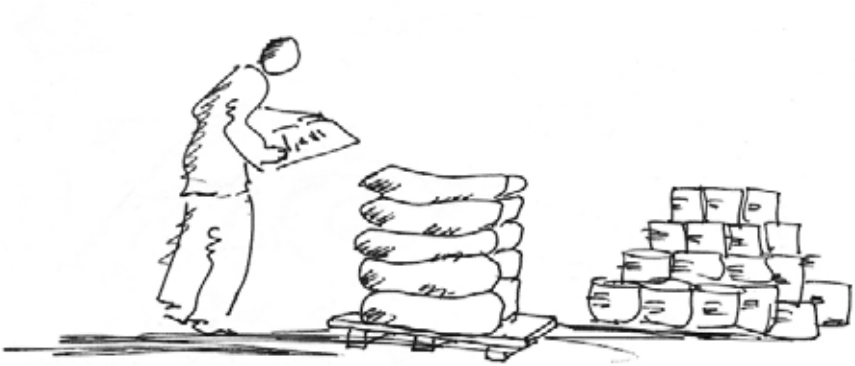
Once registration is complete, the church leaders (or the committee running the feeding project) should communicate how the food is going to be distributed. This includes:

- the place and date of distribution
- the level of entitlement due to each person (ie the quantity of food per person)
- the process of distribution (eg using packets or measured scoops of grain).

There are different ways of managing the distribution, but the process must be done in an orderly way and be seen to be just and fair. Food is given to each woman, as the representative of her household and the primary carer of her children.

Here are some suggested steps:

1. Food unloaded from a truck should be checked and recorded.
2. Scoops (one scoop per person) should be demonstrated to beneficiaries.
3. The food sacks should be arranged in an open but secure place, so that everyone can see them.
4. A member of the church leadership or committee, or a monitor, should read each name from the register in turn. On hearing her name, each woman comes forward



and is given the amount of food due to her household. She only has to count the number of scoops to be confident that she is receiving her full entitlement.

5 The committee member or the monitor marks the register to confirm which households have received their ration.

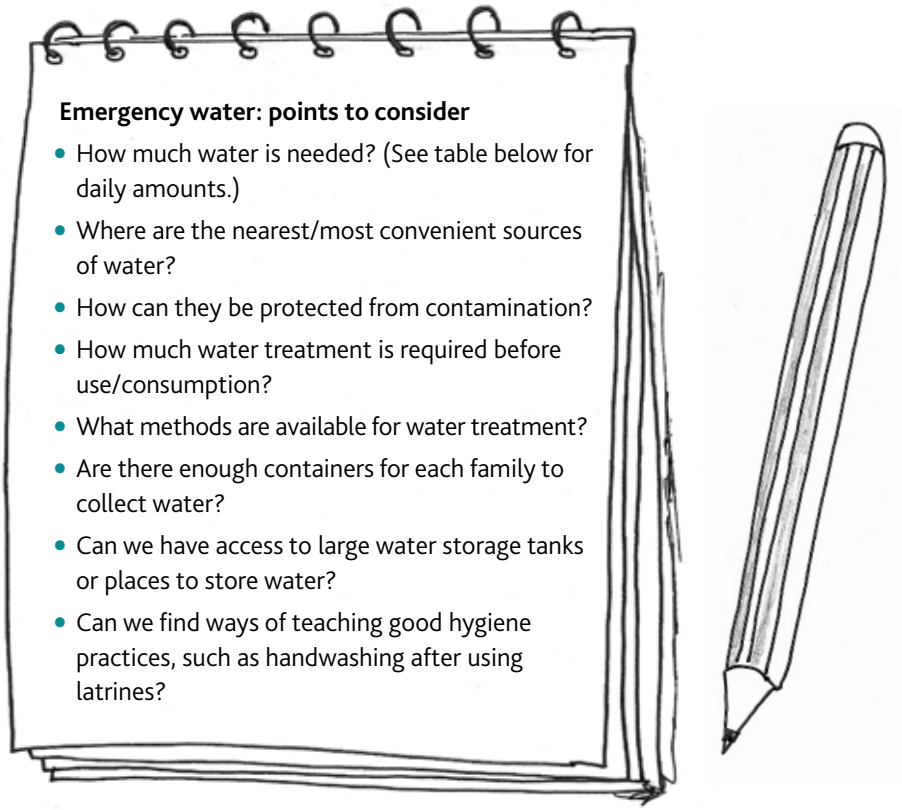
Throughout the distribution, committee members and church leaders should monitor what happens and take any necessary action, according to agreed guidelines, to resolve difficulties.

Here are some suggested questions for those monitoring the distribution process:

- Is the registration information accurate?
- Are the registered people receiving their entitlements?
- Are the systems running smoothly?
- Are committee members and volunteers confidently and capably fulfilling their responsibilities?
- Is feedback from the people receiving food generally positive?
- Is there a good mechanism to respond to community feedback?

Water

This is an overview of the principles of providing water in emergency situations. It does not focus on detailed design, but outlines the planning and procedures which are necessary for ensuring adequate supply. Alongside food, shelter, sanitation and medical aid, clean water is one of the highest priorities in a disaster situation.



Emergency water: points to consider

- How much water is needed? (See table below for daily amounts.)
- Where are the nearest/most convenient sources of water?
- How can they be protected from contamination?
- How much water treatment is required before use/consumption?
- What methods are available for water treatment?
- Are there enough containers for each family to collect water?
- Can we have access to large water storage tanks or places to store water?
- Can we find ways of teaching good hygiene practices, such as handwashing after using latrines?

Basic survival water needs

The table below shows guideline figures only. It is important to note that water quantity alone is not sufficient to ensure the health of displaced people. The quality of the water, good sanitation and hygiene education and the application of this teaching are also essential.

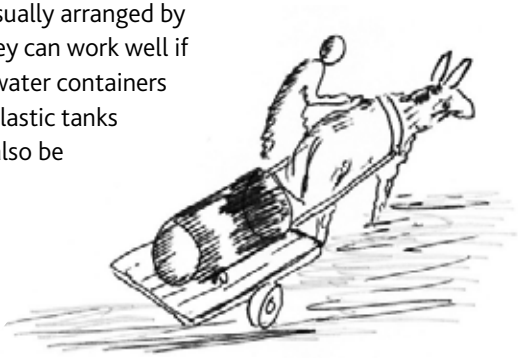
Survival needs: water intake (drinking and food)	2.5 – 3 litres per day	Depends on: the climate and individual physiology
Basic hygiene practices	2 – 6 litres per day	Depends on: social and cultural norms
Basic cooking needs	3 – 6 litres per day	Depends on: food type, and social as well as cultural norms
Total basic water needs	7.5 – 15 litres per day	

Water sources and water quality

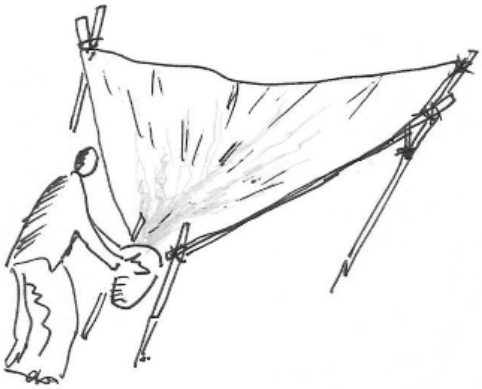
A disaster may contaminate or destroy the local water supply. Wells may be flooded, pipework may be damaged, and springs may run dry. The problem is often made worse by shortages of water containers. Safe drinking water and the ability to carry and store it are priority concerns.

Here are a few suggestions:

- Bottled water, or water in plastic packets. This is an expensive option, but might be necessary in the first day or two.
- Water tanker deliveries. These are usually arranged by government or rented by NGOs. They can work well if deliveries are frequent enough and water containers are available. It is more effective if plastic tanks or drums or large earthen pots can also be filled up.



- Donkey carts or pick-up trucks. This method is based on water drums carried by the traditional donkey cart, or by pick-up truck if the supply is more distant.
- Alternative sources. There may be springs, wells or hand-pumps in nearby villages, but residents may not welcome the competition for water, and delivery from these sources may be reduced if increased amounts of water are used.
- Filtration or purification – this is usually done at household level, using chlorine tablets, filters or sun sterilisation (see below).
- Rainwater harvesting. If there is rainfall, it can be collected from tin roofs or by using a plastic sheet, suspended by its corners, to channel water into a container.

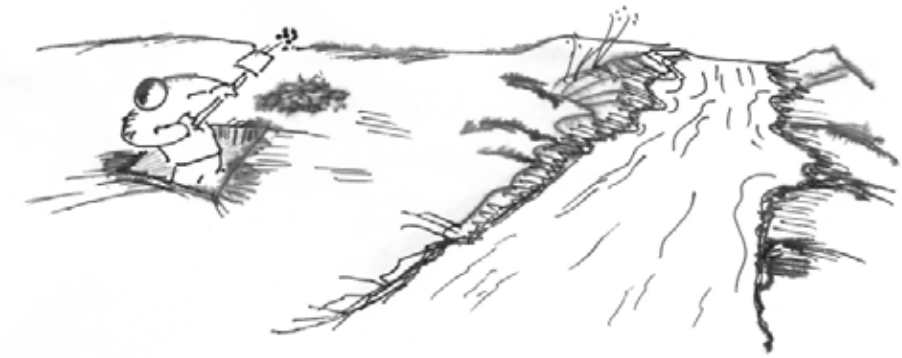


The church can advocate on behalf of the displaced people for a fair distribution of water in the short term, and in the long term it can encourage the setting up of more permanent water supply sources which are clean and safe.

Water treatment (surface sources)

Some of the above methods require water treatment in order to make the water suitable for drinking. Contaminated water carries disease and is a major cause of further suffering and death. If the water is clear to look at, does not smell or have an unpleasant taste, and is disinfected, it is usually acceptable in the short term, but it should be tested as soon as possible. There are a number of water treatment options to consider, some short-term, others applicable as longer-term solutions.

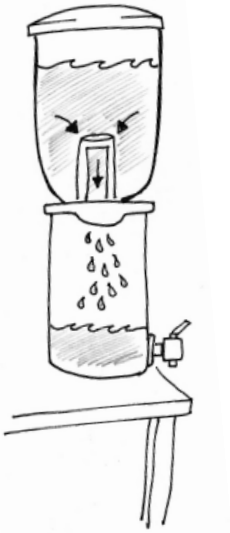
INFILTRATION WELLS The sand and gravel deposited along a river act as a very effective water filter. Wells dug a short distance from a river bank will usually provide better-quality water than the river itself.



PACKAGE WATER-TREATMENT PLANTS

Package water-treatment plants are highly mechanised, self-contained units which, though small and quick to install, are expensive, and require routine maintenance by a skilled person. They have been used successfully in Turkey and the Democratic Republic of Congo, as well as in Mozambique after severe floods. An NGO or government agency may be able to supply these, but people must also be trained to use them properly. Package plants are really only suitable for camp situations.

FILTRATION Slow sand filters provide one of the simplest and most reliable forms of water treatment, but they occupy large areas of land, and require careful design and maintenance.



Small volumes of drinking water, suitable for households, can be obtained from domestic filters (shown on the right) that allow water to pass through ceramic filter 'candles'. These might be available from local markets or from an NGO.

Disinfection

As a final precaution to ensure that water is pure, it should be disinfected. This reduces the number of bacteria present in the water to a safe level. Disinfection is most effective in clear water, and chlorine tablets are widely available. Some of the chlorine compound should remain in the water, increasing the likelihood that the water will remain safe to drink during distribution and storage. If the water is still cloudy it can be filtered through a cloth or sand filter.

Low-cost method of disinfection

In countries where there is a lot of sunshine, the heat and ultra-violet (UV) light of the sun can be used to kill disease-causing organisms. This method is becoming very popular because it is cheap and simple and requires little work. Research has shown that if this method is used correctly, the treated water is as clean as boiled water. The process is called solar disinfection (SODIS).

This method requires:

- clear plastic bottles of approximately 1.5 litres (those used for bottled water are ideal)
- water that is not too cloudy.

It is important not to use glass bottles, as they do not allow enough sunlight into the water. Plastic bottles have very thin walls which allow the sunlight to reach the water. Cloudy water should be left to settle and filtered before use.

Fill a clean bottle about three-quarters full, put the top on and shake it vigorously for about 20 seconds. This ensures there is plenty of air in the water, which reacts with the sunlight to help the purification process. Then fill the bottle to the top and place

it on its side in a place where it will receive direct sunshine for several hours and where wind will not cool it. The UV light and heat kill the germs in the water.

Water quantity and access

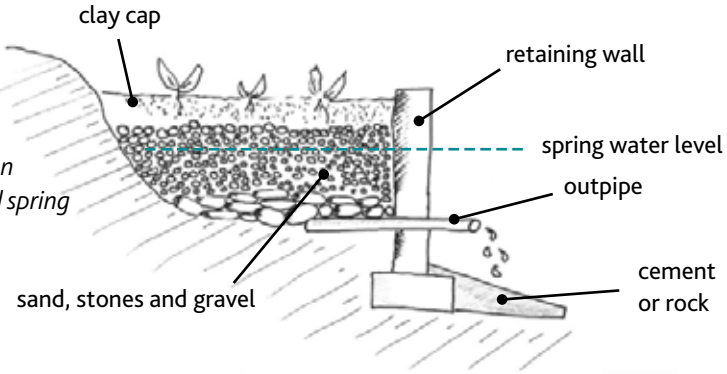
Here are a few more guidelines on water quantity and access to it. Local conditions may sometimes mean a lower target.

- The average amount of water available per person (for drinking, cooking and personal hygiene) should be at least 15 litres a day. People living with HIV need a larger amount.
- The maximum distance from any household to the nearest water point should be 500m. Water points should be located in safe areas that are accessible to all, regardless of class, gender or ethnicity.
- Queuing time at a water source should not be more than 30 minutes.
- The number of people per water source depends on how much water is delivered by the tap or pump. As a rough guide, there should be:
  - People per tap: 250
  - People per open well: 400
  - People per hand pump: 500.
- It should take no more than three minutes to fill a 20 litre container. Times should be set which are convenient and safe for women and others who have responsibility for collecting water, and all users should be fully informed of when and where water is available.
- Water sources should be well maintained and protected from contamination, eg by animals or from toilets close by.

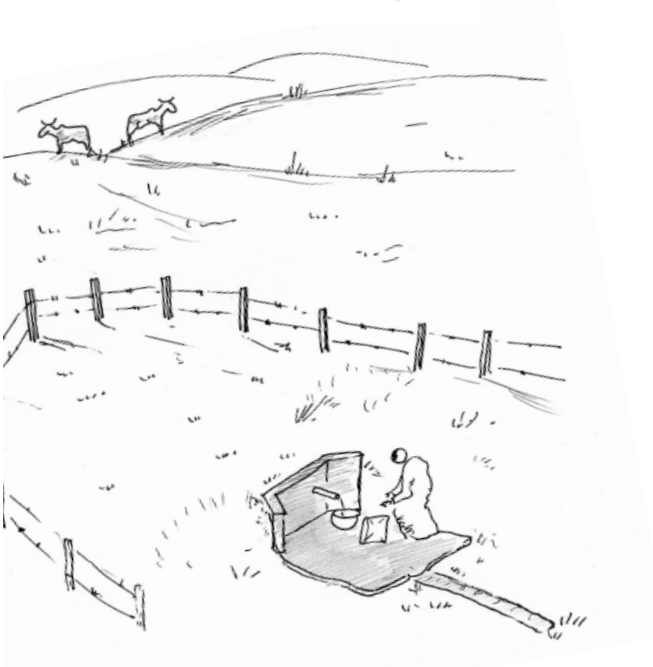
Longer-term solutions

There are many ways of addressing longer-term needs for clean water. Some of these are considered in Chapter 7: 'Drought and food insecurity'. Usually, these methods will require input from a water engineer, who could be either a church member, a local government person or an NGO worker. Some ideas include:

- capping wells to protect them from contamination
- protecting springs by installing gravel and sand filters, with clay over the top (**A**)
- building a fence around water sources to exclude livestock (**B**)



A *Cross-section of protected spring*



B *Protected spring with fence*

- raising hand-pumps (attached to tube-wells) onto a platform so that they are not contaminated by flood water (C)
- catching the rain falling on the roofs of schools and churches and storing it in drums, plastic tanks or large earthen pots.

C *Raised tube-well*

Sanitation

Sanitation is another important physical need of displaced people and is essential to their health and well-being. Sanitation is usually allocated a much lower priority than clean water, but it is just as important in controlling many of the commonest water-borne diseases. Sanitation is the efficient and safe disposal of excreta, urine and refuse. Defecation on open ground is normally the main hazard to health among displaced people, because it can contaminate water supplies. Poor hygiene practices, such as failure to wash hands, are also a major contributor to disease.

Preventing defecation in certain areas

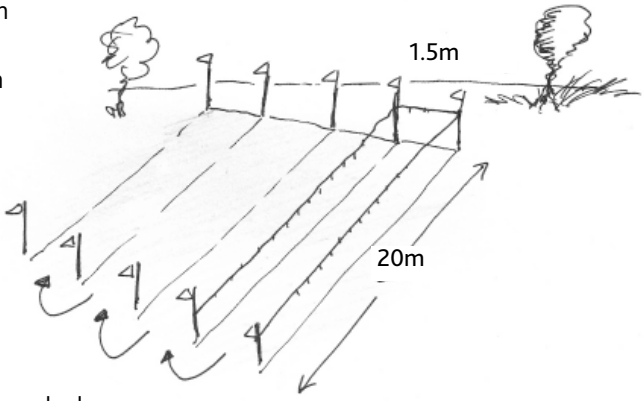
Displaced people may not have access to toilets, and often resort to open defecation in the fields, among bushes or behind buildings. Before toilets can be arranged, defecation should be restricted to designated areas, and not allowed to contaminate water supplies or food crops. For example, defecation should not be allowed on the banks of rivers, streams, or ponds which may be used as a water source. Also, defecation should not take place near shallow wells, or near crops which are soon to be harvested.

Keeping people away from such areas may not be easy, particularly where traditional habits make such practices common. It may be necessary to construct a physical barrier, such as a fence, which may need patrolling.

Immediate measures to control open defecation should not be solely negative: it is much better to designate areas where defecation is allowed than to fence off those where it is not.

Defecation fields and trenches

Please note that defecation fields and trenches are for emergency and short-term use only, before other toilet arrangements can be made. Some cultures may find these practices unacceptable, but in other locations it might be the only option available.

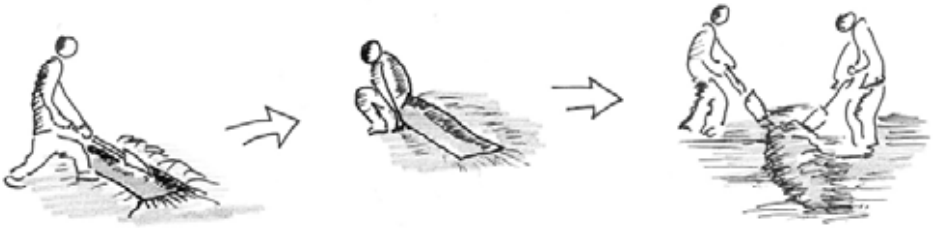


Defecation fields are areas marked out with fixed boundaries which displaced people can use for toilet purposes. The use of such fields helps to restrict pollution to one place and makes it easier to manage and clean the site. They should be located carefully so that they are easily reached by the community but do not pollute water supplies or sources of food. There should be separate fields for men and for women.

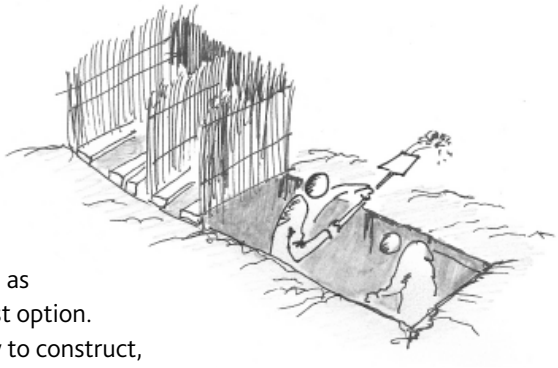
The defecation field should be as large as possible and divided into strips with string and pegs. A different strip can be used each day, and the excrement covered with soil at the end of the day. The area of the field farthest from the living areas should be used first, so that people do not have to walk across contaminated ground to reach the designated area. The area should be big enough to give 0.25 square metres per person per day.

Shallow trench toilets

In some cultures, it is not appropriate to have defecation fields. In these cases, just dig a shallow trench about 30cm deep for defecation. Once it has been used a number of times, it can be filled in and another trench can be dug.



Trench latrines



The ideal solution is to have one toilet (or latrine) per family. However, when displaced people first arrive, the numbers and length of stay are unknown. In such situations, trench latrines used as a community toilet are the best option. They are quick, cheap and easy to construct, and can provide some privacy.

A trench latrine is a rectangular hole in the ground. The hole should be dug as deep as possible (about 2m) and may be lined with stone, brick or timber (if available) where there is danger of collapse. It may be of any convenient length, usually between 5m and 10m, and up to 80cm wide. The trench is crossed by pairs of wooden boards on which the users squat. There is a gap between the boards. Preferably, each pair of boards is separated by a simple screen to provide privacy.

In wet weather a roof is needed to prevent the trench from filling up with rainwater. A drainage ditch should be built to divert surface water. Each day, the contents of the trench should be covered by a layer of soil 10–15cm deep. This will reduce the smell and prevent flies from breeding in the trench. When the bottom of the trench has risen to within 30cm of the surface, the trench is filled in and the latrine is closed.

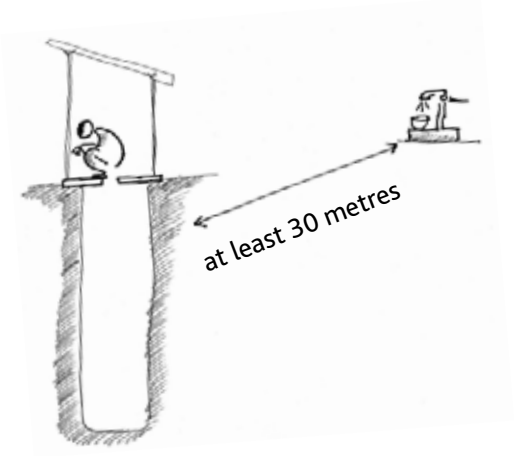
A trench latrine system is labour-intensive and requires regular supervision. Not only must the contents of each latrine be covered each day, but new latrines must be prepared, old ones filled in, and regularly used latrines cleaned. A poorly maintained latrine will quickly become offensive and will not be used. There must be separate latrines for males and females.

Latrines must be at least 30m from the nearest water supply and deep enough to last a minimum of two weeks. However, if the water table is high, the pits should be less deep and be changed more frequently. Walls and partitions can be made of matting or plastic sheets to allow privacy.

People also need to be able to wash their hands after using the latrines, with water and soap, if available, or clean them with ash from a cooking fire.

Standard pit latrines

Pit latrines are dug to a depth of up to 6m (less if the water table is high) and usually have a concrete slab placed over the hole, with footrests. There is a semi-permanent shelter around the slab. As with other toilets, they must be at least 30m from the nearest water source to prevent contamination.



Portable toilets

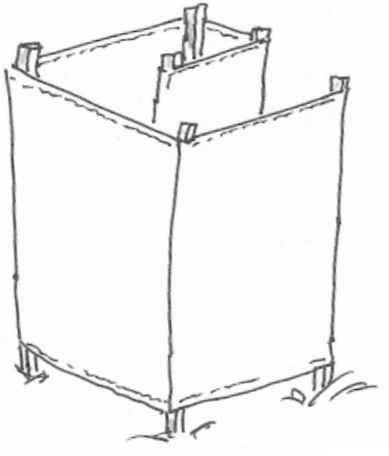
Some countries bring portable toilets into use for large social or sporting events, or in the aftermath of a disaster. This is something to follow up with local government officials who may be able to help. In urban areas this may be the most practical solution, but renting such toilets could prove expensive.

Use of plastic sheeting in emergency sanitation

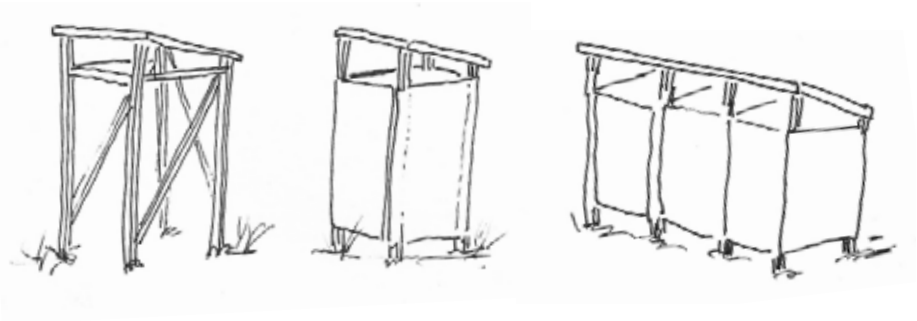
Plastic sheeting can be used to create simple screens to ensure privacy within a trench latrine (as noted above) or to build cubicles around pit latrines. It can also be used for a simple roof. Bathing shelters can be constructed in a similar way.

The materials required are:

- solid timber or bamboo poles, 3m (6)
- plastic sheeting 6m x 3m (cut in half)
- dome-head nails (1kg) or nails and battening.



Alternative wooden frameworks for toilet/washroom, covered by plastic sheeting, are also shown.



Community mobilisation

The safe disposal of excreta is primarily the result of good supervision and management, and this can only be achieved with the full cooperation of the community. It is essential, therefore, that the community is fully consulted at every stage and that the views of both men and women are taken into account.

The location and design of toilets are very important and must be decided before work begins. Women and girls are often reluctant to use toilets if they do not feel the area is safe. This is especially true where toilets are located at the edge of a settlement or in a dark place.

Building communal toilet blocks can save materials, but it can be harder to encourage ownership and keep them clean. Aim for a minimum of one latrine for 20 people.

Questions to consider

Here are some questions for the disaster management committee to discuss if they are planning to do sanitation work:

- *Why should we build and use latrines?*
- *Are community members fully aware of the need for adequate sanitation at all times? A community that understands the importance of good sanitation will be more likely to see the need for emergency sanitation following a disaster.*
- *What would be needed to encourage good hygiene (eg a place to wash hands, and cleaning arrangements for latrines)?*
- *In the event of a disaster, who would be responsible for deciding where the latrines should be built? How will you make sure that the location for women's latrines is private and safe?*
- *Where could building materials be obtained (timber, matting for the walls, etc)?*
- *Who would be responsible for digging pits and constructing temporary walls?*
- *How can children be encouraged to use emergency latrines and be kept safe?*
- *What are the likely difficulties in providing emergency latrines after a disaster? How will these difficulties be overcome?*
- *What problems could there be in ensuring the latrine is kept clean? How could these problems be avoided?*

Shelter

Another priority for displaced people arriving in a new location is likely to be shelter, or somewhere to gain protection from rain and very hot sun. In many situations, people construct rough shelters from local vegetation, according to what is available. Sometimes, community buildings are brought into use.

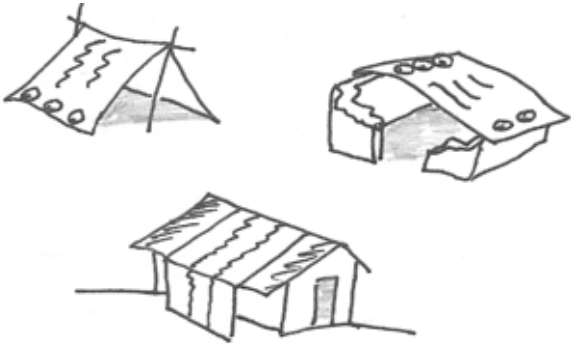
Consider all the buildings in your community that could be used as emergency shelters. These could include churches, mosques, offices, grain banks and schools. Shelter arrangements may be needed for animals too.

If no such buildings are available, the church may be able to obtain plastic sheeting (from government sources or from an NGO) and distribute it to people so they can make emergency shelter.

Uses of plastic sheeting

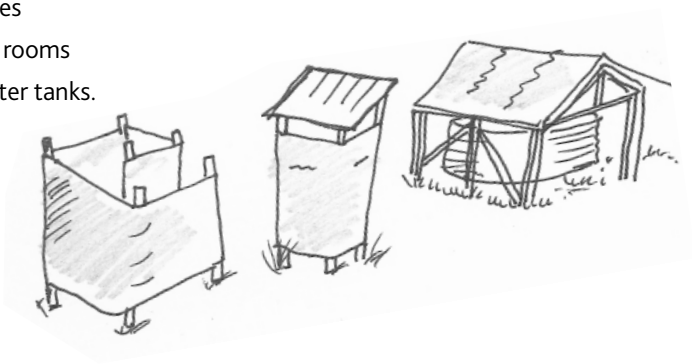
Family shelter options

- creating basic family structures
- repairing damaged buildings
- extending or strengthening tents and shelters
- creating timber-framed shelters.



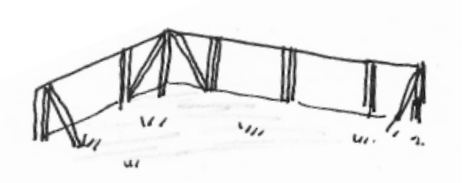
Sanitation and water supply options

- building latrines
- building wash rooms
- protecting water tanks.



Infrastructure and other uses

- fencing
- repairing schools and clinics
- rainwater harvesting
- making cholera beds
- building market stalls
- storing and drying food.



4

Plastic sheeting combined with other building materials

In any construction, the design and materials used must be appropriate to the local skills, climate and culture. Plastic sheeting may not be the only material available for the given job. There may be other, more appropriate materials available locally.

Basic shelters can be created in rural areas from local materials such as:

- palm, banana or other leaves
- thatch or other grasses
- adobe (sun-dried brick – particularly for walls).

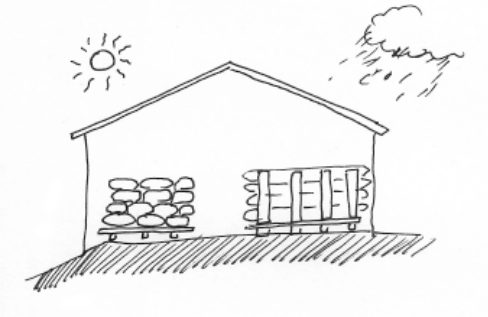
Shelters can be created in towns and cities from materials such as:

- waxed canvas tarpaulin
- tarred sheet (or roofing felt)
- corrugated iron (CGI)
- plywood or fibreboard.

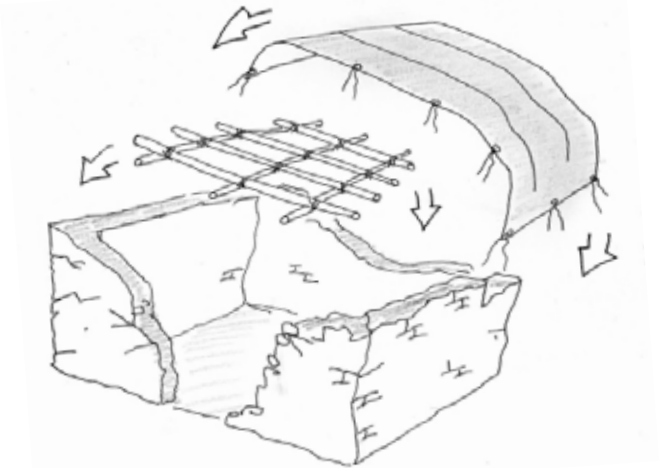
The picture on the right illustrates the combination of plastic sheet and local materials.

The structure has stone walls, wooden boards front and back, poles supporting plastic sheeting, and grass and twigs covering the plastic sheeting to protect it from deterioration caused by sunshine.

It is important to store plastic sheeting away from the sun and rain so that it doesn't lose its quality and effectiveness. In addition, the sheeting should be stored in a way that makes it easy to count and distribute.

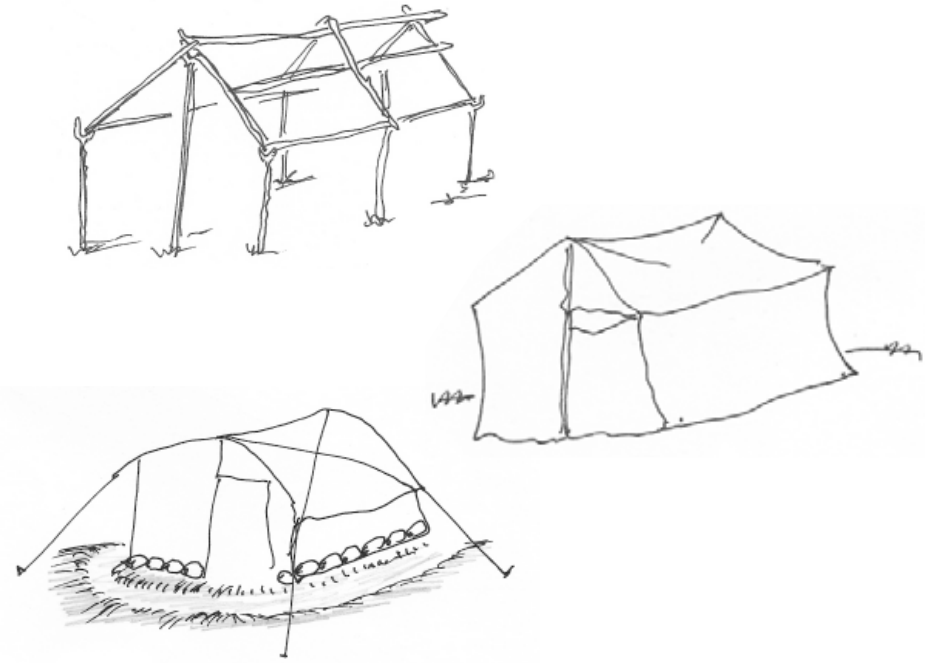


Family shelter repair kit following an earthquake



Roof, walls, floor	One or two plastic sheets, depending on damage to be covered
Fixings	• nails, 5cm–12.5cm (5kg) • washers (500g) • rope (20m) • metal strap to nail over and strengthen timber joints • binding wire
Tools	Possibly distributed to the community or to share between a group of families: • hammer • saw

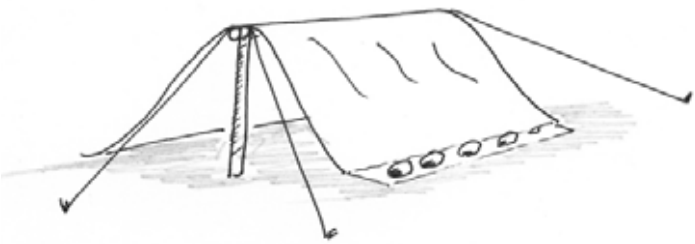
Waterproof covering for a bush pole shelter



Roof, walls, floor	• plastic sheeting
Fixings	• rope (20m) (for fixing sheeting)
Basic framework	• bush poles • strong binding wire • woven grass mats • oil/diesel for termite treatment of poles

Grass mats tied on top of the plastic will protect it from the sun. Mats can be used for the walls instead of plastic if the sheets are too small.

A very basic plastic sheet shelter for hot climates



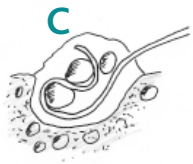
This type of emergency shelter (with no ends) is a last resort when no other options are possible. It should be upgraded as soon as possible.

Roof, walls, floor	• plastic sheeting
Fixings	• rope (20m) • binding wire or nails • ground pegs (metal or timber)
Basic framework	• timber or bamboo for ridge pole (4m long) • 2.5m uprights

NOTE: Various qualities of plastic sheet are available. The UNHCR has a recommended specification for the ideal plastic sheet to be used, which has reinforced bands, edges and eyelets. Plastic should be securely anchored to the ground on each side.

Securing plastic sheet

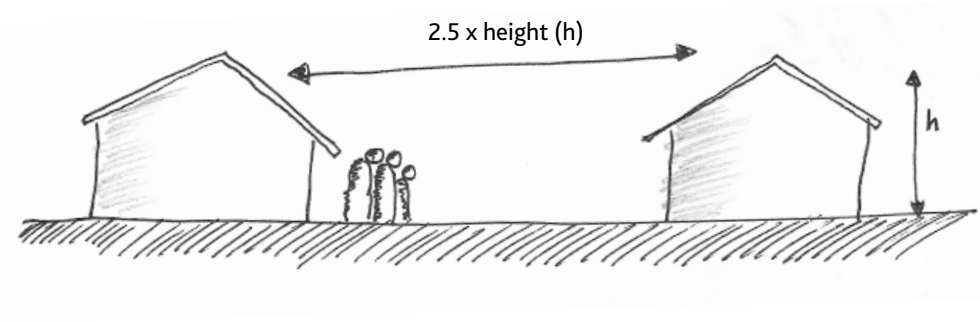
When plastic sheeting is connected directly to the ground, you will need 50cm of additional sheeting on each side which should be buried in trenches. See the diagrams (right) for suggested methods.



- Tent pegs do not spread the load. There is a high risk that they will be pulled out (**A**).
- Dig a trench and cover the end of the plastic with earth (**B**).
- Wrap the plastic round the rocks and bury it (**C**).
- Wrap the plastic round the timber and bury it with stones (**D**).

Firebreaks

Emergency structures should be placed so that the distance between them is 2.5 times their height, to prevent the spread of fire. There should also be firebreaks at regular intervals.



4

Providing for spiritual needs

Pastoral and spiritual support

As well as undertaking a number of practical tasks as described above, the church can provide pastoral and spiritual support. This can use the gifts and skills of church members who may not have the strength or physical capacity to undertake some of the heavier tasks.

Church members can meet with individuals and families who have been emotionally upset. They can listen and help them to share their experiences and, if appropriate, they can pray with them.

> 'To listen to someone and their pain is one of the greatest acts of healing a Christian can do.' (Anonymous)

Grieving

Here are some tips for supporting people who are grieving:

- Allow them to share their sadness and their memories of the person they have lost.
- Do not try to advise them or instruct them about what they should feel or do.
- Do not share your own experiences of grief.
- If appropriate, share relevant Bible passages.
- Offer to pray with them.

Here are some suggested Bible passages for use with bereaved Christians:

John 17:24, Romans 14:8, 1 Corinthians 13:12, 2 Corinthians 5:6, Philippians 1:23-24, 1 Thessalonians 4:17-18.

Sunday worship

The displaced people may include groups of Christians who would value an opportunity to worship together. The church may be able to welcome displaced people (if from outside) or allow its building to be used for separate services. This opportunity is important for spiritual comfort, and it also helps to restore some structure to the lives of the displaced people.

Sharing our resources

In some situations church members may be able to supply additional resources from their own homes to support the needs of displaced people. This is most likely where there are not many displaced people and therefore it is practically possible to share resources. These resources could include food, water,

blankets, cooking pots and clothes. In situations where there is an influx of displaced people into a town or city, the church members can befriend individuals and families in their own homes and church buildings.

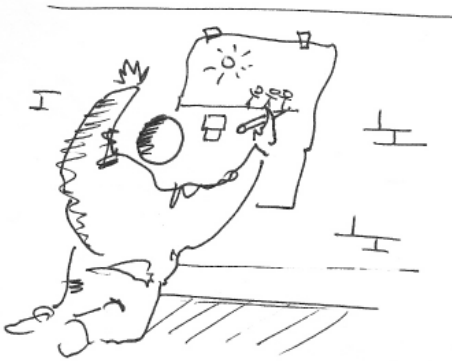
Burials

The church can organise funerals and burials. This can mean anything from leading the service through to the practical tasks of supplying coffins, marking out burial grounds and digging graves. For those who are mourning the loss of loved ones, it is important to be able to bury their dead in a culturally and spiritually appropriate way.

Helping children in post-disaster situations

Almost 750,000 children are caught up in disasters annually and can be greatly upset by the experience of being displaced, losing loved ones and friends. The church can act to ensure the safety of children, and to help them to come to terms with their experience. In order to restore some regularity to the lives of these children, churches can offer 'children's club' activities which help to rebuild their ability to play together, and to regain their sense of hope and social well-being. Clubs also provide them with an opportunity to learn, for example, about health. This will be especially important in situations where children have been separated from their families. In areas of frequent disaster, the church could consider having a small team of people trained to do counselling with children in a safe and supportive way.

Children who are severely traumatised may find it difficult to express – or even name – their feelings. This drawing exercise may help:



1. Give each child a large piece of paper and some coloured crayons. Invite them to draw a picture of their journey to where they are now and the experiences they had along the way, including times of fear.
2. When there are enough trained counsellors available, take time with each child to talk about what they have drawn and what they felt in each situation. Discussion in a bigger, open group will be too distressing for many of the children, so small groups are best. Ensure that counsellors allow children to discuss deeper feelings at their own speed.
3. In some situations where children have lost parents or close relatives, it may be appropriate to assemble a 'memory box' of all the things they appreciated about the person they have lost. When a child misses that special person, they can feel close to them when they open the box.

Children's clubs in Haiti

In the aftermath of the Haiti earthquake, Tearfund set up around 70 children's clubs around Léogâne, some in association with local churches. One of them was led by sisters Françoise and Monette. They had 130 pupils aged from three to 14, two or three times a week.

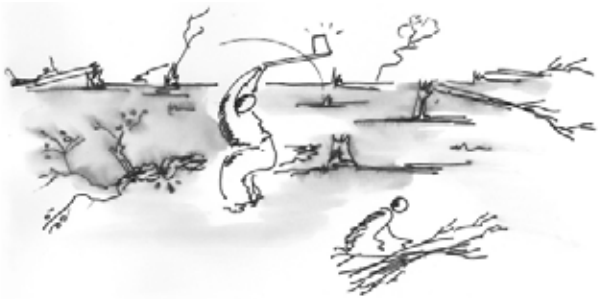
They taught the children songs about healthcare and disease prevention and provided a safe place where children could be children again in the midst of the hardship. Françoise and Monette's enthusiasm for the club and passion for children's education made an enormous difference; the club became one of the most exciting places to be for the children of Gressier. It helped them to cope with the trauma of the earthquake and to learn important messages about health.

Child protection

In today's world, there are people who try to exploit and abuse children, often targeting those who are vulnerable after a disaster. Children separated from their families are at risk of being abducted, trafficked, exploited or harmed.

Churches may be able to create 'safe places' for such children, in either urban or rural locations. They can ensure such children are looked after, given protection from people who wish to harm them ('predators'), and where possible reunited with and reintegrated into their wider family. It's important that churches have child protection policies and procedures in place to ensure that churches create a safe place for vulnerable children. (Refer to *Tearfund's Child Protection Policy* for help: http://tilz.tearfund.org/Topics/Child+development/Child+Protection+Policy.htm)

Restoring the environment



In an emergency, basic human needs have to be met, but the environment must be treated carefully. If displaced people overuse an area's natural resources, it can cause serious damage and prevent long-term recovery. The picture shows bad practice!

If the displacement will last for some weeks, it is useful to make some assessment of the potential impact of displaced people on the environment. In particular, this means looking at the impact on local forests (if displaced people collect firewood and building materials), on pasture land (from grazing of animals), and on water sources. Once this assessment is made, the church, together with community leaders, can plan how these resources can be rationed or used or replenished in a way that does not permanently damage the environment.

Once the initial emergency phase has passed, a more detailed environmental impact assessment should be done, so that local resources – trees, water, pasture etc – can be well managed. (See Tearfund publication *Environmental Assessment*.) The assessment may result in the adaptation of some activities to make them 'kinder' to

the environment. For example, cement-stabilised mud blocks could be used instead of wood-fired burnt bricks.

The church may be able to help restore some areas of land by setting up tree nurseries or community tree plantations, which can improve the soil and reduce further soil erosion. This can be done during the crisis or after it, as part of rehabilitating the land.

Case study

The suggested code of conduct for churches on page 99 indicated that assistance should be given regardless of race, belief, gender or nationality. Here is an example of a situation where people from two religious groups helped each other in times of need, and helped to build long-term good relationships between the communities:

Working together

In northern Kenya, on the Ethiopian border, there was a community that regularly suffered severe droughts. The local Anglican church, with support from a Kenyan NGO, frequently coordinated food distributions for the whole area. This included a large number of Muslim communities. This action created good relationships with the Muslim community and led to a number of small projects to improve food security which they did together.

One year the Muslims received food aid from an Islamic relief agency which instructed the community that they should only distribute the food to Muslims. However, because of the good relationships between the two faith groups, the local Muslim community made sure that all the non-Muslims got the same amount of food as they did.

BIBLE STUDY

Overcoming prejudice Luke 10:25–37

Background

The Good Samaritan is a story about dealing with prejudice. Jesus presents his listeners with a story of one individual's kindness to another person. The victim in the story is a Jew; the hero is a Samaritan. There were bad relationships between these two groups. His listeners would have been shocked and challenged because the Samaritan was showing kindness to a Jew.

Key points

- Jesus used the story to highlight the need for us to rise above prejudice and show compassion for those different to ourselves. He makes it clear that the command to 'love your neighbour' still applies, however great the historical, cultural, ethnic or religious differences may be.

Questions

1 *Explore the reactions of the people in the story. Why did they do the things they did?*

2 *Why do we sometimes walk by on the other side (ie ignore the needs of others)?*

3 *How might this incident have changed the traveller's life?*

4 *Can you think of any similar examples that might occur in your community after a disaster?*

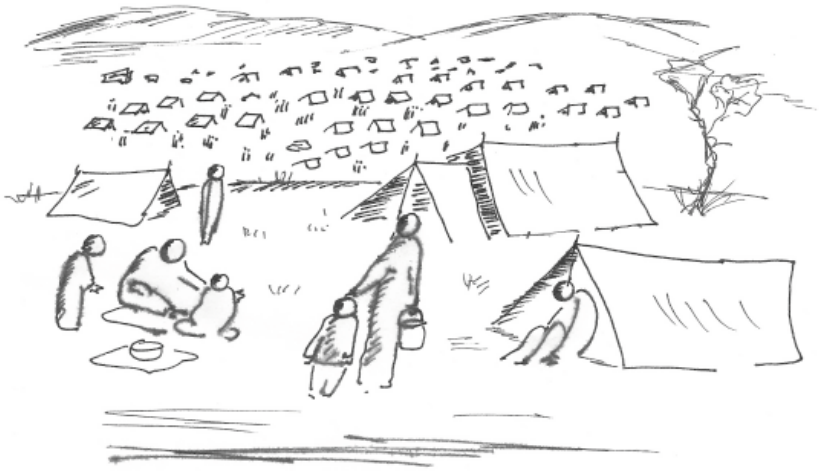
5 *In what ways do we, as a church community, feel and express prejudice? Are there subtle ways in which we are excluding people?*

6 *In what ways can churches ensure there is a fair and equal distribution of aid to beneficiaries who represent a number of different faiths and ethnic groups?*

7 *What challenges face churches if they work alongside other faith groups, and how could these challenges be addressed so that they could work together effectively?*

Review of this chapter

- *What are the causes of people being displaced?*
- *What are some of the problems displaced people face in a new area?*
- *Why is the adapted Red Cross Code of Conduct for churches important?*
- *Why is it important to do an initial assessment of needs when people arrive?*
- *What are some of the challenges in registering displaced people? How can these be addressed?*
- *Why is food for work a better approach than free food distribution?*
- *In what circumstances is free food distribution the only option?*
- *In providing food, water, sanitation and shelter, how should women be included in the planning and implementation of activities?*
- *What types of materials can be used for building temporary shelter?*
- *How many different ways can you use a plastic sheet?*
- *Name some ways in which the church can help children to deal with trauma and grief, and protect them from abuse and exploitation?*
- *How can the church help to protect the environment after a disaster? What are the environmental factors to consider when providing water, choosing a location for toilets and constructing buildings?*



4

5 Floods

Introduction

Floods are among the most frequent and costly natural disasters in terms of human hardship, structural damage and economic loss.

Flooding has a variety of causes. Continuous rainfall over several days may cause rivers to overflow and cover their flood plains. Intense rainfall over a few hours may trigger a flash flood. An ice-fall or landslide may temporarily block a river and flood the land upstream of the blockage. Melting snow can combine with rain in the early spring; severe thunderstorms can bring heavy rain during hot weather; tropical cyclones can bring intense rainfall to coastal and inland areas.

Flash floods are the most dangerous to human life. They may occur within a few hours of intense rainfall, as a result of fast run-off of surface water. This effect is worse if trees have been cleared from upstream slopes, or if grass has been overgrazed by livestock. A dam or dyke failure may also cause a flash flood, as can the sudden opening of dam sluices to relieve pressure on the dam itself. A temporary upstream blockage, when cleared, will also release a large volume of water. Flash floods can catch people unprepared – usually there is no warning system.

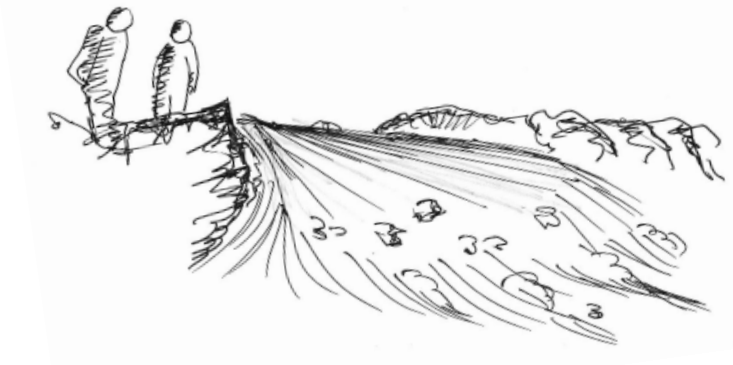
Floods can move boulders, tear out trees, destroy buildings, roads and bridges, and scour out new channels. Flood waters can reach heights of three to six metres and often carry a deadly cargo of tree branches and other debris. Extended periods of heavy rain can also trigger catastrophic mud slides.

In urban areas, much less water is absorbed by the land; surface run-off can be up to six times greater than in the countryside. During urban flooding, streets can become rapidly moving rivers, basements can fill with water, and culverts (roadside drains) can become blocked, creating lakes of water.

Increased threat of disease

Flooding also brings outbreaks of disease, and in particular, water-borne diseases such as cholera and typhoid. These can occur when sewage and general waste enter the flood waters and contaminate drinking water and food. In addition, in areas where there is malaria, stagnant water becomes a breeding ground for mosquitoes.

When floods strike, it is important not just to prevent death by drowning but also to reduce these threats from water-borne disease.



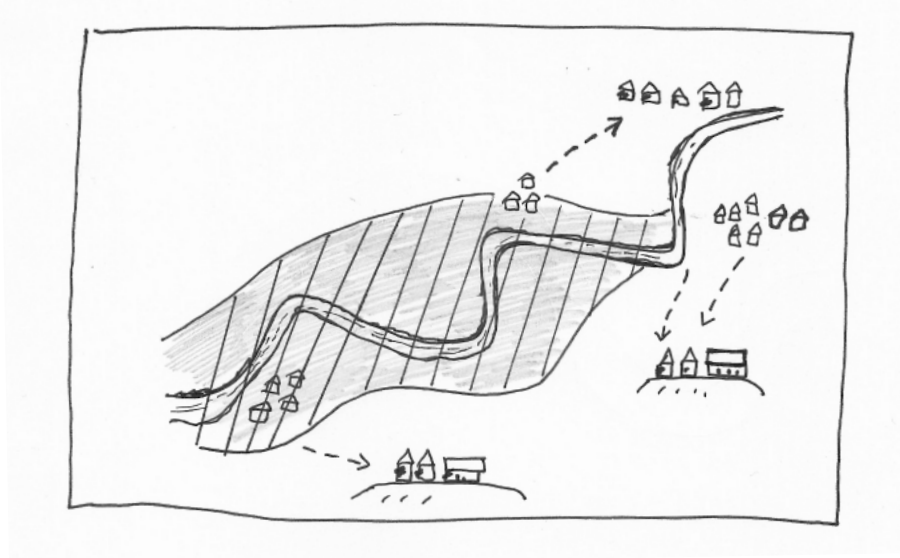
Preparing for floods

Floods often occur in the same place almost every year. The best way of reducing flood losses is to be prepared for them. These preparations can be at household, family and community levels, and can also involve the church. Increasing awareness of the risks, monitoring flood levels and a system for raising the alarm are essential steps.

Awareness-raising activities

One way to increase awareness of flood dangers is to involve the community in drawing a map of the affected area. This allows people with local knowledge to highlight the places and people at greatest risk. Maps can then be used to develop simple plans to reduce the risks. Here are a few suggestions.

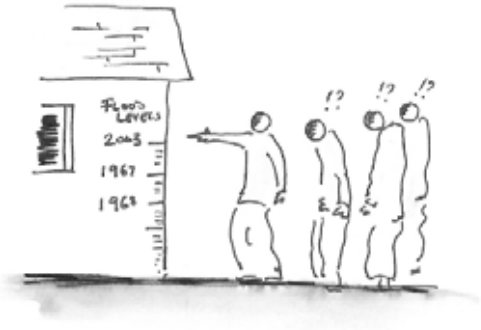
- Draw a map of your community. Show the rivers, roads, bridges, houses, other buildings, markets, water sources, forest, etc. (See also Chapter 3, pages 70–79.)
- Show the areas likely to be affected by flood water.
- Identify the people most likely to be affected and the facilities which will be damaged or lost.



- Identify areas of high ground where the community can go if evacuation is needed.
- Identify evacuation routes from the high-risk areas to the higher ground.

Another good way of raising awareness is to mark the heights of previous floods on public buildings or on trees or posts. This serves as a reminder of the seriousness of floods and the need to take preparatory action. These markings can be used as part of a community training programme on flood preparedness.

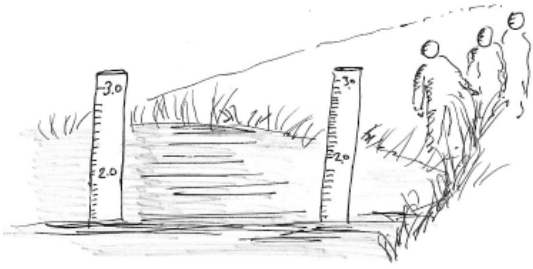
Awareness can also be increased by using posters or leaflets, often available from government officials or from NGOs. Schoolchildren also need to hear about floods and how to cope with them. This could be discussed with the local teachers, and classes arranged. Creative methods can be used – for example, songs, drama, poetry, making pictures.



Monitoring and warning systems

In areas at risk of flooding, it is important to establish a simple method of monitoring the increase in water depth, so there can be some warning of an approaching flood.

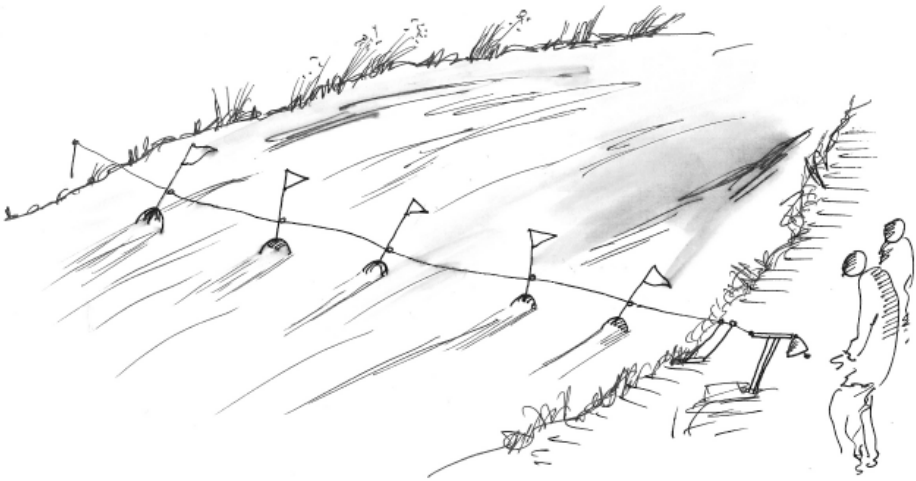
Depth marker posts



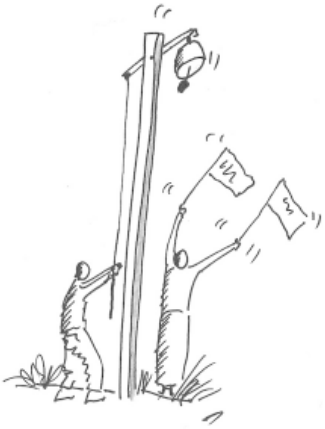
In some countries, communities place a series of bamboo poles in a river, with depth marks (as on a ruler) along the pole. Three colours are often used – green at the bottom, meaning 'safe', yellow in the middle, meaning 'be alert' and red nearer the top, meaning 'danger'. This gives an indication of how quickly the water is rising. During heavy rain, some community members should be given the task of monitoring the water level and warning the community if the water reaches the danger level (marked in red).

Rope and bells

One community in the Philippines ties ropes over the rivers, with flags and small bells attached. If the river level rises, the bells ring, alerting people to the danger.



Raising the alarm



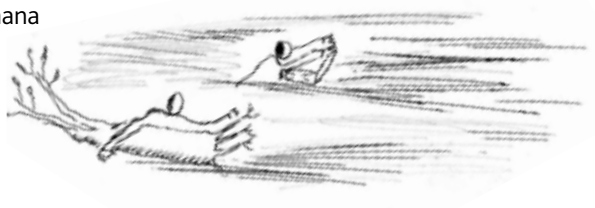
Once the water has risen above the danger level, all members of the community must be alerted, and those in danger must be asked to move to higher ground. Many communities have developed ways of passing on warnings: these include drums, school bells, church bells, mosque loudspeakers, gongs, mobile phones, bicycles and megaphones. In flash floods, the water rises very quickly. Where mobile phones are working, messages can be passed by mobile from upstream to downstream locations, alerting people of approaching floods.

5

Preparing at family level

Families in flood-prone areas can make some simple plans to help them cope with floods.

- Where possible, keep a small stock of dry food that requires no cooking or refrigeration – dry fuel and electricity may become unavailable.
- For emergencies, keep a portable radio, some cooking equipment, a torch and spare batteries. Matches and candles should be included and stored in a plastic bag to keep them dry. These items should be kept ready to be carried, in case you need to evacuate the house during floods.
- Fill water containers with clean drinking water and cover them.
- Family members who cannot swim should be encouraged to keep things which will enable them to float, eg banana tree trunks, plastic bottles or coconuts.



- Keep First Aid supplies and any medicines the family may need readily available.
- Store some essential items (such as sandbags or plastic sheeting) to protect your house and to make emergency repairs. If money permits, some wooden boards and a hammer and nails would also be useful.
- Seed should be double-wrapped in plastic bags or sealed in clay pots and buried in the ground, at a location which can be easily identified later.
- Valuable items, such as papers, money, jewellery or livelihood tools, should be made ready (preferably in plastic bags) to be carried with the family.

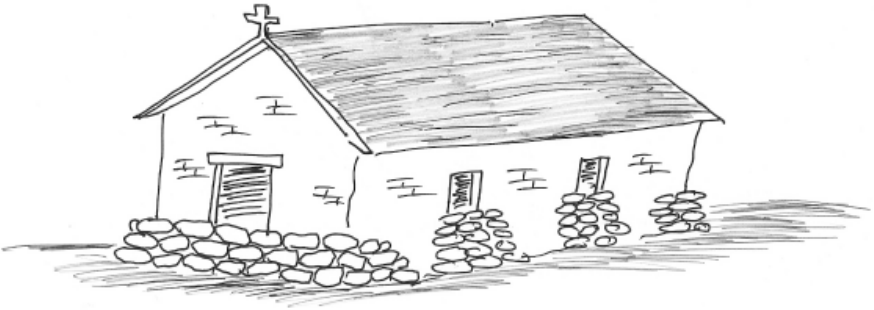
- Prepare a family evacuation plan, with each member responsible for carrying specific items, caring for livestock or helping the more vulnerable members of the family – for example, small children or elderly, sick or disabled people.
- In the event of being trapped on rooftops, consider how to alert others that you need rescue (eg tie coloured clothes to a stick and wave it as a flag).

Preparing at community level

There are also actions which the community can take to reduce the risk of loss and damage. The church may be able to help with some of these.

- Everyone in the community should be aware of areas that are at risk of flooding, especially their own homes and assets (see awareness-raising activities above).
- Everyone should know the flood warning signals and the evacuation routes to higher ground. They should also know the location of community shelters, and which one they should go to in an emergency.
- The evacuation routes should be checked to see if everyone can use them, including disabled people. Place white wooden posts along the evacuation route. This will help people to see the pathway, even when flooded or at night.
- Community members should listen to radios for emergency instructions and pass on the information to others who might not have radios.
- Consider recruiting and training a team of volunteers to help with the evacuation and managing the evacuation centre. This was considered in Chapter 2, pages 41–45.
- There should be clear leadership (see Chapter 2, pages 39–41). Keep the phone numbers of government officials.

Preparing the church



The church can take action to protect its buildings and assets. It can also become an important resource for the whole community. Here are some ideas:

- If sandbags are available, use them to create a barrier around the building or across doorways and exits.
- If you are building a new church in a flood-prone area, build it on higher ground or on a raised platform.
- Strengthen the structure of the church with extra pillars and good foundations, so that it can withstand the pressure of flowing water.
- Dig a small ditch around the building to divert the flood water.
- Raise all important furniture above the threatened height of flood water, or keep things on the roof, protected by plastic sheeting.
- Put all important documents in big plastic bags and seal them tightly.
- Consider whether or not to allow the church building to be used for emergency shelter or storage. Take a decision on this before the flood season. If this is not allowed, consider keeping some tents or plastic sheeting to provide shelter. Allow people to camp in the church compound.

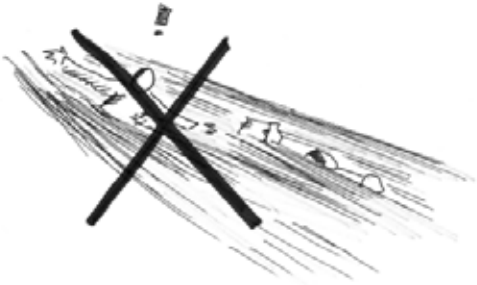
Some other suggestions for church involvement in floods are given in Chapter 2: 'Organising ourselves' (eg training and deployment of volunteers), in Chapter 3: 'Risks, needs and capacity assessments' (eg makings lists of useful skills and resources in the church), and Chapter 4: 'Displaced people' (eg emergency shelter, water and sanitation arrangements).

Emergency response – saving and preserving life

Here are some basic tips on the immediate response needed when flood warnings are given. These ideas may save the lives of people caught up in flood waters.

- Flood preparedness plans (family, community and church) should be activated as soon as news of rising flood waters is received. Use the agreed methods of raising the alarm and encourage people, especially the most vulnerable, to go to flood shelters.
- Volunteer teams, if trained and prepared earlier, should be activated for immediate work, to prepare evacuation sites and assist the more vulnerable people to reach those sites.

- Check that all church/community members are safe. Some may still be trapped on the roofs of buildings or in trees.
- Do not enter fast-moving water to rescue people unless you are secured by a rope to a tree or a group of rescuers. It may also be useful to have some form of buoyancy aid, such as sealed plastic containers, a bunch of coconuts or banana tree trunks.



- Be aware of collapsing banks, which create extra risk when people are entering or leaving the water.
- If canoes, rafts or dugout boats are available, use them to reach people who are trapped in buildings or trees or on isolated areas of high ground.
- If the church is being used for shelter, church members may be able to lend some blankets or dry clothes, especially for elderly people or young children.
- Remind church/community members that flood waters can be contaminated with sewage and with dead bodies of animals. Flood water should not be drunk unless it is first purified by tablets, filtration or boiling (if fuel is available). (See also Chapter 4: 'Displaced people', pages 109–111.) After flooding, all exposed food should be thrown away to prevent the spread of disease.

Discussion questions

After you have read the material so far, discuss these questions with your co-leaders and church members:

- *Where can you obtain reliable information about approaching floods? Is this available from government officials? Or from local radio stations? How could this information be improved?*
- *What could your church do to pass on warnings about floods? (For example, use bells.) Are there any sounds/noises that are already used in your community to call people together or to give warning? What other sounds or noises could be used?*
- *Can you think of other ways in which flood awareness and flood preparedness information could be passed on through the various groups within the church? How could the church help the community to make flood contingency plans?*
- *Some people choose to build in flood-prone areas. Are there ways that such people could develop relationships with people living on higher land , so that families can evacuate to these areas during times of flooding? Can the church help to set up these relationships?*
- *How can communities ensure that everybody knows the safest route to high ground and the location of emergency shelters? What could the church do to contribute to this?*
- *Can the church building be made available as an evacuation centre? What are the points for and against using the church in this way? What would need to be done to prepare the church building for use as a flood shelter?*
- *What could the church do to make sure that the weakest people in the community (elderly people, pregnant women, young children and people with disabilities) are helped to safety?*
- *Floodwaters can be very powerful and wash away roads and bridges. Sometimes, vehicles as well as people may be washed away in strong water currents. How can roads be made safer for use during times of flood? (One possible answer may be to plant trees along the edges of roads to help mark their position, or to put a line of posts or poles alongside the road with their tops painted white.)*
- *What materials are available to build rafts or boats to help evacuate people? (For example, banana trees.) What materials could be used to make personal life-saving floats? (For example, coconuts, empty plastic bottles and barrels.)*

- *What methods could be used to mark the location of the more vulnerable people in the community? (For example, flags on houses.)*
- *What can the church do if some people, especially elderly people, refuse to leave their homes after a severe flood warning is given?*

Flood mitigation

Communities can undertake a number of low-cost activities in the longer term to reduce the impact of floods. These are called ***mitigation***: some ideas are suggested below.

Tree planting

In flood plains, trees help to absorb the water and reduce the speed of water flow during flooding. They also provide protection from floating debris, which can cause further destruction as it gains speed across the flooded area. Setting up community plantations or 'wood-lots' may also provide a source of income for funding small community projects and other flood protection initiatives.

Before planting trees, obtain expert advice on the most suitable ones to plant. Avoid trees that draw up excessive amounts of water, and do not plant trees close to houses.

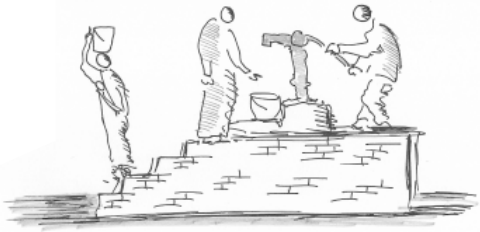
Raised roads

Roads provide a vital form of communication and often a major route of evacuation for people affected by a flood. In low-lying areas, it is good to raise the height of roads, using soil from the surrounding area. This also acts as a flood barrier and can help slow down the spread of a flood. In addition, trees can be planted along the roadside to protect the road from being washed away. Culverts should pass under the road to allow drainage afterwards.

Ditches and dykes

Ensure that ditches and dykes are well maintained and free of debris. Dykes should be checked during heavy rain for cracks or breaches. Culverts/drains under the dyke are a good idea, but there should be some system for closing them to keep water out when levels are rising. When flood water is receding, water should pass freely though the culvert and drain away from the flood area. As water run-off is more rapid in urban areas, ensure culverts and drains are also clear of rubbish and well maintained. Ditches can sometimes be used to channel water away from key buildings, homes and farming areas.

Raised water pumps



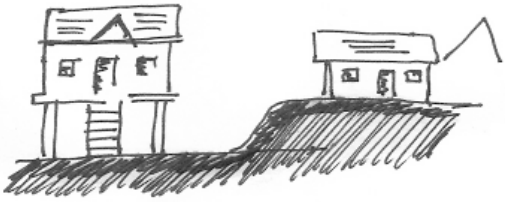
In flood-prone areas it is important to raise the height of the water pump above the threatened level of a flood. This will prevent the water source being contaminated by flood water containing sewage and the dead bodies of humans and animals. These raised pumps should be located near to areas of high land, where evacuated people will congregate.

Removal of rubbish

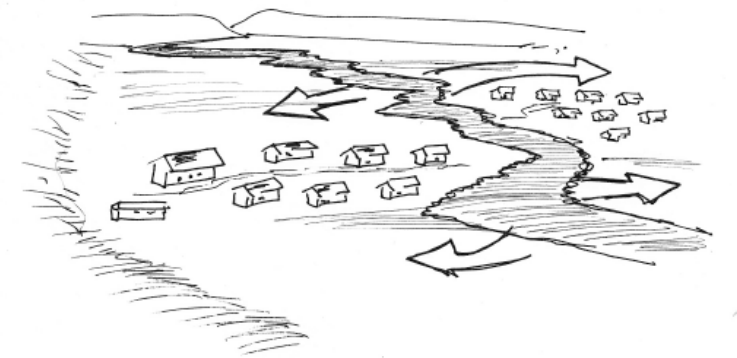
Where possible, encourage the community and/or local authorities to have all rubbish either removed on a regular basis or contained or buried, so that it doesn't contaminate the flood water.

Areas prone to frequent flooding

In coastal areas, a major problem is the deposit of sand and silt into houses and buildings. It is important for the community to adapt new housing to the risk of flooding, for example, by building houses on stilts, or by creating mounds of earth on which houses can be built.

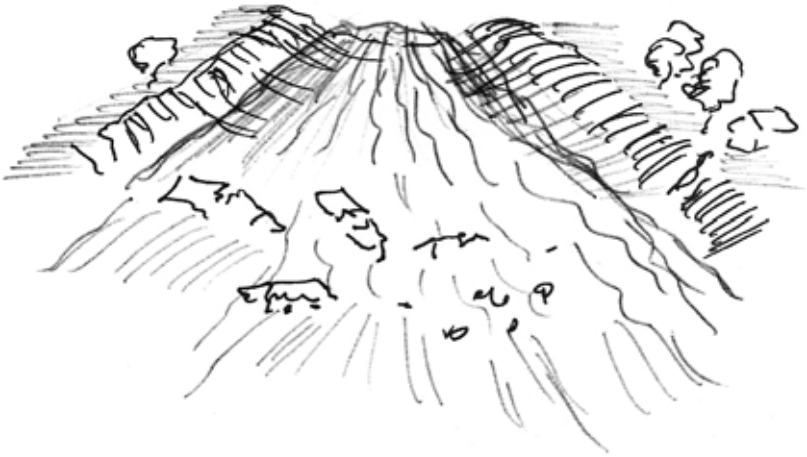


River banks can erode rapidly during floods, especially if the banks are near vertical. Any buildings – and people in them – can fall into the river with little or no warning. Houses built near the rivers are often on cheap or unwanted land and occupied by poor families who have nowhere else to build. The church can highlight the risks and advocate on their behalf for new housing in safer locations.



New settlements should not be built on river flood plains which have a continued risk of flooding – this would put lives and property at risk. These are often in areas of low-price land, and the government may have little or no interest in providing any form of flood protection.

Houses built in or near to dry river valleys are at risk from flash floods. These floods may have been rare events in the past, but could become more frequent and more serious in future. Climate change is likely to create more extreme weather, such as heavy storms which trigger flooding. The church can use risk mapping to show people these dangers and to suggest moving to safer areas (see pages 70–79).



Case study

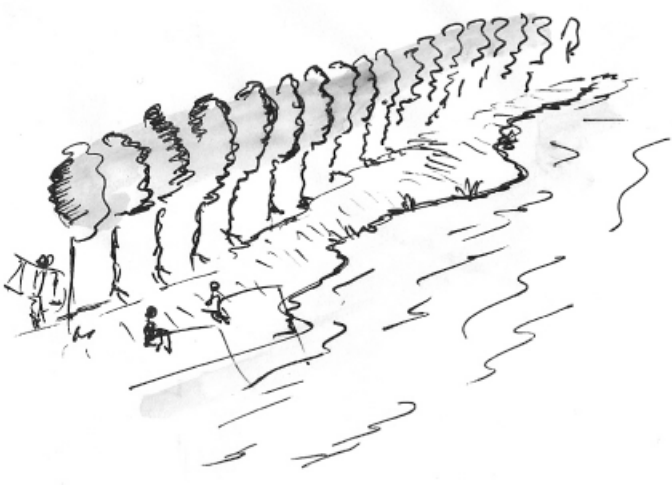
The church prepares for annual floods in north-east India

The Brahmaputra River floods every year, from June to September, and can become up to 45km wide. Tens of thousands of communities live along a 500km stretch and become surrounded by water. When there is particularly heavy rain, it erodes the higher land and destroys infrastructure.

Scattered Christian communities live throughout this area, a small minority in a predominantly Hindu population. These local congregations became the focal point of a disaster management programme that tried, for the first time, to reduce the destructive power of this mighty river and protect people's lives and property. At the same time, it challenged unhelpful worldviews – people's thinking was dominated by negative views of the river.

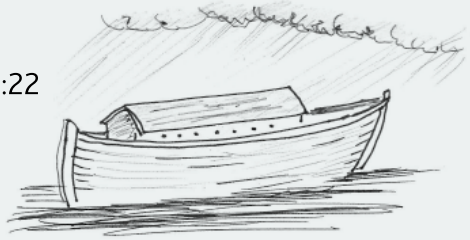
This initiative included practical activities such as extensive tree planting, improved and protected wells and water sources, and improved roads and bridges. In addition, there was leadership development and community organisation in preparing local disaster plans, and training teams of volunteers. Boats were provided in communities where there were none.

The local government recognised this initiative as an example which could be replicated in other areas of the Brahmaputra river basin.



BIBLE STUDY

The Flood Genesis 6:9–8:22



Background

Constant rain for 40 days caused a total flood of the world's surface to a minimum depth of seven metres (Genesis 7:20) for 150 days. The flood completely destroyed the human and animal populations (except those with Noah).

Key points

- Noah was warned by God that a flood was going to take place, and he responded by making a preparedness plan and assembling the necessary resources. Churches can play a key role in bringing communities together to prepare for the threat of disaster.
- Noah's preparation included making provision for the duration of the flood (food) and the period after the flood (male and female animals). Churches and communities should also be careful to prepare for possible disasters, including planning for the days during the disaster and for the recovery period afterwards.
- Noah used appropriate methods to monitor the flood situation (sending out a bird), so as to know when to move from survival activities to the rehabilitation phase (resettling on the land). It is important to keep the changing disaster situation under constant review and to adjust our activities accordingly.
- Following the flood, Noah and his family resettled in a less flood-prone area – the mountains of Ararat (Genesis 8:4) and resumed their livelihoods. Disasters should be used as an opportunity to reduce vulnerability, as people are often more open to change at this time.

Questions

1 *This particular disaster was the result of widespread disobedience to God's laws. Is this true for other disasters? What passages in the Bible suggest that disasters are not the result of sin?*

2 *Noah was warned by God about the approaching flood. What warnings are available to tell us that floods are coming? What traditional methods do you know, as well as the weather forecasts?*

3 *Noah was given very precise dimensions by God for building the ark, a very large wooden boat. Engineers tell us that the proportions (the ratio of length to width to height) are about right for a vessel of this size. What other instructions did God give Noah to ensure that air-breathing animals survived the flood and were able to repopulate the earth afterwards? What are some of the things we must do to prepare for a flood?*

4 *The Genesis account says very little of the reaction of other people to Noah's boat-building activity. How do you think they felt? What comments might they have made to Noah, given that the boat was far from the sea? What opposition might face us if we try to make preparation for a disaster, and how can we overcome that opposition?*

5 *In what ways can churches build a good relationship with their community, so that the church is able to take a lead in preparing for a disaster?*

6 *How can we learn from previous disasters to prepare for future disasters?*

Review of this chapter

- *What are some of the main causes of flooding?*
- *Describe some of the ways of raising awareness of flood risks in a community.*
- *Describe some of the early warning systems which can be used by local communities.*
- *Why are women sometimes at greater risk than men during floods?*
- *In areas of frequent flooding, what can families and communities do to prepare for them? What can the church do to prepare?*
- *What are some of the mitigation measures that communities can take to reduce the losses during future floods?*
- *How can we protect churches and other buildings from flood damage?*

6 Windstorms and landslides

Introduction

Windstorms

A windstorm is a highly destructive natural hazard which is capable of destroying houses and infrastructure, ruining crops (for the present and for years to come) and taking the lives of people and their livestock.

Tropical storms develop winds of 39–73 miles per hour, but when a constant speed of 74 miles per hour or more is attained, it is then technically called a windstorm. In the Atlantic and eastern Pacific, such a storm would be called a hurricane, while in the western Pacific it is known as a typhoon and in the Bay of Bengal and Indian Ocean as a cyclone.

At these speeds, winds blow in a large spiral around a relatively calm centre known as the 'eye'. The eye is generally small, 20–30 miles wide, but the storm itself may have a diameter of 400 miles across. As a hurricane approaches, the skies begin to darken, winds increase and heavy rainfall begins. A windstorm can last more than two weeks over open waters, changing course frequently, before eventually hitting land and creating a destructive storm surge (tidal wave).

Tornadoes

Tornadoes are much faster winds, sometimes called 'twisters', with wind speeds of more than 200 miles per hour. There may be sufficient warning for people to take shelter, but to find a safe place is not always easy, given the power of such winds. No defence is possible, as all building systems are vulnerable to such powerful forces. However, tornadoes are small in scale in comparison with tropical storms, and loss of life is very low.

Impact of windstorms

Flying debris can be fatal: tin roofing sheets, timber, household goods.

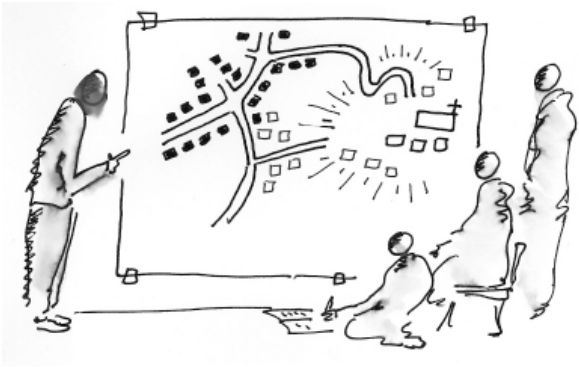
Windstorms cause loss of life, houses, crops, food stocks, animals and land. The greatest damage from winds is to buildings and trees, but most deaths result from drowning, because of storm surges and accompanying flooding. As a storm approaches the coastline, it generates the storm surge and raises the tide, sometimes five metres above the normal level. This rise may come rapidly and produce flash flooding in coastal lowlands. Waves and currents erode beaches, undermine buildings and wash away roads and irrigation ditches. Torrential rain can produce flooding and mudslides further inland.

Buildings collapse in high winds, injuring or killing the people inside and damaging the contents.

Other impacts include:

- people marooned on housetops, without food or water
- damage to agriculture, from wind, salty water or prolonged floods
- health hazards, as the water is often contaminated by sewage.

Preparing for windstorms



Some of the preparations are similar to those for flooding. Start by making a risk map of the area, marking on it the homes most at risk, and developing evacuation routes to higher or safer ground. Mark on the map the location of safe buildings and places where emergency water sources can be found on higher ground.

The next step is to develop a contingency plan – at least for the church, but preferably for the whole community. Each person should know the evacuation signal, and exactly where to go and what to carry with them. There should be awareness-raising meetings for all members of the community: make sure that women are fully involved as well as men, and that schools and hospitals also know what to do in preparation for the storm. As noted in Chapter 2, pages 41–45, you could consider forming a team of trained volunteers.

Early warning systems

Warning methods include local radio broadcasts and television. Internet sites may be accessible in more developed locations. Government authorities are usually responsible for giving advanced warning to threatened communities, but the messages do not always reach more remote places. If churches have wide networks, they can contribute effectively to passing on these warnings.

As well as scientific weather forecasting, a number of traditional methods can be used, for example, watching certain species of bird which migrate before a storm. In addition, animal behaviour can change dramatically when the air pressure changes.

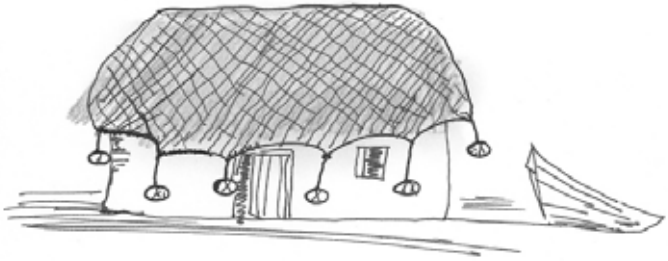
Other methods include observing the weather patterns and seeing changes in the clouds which indicate that a serious storm is building up.

Once the early signs of a storm have been recognised, local methods can be used to warn the rest of the community. This might include hoisting special flags and using bicycle-borne megaphones. In coastal Bangladesh, a green flag indicates a hurricane is approaching; a yellow flag means people should assemble the goods and possessions they need in preparation for evacuation and send the elderly and sick people to safe places; a red flag indicates a need for urgent evacuation of all people to a safe location. A more technical method of spreading warnings is to send messages to mobile phones in high-risk areas.

Reducing damage to property

In a windstorm, communities cope with high winds in different ways. Some open windows and doors to allow the wind to blow through. Others nail wood over the doors and windows to keep the wind out!

Fishermen sometimes protect their houses by throwing nets over them and weighting them down with stones so that the thatched roofs are protected. Other communities who live on the coast have adapted to the high risk by living in houses which can be easily dismantled. They simply pick up the building materials and carry them inland to a more sheltered area!



Another method is to tie wooden houses down with ropes attached to large rocks or pegs. All the main joints of the wooden structure should be secured in this way.

Keeping valuable items safe

Store personal items such as passports, identity cards, certificates, land documents, cash and medicines in a safe place.

Wrap up seeds for planting in small plastic bags, then – if possible – in a large piece of plastic for protection.

Turn off all electrical supply points and unplug appliances. Also turn off gas appliances and shut the valve on gas cylinders: this reduces the risk of fire. Put all electrical items in a higher place to avoid flooding.

Put together enough food to feed the family for five to seven days, and some containers of clean drinking water.

Gather essential medicines, dry matches, a torch and a lantern. If you have a mobile phone, make sure it is charged and has key contact numbers on it (including local government contact numbers).

Make sure all livestock are collected and placed somewhere safe on higher land. Animals are often left untied, so that they are free to save themselves.

Make sure the sick, elderly and most vulnerable people have access to safe, warm shelter and adequate food. They should be evacuated to safety as soon as warnings appear.

Emergency shelters

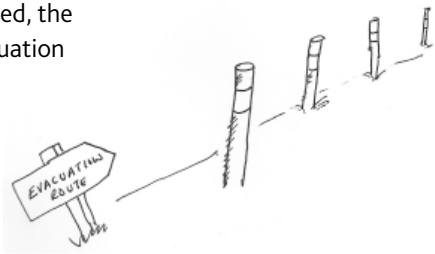
Where there is a threat of windstorms and flooding, there should be a designated safe place where families can shelter for the duration of the storm. This needs to be on high ground and should have plenty of capacity to accommodate members of the community. In some countries, government, the Red Cross and NGOs have built strong cyclone shelters which are raised off the ground on pillars.

More commonly, schools, churches, mosques, government offices or grain stores are used. They need to be cleared and prepared before the storm arrives. If a disaster management committee has already been set up (see Chapter 2: 'Organising ourselves', page 39), or a volunteer team has been chosen and trained, then preparation of the shelter should be their responsibility.

A church may decide to offer its building as a temporary shelter. In this case, make sure that there are basic facilities available, such as water supply and toilets, emergency lighting and a First Aid kit.

Signs for the evacuation route

Once an evacuation shelter has been identified, the community should mark out a series of evacuation routes to the shelter with clear signs, either mounted on white-topped posts or painted on the walls of houses or on tree trunks. These white marks will help people to find their way to a place of shelter, even in darkness or under flood conditions.

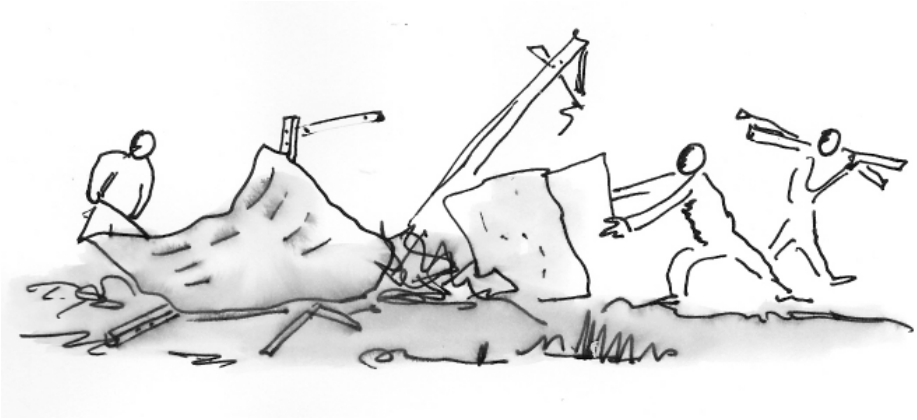


Careful consideration should be given to old people, disabled people, pregnant mothers, those with long-term sickness and young children. These people should be evacuated quickly and with support from volunteers.

What to do during intense storms

- Stay alert and awake. Listen to weather reports on the radio. Be aware that intense, short bursts of rain may be particularly dangerous, especially after longer periods of heavy rainfall.
- If you are in a hilly area where there is a risk of landslides, consider leaving if it is safe to do so. If you have a car, remember that driving during an intense storm can be hazardous. If you remain at home, move to a second storey if possible.
- Listen for any unusual sounds that might indicate moving debris, such as trees cracking or boulders knocking together. A trickle of flowing or falling mud or debris may precede larger landslides. Moving debris can flow quickly and sometimes without warning. Staying out of its path will save lives.

What to do after an intense storm



Following a severe storm, church members can assist individuals and families to repair and rebuild their homes, especially the more needy such as widows and elderly people. The church can possibly advocate on behalf of the poorest, to ensure they receive help from the government, military or NGOs. This might include compensation for damage or loss.

The church can bring the community together to plan the reconstruction of houses and community buildings. Community schemes can include tasks such as clearing stones from damaged properties and agricultural land and removing salt water from fields. As people work together on recovery, they may also be able to explore ways of increasing their ability to face future storms. These include stronger houses, improved drainage, changes to farming systems, and perhaps self-help groups and saving and loan schemes. A disaster can become an opportunity to 'build back better'.

Mitigation measures

Previous sections have concentrated on preparing for and recovering from storms. This section looks at ways of reducing the impact of future storms and some opportunities for the church to assist in these areas. Community cooperation and togetherness is an important foundation for many of the following mitigation ideas.

There are various ways to mitigate the effects of storms. These include:

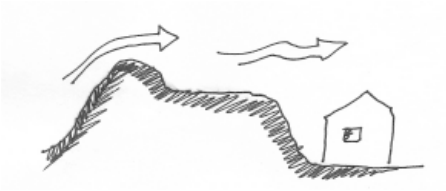
- improving or changing the location of buildings and houses so that they are less exposed to storm damage
- strengthening the way houses are constructed so that they are less vulnerable to wind damage and overall destruction
- adopting improved agricultural practices to reduce crop damage, plus introducing more storm-resistant plants
- improved water management, such as embankments and improved drainage

Location of new buildings

Trees and land formations give some protection from high winds. Buildings with no such protection are more exposed to the power of a windstorm.

A belt of trees absorbs some of the power of the wind and redirects it over the buildings. The stand of trees must include a sufficient number of trees, and they should not be planted too close to houses – falling branches may cause damage. Where possible, plant deep-rooted trees which are less likely to be blown over by the wind.

Avoid building on a ridge or area of exposed high ground, as these are more at risk of wind damage. Building in sheltered valleys or areas protected by hills can reduce the impact of the wind.



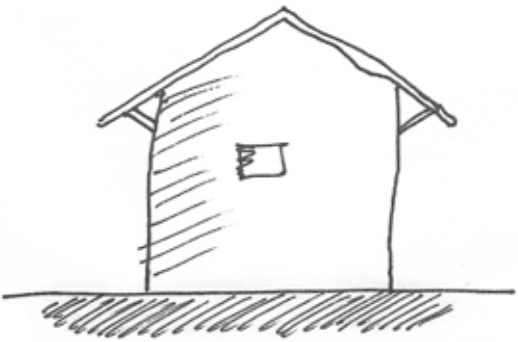
Sometimes a lack of land can cause people to build in exposed places. The church may be able to lobby the local authorities to provide alternative land for housing in safer places.

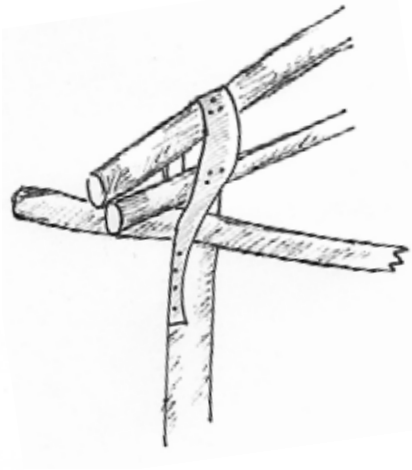
Design and construction of houses

In severe winds, overhanging sections of the roof (the eaves) can be lifted up and broken.

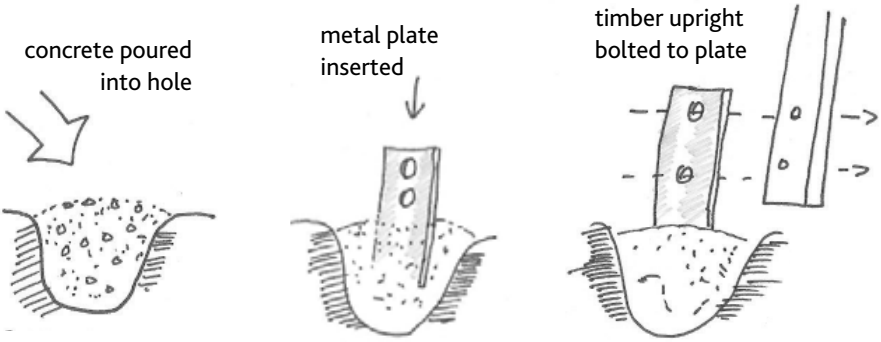
To avoid this, hold the roof down with overhang ties. These should be used if the overhang exceeds 45cm.

Metal straps can also be used to secure roofs firmly to roof beams and to secure the roof beams to the upright posts. This can significantly reduce damage to the roof.





Another reason why a house may collapse is the lack of good foundations. One way of overcoming this is to dig holes at least one metre deep at the foot of each vertical post. These holes are filled with concrete, and a metal plate (40–50cm long) is embedded in the concrete, with about half the plate above the concrete. The exposed part of the plate should have two or three holes in it. When the concrete has set, the vertical wooden posts of the house are bolted to the metal plate. This will give greatly improved wind resistance.



The church is not a construction company! However, there may be a builder or carpenter among its members who can adopt these practices. Could the church building be strengthened in the ways described above? Could the pastor's house become a 'model house' for others to see and copy? In this way, the church can take a positive lead to ensure that new houses are built properly and safely.

6

Agricultural practices

Crops can be affected by windstorms in the following ways:

- Crops can be flattened by the sheer force of the rain and wind.
- Crops can be waterlogged to such an extent that they rot in the fields.
- Crops can be killed by salt water and by silt/sand deposits brought by a coastal storm surge.

The following responses are ways of reducing the impact of storms on agricultural production.

Shelterbelts and windbreaks

In order to protect more fragile and vulnerable crops, bands of trees can be grown in the form of shelterbelts or windbreaks.

Mangrove swamps and sand dunes provide excellent protection from storms along the coastline.

Shrubs, trees and grasses can be used to stabilise sand dunes which may collapse during storms and allow high tides to penetrate further inland.

Crop diversification and intercropping

Another method for reducing the impact of storms is to protect vulnerable crops by mixing them with more hardy ones. One example is to mix lines of storm-resistant pineapples with weaker vegetables such as tomatoes, cabbages and root crops.

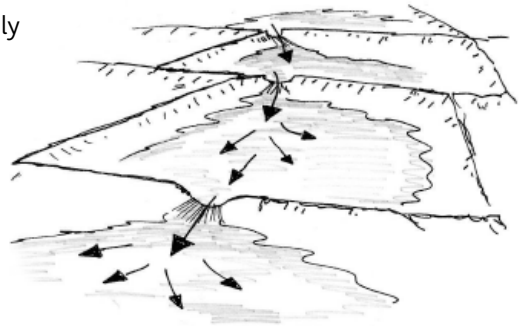
In coastal areas, coconut trees can be intercropped with banana trees. Depending on coconut harvesting methods, peppers can sometimes be grown up the trunks of coconut trees. Similarly, coffee trees can be intercropped with legumes, which have the added benefit of improving the soil.

Rural churches nearly always have farmers among their members. Some of the above methods could be adapted and used by them to reduce the damage to their livelihoods in future storms.

Preventing salt contamination of land

When salt concentrations in the soil are higher than normal, as would be the case after a tsunami, the water will be drawn out of the root cells of the plants and the plants will die.

The most effective way of dealing with this is to irrigate the land thoroughly with fresh water and to ensure there is good drainage to allow the salt to be removed from the affected area. Where irrigation is not possible, it is best to use simple rain harvesting techniques, such as catchment pits and bunds. It may be necessary to break up the surface layer of the soil by cultivation to improve the drainage.



Some other techniques, such as cropping systems, use of compost and use of chemicals (if available and affordable), may help to reduce soil salinity, but none of them can replace thoroughly washing the soil with clean water. Local government agricultural officials may be able to provide appropriate advice for your particular location.

Salt-tolerant crops

Salt-tolerant crops may be a practical option during the recovery process. The following is a brief list of such crops (source: FAO). However, it is not easy to introduce new crops, and expert advice will be essential.

	High tolerance		Medium tolerance	
Field crops	• barley	• cotton	• rye • wheat • lupin • soybean	• millet • sorghum • rice • peanut
Fruit	• date palm		• pomegranate • fig	• olive • grape
Vegetables	• beetroot • kale	• asparagus • spinach	• tomato • broccoli • cabbage • cauliflower • sweet corn	• broad bean • squash • pumpkin • cucumber
Pasture plants	• rhodes grass • couch • kikuyu • almum • pangola • Wimmera ryegrass	• lucerne • phasey bean • siratro • buffel • sabi • guinea	• berseem clover • snail medic • barrel medic • blycine • perennial ryegrass	• strawberry clover • paspalum • sudan grass • phalaris • reed canary

Pasture plants refers to grasses which can be grown for animals. Your local government agricultural or livestock officer may be able to help you locate some of these.

Embankments and dykes

These are usually large government schemes to protect against tidal surges. However, communities can be organised to repair or strengthen them by volunteer labour. The church could also lobby the government for improved flood defences.

Landslides and mudslides

Severe storms often result in landslides. Heavy, prolonged rain saturates the soil and causes unstable slopes to move, creating landslides. In 1998, landslides associated with Hurricane Mitch killed 18,000 people across four countries. Landslides are often most destructive in urban areas, where shortage of land has forced people to build on steep and unstable slopes. Hillside slum communities in towns are common.

Some landslides move slowly and cause damage gradually, whereas others move rapidly, destroy property and take lives. Gravity is the force driving landslide movement. Landslides and flooding often happen at the same time, both due to heavy rain.

Factors that can trigger landslides include:

- saturation by water (after heavy rain or rapid snow-melt)
- slopes being made steeper by erosion or construction
- alternate freezing and thawing
- earthquake shaking
- volcanic eruptions

Debris flows, sometimes referred to as mudslides, also generally occur during periods of intense rainfall or rapid snow-melt. They usually start on hillsides and their composition can vary from watery mud to thick rocky mud that can carry large items such as boulders, trees and cars. When the mudslide reaches flatter ground, the debris spreads over a broader area and causes widespread damage.

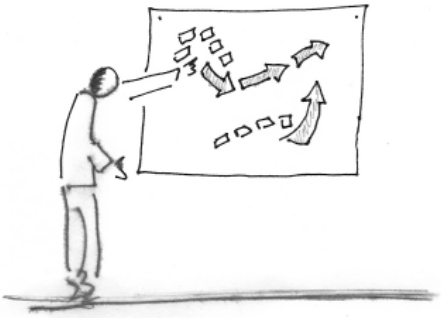
Landslides and mudslides may block rivers and cause upstream floods. When the temporary dam breaks, a destructive flash-flood moves down the valley.

Reducing landslide risk

The first step is to become familiar with the land around you. Find out whether landslides and debris flows have occurred in your area in the past by asking some of the older residents.

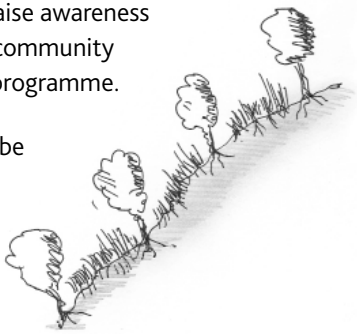
Areas that are generally prone to landslide hazards include existing old landslides, the bases of steep slopes, the bases of drainage channels, and areas where a lot of toilet waste is dispersed underground through the soil.

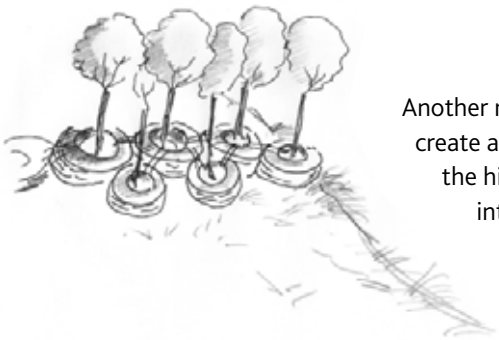
To be prepared, look for patterns of storm-water drainage on slopes near your home, noting especially the places where runoff water converges. Before the hurricane season, ensure that all drains and ditches are thoroughly cleaned, and new ones dug (see below).



As with areas at risk of floods and cyclones, it is a good idea to create risk maps showing the areas most likely to be affected by slides. Evacuation routes should be developed, showing people how to escape from potential mudslide areas. Maps are a good way to raise awareness in the community. Work with local authorities and community organisations when planning an awareness-raising programme.

Slopes above settlements and agricultural land can be stabilised in several ways – for example, by growing a combination of trees and soil-holding grasses.

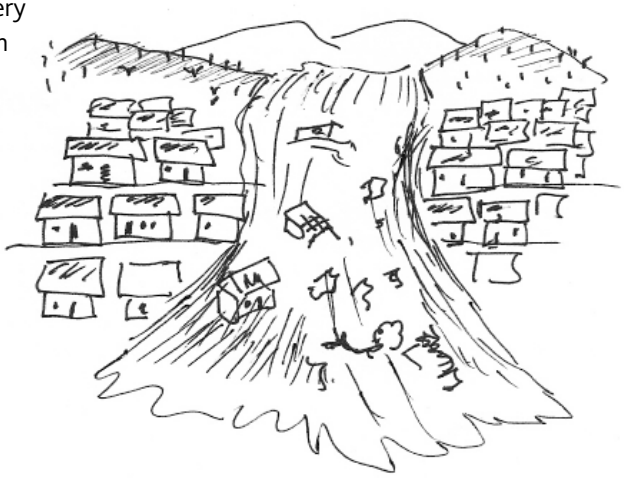




Another method for stabilising hillsides is to create a chain of tyres wired together across the hillside. Tree seedlings are then planted into the centre of each tyre. Stake the tyres so they cannot be moved. The tyres and trees together will help to stabilise the soil.

When constructing new houses, avoid areas that have a high risk of landslides.

Where hillsides have been deforested and the land is very steep, illegal housing is often built in the form of a shanty town. The combination of unprotected hillsides and poor-quality housing means the community is very vulnerable to sudden and violent landslides. The church can help to raise awareness of the risk of landslides and mobilise the community to reforest the hillsides.



The importance of good drainage

A major cause of landslides is excessive amounts of water soaking into a slope. It is important to limit the amount of water entering the soil, because wet soil is more prone to landslides than dry soil. If there are drains on the hillside, residents should be encouraged to keep them clean to prevent flooding, soil erosion and landslides. Extra drains should be dug across the slope, higher up from the houses, to remove water. Rain falling on roofs should be channelled into water-storage barrels or into the drains. Lining these drains with plastic, covered by wire mesh or stones, is one way of reducing the amount of water soaking into the soil.

The church may be able to promote some of these methods among its members, and to warn residents against making the ground up-slope from their house excessively steep, since this can cause minor landslides.

Warning signs

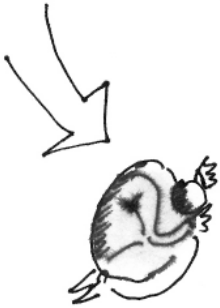
Warning signs include leaning posts or trees, soil cracks, changes in spring water flow and disruption to piped water supply. If you are near a stream or channel, be alert for any sudden increase or decrease in water flow and for a change from clear to muddy water. Such changes may indicate landslide activity upstream, so be prepared to move quickly. Don't delay – save yourself, not your belongings.

Be especially alert when driving. Embankments along roadsides are particularly susceptible to landslides. Watch the road for collapsed pavement, mud, fallen rocks and other indications of possible debris flows.

If you suspect that a landslide is about to happen, inform your neighbours immediately. Advising them of a potential threat may help to save lives. Help neighbours who may need assistance to move from their homes. Evacuate – getting out of the path of a landslide or debris flow is your best protection.

What to do during and after a landslide

If a landslide happens where you are, respond immediately. Quickly move out of the way of the soil or mud flow. If escape is not possible, curl into a tight ball and protect your head. A tight ball will provide the best protection for your body.



After a landslide, you should do the following:

- Stay away from the slide area. There may be a danger of additional slides.
- Check for injured and trapped persons near the slide, without entering the area of the slide itself. Note their location and inform rescue teams.
- Help neighbours who may require special assistance – infants, elderly people and people with disabilities.
- Listen to local radio or television stations.
- Watch for flooding which may occur after a landslide.
- Look for and report broken electricity lines and gas or water pipes to the appropriate authorities. Reporting potential hazards will get the power or gas turned off quickly, preventing further hazard and injury.
- Check the safety of buildings close to the landslide.
- Replant damaged ground as soon as possible, since erosion caused by loss of ground cover can lead to flash flooding.
- Do **not** rebuild houses in their old locations.

Case study

Cyclone Nargis response in Myanmar

Cyclone Nargis was a strong tropical cyclone that caused the worst natural disaster in the recorded history of Burma (also known as Myanmar). The cyclone hit the country on 2 May 2008, causing catastrophic destruction and at least 138,000 deaths.

Despite the devastation, acts of compassion by the church were spontaneous. One pastor took in 30 neighbours into his own house before it collapsed. People from all ethnic and religious groups set up temporary shelter in his church and its compound for many months afterwards. They expressed their thanks later by contributing money and labour to rebuild the church tower that had fallen during the storm.

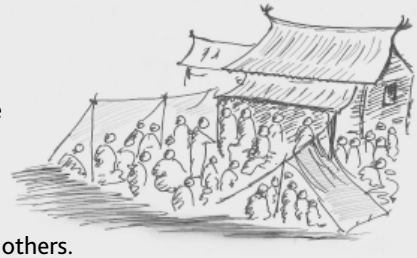
Another pastor took in more than 300 people, allowing them to take shelter in his church, where the church members cared for them to the best of their ability.

The church gave assistance quickly in the early stages of the crisis. 'The church knew where its people were and was in a position to assist immediately,' said one cyclone survivor. The pastor, who lost his own house, was wading through the mud and rubble the very next morning, gathered six boats and 16 people from a nearby village, and then he began rescuing people from isolated areas in the delta.

Beneficiaries of the project (believers and non-believers) knew that the church belonged to a wider network of people, and would not leave their community. This gave them an added sense of security and an opportunity for continued learning. 'We have got to know the church better and we are thankful,' said one beneficiary.

Some key points:

- rapid response to the disaster
- compassionate action to help people of all faiths
- use of church and its compound for temporary shelter
- self-sacrifice and taking risks to save others.



BIBLE STUDY

Fighting injustice Nehemiah 5

Background

The situation in this chapter occurred during the rebuilding of the wall of Jerusalem (see also the Bible study on Nehemiah 2 in Chapter 3, page 91). It reminds us that even in a process of reconstruction and rehabilitation, the rich may use the situation to exploit the poor. As well as opposition from Sanballat, Tobiah and friends, the people were being badly treated by their own nobles and officials. After some thought, Nehemiah confronted them about their behaviour (verses 6–11) and was able to reform the situation.

Nehemiah's leadership is an example to churches to speak out boldly against injustice and to raise awareness of the issues that are making people poor.

Key points

- The poor complain of being oppressed by the rich (Nehemiah 5:1-5).
- Nehemiah removes the oppression (Nehemiah 5:6-13).
- He sets an example of compassion for poor people (Nehemiah 5:14-19).

Questions

1 *In Nehemiah 5, how were the rich exploiting the poor? How does Nehemiah respond? In what ways could poor people be exploited during the reconstruction phase following a windstorm or mudslide?*

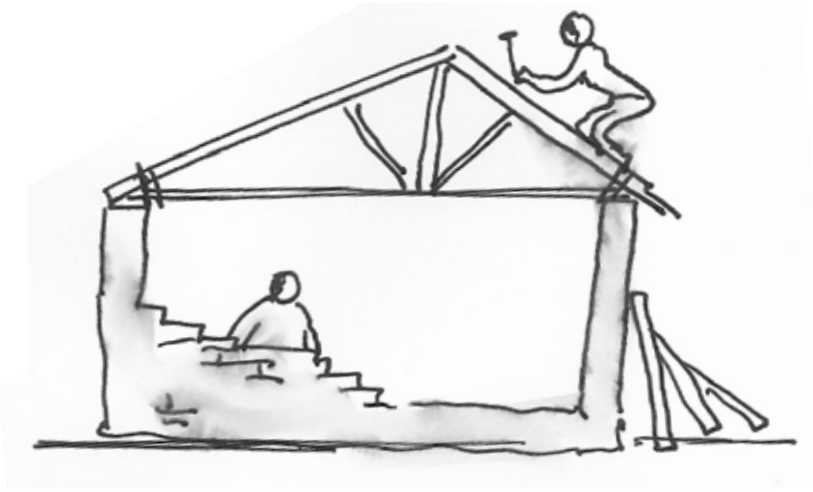
2 *The church can help to ensure that at all stages of disaster recovery, the poor are protected from exploitation and helped to find ways out of their poverty. What practical actions could your church undertake to ensure that poor people are not exploited?*

3 *How can the church ensure that the poorest people are not missed out when there is a distribution of relief goods by the government or by NGOs?*

4 *What does your church need in order to become more confident and effective in speaking out on behalf of poor people?*

Review of this chapter

- *What are the main features of a severe windstorm, and what are the common effects that it has on a community?*
- *What are the things a community can do to practically prepare for a severe windstorm?*
- *How can a community identify who is most vulnerable to windstorm damage, and how can the community ensure that they are protected and evacuated in time?*
- *If the church or church hall or school is being used as an evacuation centre, how can you ensure that the needs of women and children will be met, as well as the needs of men (eg in providing latrines)?*
- *What can the church and community do to protect property from the impact of windstorms?*
- *What are some of the ways you can tell that there is a threat of a landslide?*
- *What can the church and community do to reduce crop damage from the impact of a windstorm?*
- *How can we reduce the risk of landslides?*



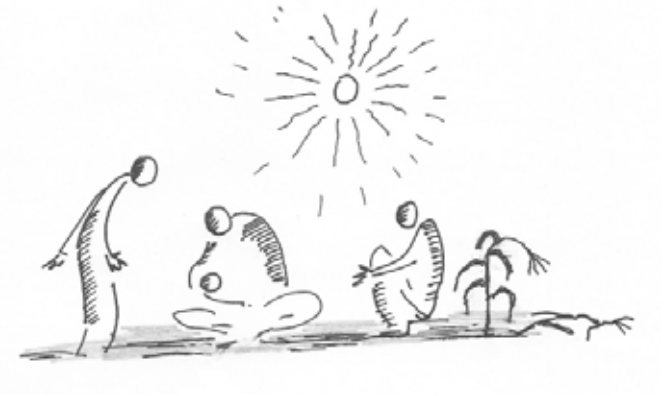
6

7

Drought and food insecurity

Introduction

This chapter looks at the impact of drought and food insecurity on communities and households. It also considers the different approaches that a community can take to become more resilient and effective in managing the long-term effects of drought. The chapter examines several assessment tools which can be used both for emergency response and for long-term mitigation planning.



What is drought?

In the broadest sense, any lack of water for normal needs of agriculture, livestock, industry or human population may be called drought. While drought is generally associated with semi-arid or desert climates, it can also occur in areas that normally have adequate rainfall and moisture levels. A delay in seasonal rainfall can still create drought conditions. Areas which depend on water from other regions (via rivers, irrigation channels or underground aquifers) may experience drought if the rains fail in that region, perhaps many miles away.

Drought on its own is not necessarily a disaster – some people have assets or traditional coping mechanisms which enable them to survive. These mechanisms include selling their livestock and household items, reducing their number of meals, sharing food with neighbours, or collecting wild fruits, leaves or roots. Such mechanisms may help in the short term, but if people sell their assets it increases poverty, and in the long term it also increases vulnerability.

What is food security?

Food security exists 'when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life'.(World Food Summit, 1996). Commonly, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs, as well as their food preferences. Food security is built on four pillars:

FOOD AVAILABILITY: sufficient quantities of food available, through farming, imports or food-aid.

FOOD ACCESS: people have money to buy food (at affordable prices) and can reach markets.

FOOD QUALITY: food is safe and of good nutritional value to promote good health.

STABILITY OF FOOD SUPPLY: supplies of food ensured, even in a disaster or family crisis.

Causes of drought and food insecurity

Drought has been known since biblical time, but is becoming a more serious hazard because of climate change. Human activities, such as burning fossil fuels and deforestation, have increased the quantity of harmful 'greenhouse gases' in the atmosphere. These trap much of the heat that would otherwise escape from the planet, leading to a generally warmer world. This is affecting weather patterns in various ways. One of these is the change in the amount and distribution of rainfall in many parts of the world, resulting in an increase in the frequency and duration of droughts.

Climate change has also influenced the agricultural seasons. Some farmers now struggle because there is not enough rain at the beginning of the planting season to sustain plants, or there is too much rain at the traditional harvest time, which causes crops to rot. Sometimes the rain stops prematurely, causing rain-fed crops to wither and give poor yields.

Warmer temperatures and water shortages have also caused an increase in livestock diseases, a decline in available pasture and reduced livestock yields. Seasonal migration patterns of cattle herders are changing, with increased potential for conflict.

The overall impact of an increased cycle of drought and food insecurity is that populations become displaced and potentially become dependent on emergency food aid. In the past, when droughts happened, most communities had simple methods of coping with them. In many places the droughts have become more severe and these traditional mechanisms no longer work.

Another cause of food insecurity is civil conflict, as a result of which populations are displaced and cannot safely reach their own fields. They may also be unable to reach other areas, and secondary livelihoods (eg gathering firewood) are no longer possible. In their new location, there may be no good land available.

In addition, food insecurity may be caused by traders profiteering through cross-border trading. Merchants buy up low-priced grain and foodstuffs and sell them for profit in a neighbouring country. This reduces the amount of grain available in the area where it was grown, and pushes up prices, so that poor people cannot afford to buy it. Food prices can also be driven upwards by global market trends.

Other factors contributing to food insecurity include: poor governance, social inequalities, discrimination against minority groups (political, ethnic or religious), impact of HIV, and global policies on agriculture and trade. The church may find ways of addressing some of these causes, as well as responding to the needs of those who are hungry.

Household food security assessment

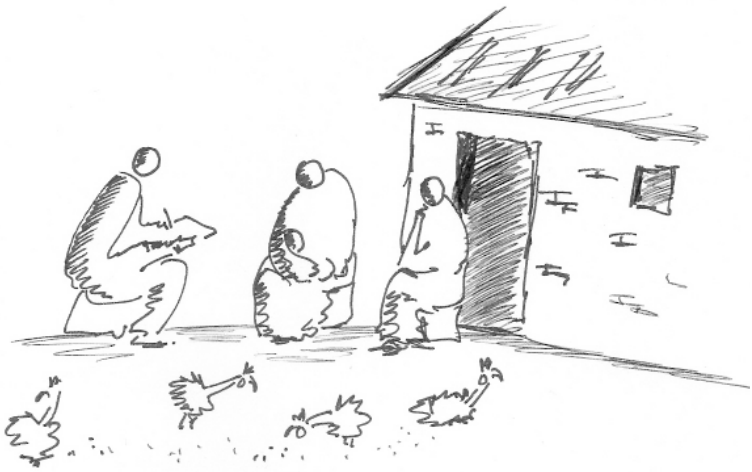
When rains fail and a poor harvest is expected, it is a good idea to carry out an assessment of the food situation. Food surveys should also be done after a bad harvest to assess the impact of crop failure on the community and the hunger gap expected. However, asking questions about food often raises expectations of food distribution, so you should take care not to make promises and try not to raise hopes (unless you have firm promises of food from an NGO).

Photocopiable assessment form

The assessment tool on the following pages will determine immediate needs and contribute to long-term planning. It is best used as a house-to-house questionnaire, and covers livelihoods as well as food stocks. The findings should be reviewed by a small committee, including church leaders, who can then determine the key trends in the population and identify which households will be most at risk of food insecurity.

The form collects information about livestock and about water sources. Both of these will be under threat if the drought continues.

This assessment form should be photocopied, and one copy per family should be filled in. A team of volunteers will be needed to visit the households. Team members should be well trained in the purpose of the survey and the method of completing the form. The survey could also be announced and explained as part of church notices.



Household information	Number
How many people live in this household?	
How many children are there under the age of five?	
How many girls are there between five and 15 years old?	
How many boys are there between five and 15 years old?	
How many people with long-term sickness, elderly or disabled?	
Main livelihood or occupation which supports the family	

Food consumption

Describe what household members have eaten in the last 24 hours.

	Morning	Afternoon	Evening
Infants (under 5 yrs)			
Girls (5–15 yrs)			
Boys (5–15 yrs)			
Adult males			
Adult females			

Animal ownership

	Number
Cattle	
Pigs	
Goats and sheep	

	Number
Camels	
Chickens	
Other (specify)	

Food stocks and (if pre-harvest survey) anticipated harvest

Food	Stocks in household*	Anticipated harvest Month	Anticipated harvest Amount*	Number of fields	Crop condition (good/fair/poor)
Maize/corn					
Beans					
Sorghum					
Wheat					
Other					

* **Stocks in household** and **Anticipated harvest amount**: specify number and units (kg, bags, tins etc)

Hunger gap

Which months are likely to be hungry months this year?	
After a good harvest, which are the hungry months?	

Water supply

	Available Y/N	Comments on water condition	Distance to this source
Water from pipes/taps			
Well or bore-well			
River, stream or spring			
Dam, pond or lake			
Rain harvesting system			

Market prices

compared with same time last year

	Higher	Same	Lower	Trend up/down
Main food-grain				
Large livestock (eg cows)				
Small livestock (sheep/goats)				

Emergency food distribution

If the food security assessment reveals serious shortages (current or expected soon), then some form of emergency food distribution may be needed.

Distribution of food is described in detail in Chapter 4: 'Displaced people', pages 104–106. Here are a few key principles:

Key principles

1 The specific method of distribution and type of food should be decided according to the people's lifestyle and culture. For example, distribution will vary between urban and rural areas, or between nomadic and farming communities.

2 Distribution of food should be completely transparent, with each person knowing the criteria for receiving food, and also their own entitlement.

3 The beneficiaries of the distribution should be treated with respect and dignity.

4 Beneficiaries should be actively involved in the management and distribution of food, and in deciding selection criteria.

5 Women should take responsibility for collecting the food – usually women receive the food on behalf of their families.

6 Each beneficiary has the right to receive a fair ration, regardless of gender, age, religion and ethnicity.

7 The most vulnerable people in the community should be prioritised, if there is not enough for all.

8 Trusted members of the community, or church leaders, should oversee the distribution.

Rations

Food gives energy, and energy is measured in kilocalories (kcals). An internationally accepted guidebook, from the Sphere Project, *Humanitarian Charter & Minimum Standards in Disaster Response,* recommends 2,100 kcals per person per day for emergency rations. This should be made up of different food types:

- Ten to twelve per cent of total energy should come from protein (eg pulses, fish, milk powder).
- Seventeen per cent of total energy should come from fat (eg oil used for cooking).
- The remainder should come from cereals, such as rice, maize or wheat.

If you have a nutritionist in your church, he/she may be able to do some more accurate calculations, but the general rule is that every day each person should have 500g of cereal (eg rice, sorghum, millet), and 100g of lentils (pulses), plus a little cooking oil.

The amount of food distributed to a family should be according to the number of family members. Sometimes there may not be enough food available to meet the above guidelines. If there is no possibility of increasing the supply, a difficult choice has to be made – either to reduce the food ration per person or to reduce the number of people served by the feeding programme (giving priority to those in greatest need).

Obtaining food

You may be able to obtain food for your distribution programme from a number of sources, for example:

- From church members. Those with more food may be willing to share with those who have less.
- From other churches or from denominational structures. Sometimes, other branches of your church association or diocese may be able to provide food.
- From government sources. Local government may organise distributions from food stocks. Church leaders may be able to ensure that poorer church members are included.
- From NGOs. Local or international NGOs may be operating in your area. Make contact with them and share the survey information you have collected.

Water

Ideas for providing water are found in Chapter 4: 'Displaced people' on pages 106–113.

Drought mitigation

In areas which suffer from frequent drought, various methods of farming and water management can make the maximum use of any rain which falls and reduce losses from evaporation. The church leader may not be a farmer, but someone in the church may be able to help rural farmers to adopt one or more of the following suggestions. The ideas fall into four main categories:

- cultivation methods
- water management
- crop management
- food storage and cereal banks.

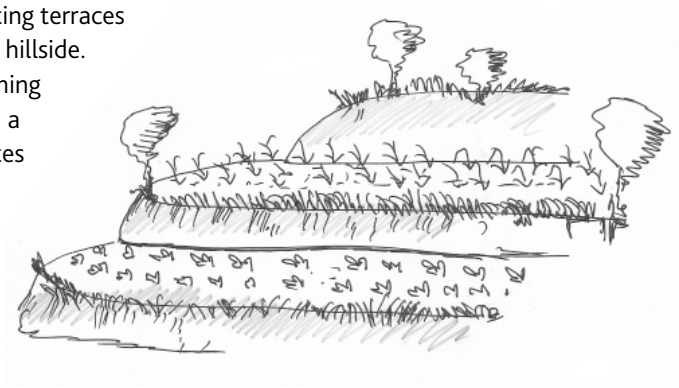
These are all agricultural solutions, aimed at strengthening the first pillar of food security – **food availability** (page 177). A church may have opportunities to help its members develop alternative livelihoods, such as small livestock, small business or handicrafts. These activities would increase **access to food** (second pillar) by giving more income to families. The third pillar (**food quality**) could by addressed by introducing basic health and nutrition classes for mothers, perhaps drawing in the services of an NGO or health worker. **Stability of food supply** (fourth pillar) is considered below under grain banks.

Cultivation methods

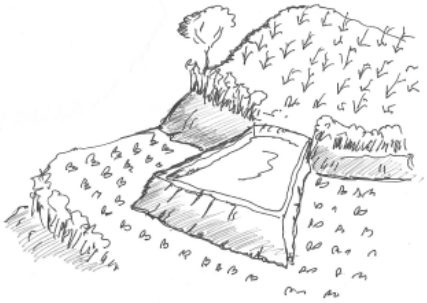
If land is to be cultivated in drought areas, every drop of available rainfall must be used or stored. Water can be conserved or retained in a number of ways.

Terracing

Terracing involves cutting terraces along the contour of a hillside. (A contour is a line joining points of equal height; a terrace therefore creates strips of flat land.) This helps prevent the loss of water down the slope and means more water is available for the

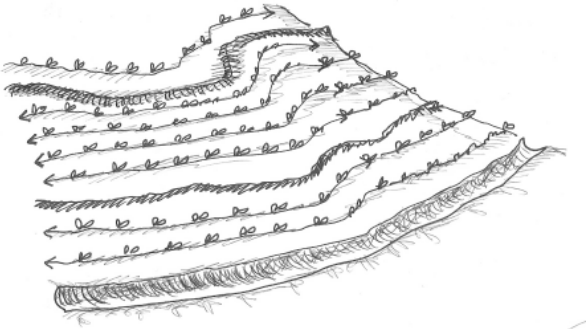


plants. A terrace can be strengthened by planting trees or perennial plants along its edge: this reduces soil erosion and retains more moisture.



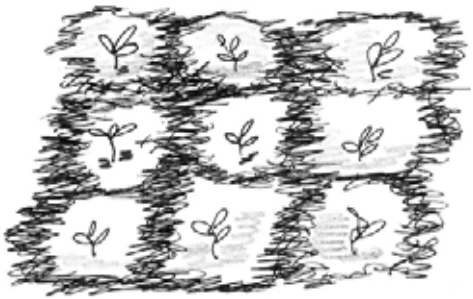
Terracing can be combined with water harvesting if the run-off water along a terrace is diverted into a small reservoir or pond. This can then be used for irrigating more fragile crops or vegetables.

Terracing plus 'dead furrows'



As a general principle it is best to cultivate across a hillside, not running up and down the slope. Terracing can be improved by cutting large furrows every three to four metres, depending on the angle of the slope. These are called 'dead furrows' and are useful for those times when heavy rain falls. The furrows trap the run-off water and divert it away, preventing it from damaging crops further down the slope. Less heavy rainfall is retained by the terraces as before.

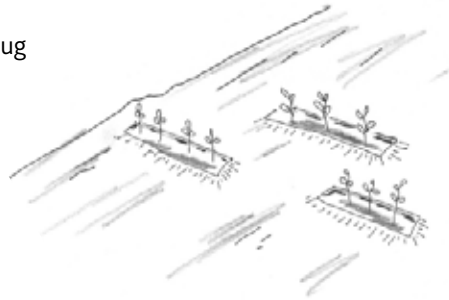
Minimum tillage



Minimum (or *reduced*) *tillage* means planting seeds into small holes, without ploughing or hoeing the whole field. Waste plant material (called *mulch*) can be placed between the growing plants to reduce water loss and control weeds.

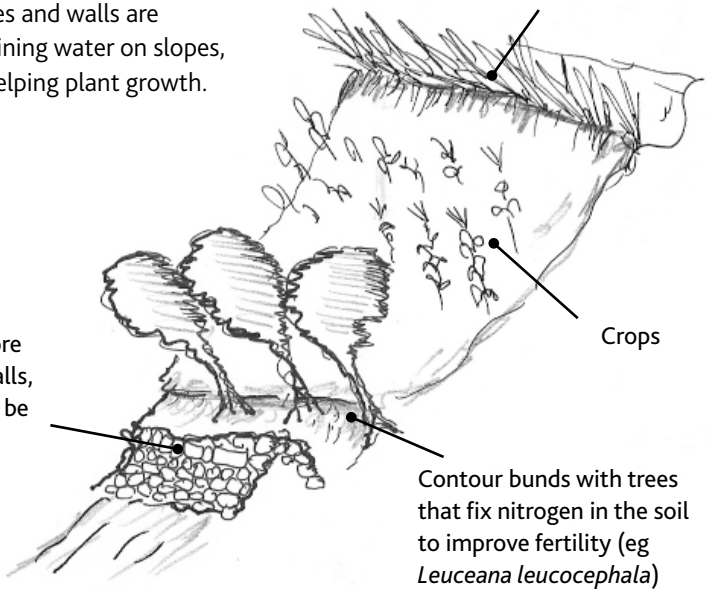
Contour trenches

Contour trenches are small sets of trenches dug across a hillside which capture water. They are easier to dig than terraces (which need a lot of labour), but they still help to collect run-off water for crops. Each of these trenches can be filled with manure and plant waste to improve the yield and fertility of the soil. The trenches can be used each year for a different crop.



Contour bunds, trenches and stone walls

Contour bunds, trenches and walls are additional ways of retaining water on slopes, reducing erosion and helping plant growth.



7

Catchment pits

Catchment pits are small basins made in the soil into which seedlings are planted. The basins collect early morning dew water as well as occasional rain. They can be improved by spreading a mulch of dry leaves around the plant to reduce loss of moisture

Catchment pit

by evaporation. On a slope, they can be adapted to have a crescent of soil which acts as a barrier to collect any run-off. They are sometimes referred to as half-moon pits.

Half-moon catchment pit

Windbreaks and shelterbelts

Windbreaks help to reduce water loss by evaporation when the wind blows across the surface of the soil and plants. They are made of trees planted around the edge of a field, or a series of lines of trees running parallel to the crops. In some cases it is appropriate to plant tree types which fix nitrogen and improve the soil.

Alley cropping (or agroforestry)

Alley cropping is a technique for combining trees and crops which helps to improve poor soils by adding nutrients and improving soil structure. It provides fodder for livestock and protects the soil from heavy rainfall.

Rows of suitable trees are planted about 5m apart, usually by sowing seeds directly into the soil in the rainy season. Crops or vegetables are planted between the rows of trees. On sloping ground the rows must be planted along the contour – across the slope. Alley cropping may also give some protection during irregular rainfall, as the rows of trees help to trap rainfall in the soil.

The tree seeds are planted close together, so the young trees form a hedge. If possible, try to mix several different types of tree. Once the trees reach shoulder height (about 1.5 metres high) they should be cut right back to 20–30cm in height. The leaves can be left on the ground as a mulch which will rot down and add nutrients to the soil. Alternatively, leaves can be collected and used as animal fodder. The remaining stumps

quickly grow back and the cutting can be repeated for many years. Without regular cutting the trees will grow tall, develop thick trunks and compete with the crops.

It is a good idea to cut some of the trees' lateral roots with a spade to encourage the development of a more efficient fibrous root system, and reduce competition with the crops for essential nutrients.

Recommended species of tree for alley cropping

Latin name	Where found	Some common names
Acacia albida	Africa, Middle East, India and Pakistan	acacia, haraz, kad, winter thorn
Calliandra calothyrsus	Central America and Mexico	calliandra, cabello de angel, barba de gato, barbillo, barbe jolote, clavellino
Cassia siamea	Malaysia	cassia, sele, amarillo, kassod
Gliricidia sepium	Central America and the Philippines	gliricid, cacahuananche, madre de cacao, madriado
Leucaena leucocephala	Asia and Africa	leucaena, guage lamtoro, ipil ipil, subabul
Moringa oleifera	Asia and Africa	moringa, arzantiga, mbum
Sesbania	Asia, Africa and the USA	sesbania, agati, bagphal, pan hatiya, tuwi
Fast-growing trees suitable for semi-arid areas: *Acacia albida, Cassia siamea, Leuceana leucocephala, Moringa oleifera*		

7

Mulching

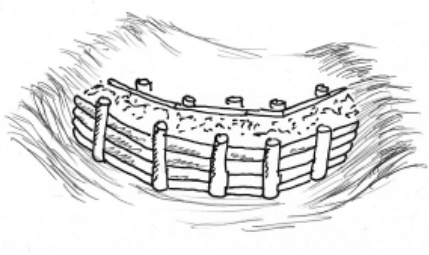
A *mulch* is a ground cover that prevents the soil from being blown or washed away, reduces evaporation and controls the growth of unwanted weeds. Mulches can be made from unwanted stems and leaves from a crop, or from materials such as plastic sheeting. The process of making and using a mulch is called *mulching*.

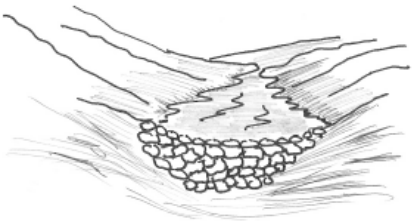
Water management

The second category of measures to cope with drought includes a number of ways of capturing and using surface water.

Check dams

Check dams are temporary structures built across a stream or gulley, to retain water. They are constructed using locally available materials, such as brushwood and rocks. An example is shown here.





Percolation ponds

Percolation ponds store water for livestock and recharge the underground water reserves. They are constructed by excavating a depression to form a small reservoir, or by building an embankment in a natural gully to form a barrier.

If you are planning to block a stream, make sure that this does not create conflict with water users downstream. It is usually good to have a spillway (an overflow channel), allowing some water to pass the dam and preventing excess water pressure from building up after heavy rain.

Crop management

In drought areas, crop production has to be maximised, and losses which are not related to drought must be minimised.

Pest problems

Pests can greatly reduce crop yields in the field. Where possible, try to control them, but avoid using expensive and harmful pesticides. Most pests can be contained by 'intercropping' – planting different crops together in the same field. Herbs planted round the edge of the garden will also help to repel pests. Make your own safe sprays by using strong-smelling substances such as chilli, garlic, pawpaw leaves and castor-bean leaves.

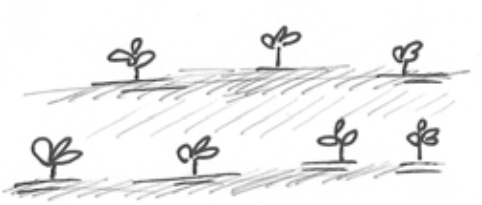
Animals eating crops

To prevent animals eating your crops, plant fast-growing trees which will provide a live fence. If available, use nitrogen-fixing trees such as *Leucaena* which will improve the soil. In other situations, more prickly plants might be appropriate, such as sisal and acacia thorns.

Drought-resistant crops and vegetables

Where possible, choose crop types that are known for their drought-resistant qualities. Such crops include millet, sorghum, and root crops such as cassava, yam and sweet potato. There are also many traditional crops which are not necessarily high-yielding but do have drought-resistant qualities. Sometimes, governments have reduced the cultivation of traditional crops in favour of maize or cash crops – but if seed is still available, such traditional crops may be more suitable for the current and future climate. Planting vegetables outside the main growing season, called *market gardening*, is a way of increasing family income, but may need extra water for irrigation.

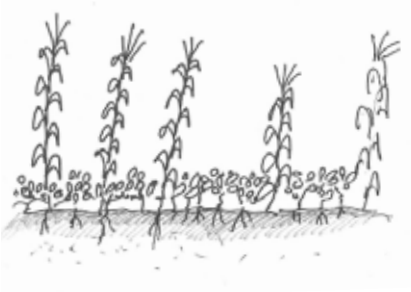
Wider spacing



Farmers in drought-prone areas must raise a good crop even in dry soil. Create bigger spaces between the rows and between the plants in the rows. This reduces the plant population and reduces competition for scarce soil moisture.

Increasing soil fertility

Soil fertility is essential for good crops. The use of animal manure and well-rotted compost will increase fertility and improve water retention. Fertility can be further improved by using plants such as legumes, mixed with the main crop. Legumes help to trap more nitrogen into the soil as an alternative to chemical fertiliser.



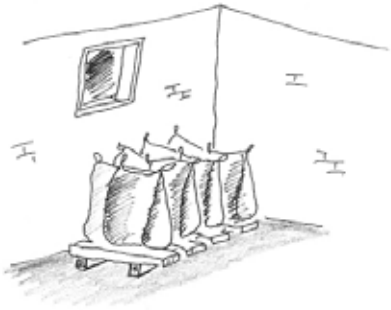
Food storage and cereal banks

Harvested crops which are not stored properly suffer from rodent and insect damage, and if they are stored in a damp area they can quickly rot. A key strategy for food security is to ensure proper conditions for storing harvested crops. Many traditional methods used in the past were effective but still incurred some losses. Those losses can be minimised by some improvements.

Room storage

Grain stored in a room, either swept up in a corner or packed in bags, is often damaged by rodents, insects or damp, and losses can be high.

Storing the grain in bags raised off the floor, with a tight-fitting door, will help to reduce losses. Turning the bags every few days will help to reduce insect damage.

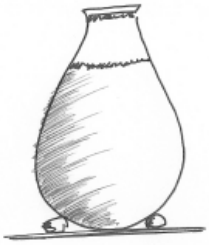


Traditional basket store

The basket store is a traditional African method of storing maize which involves placing a large wicker basket on stilts and putting a grass thatch roof on top. On each of the stilts there are metal covers which stop rodents climbing up into the basket. If these stores are well maintained they can be highly effective. However, in times of crisis they are not secure from local theft.

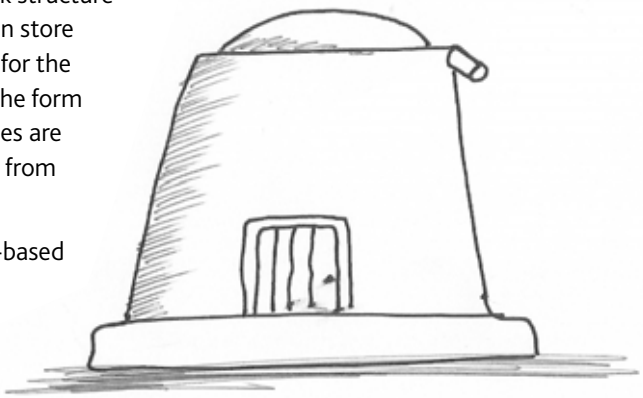
The earthenware pot

The earthenware pot is a small-capacity receptacle used to store grains for daily consumption. Earthenware pots are both dry and rodent-proof. Smaller pots are suitable for seed storage, especially if the lid is sealed after a lighted candle has been placed inside (the candle uses up oxygen, killing insect pests).



Cereal banks

A cereal bank is usually a brick structure built on a concrete base. It can store a large amount of local grain for the community. Cereal banks in the form of metal cylinders with hatches are also sometimes seen, shaded from direct sun.



Cereal banks are community-based institutions (or are based on a cooperative run by a village or a group of villages) that buy, store and sell basic food grains.

Most cereal banks offer farmers the opportunity to store their harvest in a community warehouse and to wait until prices increase before selling their surplus in the market. Farmers do not have to sell their harvest immediately, when prices are lowest.

Cereal banks can also benefit the most vulnerable people in the community. Grain purchased at harvest time is resold during the hunger gap at an affordable price. People do not have to pay the inflated prices demanded by greedy merchants.

An alternative system is to have everyone put in grain and then, during times of crisis, to make this grain available for members of the community. In this way the cereal bank works as a mutual benefits/insurance society. Each person who has contributed to it can receive grain at a time when it is most needed.

When food reserves have been used up, an empty bank can be used to store emergency food supplies.

What makes a cereal bank successful?

A number of factors help to make a cereal bank successful, including the following:

- Strong community spirit and motivation to work together.
- Development of a good business plan.
- Competent management of the bank, to ensure accountability to its members and good systems for managing the purchase and distribution of grain.
- Regular maintenance to ensure the food is safe from pests and remains dry.
- Sufficient local cereal production to make sure the bank can be restocked.

- Availability of a community building with sufficient storage capacity and good conditions (ventilation, raised wooden platform, pest control, etc).
- Agreement to add an administration charge at time of deposit or time of sale. This is used to pay for protection measures against pests and to cover other losses and maintenance costs.
- Arrangements to ensure banks do not lose money between stocking and restocking time, in order to keep economic sustainability.

What are the benefits of a successful grain bank?

A successful grain bank:

- provides better marketing services for farmers and consumers at the community level at critical periods of the year
- protects farmers and consumers against market price fluctuations, and limits speculation and hoarding
- improves the availability of cereals within the community and may create local emergency stocks
- strengthens community organisation, cohesion and planning capacities

Common errors to avoid

Experience has highlighted some common errors to avoid, including the following:

- Providing grain on credit, which often results in defaults.
- Corruption among the management, misusing the funds.
- Theft of cash and grains from warehouses if these are not secure.
- Selling or lending grain at below-market rates in a relatively competitive market.
- Inexperienced, slow, collective decision-making processes.
- Social pressures on management, leading to bad decisions on timing and pricing of purchases and sales.
- Lack of incentive and motivation to manage a cereal bank, as it can be time-consuming and offer limited private benefit. A church may be able to make the system work, if trusted competent people are in charge.

Case study

The Ateli grain bank, Burkina Faso

Ateli is a village of 1,000 people. The men of the village set up a group in 1982 during a time of famine. One of their objectives was to work together to achieve self-sufficiency in food, and in 1986 they began the community grain bank project to improve food security. The group asked for help from a local Christian NGO, which agreed to provide the credit they needed to begin work. A well-built community grain store was constructed with the full participation of villagers.

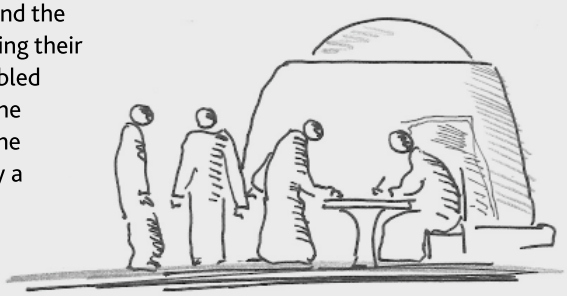
Operation

A committee was selected to look after the management of the grain bank. Ateli chose well, forming a dynamic committee. The members of the committee received training in grain storage and marketing, and were given credit so that they could buy grain at the end of the harvest season when prices were low. The credit was given in two instalments over two successive years, in order to reduce risk in the first year. Ateli purchased five tonnes of grain in the first year and another five tonnes in the second year. Repayment was to be made within five years.

Since 1988, Ateli has stored several types of grain in its grain bank. Grain prices are fixed by the village group to provide a balance between the low grain prices at the end of harvest and the high prices charged by traders later in the year. When food is in short supply, grain is sold to villagers on a regular basis. Ateli has been able to pay back the loan in just four years.

Impact of the project

The villagers of Ateli have warmly welcomed the grain bank and they understand the advantage of safeguarding their grain. The bank has enabled households to survive the three rainy months of the year which are normally a time of shortage.



Some problems

- One difficulty has been bookkeeping. In this rural environment, most people cannot read or write. Management of the grain bank requires good record-keeping.
- If grain is given on credit to help people during the most difficult periods, there can be a problem recovering debts, and the committee must be very patient.
- The initial loan was repaid, so the only funds the grain bank had for its operations was the slight profit it made during the five years of credit. This made it difficult to buy enough grain in advance for all village households.

Some solutions

- The churches played an important role in teaching literacy and numeracy so that better records could be kept.
- To increase the buying power of grain banks, the local NGO offered fresh loans to all well-managed grain banks, including the bank at Ateli.
- The NGO will continue to provide some follow-up and support for committees, even after loans are repaid, until they judge the community organisation is sufficiently in control and the project is sustainable.

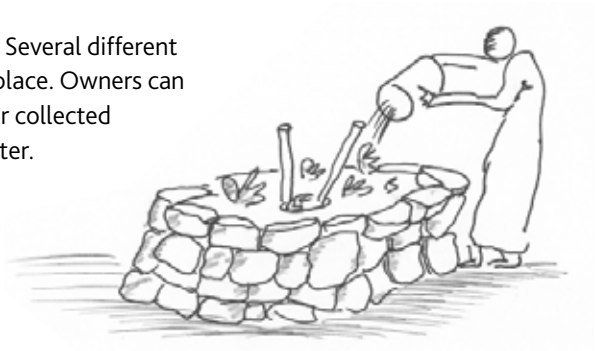
Food security in urban areas

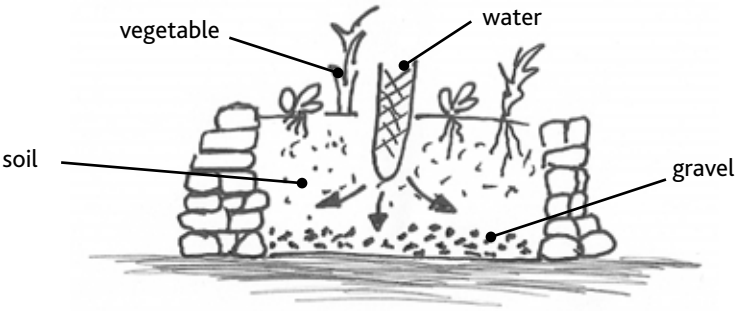
People living in cities usually do not have access to fields to grow their own food, and have chosen a different livelihood. Many live in slums or apartment blocks. They are more dependent on finding food available in the local market at affordable prices. They may often experience food insecurity, not because their own crops fail but because prices are too high or their own income is too small. However, there are still opportunities in urban areas for families to grow their own food. This can be in the form of keyhole gardens or containers, as described below. Land can sometimes be accessed in schools, church compounds and other community centres.

Keyhole gardens

A keyhole garden is a simple structure made from stones, which acts like a large basin. It is filled with soil and plant waste and used for growing vegetables. A hole is kept in the centre and filled with compost. The advantage of keyhole gardens is that

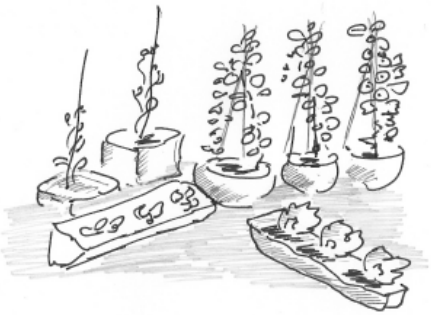
they don't take up a lot of space. Several different crops can be grown in the same place. Owners can water their garden with rainwater collected from the roof and with waste water. Water is usually added via the compost in the centre.





Container gardens

Another way to grow food in cities is to use old discarded containers of either plastic or metal. Sand and gravel are added at the base to help them drain properly, then they are filled with soil. The advantage of this method is that the containers can be moved around and can take up unused areas such as balconies and flat roof spaces.



Yet another method is to support a plastic sack between bamboo poles and fill it with soil and compost. Cut holes in the sides of the bag to plant vegetables, and plant other vegetables in the top.

Alternative livelihoods

For many city dwellers, these gardening options might not be possible. Churches may be able to find NGO support to start alternative income generating schemes, for individuals or groups, for example, small businesses, tailoring or tea shops.

Managing livestock in drought

Herd management is an important strategy for drought mitigation, because many people groups rely on animals as their main livelihood. Factors to be considered include the expected length of the drought, the current water and feed supplies, the composition and health of the herd, and the financial resources available. Some suggested methods of managing herds are given below.

Reducing herd numbers

When there is a shortage of grazing areas or water resources, one solution is to assess the animals and sell those that are less useful, eg older animals or surplus males. Another solution is to move part or all of the herd to pastures which are less affected by drought – sometimes this may be many miles away.

Strategic weaning of calves

During a drought, the production of milk rapidly uses up a cow's body reserves. Weaning the calf gives the cow a better chance of survival. However, the decision to wean must be made in relation to the time of year and the age of the calf. In drought years, early weaning is recommended. Calves should not be weaned before they are three months old, so that they get the best possible start in life and gain all the benefits of the mother's highly nutritious milk.

Controlling parasites

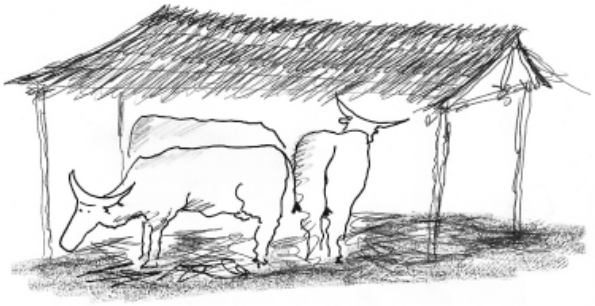
Cattle under nutritional and other stresses are less resistant to parasites and diseases than they would be in normal conditions. Worms can be a serious problem with young cattle. If a drought looks likely, all cattle under 18 months of age should be treated with appropriate medicine for worms. Healthy animals will survive for longer periods when food is scarce.

Avoiding contaminated water

Polluted surface waters can be dangerous for drought-weakened cattle. Fencing may be necessary to keep cattle away from undesirable water holes. Salinity can also be a problem in drought conditions: if the level of the underground water table falls, the water may become too salty for the animals to drink safely. In extreme cases, supplies of good water will need to be brought in by cart or tanker.

Providing shade

Try to find pasture near trees that can provide shade, or build temporary shelter from bamboo and grasses where the cattle can rest at the hottest part of the day.



Methods of grazing

A common problem during drought is that pasture dries up and there are no alternative foods for the animals. This tends to happen when the herds are too large. It may be possible to establish a more organised system of grazing by using fenced paddocks.

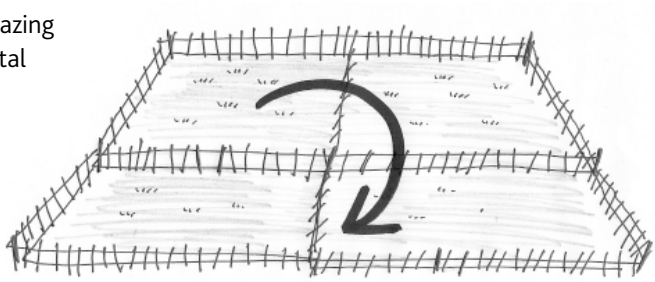
Managed grazing can also involve planting new grasses, and harvesting fodder crops so that you can feed livestock during the times when natural pasture is not available.

Paddock grazing

The method of paddock (small pasture) grazing is suitable when grass is growing well and faster than the animals can eat it. Any surplus grass can be cut and made into hay (cut and dried grass). Grass is cut before it flowers, to leave 50–100mm of stubble. Grass which contains the flowering heads does not make good hay.

Deferred grazing

Where grazing land is of poor quality, cows may walk around for two miles or more in a day, just to find grass. The pastures will be large and may need long rests to recover from a period of grazing.



To use the deferred grazing method, divide the total grazing area into four paddocks. The whole herd then spends four months in each paddock. When the four months are up, the herd moves to the next area, and so on. In this way, it is 12 months before the first paddock receives cattle again, so it gets a whole year to rest and recover growth.

Improving pastures

- Plant or sow seeds of valuable grasses and legumes during the wet season (see below for suggested types).
- Before pastures become too mature, either cut them or graze them. This will ensure that the younger grasses are fed to the animals, giving them better-quality food. At the same time, make sure the pastures are not overgrazed, because this can kill off the more nutritious grasses.
- Leave the cattle in one place long enough for them to eat the good and the not-so-good grasses. If you move the cattle too soon, only the better types of grass will be eaten and the poorer types will remain, with the result that thorn scrub may eventually take over the land.

Some valuable grasses for cattle food…

Pasapalum – good for grazing

Digitaria – good for hay

Pennisetum – 10–15 tonnes of silage per hectare after 3 months

Centrosema in leaf – valuable fodder legume and green manure crop

BIBLE STUDY

Famine and a future king Ruth 1–4

Background

The story of Ruth is set in the Old Testament, in the time of the judges, before Israel had a king. A man called Elimelech, his wife Naomi and their two sons lived in Bethlehem, in a fertile farming area. A famine occurred at that time, possibly as a result of drought, or possibly because raids by neighbouring tribes made it hard to grow food. Elimelech chose to migrate with his family to the land of Moab – surprisingly, because the Moabites (descendants of Abraham's nephew Lot) worshipped other gods and were sometimes hostile to the Jews.

Shortly afterwards, Elimelech died. His sons Mahlon and Kilion married Moabite women, Ruth and Orpah, but after about ten years tragedy struck again and both men died. Naomi was left with no husband, no sons and no grandchildren. On hearing that food was again available in Bethlehem, she decided to return home. She begged her daughters-in-law to stay in Moab and remarry. Orpah agreed, but Ruth insisted on returning to Bethlehem with Naomi, saying, 'Where you go, I will go, and where you stay, I will stay. Your people will be my people and your God my God' (Ruth 1:16).

The chapters which follow reveal much about the ancient culture and customs of Israel. Naomi and Ruth, as poor returnees, are kept alive by the coping systems for the poor and by the intervention of a rich relative – 'a kinsman-redeemer' (Ruth 2:20). Ruth's loyalty and good character are rewarded. She marries Boaz and becomes the mother of Obed – the grandfather of Israel's greatest king, David (Ruth 4:16-17).

Key points

- Disasters, such as famine, can cause migration and the breakdown of normal social life. Family members may be lost. However, God is faithful to his people, and his love does not change, even in times of darkness and despair.
- God has his own bigger plans and purposes for his people. Human tragedy and loss may slow down those plans, but God can use these setbacks to achieve his ultimate goals.

- Every society has its coping mechanisms which enable people to survive in times of hardship. Any outside help in times of disaster must recognise and strengthen these systems, not undervalue or spoil them.

Questions

1 *The famine in Bethlehem caused Elimelech and his family to migrate to Moab. Why do you think he chose a land where other gods were worshipped, and a people who were sometimes hostile to his own? In times of hardship, how do people today decide where to migrate?*

2 *While they are in Moab, Naomi's husband dies, followed a few years later by her two sons. She decides to return home, and her daughter-in-law Ruth is determined to go with her. How was Naomi feeling when she reached Bethlehem (Ruth 1:19-22)? To what extent do we blame God when we experience times of crisis in our own lives?*

3 *Naomi and Ruth arrived at the time of barley harvest. (Barley is a cereal crop similar to wheat.) What custom does Ruth follow which allowed poor people to share in the harvest (Ruth 2:2-3 and 5-7)? Does your culture have any similar systems for helping poor people?*

4 *How was Ruth treated by the owner of the fields where she worked (a man named Boaz)? Why did he show this kindness to her (Ruth 2:8-13)?*

5 *Naomi recognises Boaz as a relative of her late husband. How does her attitude to God begin to change (Ruth 2:19-20)? What evidence can you find of God's kindness to Ruth and Naomi, even though Ruth was a foreigner? How do we treat foreigners in times of disaster?*

6 *The Israelites had a system of 'kinsman-redeemers' who were usually relatively wealthy. The kinsman-redeemer was responsible for looking after needy members of his extended family. How does Boaz fulfil his duty as kinsman-redeemer to Naomi (Ruth 4:1-10)? How does he deal with the fact that Naomi has a closer relative?*

7 *The story has a happy ending: Boaz buys Elimelech's land from Naomi and marries Ruth (Ruth 4:9-12). The couple have a baby son and name him Obed. How does Obed fit into God's bigger plans for the nation of Israel (Ruth 4:16-22)? How does God act as 'kinsman-redeemer' later on, through another baby born in Bethlehem?*

Review of this chapter

- *What are the main impacts of drought and food insecurity on your community?*
- *How would you best use the household food security assessment forms so that they are appropriate and relevant to your local situation?*
- *What traditional methods of coping with drought have been used in your community?*
- *Why do women and children often suffer greater hardship than men during times of drought? How could the church respond to the particular needs of women and children during drought?*
- *What new mitigation measures could your community adopt to reduce the impact of drought?*
- *What methods of food storage are used most commonly in your community? How could they be improved?*
- *What are the common errors made in the management of cereal banks and how can they be avoided?*
- *What are some of the best ways of managing livestock in drought situations to help them survive?*
- *What are some ways of producing food in urban areas where there is little land?*

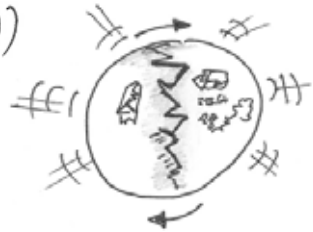
8 Earthquakes

Introduction

An earthquake is a sudden shaking of a section of the Earth's outer rocky surface. Over the years, huge plates that form this surface move slowly over, under and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to move to release the accumulating pressure. When the pressure grows strong enough, the plates break free, causing the ground to shake sideways or up and down. Most earthquakes occur at the boundaries where the plates meet. When the quake has finished, the land may be higher or lower than before, there may be cracks in the ground, and sea level may appear to be higher or lower than before.

1. Movement of the Earth's plates towards each other.

2. The plates collide and cause an earthquake.



3. Following an earthquake there are sometimes aftershocks.

8

Earthquake impact and aftershocks

In a desert or remote mountain area, an earthquake may be relatively harmless. However, when it occurs in a populated area, it may cause deaths and injuries and extensive property damage. Infrastructure, such as roads, bridges and railways, will be badly damaged. Sometimes essential emergency services, such as hospitals, will themselves be destroyed. There are likely to be secondary impacts also: an earthquake may trigger landslides, avalanches, flash floods, fires and tsunamis, which can have a much wider impact many miles from the epicentre of the quake.

Ground movement during an earthquake is rarely the direct cause of death or injury. Ninety-eight per cent of all earthquake deaths occur as a result of buildings and structures collapsing. Buildings with foundations on unstable ground, or with walls not tied securely to the foundations and the roof, are at high risk of structural failure and collapse. Sadly, building regulations in urban areas are often not followed, and the systems to enforce the laws are weak. There is a well known saying: 'It's the buildings that kill the people, not the earthquakes.'

Aftershocks are smaller earthquakes that follow the main shock and can cause further damage to weakened buildings. Aftershocks may continue for several months after the quake. Sometimes, an earthquake may actually be a foreshock, heralding a larger earthquake coming soon.

In addition to structural damage, gas, electricity, water and phone services may all be disrupted. Minor injuries are caused by flying glass and falling objects. Much of the damage and injury in earthquakes is predictable and can be prevented, either by improving the design of buildings or by acting on the simple guidelines below.

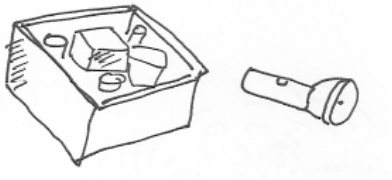
Preparing for earthquakes

Personal safety

You should take the following steps to protect yourself and others:

- Make sure you know about the fire evacuation procedures and any earthquake plans for all of the buildings you occupy regularly, including the church building.
- Identify safe places in each room of your home, workplace or school. A safe place could be under a piece of heavy furniture or against an interior wall – away from windows, bookcases or tall furniture that could fall on you.
- Practise the earthquake procedure of **'drop, cover and hold on'** in each safe place. **'Drop'** means sit down to the floor. **'Cover'** means protect your head using a school-bag or cushion. **'Hold'** means grab hold of some solid furniture. If you do not have sturdy furniture, sit on the floor next to an interior wall and cover your head and neck with your arms.
- Make sure everyone in your family knows the correct action to take, especially children.
- Keep a flashlight (or candles and matches) and shoes by each person's bed at night, plus a bottle of drinking water (changed regularly).
- Place all furniture at the sides of your room and store any heavy objects such as sewing machines on the floor, not on high shelves. Consider ways of attaching heavy cupboards and bookshelves to the wall with hooks and brackets.
- Make sure that all high-up cupboards or cabinets are shut, and locked if possible, at night.

- Be alert to any unusual behaviour by many birds or animals at the same time. This has happened before other earthquakes and may be a signal that tremors are coming soon.
- Learn how to shut off the gas valves in your home (if applicable) and keep a wrench handy for that purpose. It is a good idea to turn off gas at night, or if leaving the house. (Many fires result from leaking gas after a quake.)
- Keep and maintain an emergency supplies kit in an easy-to-access location. This kit should include flashlight, matches and candles, First Aid materials, basic medicines, water and some dry food supplies. A cooking pot may also be useful.



Church and community preparedness

Churches in earthquake-prone areas can do several things to prepare for a possible earthquake:

- Raise awareness about earthquakes and train all church members, young and old, on the correct action to take if an earthquake begins (see 'Personal safety' above).
- Assess the risks in the church building and seek to minimise them (eg are there items on high shelves, or heavy furniture items which could fall and cause injury?).
- Practise an evacuation from the church, in case a quake occurs during a service.
- Develop a contingency plan, so that the church will be able to assist its members and the wider community after a quake. Link this plan with local government plans. Consider how the immediate needs for rescue, medical care, food, water, shelter and emotional support will be met, and ensure that everyone knows this plan.
- Identify safe assembly points for each group of buildings, so that a 'roll-call' can establish who might be trapped in rubble.
- Consider training a team of volunteers to lead the immediate rescue efforts (before outside help arrives) and to provide emergency First Aid (see Chapter 2, pages 41–45 and 62–66).
- Consider keeping a few basic tools – shovels, crowbars, saws, ropes etc – in a store, box or cupboard outside the church building. This can be locked, but there should be multiple keys kept by several church and community leaders. There must be quick and easy access to these tools in an emergency.

What to do during an earthquake

If you are inside when the shaking starts, take the following action:

- Drop, cover and hold on, as practised before. Move as little as possible.
- If you are in bed, stay there, curl up and hold on. Protect your head with a pillow.
- Stay away from windows to avoid being injured by shattered glass.
- Stay indoors until the shaking stops and you are sure it is safe to go out. If you think the building has been damaged, leave it after the shaking stops, using stairs rather than a lift, in case there are aftershocks, power cuts or other damage.

- If you are outside when the shaking starts, find a clear area (away from trees, hoardings, road signs, power lines, buildings, etc) and drop to the ground. Stay there until the shaking stops.
- If you are in a vehicle, pull over to a clear location and stop. Avoid bridges, overpasses and power lines if possible. Stay inside with your seatbelt fastened until the shaking stops. Then drive carefully, avoiding dangerous cracks in the road and bridges and ramps that may have been damaged. Watch out also for landslides which may have blocked the road or removed a section of the road.
- If a power line falls on your vehicle, get out with great care, not touching cables or metal car parts.
- If you are in a mountainous area or near unstable slopes or cliffs, be alert for falling rocks and other debris. Earthquakes often trigger landslides.

What to do after an earthquake

When the shaking stops it does not mean that the danger is over.

Here are some things you should do after an earthquake:

- Expect and prepare for potential aftershocks, landslides and fires.
- If you are living near the coast, expect a tsunami (a very large wave) and move to higher land quickly. Watch the behaviour of animals: some may instinctively run to high ground.
- Look quickly for damage in and around your home and get everyone out if your home is unsafe. Try to put out any small fires and turn off gas valves.
- Check yourself for injuries. Control heavy bleeding before helping other people who are injured or trapped. If you have sustained more serious injuries, you may need to seek medical help, and be unable to assist others.
- Make sure that all members of your family are safe. Mark the location of any relative or neighbour who you know is trapped under a building, and seek help. Try to pass water and wound dressings through gaps to trapped or injured people.
- Each time you feel an aftershock, follow the earthquake rule: drop, cover and hold on.
- Check the telephones in your home or workplace to see if they are working. Make brief calls to report life-threatening situations to the local authorities.
- Listen to a portable, battery-operated or hand-crank radio for updated emergency information and instructions.
- Open cupboard and cabinet doors carefully, as the contents may have shifted.
- Help people who require special assistance, such as infants, children and elderly or disabled people.

- Watch out for fallen power lines or broken gas pipes and stay out of damaged buildings until the authorities say they are safe. If it is essential to enter a building (eg to rescue someone), follow the procedure outlined below.

- Keep animals under control: they may become agitated or aggressive after a quake.
- Be careful when driving, as roads may be severely damaged and dangerous in places; landslides may block the road or sweep it away.

Entering buildings

The points listed below are relevant to everyone, but especially those living in urban areas with gas, electricity and water supplies.

- When entering buildings, use extreme caution. Building damage may have occurred where you least expect it. Carefully watch every step you take.
- Examine walls, floors, doors, staircases and windows to make sure that the building is not in danger of collapsing.

- Check for gas leaks. If you smell gas or hear a blowing or hissing noise, open a window and quickly leave the building. Turn off the gas if there is an accessible valve.
- Look for electrical system damage. If you see sparks or broken or frayed wires, or if you smell burning insulation, turn off the electricity at the mains switch or circuit breaker. Avoid stepping in water if the electric power is still on.
- In a city, check for broken water pipes or damage to sewage systems. Water may have been polluted by sewage or household rubbish.

Church response to an earthquake

Church response to an earthquake will depend partly on the amount of preparation done beforehand. If there is a disaster management committee (see Chapter 2, page 39), a team of trained volunteers (Chapter 2, pages 41–45), a clear contingency plan or available tools and First Aid equipment, the response will be quicker and more effective.

In reality, earthquakes are uncommon and mostly difficult to predict, so they often occur in places which are unprepared. This was true of the January 2010 earthquake

in Haiti, but many urban churches in Port-au-Prince still took action to accommodate and feed hundreds of people in their compounds.

Here are some more ideas:

- Church volunteers may be able to help with search and rescue. Medically trained members can give emergency First Aid for people who have been injured.
- Survivors may be accommodated in a church compound. If the church building, church hall or school is still standing and in safe condition, it could be used as temporary shelter.
- Emotional help and counselling can be offered for people who are bereaved and upset, plus prayer support.
- Funerals and burials will certainly be needed, and should be conducted in culturally appropriate ways.
- As well as shelter, immediate needs are likely to be for water, food, toilets and medical help. The church may be able to arrange some of these through contacts with the local authorities or with NGOs, or by using the labour of its volunteers.
- Care for children and the protection of vulnerable orphans should be a priority for the church. Sunday School teachers and church leadership should be trained to be able to identify those most at risk and take steps to care for them and protect them from abuse and exploitation. Churches should create a safe and secure environment for children and that means zero-tolerance towards child abuse and exploitation. For support please refer to Tearfund's Child Protection Policy: http://tilz.tearfund.org/Topics/Child+development/Child+Protection+Policy.htm

More information can be found in Chapter 2: 'Organising ourselves' (pages 37–68) and Chapter 4: 'Displaced people' (pages 95–131).

Earthquake damage mitigation

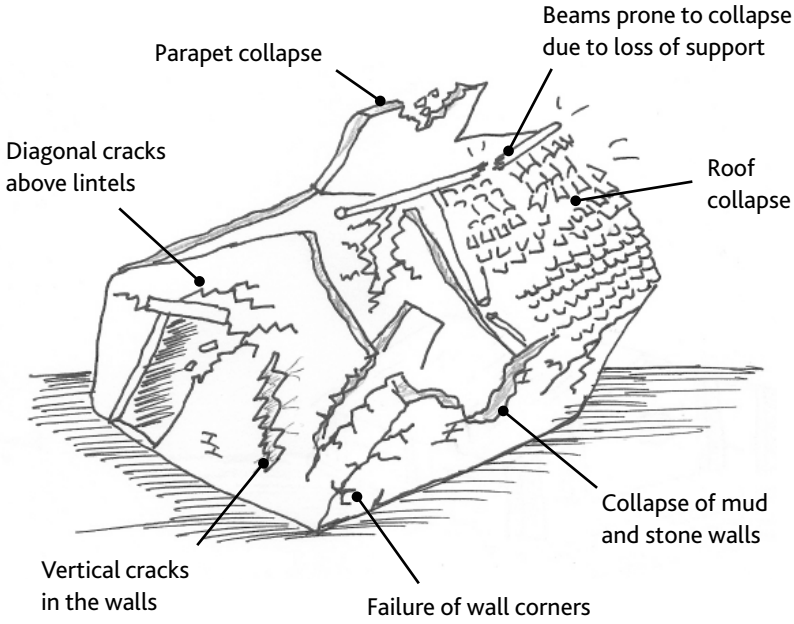
Earthquakes are the result of massive forces working in the earth below us, but it is still possible to limit damage and to reduce deaths and injuries.

Some possibilities include:

- improving the design of new houses and buildings so that they are more earthquake-resistant, and avoiding weak, non-resistant extensions
- making existing houses and buildings (including churches) more earthquake-resistant by adding additional strength to key parts of the structure and foundations

- avoiding areas which could be at high risk following an earthquake, eg hillsides vulnerable to landslides, and flat coastal lands at risk from tsunamis.

The picture below highlights the main impacts an earthquake can have on a building. Studying the points of building failure can help us to build structures that are more resistant to earthquakes.

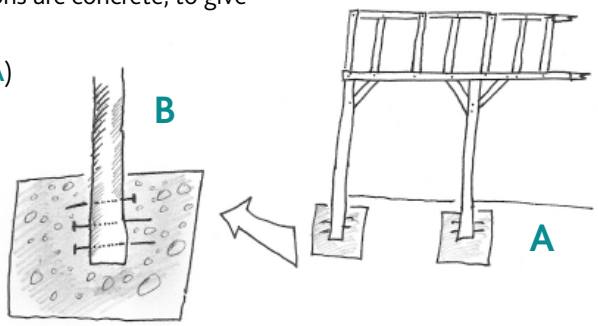


Building low-cost earthquake-resistant housing

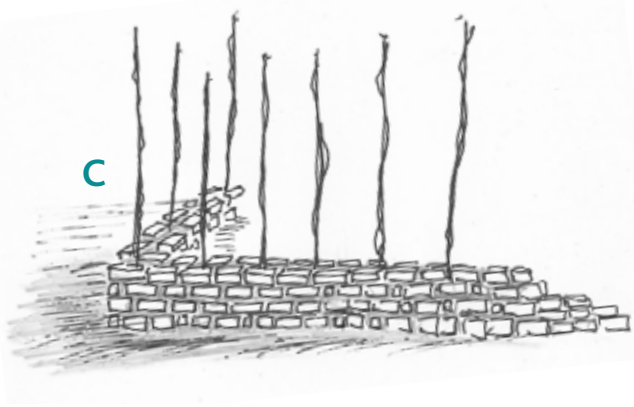
Here are some tips for building earthquake-resistant housing at low cost. They apply to adobe (sun-dried brick) construction. They are also useful in constructing new church buildings or strengthening existing ones. Some of the points are a little technical, but they should be understood by anyone who is a housebuilder or contractor. Earthquake-resistant features may vary for other types of construction.

- Try to build one-storey structures only. Two or more storeys are likely to collapse.
- Houses in places with cold winters often have a heavy roof made from beams and compacted earth. These are highly dangerous – it is much better to use an insulated lightweight roof instead. Lightweight metal sheets are less likely to injure people in an earthquake, although in a cyclone, with high winds, metal sheets blow around and cause many casualties.

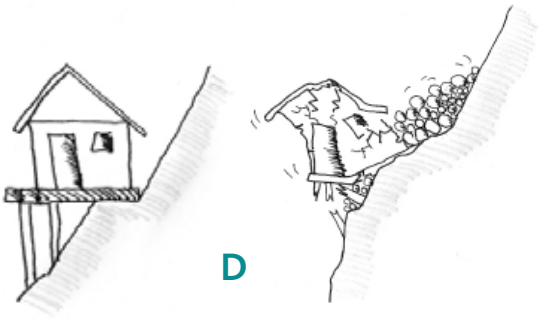
- Arrange the wall layout to provide mutual support by means of cross-walls and intersecting walls at regular intervals in both directions, or use buttresses.
- Keep the openings in the wall small and well spaced.
- Make sure the foundations are concrete, to give greater stability.
- Use wooden columns (A) treated with tar or pitch to protect them against humidity, concreted into the ground and with nails embedded in the wood at the base to give extra anchorage (B).



- Reinforce the walls with bamboo rods (C) to provide greater stability.
- Strengthen the roof by nailing roofing material to roof beams and tying the beams to the vertical posts with roof wires or metal bands, to guard against strong wind and earth movement.
- Stabilise adobe with a small amount of cement to give extra strength.



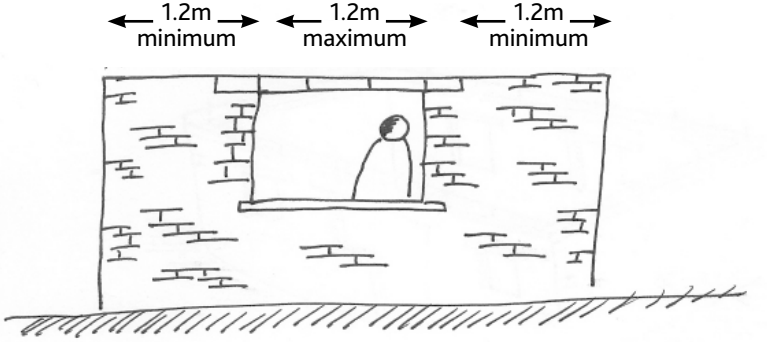
- Reinforce the corners of the building with extra brickwork or buttresses.
- Reinforce lintels with wire mesh or steel rods.
- Avoid building on steep slopes. Buildings supported by pillars on slopes are likely to collapse (D).



Strengthening the walls

Walls are the main load-bearing elements in an adobe building. They can be made more resistant to earthquakes in the following ways:

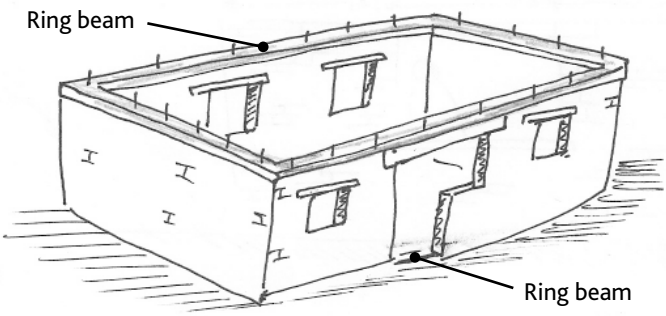
- The wall height should not exceed eight times the wall thickness at the base, and the wall should not be more than 3.5m high.
- The unsupported length of the wall between the cross-walls should not exceed ten times the wall thickness, with a maximum of 7m.
- Wall openings should not exceed one-third of the total wall length.
- No opening should be wider than 1.2m.
- Sections of wall between openings should be at least 1.2m in width.



Ring beams

A ring beam (also known as a crown, collar, bond or tie beam or seismic band) is a continuous band of wood or concrete around a building, which ties the walls together in a box-like structure. There are usually at least two, one in the foundations and the other just above the windows and doors. They are among the most essential components of earthquake resistance for load-bearing masonry or adobe buildings.

The ring beam must be strong, continuous and well tied to the walls, and it must be attached also to the roof, giving it support. A concrete beam should be reinforced



8

with steel rods. The corners of the building should also be reinforced with vertical steel rods, tied to the ring beams and tied also to the roof structure.

Earthquake resistance is a technical topic and the best solution is to seek advice from a qualified structural engineer, especially if planning a new church or school.

NOTE: Sometimes, buildings are constructed using earthquake-resistant designs, but extensions are then added which do not have the resistant features. The construction process itself may damage ring beams or other essential features, and the whole building becomes weaker. If you are extending a house, make sure that earthquake rules are followed. It is better to add new rooms by the side, not on top of existing rooms.

Building houses, building community

Following a major earthquake, there is an opportunity to use the reconstruction phase to learn new skills and build better, more resistant houses. At the same time, there is a parallel opportunity to strengthen cooperation between members of the community.

The following steps describe a typical process which community groups could follow, perhaps under the leadership of members of the church with appropriate skills.

1. Community meetings are held to review the faults of previous housing designs and to discuss why they were vulnerable to earthquake damage.
2. Members of the community are trained by an experienced architect and builder in how to make low-cost houses which are earthquake-resistant.
3. Families design their own homes, using the suggestions from the earthquake resistance training sessions.
4. Community members then start building, applying their new skills, working in small groups to build each other's houses.

NOTE: In places where building is always done by masons and carpenters, these artisans should be trained in earthquake-resistant construction methods.

Case study

Earthquake-resistant housing in Peru

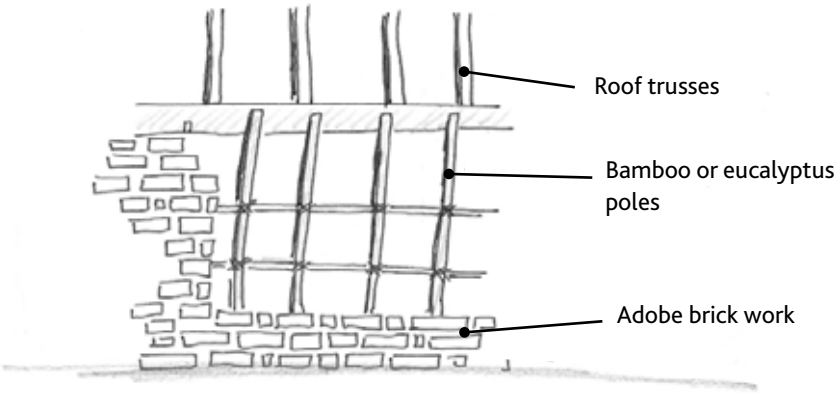
Traditional adobe houses are built of sun-dried brick. They have been used for centuries in Peru and are popular because adobe, consisting of straw and clay, is readily available and inexpensive. The houses can be built by unskilled workers and are fire-resistant. However, adobe lacks the strength to withstand earthquakes.

Adobe buildings house some 65 per cent of the rural and 35 per cent of the urban population in Peru. During the earthquake of 1970, 50,000 people died and more than 60,000 houses were destroyed – a level of destruction that can largely be attributed to traditional housing styles. When an earthquake occurs, the walls of these houses collapse outwards and the dried mud roof, which can weigh up to ten tonnes, falls and crushes the occupants.

The new construction methods include reinforcing the walls with inexpensive bamboo or eucalyptus poles anchored to the foundations, together with horizontal canes tied to the poles at every fourth row of bricks. The poles are secured to parallel wooden beams on top of the walls, which also act as roof supports.

These structural changes allow the walls and roof to react to the vibrations of an earthquake as a structural unit rather than as separate elements. The improved methods were tested at the Pontificia Universidad Católica del Perú on a 'seismic table', which simulates earthquakes. The improvements have succeeded in making the adobe constructions resistant to the force of Peru's most severe earthquakes.

Source: Practical Action Peru



BIBLE STUDY

The Philippian jailer Acts 16:22–30

In the Bible, earthquakes sometimes have a meaning and purpose. At other times, they are merely historical events.

1 KINGS 19:11–12 Elijah flees from Queen Jezebel and meets with God on Mount Horeb. There is a strong wind and then an earthquake and a fire – but God chooses to reveal himself not in these but in a 'gentle whisper'.

ISAIAH 29:6 The prophet writes: 'The Lord Almighty will come with thunder and earthquake and great noise, with windstorm and tempest and flames of a devouring fire.' He will assist his people against their enemies.

AMOS 1:1 AND ZECHARIAH 14:5 A particular earthquake during the reign of King Uzziah is used to mark the date of Amos's ministry, and is referred to as a historical event by Zechariah.

MATTHEW 24:7 Jesus mentions earthquakes (along with famine and war) as future events which will be a sign of his imminent return.

MATTHEW 27:54 AND MATTHEW 28:2 Earthquakes are recorded as occurring in the natural world as signs of major spiritual events – the death of Jesus and his resurrection a few days later.

ACTS 16:22–30 An earthquake acts as a potential jail-breaker! Paul and Silas, in prison in Philippi, are freed by a violent earthquake.

REVELATION 16:18 A tremendous earthquake is recorded as part of the awful events taking place on earth, as seen in John's vision of the future.

Background

Paul visited Philippi during his second great missionary journey, having been guided by the Holy Spirit to cross into Greece from Asia Minor (modern Turkey) (Acts 16:6–12). Philippi was an important city, a Roman colony, where Roman citizens enjoyed many privileges, including freedom from beatings and arrest. It was here that Paul met Lydia, a trader in purple cloth, and she and her family became the first believers in the city – the nucleus of the first European church. However, opposition soon followed (verses 16–22). The local magistrates, ignorant of Paul and Silas's identity as Roman citizens, ordered them to be whipped and imprisoned (verses 23–24).

Paul and Silas, with their feet restrained and in pain from their injuries, spent the night in prayer and praise, with the other prisoners listening (verse 25). During that night, a violent earthquake occurred.

(Earthquakes were well known in New Testament and early church times. Ephesus, another major first-century city, located just across the sea from Philippi, was severely damaged by earthquakes in AD 23, 262 and 614.)

Key points

God used the earthquake in Philippi to free Paul and Silas, but also to bring the Christian message to the jailer and his family and probably to other prisoners. The behaviour of Paul and Silas, first by their singing, then by their refusal to escape, had a big impact upon the jailer and the other inmates. A disaster causes much suffering, but God is still able to bring some good, even from the worst disaster.

Questions

1 *How do you think Paul and Silas were feeling after the traumatic events of the day?*

2 *What was the immediate impact of the earthquake on the prison building, on Paul and Silas, and on the other prisoners (verse 26)?*

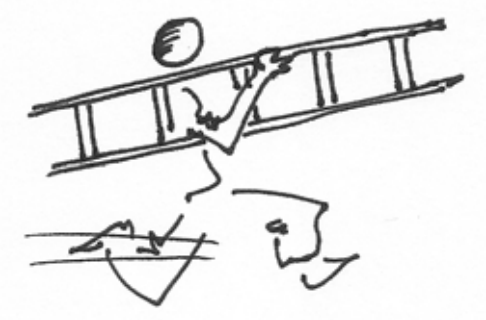
3 *What was the first reaction of the jailer to these events (verses 27–28)? (Jailers at that time would be severely punished for losing their prisoners.) How did he respond to Paul's reassurance that none of the prisoners had escaped? How did life change for the jailer and his family after the earthquake?*

4 *The first believers in Philippi came from different backgrounds. Lydia was from Thyatira in Asia Minor (now Turkey); other believers were possibly Greek. The slave girl formerly possessed by an evil spirit (verses 16–18) could have come from any of the Mediterranean countries. The jailer and his family were probably Romans. What type of church might we expect to see in Philippi? How does this church illustrate Galatians 3:26-28?*

5 *What good can God bring out of the terrible destruction and loss of life usually associated with earthquakes today? How can the behaviour of rescuers have a positive effect? What benefits might come to the community and to the church through the subsequent recovery programme?*

Review of this chapter

- *What are the main causes of earthquakes and their main effects on a community?*
- *What can churches do to prepare individuals and households for an earthquake?*
- *What can churches do in the aftermath of an earthquake?*
- *What risks do you need to be aware of when entering a building that has been affected by an earthquake?*
- *What tasks can volunteers perform in helping people caught up in an earthquake?*
- *What are some of the things you can do to make low-cost houses more resistant to earthquake damage?*
- *Why is it important to involve the whole community in planning and designing new earthquake-resistant housing?*



Notes

Notes

Notes

Notes

Notes

tearfund

www.tearfund.org

100 Church Road, Teddington, TW11 8QE, United Kingdom

Tel: +44 (0)20 8977 9144

Registered Charity No. 265464 (England and Wales)
Registered Charity No. SC037624 (Scotland)

19586–(0111)